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DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: **Spray Products Corporation**
Facility Address: **1323 Conshohocken Road, Norristown, PA 19401**
Facility EPA ID #: **PAD042716084**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   [X] If yes – check here and continue with #2 below.

   [ ] If no – re-evaluate existing data, or

   [ ] If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility [i.e., site-wide]).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale/Key Contaminants
Groundwater	**X**			Shallow, medium and deep fractured bedrock wells contaminated with VOCs above the PADEP MSCs.
Air (indoors)[2]	**X**			Facility maintains an air permit for its emission sources. Soil vapors impacted by VOCs and SVOCs, lighter-phase petroleum hydrocarbons (gasoline), and heavier-phase hydrocarbons (oil) were identified on-site.
Surface Soil (e.g., <2 ft)			**X**	Samples collected at 1 to 2 feet. No detections exceed PADEP non-residential direct contact MSCs. Area is paved. However, possible impacts by storage of 360 uncontained hazardous waste drums in the western storage area in 2007 is unknown.
Surface Water			**X**	Shallow, medium-depth, and deeper fractured bedrock well contaminated with VOCs above the PADEP MSCs. Fate and transport modeling indicate VOCs discharging into the Schuylkill River would not exceed surface water quality criteria. PADEP rejected the model. No model to Diamond Run or the quarry pit.
Sediment			**X**	Shallow, medium-depth, and deeper fractured bedrock well contaminated with VOCs above the PADEP MSCs. Fate and transport modeling indicate VOCs discharging into the Schuylkill River would not exceed surface water quality criteria. PADEP rejected the model. No model to Diamond Run or the quarry pit.

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

Subsurf. Soil (e.g., >2 ft)			X	Samples collected at 1 to 16 feet. No detections exceed PADEP non-residential direct contact MSCs. Area is paved. A source for the VOC-impacted groundwater has not been identified. There have been no sub-slab soil investigations completed beneath the buildings. Possible impacts by storage of 360 uncontained hazardous waste drums in the western storage area in 2007 is unknown.
Air (outdoors)		X		Facility maintains an air permit for its emission sources.

____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

____ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

X If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):
Spray Products Corporation (Spray Products or facility) is a packager of aerosol products including paints, brake fluid, carburetor cleaners, staring fluid, and penetrants. Products are brought into the facility in bulk to be canned or packaged. Some of the organic solvents historically used at the property include, but were not limited to: 1,1,1-trichloroethane (TCA), tetrachloroethylene (PCE), trichloroethylene (TCE), acetone, toluene, methylene chloride, methyl isobutyl ketone (MIBK), methyl ethyl ketone (MEK), propylene glycol monomethyl ether acetate, and xylene.

Prior to 1986, in their packaging process, the facility generated dirty wash solvent from their clean-up operation. This dirty wash solvent was stored in drums for pick up in a tank wagon by a solvent reclaimer. The clean solvent was then recycled. The drums were staged in the drum storage area, which consisted of a concrete slab that had a small berm built by 1983 or 1984. The drum storage area was located outside in the southeastern portion of the property in the vicinity of the former underground storage tank (UST) farm. The UST farm was utilized for storage of product including diethyl ether, acetone, toluene, MIBK, and MEK. The USTs were removed in 1990, at which time, volatile organic compound (VOC) contamination was identified in soil and groundwater. Subsequent subsurface investigations suggested that the source of the contamination likely came from underground transfer piping.

In 1996, the facility began to lease the western portion of the property (west storage area) to a landscaping company for storing equipment and materials. Reportedly, no fertilizer or pesticide was kept at this location by the landscaping company. However, they maintained two 1,000-gallon aboveground storage tanks (ASTs) containing diesel fuel for refueling vehicles. The ASTs were reportedly situated on a concrete pad inside of secondary containment units. The landscaping company left the west storage area in 2004, dismantled their ASTs and took them with them. The facility representative stated he is not aware of any releases occurring from the ASTs. Only the concrete pad was present during the March 2012 site visit. There was no evidence of releases in the area at that time. Historically, the west storage area was used as a parking area for new car carrier operations formerly at the Norristown Wholesale property, and as a parking lot for towed vehicles (Weston, 2001). The west storage area is a large fenced and gated area that consists primarily of gravel, deteriorating asphalt and concrete pads, and scrub grass. The facility currently uses the west storage area for storage of empty drums and totes, trash bins, pallets, small out-of-service ASTs, storage trailers, etc. However,

documentation (PADEP inspection reports) suggests that the facility stored approximately 360 drums of hazardous wastes in this area in 2007. Drums of soil from the heptane release that occurred in April 2011 were stored on wood pallets that were situated on the gravel/scrub grass in March 2012.

In 2012, the facility operates two business lines out of two separate buildings. The Spray Products line is a large scale operation in that production is no less than 25,000 units. This line operates out of the north building. The ORB line is a small scale version of the Spray Products line in that production can be from one can to 100 cans of aerosol. This line operates out of the south building. The buildings are separated by a fenced and gated yard through which is a rail spur. Raw materials are received by rail car, tanker, totes, 55-gallon drums, 30-gallon kegs, and 5-gallon pails. The materials are either stored in the rail car, in the bulk ASTs located in the tank farm, or in the drum storage area outside of the south wall of the north building. The rail cars are parked on the spur and the contents are pumped directly from the car.

Rail cars are switched out of the yard typically at a rate of one per day. Occasionally, up to three cars per day have been switched out of the yard. Based on aerial photographs, the spur was put in place when the facility was built. Previously, this area was open and vegetated. At times, tankers are temporarily stored on-site. At the time of the March 2012 site visit, a tanker containing dimethyl ether was staged on the soil/gravel area located directly west of the south building. The contents of the tanker were being pumped directly into the south building using flexible hoses.

The facility is an active large quantity generator (LQG) of hazardous waste (USEPA ID PAD042716084) generating the following five waste streams: (1) acetone wash; (2) waste heptanes; (3) waste methanol; (4) waste chloride that includes primarily methylene chloride but also contains PCE and TCE; and (5) insecticide. The facility maintains State Only Operating Permit (SOOP) No. 46-00139 for air emissions sources, which includes fugitive emissions from their 27 registered ASTs (Facility ID 46-15576). The facility also maintained a General Permit for Discharges of Stormwater from Industrial Activities (PAG-03) (No. PAR150007), which was not renewed when it expired in 2004. A renewal application for the PAG-03 permit prepared by Stantec Consulting Services, Inc. (Stantec) (Spray Products's consultant) is currently under review with facility management and will be submitted to PADEP.

The facility intends to obtain a PADEP Land Recycling Program (Act 2) release of liability for the contamination identified in soil and groundwater. However, the PADEP rejected the facility's Site Characterization Report submitted in 2003. In 2005, a Notice of Intent to Remediate was submitted to PADEP. The most recent documentation in the public files is from 2005, which includes additional groundwater monitoring data for the onsite monitoring wells. Per the PADEP Land Recycling Program website (accessed December 30, 2011), a Final Report and associated release of liability has not been issued for the facility. In 2012, Stantec completed an evaluation of the wells and have included in their work plan to the facility provisions to abandon several wells that were deemed beyond repair, and install three new wells. The work plan also provides for initiation of a sampling program. The facility stated that this work is on hold until the heptane release remediation work is completed due to budget restraints.

Site Layout

The facility is located at 1323 Conshohocken Road, Norristown, Montgomery County, Pennsylvania (Block 22, Lot 17). The facility is located in an industrial/commercial area; various industries are located in the immediate vicinity. Adjacent properties include an auto body shop to the north, a vacant lot to the east, Chemalloy (manufacturer of alloys, metals, minerals and chemicals for industrial applications) and a bulk oil terminal to the south, and a landscape contractor to the west across Conshohocken Road. Ivy Rock Clean Fill Reclamation (formerly Ivy Rock Quarry) is located approximately 2,200 feet southwest of the facility, west of Conshohocken Road. Residential areas are located less than a quarter mile to the north and the northeast. The facility lies east of Conshohocken Road, south of the Pennsylvania Turnpike (Interstate 276), north of a railroad line, and west of East Main Street. Diamond Run is located less than 0.25 miles to the northwest and the Schuylkill River is located less than 0.3 miles southwest of the facility.

The site covers 7.25 acres of land that contains two masonry and steel buildings (the north and south buildings) separated by the yard and the rail spur, an outdoor AST farm, and product storage areas. Access to the yard is limited by two

locking gates located on each end of the yard. The north building contains offices, a cafeteria, a boiler room, warehouse space, a laboratory, a filling area, an in-line can popper and recycling process, a product batching area and an attached gas house. The south building contains a warehouse, packing and filling areas, a batching area, and an attached gas house. A can crusher was formerly located outside of the south building, but was recently removed.

In the north building, the batching area is used to store products and degreasers used for cleaning the paint line operation for the Spray Products line. It has a concrete floor, diking at the doorways, and no floor drains. At the time of the Preliminary Assessment (PA) completed by NUS Corporation (NUS) on behalf of the USEPA (1989), there were two product storage tanks in the central portion of the room; one contained a diesel fuel additive and the other was used storage of a penetrant (trade name: "Nuts-Off"). Another two-tiered storage tank area was also in the batching area, which contained four tanks of mineral spirits and 1,1,1-TCA (degreaser). During the March 2012 site visit, five batch mixing vessels, two 2,000-gallon ASTs containing PCE, and a satellite container (55-gallon drum) of waste heptane were present in the batching area.

The south building contains the batching, can filling, and packaging areas for the ORB line. This line consists of two process lines to fill aerosol cans with various products. The doorways had diking and the building had no floor drains. The packaging area contains a capping machine, a can labeling machine, and case packagers and sealers. Off-specification filled cans historically were taken to a can crusher located outside the packaging area's northwestern corner. The product drained into a recovery drum and was then repackaged. The crushed cans were placed into an adjacent trash dumpster. The can crusher was removed from service in 2009, removed from the facility's air permit in 2010 and was not present during the 2012 site visit. The paint batching area is located within the south building directly east of the filling area where paints are blended in vats. Batching was formerly conducted in a small shed situated between the south building and the AST farm. This shed is currently used for storage.

Additional storage of empty drums and totes, trash bins, pallets, small ASTs, trailers, etc. is located in the west storage area that was formerly leased to a landscaping company from 1996 to 2004. The west storage area is fenced and has a locking gate.

Potable water is supplied to the facility by Aqua Pennsylvania's Main System (Aqua PA, formerly Philadelphia Suburban Water Company [PSWC]). The landscaping company was formerly supplied public water by Keystone Water Company (Weston, 2001). There are no on-site drinking water wells.

Wastewater is primarily from domestic sources such as restrooms. The wastewater is discharged to the East Norriton Plymouth Joint Sewer Authority. There is a pump station for the sewer located on the northwest corner of the property, at the entrance road to the facility.

Historically, hot water baths were present on the aerosol lines to cool cans after they were filled with gas propellant in the filling area. The water was filtered and discharged via floor drains and underground wastewater lines into the sanitary sewer through Plymouth Township (permitted). The buildings had floor drains that have been sealed. The drains are no longer functional (Weston, 2001). During the cleaning of some traps associated with the wastewater lines, the former Spray Products president, stated that breaks were discovered in the lines (Weston, 2001). These lines also drained the filling area when Strouse, Incorporated (Strouse) operated the subject property. Subsequent to the discovery of the line breaks, the wastewater lines were made non-functional. Some wastewater was then disposed offsite by Safety-Kleen. The water bath was not observed during the March 2012 site visit, and the facility representative indicated that he had no knowledge of discharge of process wastewater at the facility. Stantec is in the process of determining if this bath water exists, and if so, how it is managed. No floor drains were observed in the facility buildings during the March 2012 site visit.

A 1962 Temporary Sewage Disposal Plan indicated the existence of a 500-gallon septic tank that drained to the tile field drains. This tank was located north of the office, approximately 30 feet north and west of the building. Only the building

toilets discharged to this tank. There is no record of the tank being removed (Weston, 2001). There was no visual evidence of this on-lot septic system during the March 2012 site visit, and the facility representative present stated that he had no knowledge of its existence.

A 1961, revised 1962, Sewage and Water Plan for the property indicated a grease interceptor was present northwest of the northern building. This interceptor was located along the sewer line before the line connected with the east-west sewer line. This interceptor appeared to be present along the edge of the parking lot, northwest of the northern building (Weston, 2001).

Chemalloy connected their sewer line beneath the railroad, west of the landscaping operations into the subject property line near the entrance road to the facility. According to Mr. Orr, the subject property had excess capacity to permit the connection (Weston, 2001). Another sewer line that was connected to the on-site sewer pumping station was associated with the Norristown Wholesale building, but is no longer in use. The wastewater from the former landscaping operations was from domestic sources such as restrooms. There are currently no structures or wastewater discharges from this source.

The surface topography of the site is relatively flat and dips gently to the north. The approximate elevation is 100 feet above mean sea level (msl). The facility is underlain by a Made Land soil (MeB – sloping), a result of altering and mixing soils formed in material weathered from shale and sandstone. The soil is a dusky-red to yellowish-brown shaly silt loam to channery sandy loam with some areas along the Schuylkill River consisting of gravelly silty loam mixed with shale. It has a moderate to very slow permeability, a moderate to very low available moisture capacity, and a pH range of very strongly acid to medium acid. Site investigation activities performed by HydroScience Inc. (HSI) indicate that the surficial (overburden) geology consists primarily of clayey and sandy silt.

The facility is located within the Triassic Lowlands Section of the Piedmont Physiographic Province, containing non-marine sedimentary rocks. The facility is underlain by the Triassic age Stockton Formation consisting of a lower conglomerate arkose member, a middle arkosic sandstone member, and an upper mudstone member. The lower yellow gray conglomerate deposits consist of relatively dispersed, moderately rounded clasts of quartz, quartzite, limestone, and feldspar.

Historically, surface water runoff from the facility entered a storm drain on the western end of the property which collected stormwater from properties upgradient and downgradient of the site. The water discharged to the Schuylkill River approximately 1,250 feet west of the facility (HSI, 2002). As observed during the March 2012 site visit, stormwater at the facility enters catch basins located in the paved areas on the north and east sides of the facility. There were no catch basins observed within the fenced yard. However, one catch basin was observed directly outside of the west gate of the yard. According to the facility representative, the catch basins are all connected to the municipal storm sewer system. The collected stormwater discharges to a drainage swale in the wooded area on the western end of the property. The swale is then directed under Conshohocken Road and ultimately discharges to Diamond Run and the Schuylkill River. The portion of the storm sewer system located on the east end of the building was recently reconstructed in an effort to control excessive runoff from a drainage swale east of the facility, which reportedly has previously flooded the eastern parking area.

A new stormwater discharge permit (No. PAR150007) was issued in 1999 for the stormwater discharge. This permit expired in 2004 and was not renewed. The facility is in the process of renewing this permit. The stormwater collected on-site is discharged via Outfall 001 to Diamond Run, which is classified as a warm-water fishery. Approximately 36 acres drain into the on-site system of which approximately 29 acres are from other upgradient properties such as Conicelli Auto Body Shop (formerly Norristown Wholesale), located directly north of the facility (Weston, 2001). Historically, rainwater collected in the AST containment area either evaporated or was collected and stored in drums prior to disposal at an approved facility. The stormwater was analyzed by QEM as part of the stormwater general permit. Currently, the facility contracts Elk Environmental (Elk) to periodically pump out the fluid. Elk samples the fluid prior to vacuuming it out and transporting it offsite for disposal.

Ownership
According to the PA (1989), prior to 1961, the property was first utilized by the Penn Central Railroad as a rail yard. Ownership prior to Penn Central is unknown. The facility was then owned and operated by Strouse and Company from 1961 until 1973, when vandals started a fire on December 31, 1973. (The ruptured aerosol line was located in the Batching Area on-site.) Spray Products purchased the facility in 1974 (operations began on January 10, 1974) and operated it until 2001 when they sold the facility and name to ORB Acquisition Group, Inc. (ORB), the current owner. The facility operates under the name of Spray Products Corporation.

On December 27, 2001, ORB Industries, Inc., Bastian Enterprises, LLC, and ORB Acquisition Group, Inc. purchased the facility. The three companies maintain a Covenant Not to Sue from the PADEP, which was established in the April 24, 2002 Consent Order and Agreement (COA). ORB is the current owner and operator of Spray Products.

Bastian Enterprises originally owned ORB, which was located on 2 Race Street in Upland Borough. This facility operated under a separate USEPA identification number (PAD015056062) under the name of Spray Products, and was a small scale version of the Spray Products operation. Bastian Enterprises purchased Spray Products in 2002. In the summer of 2009, Bastian Enterprises closed the ORB facility in Upland and the company was absorbed into Spray Products. The materials and processes were moved to the 1323 Conshohocken Road facility. ORB's USEPA identification number for the Upland facility was reportedly terminated with the USEPA in 2009. The processes have not changed.

Waste Types and Quantities
On July 24, 1980, Spray Products Corporation submitted a Notification of Hazardous Waste Activity. On October 9, 1980 the USEPA acknowledged receipt of the notification form and issued the facility USEPA ID No. PAD042716084.

On March 4, 1983, PADEP submitted a formal request for the Part B of the Hazardous Waste Permit Application. On July 25, 1983, the facility determined that they would remove the storage facility; the Part B of the Hazardous Waste Permit was not necessary. On August 11, 1983, the facility was issued a notification as a Captive Generator – Large (PADEP eFACTS, 2011).

Hazardous wastes generated at the subject property have included liquid wastes which were fuel blended by Safety-Kleen off-site. The waste is stored in drums, and staged within secondary containment within the diked portion of the AST farm or at the hazardous waste storage area. These storage areas were generally observed in good condition. No staining or cracks were observed. Clean products such as starting fluid are reclaimed on-site. Off-specification product is placed in the can crusher where the liquid in the can is collected in a 55-gallon drum for reuse. Paint products are not included in the recycling because of the many paint colors.

The July 24, 1980 Notification of Hazardous Waste Activity Form indicated that the facility generated paint and solvent cleaning waste (USEPA hazardous waste code K078) as well as D001 (ignitable) and D000 (non-specific toxic) wastes. The solvent waste consisted of wash solvent from clean-up operations. The facility's Part A Hazardous Waste Permit Application dated November 12, 1980 listed 10,000 gallons of container storage (S01) for the K078 waste, which was changed to D001 waste per letter dated July 21, 1981. Hazardous waste code K078 was suspended in July 1981 by the USEPA, and the material was thereafter designated as D001 waste.

On December 6, 1983, the facility submitted a notification of hazardous waste activity form to the PADEP changing the waste code for the wash solvent waste from D001 to U002 (acetone), since acetone was the largest single component of the waste (note that the form was dated 11-28-83). The facility also was seeking advice concerning how to classify their new wash solution, Cyclesolv 60, which was composed of 60 percent minimum blend of ketones and esters, 40 percent maximum blend of alcohols and aromatic hydrocarbons, and 5 percent maximum of chlorinated hydrocarbons. The facility recommended classifying the wash solution as D001, but requested PADEP to recommend a waste code designation.

The facility's Preparedness, Prevention, and Contingency (PPC) Plan dated February 1, 1984 listed the following waste types at the facility: paint manufacturing wastes (K087, which was suspended by USEPA), ignitable wastes (D001), and acetone (U001).

The 1986 Solid Waste Management Unit (SWMU) report listed the waste generated at the facility was paint solvent used for cleaning on the production line. The paint solvent consisted of the following:

Chemical	% By Volume	% by Weight
Propylene Glycol Monomethyl Ether Acetate *	5.1	5.6
Methyl Isobutyl Ketone	11.5	10.3
Acetone	51.3	45.7
Methylene chloride	14.0	20.7
Toluene	18.1	17.7
Total	100.0	100.0

* Changed from E.E. Acetate in early 1984

The facility was generating approximately 8,000 to 10,000 gallons (60,000 to 75,000 pounds) of this waste per year in 1986. The waste was stored in drums.

The 1992 Emergency Response Plan (ERP) submitted on January 16, 1992 indicated that flammable liquids were stored outside in bulk tanks in a diked area or in the hazardous material area, combustible liquids were stored in the mixing tanks or drums in the batch area, methylene chloride was in the bulk tank in the diked area, PCE and 1,1,1-TCA were in drums or tanks in the batch area, and isobutene and propane were in pressure vessels in the hazardous material area.

On March 8, 1993, the facility submitted a Notification of Regulated Waste Activity form listing F003 waste (non-halogenated solvents). It noted that they had not stored waste on the property since August 1983. The facility was a generator only.

In 2002, the facility stored off-specification material for some customers. This material was sent to the facility from these customers. The facility had asked the customers to remove the materials. The materials were finished products on pallets stacked in the north building.

A 2009 inspection noted sample waste types of flammable liquid (D001, F002, F003), waste methanol (U154, D001, F003), waste dichloromethane (F002), waste heptane (D001), and waste acetone (D001, F003).

In 2012, the facility generates five waste streams: (1) acetone wash; (2) waste heptanes; (3) waste methanol; (4) waste chloride that includes primarily methylene chloride but also contains PCE and TCE; and (5) insecticide. Acetone wash and waste heptanes are reportedly 95% of the waste generated at the facility. These wastes are sent to fuel blenders. The other wastes are sent to be incinerated. All wastes are containerized in 55-gallon drums and stored in the outdoor bermed hazardous waste storage area on the west end of southern building. The wastes are handled by Nexeo. During the March 2012 site visit, 22 drums of waste were present in the storage area that included 3 drums of acetone; 7 drums of waste heptanes; 9 drums of waste methanol; 2 drums of dichloroethylene; and 1 drum of insecticide. There was 1 drum of oil dry material outside of the containment area. One drum of waste heptane was observed in the batching area satellite storage area in the north building and one drum of waste heptane was stored in the satellite storage area within the AST containment area.

Nonhazardous solid waste (general refuse), including paper, food, plastics, glass, crushed metal cans, and cardboard generated at the facility is collected and disposed of off-site through a commercial vendor, BFI, approximately once a week. Cardboard is also recycled.

The former landscaping operation used materials to service their vehicles, including oils, greases, etc. These materials appeared to be in the manufacturers' containers that were generally less than 5 gallons (Weston, 2001). No pesticides or fertilizers were stored on-site. No hazardous waste was generated at the former landscaping operations.

SWMUs

The 1989 PA identified the following three SWMUs (SWMUs 1 through 3) that are located within a fenced in portion of the facility. During the March 2012, one additional SWMU (SWMU 4) was identified.

SWMU 1 - Former Hazardous Waste Drum Storage Area (Former UST Farm): This 35 by 65 foot concrete pad was located outside in the southeastern portion of the facility within the UST tank farm and product storage area. The pad and a portion of the concrete dike (6-inch high; 8 by 25 feet) remained at the time of the 1989 PA. The pad was being used for storage of empty drums and drums of product. There were no known releases from this SWMU that began operations in 1975; the last shipment was on October 30, 1986 (SWMU inactive since this shipment). Wastes were stored in sealed, 55-gallon drums and included spent wash solvents containing toluene, methylene chloride, acetone, MIBK, and propylene glycol monomethyl ether acetate, and were classified as ignitable (D001). Secondary containment around this area was built sometime around 1983 or 1984, according to a November 28, 1983 response to a compliance inspection. In 1989, no evidence of spills was observed. Per the PPC plan, rainwater accumulated within the SWMU was collected and stored in drums prior to disposal. On August 1, 1989, the facility representative indicated to NUS that the closure of the drum storage pad was held up until the USTs beneath the pad were removed; this action was planned for Spring 1990. Also, the facility reused the solvent from cleaning operations in primers where colors were unimportant thereby eliminating a waste stream.

Based on the description of work completed by CM Environmental Services (CMES) in May 1990 for the UST closures, the concrete storage pad associated with the drum storage area and underlying soils would have been removed concurrent with the tank work. Soil boring investigations were subsequently conducted by HSI in 2002 at various potential areas of concern (AOCs) associated with waste storage (e.g., can crusher, empty product drum storage). The findings associated with this work were reportedly submitted to PADEP, but the facility's current consultant (Stantec) did not locate any regulatory correspondence in the facility's files specifically confirming PADEP approval for the AOC closures. The exact location of this former SWMU is uncertain; however, the suspected location of the former hazardous waste drum storage area was concrete covered and in good condition during the 2012 site visit.

SWMU 2 – Former Off-Specification Can Crushing Machine/Dumpster Area: Historically, the can crusher was located outside the northwestern corner of the packaging area (the northwestern corner of the south building). In this SWMU, cans were crushed using a worm auger to puncture filled off-specification cans. Product drained into a recovery drum and was then repackaged (reclaimed). The crushed cans were placed into an adjacent trash dumpster. There were no known releases reported by the facility from this SWMU that was installed in 1987. Wastes managed at the unit included starting fluids (containing ether), brake and carburetor cleaners, and penetrants (containing phenols, oils and solvents) (D001). The unit and associated dumpster used to store the crushed cans were located on the concrete driveway. In 1989, no evidence of spills was observed by NUS.

A July 10, 2007 PADEP inspection identified a clear, odorless liquid coming out of the ground between the can crusher and the gate and running into a storm drain. PADEP requested that measures be taken to keep the unknown material out of the storm drain. In March 2012, the facility representative reported that he has no knowledge of the alleged leak from the can crusher and that the can crusher was taken out of service in 2009 and was removed from the facility's air permit in 2010.

Currently, the cans are punctured in-line at the beginning of the fill station in the north building. The solvent is recycled directly back into the filling process, and the cans are scrapped. The concrete surface in the area where the can crusher was formerly located appeared to be in good condition with minor staining observed.

SWMU 3 – Former Empty Product Drum Storage Area (Former and Current Hazardous and Raw Materials Storage Area): During the NUS site visit in 1989, empty product drums that contained penetrants, paints, and brake fluids (D001) and drummed product were stacked upright on pallets and stored outside the southern side of the north building. Empty drums were also stored in the tank farm and product storage area. There were no known releases from this SWMU that began operation in 1975. In 1989, no evidence of spills was observed.

Historically, this area has been used to store hazardous materials. As observed during the 2012 site visit, the area is used for storage of various quantities and types of raw materials that are stored in drums and totes. The drums and totes are stored on pallets, stacked two to three high. The pallets are situated on the concrete and asphalt surface. There are no other containment features. The asphalt surfaces are in fair to poor condition; however, no evidence of release was observed. Steel plates had been placed over portions of the asphalt that had been damaged. Totes are also stored across the yard on the concrete surface between the tank farm and the south building. There are no other containment features. The concrete was in good condition at the time of the 2012 site visit. No evidence of releases was observed.

SWMU 4 – Hazardous Waste Storage Area: This storage area was observed outside the northwestern corner of the concrete block south building during the March 2012 site visit. The storage area consists of a concrete floor surrounded by a concrete berm (1 foot high). The northern section of the berm was removed to allow for forklift traffic. A temporary rubber berm was present that is used to close the open section in the concrete berm. The storage area looks to be as wide as a loading dock bay door [located adjacent a former loading dock and bay door] and approximately 15 feet long. During the March 2012 site visit, 22 drums of waste were present in the storage area that included 3 drums of acetone; 7 drums of waste heptanes; 9 drums of waste methanol; 2 drums of dichloroethylene; and 1 drum of insecticide. There was 1 drum of oil dry material outside of the containment area. The drums were labeled with hazardous waste labels. Outside the diked area was a pallet with an opened drum that contained oil dry from a recent hydraulic oil release from a Norfolk Southern engine (see *AOCs* section).

AOCs

The Additional Site Characterization Study (ERI, 1995) identified areas of concern, which were located in the back southeast corner of the property. The AOCs included the old copper pipe area, former UST excavation area, and the rail spur. See *Investigations and Remedial Actions to Date* section for historic investigation information.

The Site Characterization Report for Soil and Groundwater (HSI, 2002) identified seven potential areas of concern (PAOCs). The PAOCs included:

- PAOC 1 – Former Copper Product Lines
- PAOC 2 – Vapor Flux Area Between Buildings (Freon 12)
- PAOC 3 – Vapor Flux Area North of Warehouse (DCA and Freon 12)
- PAOC 4 – Former Drain Line Beneath Warehouse
- PAOC 5 – Can Crusher/Dumpster Area (SWMU 2)
- PAOC 6 – Empty Product Drum Storage Area (SWMU 3)
- PAOC 7 – Western Parcel - B&M Landscaping

Ruptured Aerosol Line Release: A ruptured aerosol line in the batching area that led underground to the filling area ruptured during a 1973 fire that may have released materials to subsurface soils (NUS, 1989). The facility representative interviewed during the 2012 site visit has only been with the company for 10 years. He stated that there are no employees remaining from the original Spray Products work force; therefore, the location of the possible release is unknown.

Heptane Spill: On April 26, 2011, PADEP conducted a spill investigation after the facility discovered on April 25, 2011 (April 22, 2011) that an employee failed to close an opened valve on the heptane AST (AST 024A). Approximately 4,000 gallons were released into the south building and spilled outside onto a concrete-covered rail spur that had cracks. See *Investigations and Remedial Actions to Date* section for investigation information.

Diesel Spill: On June 1, 2011, a PADEP Incident Notification form was completed following a 200-gallon diesel spill to soil. A tractor trailer owned by Joint Express, Inc. drove off the edge of the facility's parking lot into a grass-covered area. When the wheels of the truck sank into the soil, the trailer tipped over, and one of its fuel tanks was punctured on an inactive light stanchion. See *Investigations and Remedial Actions to Date* section for investigation information.

Norfolk Southern Release: During the March 2012 site visit, a relatively recent release of hydraulic oil from a Norfolk Southern engine was observed along the railroad spur leading into the facility yard from the west. The release was a trail that extended approximately 200 feet, and ending approximately 50 feet inside of the yard. The impacted areas consisted of gravel, asphalt, and grass-covered surfaces. The facility had spread oil dry over portions of the release that occurred on the asphalt surfaces immediately outside and within the yard (the facility's property). Some of the oil dry had been cleaned up, drummed, and stored adjacent to the hazardous waste storage area. However, the portion of the spill that had occurred on the gravel outside of the facility was not addressed. The facility representative stated that he was contacting Norfolk Southern to clean this area up because the release occurred from their engine on their property and the facility was not responsible.

Storage Tanks
In 1989, to the east of the south building was the tank farm and product storage area. The tank farm consisted of various used and unused ASTs and 10 USTs. The used tanks contained either ether or heptanes. All of the ASTs were located over dirt and gravel; however, six of the ASTs were surrounded by a 1.5-feet high concrete dike. In 2012, there are no longer any known USTs onsite.

USTs
UST Assessment Following the Removal of 10 USTs (1990): As reported in the letter report of July 11, 1990 by CMES, on May 9 and 10, 1990, 10 steel USTs in the chemical UST farm were removed by C. Delong Associates with oversight by CMES. The 10 USTs were located adjacent to each other with six USTs in line to the south of 4 in line USTs. The pertinent UST information is summarized in the following table.

USTs			
ID	**Size**	**Contents**	**Status**
1	6,000	Diethyl Ether	Removed 1990 intact
2	6,000	Diethyl Ether	Removed 1990 intact
3	6,000	Diethyl Ether	Removed 1990 intact
4	6,000	Diethyl Ether	Removed 1990 intact
5	6,000	Diethyl Ether	Removed 1990 intact
6	6,000	Diethyl Ether	Removed 1990 intact
7	6,000	Diethyl Ether	Removed 1990 intact
8	3,000	Diethyl Ether	Removed 1990 intact
9	6,000	Acetone, Toluene, MIBK, MEK	Removed 1990 intact
10	3,000	Acetone, Toluene, MIBK, MEK	Removed 1990 intact

The USTs were emptied prior to removal. After removal, the USTs were cleaned, cut up and disposed offsite. On May 9, 1990, C. Delong Associates Inc. collected soil samples and on May 10, 1990, CMES collected soil and water samples from beneath the USTs.

The size of the excavation was approximately 60 feet long by 36 feet wide by 12 feet deep. The excavation began approximately 10 feet south of the rail spur and extended south 36 feet. The length of the excavation parallel to the rail spur was 60 feet and the total depth varied from 10 to 13 feet. Groundwater was observed in the bottom of the northern half of the excavation and in the southwestern corner of the excavation. A concrete pad on the ground surface above the USTs was broken into pieces and stockpiled beside the excavation for offsite disposal. Any pieces with observable stains were cleaned on-site before disposal. The screenings that surrounded the USTs initially remained in the excavation until analytical work was performed. The screenings revealed petroleum and solvent odors and a sheen was observed on top of the groundwater in the excavation.

After the USTs were removed, CMES conducted a visual examination and found no observable holes or signs of staining or leakage on the sides, tops, and bottoms of the USTs.

A total of eight soil samples were collected by CMES beneath USTs 7, 8, 9 and 10 (Soil Samples 5, 6, 7, 8, 9, 10, 11, and 12). One sample was collected beneath both ends of each UST. Two groundwater samples were collected below two of the USTs (i.e. one beneath UST 7 [Water Sample 2] and one beneath UST 19 [Water Sample 3]). Three soil samples were collected from the virgin soil at an approximate depth of 11 feet (i.e. Samples 1D, 2D, and 3D). Sample 1D was taken from the center of the northern half of the excavation, Sample 2D from the southwestern corner of the excavation, and Sample 3D from the southeastern corner of the excavation. The soil and groundwater samples were analyzed for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and total xylenes (BTEX), MIBK, MEK, acetone, methylene chloride, heptane, and diethyl ether.

On May 10, 1990, CMES notified PADEP that during the excavation of the USTs, there was product visible in the excavation on either the shallow groundwater table or the perched groundwater table.

Several VOCs were detected in each of the soil samples of the material directly below the USTs. Higher VOCs were detected below USTs 7, 8, 9, and 10, which were removed from the northern half of the excavation. The highest total VOCs were detected in Soil Sample 9 and Soil Sample 12 having total VOCs of 393,600 micrograms per kilogram (ug/kg) and 285,700 ug/kg, respectively. Diethyl ether was detected in 10 soil samples, with the highest concentration being 44,000 ug/kg. Acetone was detected (estimated) in every sample with the highest concentration being 16,000 B ug/kg. MIBK was detected in one sample at 1,500 J ug/kg. MEK was detected in one sample at 2,100 ug/kg. VOCs were detected in each of the three groundwater samples from the excavation. The highest concentration of total VOCs was detected at 843,900 micrograms per liter (ug/L) in Water Sample 3, which was collected from below UST 9. Diethyl ether (highest concentration of 330,000 ug/L) and acetone (highest concentration of 400,000 ug/L) were detected in the three groundwater samples. MIBK was not detected in any samples. MEK (22,000 ug/L) was detected one sample.

TPH were detected in all 15 soil samples and all three groundwater samples. A PADEP regulatory guideline for TPH in soil of less than 100 milligrams per kilogram (mg/kg) was exceeded in twelve of the soil samples collected. Higher TPH concentrations were detected in Soil Samples 2D, 6, and 3D at 370 mg/kg, 355 mg/kg, and 329 mg/kg, respectively. The PADEP regulatory limit of 1 mg/L for TPH in groundwater was exceeded in all three groundwater samples. The highest concentration of TPH was detected in Water Sample 3 at 800 mg/L.

As contamination was detected, PADEP approved excavating to bedrock, installing three monitoring wells in the excavation, then backfilling the excavation. The southeastern corner of the property was cleared of vegetation to provide an area to stockpile the contaminated soil. Plastic was placed below and on top of the stockpile. (Note: According to the Final Report for Soil Pile Remediation and Closure prepared by United States Environmental Services Corp. [USES], dated September 9, 1994, the excavated soil was stockpiled in the area directly west of the south building between the

railroad tracks and the rail spur. See *Investigations and Remedial Actions to Date* section for detailed information regarding remediation and reuse of the stockpile soil.)

In addition, visually contaminated groundwater was pumped from the bottom of the excavation into drums. Sorbent pads were also placed on top of the groundwater in the excavation to absorb the oily sheen.

After excavating, bedrock was reached on June 5, 6, and 8, 1990. CMES collected new soil samples and a groundwater sample from the bottom of the excavation. The excavation was divided into six areas and a two-point composite soil sample was collected from each area (i.e. Samples S-1 PSE, S-2 PSE, S-3 PSE, S-4 PSE, S-5 PSE, S-9 PSE, and S-10 PSE). A groundwater sample was collected from the center of the southern half of the excavation. Samples were analyzed for TPH and BTEX (plus library search). (Note: MIBK and MEK, and other VOCs, do not appear to have been analyzed.)

Concentrations of VOCs detected were drastically reduced. The highest concentration of total VOCs in soil was 368 ug/kg. No diethyl ether was detected in the soil samples; acetone was detected in six samples, ranging from 25 JB to 35,000 JB ug/kg. TPH in soil ranged from 31.6 mg/kg to 368 mg/kg. Other constituents detected in the soil samples included methylene chloride, toluene, xylenes, 3-methyl hexane, 2,3-dimethyl pentane, 2-methyl hexane, and ethylbenzene (all constituents detected previously).

Diethyl ether was detected in the groundwater sample at 10,000 ug/L; acetone was detected at 5,800 B ug/L. TPH in groundwater was 51.8 mg/L. Other constituents detected in the groundwater sample included methylene chloride, toluene, 3-methyl hexane, 2-methyl hexane, 4-methyl-2-pentanone (MIBK).

Three monitoring/recovery wells were installed in the excavation. One well was set in the northeast corner of the excavation, one in the northwest corner of the excavation, and one along the south-center of the excavation. The wells were 15 feet deep and were constructed of 10 feet of 4-inch diameter, .020 slotted PVC, and five feet of solid PVC riser. The space around the wells was backfilled with sand to two feet above the slotted PVC screen and a sand/cement slurry was used to fill the annulus to grade. A protective steel casing was placed over each well. CMES recommended two rounds of sampling of these wells be conducted during the upcoming six months.

2,000-Gallon UST: In January 2008, while installing a new scale in the south building, a manhole was discovered. When opened, a 2,000-gallon UST was found that contained 98 percent water. The facility representative stated that the UST was identified on a 1961 Plumbing Storage and Filling Building Plan. The contents were unknown, but it appeared that the floor drains that were formerly in the building discharged to that UST. During the March 2012 site visit, the facility representative stated the floor drains were plugged with concrete long before he began working there. Prior to closure of the UST, the facility collected a sample of the UST contents (water/residual liquid) for laboratory analysis for waste characterization purposes. The analytical results as reported by Rineco Analytical Services for a sample of the clear liquid collected from the UST on June 19, 2007, indicated that ignitability was greater than 212 degrees Fahrenheit; pH was 6.9; there were no toxicity characteristic leaching procedure (TCLP) metals, VOCs (limited list), or semivolatile organic compounds (SVOCs) (limited list); and there were no sulfides. The analytical results indicated that the liquid was not RCRA hazardous. The contents of the UST (2,081 gallons described as an oil/water mix) were removed using a vacuum truck and transported for treatment/disposal to Environmental Recovery Corporation, Inc. (ERC) on January 23, 2008 by Elk Environmental, Inc. Following emptying of the UST, the UST was closed-in-place by Elk Environmental using flowable fill. The integrity of this UST is unknown and no investigation of this UST and surrounding soils has occurred (Weston, 2001).

ASTs

After the USTs were removed and the excavation backfilled, a concrete pad was poured over the former location and the new ASTs were installed. The registered and unregistered ASTs identified at the facility are presented in the following table.

ASTs					
IDs PADEP (Plant)	**Size**	**Contents**	**Location**	**Status**	**Secondary Containment**
001A (01)	5,000	Isopropyl Alcohol	Area 1	Active	Yes
002A (02)	5,000	De-icer	Area 1	Active	Yes
003A (03)	5,000	Heptane	Area 1	Active	Yes
004A (04)	5,000	Heptane	Area 1	Active	Yes
005A (05,15)	10,000	Acetone	Area 1	Active	Yes
012A	1,000	Mineral Seal Oil	Inside north building	Removed	N/A
013A	1,000	Mineral Seal Oil	Inside north building	Removed	N/A
014A	1,000	Mineral Seal Oil	Inside north building	Removed	N/A
015A	1,000	Empty (formerly Mineral Seal Oil)	Area 1	Out of Service since approximately 2006	Yes
016A	2,000	Perchloroethylene	Inside north building filling area	Active	Yes
017A	2,000	Perchloroethylene	Inside north building filling area	Active	Yes
018A (18, 701)	6,000	Chemical Blend	Area 1	Active	Yes
019A (19, 702)	6,000	Chemical Blend	Area 1	Active	Yes
020A (703)	6,000	Chemical Blend	Inside north building batch area	Active	Yes
021A (704)	6,000	Chemical Blend	Inside north building batch area	Active	Yes
022A (706)	7,500	Diethylether	Area 1	Active	Yes
023A (707)	7,500	Diethylether	Area 1	Active	Yes
024A (24,705)	10,000	Heptane	Area 1	Active	Yes
025A (25)	6,000	Diethylether	Area 1	Active	Yes
026A (26)	6,000	Diethylether	Area 1	Active	Yes
028A	8,000	Chemical Blend	Area 1	Active	Yes
029A	8,000	Chemical Blend	Area 1	Active	Yes
030A	8,000	Chemical Blend	Area 1	Active	Yes
031A	6,000	IPA (currently Hexane)	Area 4	Active: Installed 6-4-08	Yes
032A (31)	6,000	Hexane (currently D-95 solvent)	Area 4	Active: Installed 6-4-08	Yes
033A (34)	6,000	Xylene (currently Toluene)	Area 4	Active: Installed 6-4-08	Yes
034A	6,000	Lubricating Oil Solvent (currently Xylenes)	Area 4	Active: Installed 6-4-08	Yes
(152A)		1,1-Difluoroethane	Area 3	Active	No

(108A)		Aeron	Area 3	Active	No
unnumbered		Aeron/NP-70	Area 3	Active	No
(134A)		1,1,1,2-Tetrafluoroethane	Area 3	Active	No
	8,000	Fuel Oil	Fuel Oil Tank	Active	Yes

Per the March 2012 site visit, the ASTs are used for raw materials storage. No waste is stored in the ASTs. To best identify the location of the tanks, the tank areas have been identified as Areas 1 through 4.

Area 1 – Area 1 is the large containment structure located at the former UST tank farm. The area consists of poured concrete floors and walls. Some of the piping is within the containment; some piping runs are over soil/grass. The ASTs are raised within the containment structure. During the March 2012 site visit, liquid was observed in the containment areas. The facility representative stated that he periodically calls Elk Environmental to pump out the fluids. Elk samples the fluids prior to vacuuming them out and transporting them offsite for disposal. The containment area was in good condition with no significant staining. Tank vessels (rail cars) were present on the track immediately north of the AST area. The rail cars were parked immediately north of the railroad tracks.

Area 2 – Area 2 is located west of Area 1. Area 2 stores the 26,000 ton carbon dioxide (CO2) cryogenic tank and many totes stored on asphalt with no secondary containment. Piping behind this area was over soil/long grass. The piping was rusted.

Area 3 – Area 3 is east of Area 1. ASTs 108A, 134A, 154A, and an unnumbered AST in the area are situated over gravel with concrete walkways around the ASTs. AST 134A is situated over concrete with no other secondary containment. There was no staining observed beneath or in the area of these four ASTs. Formerly, there were three propane ASTs located in this area (WES, 1989).

Area 4 – Area 4 contains the four vertical ASTs located adjacent to the batching area of the northern building. The ASTs are raised above the concrete base and walls of the containment structure.

Fuel Oil AST – The diked, 8,000-gallon fuel oil tank is located north of the south building. The diked AST is situated on soil/gravel and grass. Prior to 1990, when this new AST was installed, an 8,000-gallon UST was located in its location. The former UST was connected to the boiler room by underground piping. When the UST was removed, it reportedly had no holes and the soil around the UST did not have any odors or traces of oil (C. DeLong Associates, Inc.).

In 2002, there were 12 process tanks in the mixing area. These tanks were:

- Five 1,000-gallon, stainless steel
- Three 500-gallon, jacketed
- One 5,100-gallon, stainless steel
- One 2,000-gallon, stainless steel
- Two 1,500-gal!on, black iron

During the 2012 site visit, five stainless steel process tanks were observed in the filling area of the north building, and six were located inside of the batching area of the south building. These tanks are on wheels and can be easily moved throughout the facility. The tanks were situated on the concrete floor. No secondary containment units were present.

On January 30, 1992, the facility notified PADEP of the inventory of chemicals stored at the facility. It noted that although the facility is not located next to the Schuylkill River, they were required to notify all facilities with intakes located within 20 miles downstream of the facility. Chemicals included acetone (3,000 to 8,000 gallons), ethyl ether (10,000 to 40,000 gallons), heptanes (10,000 to 20,000 gallons), hexane (500 to 7,500 gallons), methanol (0 to 5,000 gallons), methylene chloride (500 to 4,000 gallons), mineral spirits (500 to 2,000 gallons), toluene (1,000 to 3,000

gallons), 1,1,1-trichloroethane (500 to 2,000 gallons), and No. 2 fuel oil (1,000 to 8,000 gallons). The largest tank was 10,000 gallons and the facility has a maximum capacity of 110,000 gallons.

eFACTS identifies 20 ASTs (Tanks 001A, 002A, 003A, 004A, 005A, 012A, 013A, 014A, 015A, 016A, 017A, 018A, 019A, 020A, 021A, 022A, 023A, 024A, 025A, and 026A) registered to ORB on April 30, 2002. On December 27, 2004 the list of registered ASTs was modified by ORB to include 028A, 029A and 030A.

On June 18, 2008, JD Environmental Inc. on behalf of ORB sent the Storage Tank Registration Permitting Application to PADEP for a series of four 6,000-gallon single-walled steel ASTs (031A, 032A, 033A, 034A) containing isopropyl alcohol, hexane, xylene, and lubricating oil solvent, respectively, at the Spray Products facility. The tanks were provided with secondary containment.

On March 19, 2010, PADEP requested a Spill Prevention Response Plan (SPRP) for facilities exceeding storage capacities exceeding 21,000 gallons. Per the facility representative, the last revision to the SPRP was done in 2005 when it was prepared by Gilmore and Associates.

On November 30, 2010, Mott Tank Inspection Inc. sent AST inspection summaries for ASTs 005A (15), 025A (rear), 026A (front), 018A (701), 019A (702), 020A (703), 021A (704), 022A (706), 023A (707), and 024A (705).

On December 6, 2010, PADEP sent a Notice of Violation (NOV) following an October 7, 2010 inspection when an integrity in-service inspection was conducted on tanks 025A and 026A and identified that both tanks lacked emergency vents and that the shells, nozzles, and roofs had coating deterioration and were in unsatisfactory condition. PADEP requested the deficiencies be corrected with 60 days. During the March 2012 site visit, the facility stated they had no knowledge of the NOV, and would not have knowingly not responded to it. On July 16, 2012, the PADEP Storage Tanks Program provided a copy of the 2010 NOV to the facility. As of July 20, 2012, the facility was preparing a response to the NOV. Per the March 2012 site visit, the facility is currently cleaning and painting the ASTs as well as making any repairs as needed (i.e., replacing seals, upgrading venting).

Investigations and Remedial Actions to Date

Phase I, Phase II, Phase III (1989) (Included in Site Characterization Report for Soil and Groundwater (2002): On January 19, 1989, Westinghouse Environmental Services (WES) submitted to the facility the letter report with the objective of identifying and evaluating potential environmental impacts with the intent of reducing potential environmental liabilities. The report summarized the Phase I and Phase II portions of the environmental assessment.

- Phase I - Background Data Review
- Phase II - Field Investigation (eight soil borings; four soil samples analyzed for VOCs plus 20 tentatively identified compound [TICs], SVOCs, and priority pollutant [PP] metals; effluent bath sample [northwest corner of the packaging area – discharged to the storm sewer], downgradient storm sewer samples, and bulk asbestos sampling)
- Phase III - Letter Report

The assessment concluded the following:

- The compounds identified in the samples, excluding the polynuclear aromatic hydrocarbons (PAHs) in SP-5, can be associated with the compounds used by the facility.
- The discharge of the bath water into the storm sewer is an illegal discharge.
- The levels of VOCs identified in SP-5 indicate that the USTs or associated lines located at the southeast corner of the property are leaking.
- The PAHs identified in SP-5 cannot be tied into the Spray Products manufacturing process. These compounds are characteristic of creosote and may be associated with the railroad spur.
- The downgradient storm sewer sample indicates that levels of VOCs attributable to the facility (methylene chloride, 1,1-dichloroethane (DCA), toluene, acetone, and MIBK as well as other unknown VOCs) are

following an as yet unknown underground conduit and entering the storm sewer. The effluent (bath water) discharge, which contained elevated concentrations of VOCs (toluene, acetone, MIBK, and bis(2-ethylhexyl)phthalate) is also contributing to the elevated VOC content.

- The information from both the sample results and field data collected during the drilling indicate that the soil and surface water at the facility are contaminated with compounds attributable to the facility.
- The boiler wrap contains asbestos.

WES recommended the following actions:

- The facility should either obtain a NPDES permit for the discharge of their bath water or reroute this discharge to the sanitary sewer, upon approval of the municipal authority.
- The USTs should be leak tested. If found leaking, they should be excavated and removed.
- Groundwater monitoring wells should be installed in order to determine if the VOCs detected in the soil boring samples have impacted the groundwater quality.
- The facility should secure an asbestos removal contractor and remove the boiler wrap.

Phase II (1989) (Included in Site Characterization Report for Soil and Groundwater (2002): On May 9, 1989, WES submitted to the facility the Phase II report which identified the potential source and migration pathway of VOCs detected near the UST area and evaluate the potential for groundwater contamination attributable to the VOCs detected within soils collected during the 1988 Phase I investigation.

The evaluation of the sources and migration pathways for the VOCs yielded the following:

- Advanced eight soil borings along the outside the southern side of the main building (north building) and installed one monitoring well near the northwest corner of the north building to investigate sources of VOC contamination from transfer piping running from the batch area to the packaging building. Four out of 13 copper transfer pipes were in satisfactory condition when Spray Products first occupied the site. The pipes were suspected to be the cause of the release, which migrated along the adjacent railroad spur ballast via shallow groundwater.
- Copper lines were removed and replaced with new lines of chemically compatible materials.
- An installed monitoring well indicated VOC contamination in groundwater.
- Installation of additional wells was recommended.

The Phase II assessment concluded the following:

- Due to the shallow depth of the soil samples (less than five feet), the compounds detected in soil can be attributed to the facility. The unknown cyclohexanes, alkanes, ketones, and aromatics are most likely low molecular weight compounds not identified during a standard library search, chemical or physical breakdown products of the on-site compounds, or a combination of both.
- The railroad ballast is most likely acting as a conduit for water movement downgradient from the UST area. However, wherever groundwater was encountered during the boring program, significant levels of known or unknown compounds were encountered. Sample B-8 was not collected from the saturated soil zone, and it contained the lowest contaminant concentration (unknown compound 600 ppb).
- The positive results of the downgradient storm sewer sample collected during the previous site investigation are most likely water seepage into the sewer culvert.
- The weathered Stockton Formation underlying the facility forms a clay-rich mantle which perches a small amount of groundwater, thus explaining the high water table south of the main (north) building. Bedrock crops out south of the filling and packaging area (south building), and the erosional surface of the bedrock dips north. The mantle is however most likely not impervious to water and leakage does occur.
- The groundwater sample collected from MW-1 contained methylene chloride (28,000 ug/L), 1,1-DCA (15,000 ug/L), total 1,2-dichloroethylene (DCE) (9,700 ug/L), 1,1,1-TCA (12,000 ug/L), toluene (140,000 ug/L), acetone (47,000 ug/L), MIBK (103,000 ug/L), and an unknown hydrazine isomer (370,000 ug/L). (Note: MW-1 was later renamed MW-4D.) Groundwater quality beneath the facility has been adversely impacted by

compounds attributable to Spray Products operations. Strouse, the previous owner/operator, was engaged in similar operations using similar chemical compounds including methylene chloride, acetone, MIBK, and toluene. Each of these compounds had been stored in USTs during the facility's history.

WES recommended the following actions:

- The USTs should be replaced. While some tanks may not be leaking, their age, approximately 14 years, warranted their removal. The facility had indicated that all underground product lines were pressure tested for tightness. WES recommended excavating any product lines removed from service.
- Additional groundwater monitoring wells (upgradient and downgradient) should be installed to evaluate the extent of groundwater impacts. Utilizing the information obtained from the additional wells, a groundwater remediation system can be designed.
- A feasibility study should be undertaken to identify remedial alternatives for the perched water.
- The railway ballast conduit should be removed.
- The need to inform the PADEP of the results of this study should be evaluated.
- The legal ramifications associated with the joint relationship with the Montgomery County Industrial Development Authority associated with should be ascertained.

USEPA Preliminary Assessment (1989): On August 10, 1989, NUS completed the PA for the facility, which indicated that the last shipment of hazardous waste was in October 30, 1986. The facility's operations changed to include use of the dirty wash solvents as product in paint primers, which were canned at the facility. As a result the dirty solvent waste stream was eliminated. Although the container storage area was no longer in use, it was never certified as closed in accordance with the closure plan, according to the PA. Chemicals that were observed onsite during the PA included: 1,1,1-TCA, mineral spirits, ether, hexane, MEK, toluene, methylene chloride, and acetone. Other possible AOCs identified during the PA included the railroad spur that runs east-west through the property and a ruptured aerosol line in the batching area that led underground to the filling area. This line reportedly ruptured during a 1973 fire and may have released materials to subsurface soils. A rough HRS PROscore of 24.54 was obtained for the facility.

Former UST Storage Area: On May 10, 1990 the facility notified PADEP that during the excavation of the 10 USTs (eight 6,000-gallon steel USTs containing diethyl ether and heptane, and two 3,000-gallon steel USTs containing a mixture of acetone, toluene, MIBK, methylene chloride, and glycol ether), there was product visible in the excavation on either the shallow water table or the perched water table. Soil and water samples were collected and further excavation was planned. The facility was dewatering the product through an oil/water separator and discharging the remaining water to the sanitary sewer system. Additional discussion related to the USTs/UST removals is presented in the *Storage Tanks* section. The subsequent investigations and remedial actions were initiated as a result of the UST area release and could have been completed under Storage Tanks: Corrective Action (Chapter 245); however, the facility chose to clean up the site under Act 2.

On January 5, 1993, PADEP inquired into the additional investigations/remediation from the proposed activities recommended in the July 11, 1990 Tank Assessment prepared by CMES (see *Storage Tanks* section) that proposed two rounds of initial shallow groundwater sampling.

On April 19, 1993, PADEP notified the facility that they had reviewed the February 2, 1993 information report from ERI. It noted that several VOCs were detected in three of the groundwater samples and in the screening material soil samples from the excavation where the 10 USTs were removed on May 9-10, 1990. PADEP indicated that the levels were unacceptable. Based on the data from the two rounds of sampling (September 24, 1991 and November 30, 1992), PADEP requested that the facility develop and implement a hydrogeologic study to determine the extent and impact of soil and groundwater contamination, evaluate the potential for further spread of the contamination, define all of the sources of pollution, evaluate alternatives available to abate soil and groundwater pollution, and develop a groundwater monitoring program.

Results of Third Round of Groundwater Sampling and Analysis (1993) (Included in Site Characterization Report for Soil and Groundwater (2002): On March 19, 1993, ERI submitted the report to Spray Products. It documented the results of the November 30, 1992 sampling of 10 monitoring wells located throughout the facility, which were installed as a result of releases from a leaking sewer line (wastewater [bath water] pipe break), several UST lines, and the UST area.

ERI's evaluation of the dissolved constituents observed to date showed that the chemical contaminants present included substances with specific gravities both lighter than water (e.g. toluene, acetone, and chloroethane) and substances denser than water (e.g. 1,1,1-TCA, TCE, methylene chloride, and PCE). This meant that future well sampling needed to include sampling at the bottom of the well to sample denser substances (dense non-aqueous phase liquids [DNAPLs]) as well as at the top of the well for lighter substances (light non-aqueous phase liquids [LNAPLs]).

Based on the data for the seven wells that intersected the shallow aquifer, which were sampled on November 30, 1992 (MW-1 Shallow, MW-2 Shallow, MW-3 Shallow, MW-4 Shallow, MW-5 Shallow, MW-6 Shallow, and MW-7 Shallow), the groundwater flow direction in the shallow aquifer was interpreted to be to the northwest. The previous sampling data also indicated the same general flow direction for the shallow aquifer.

Three wells intersected the deeper aquifer and were sampled on November 30, 1992 (MW-1 Deep, MW-2 Deep, and MW-4 Deep). The groundwater flow in the deeper aquifer was interpreted to be to the southwest. The previous sampling data also indicated the same general flow direction for the deeper aquifer.

Based on the elevations of groundwater in the paired wells, a general downward vertical gradient existed (i.e., a higher piezometric head in the shallow aquifer and a lower piezometric head in the deeper aquifer). The lower piezometric head in the deeper aquifer was believed to be due to pumping of groundwater from the quarry to the south of the facility which reduced the pressure in the deeper aquifer and directed the flow in the deeper aquifer to the southeast. It was concluded that the combined effect would cause contaminants to be encouraged to migrate vertically downward on-site to the deeper aquifer.

When comparing the groundwater analytical data obtained from three sampling events, an obvious trend was observed. Major decreases in contaminant values were noted from Round 1 to Round 3, which was interpreted to be due to biological degradation, dispersion, and dilution of the compounds within the aquifers. Upgradient wells contained trace amounts of contaminants which were consistent with those on-site. This indicated a possible area-wide occurrence of low levels in groundwater in the geographic area, or a possible source upgradient from the facility. However, the concentrations of contaminants due to sources found on-site were well above the USEPA maximum contaminant levels (MCLs) and therefore required cleanup. The highest concentrations and the greatest number of VOCs were detected in the monitoring wells located on the northwest corner of the north building (MW-4 Shallow/Deep) and at the former UST excavation area (MW-5 Shallow, MW-6 Shallow, and MW-7 Shallow).

ERI made the following conclusions and recommendations:

- Even though groundwater is not used on-site as a drinking water source, the MCLs are the governing standard. While no immediate receptor wells were known to be downgradient of the facility at the time, groundwater contamination significantly exceeded the drinking water MCLs. Remedial options needed to be evaluated. It was recommended that the selected remediation plan be approved by PADEP prior to implementation.
- The next round of groundwater sampling needed to include sample collection from the bottom of each well to analyze for DNAPLs, as well as near the surface to analyze for LNAPLs.

Final Report for Soil Pile Remediation and Closure (1994) (Included in Site Characterization Report for Soil and Groundwater (2002): On December 28, 1993, PADEP completed their review of the Technical Work Plan for Vacuum Extraction Remediation of Stockpiled Soil prepared by USES, dated November 29, 1993. PADEP agreed with USES'

proposal to install a vacuum remediation system for the soil excavated during the removal of the USTs and stockpiled onsite (see *Storage Tanks* section for details of the UST removal and subsequent sampling).

The Technical Work Plan for Vacuum Extraction Remediation of Stockpiled Soil could not be located, though the facility did retain a document entitled "Additional Site Characterization Study" that contained information pertaining to a soil vapor study that included results for soil vapor samples. (On April 8, 1994, ERI sent PADEP notification that the soil vapor screening phase of the Hydrogeological Investigation was tentatively scheduled to begin on May 2, 1994.)

On May 1, 1994, the facility sent a Request for Determination (RFD) to treat soil contaminated with 1,1-DCA from the UST leak using vacuum extraction through the use of six pipes placed in the soil pile. On May 26, 1994, PADEP granted the facility an exemption from permitting requirements and permitted use of a 2,000 pound vapor phase carbon filter drum to be used for a three month remediation project. The drum was to be replaced when the effluent reached 10 percent of the influent concentration.

On September 9, 1994, USES submitted the Final Report for Soil Pile Remediation and Closure to Spray Products documenting the project activities from April to June, 1994. The report documented that 630 cubic yards of contaminated soil was removed during the UST excavation activities and was stored in the area directly west of the south building between the railroad tracks and the rail spur. The report also outlined the activities performed in the sampling, construction, and operation of the vacuum extraction remediation system. The system consisted of four major components; the manifold, carbon treatment unit, hot air injection system, and the particulate filter unit and vacuum pump. The driving force of the system was the vacuum pump.

The cleanup goal for remediation of the stockpiled soil was non-detect for VOCs with a detection limit of 0.125 mg/kg for all solvents except 2-chloroethylvinyl ether for which the detection limit was 1.25 mg/kg. For the air samples, the clean-up goal set by PADEP was non-detect for VOCs with a detection limit of 0.00005 mg/kg for all solvents; methylene chloride and vinyl chloride exceeded this detection limit due to outside sources. The system ran uninterrupted except for monthly maintenance and soil sampling. The cleanup goals were met during this sampling period.

The "Cleanup Standards for Contaminated Soils", dated December, 1993, stated that if the original contaminant was no longer present or "non-detect", then the material was considered clean. The soil was considered clean fill for purposes of subsequent use according to the PADEP; therefore, the post-remediation soil was used as backfill material by the facility.

On July 25, 1995, PADEP stated they had reviewed the report and the remediated soils could be used onsite provided they are not used to fill in a drainage way or wetland area. As PADEP had not received the report on soil vapor screening, the facility notified PADEP on August 3, 1995, that they would provide the report by September 29, 1995. The letter noted the soil pile would remain in place until it could be used during the expansion of the building.

<u>Additional Site Characterization Study (1995) (Included in Site Characterization Report for Soil and Groundwater (2002)</u>: On September 21, 1995, ERI sent PADEP the Additional Site Characterization Study. It was performed in accordance with the Hydrogeological Study Work Plan submitted to PADEP in March 1994, which was approved by PADEP on March 22, 1994.

The study noted that the facility was currently an aerosol packaging plant which packages paints lubricants, and starting fluids. The slope of the site pitches gradually to the northwest. Surface runoff flows in this general northwesterly direction and collects in a 26-inch concrete storm sewer flowing east to west.

This study noted that previous investigations were performed. However, the purpose of this investigation was to fulfill the following objectives:

- Define the extent of soil and groundwater contamination
- Evaluate the potential for further spread of soil and groundwater contamination

- Define the source of the pollution and means by which said sources have been eliminated
- Evaluate the alternatives available to abate the soil and groundwater pollution
- Implement a groundwater monitoring program
- Develop a course of action to abate the soil and groundwater pollution

The scope of work included:

- Conduct a soil vapor survey to begin to delineate the extent of soil and groundwater contamination, evaluate the spread of the pollution, and define the source area(s)
- Drill additional borings and install additional monitoring wells to fill data gaps in the monitoring well network and better define the extent of the soil and groundwater problem
- Conduct additional soil and groundwater sampling and analysis to better define the extent of the soil and groundwater contamination
- Prepare a summary report to present additional findings and to begin to address PADEP's concerns regarding monitoring and abatement alternatives

The study identified AOCs, which were located in the southeast corner of the property. The AOCs included the old copper pipe area, former UST excavation area, and the rail spur. The study addressed the following:

Soil Vapor – Based on the historic data, the potential existed for VOCs to be encountered over a large aerial extent and the potential to encounter DNAPL also existed. Results for Petrex tube samples placed throughout the property at a depth of 18 inches revealed evidence of VOCs and SVOCs, lighter-phase petroleum hydrocarbons (gasoline), and heavier-phase hydrocarbons (oil) present on-site. No source areas for gasoline or oil range petroleum hydrocarbon compounds were known to exist onsite. Toluene was observed at significant concentrations in on-site groundwater, but reported soil vapor fluxes for BTEX did not correlate with background monitoring well analytical data. (Note: The results for the Petrex tube samples only provided a relative vapor flux. The results are not a measure of the concentration of specific compounds. The purpose was to guide the selection for locations of additional monitoring wells [MW-8S and MW-9D]. The highest vapor flux areas for PCE, chlorobenzene/dichlorobenzene, DCA, and Freon 12 were situated between the north and south buildings directly north of the AST farm/former UST excavation area. Additional areas of high vapor flux for DCA and Freon 12 were located directly north of the north building in the area of MW-8S, centrally located between the buildings, and south of the southwest end of the south building. High vapor flux areas for TCE were observed directly west of MW-4S/4D and directly northeast of MW-2S/2D.)

Additional Monitoring Well Construction - Two additional monitoring wells (MW-8S and MW-9D) were installed on September 7, 1994 to further characterize the release from the UST system piping.

Shallow Well Soil Sample Analytical Results - No detectable concentrations of target compound list (TCL) VOCs were detected in the two soil samples collected from the shallow well boring (MW-8S). Analytical results indicated that contaminant concentrations were limited to the groundwater and did not appear to be significantly impacting soils away from the source areas. Contaminated soils at the source areas appeared to be isolated due to the thin veneer of soil overlying the bedrock. Much of the contaminated soil (950 to 1,000 tons from the UST excavation area) was remediated on-site.

Groundwater - Groundwater at the facility occurs in two distinct zones. A shallow groundwater zone exists along the top of the bedrock surface and a deeper groundwater zone exists in the bedrock formation underlying the facility.

- Shallow groundwater exists beneath the facility perched just above bedrock. This zone was encountered at 9.5 feet in a saturated, sandy, medium-size seam, and recharged along the southern portion of the property due to permeability and porosity associated with shallow bedrock conditions,

the railroad track ballast rock, and surface water drainage toward the southeast corner of the property.

- The discharge point for shallow groundwater was not completely understood at the time. The total head in the shallow groundwater was greater than in the deeper groundwater aquifer creating the potential for an overall downward vertical gradient.
- Deeper groundwater appears to exist beneath the facility in the secondary porosity (fractures) within the consolidated shale bedrock. Deeper groundwater movement has been shown to be in the general southwesterly direction. The flow direction in the deeper groundwater aquifer appeared to be controlled primarily by its discharge point, the Schuylkill River located 1,500 feet west of the facility at an elevation approximately 50 feet below that of the facility.
- Groundwater samples were analyzed for priority pollutant list (PPL) purgable compounds plus TICs and acetone. There were several samples that exceeded the USEPA MCLs in several wells for the following: total 1,2-DCE, 1,1-DCE, toluene, vinyl chloride (VC), TCE, PCE, 1,1,1-TCA, benzene, and methylene chloride. The greatest number of VOCs and the highest concentrations were detected in the MW-4 well pair and MW-8S.

ERI presented the following conclusions:

- Upgradient and downgradient monitoring well data indicated that the facility was contributing contamination to groundwater in excess of the MCLs.
- Upgradient wells indicated low levels of background contamination (namely TCE and total 1,2-DCE in MW-1D, MW-2S, and MW-2D) from an offsite source.
- Problem areas associated with the UST system transfer piping leak were identified by soil vapor delineations and subsequent groundwater samples from shallow groundwater monitoring wells.
- An additional problem area was identified via monitoring wells (MW-4S and MW-4D near the northwestern corner of the north building), which was determined to be caused by the former owner (Strouse). Prior to 1974, the former owner located an aerosol line inside the facility above several floor drains that drained to the sanitary sewer, which had a broken lateral line. Leakage from the aerosol line was caused by the chemical incompatibility of the piping and/or from an explosion at the facility caused by the aerosol line. Following the explosion, Strouse removed the aerosol line and sealed the floor drains. Spray Products discovered the broken lateral line and repaired it.
- Shallow groundwater from the former UST area did not appear to have impacted deeper groundwater greater than what was observed due to background contamination.
- A comparison of worst case monitoring well top sample and bottom groundwater sample analyses did not indicate the presence of free product, namely DNAPLs.
- Soil contamination appeared to be isolated to the original source areas on-site. Much of this material had been removed.
- Shallow groundwater degradation was the main environmental concern at the facility; however, shallow groundwater was not an important resource for the area. Thus, remediation of the groundwater to drinking water standards was deemed not practical or economically feasible.
- Soil vapor flux plot delineations and monitoring well data indicated that spillage from the UST system was primarily confined to the site, except for specific compounds (benzene, toluene, 1,1-DCE, total 1,2-DCE, methylene chloride, TCE, and VC) detected above the MCLs at well MW-8S that had migrated beyond MW-8S.

ERI presented the following recommendations:

- Minimal action until the Act 2 regulations were finalized, followed by groundwater remediation.
- Semi-annual to annual groundwater monitoring.

On November 20, 1995, PADEP acknowledged they had reviewed the report. It noted that because the facility is a regulated facility under Chapter 245 (Storage Tanks; Corrective Action) of Title 25, the site does not have to enter into Act 2 to obtain a release of liability from the State. Actions conducted at the facility should continue to follow the

corrective action requirements of Chapter 245. Based on the report, several contaminants were detected above the USEPA drinking water standards. Therefore, PADEP recommended that remedial measures were necessary to abate the contamination. In addition, a groundwater sampling and analysis program should be implemented to monitor groundwater quality.

On December 12, 1995, the facility notified PADEP that they were soliciting quotations to implement a groundwater quality monitoring program and implement the preparation of a Remedial Action Plan/Remedial Technology Feasibility Evaluation.

Phase I Environmental Site Assessment (2001) (Included in Site Characterization Report for Soil and Groundwater (2002): The Phase I Environmental Site Assessment (ESA), dated June 2001, was prepared by Roy F Weston (Weston). The ESA indicated that stormwater from the facility is collected in catch basins located in the paved and maintained portions of the property. The catch basins discharge to a storm sewer and then to the drainage swale, which is located at the west end of the facility.

Electricity to the facility was provided by PECO Energy Corp. Drinking water was supplied by PWSC to Spray Products and by Keystone American Water Company to the landscaping operation that occupied the west storage area. East Norriton Plymouth Joint Sewer Authority handled sanitary wastewater from the property.

Marbles used in the spray paint cans were observed at various locations between the buildings, as were parts of spray cans, and approximately 100 used 55-gallon drums. Debris such as bottles, tires, and paper were noted principally in the vegetated areas. Apparent hydraulic oil spills or leaks were observed in the boiler room near the compressor. Oil leaks may also have been the discoloration observed at the storage tank pumps. Paint and paint resin stains were observed between the buildings, and the facility president, Mr. Orr, attributed these stains to prior site occupants. Paint stains were also noted within the buildings.

Mr. Orr stated that explosions occurred when Strouse operated the facility. A fire, apparently set by vandals, also occurred when Strouse operated the facility.

Raw materials were stored in the storage tanks and in 55-gallon drums. No leaks or spills were observed. The materials were generally VOCs. Organic-like odors were noted throughout the facility, principally in the production area.

Acetylene tanks used for welding were observed. There were pipes in the wall of the north building that did not lead to a process or container. These pipes, on the southern wall of the north building near the east end, may have been used by Strouse to transfer materials. Mr. Orr reported discovering and removing underground pipes that appeared to lead from the mixing area.

Recognized environmental conditions (RECs) identified included:

- VOCs are present in the soil and groundwater as evidenced from past soil and groundwater investigations.
- A 2,000-gallon receiving tank may be abandoned beneath the south building. The integrity of this UST is unknown and no investigation of this UST and surrounding soils has occurred.
- Prior site occupants may have spilled paint and paint resins, as evidenced by paint staining outside the buildings. Paint stains were also noted inside the buildings. These may have contributed to the VOCs in the groundwater or could be de minimus conditions.
- The oil leaks associated with the compressor, tank farm pumps, and boilers appear to be de minimus conditions. The leaks appear to be isolated to the area immediately beneath the leaks.

Site Characterization Report for Soil and Groundwater (2002): On February 25, 2002, HSI submitted the report to PADEP on behalf of Spray Products Corporation. The report sections included introduction, facility description, PAOCs, site investigation, summary of results, Act 2 standards, ecological screening, attainment, conclusions and recommendations,

and references. The appendices included the Phase I report (Weston, 2001), well construction logs, project plans, laboratory reports, a Pennsylvania Natural Diversity Inventory (PNDI) letter, and an example declaration of environmental restriction. Volume II included the following environmental reports: Phase I Investigation, Phase II Investigation, Preliminary Assessment Report, Assessment following UST Removal, Final Report on Soil Pile Remediation from UST Closure, Report of Results from 3rd Round of Groundwater Samples, Report of Additional Site Characterization, and Data from November 2000 Sampling Event. (Note: Summaries of these reports in this EI are presented individually and chronologically.)

The site characterization was conducted to evaluate existing conditions in order to obtain an Act 2 release of liability. In addition, the report was intended provide the technical basis for the buyer/seller agreement between Spray Products Corporation (Seller) and ORB Industries, Inc., Bastian Enterprises, LLC, and ORB Acquisition Group, Inc. (collectively, Buyer). The demonstration of attainment was based on the following:

- For soils – Non-residential direct contact statewide health standard (SHS)
- For groundwater - Site-specific standard (SSS) via pathway elimination

The site investigation included the following:

- Geology - HSI installed three deep monitoring wells and three shallow monitoring wells at the facility. The shallow monitoring wells (MW-12S, MW-13S, and MW-14S) were installed in overburden soils using a hollow stem auger drilling rig. The wells were drilled to bedrock refusal at each location. Overburden materials were composed of silty clay and silty sand. The bedrock surface was shallow and highly variable in the western portion of the facility. Only one of the three wells (MW-13S) contained water. Shallow wells MW-12S and MW-14S were dry since installation in late November 2001. Shallow well MW-2S had also been dry since the beginning of the HSI investigation. HSI believed this was due to the extremely dry conditions in southeastern Pennsylvania during the investigation. A drought watch was issued by the Delaware River Basin Commission in early December 2001 and a drought emergency was declared on February 12, 2002.

- The deep wells (MW-9DD, MW-10D, and MW-10DD) were installed using air rotary drilling techniques. During deep well installation, fractures and voids were observed at various depths. Many of the fractures were less than one foot openings. Many of the fractures identified were coincident with zones of increased yield in the deeper wells.

- Static water level measurements collected in the monitoring wells ranged from approximately 10 to 50 feet below grade. Based upon HSI's and historic groundwater level data, shallow groundwater at the facility was interpreted to flow generally to the northwest and deeper (intermediate and deep) groundwater flows were to the southwest. Regionally, the Schuylkill River serves as a groundwater discharge point. Therefore, groundwater flow was expected to be toward the southwest, ultimately discharging into the Schuylkill River. Groundwater in the unconsolidated material is seasonal and is present due to the semi-confined nature of the bedrock aquifer. The yield of the bedrock aquifer is relatively low in the uppermost (20 to 55 feet) zone. The yield of the deeper wells completed from 55 to 90 feet below grade were higher and dependent on the existence of fractures.

- PAOCs - HSI advanced 42 soil borings on December 18 and 19, 2001 to provide overall coverage of the identified PAOCs with a bias toward known historical impacts. The PAOCs included:
  - PAOC 1 – Former Copper Product Lines
  - PAOC 2 – Vapor Flux Area Between Buildings
  - PAOC 3 – Vapor Flux Area North of Warehouse
  - PAOC 4 – Former Drain Line Beneath Warehouse
  - PAOC 5 – Can Crusher/Dumpster Area
  - PAOC 6 – Empty Product Drum Storage Area
  - PAOC 7 – Western Parcel - B&M Landscaping

- The former UST area was not further investigated by HSI. It was noted that the copper lines that distributed the liquids between the two buildings had leaked. The copper lines were excavated, the contaminated material was removed, and the area was backfilled with clean fill. No further investigative activities were proposed.

- Soil Investigation – Soil borings were advanced using direct push methods. Soil was screened for VOCs using a photoionization detector (PID). Based on the screening results, a sample was collected for analysis of PPL VOCs. The depths of the samples ranged from 1 to 2.5 feet below ground surface (bgs) at PAOC 1; 1 to 10 feet bgs at PAOC 2; 4 to 9 feet bgs at PAOC 3; 6.5 to 16 feet at PAOC 4; 2 to 5 feet bgs at PAOC 5; 3 to 4 feet bgs at PAOC 6; and 1 to 12 feet bgs at PAOC 7. Stained soils and solvent odors were noted between 4 and 8 feet bgs at PAOC 3.

- Groundwater Investigation – Six groundwater monitoring wells were installed to supplement the existing facility monitoring wells. The six newly installed wells consisted of three overburden wells (MW-12S, MW-13S, and MW-14S) installed to monitor shallow water table conditions, and three bedrock wells (MW-9DD, MW-10D, and MW-10DD) to monitor the bedrock aquifer. HSI conducted two groundwater sampling events using bottom-loading bailers. The first sampling event was conducted on January 8 and 9, 2002 and included several existing monitoring wells (MW-1D, MW-4S, MW-4D, MW-6S, MW-8S, and MW-9D) and the newly installed HSI wells (MW-9DD, MW-10D, MW-10DD, and MW-13S). The second sampling event was conducted by HSI on February 12 and 13, 2002 and included wells MW-9D, MW-9DD, MW-10D, MW-10DD, and MW-13S. Groundwater samples were analyzed for PPL VOCs including 1,2-dichlorobenzene (DCB), 1,3-DCB, 1,4-DCB, and dichlorodifluoromethane (Freon-12).

HSI provided the following conclusions and recommendations based on the investigation activities:

- Only one soil sample contained a compound above the PADEP residential direct contact medium specific concentrations (MSCs); 1,1-DCE in PAOC-2. However, the detected concentration was below the non-residential direct contact MSC. All other compounds in soils were detected at concentrations below the residential direct contact MSCs, thus demonstrating attainment of the selected cleanup standard for soil, with the required deed notice.
- Shallow and deep groundwater exhibited contamination of VOCs. The following compounds were detected in above the PADEP used-aquifer, total dissolved solids less than 2,500 mg/L, non-residential MSCs in groundwater samples collected from 10 monitoring wells (MW-1D, MW-4S, MW-4D, MW-6S, MW-8S, MW-9D, MW-9DD, MW-10D, MW-10DD, and MW-13S) in January 2002: acetone, benzene, bromodichloromethane, chloroethane, ethylbenzene, Freon-12, methylene chloride, 1,1,1-TCA, 1,1-DCA, 1,1-DCE, 1,2-DCB, 1,4-DCB, 1,2-DCE, cis-1,2-DCE, methyl tert-butyl ether (MTBE), PCE, TCE, toluene, VC, and xylenes. The following compounds were detected above the PADEP non-residential MSCs in groundwater samples collected from five monitoring wells (MW-9D, MW-9DD, MW-10D, MW-10DD, and MW-13S) in February 2002: benzene, chloroethane, methylene chloride, 1,1,1-TCA, 1,1-DCA, 1,1-DCE, cis-1,2-DCE, TCE, and VC. Other VOCs were detected in the monitoring wells below the MSCs. Decreases in contaminant concentrations in select wells over time (from 1993) were noted and was concluded to be evidence of natural attenuation processes (e.g., biological degradation, dilution, and dispersion).
- For groundwater, HSI concluded that demonstration of attainment of the SSS for groundwater and potential migration to indoor air was achieved in accordance with 25 Pa Code §250.404 (pertaining to pathway elimination) and §250.406 (compliance with surface water quality requirements). However, it would be necessary to demonstrate that the diffuse groundwater discharge from the facility to the Schuylkill River would not violate PADEP's in-stream criteria (25 Pa Code §93 and 25 Pa Code §16). In addition, it was noted that a deed notice (i.e., Declaration of Environmental Restriction) must be developed restricting the property to non-residential use and prohibiting the use of groundwater derived on the property for drinking water or commercial agricultural purposes to comply with the SSS.
- The results for the ecological screening indicated that the facility property contained no exceptional value

wetlands, no habitats of concern, and no species of concern. The PNDI query confirmed that there were no known occurrences of species of special concern within the project area.

On March 19, 2002, email correspondence between PADEP legal and environmental departments indicated that PADEP does not execute Buyer/Seller Agreements when the site has not been adequately characterized, thus preventing selection of an Act 2 standard, a timeline to attain the standard, and the achievement of the standard. PADEP believed there were substantial data gaps remaining with respect to the characterization of groundwater. PADEP makes reference to 15 AOCs identified in the Site Characterization Report, but does not specify the locations of the AOCs (Note: the AOCs were not identified in the report). The contaminants of concern in the shallow, intermediate, and deep aquifers were listed as primarily benzene, chloroethane, 1,1-DCA, toluene, 1,1,1-TCA, TCE, and vinyl chloride. The shallow aquifer flows to the northwest, while the intermediate and deep aquifers flow to the southwest.

Several data gaps were identified by PADEP with respect to the Site Characterization Report:

- Insufficient characterization of the groundwater quality at the point of compliance in the shallow aquifer
- Fate and transport modeling was needed to characterize offsite migration of contaminated groundwater in the shallow and deep aquifers
- Additional quarterly monitoring was needed
- Receptors that were identified are (a) the Schuylkill River, (b) quarry to the south/southwest, and (c) industrial well 1,400 feet southwest of property. Both the quarry and the industrial wells were pumping. Not enough information was presented to demonstrate pathway elimination for these potential receptors.
- No groundwater information was presented for Area 7, the western parcel of the site occupied by a landscaping company
- Deed notice restricting the use of groundwater at the site and submission of a long term care plan or post-remediation care plan was needed
- All administrative Act 2 submissions were needed

COA (2002): On April 24, 2002, a COA (Buyer-Seller Agreement) was entered between PADEP, Spray Products ("Seller"), and ORB Industries, Inc., Bastian Enterprises, LLC, ORB Acquisition Group, Inc. (collectively, "Buyer"). (The buyer bought the facility on December 27, 2001).

- The COA created a $400,000 escrow account after the closing for the assessment and remediation of the property to demonstrate attainment with the SSS for groundwater and SHS for soils.
- It noted that since 1996, the western portion of the property had been leased to a landscaping company that stored equipment, materials, and two diesel ASTs. (Note: As previously discussed, the landscaping company left the west storage area in 2004. They dismantled their diesel ASTs and took them with them. The ASTs were situated on a concrete pad inside of secondary containment. The facility representative is not aware of any releases from the ASTs. Only the concrete pad was present during the March 2012 site visit. There was no evidence of release in the area. The west storage area is currently used by the facility for storage of empty drums and totes, trailers, etc.)
- Surrounding facilities were industrial and commercial in nature; no residential properties were nearby.
- Historical organic solvents used at the property included: 1,1-TCA, acetone, toluene, methylene chloride, MIBK, MEK, propylene glycol monomethyl ether acetate, and xylene.
- Prior to development by Strouse in 1962, the property was a vacant lot owned by the Pennsylvania Railroad. Spray Products purchased the property in 1974.
- In addition to the reports previously mentioned in the 1995 Additional Site Characterization Study, the following reports were referenced: November 2000 Groundwater Monitoring Data, Phase I Environmental Site Assessment (Weston, 2001) (Weston identified 12 wells [8 shallow and 4 deep] on the site map [wells located north of the north building, around the tank farm and flammable storage area]) and Site Investigation Report (HSI, 2002).
- Spray Products intended to obtain an Act 2 release of liability for identified contamination in soil and groundwater. It was proposed that Spray Products would demonstrate attainment of the residential and/or non-

residential SHS for identified contamination in soil at the property and a SSS via pathway elimination for identified contamination in groundwater based on non-residential use of the property. Spray Products was required to :

- Collect two quarters of data from all wells on the property (and potentially AOC 7, the west storage area)
- Perform fate and transport modeling at the point of compliance for potential downgradient groundwater receptors
- Submit the results to the PADEP by January 1, 2003
- Submit a remediation plan to the PADEP
- Submit Notice of Intent to Remediate (NIR)
- Submit a Final Report
- Submit appropriate deed restrictions and record the COA with exhibits with the Recorder of Deeds
- Notify the PADEP 10 days prior to initiation of the plan

- ORB was obligated to the following:
  - Only use the property for commercial or industrial activity
  - Not allow installation of groundwater production wells
  - Maintain property covenants and deed restrictions.
  - Notify the PADEP of any proposed changes to the exposure patterns
  - Notify the PADEP when property ownership changes
- A Covenant Not to Sue was included which stated that the PADEP would not sue or take administrative action against the Buyer for remediation of the identified contamination.

Addendum to Site Characterization Report (Synergy, 2003): On January 10, 2003, Synergy Environmental Inc. (Synergy – formerly HSI) submitted this report to the PADEP as an addendum to the Site Characterization Report (HSI, 2002) in accordance with the requirements set forth in the COA. The addendum contained the following information:

Groundwater Monitoring Results

- Synergy conducted three additional groundwater sampling events from July to November 2002, concluding that the concentration of compounds in groundwater was inherently variable.
- 2-Hexanone was detected in groundwater for the first time subsequent to the previous report and was recommended to be added to the list of compounds identified in the release of liability for groundwater.
- Synergy indicated that the upper and lower aquifer systems were interconnected and that there was a downward component of groundwater flow. They indicated uncertainty concerning the historical distinction between the intermediate and deep aquifers.

Fate and Transport

- A fate and transport evaluation was performed using the *Quick Domenico* model.
- None of the modeled compounds exceeded the PADEP residential MSCs at the point of compliance (i.e., the western-most extent of the Spray Products property).
- The Ivory Rock Quarry was determined to not be a likely receptor because they are no longer dewatering the pit (turned off in 2002) and based on the *Quick Domenico* model results.
- There were 10 wells within a 0.5 mile radius of the facility (according to PaGWIS accessed in 2002). Most wells were upgradient, were across the Schuylkill River, or were abandoned. Only one well was active downgradient of the facility: the PF Laumer Bros. industrial well located 1,400 feet southwest of the facility on Delaware Valley Concrete (DVC) property. DVC was made aware of potential groundwater contamination issues. DVC had two production wells; 1) 330 feet deep, pumped at 35 gallons per minute during season, and 2) 600 feet deep. The two production wells had to be drilled deep to avoid area-wide groundwater contamination stemming from a nearby steel production facility along Conshohocken Road. (Note: As of March 2012, Spray Products has not done any offsite sampling of private wells and has no knowledge of the use, production, and discharge of water from DVC's wells.)

- The Schuylkill River located downgradient from the facility was determined to be a potential receptor, but modeling results using *SWLOAD* and *PENTOXSD* indicated that concentrations of TCE and VC entering the Schuylkill River would not result in exceedances of the surface water criteria.

Remedial Plan

- Soil: Soil sample results demonstrated that all compounds were present below the PADEP residential direct contact MSCs, except for 1,1-DCE, which exceeded in one sample. The facility indicated that the following compounds should be included in the release of liability for soil:
  - *Residential SHS for Soil (direct contact)*: acetone, benzene, carbon disulfide, chlorobenzene, chloroethane, 1,1-DCA, 1,2-DCA, cis-l,2–DCE, 1,2-DCB, 1,3-DCB, 1,4-DCB, dichlorodifluoromethane (Freon-12), ethylbenzene, methylene chloride, MIBK, PCE, toluene, 1,1,1-TCA, TCE, trichlorofluoromethane (Freon-11), VC, and xylenes (total)
  - *Non-Residential SHS for Soil (direct contact)*: 1,1–DCE
- Groundwater: Demonstration of attainment of the SSS for groundwater via pathway elimination was met. No potable water sources were identified, only one active industrial well was identified downgradient of the facility, and surrounding properties received water from the PSWC. The facility indicated that the following compounds should be included in the release of liability for groundwater:
  - *SHS for Groundwater*: acetone, 2-butanone, carbon disulfide, chlorobenzene, chloroform, chloromethane 1,2-DCB, 1,3-DCB, 1,4-DCB, dichlorodifluoromethane (Freon-12), 1,2-dichloropropane, ethylbenzene, MIBK, trichlorofluoromethane (Freon-11), and xylenes (total)
  - *SSS for Groundwater*: benzene, chloroethane, 1,1-DCA, 1,2-DCA, 1,1-DCE, cis-l,2-DCE, trans-1,2-DCE, 2-hexanone, methylene chloride, MTBE, PCE, toluene, 1,1,1-TCA, TCE, and VC
- Vapor Intrusion: Fate and transport modeling of the contaminated groundwater indicated that none of the regulated compounds detected in the on-site groundwater exceeded the residential MSC at the downgradient property boundary; thus no offsite inhalation pathways were likely to exist. The facility buildings are constructed as concrete slab-on-grade structures and potential preferential pathways for vapor intrusion were present in association with the sewer and distribution lines running underneath and between the buildings. However, the indoor air exposure pathway was not further evaluated because the facility already has elevated levels of VOCs due to daily operations, which are likely managed under OSHA regulations.

Post-Remediation Care Plan and Compliance Schedule

This plan will rely on institutional controls to maintain the selected standards. This will consist solely of an environmental notice placed on the property deed. No engineering controls will be implemented. Quarterly monitoring, mitigation, and documentation of financial ability to implement any remedies are not required. No proposed measures will be taken to correct nonattainment as nonattainment was not expected to occur since future use of the site would remain as non-residential.

On April 17, 2003, the PADEP responded to the Addendum noting that they did not accept the initial site characterization report or the addendum. Once the characterization of the site was completed and approved by the PADEP, formal submissions for the Act 2 administrative process could begin. In the interim, the PADEP required the following information:

- Detailed information regarding the geologic formation and role of the structure on the migration of the groundwater plume
- Determination of the groundwater gradient to understand the transport of contaminants of concern (COC)
- Detailed information of the sequential degradation of the COCs
- Compilation of the historical information relevant to the characterization of the property
- Groundwater analytical results for wells 3, 12, and 14
- Installation of more wells to delineate the full horizontal and vertical extent of the groundwater plume
- Detailed receptor survey identifying all potential pathways of concern downgradient and side-gradient of the property

- Quarterly groundwater sampling and monitoring of all wells for the identified parameters
- Modeling of groundwater flow from shallow aquifer to intermediate/deep aquifers. The COCs need to meet the SHSs at all receptors and the role the receptors have on influencing plume migration should be identified. The model should be able to demonstrate plume stability/movement, center of plume calculations, source areas and natural attenuation scenarios.
- Discussion of current conditions and operations of the property including any new or ongoing environmental impacts

Act 2 Investigation (Gilmore, 2005): On March 7, 2005, Gilmore & Associates, Inc. (Gilmore) sent Plymouth Township a response to their letter regarding the NIR noting that there were no current plans for the reuse of the facility and that the current commercial activities would continue in the future.

In June 2005, Mid-Atlantic Geosciences, LLC conducted downhole geophysical logging and televiewer surveys of eleven monitoring wells. Fractures were described and ranked, and other geophysical testing completed. Geology was described as interbedded sandstone and shale layers of the Stockton Formation.

On August 30, 2005, Gilmore sent PADEP the first quarterly groundwater monitoring report, in accordance with the October 14, 2004 Draft Work Plan that was approved by PADEP on October 19, 2004. It noted that in May 2005, four additional permanent wells (MW-15DD, MW-16DD, MW-17DD, and MW-18DDD) were installed to aid in the horizontal and vertical characterization of groundwater contaminants. All 22 monitoring wells were sampled for VOCs, dissolved metals, chloride, manganese, methane, ethane, ethane, and sulfate. First quarter results indicated the presence of VOCs above the PADEP residential and non-residential MSCs in groundwater beneath the facility including benzene, chloroethane, 1,1-DCA, 1,2-DCE, methylene chloride, PCE, toluene, 1,1,1-TCA, TCE, and VC. The greatest number of compounds and the highest concentrations were detected in the MW-4 well pair (MW-4S/4D). Low levels of TCE and 1,1,-DCA were detected in the shallow aquifer monitoring wells located on the east property boundary (apparent upgradient direction).

During the 2005 sampling event, monitoring wells in the shallow aquifer with VOCs above the PADEP MSCs included:

- MW-3S: TCE, 9.6 ug/L
- MW-4S: benzene, 91.2 ug/L; chloroethane, 3,280 ug/L; 1,1-DCA, 27.1 ug/L; methylene chloride, 11.6 ug/L
- MW-5S: PCE, 10.5 ug/L
- MW-7S: PCE, 22.4 ug/L
- MW-6S: 1,1-DCA, 28.5 ug/L
- MW-8S: chloroethane, 1,490 ug/L
- MW-12S: 1,1-DCA, 166 ug/L; 1,1,1-TCA, 1,200 ug/L
- MW-13S: benzene, 119 ug/L

Medium-depth monitoring wells in the intermediate fractured bedrock aquifer with VOCs above the PADEP MSCs included:

- MW-4D: benzene, 163 ug/L; chloroethane, 1,870 ug/L, 1,1-DCA, 372 ug/L; 1,1-DCE, 120 ug/L; methylene chloride, 47.7 ug/L; PCE, 47.9 ug/L; toluene, 3,110 ug/L; 1,1,1-TCA, 402 ug/L; TCE, 103 ug/L
- MW-16DD: 1,1-DCA, 105 ug/L
- MW-10D: 1,1-DCE, 13.7 ug/L; TCE, 126 ug/L, VC, 2.4 ug/L

Monitoring wells in the deeper fractured bedrock aquifer with VOCs above the PADEP MSCs included:

- MW-17DD: 1,1-DCE, 22.3 ug/L, TCE, 70 ug/L
- MW-10DD: 1,1-DCE, 109 ug/L, methylene chloride, 21.3 ug/L
- MW-18DDD: 1,1-DCE, 20.3 ug/L, TCE 187 ug/L

Groundwater flow direction was from the east to west in the shallow wells. Groundwater flow directions in the intermediate and deep wells were from northeast to southwest. Depths to groundwater ranged from 1 to 9 feet bgs in the shallow wells and 15 to 27 feet bgs in the deeper wells. The NIR was published on February 7, 2005. The second quarterly event was scheduled for September 2005.

As stated by the facility representative in 2012, the Act 2 investigation has been placed on hold. No work has been completed at the site since 2005. At that time, the facility and Gilmore met with PADEP to discuss their impending submittal that included additional groundwater contaminant fate and transport modeling. The facility stated that they did not submit this final documentation because the PADEP indicated that they would reject the report based on the model. The facility has recently contracted Stantec to continue with the Act 2 work. Stantec completed an evaluation of the wells. A work plan to re-initiate the work was submitted to the facility for approval; however, the plan (that includes the abandonment of three monitoring wells and installation of three monitoring wells and additional groundwater sampling) will not be implemented until the heptane release that occurred in April 2011 has been closed.

According to the July 20, 2012 facility response to comments, Stantec has reviewed the investigation reports prepared by HSI dated February 2002 and January 2003 and a Remedial Investigation Report prepared by Gilmore dated February 2007. Stantec noted that the prior consultants did not consider the soil-to-groundwater MSCs in their evaluation of soils. The facility is planning to move forward with obtaining a release of liability for the site under Act 2 and will be reviewing cleanup standards and exposure pathways for historic soil impacts, as appropriate.

Heptane Spill (2011): On April 26, 2011, the PADEP conducted a spill investigation after the facility discovered on April 25, 2011 (April 22, 2011) that an employee failed to close an opened valve on the heptane AST (AST 024A). Approximately 4,000 gallons were released into the south building and spilled outside onto the concrete-covered portion of the rail spur that had cracks. Approximately 1,000 gallons were recovered by pumping an underground scale inside of the south building. Pits were dug outside of the building along and within the railroad spur to recover any material that had seeped into the ground. At the time of the investigation, 500 gallons of material were removed from the pits, 60 percent of which was estimated to be groundwater. Two-inch diameter boreholes were drilled through the concrete in the area surrounding the rail spur to detect odors of heptanes. PADEP inspectors walked the extent of Diamond Run (the nearest creek) to the Schuylkill River and there did not appear any spilled material in the stream.

On April 29, 2011, PADEP issued a NOV for violations of the Clean Streams Law and for failure to report the spill in a timely manner. The PADEP requested the facility submit an incident report within 15 days and include an assessment of contamination, estimated release quantities, an assessment of any contamination, estimated quantities of recovered materials, actions taken to prevent similar occurrences, and actions to amend the PPC plan to ensure proper spill response and notification.

On May 3, 2011, soil samples were collected at 11 soil borings along the rail spur and asphalt work area. Samples were collected from 1 to7.5 feet. Heptane concentrations ranged from non-detect to 1,100 mg/kg.

On May 9, 2011, the facility supplied the PADEP with background information on the spill and the initial response efforts to contain and remediate the release. This letter was prepared in response to the recommendation for a follow-up investigation of the spill area per a discussion between the PADEP and Spray Products.

During the March 2012 site visit, three excavation areas were observed within the rail spur. Six 55-gallon drums containing heptane and groundwater were stored on a pallet within the rail spur. In addition, seven 55-gallon drums of heptane-impacted soil and aggregate from the initial excavations were also stored on pallets in the western storage area until the release is closed. The facility representative stated that he was given permission from the PADEP to spread the soil onsite; however, this was not done as of the time of the March 2012 site visit.

Heptane Spill Remediation Plan (2012): On March 27, 2012, Stantec prepared this confirmation sampling plan to address the above-referenced spill incident. Upon approval from PADEP, Stantec proposed to advance soil borings to depths ranging from four to eight feet bgs using direct-push methods. The borings would be drilled adjacent to previous test locations where the highest concentrations of heptane were detected (SB-2, SB-4, SB-5, SB-6, and SB-9). Soil samples selected for laboratory analysis would be collected based on field screening evidence. The two sample intervals from each borehole exhibiting the highest VOC readings will be submitted for analysis of VOCs. If no PID readings are detected, samples will be obtained from the same intervals as were previously collected. A summary report will document the field activities and findings from the investigation. The findings from this confirmatory sampling program may serve as documentation that remediation of the spill area is complete and will be incorporated into the planned Act 2 closure for the site.

On April 9, 2012, PADEP approved the proposed sampling plan via email and requested additional sampling locations downgradient from SB-5 and upgradient of SB-9 to delineate the lateral extent of the contamination. The additional sampling was completed in May 2012, and a report of findings is in preparation.

Diesel Spill (2011): On June 1, 2011, a PADEP Incident Notification form was completed following a 200 gallon diesel spill to soil. A tractor trailer owned by Joint Express, Inc. drove off the edge of the facility's parking lot into a grass-covered area. When the wheels of the truck sank into the soil, the trailer tipped over and one of its fuel tanks was punctured on an inactive light stanchion.

On August 11, 2011, Stantec sent the PADEP a summary of the emergency response services that were conducted following the spill. The truck driver estimated 140 gallons of diesel fuel was released to a grass-covered drainage ditch on the northern boundary of the property. PSC Environmental Services LLC (PSC) provided emergency response services by covering the area of the release with plastic sheeting and placing absorbent booms around the spill area to protect the nearby storm drains from run-off in the event of rainfall.

Excavation activities commenced on June 6, 2011. Fifty-seven (57) tons of impacted soil was excavated and containerized on-site in two 20-yard and one 30-yard lined roll-offs. Excavation limits were guided by field screening the soils for total detectable VOCs using a calibrated PID. PID readings obtained at the excavation limits did not exceed 3.0 ppm. The excavation area was 40 feet by 15 feet. Excavation depths ranged from 1.5 to 12 feet bgs. Three post-excavation soil samples were collected and analyzed for PADEP's Short List of Petroleum Products for diesel fuel. No compounds were detected above PADEP Non-Residential Direct Contact and Non-Residential Soil to Groundwater MSCs. The excavation was backfilled, and the area was restored on June 7, 2011. Stantec sent PADEP figures the showing the area of the diesel release, the extent of the excavation and the sample locations on August 25, 2011.

During the 2012 site visit, the area of the diesel release outside of the asphalt drive/parking lot was covered in large crushed rock.

Groundwater: Residents within a three-mile radius of the facility obtain water from the public water system and two private water systems (NUS, 1989). Aqua PA (formerly PSWC) supplies potable water to the facility and the surrounding areas. Aqua PA obtains water from seven surface sources (Chester, Ridley, Crum, Pickering, Perkiomen, and Neshaminy Creeks, and the Schuylkill River), and a number of groundwater wells (4 are located within a three mile radius). The Schuylkill River intake is located 2.3 miles to the west-northwest and upstream of the facility. Others are outside a three-mile radius and downstream of the facility.

Information obtained from the Pennsylvania Department of Conservation and Natural Resources (DCNR) Groundwater Information System (PaGWIS) accessed on December 6, 2011 provided the following information regarding seven groundwater wells located within a 0.5 mile radius surrounding the facility. No potable water wells are on the Spray Products property. There is one unused well to the south, which was drilled in 1915 and is 40 feet deep. Four wells are to

the west that were drilled between 1900 and 1935 and range from 50 to 210 feet deep. One well is for industrial withdrawal and the remaining three are listed as unused. Four wells are located to the north. Three industrial wells were installed in 1974 and range from 310 to 605 feet deep. The fourth well is for domestic usage, drilled in 1987, and is 198 feet deep.

Based on the Addendum to the Site Characterization Report (Synergy, 2003), DVC has had a facility located downgradient of the facility on the west side of Conshohocken Road since 1988. DVC has two production wells that are pumped seasonally. One well has been there since DVC moved to the property, is 330 feet deep and pumps at rate of about 35 gallons per minute. The pumping rate was not sufficient for the facility's needs, so DVC uses two surge tanks (one 3,000-gallon tank and one 12,000-gallon tank) to provide additional volume, as needed. DVC also drilled a new well to supplement the water supply, but had limited success. According to DVC, the new well was originally drilled to approximately 300 to 400 feet, but was repeatedly shifted and stopped producing water in response to blasting that had occurred at the former Ivy Rock Quarry (currently a clean landfill). The well was re-drilled and deepened several times, and DVC estimated that the new well was approximately 600 feet deep. DVC indicated that the two production wells had to be drilled deep to avoid area-wide groundwater contamination stemming from a nearby steel production facility along Conshohocken Road.

Based on investigations completed at the facility, shallow groundwater occurs in the overburden materials composed of silty clay and silty sand. Groundwater in the shallow aquifer is seasonal and is present due to the semi-confined conditions of the deeper aquifer. Deeper groundwater occurs along bedding planes and in the fractures and joints in the underlying interbedded sandstone, mudstone, and shale of the Stockton Formation. These primary and secondary openings provide moderate to high total effective porosity and permeability. Groundwater flow in the shallow aquifer based on the onsite monitoring well network has been interpreted to be generally toward the northwest toward Diamond Run. Groundwater flow in the deeper fractured bedrock (shale) aquifer has been interpreted to be generally toward the southwest toward the Schuylkill River.

Various site investigations have been completed at the facility since approximately 1989 during which VOC-impacted groundwater has been identified in the unconsolidated and fractured bedrock aquifers underlying the facility. A source area has not been formally identified. However, the impacted groundwater has been attributed to: leakage from the former product storage USTs and associated transfer piping to the buildings; historical discharges by the former owner (Strouse) of process wastewater (bath water) to the former floor drains inside of the buildings and unpermitted discharge of the wastewater to the sewer system via piping that was found to be broken; and potentially the recently closed-in-place UST beneath the south building that may have received process wastewater in the past.

Twenty-two groundwater monitoring wells exist on-site. The most recent groundwater sampling of the 22 wells was completed in June 2005. VOCs detected in groundwater above the PADEP used-aquifer, total dissolved solids less than 2,500 mg/L residential and non-residential MSCs include: benzene; chloroethane; 1,1-DCA; 1,1-DCE; methylene chloride; PCE; toluene; 1,1,1-TCA; TCE, and vinyl chloride. The greatest number of VOCs and the highest concentrations have historically been detected at the MW-4S/4D well pair.

During the 2005 sampling event, monitoring wells in the unconsolidated aquifer with VOCs above the PADEP MSCs included:

- MW-3S: TCE, 9.6 ug/L
- MW-4S: benzene, 91.2 ug/L; chloroethane, 3,280 ug/L; 1,1-DCA, 27.1 ug/L; methylene chloride, 11.6 ug/L
- MW-5S: PCE, 10.5 ug/L
- MW-6S: 1,1-DCA, 28.5 ug/L
- MW-7S: PCE 22.4 ug/L
- MW-8S: chloroethane, 1,490 ug/L
- MW-12S: 1,1-DCA, 166 ug/L; 1,1,1-TCA, 1,200 ug/L
- MW-13S: benzene, 119 ug/L

Groundwater flow in the unconsolidated aquifer was interpreted to be toward the northwest. MW-12S and MW-13S are located near the northern (apparent downgradient) property boundary. Low levels of 1,1-DCA and TCE were detected in wells located on the eastern (apparent upgradient) property boundary.

Medium-depth monitoring wells in the intermediate fractured bedrock aquifer with VOCs above the PADEP MSCs included:

- MW-4D: benzene, 163 ug/L; chloroethane, 1,870 ug/L, 1,1-DCA, 372 ug/L; 1,1-DCE, 120 ug/L; methylene chloride, 47.7 ug/L; PCE, 47.9 ug/L; toluene, 3,110 ug/L; 1,1,1-TCA, 402 ug/L; TCE, 103 ug/L
- MW-16DD: 1,1-DCA, 105 ug/L
- MW-10D: 1,1-DCE, 13.7 ug/L; TCE, 126 ug/L, VC, 2.4 ug/L

Groundwater flow in the intermediate fractured bedrock aquifer was interpreted to be toward the southwest toward the Schuylkill River. MW-16DD is near the north (apparent upgradient) property boundary and MW-10DD is near the south (apparent downgradient) property boundary.

Monitoring wells in the deeper fractured bedrock aquifer with VOCs above the PADEP MSCs included:

- MW-17DD: 1,1-DCE, 22.3 ug/L, TCE, 70 ug/L
- MW-10DD: 1,1-DCE, 109 ug/L, methylene chloride, 21.3 ug/L
- MW-18DDD: 1,1-DCE, 20.3 ug/L, TCE 187 ug/L

Groundwater flow in the deeper fractured bedrock aquifer was interpreted to be toward the southwest toward the Schuylkill River. MW-10DD and MW-18DDD are near the southern (apparent downgradient) property boundary.

There have been no offsite investigations completed to date. The facility intends to obtain a PADEP Land Recycling Program (Act 2) release of liability for the contamination identified in soil and groundwater. However, the PADEP rejected the facility's Site Characterization Report submitted in 2003. In 2005, a Notice of Intent to Remediate was submitted to PADEP. The most recent documentation in the public files is from 2005, which includes additional groundwater monitoring data for the onsite monitoring wells. Per the PADEP Land Recycling Program website (accessed December 30, 2011), a Final Report and associated release of liability has not been issued for the facility. In 2012, Stantec completed an evaluation of the wells and have included in their work plan to the facility provisions to abandon several wells that were deemed beyond repair, and install three new wells. The work plan also provides for initiation of a sampling program. The facility stated that this work is on hold until the heptane release remediation work is completed due to budget restraints.

Air: The facility's air emissions sources are permitted under SOOP 46-00139 which includes VOC emissions from the propellant gasser/product filling lines and fugitive emissions from the storage tanks. The facility is surrounded by industrial and commercial properties including an auto body shop, a former quarry (now clean fill landfill), a manufacturer of alloys, metals, minerals, and chemicals for industrial uses, a bulk oil terminal, and a landscaping company. The facility buildings are slab-on-grade construction. Floor drains were present inside of the buildings that have been sealed. Underground wastewater lines were also present beneath the buildings.

Soil vapor samples were collected using Petrex tubes from a depth of 18 inches throughout the site during ERI's 1995 investigation. VOCs and SVOCs, lighter-phase petroleum hydrocarbons (gasoline), and heavier-phase hydrocarbons (oil) were identified on-site. No source areas for gasoline or oil range petroleum hydrocarbon compounds were known to exist onsite. Toluene was observed at significant concentrations in on-site groundwater, but reported soil vapor fluxes for BTEX did not correlate with background monitoring well analytical data. The highest vapor flux areas for PCE, chlorobenzene/dichlorobenzene, DCA, and Freon 12 were situated between the north and south buildings directly north of the AST farm/former UST excavation area. Additional areas of high vapor flux for DCA and Freon 12 were located directly north of the north building in the area of MW-8S, centrally located between the buildings, and south of the southwest end of

the south building (Freon 12). High vapor flux areas for TCE were observed directly west of MW-4S/4D and directly northeast of MW-2S/2D.

The results for the Petrex tube samples only provide a relative vapor flux. The results are not a measure of the concentration of specific compounds; therefore, no direct comparison to regulatory criteria can be made. VOCs have been detected in soils and groundwater beneath the property. VOCs in groundwater continue to be detected in the shallow and deeper fractured bedrock aquifers above the PADEP residential and non-residential MSCs, and have been shown to be migrating offsite to the northwest and southwest. A source area has not been identified. All soil investigation work has been conducted outside of the buildings. There has been no sub-slab investigation work completed at this time.

The facility is a packager of aerosol products. Daily operations utilize solvents. According to the facility representative, employee air monitoring is conducted on a quarterly basis. This will continue indefinitely, but is now being handled by a consulting firm. Therefore, no additional exposure controls appear to be warranted at this time. High concentrations of VOCs were detected in groundwater at the facility's property boundaries. The vertical and horizontal extent of the VOC-impacted groundwater migrating offsite has not been fully characterized. Therefore, it is unknown whether offsite structures may be impacted such that exposure controls would be required.

Soil: The surface topography of the site is relatively flat and dips gently to the north. The facility is underlain by a Made Land soil (MeB – sloping). MeB soils consist of areas where earthmoving has removed or altered the characteristics of the original soils. The soil is the result of altering and mixing soils formed in material weathered from shale and sandstone. MeB soil is a described as dusky-red to yellowish-brown shaly silt loam to channery sandy loam with some areas along the Schuylkill River consisting of gravelly silty loam mixed with shale. It has a moderate to very slow permeability, a moderate to very low available moisture capacity, and a pH range of very strongly acid to medium acid. Investigations completed at the facility indicate that the soil profile consisted of up to three feet of fill (gravel and silt) followed by clayey or sandy silt. Bedrock was shallow (less than 5 feet deep) in the area of the former can crusher. Fill depths were shallower (approximately 2 feet deep) in the western storage area.

The property is covered with impermeable surfaces such as the buildings, containment areas for the ASTs, and concrete and asphalt paved surfaces. However, areas that are grass and/or gravel covered are also present at the facility.

Numerous soil samples have been collected throughout the facility from various depths ranging from 1 to 16 feet bgs. It appears that results for the soil samples were compared only to the PADEP non-residential direct contact MSCs. None of the detected VOCs exceeded these criteria. There was one exceedance of the residential direct contact MSC for 1,1-DCE at PAOC 2. The property is currently used for non-residential purposes, and the area where the soil sample was collected is paved.

During the May 3, 2007 inspection, PADEP observed approximately 360 hazardous waste drums stored in the far end lot (believed to be the western storage area). Many of the drums were unlabeled; damaged, bulging, and in poor condition; or were open. Photographs taken by the inspector indicate the drums were stored on pallets directly on the ground surface, were stacked two to three drums high, and were stored in a manner that hindered access for inspection and emergency access. This storage area was not inspected weekly and the wastes had been at the facility for more than one year. (Note: It appears from the photographs included in the inspection report that these wastes were stored in the western storage area.) An NOV was issued on May 7, 2007 for the violations. The PADEP memo dated May 11, 2007 requested escalated enforcement action due to the severity of the violations observed during the May inspection and the repeat of several violations over time. It is unknown whether any leaks had occurred from these drums to the ground surface or if the exposed soils were impacted by any releases. There were no obvious signs of releases in the western storage area during the March 2012 site visit. This area is fenced in and is accessible via a locked gate along the entrance road. Those with access include facility personnel and a scrap dealer. At this time, it is unknown whether exposure controls are required at the location where these wastes had been stored.

A source for the VOC-impacted groundwater has not been identified. There have been no sub-slab soil investigations completed beneath the buildings. Therefore, it is unknown whether soil and/or fill materials beneath the building have been impacted by historical releases at the facility, particularly related to the presence of the former floor drains and/or transfer pipes that were present beneath the buildings that were found to be broken. However, direct contact with impacted soils that may exist beneath the building is not expected. Therefore, it appears that no further exposure controls are warranted for these soils at this time.

Surface Water/Sediment: Stormwater runoff enters catch basins located in the paved areas on the north and east sides of the facility. There were no catch basins observed within the fenced yard between the north and south buildings. However, one catch basin was observed directly outside of the west gate of the yard. According to the facility representative, the catch basins are all connected to the municipal storm sewer system. The collected stormwater discharges to a drainage swale in the wooded area on the western end of the property. The swale is then directed under Conshohocken Road, then discharges to the Schuylkill River and ultimately to the Delaware River located approximately 20 miles downstream. The portion of the storm sewer system located on the east end of the building was recently reconstructed in an effort to control excessive runoff from a drainage swale east of the facility, which reportedly has previously flooded the eastern parking area.

Based on information obtained from PADEP eMapPA (accessed December 6, 2011), the Lower Schuylkill River is located approximately 0.3 miles southwest of the facility. It is designated as warm water fishery and supports aquatic life. However, the river is impaired for fish consumption from an unknown source of polychlorinated biphenyls (PCBs). Diamond Run, located less than a quarter mile to the northwest of the facility (in the direction of shallow groundwater flow), is listed as a warm water fishery, and is a also a non-attaining stream which is impaired for aquatic life due to water/flow variability from urban runoff/storm sewers and removal of vegetation and siltation due to channelization. The facility exists within less than a quarter mile of the statewide floodplains and the Federal Emergency Management Agency (FEMA) 100 and 500 year floodplains.

VOC-impacted groundwater has been identified in the shallow aquifer and in the intermediate and deeper fractured bedrock aquifers underlying the facility. Groundwater sampling conducted in 2005 shows that the impacted groundwater is migrating offsite above PADEP residential and non-residential MSCs. Groundwater in the shallow aquifer flows to the northwest, toward Diamond Run and the Schuylkill River. Groundwater in the fractured bedrock aquifer flows to the southwest toward a quarry (that is no longer dewatering its pit) and the Schuylkill River. The facility conducted fate and transport modeling of TCE and VC-impacted groundwater toward the Schuylkill River using the models Quick Domenico, SWLOAD and PENTOXSD. These models indicated that the concentrations of TCE and VC discharging into the Schuylkill River would not result in exceedances of the surface water criteria. The PADEP rejected the model results citing that modeling of the groundwater flow from the shallow aquifer to the deeper aquifers should be considered, as well as the physical and chemical properties of the solvents in the groundwater and the aquifer materials (the models used were not appropriate where chlorinated solvents were the present). Breakdown products also needed to be considered. There was no known modeling of impacted groundwater discharges to Diamond Run.

The facility and Gilmore met with PADEP in 2005 to discuss their impending submittal that included additional groundwater contaminant fate and transport modeling. The facility stated that they did not submit this final documentation because the PADEP indicated that they would reject the report based on the model. No work has been completed at the site since 2005. Therefore, it is unknown whether the VOC-impacted groundwater from the facility is discharging to Diamond Run, the quarry pit, and/or the Schuylkill River that would warrant exposure controls.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

	Potential **Human Receptors** (Under Current Conditions)						
Contaminated Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater							
Air (indoors)							
Soil (surface, e.g., <2 ft.							
Surface Water							
Sediment							
Soil (subsurface e.g., >2 ft.							
Air (outdoors)							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

_____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

_____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

_____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing <u>and</u> referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable") - continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

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[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

_____ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the Information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **Spray Products Corporation** facility, EPA ID # **PAD042716084**, located at **1323 Conshohocken Road, Norristown, Pennsylvania 19401** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

_____ NO - "Current Human Exposures" are NOT "Under Control."

X IN - More information is needed to make a determination.

Completed by (signature) Draghicu Date 7/30/13
(print) CAMELIA DRAGHICIU
(title) Geologic Specialist

Supervisor (signature) Mohamad Mazid Date 8/1/2013
(print) MOHAMAD MAZID
(title) Env. Eng. Manager
(EPA Region or State) PADEP/SERO

Locations where References may be found:

USEPA Region III
Waste and Chemical Mgmt. Division
1650 Arch Street
Philadelphia, PA 19103

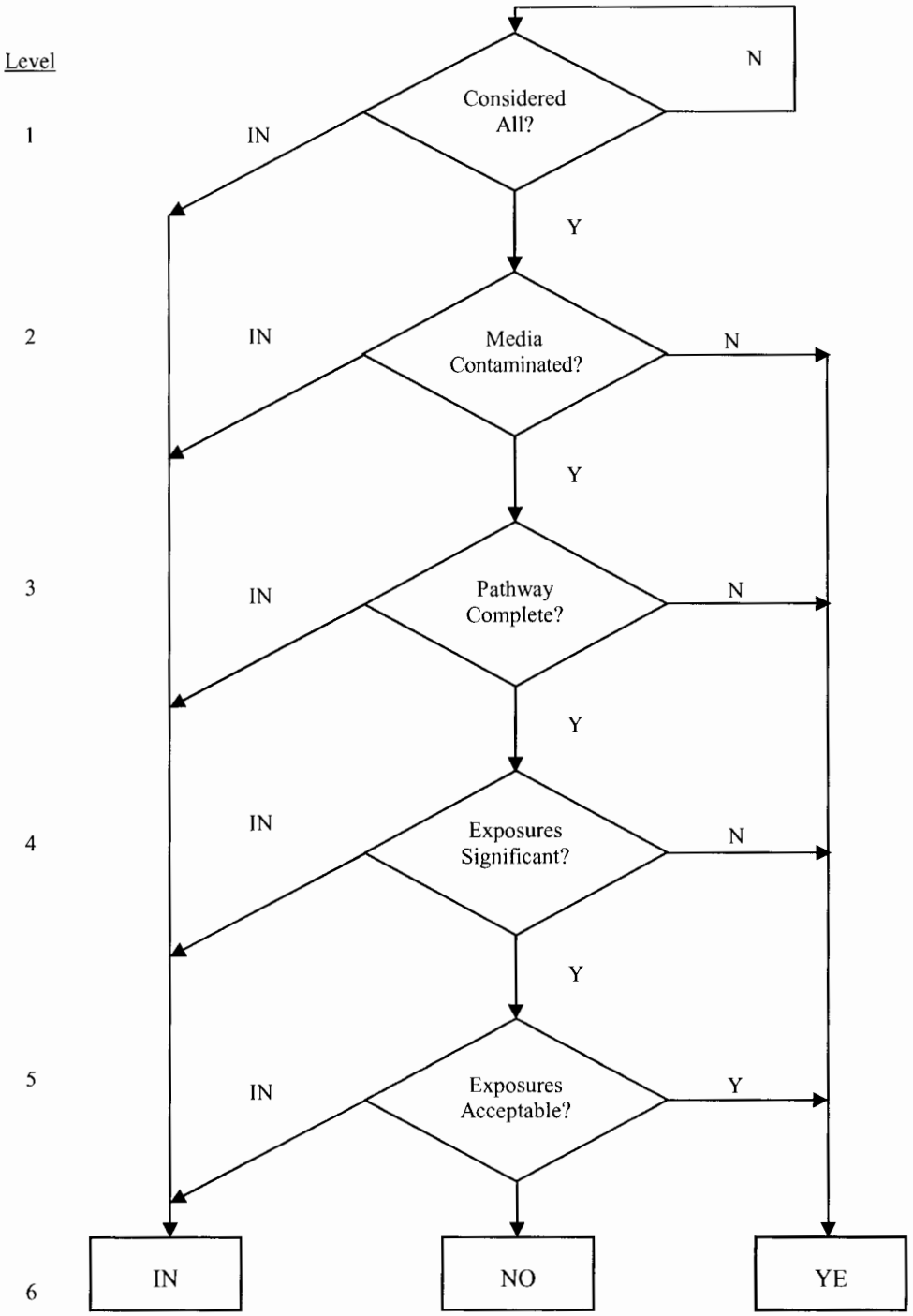
PADEP
South East Regional Office
2 E. Main Street
Norristown, PA 19401

Contact telephone and e-mail numbers.
(~~signature~~) CAMELIA DRAGHICIU
(~~print~~) Phone # 484 250 5743
(~~title~~) email cdraghiciu@pa.gov.

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

Facility Name: Spray Products Corporation
EPA ID# PAD042716084
City/State Norristown, PA 19401

CURRENT HUMAN EXPOSURES UNDER CONTROL (CA725)



DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: **Spray Products Corporation**
Facility Address: **1323 Conshohocken Road, Norristown, PA 19401**
Facility EPA ID #: **PAD042716084**

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units [SWMU], Regulated Units [RU], and Areas of Concern [AOC])

   [X] If yes – check here and continue with #2 below.

   [ ] If no – re-evaluate existing data, or

   [ ] If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

X If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):
Spray Products Corporation (Spray Products or facility) is a packager of aerosol products including paints, brake fluid, carburetor cleaners, staring fluid, and penetrants. Products are brought into the facility in bulk to be canned or packaged. Some of the organic solvents historically used at the property include, but were not limited to: 1,1,1-trichloroethane (TCA), tetrachloroethylene (PCE), trichloroethylene (TCE), acetone, toluene, methylene chloride, methyl isobutyl ketone (MIBK), methyl ethyl ketone (MEK), propylene glycol monomethyl ether acetate, and xylene.

Prior to 1986, in their packaging process, the facility generated dirty wash solvent from their clean-up operation. This dirty wash solvent was stored in drums for pick up in a tank wagon by a solvent reclaimer. The clean solvent was then recycled. The drums were staged in the drum storage area, which consisted of a concrete slab that had a small berm built by 1983 or 1984. The drum storage area was located outside in the southeastern portion of the property in the vicinity of the former underground storage tank (UST) farm. The UST farm was utilized for storage of product including diethyl ether, acetone, toluene, MIBK, and MEK. The USTs were removed in 1990, at which time, volatile organic compound (VOC) contamination was identified in soil and groundwater. Subsequent subsurface investigations suggested that the source of the contamination likely came from underground transfer piping.

In 1996, the facility began to lease the western portion of the property (west storage area) to a landscaping company for storing equipment and materials. Reportedly, no fertilizer or pesticide was kept at this location by the landscaping company. However, they maintained two 1,000-gallon aboveground storage tanks (ASTs) containing diesel fuel for refueling vehicles. The ASTs were reportedly situated on a concrete pad inside of secondary containment units. The landscaping company left the west storage area in 2004, dismantled their ASTs and took them with them. The facility representative stated he is not aware of any releases occurring from the ASTs. Only the concrete pad was present during the March 2012 site visit. There was no evidence of releases in the area at that time. Historically, the west storage area was used as a parking area for new car carrier operations formerly at the Norristown Wholesale property, and as a parking lot for towed vehicles (Weston, 2001). The west storage area is a large fenced and gated area that consists primarily of gravel, deteriorating asphalt and concrete pads, and scrub grass. The facility currently uses the west storage area for storage of empty drums and totes, trash bins, pallets, small out-of-service ASTs, storage trailers, etc. However, documentation (PADEP inspection reports) suggests that the facility stored approximately 360 drums of hazardous wastes in this area in 2007. Drums of soil from the heptane release that occurred in April 2011 were stored on wood pallets that were situated on the gravel/scrub grass in March 2012.

In 2012, the facility operates two business lines out of two separate buildings. The Spray Products line is a large scale operation in that production is no less than 25,000 units. This line operates out of the north building. The ORB line is a small scale version of the Spray Products line in that production can be from one can to 100 cans of aerosol. This line operates out of the south building. The buildings are separated by a fenced and gated yard through which is a rail spur. Raw materials are received by rail car, tanker, totes, 55-gallon drums, 30-gallon kegs, and 5-gallon pails. The materials

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

are either stored in the rail car, in the bulk ASTs located in the tank farm, or in the drum storage area outside of the south wall of the north building. The rail cars are parked on the spur and the contents are pumped directly from the car. Rail cars are switched out of the yard typically at a rate of one per day. Occasionally, up to three cars per day have been switched out of the yard. Based on aerial photographs, the spur was put in place when the facility was built. Previously, this area was open and vegetated. At times, tankers are temporarily stored on-site. At the time of the March 2012 site visit, a tanker containing dimethyl ether was staged on the soil/gravel area located directly west of the south building. The contents of the tanker were being pumped directly into the south building using flexible hoses.

The facility is an active large quantity generator (LQG) of hazardous waste (USEPA ID PAD042716084) generating the following five waste streams: (1) acetone wash; (2) waste heptanes; (3) waste methanol; (4) waste chloride that includes primarily methylene chloride but also contains PCE and TCE; and (5) insecticide. The facility maintains State Only Operating Permit (SOOP) No. 46-00139 for air emissions sources, which includes fugitive emissions from their 27 registered ASTs (Facility ID 46-15576). The facility also maintained a General Permit for Discharges of Stormwater from Industrial Activities (PAG-03) (No. PAR150007), which was not renewed when it expired in 2004. A renewal application for the PAG-03 permit prepared by Stantec Consulting Services, Inc. (Stantec) (Spray Products' consultant) is currently under review with facility management and will be submitted to PADEP.

The facility intends to obtain a PADEP Land Recycling Program (Act 2) release of liability for the contamination identified in soil and groundwater. However, the PADEP rejected the facility's Site Characterization Report submitted in 2003. In 2005, a Notice of Intent to Remediate was submitted to PADEP. The most recent documentation in the public files is from 2005, which includes additional groundwater monitoring data for the onsite monitoring wells. Per the PADEP Land Recycling Program website (accessed December 30, 2011), a Final Report and associated release of liability has not been issued for the facility. In 2012, Stantec completed an evaluation of the wells and have included in their work plan to the facility provisions to abandon several wells that were deemed beyond repair, and install three new wells. The work plan also provides for initiation of a sampling program. The facility stated that this work is on hold until the heptane release remediation work is completed due to budget restraints.

Site Layout
The facility is located at 1323 Conshohocken Road, Norristown, Montgomery County, Pennsylvania (Block 22, Lot 17). The facility is located in an industrial/commercial area; various industries are located in the immediate vicinity. Adjacent properties include an auto body shop to the north, a vacant lot to the east, Chemalloy (manufacturer of alloys, metals, minerals and chemicals for industrial applications) and a bulk oil terminal to the south, and a landscape contractor to the west across Conshohocken Road. Ivy Rock Clean Fill Reclamation (formerly Ivy Rock Quarry) is located approximately 2,200 feet southwest of the facility, west of Conshohocken Road. Residential areas are located less than a quarter mile to the north and the northeast. The facility lies east of Conshohocken Road, south of the Pennsylvania Turnpike (Interstate 276), north of a railroad line, and west of East Main Street. Diamond Run is located less than 0.25 miles to the northwest and the Schuylkill River is located less than 0.3 miles southwest of the facility.

The site covers 7.25 acres of land that contains two masonry and steel buildings (the north and south buildings) separated by the yard and the rail spur, an outdoor AST farm, and product storage areas. Access to the yard is limited by two locking gates located on each end of the yard. The north building contains offices, a cafeteria, a boiler room, warehouse space, a laboratory, a filling area, an in-line can popper and recycling process, a product batching area and an attached gas house. The south building contains a warehouse, packing and filling areas, a batching area, and an attached gas house. A can crusher was formerly located outside of the south building, but was recently removed.

In the north building, the batching area is used to store products and degreasers used for cleaning the paint line operation for the Spray Products line. It has a concrete floor, diking at the doorways, and no floor drains. At the time of the Preliminary Assessment (PA) completed by NUS Corporation (NUS) on behalf of the USEPA (1989), there were two product storage tanks in the central portion of the room; one contained a diesel fuel additive and the other was used storage of a penetrant (trade name: "Nuts-Off"). Another two-tiered storage tank area was also in the batching area, which contained four tanks of mineral spirits and 1,1,1-TCA (degreaser). During the March 2012 site visit, five batch mixing vessels, two 2,000-gallon ASTs containing PCE, and a satellite container (55-gallon drum) of waste heptane were present in the batching area.

The south building contains the batching, can filling, and packaging areas for the ORB line. This line consists of two process lines to fill aerosol cans with various products. The doorways had diking and the building had no floor drains. The packaging area contains a capping machine, a can labeling machine, and case packagers and sealers. Off-specification filled cans historically were taken to a can crusher located outside the packaging area's northwestern corner. The product drained into a recovery drum and was then repackaged. The crushed cans were placed into an adjacent trash dumpster. The can crusher was removed from service in 2009, removed from the facility's air permit in 2010 and was not present during the 2012 site visit. The paint batching area is located within the south building directly east of the filling area where paints are blended in vats. Batching was formerly conducted in a small shed situated between the south building and the AST farm. This shed is currently used for storage.

Additional storage of empty drums and totes, trash bins, pallets, small ASTs, trailers, etc. is located in the west storage area that was formerly leased to a landscaping company from 1996 to 2004. The west storage area is fenced and has a locking gate.

Potable water is supplied to the facility by Aqua Pennsylvania's Main System (Aqua PA, formerly Philadelphia Suburban Water Company [PSWC]). The landscaping company was formerly supplied public water by Keystone Water Company (Weston, 2001). There are no on-site drinking water wells.

Wastewater is primarily from domestic sources such as restrooms. The wastewater is discharged to the East Norriton Plymouth Joint Sewer Authority. There is a pump station for the sewer located on the northwest corner of the property, at the entrance road to the facility.

Historically, hot water baths were present on the aerosol lines to cool cans after they were filled with gas propellant in the filling area. The water was filtered and discharged via floor drains and underground wastewater lines into the sanitary sewer through Plymouth Township (permitted). The buildings had floor drains that have been sealed. The drains are no longer functional (Weston, 2001). During the cleaning of some traps associated with the wastewater lines, the former Spray Products president, stated that breaks were discovered in the lines (Weston, 2001). These lines also drained the filling area when Strouse, Incorporated (Strouse) operated the subject property. Subsequent to the discovery of the line breaks, the wastewater lines were made non-functional. Some wastewater was then disposed offsite by Safety-Kleen. The water bath was not observed during the March 2012 site visit, and the facility representative indicated that he had no knowledge of discharge of process wastewater at the facility. Stantec is in the process of determining if this bath water exists, and if so, how it is managed. No floor drains were observed in the facility buildings during the March 2012 site visit.

A 1962 Temporary Sewage Disposal Plan indicated the existence of a 500-gallon septic tank that drained to the tile field drains. This tank was located north of the office, approximately 30 feet north and west of the building. Only the building toilets discharged to this tank. There is no record of the tank being removed (Weston, 2001). There was no visual evidence of this on-lot septic system during the March 2012 site visit, and the facility representative present stated that he had no knowledge of its existence.

A 1961, revised 1962, Sewage and Water Plan for the property indicated a grease interceptor was present northwest of the northern building. This interceptor was located along the sewer line before the line connected with the east-west sewer line. This interceptor appeared to be present along the edge of the parking lot, northwest of the northern building (Weston, 2001).

Chemalloy connected their sewer line beneath the railroad, west of the landscaping operations into the subject property line near the entrance road to the facility. According to Mr. Orr, the subject property had excess capacity to permit the connection (Weston, 2001). Another sewer line that was connected to the on-site sewer pumping station was associated with the Norristown Wholesale building, but is no longer in use. The wastewater from the former landscaping operations was from domestic sources such as restrooms. There are currently no structures or wastewater discharges from this source.

The surface topography of the site is relatively flat and dips gently to the north. The approximate elevation is 100 feet above mean sea level (msl). The facility is underlain by a Made Land soil (MeB – sloping), a result of altering and

mixing soils formed in material weathered from shale and sandstone. The soil is a dusky-red to yellowish-brown shaly silt loam to channery sandy loam with some areas along the Schuylkill River consisting of gravelly silty loam mixed with shale. It has a moderate to very slow permeability, a moderate to very low available moisture capacity, and a pH range of very strongly acid to medium acid. Site investigation activities performed by HydroScience Inc. (HSI) indicate that the surficial (overburden) geology consists primarily of clayey and sandy silt.

The facility is located within the Triassic Lowlands Section of the Piedmont Physiographic Province, containing non-marine sedimentary rocks. The facility is underlain by the Triassic age Stockton Formation consisting of a lower conglomerate arkose member, a middle arkosic sandstone member, and an upper mudstone member. The lower yellow gray conglomerate deposits consist of relatively dispersed, moderately rounded clasts of quartz, quartzite, limestone, and feldspar.

Historically, surface water runoff from the facility entered a storm drain on the western end of the property which collected stormwater from properties upgradient and downgradient of the site. The water discharged to the Schuylkill River approximately 1,250 feet west of the facility (HSI, 2002). As observed during the March 2012 site visit, stormwater at the facility enters catch basins located in the paved areas on the north and east sides of the facility. There were no catch basins observed within the fenced yard. However, one catch basin was observed directly outside of the west gate of the yard. According to the facility representative, the catch basins are all connected to the municipal storm sewer system. The collected stormwater discharges to a drainage swale in the wooded area on the western end of the property. The swale is then directed under Conshohocken Road and ultimately discharges to Diamond Run and the Schuylkill River. The portion of the storm sewer system located on the east end of the building was recently reconstructed in an effort to control excessive runoff from a drainage swale east of the facility, which reportedly has previously flooded the eastern parking area.

A new stormwater discharge permit (No. PAR150007) was issued in 1999 for the stormwater discharge. This permit expired in 2004 and was not renewed. The facility is in the process of renewing this permit. The stormwater collected on-site is discharged via Outfall 001 to Diamond Run, which is classified as a warm-water fishery. Approximately 36 acres drain into the on-site system of which approximately 29 acres are from other upgradient properties such as Conicelli Auto Body Shop (formerly Norristown Wholesale), located directly north of the facility (Weston, 2001). Historically, rainwater collected in the AST containment area either evaporated or was collected and stored in drums prior to disposal at an approved facility. The stormwater was analyzed by QEM as part of the stormwater general permit. Currently, the facility contracts Elk Environmental (Elk) to periodically pump out the fluid. Elk samples the fluid prior to vacuuming it out and transporting it offsite for disposal.

Ownership
According to the PA (1989), prior to 1961, the property was first utilized by the Penn Central Railroad as a rail yard. Ownership prior to Penn Central is unknown. The facility was then owned and operated by Strouse and Company from 1961 until 1973, when vandals started a fire on December 31, 1973. (The ruptured aerosol line was located in the Batching Area on-site.) Spray Products purchased the facility in 1974 (operations began on January 10, 1974) and operated it until 2001 when they sold the facility and name to ORB Acquisition Group, Inc. (ORB), the current owner. The facility operates under the name of Spray Products Corporation.

On December 27, 2001, ORB Industries, Inc., Bastian Enterprises, LLC, and ORB Acquisition Group, Inc. purchased the facility. The three companies maintain a Covenant Not to Sue from the PADEP, which was established in the April 24, 2002 Consent Order and Agreement (COA). ORB is the current owner and operator of Spray Products.

Bastian Enterprises originally owned ORB, which was located on 2 Race Street in Upland Borough. This facility operated under a separate USEPA identification number (PAD015056062) under the name of Spray Products, and was a small scale version of the Spray Products operation. Bastian Enterprises purchased Spray Products in 2002. In the summer of 2009, Bastian Enterprises closed the ORB facility in Upland and the company was absorbed into Spray Products. The materials and processes were moved to the 1323 Conshohocken Road facility. ORB's USEPA identification number for the Upland facility was reportedly terminated with the USEPA in 2009. The processes have not changed.

Waste Types and Quantities
On July 24, 1980, Spray Products Corporation submitted a Notification of Hazardous Waste Activity. On October 9, 1980 the USEPA acknowledged receipt of the notification form and issued the facility USEPA ID No. PAD042716084.

On March 4, 1983, PADEP submitted a formal request for the Part B of the Hazardous Waste Permit Application. On July 25, 1983, the facility determined that they would remove the storage facility; the Part B of the Hazardous Waste Permit was not necessary. On August 11, 1983, the facility was issued a notification as a Captive Generator – Large (PADEP eFACTS, 2011).

Hazardous wastes generated at the subject property have included liquid wastes which were fuel blended by Safety-Kleen off-site. The waste is stored in drums, and staged within secondary containment within the diked portion of the AST farm or at the hazardous waste storage area. These storage areas were generally observed in good condition. No staining or cracks were observed. Clean products such as starting fluid are reclaimed on-site. Off-specification product is placed in the can crusher where the liquid in the can is collected in a 55-gallon drum for reuse. Paint products are not included in the recycling because of the many paint colors.

The July 24, 1980 Notification of Hazardous Waste Activity Form indicated that the facility generated paint and solvent cleaning waste (USEPA hazardous waste code K078) as well as D001 (ignitable) and D000 (non-specific toxic) wastes. The solvent waste consisted of wash solvent from clean-up operations. The facility's Part A Hazardous Waste Permit Application dated November 12, 1980 listed 10,000 gallons of container storage (S01) for the K078 waste, which was changed to D001 waste per letter dated July 21, 1981. Hazardous waste code K078 was suspended in July 1981 by the USEPA, and the material was thereafter designated as D001 waste.

On December 6, 1983, the facility submitted a notification of hazardous waste activity form to the PADEP changing the waste code for the wash solvent waste from D001 to U002 (acetone), since acetone was the largest single component of the waste (note that the form was dated 11-28-83). The facility also was seeking advice concerning how to classify their new wash solution, Cyclesolv 60, which was composed of 60 percent minimum blend of ketones and esters, 40 percent maximum blend of alcohols and aromatic hydrocarbons, and 5 percent maximum of chlorinated hydrocarbons. The facility recommended classifying the wash solution as D001, but requested PADEP to recommend a waste code designation.

The facility's Preparedness, Prevention, and Contingency (PPC) Plan dated February 1, 1984 listed the following waste types at the facility: paint manufacturing wastes (K087, which was suspended by USEPA), ignitable wastes (D001), and acetone (U001).

The 1986 Solid Waste Management Unit (SWMU) report listed the waste generated at the facility was paint solvent used for cleaning on the production line. The paint solvent consisted of the following:

Chemical	% By Volume	% by Weight
Propylene Glycol Monomethyl Ether Acetate *	5.1	5.6
Methyl Isobutyl Ketone	11.5	10.3
Acetone	51.3	45.7
Methylene chloride	14.0	20.7
Toluene	18.1	17.7
Total	100.0	100.0

* Changed from E.E. Acetate in early 1984

The facility was generating approximately 8,000 to 10,000 gallons (60,000 to 75,000 pounds) of this waste per year in 1986. The waste was stored in drums.

The 1992 Emergency Response Plan (ERP) submitted on January 16, 1992 indicated that flammable liquids were stored outside in bulk tanks in a diked area or in the hazardous material area, combustible liquids were stored in the mixing

tanks or drums in the batch area, methylene chloride was in the bulk tank in the diked area, PCE and 1,1,1-TCA were in drums or tanks in the batch area, and isobutene and propane were in pressure vessels in the hazardous material area.

On March 8, 1993, the facility submitted a Notification of Regulated Waste Activity form listing F003 waste (non-halogenated solvents). It noted that they had not stored waste on the property since August 1983. The facility was a generator only.

In 2002, the facility stored off-specification material for some customers. This material was sent to the facility from these customers. The facility had asked the customers to remove the materials. The materials were finished products on pallets stacked in the north building.

A 2009 inspection noted sample waste types of flammable liquid (D001, F002, F003), waste methanol (U154, D001, F003), waste dichloromethane (F002), waste heptane (D001), and waste acetone (D001, F003).

In 2012, the facility generates five waste streams: (1) acetone wash; (2) waste heptanes; (3) waste methanol; (4) waste chloride that includes primarily methylene chloride but also contains PCE and TCE; and (5) insecticide. Acetone wash and waste heptanes are reportedly 95% of the waste generated at the facility. These wastes are sent to fuel blenders. The other wastes are sent to be incinerated. All wastes are containerized in 55-gallon drums and stored in the outdoor bermed hazardous waste storage area on the west end of southern building. The wastes are handled by Nexeo. During the March 2012 site visit, 22 drums of waste were present in the storage area that included 3 drums of acetone; 7 drums of waste heptanes; 9 drums of waste methanol; 2 drums of dichloroethylene; and 1 drum of insecticide. There was 1 drum of oil dry material outside of the containment area. One drum of waste heptane was observed in the batching area satellite storage area in the north building and one drum of waste heptane was stored in the satellite storage area within the AST containment area.

Nonhazardous solid waste (general refuse), including paper, food, plastics, glass, crushed metal cans, and cardboard generated at the facility is collected and disposed of off-site through a commercial vendor, BFI, approximately once a week. Cardboard is also recycled.

The former landscaping operation used materials to service their vehicles, including oils, greases, etc. These materials appeared to be in the manufacturers' containers that were generally less than 5 gallons (Weston, 2001). No pesticides or fertilizers were stored on-site. No hazardous waste was generated at the former landscaping operations.

SWMUs

The 1989 PA identified the following three SWMUs (SWMUs 1 through 3) that are located within a fenced in portion of the facility. During the March 2012, one additional SWMU (SWMU 4) was identified.

<u>SWMU 1 - Former Hazardous Waste Drum Storage Area (Former UST Farm)</u>: This 35 by 65 foot concrete pad was located outside in the southeastern portion of the facility within the UST tank farm and product storage area. The pad and a portion of the concrete dike (6-inch high; 8 by 25 feet) remained at the time of the 1989 PA. The pad was being used for storage of empty drums and drums of product. There were no known releases from this SWMU that began operations in 1975; the last shipment was on October 30, 1986 (SWMU inactive since this shipment). Wastes were stored in sealed, 55-gallon drums and included spent wash solvents containing toluene, methylene chloride, acetone, MIBK, and propylene glycol monomethyl ether acetate, and were classified as ignitable (D001). Secondary containment around this area was built sometime around 1983 or 1984, according to a November 28, 1983 response to a compliance inspection. In 1989, no evidence of spills was observed. Per the PPC plan, rainwater accumulated within the SWMU was collected and stored in drums prior to disposal. On August 1, 1989, the facility representative indicated to NUS that the closure of the drum storage pad was held up until the USTs beneath the pad were removed; this action was planned for Spring 1990. Also, the facility reused the solvent from cleaning operations in primers where colors were unimportant thereby eliminating a waste stream.

Based on the description of work completed by CM Environmental Services (CMES) in May 1990 for the UST closures, the concrete storage pad associated with the drum storage area and underlying soils would have been removed

concurrent with the tank work. Soil boring investigations were subsequently conducted by HSI in 2002 at various potential areas of concern (AOCs) associated with waste storage (e.g., can crusher, empty product drum storage). The findings associated with this work were reportedly submitted to PADEP, but the facility's current consultant (Stantec) did not locate any regulatory correspondence in the facility's files specifically confirming PADEP approval for the AOC closures. (See *Storage Tanks* and *Investigations and Remedial Actions to Date* sections for details.) The exact location of this former SWMU is uncertain; however, the suspected location of the former hazardous waste drum storage area was concrete covered and in good condition during the 2012 site visit.

SWMU 2 – Former Off-Specification Can Crushing Machine/Dumpster Area: Historically, the can crusher was located outside the northwestern corner of the packaging area (the northwestern corner of the south building). In this SWMU, cans were crushed using a worm auger to puncture filled off-specification cans. Product drained into a recovery drum and was then repackaged (reclaimed). The crushed cans were placed into an adjacent trash dumpster. There were no known releases reported by the facility from this SWMU that was installed in 1987. Wastes managed at the unit included starting fluids (containing ether), brake and carburetor cleaners, and penetrants (containing phenols, oils and solvents) (D001). The unit and associated dumpster used to store the crushed cans were located on the concrete driveway. In 1989, no evidence of spills was observed by NUS.

A July 10, 2007 PADEP inspection identified a clear, odorless liquid coming out of the ground between the can crusher and the gate and running into a storm drain. PADEP requested that measures be taken to keep the unknown material out of the storm drain. In March 2012, the facility representative reported that he has no knowledge of the alleged leak from the can crusher and that the can crusher was taken out of service in 2009 and was removed from the facility's air permit in 2010.

Currently, the cans are punctured in-line at the beginning of the fill station in the north building. The solvent is recycled directly back into the filling process, and the cans are scrapped. The concrete surface in the area where the can crusher was formerly located appeared to be in good condition with minor staining observed.

SWMU 3 – Former Empty Product Drum Storage Area (Former and Current Hazardous and Raw Materials Storage Area):
During the NUS site visit in 1989, empty product drums that contained penetrants, paints, and brake fluids (D001) and drummed product were stacked upright on pallets and stored outside the southern side of the north building. Empty drums were also stored in the tank farm and product storage area. There were no known releases from this SWMU that began operation in 1975. In 1989, no evidence of spills was observed.

Historically, this area has been used to store hazardous materials. As observed during the 2012 site visit, the area is used for storage of various quantities and types of raw materials that are stored in drums and totes. The drums and totes are stored on pallets, stacked two to three high. The pallets are situated on the concrete and asphalt surface. There are no other containment features. The asphalt surfaces are in fair to poor condition; however, no evidence of release was observed. Steel plates had been placed over portions of the asphalt that had been damaged. Totes are also stored across the yard on the concrete surface between the tank farm and the south building. There are no other containment features. The concrete was in good condition at the time of the 2012 site visit. No evidence of releases was observed.

SWMU 4 – Hazardous Waste Storage Area: This storage area was observed outside the northwestern corner of the concrete block south building during the March 2012 site visit. The storage area consists of a concrete floor surrounded by a concrete berm (1 foot high). The northern section of the berm was removed to allow for forklift traffic. A temporary rubber berm was present that is used to close the open section in the concrete berm. The storage area looks to be as wide as a loading dock bay door [located adjacent a former loading dock and bay door] and approximately 15 feet long. During the March 2012 site visit, 22 drums of waste were present in the storage area that included 3 drums of acetone; 7 drums of waste heptanes; 9 drums of waste methanol; 2 drums of dichloroethylene; and 1 drum of insecticide. There was 1 drum of oil dry material outside of the containment area. The drums were labeled with hazardous waste labels. Outside the diked area was a pallet with an opened drum that contained oil dry from a recent hydraulic oil release from a Norfolk Southern engine (see *AOCs* section).

AOCs
The Additional Site Characterization Study (ERI, 1995) identified areas of concern, which were located in the back southeast corner of the property. The AOCs included the old copper pipe area, former UST excavation area, and the rail spur. See *Investigations and Remedial Actions to Date* section for historic investigation information.

The Site Characterization Report for Soil and Groundwater (HSI, 2002) identified seven potential areas of concern (PAOCs). The PAOCs included:

- PAOC 1 – Former Copper Product Lines
- PAOC 2 – Vapor Flux Area Between Buildings (Freon 12)
- PAOC 3 – Vapor Flux Area North of Warehouse (DCA and Freon 12)
- PAOC 4 – Former Drain Line Beneath Warehouse
- PAOC 5 – Can Crusher/Dumpster Area (SWMU 2)
- PAOC 6 – Empty Product Drum Storage Area (SWMU 3)
- PAOC 7 – Western Parcel - B&M Landscaping

Ruptured Aerosol Line Release: A ruptured aerosol line in the batching area that led underground to the filling area ruptured during a 1973 fire that may have released materials to subsurface soils (NUS, 1989). The facility representative interviewed during the 2012 site visit has only been with the company for 10 years. He stated that there are no employees remaining from the original Spray Products work force; therefore, the location of the possible release is unknown.

Heptane Spill: On April 26, 2011, PADEP conducted a spill investigation after the facility discovered on April 25, 2011 (April 22, 2011) that an employee failed to close an opened valve on the heptane AST (AST 024A). Approximately 4,000 gallons were released into the south building and spilled outside onto a concrete-covered rail spur that had cracks. See *Investigations and Remedial Actions to Date* section for investigation information.

Diesel Spill: On June 1, 2011, a PADEP Incident Notification form was completed following a 200-gallon diesel spill to soil. A tractor trailer owned by Joint Express, Inc. drove off the edge of the facility's parking lot into a grass-covered area. When the wheels of the truck sank into the soil, the trailer tipped over, and one of its fuel tanks was punctured on an inactive light stanchion. See *Investigations and Remedial Actions to Date* section for investigation information.

Norfolk Southern Release: During the March 2012 site visit, a relatively recent release of hydraulic oil from a Norfolk Southern engine was observed along the railroad spur leading into the facility yard from the west. The release was a trail that extended approximately 200 feet, and ending approximately 50 feet inside of the yard. The impacted areas consisted of gravel, asphalt, and grass-covered surfaces. The facility had spread oil dry over portions of the release that occurred on the asphalt surfaces immediately outside and within the yard (the facility's property). Some of the oil dry had been cleaned up, drummed, and stored adjacent to the hazardous waste storage area. However, the portion of the spill that had occurred on the gravel outside of the facility was not addressed. The facility representative stated that he was contacting Norfolk Southern to clean this area up because the release occurred from their engine on their property and the facility was not responsible.

Storage Tanks
In 1989, to the east of the south building was the tank farm and product storage area. The tank farm consisted of various used and unused ASTs and 10 USTs. The used tanks contained either ether or heptanes. All of the ASTs were located over dirt and gravel; however, six of the ASTs were surrounded by a 1.5-feet high concrete dike. In 2012, there are no longer any known USTs onsite.

USTs
UST Assessment Following the Removal of 10 USTs (1990): As reported in the letter report of July 11, 1990 by CMES, on May 9 and 10, 1990, 10 steel USTs in the chemical UST farm were removed by C. Delong Associates with oversight by CMES. The 10 USTs were located adjacent to each other with six USTs in line to the south of 4 in line USTs. The pertinent UST information is summarized in the following table.

USTs			
ID	**Size**	**Contents**	**Status**
1	6,000	Diethyl Ether	Removed 1990 intact
2	6,000	Diethyl Ether	Removed 1990 intact
3	6,000	Diethyl Ether	Removed 1990 intact
4	6,000	Diethyl Ether	Removed 1990 intact
5	6,000	Diethyl Ether	Removed 1990 intact
6	6,000	Diethyl Ether	Removed 1990 intact
7	6,000	Diethyl Ether	Removed 1990 intact
8	3,000	Diethyl Ether	Removed 1990 intact
9	6,000	Acetone, Toluene, MIBK, MEK	Removed 1990 intact
10	3,000	Acetone, Toluene, MIBK, MEK	Removed 1990 intact

The USTs were emptied prior to removal. After removal, the USTs were cleaned, cut up and disposed offsite. On May 9, 1990, C. Delong Associates Inc. collected soil samples and on May 10, 1990, CMES collected soil and water samples from beneath the USTs.

The size of the excavation was approximately 60 feet long by 36 feet wide by 12 feet deep. The excavation began approximately 10 feet south of the rail spur and extended south 36 feet. The length of the excavation parallel to the rail spur was 60 feet and the total depth varied from 10 to 13 feet. Groundwater was observed in the bottom of the northern half of the excavation and in the southwestern corner of the excavation. A concrete pad on the ground surface above the USTs was broken into pieces and stockpiled beside the excavation for offsite disposal. Any pieces with observable stains were cleaned on-site before disposal. The screenings that surrounded the USTs initially remained in the excavation until analytical work was performed. The screenings revealed petroleum and solvent odors and a sheen was observed on top of the groundwater in the excavation.

After the USTs were removed, CMES conducted a visual examination and found no observable holes or signs of staining or leakage on the sides, tops, and bottoms of the USTs.

A total of eight soil samples were collected by CMES beneath USTs 7, 8, 9 and 10 (Soil Samples 5, 6, 7, 8, 9, 10, 11, and 12). One sample was collected beneath both ends of each UST. Two groundwater samples were collected below two of the USTs (i.e. one beneath UST 7 [Water Sample 2] and one beneath UST 19 [Water Sample 3]). Three soil samples were collected from the virgin soil at an approximate depth of 11 feet (i.e. Samples 1D, 2D, and 3D). Sample 1D was taken from the center of the northern half of the excavation, Sample 2D from the southwestern corner of the excavation, and Sample 3D from the southeastern corner of the excavation. The soil and groundwater samples were analyzed for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and total xylenes (BTEX), MIBK, MEK, acetone, methylene chloride, heptane, and diethyl ether.

On May 10, 1990, CMES notified PADEP that during the excavation of the USTs, there was product visible in the excavation on either the shallow groundwater table or the perched groundwater table.

Several VOCs were detected in each of the soil samples of the material directly below the USTs. Higher VOCs were detected below USTs 7, 8, 9, and 10, which were removed from the northern half of the excavation. The highest total VOCs were detected in Soil Sample 9 and Soil Sample 12 having total VOCs of 393,600 micrograms per kilogram (ug/kg) and 285,700 ug/kg, respectively. Diethyl ether was detected in 10 soil samples, with the highest concentration being 44,000 ug/kg. Acetone was detected (estimated) in every sample with the highest concentration being 16,000 B ug/kg. MIBK was detected in one sample at 1,500 J ug/kg. MEK was detected in one sample at 2,100 ug/kg. VOCs were detected in each of the three groundwater samples from the excavation. The highest concentration of total VOCs was detected at 843,900 micrograms per liter (ug/L) in Water Sample 3, which was collected from below UST 9. Diethyl ether (highest concentration of 330,000 ug/L) and acetone (highest concentration of 400,000 ug/L) were

detected in the three groundwater samples. MIBK was not detected in any samples. MEK (22,000 ug/L) was detected one sample.

TPH were detected in all 15 soil samples and all three groundwater samples. A PADEP regulatory guideline for TPH in soil of less than 100 milligrams per kilogram (mg/kg) was exceeded in twelve of the soil samples collected. Higher TPH concentrations were detected in Soil Samples 2D, 6, and 3D at 370 mg/kg, 355 mg/kg, and 329 mg/kg, respectively. The PADEP regulatory limit of 1 mg/L for TPH in groundwater was exceeded in all three groundwater samples. The highest concentration of TPH was detected in Water Sample 3 at 800 mg/L.

As contamination was detected, PADEP approved excavating to bedrock, installing three monitoring wells in the excavation, then backfilling the excavation. The southeastern corner of the property was cleared of vegetation to provide an area to stockpile the contaminated soil. Plastic was placed below and on top of the stockpile. (Note: According to the Final Report for Soil Pile Remediation and Closure prepared by United States Environmental Services Corp. [USES], dated September 9, 1994, the excavated soil was stockpiled in the area directly west of the south building between the railroad tracks and the rail spur. See *Investigations and Remedial Actions to Date* section for detailed information regarding remediation and reuse of the stockpile soil.)

In addition, visually contaminated groundwater was pumped from the bottom of the excavation into drums. Sorbent pads were also placed on top of the groundwater in the excavation to absorb the oily sheen.

After excavating, bedrock was reached on June 5, 6, and 8, 1990. CMES collected new soil samples and a groundwater sample from the bottom of the excavation. The excavation was divided into six areas and a two-point composite soil sample was collected from each area (i.e. Samples S-1 PSE, S-2 PSE, S-3 PSE, S-4 PSE, S-5 PSE, S-9 PSE, and S-10 PSE). A groundwater sample was collected from the center of the southern half of the excavation. Samples were analyzed for TPH and BTEX (plus library search). (Note: MIBK and MEK, and other VOCs, do not appear to have been analyzed.)

Concentrations of VOCs detected were drastically reduced. The highest concentration of total VOCs in soil was 368 ug/kg. No diethyl ether was detected in the soil samples; acetone was detected in six samples, ranging from 25 JB to 35,000 JB ug/kg. TPH in soil ranged from 31.6 mg/kg to 368 mg/kg. Other constituents detected in the soil samples included methylene chloride, toluene, xylenes, 3-methyl hexane, 2,3-dimethyl pentane, 2-methyl hexane, and ethylbenzene (all constituents detected previously).

Diethyl ether was detected in the groundwater sample at 10,000 ug/L; acetone was detected at 5,800 B ug/L. TPH in groundwater was 51.8 mg/L. Other constituents detected in the groundwater sample included methylene chloride, toluene, 3-methyl hexane, 2-methyl hexane, 4-methyl-2-pentanone (MIBK).

Three monitoring/recovery wells were installed in the excavation. One well was set in the northeast corner of the excavation, one in the northwest corner of the excavation, and one along the south-center of the excavation. The wells were 15 feet deep and were constructed of 10 feet of 4-inch diameter, .020 slotted PVC, and five feet of solid PVC riser. The space around the wells was backfilled with sand to two feet above the slotted PVC screen and a sand/cement slurry was used to fill the annulus to grade. A protective steel casing was placed over each well. CMES recommended two rounds of sampling of these well be conducted during the upcoming six months.

<u>2,000-Gallon UST</u>: In January 2008, while installing a new scale in the south building, a manhole was discovered. When opened, a 2,000-gallon UST was found that contained 98 percent water. The facility representative stated that the UST was identified on a 1961 Plumbing Storage and Filling Building Plan. The contents were unknown, but it appeared that the floor drains that were formerly in the building discharged to that UST. During the March 2012 site visit, the facility representative stated the floor drains were plugged with concrete long before he began working there. Prior to closure of the UST, the facility collected a sample of the UST contents (water/residual liquid) for laboratory analysis for waste characterization purposes. The analytical results as reported by Rineco Analytical Services for a sample of the clear liquid collected from the UST on June 19, 2007, indicated that ignitability was greater than 212 degrees Fahrenheit; pH was 6.9; there were no toxicity characteristic leaching procedure (TCLP) metals, VOCs (limited list), or semivolatile organic compounds (SVOCs) (limited list); and there were no sulfides. The analytical results

indicated that the liquid was not RCRA hazardous. The contents of the UST (2,081 gallons described as an oil/water mix) were removed using a vacuum truck and transported for treatment/disposal to Environmental Recovery Corporation, Inc. (ERC) on January 23, 2008 by Elk Environmental, Inc. Following emptying of the UST, the UST was closed-in-place by Elk Environmental using flowable fill. The integrity of this UST is unknown and no investigation of this UST and surrounding soils has occurred (Weston, 2001).

ASTs
After the USTs were removed and the excavation backfilled, a concrete pad was poured over the former location and the new ASTs were installed. The registered and unregistered ASTs identified at the facility are presented in the following table.

IDs PADEP (Plant)	Size	Contents	Location	Status	Secondary Containment
001A (01)	5,000	Isopropyl Alcohol	Area 1	Active	Yes
002A (02)	5,000	De-icer	Area 1	Active	Yes
003A (03)	5,000	Heptane	Area 1	Active	Yes
004A (04)	5,000	Heptane	Area 1	Active	Yes
005A (05,15)	10,000	Acetone	Area 1	Active	Yes
012A	1,000	Mineral Seal Oil	Inside north building	Removed	N/A
013A	1,000	Mineral Seal Oil	Inside north building	Removed	N/A
014A	1,000	Mineral Seal Oil	Inside north building	Removed	N/A
015A	1,000	Empty (formerly Mineral Seal Oil)	Area 1	Out of Service since approximately 2006	Yes
016A	2,000	Perchloroethylene	Inside north building filling area	Active	Yes
017A	2,000	Perchloroethylene	Inside north building filling area	Active	Yes
018A (18, 701)	6,000	Chemical Blend	Area 1	Active	Yes
019A (19, 702)	6,000	Chemical Blend	Area 1	Active	Yes
020A (703)	6,000	Chemical Blend	Inside north building batch area	Active	Yes
021A (704)	6,000	Chemical Blend	Inside north building batch area	Active	Yes
022A (706)	7,500	Diethylether	Area 1	Active	Yes
023A (707)	7,500	Diethylether	Area 1	Active	Yes
024A (24,705)	10,000	Heptane	Area 1	Active	Yes
025A (25)	6,000	Diethylether	Area 1	Active	Yes
026A (26)	6,000	Diethylether	Area 1	Active	Yes
028A	8,000	Chemical Blend	Area 1	Active	Yes
029A	8,000	Chemical Blend	Area 1	Active	Yes
030A	8,000	Chemical Blend	Area 1	Active	Yes
031A	6,000	IPA (currently Hexane)	Area 4	Active: Installed 6-4-08	Yes

032A (31)	6,000	Hexane (currently D-95 solvent)	Area 4	Active: Installed 6-4-08	Yes
033A (34)	6,000	Xylene (currently Toluene)	Area 4	Active: Installed 6-4-08	Yes
034A	6,000	Lubricating Oil Solvent (currently Xylenes)	Area 4	Active: Installed 6-4-08	Yes
(152A)		1,1-Difluoroethane	Area 3	Active	No
(108A)		Aeron	Area 3	Active	No
unnumbered		Aeron/NP-70	Area 3	Active	No
(134A)		1,1,1,2-Tetrafluoroethane	Area 3	Active	No
	8,000	Fuel Oil	Fuel Oil Tank	Active	Yes

Per the March 2012 site visit, the ASTs are used for raw materials storage. No waste is stored in the ASTs. To best identify the location of the tanks, the tank areas have been identified as Areas 1 through 4.

Area 1 – Area 1 is the large containment structure located at the former UST tank farm. The area consists of poured concrete floors and walls. Some of the piping is within the containment; some piping runs are over soil/grass. The ASTs are raised within the containment structure. During the March 2012 site visit, liquid was observed in the containment areas. The facility representative stated that he periodically calls Elk Environmental to pump out the fluids. Elk samples the fluids prior to vacuuming them out and transporting them offsite for disposal. The containment area was in good condition with no significant staining. Tank vessels (rail cars) were present on the track immediately north of the AST area. The rail cars were parked immediately north of the railroad tracks.

Area 2 – Area 2 is located west of Area 1. Area 2 stores the 26,000 ton carbon dioxide (CO2) cryogenic tank and many totes stored on asphalt with no secondary containment. Piping behind this area was over soil/long grass. The piping was rusted.

Area 3 – Area 3 is east of Area 1. ASTs 108A, 134A, 154A, and an unnumbered AST in the area are situated over gravel with concrete walkways around the ASTs. AST 134A is situated over concrete with no other secondary containment. There was no staining observed beneath or in the area of these four ASTs. Formerly, there were three propane ASTs located in this area (WES, 1989).

Area 4 – Area 4 contains the four vertical ASTs located adjacent to the batching area of the northern building. The ASTs are raised above the concrete base and walls of the containment structure.

Fuel Oil AST – The diked, 8,000-gallon fuel oil tank is located north of the south building. The diked AST is situated on soil/gravel and grass. Prior to 1990, when this new AST was installed, an 8,000-gallon UST was located in its location. The former UST was connected to the boiler room by underground piping. When the UST was removed, it reportedly had no holes and the soil around the UST did not have any odors or traces of oil (C. DeLong Associates, Inc.).

In 2002, there were 12 process tanks in the mixing area. These tanks were:

- Five 1,000-gallon, stainless steel
- Three 500-gallon, jacketed
- One 5,100-gallon, stainless steel
- One 2,000-gallon, stainless steel
- Two 1,500-gal!on, black iron

During the 2012 site visit, five stainless steel process tanks were observed in the filling area of the north building, and six were located inside of the batching area of the south building. These tanks are on wheels and can be easily moved throughout the facility. The tanks were situated on the concrete floor. No secondary containment units were present. On January 30, 1992, the facility notified PADEP of the inventory of chemicals stored at the facility. It noted that although the facility is not located next to the Schuylkill River, they were required to notify all facilities with intakes

located within 20 miles downstream of the facility. Chemicals included acetone (3,000 to 8,000 gallons), ethyl ether (10,000 to 40,000 gallons), heptanes (10,000 to 20,000 gallons), hexane (500 to 7,500 gallons), methanol (0 to 5,000 gallons), methylene chloride (500 to 4,000 gallons), mineral spirits (500 to 2,000 gallons), toluene (1,000 to 3,000 gallons), 1,1,1-trichloroethane (500 to 2,000 gallons), and No. 2 fuel oil (1,000 to 8,000 gallons). The largest tank was 10,000 gallons and the facility has a maximum capacity of 110,000 gallons.

eFACTS identifies 20 ASTs (Tanks 001A, 002A, 003A, 004A, 005A, 012A, 013A, 014A, 015A, 016A, 017A, 018A, 019A, 020A, 021A, 022A, 023A, 024A, 025A, and 026A) registered to ORB on April 30, 2002. On December 27, 2004 the list of registered ASTs was modified by ORB to include 028A, 029A and 030A.

On June 18, 2008, JD Environmental Inc. on behalf of ORB sent the Storage Tank Registration Permitting Application to PADEP for a series of four 6,000-gallon single-walled steel ASTs (031A, 032A, 033A, 034A) containing isopropyl alcohol, hexane, xylene, and lubricating oil solvent, respectively, at the Spray Products facility. The tanks were provided with secondary containment.

On March 19, 2010, PADEP requested a Spill Prevention Response Plan (SPRP) for facilities exceeding storage capacities exceeding 21,000 gallons. Per the facility representative, the last revision to the SPRP was done in 2005 when it was prepared by Gilmore and Associates.

On November 30, 2010, Mott Tank Inspection Inc. sent AST inspection summaries for ASTs 005A (15), 025A (rear), 026A (front), 018A (701), 019A (702), 020A (703), 021A (704), 022A (706), 023A (707), and 024A (705).

On December 6, 2010, PADEP sent a Notice of Violation (NOV) following an October 7, 2010 inspection when an integrity in-service inspection was conducted on tanks 025A and 026A and identified that both tanks lacked emergency vents and that the shells, nozzles, and roofs had coating deterioration and were in unsatisfactory condition. PADEP requested the deficiencies be corrected with 60 days. During the March 2012 site visit, the facility stated they had no knowledge of the NOV, and would not have knowingly not responded to it. On July 16, 2012, the PADEP Storage Tanks Program provided a copy of the 2010 NOV to the facility. As of July 20, 2012, the facility was preparing a response to the NOV. Per the March 2012 site visit, the facility is currently cleaning and painting the ASTs as well as making any repairs as needed (i.e., replacing seals, upgrading venting).

Investigations and Remedial Actions to Date

Phase I, Phase II, Phase III (1989) (Included in Site Characterization Report for Soil and Groundwater (2002): On January 19, 1989, Westinghouse Environmental Services (WES) submitted to the facility the letter report with the objective of identifying and evaluating potential environmental impacts with the intent of reducing potential environmental liabilities. The report summarized the Phase I and Phase II portions of the environmental assessment.

- Phase I - Background Data Review
- Phase II - Field Investigation (eight soil borings; four soil samples analyzed for VOCs plus 20 tentatively identified compound [TICs], SVOCs, and priority pollutant [PP] metals; effluent bath sample [northwest corner of the packaging area – discharged to the storm sewer], downgradient storm sewer samples, and bulk asbestos sampling)
- Phase III - Letter Report

The assessment concluded the following:

- The compounds identified in the samples, excluding the polynuclear aromatic hydrocarbons (PAHs) in SP-5, can be associated with the compounds used by the facility.
- The discharge of the bath water into the storm sewer is an illegal discharge.
- The levels of VOCs identified in SP-5 indicate that the USTs or associated lines located at the southeast corner of the property are leaking.
- The PAHs identified in SP-5 cannot be tied into the Spray Products manufacturing process. These compounds are characteristic of creosote and may be associated with the railroad spur.
- The downgradient storm sewer sample indicates that levels of VOCs attributable to the facility (methylene chloride, 1,1-dichloroethane (DCA), toluene, acetone, and MIBK as well as other unknown VOCs) are following an as yet unknown underground conduit and entering the storm sewer. The effluent (bath water)

discharge, which contained elevated concentrations of VOCs (toluene, acetone, MIBK, and bis(2-ethylhexyl)phthalate) is also contributing to the elevated VOC content.

- The information from both the sample results and field data collected during the drilling indicate that the soil and surface water at the facility are contaminated with compounds attributable to the facility.
- The boiler wrap contains asbestos.

WES recommended the following actions:

- The facility should either obtain a NPDES permit for the discharge of their bath water or reroute this discharge to the sanitary sewer, upon approval of the municipal authority.
- The USTs should be leak tested. If found leaking, they should be excavated and removed.
- Groundwater monitoring wells should be installed in order to determine if the VOCs detected in the soil boring samples have impacted the groundwater quality.
- The facility should secure an asbestos removal contractor and remove the boiler wrap.

Phase II (1989) (Included in Site Characterization Report for Soil and Groundwater (2002): On May 9, 1989, WES submitted to the facility the Phase II report which identified the potential source and migration pathway of VOCs detected near the UST area and evaluate the potential for groundwater contamination attributable to the VOCs detected within soils collected during the 1988 Phase I investigation.

The evaluation of the sources and migration pathways for the VOCs yielded the following:

- Advanced eight soil borings along the outside the southern side of the main building (north building) and installed one monitoring well near the northwest corner of the north building to investigate sources of VOC contamination from transfer piping running from the batch area to the packaging building. Four out of 13 copper transfer pipes were in satisfactory condition when Spray Products first occupied the site. The pipes were suspected to be the cause of the release, which migrated along the adjacent railroad spur ballast via shallow groundwater.
- Copper lines were removed and replaced with new lines of chemically compatible materials.
- An installed monitoring well indicated VOC contamination in groundwater.
- Installation of additional wells was recommended.

The Phase II assessment concluded the following:

- Due to the shallow depth of the soil samples (less than five feet), the compounds detected in soil can be attributed to the facility. The unknown cyclohexanes, alkanes, ketones, and aromatics are most likely low molecular weight compounds not identified during a standard library search, chemical or physical breakdown products of the on-site compounds, or a combination of both.
- The railroad ballast is most likely acting as a conduit for water movement downgradient from the UST area. However, wherever groundwater was encountered during the boring program, significant levels of known or unknown compounds were encountered. Sample B-8 was not collected from the saturated soil zone, and it contained the lowest contaminant concentration (unknown compound 600 ppb).
- The positive results of the downgradient storm sewer sample collected during the previous site investigation are most likely water seepage into the sewer culvert.
- The weathered Stockton Formation underlying the facility forms a clay-rich mantle which perches a small amount of groundwater, thus explaining the high water table south of the main (north) building. Bedrock crops out south of the filling and packaging area (south building), and the erosional surface of the bedrock dips north. The mantle is however most likely not impervious to water and leakage does occur.
- The groundwater sample collected from MW-1 contained methylene chloride (28,000 ug/L), 1,1-DCA (15,000 ug/L), total 1,2-dichloroethylene (DCE) (9,700 ug/L), 1,1,1-TCA (12,000 ug/L), toluene (140,000 ug/L), acetone (47,000 ug/L), MIBK (103,000 ug/L), and an unknown hydrazine isomer (370,000 ug/L). (Note: MW-1 was later renamed MW-4D.) Groundwater quality beneath the facility has been adversely impacted by compounds attributable to Spray Products operations. Strouse, the previous owner/operator, was engaged in similar operations using similar chemical compounds including methylene chloride, acetone, MIBK, and toluene. Each of these compounds had been stored in USTs during the facility's history.

WES recommended the following actions:

- The USTs should be replaced. While some tanks may not be leaking, their age, approximately 14 years, warranted their removal. The facility had indicated that all underground product lines were pressure tested for tightness. WES recommended excavating any product lines removed from service.
- Additional groundwater monitoring wells (upgradient and downgradient) should be installed to evaluate the extent of groundwater impacts. Utilizing the information obtained from the additional wells, a groundwater remediation system can be designed.
- A feasibility study should be undertaken to identify remedial alternatives for the perched water.
- The railway ballast conduit should be removed.
- The need to inform the PADEP of the results of this study should be evaluated.
- The legal ramifications associated with the joint relationship with the Montgomery County Industrial Development Authority associated with should be ascertained.

USEPA Preliminary Assessment (1989): On August 10, 1989, NUS completed the PA for the facility, which indicated that the last shipment of hazardous waste was in October 30, 1986. The facility's operations changed to include use of the dirty wash solvents as product in paint primers, which were canned at the facility. As a result the dirty solvent waste stream was eliminated. Although the container storage area was no longer in use, it was never certified as closed in accordance with the closure plan, according to the PA. Chemicals that were observed onsite during the PA included: 1,1,1-TCA, mineral spirits, ether, hexane, MEK, toluene, methylene chloride, and acetone. Other possible AOCs identified during the PA included the railroad spur that runs east-west through the property and a ruptured aerosol line in the batching area that led underground to the filling area. This line reportedly ruptured during a 1973 fire and may have released materials to subsurface soils. A rough HRS PROscore of 24.54 was obtained for the facility.

Former UST Storage Area: On May 10, 1990 the facility notified PADEP that during the excavation of the 10 USTs (eight 6,000-gallon steel USTs containing diethyl ether and heptane, and two 3,000-gallon steel USTs containing a mixture of acetone, toluene, MIBK, methylene chloride, and glycol ether), there was product visible in the excavation on either the shallow water table or the perched water table. Soil and water samples were collected and further excavation was planned. The facility was dewatering the product through an oil/water separator and discharging the remaining water to the sanitary sewer system. Additional discussion related to the USTs/UST removals is presented in the *Storage Tanks* section. The subsequent investigations and remedial actions were initiated as a result of the UST area release and could have been completed under Storage Tanks: Corrective Action (Chapter 245); however, the facility chose to clean up the site under Act 2.

On January 5, 1993, PADEP inquired into the additional investigations/remediation from the proposed activities recommended in the July 11, 1990 Tank Assessment prepared by CMES (see *Storage Tanks* section) that proposed two rounds of initial shallow groundwater sampling.

On April 19, 1993, PADEP notified the facility that they had reviewed the February 2, 1993 information report from ERI. It noted that several VOCs were detected in three of the groundwater samples and in the screening material soil samples from the excavation where the 10 USTs were removed on May 9-10, 1990. PADEP indicated that the levels were unacceptable. Based on the data from the two rounds of sampling (September 24, 1991 and November 30, 1992), PADEP requested that the facility develop and implement a hydrogeologic study to determine the extent and impact of soil and groundwater contamination, evaluate the potential for further spread of the contamination, define all of the sources of pollution, evaluate alternatives available to abate soil and groundwater pollution, and develop a groundwater monitoring program.

Results of Third Round of Groundwater Sampling and Analysis (1993) (Included in Site Characterization Report for Soil and Groundwater (2002): On March 19, 1993, ERI submitted the report to Spray Products. It documented the results of the November 30, 1992 sampling of 10 monitoring wells located throughout the facility, which were installed as a result of releases from a leaking sewer line (wastewater [bath water] pipe break), several UST lines, and the UST area.

ERI's evaluation of the dissolved constituents observed to date showed that the chemical contaminants present included substances with specific gravities both lighter than water (e.g. toluene, acetone, and chloroethane) and substances denser

than water (e.g. 1,1,1-TCA, TCE, methylene chloride, and PCE). This meant that future well sampling needed to include sampling at the bottom of the well to sample denser substances (dense non-aqueous phase liquids [DNAPLs]) as well as at the top of the well for lighter substances (light non-aqueous phase liquids [LNAPLs]).

Based on the data for the seven wells that intersected the shallow aquifer, which were sampled on November 30, 1992 (MW-1 Shallow, MW-2 Shallow, MW-3 Shallow, MW- 4 Shallow, MW-5 Shallow, MW-6 Shallow, and MW-7

Shallow), the groundwater flow direction in the shallow aquifer was interpreted to be to the northwest. The previous sampling data also indicated the same general flow direction for the shallow aquifer.

Three wells intersected the deeper aquifer and were sampled on November 30, 1992 (MW-1 Deep, MW-2 Deep, and MW-4 Deep). The groundwater flow in the deeper aquifer was interpreted to be to the southwest. The previous sampling data also indicated the same general flow direction for the deeper aquifer.

Based on the elevations of groundwater in the paired wells, a general downward vertical gradient existed (i.e., a higher piezometric head in the shallow aquifer and a lower piezometric head in the deeper aquifer). The lower piezometric head in the deeper aquifer was believed to be due to pumping of groundwater from the quarry to the south of the facility which reduced the pressure in the deeper aquifer and directed the flow in the deeper aquifer to the southeast. It was concluded that the combined effect would cause contaminants to be encouraged to migrate vertically downward on-site to the deeper aquifer.

When comparing the groundwater analytical data obtained from three sampling events, an obvious trend was observed. Major decreases in contaminant values were noted from Round 1 to Round 3, which was interpreted to be due to biological degradation, dispersion, and dilution of the compounds within the aquifers. Upgradient wells contained trace amounts of contaminants which were consistent with those on-site. This indicated a possible area-wide occurrence of low levels in groundwater in the geographic area, or a possible source upgradient from the facility. However, the concentrations of contaminants due to sources found on-site were well above the USEPA maximum contaminant levels (MCLs) and therefore required cleanup. The highest concentrations and the greatest number of VOCs were detected in the monitoring wells located on the northwest corner of the north building (MW-4 Shallow/Deep) and at the former UST excavation area (MW-5 Shallow, MW-6 Shallow, and MW-7 Shallow).

ERI made the following conclusions and recommendations:

- Even though groundwater is not used on-site as a drinking water source, the MCLs are the governing standard. While no immediate receptor wells were known to be downgradient of the facility at the time, groundwater contamination significantly exceeded the drinking water MCLs. Remedial options needed to be evaluated. It was recommended that the selected remediation plan be approved by PADEP prior to implementation.
- The next round of groundwater sampling needed to include sample collection from the bottom of each well to analyze for DNAPLs, as well as near the surface to analyze for LNAPLs.

<u>Final Report for Soil Pile Remediation and Closure (1994) (Included in Site Characterization Report for Soil and Groundwater (2002)</u>: On December 28, 1993, PADEP completed their review of the Technical Work Plan for Vacuum Extraction Remediation of Stockpiled Soil prepared by USES, dated November 29, 1993. PADEP agreed with USES' proposal to install a vacuum remediation system for the soil excavated during the removal of the USTs and stockpiled onsite (see *Storage Tanks* section for details of the UST removal and subsequent sampling).

The Technical Work Plan for Vacuum Extraction Remediation of Stockpiled Soil could not be located, though the facility did retain a document entitled "Additional Site Characterization Study" that contained information pertaining to a soil vapor study that included results for soil vapor samples. (On April 8, 1994, ERI sent PADEP notification that the soil vapor screening phase of the Hydrogeological Investigation was tentatively scheduled to begin on May 2, 1994.)

On May 1, 1994, the facility sent a Request for Determination (RFD) to treat soil contaminated with 1,1-DCA from the UST leak using vacuum extraction through the use of six pipes placed in the soil pile. On May 26, 1994, PADEP granted the facility an exemption from permitting requirements and permitted use of a 2,000 pound vapor phase carbon

filter drum to be used for a three month remediation project. The drum was to be replaced when the effluent reached 10 percent of the influent concentration.

On September 9, 1994, USES submitted the Final Report for Soil Pile Remediation and Closure to Spray Products documenting the project activities from April to June, 1994. The report documented that 630 cubic yards of contaminated soil was removed during the UST excavation activities and was stored in the area directly west of the south building between the railroad tracks and the rail spur. The report also outlined the activities performed in the sampling, construction, and operation of the vacuum extraction remediation system. The system consisted of four major components; the manifold, carbon treatment unit, hot air injection system, and the particulate filter unit and vacuum pump. The driving force of the system was the vacuum pump.

The cleanup goal for remediation of the stockpiled soil was non-detect for VOCs with a detection limit of 0.125 mg/kg for all solvents except 2-chloroethylvinyl ether for which the detection limit was 1.25 mg/kg. For the air samples, the clean-up goal set by PADEP was non-detect for VOCs with a detection limit of 0.00005 mg/kg for all solvents; methylene chloride and vinyl chloride exceeded this detection limit due to outside sources. The system ran uninterrupted except for monthly maintenance and soil sampling. The cleanup goals were met during this sampling period.

The "Cleanup Standards for Contaminated Soils", dated December, 1993, stated that if the original contaminant was no longer present or "non-detect", then the material was considered clean. The soil was considered clean fill for purposes of subsequent use according to the PADEP; therefore, the post-remediation soil was used as backfill material by the facility.

On July 25, 1995, PADEP stated they had reviewed the report and the remediated soils could be used onsite provided they are not used to fill in a drainage way or wetland area. As PADEP had not received the report on soil vapor screening, the facility notified PADEP on August 3, 1995, that they would provide the report by September 29, 1995. The letter noted the soil pile would remain in place until it could be used during the expansion of the building.

Additional Site Characterization Study (1995) (Included in Site Characterization Report for Soil and Groundwater (2002): On September 21, 1995, ERI sent PADEP the Additional Site Characterization Study. It was performed in accordance with the Hydrogeological Study Work Plan submitted to PADEP in March 1994, which was approved by PADEP on March 22, 1994.

The study noted that the facility was currently an aerosol packaging plant which packages paints lubricants, and starting fluids. The slope of the site pitches gradually to the northwest. Surface runoff flows in this general northwesterly direction and collects in a 26-inch concrete storm sewer flowing east to west.

This study noted that previous investigations were performed. However, the purpose of this investigation was to fulfill the following objectives:

- Define the extent of soil and groundwater contamination
- Evaluate the potential for further spread of soil and groundwater contamination
- Define the source of the pollution and means by which said sources have been eliminated
- Evaluate the alternatives available to abate the soil and groundwater pollution
- Implement a groundwater monitoring program
- Develop a course of action to abate the soil and groundwater pollution

The scope of work included:

- Conduct a soil vapor survey to begin to delineate the extent of soil and groundwater contamination, evaluate the spread of the pollution, and define the source area(s)
- Drill additional borings and install additional monitoring wells to fill data gaps in the monitoring well network and better define the extent of the soil and groundwater problem
- Conduct additional soil and groundwater sampling and analysis to better define the extent of the soil and groundwater contamination

- Prepare a summary report to present additional findings and to begin to address PADEP's concerns regarding monitoring and abatement alternatives

The study identified AOCs, which were located in the southeast corner of the property. The AOCs included the old copper pipe area, former UST excavation area, and the rail spur. The study addressed the following:

Soil Vapor – Based on the historic data, the potential existed for VOCs to be encountered over a large aerial extent and the potential to encounter DNAPL also existed. Results for Petrex tube samples placed throughout the property at a depth of 18 inches revealed evidence of VOCs and SVOCs, lighter-phase petroleum hydrocarbons (gasoline), and heavier-phase hydrocarbons (oil) present on-site. No source areas for gasoline or oil range petroleum hydrocarbon compounds were known to exist onsite. Toluene was observed at significant concentrations in on-site groundwater, but reported soil vapor fluxes for BTEX did not correlate with background monitoring well analytical data. (Note: The results for the Petrex tube samples only provided a relative vapor flux. The results are not a measure of the concentration of specific compounds. The purpose was to guide the selection for locations of additional monitoring wells [MW-8S and MW-9D]. The highest vapor flux areas for PCE, chlorobenzene/dichlorobenzene, DCA, and Freon 12 were situated between the north and south buildings directly north of the AST farm/former UST excavation area. Additional areas of high vapor flux for DCA and Freon 12 were located directly north of the north building in the area of MW-8S, centrally located between the buildings, and south of the southwest end of the south building. High vapor flux areas for TCE were observed directly west of MW-4S/4D and directly northeast of MW-2S/2D.)

Additional Monitoring Well Construction - Two additional monitoring wells (MW-8S and MW-9D) were installed on September 7, 1994 to further characterize the release from the UST system piping.

Shallow Well Soil Sample Analytical Results - No detectable concentrations of target compound list (TCL) VOCs were detected in the two soil samples collected from the shallow well boring (MW-8S). Analytical results indicate that contaminant concentrations were limited to the groundwater and did not appear to be significantly impacting soils away from the source areas. Contaminated soils at the source areas appeared to be isolated due to the thin veneer of soil overlying the bedrock. Much of the contaminated soil (950 to 1,000 tons from the UST excavation area) was remediated on-site.

Groundwater - Groundwater at the facility occurs in two distinct zones. A shallow groundwater zone exists along the top of the bedrock surface and a deeper groundwater zone exists in the bedrock formation underlying the facility.

- Shallow groundwater exists beneath the facility perched just above bedrock. This zone was encountered at 9.5 feet in a saturated, sandy, medium-size seam, and recharged along the southern portion of the property due to permeability and porosity associated with shallow bedrock conditions, the railroad track ballast rock, and surface water drainage toward the southeast corner of the property.
- The discharge point for shallow groundwater was not completely understood at the time. The total head in the shallow groundwater was greater than in the deeper groundwater aquifer creating the potential for an overall downward vertical gradient.
- Deeper groundwater appears to exist beneath the facility in the secondary porosity (fractures) within the consolidated shale bedrock. Deeper groundwater movement has been shown to be in the general southwesterly direction. The flow direction in the deeper groundwater aquifer appeared to be controlled primarily by its discharge point, the Schuylkill River located 1,500 feet west of the facility at an elevation approximately 50 feet below that of the facility.
- Groundwater samples were analyzed for priority pollutant list (PPL) purgable compounds plus TICs and acetone. There were several samples that exceeded the USEPA MCLs in several wells for the following: total 1,2-DCE, 1,1-DCE, toluene, vinyl chloride (VC), TCE, PCE, 1,1,1-TCA, benzene, and methylene chloride. The greatest number of VOCs and the highest concentrations were detected in the MW-4 well pair and MW-8S.

ERI presented the following conclusions:

- Upgradient and downgradient monitoring well data indicated that the facility was contributing contamination to groundwater in excess of the MCLs.
- Upgradient wells indicated low levels of background contamination (namely TCE and total 1,2-DCE in MW-1D, MW-2S, and MW-2D) from an offsite source.
- Problem areas associated with the UST system transfer piping leak were identified by soil vapor delineations and subsequent groundwater samples from shallow groundwater monitoring wells.
- An additional problem area was identified via monitoring wells (MW-4S and MW-4D near the northwestern corner of the north building), which was determined to be caused by the former owner (Strouse). Prior to 1974, the former owner located an aerosol line inside the facility above several floor drains that drained to the sanitary sewer, which had a broken lateral line. Leakage from the aerosol line was caused by the chemical incompatibility of the piping and/or from an explosion at the facility caused by the aerosol line. Following the explosion, Strouse removed the aerosol line and sealed the floor drains. Spray Products discovered the broken lateral line and repaired it.
- Shallow groundwater from the former UST area did not appear to have impacted deeper groundwater greater than what was observed due to background contamination.
- A comparison of worst case monitoring well top sample and bottom groundwater sample analyses did not indicate the presence of free product, namely DNAPLs.
- Soil contamination appeared to be isolated to the original source areas on-site. Much of this material had been removed.
- Shallow groundwater degradation was the main environmental concern at the facility; however, shallow groundwater was not an important resource for the area. Thus, remediation of the groundwater to drinking water standards was deemed not practical or economically feasible.
- Soil vapor flux plot delineations and monitoring well data indicated that spillage from the UST system was primarily confined to the site, except for specific compounds (benzene, toluene, 1,1-DCE, total 1,2-DCE, methylene chloride, TCE, and VC) detected above the MCLs at well MW-8S that had migrated beyond MW-8S.

ERI presented the following recommendations:

- Minimal action until the Act 2 regulations were finalized, followed by groundwater remediation.
- Semi-annual to annual groundwater monitoring.

On November 20, 1995, PADEP acknowledged they had reviewed the report. It noted that because the facility is a regulated facility under Chapter 245 (Storage Tanks; Corrective Action) of Title 25, the site does not have to enter into Act 2 to obtain a release of liability from the State. Actions conducted at the facility should continue to follow the corrective action requirements of Chapter 245. Based on the report, several contaminants were detected above the USEPA drinking water standards. Therefore, PADEP recommended that remedial measures were necessary to abate the contamination. In addition, a groundwater sampling and analysis program should be implemented to monitor groundwater quality.

On December 12, 1995, the facility notified PADEP that they were soliciting quotations to implement a groundwater quality monitoring program and implement the preparation of a Remedial Action Plan/Remedial Technology Feasibility Evaluation.

Phase I Environmental Site Assessment (2001) (Included in Site Characterization Report for Soil and Groundwater (2002): The Phase I Environmental Site Assessment (ESA), dated June 2001, was prepared by Roy F Weston (Weston). The ESA indicated that stormwater from the facility is collected in catch basins located in the paved and maintained portions of the property. The catch basins discharge to a storm sewer and then to the drainage swale, which is located at the west end of the facility.

Electricity to the facility was provided by PECO Energy Corp. Drinking water was supplied by PWSC to Spray Products and by Keystone American Water Company to the landscaping operation that occupied the west storage area. East Norriton Plymouth Joint Sewer Authority handled sanitary wastewater from the property.

Marbles used in the spray paint cans were observed at various locations between the buildings, as were parts of spray cans, and approximately 100 used 55-gallon drums. Debris such as bottles, tires, and paper were noted principally in the vegetated areas. Apparent hydraulic oil spills or leaks were observed in the boiler room near the compressor. Oil leaks may also have been the discoloration observed at the storage tank pumps. Paint and paint resin stains were observed between the buildings, and the facility president, Mr. Orr, attributed these stains to prior site occupants. Paint stains were also noted within the buildings.

Mr. Orr stated that explosions occurred when Strouse operated the facility. A fire, apparently set by vandals, also occurred when Strouse operated the facility.

Raw materials were stored in the storage tanks and in 55-gallon drums. No leaks or spills were observed. The materials were generally VOCs. Organic-like odors were noted throughout the facility, principally in the production area.

Acetylene tanks used for welding were observed. There were pipes in the wall of the north building that did not lead to a process or container. These pipes, on the southern wall of the north building near the east end, may have been used by Strouse to transfer materials. Mr. Orr reported discovering and removing underground pipes that appeared to lead from the mixing area.

Recognized environmental conditions (RECs) identified included:

- VOCs are present in the soil and groundwater as evidenced from past soil and groundwater investigations.
- A 2,000-gallon receiving tank may be abandoned beneath the south building. The integrity of this UST is unknown and no investigation of this UST and surrounding soils has occurred.
- Prior site occupants may have spilled paint and paint resins, as evidenced by paint staining outside the buildings. Paint stains were also noted inside the buildings. These may have contributed to the VOCs in the groundwater or could be de minimus conditions.
- The oil leaks associated with the compressor, tank farm pumps, and boilers appear to be de minimus conditions. The leaks appear to be isolated to the area immediately beneath the leaks.

Site Characterization Report for Soil and Groundwater (2002): On February 25, 2002, HSI submitted the report to PADEP on behalf of Spray Products Corporation. The report sections included introduction, facility description, PAOCs, site investigation, summary of results, Act 2 standards, ecological screening, attainment, conclusions and recommendations, and references. The appendices included the Phase I report (Weston, 2001), well construction logs, project plans, laboratory reports, a Pennsylvania Natural Diversity Inventory (PNDI) letter, and an example declaration of environmental restriction. Volume II included the following environmental reports: Phase I Investigation, Phase II Investigation, Preliminary Assessment Report, Assessment following UST Removal, Final Report on Soil Pile Remediation from UST Closure, Report of Results from 3rd Round of Groundwater Samples, Report of Additional Site Characterization, and Data from November 2000 Sampling Event. (Note: Summaries of these reports in this EI are presented individually and chronologically.)

The site characterization was conducted to evaluate existing conditions in order to obtain an Act 2 release of liability. In addition, the report was intended provide the technical basis for the buyer/seller agreement between Spray Products Corporation (Seller) and ORB Industries, Inc., Bastian Enterprises, LLC, and ORB Acquisition Group, Inc. (collectively, Buyer). The demonstration of attainment was based on the following:

- For soils – Non-residential direct contact statewide health standard (SHS)
- For groundwater - Site-specific standard (SSS) via pathway elimination

The site investigation included the following:

- Geology - HSI installed three deep monitoring wells and three shallow monitoring wells at the facility. The shallow monitoring wells (MW-12S, MW-13S, and MW-14S) were installed in overburden soils using a hollow stem auger drilling rig. The wells were drilled to bedrock refusal at each location. Overburden materials were composed of silty clay and silty sand. The bedrock surface was shallow and highly variable in the western portion of the facility. Only one of the three wells (MW-13S) contained water. Shallow wells MW-12S and MW-14S were dry since installation in late November 2001. Shallow well MW-2S had also

been dry since the beginning of the HSI investigation. HSI believed this was due to the extremely dry conditions in southeastern Pennsylvania during the investigation. A drought watch was issued by the Delaware River Basin Commission in early December 2001 and a drought emergency was declared on February 12, 2002.

- The deep wells (MW-9DD, MW-10D, and MW-10DD) were installed using air rotary drilling techniques. During deep well installation, fractures and voids were observed at various depths. Many of the fractures

  were less than one foot openings. Many of the fractures identified were coincident with zones of increased yield in the deeper wells.

- Static water level measurements collected in the monitoring wells ranged from approximately 10 to 50 feet below grade. Based upon HSI's and historic groundwater level data, shallow groundwater at the facility was interpreted to flow generally to the northwest and deeper (intermediate and deep) groundwater flows were to the southwest. Regionally, the Schuylkill River serves as a groundwater discharge point. Therefore, groundwater flow was expected to be toward the southwest, ultimately discharging into the Schuylkill River. Groundwater in the unconsolidated material is seasonal and is present due to the semi-confined nature of the bedrock aquifer. The yield of the bedrock aquifer is relatively low in the uppermost (20 to 55 feet) zone. The yield of the deeper wells completed from 55 to 90 feet below grade were higher and dependent on the existence of fractures.

- PAOCs - HSI advanced 42 soil borings on December 18 and 19, 2001 to provide overall coverage of the identified PAOCs with a bias toward known historical impacts. The PAOCs included:
  - PAOC 1 – Former Copper Product Lines
  - PAOC 2 – Vapor Flux Area Between Buildings
  - PAOC 3 – Vapor Flux Area North of Warehouse
  - PAOC 4 – Former Drain Line Beneath Warehouse
  - PAOC 5 – Can Crusher/Dumpster Area
  - PAOC 6 – Empty Product Drum Storage Area
  - PAOC 7 – Western Parcel - B&M Landscaping

- The former UST area was not further investigated by HSI. It was noted that the copper lines that distributed the liquids between the two buildings had leaked. The copper lines were excavated, the contaminated material was removed, and the area was backfilled with clean fill. No further investigative activities were proposed.

- Soil Investigation – Soil borings were advanced using direct push methods. Soil was screened for VOCs using a photoionization detector (PID). Based on the screening results, a sample was collected for analysis of PPL VOCs. The depths of the samples ranged from 1 to 2.5 feet below ground surface (bgs) at PAOC 1; 1 to 10 feet bgs at PAOC 2; 4 to 9 feet bgs at PAOC 3; 6.5 to 16 feet at PAOC 4; 2 to 5 feet bgs at PAOC 5; 3 to 4 feet bgs at PAOC 6; and 1 to 12 feet bgs at PAOC 7. Stained soils and solvent odors were noted between 4 and 8 feet bgs at PAOC 3.

- Groundwater Investigation – Six groundwater monitoring wells were installed to supplement the existing facility monitoring wells. The six newly installed wells consisted of three overburden wells (MW-12S, MW-13S, and MW-14S) installed to monitor shallow water table conditions, and three bedrock wells (MW-9DD, MW-10D, and MW-10DD) to monitor the bedrock aquifer. HSI conducted two groundwater sampling events using bottom-loading bailers. The first sampling event was conducted on January 8 and 9, 2002 and included several existing monitoring wells (MW-1D, MW-4S, MW-4D, MW-6S, MW-8S, and MW-9D) and the newly installed HSI wells (MW-9DD, MW-10D, MW-10DD, and MW-13S). The second sampling event was conducted by HSI on February 12 and 13, 2002 and included wells MW-9D, MW-9DD, MW-10D, MW-10DD, and MW-13S. Groundwater samples were analyzed for PPL VOCs including 1,2-dichlorobenzene (DCB), 1,3-DCB, 1,4-DCB, and dichlorodifluoromethane (Freon-12).

HSI provided the following conclusions and recommendations based on the investigation activities:

- Only one soil sample contained a compound above the PADEP residential direct contact medium specific concentrations (MSCs); 1,1-DCE in PAOC-2. However, the detected concentration was below the non-residential direct contact MSC. All other compounds in soils were detected at concentrations below the residential direct contact MSCs, thus demonstrating attainment of the selected cleanup standard for soil, with the required deed notice.
- Shallow and deep groundwater exhibited contamination of VOCs. The following compounds were detected in above the PADEP used-aquifer, total dissolved solids less than 2,500 mg/L, non-residential MSCs in groundwater samples collected from 10 monitoring wells (MW-1D, MW-4S, MW-4D, MW-6S, MW-8S, MW-9D, MW-9DD, MW-10D, MW-10DD, and MW-13S) in January 2002: acetone, benzene, bromodichloromethane, chloroethane, ethylbenzene, Freon-12, methylene chloride, 1,1,1-TCA, 1,1-DCA, 1,1-DCE, 1,2-DCB, 1,4-DCB, 1,2-DCE, cis-1,2-DCE, methyl tert-butyl ether (MTBE), PCE, TCE, toluene, VC, and xylenes. The following compounds were detected above the PADEP non-residential MSCs in groundwater samples collected from five monitoring wells (MW-9D, MW-9DD, MW-10D, MW-10DD, and MW-13S) in February 2002: benzene, chloroethane, methylene chloride, 1,1,1-TCA, 1,1-DCA, 1,1-DCE, cis-1,2-DCE, TCE, and VC. Other VOCs were detected in the monitoring wells below the MSCs. Decreases in contaminant concentrations in select wells over time (from 1993) were noted and was concluded to be evidence of natural attenuation processes (e.g., biological degradation, dilution, and dispersion).
- For groundwater, HSI concluded that demonstration of attainment of the SSS for groundwater and potential migration to indoor air was achieved in accordance with 25 Pa Code §250.404 (pertaining to pathway elimination) and §250.406 (compliance with surface water quality requirements). However, it would be necessary to demonstrate that the diffuse groundwater discharge from the facility to the Schuylkill River would not violate PADEP's in-stream criteria (25 Pa Code §93 and 25 Pa Code §16). In addition, it was noted that a deed notice (i.e., Declaration of Environmental Restriction) must be developed restricting the property to non-residential use and prohibiting the use of groundwater derived on the property for drinking water or commercial agricultural purposes to comply with the SSS.
- The results for the ecological screening indicated that the facility property contained no exceptional value wetlands, no habitats of concern, and no species of concern. The PNDI query confirmed that there were no known occurrences of species of special concern within the project area.

On March 19, 2002, email correspondence between PADEP legal and environmental departments indicated that PADEP does not execute Buyer/Seller Agreements when the site has not been adequately characterized, thus preventing selection of an Act 2 standard, a timeline to attain the standard, and the achievement of the standard. PADEP believed there were substantial data gaps remaining with respect to the characterization of groundwater. PADEP makes reference to 15 AOCs identified in the Site Characterization Report, but does not specify the locations of the AOCs (Note: the AOCs were not identified in the report). The contaminants of concern in the shallow, intermediate, and deep aquifers were listed as primarily benzene, chloroethane, 1,1-DCA, toluene, 1,1,1-TCA, TCE, and vinyl chloride. The shallow aquifer flows to the northwest, while the intermediate and deep aquifers flow to the southwest.

Several data gaps were identified by PADEP with respect to the Site Characterization Report:

- Insufficient characterization of the groundwater quality at the point of compliance in the shallow aquifer
- Fate and transport modeling was needed to characterize offsite migration of contaminated groundwater in the shallow and deep aquifers
- Additional quarterly monitoring was needed
- Receptors that were identified are (a) the Schuylkill River, (b) quarry to the south/southwest, and (c) industrial well 1,400 feet southwest of property. Both the quarry and the industrial wells were pumping. Not enough information was presented to demonstrate pathway elimination for these potential receptors.
- No groundwater information was presented for Area 7, the western parcel of the site occupied by a landscaping company
- Deed notice restricting the use of groundwater at the site and submission of a long term care plan or post-remediation care plan was needed
- All administrative Act 2 submissions were needed

COA (2002): On April 24, 2002, a COA (Buyer-Seller Agreement) was entered between PADEP, Spray Products ("Seller"), and ORB Industries, Inc., Bastian Enterprises, LLC, ORB Acquisition Group, Inc. (collectively, "Buyer"). (The buyer bought the facility on December 27, 2001).

- The COA created a $400,000 escrow account after the closing for the assessment and remediation of the property to demonstrate attainment with the SSS for groundwater and SHS for soils.
- It noted that since 1996, the western portion of the property had been leased to a landscaping company that stored equipment, materials, and two diesel ASTs. (Note: As previously discussed, the landscaping company left the west storage area in 2004. They dismantled their diesel ASTs and took them with them. The ASTs were situated on a concrete pad inside of secondary containment. The facility representative is not aware of any releases from the ASTs. Only the concrete pad was present during the March 2012 site visit. There was no evidence of release in the area. The west storage area is currently used by the facility for storage of empty drums and totes, trailers, etc.)
- Surrounding facilities were industrial and commercial in nature; no residential properties were nearby.
- Historical organic solvents used at the property included: 1,1-TCA, acetone, toluene, methylene chloride, MIBK, MEK, propylene glycol monomethyl ether acetate, and xylene.
- Prior to development by Strouse in 1962, the property was a vacant lot owned by the Pennsylvania Railroad. Spray Products purchased the property in 1974.
- In addition to the reports previously mentioned in the 1995 Additional Site Characterization Study, the following reports were referenced: November 2000 Groundwater Monitoring Data, Phase I Environmental Site Assessment (Weston, 2001) (Weston identified 12 wells [8 shallow and 4 deep] on the site map [wells located north of the north building, around the tank farm and flammable storage area]) and Site Investigation Report (HSI, 2002).
- Spray Products intended to obtain an Act 2 release of liability for identified contamination in soil and groundwater. It was proposed that Spray Products would demonstrate attainment of the residential and/or non-residential SHS for identified contamination in soil at the property and a SSS via pathway elimination for identified contamination in groundwater based on non-residential use of the property. Spray Products was required to :
    - Collect two quarters of data from all wells on the property (and potentially AOC 7, the west storage area)
    - Perform fate and transport modeling at the point of compliance for potential downgradient groundwater receptors
    - Submit the results to the PADEP by January 1, 2003
    - Submit a remediation plan to the PADEP
    - Submit Notice of Intent to Remediate (NIR)
    - Submit a Final Report
    - Submit appropriate deed restrictions and record the COA with exhibits with the Recorder of Deeds
    - Notify the PADEP 10 days prior to initiation of the plan
- ORB was obligated to the following:
    - Only use the property for commercial or industrial activity
    - Not allow installation of groundwater production wells
    - Maintain property covenants and deed restrictions.
    - Notify the PADEP of any proposed changes to the exposure patterns
    - Notify the PADEP when property ownership changes
- A Covenant Not to Sue was included which stated that the PADEP would not sue or take administrative action against the Buyer for remediation of the identified contamination.

Addendum to Site Characterization Report (Synergy, 2003): On January 10, 2003, Synergy Environmental Inc. (Synergy – formerly HSI) submitted this report to the PADEP as an addendum to the Site Characterization Report (HSI, 2002) in accordance with the requirements set forth in the COA. The addendum contained the following information:

Groundwater Monitoring Results

- Synergy conducted three additional groundwater sampling events from July to November 2002, concluding that the concentration of compounds in groundwater was inherently variable.
- 2-Hexanone was detected in groundwater for the first time subsequent to the previous report and was

recommended to be added to the list of compounds identified in the release of liability for groundwater.

- Synergy indicated that the upper and lower aquifer systems were interconnected and that there was a downward component of groundwater flow. They indicated uncertainty concerning the historical distinction between the intermediate and deep aquifers.

Fate and Transport

- A fate and transport evaluation was performed using the *Quick Domenico* model.
- None of the modeled compounds exceeded the PADEP residential MSCs at the point of compliance (i.e., the western-most extent of the Spray Products property).
- The Ivory Rock Quarry was determined to not be a likely receptor because they are no longer dewatering the pit (turned off in 2002) and based on the *Quick Domenico* model results.
- There were 10 wells within a 0.5 mile radius of the facility (according to PaGWIS accessed in 2002). Most wells were upgradient, were across the Schuylkill River, or were abandoned. Only one well was active downgradient of the facility: the PF Laumer Bros. industrial well located 1,400 feet southwest of the facility on Delaware Valley Concrete (DVC) property. DVC was made aware of potential groundwater contamination issues. DVC had two production wells; 1) 330 feet deep, pumped at 35 gallons per minute during season, and 2) 600 feet deep. The two production wells had to be drilled deep to avoid area-wide groundwater contamination stemming from a nearby steel production facility along Conshohocken Road. (Note: As of March 2012, Spray Products has not done any offsite sampling of private wells and has no knowledge of the use, production, and discharge of water from DVC's wells.)
- The Schuylkill River located downgradient from the facility was determined to be a potential receptor, but modeling results using *SWLOAD* and *PENTOXSD* indicated that concentrations of TCE and VC entering the Schuylkill River would not result in exceedances of the surface water criteria.

Remedial Plan

- Soil: Soil sample results demonstrated that all compounds were present below the PADEP residential direct contact MSCs, except for 1,1-DCE, which exceeded in one sample. The facility indicated that the following compounds should be included in the release of liability for soil:
  - *Residential SHS for Soil (direct contact)*: acetone, benzene, carbon disulfide, chlorobenzene, chloroethane, 1,1-DCA, 1,2-DCA, cis-l,2–DCE, 1,2-DCB, 1,3-DCB, 1,4-DCB, dichlorodifluoromethane (Freon-12), ethylbenzene, methylene chloride, MIBK, PCE, toluene, 1,1,1-TCA, TCE, trichlorofluoromethane (Freon-11), VC, and xylenes (total)
  - *Non-Residential SHS for Soil (direct contact)*: 1,1–DCE
- Groundwater: Demonstration of attainment of the SSS for groundwater via pathway elimination was met. No potable water sources were identified, only one active industrial well was identified downgradient of the facility, and surrounding properties received water from the PSWC. The facility indicated that the following compounds should be included in the release of liability for groundwater:
  - *SHS for Groundwater*: acetone, 2-butanone, carbon disulfide, chlorobenzene, chloroform, chloromethane 1,2-DCB, 1,3-DCB, 1,4-DCB, dichlorodifluoromethane (Freon-12), 1,2-dichloropropane, ethylbenzene, MIBK, trichlorofluoromethane (Freon-11), and xylenes (total)
  - *SSS for Groundwater*: benzene, chloroethane, 1,1-DCA, 1,2-DCA, 1,1-DCE, cis-l,2-DCE, trans-1,2-DCE, 2-hexanone, methylene chloride, MTBE, PCE, toluene, 1,1,1-TCA, TCE, and VC
- Vapor Intrusion: Fate and transport modeling of the contaminated groundwater indicated that none of the regulated compounds detected in the on-site groundwater exceeded the residential MSC at the downgradient property boundary; thus no offsite inhalation pathways were likely to exist. The facility buildings are constructed as concrete slab-on-grade structures and potential preferential pathways for vapor intrusion were present in association with the sewer and distribution lines running underneath and between the buildings. However, the indoor air exposure pathway was not further evaluated because the facility already has elevated levels of VOCs due to daily operations, which are likely managed under OSHA regulations.

Post-Remediation Care Plan and Compliance Schedule

This plan will rely on institutional controls to maintain the selected standards. This will consist solely of an environmental notice placed on the property deed. No engineering controls will be implemented. Quarterly monitoring, mitigation, and documentation of financial ability to implement any remedies are not required. No proposed measures

will be taken to correct nonattainment as nonattainment was not expected to occur since future use of the site would remain as non-residential.

On April 17, 2003, the PADEP responded to the Addendum noting that they did not accept the initial site characterization report or the addendum. Once the characterization of the site was completed and approved by the PADEP, formal submissions for the Act 2 administrative process could begin. In the interim, the PADEP required the following information:

- Detailed information regarding the geologic formation and role of the structure on the migration of the groundwater plume
- Determination of the groundwater gradient to understand the transport of contaminants of concern (COC)
- Detailed information of the sequential degradation of the COCs
- Compilation of the historical information relevant to the characterization of the property
- Groundwater analytical results for wells 3, 12, and 14
- Installation of more wells to delineate the full horizontal and vertical extent of the groundwater plume
- Detailed receptor survey identifying all potential pathways of concern downgradient and side-gradient of the property
- Quarterly groundwater sampling and monitoring of all wells for the identified parameters
- Modeling of groundwater flow from shallow aquifer to intermediate/deep aquifers. The COCs need to meet the SHSs at all receptors and the role the receptors have on influencing plume migration should be identified. The model should be able to demonstrate plume stability/movement, center of plume calculations, source areas and natural attenuation scenarios.
- Discussion of current conditions and operations of the property including any new or ongoing environmental impacts

Act 2 Investigation (Gilmore, 2005): On March 7, 2005, Gilmore & Associates, Inc. (Gilmore) sent Plymouth Township a response to their letter regarding the NIR noting that there were no current plans for the reuse of the facility and that the current commercial activities would continue in the future.

In June 2005, Mid-Atlantic Geosciences, LLC conducted downhole geophysical logging and televiewer surveys of eleven monitoring wells. Fractures were described and ranked, and other geophysical testing completed. Geology was described as interbedded sandstone and shale layers of the Stockton Formation.

On August 30, 2005, Gilmore sent PADEP the first quarterly groundwater monitoring report, in accordance with the October 14, 2004 Draft Work Plan that was approved by PADEP on October 19, 2004. It noted that in May 2005, four additional permanent wells (MW-15DD, MW-16DD, MW-17DD, and MW-18DDD) were installed to aid in the horizontal and vertical characterization of groundwater contaminants. All 22 monitoring wells were sampled for VOCs, dissolved metals, chloride, manganese, methane, ethane, ethane, and sulfate. First quarter results indicated the presence of VOCs above the PADEP residential and non-residential MSCs in groundwater beneath the facility including benzene, chloroethane, 1,1-DCA, 1,2-DCE, methylene chloride, PCE, toluene, 1,1,1-TCA, TCE, and VC. The greatest number of compounds and the highest concentrations were detected in the MW-4 well pair (MW-4S/4D). Low levels of TCE and 1,1,-DCA were detected in the shallow aquifer monitoring wells located on the east property boundary (apparent upgradient direction).

During the 2005 sampling event, monitoring wells in the shallow aquifer with VOCs above the PADEP MSCs included:

- MW-3S: TCE, 9.6 ug/L
- MW-4S: benzene, 91.2 ug/L; chloroethane, 3,280 ug/L; 1,1-DCA, 27.1 ug/L; methylene chloride, 11.6 ug/L
- MW-5S: PCE, 10.5 ug/L
- MW-7S: PCE, 22.4 ug/L
- MW-6S: 1,1-DCA, 28.5 ug/L
- MW-8S: chloroethane, 1,490 ug/L
- MW-12S: 1,1-DCA, 166 ug/L; 1,1,1-TCA, 1,200 ug/L
- MW-13S: benzene, 119 ug/L

Medium-depth monitoring wells in the intermediate fractured bedrock aquifer with VOCs above the PADEP MSCs included:

- MW-4D: benzene, 163 ug/L; chloroethane, 1,870 ug/L, 1,1-DCA, 372 ug/L; 1,1-DCE, 120 ug/L; methylene chloride, 47.7 ug/L; PCE, 47.9 ug/L; toluene, 3,110 ug/L; 1,1,1-TCA, 402 ug/L; TCE, 103 ug/L
- MW-16DD: 1,1-DCA, 105 ug/L
- MW-10D: 1,1-DCE, 13.7 ug/L; TCE, 126 ug/L, VC, 2.4 ug/L

Monitoring wells in the deeper fractured bedrock aquifer with VOCs above the PADEP MSCs included:

- MW-17DD: 1,1-DCE, 22.3 ug/L, TCE, 70 ug/L
- MW-10DD: 1,1-DCE, 109 ug/L, methylene chloride, 21.3 ug/L
- MW-18DDD: 1,1-DCE, 20.3 ug/L, TCE 187 ug/L

Groundwater flow direction was from the east to west in the shallow wells. Groundwater flow directions in the intermediate and deep wells were from northeast to southwest. Depths to groundwater ranged from 1 to 9 feet bgs in the shallow wells and 15 to 27 feet bgs in the deeper wells. The NIR was published on February 7, 2005. The second quarterly event was scheduled for September 2005.

As stated by the facility representative in 2012, the Act 2 investigation has been placed on hold. No work has been completed at the site since 2005. At that time, the facility and Gilmore met with PADEP to discuss their impending submittal that included additional groundwater contaminant fate and transport modeling. The facility stated that they did not submit this final documentation because the PADEP indicated that they would reject the report based on the model. The facility has recently contracted Stantec to continue with the Act 2 work. Stantec completed an evaluation of the wells. A work plan to re-initiate the work was submitted to the facility for approval; however, the plan (that includes the abandonment of three monitoring wells and installation of three monitoring wells and additional groundwater sampling) will not be implemented until the heptane release that occurred in April 2011 has been closed.

According to the July 20, 2012 facility response to comments, Stantec has reviewed the investigation reports prepared by HSI dated February 2002 and January 2003 and a Remedial Investigation Report prepared by Gilmore dated February 2007. Stantec noted that the prior consultants did not consider the soil-to-groundwater MSCs in their evaluation of soils. The facility is planning to move forward with obtaining a release of liability for the site under Act 2 and will be reviewing cleanup standards and exposure pathways for historic soil impacts, as appropriate.

Heptane Spill (2011): On April 26, 2011, the PADEP conducted a spill investigation after the facility discovered on April 25, 2011 (April 22, 2011) that an employee failed to close an opened valve on the heptane AST (AST 024A). Approximately 4,000 gallons were released into the south building and spilled outside onto the concrete-covered portion of the rail spur that had cracks. Approximately 1,000 gallons were recovered by pumping an underground scale inside of the south building. Pits were dug outside of the building along and within the railroad spur to recover any material that had seeped into the ground. At the time of the investigation, 500 gallons of material were removed from the pits, 60 percent of which was estimated to be groundwater. Two-inch diameter boreholes were drilled through the concrete in the area surrounding the rail spur to detect odors of heptanes. PADEP inspectors walked the extent of Diamond Run (the nearest creek) to the Schuylkill River and there did not appear any spilled material in the stream.
On April 29, 2011, PADEP issued a NOV for violations of the Clean Streams Law and for failure to report the spill in a timely manner. The PADEP requested the facility submit an incident report within 15 days and include an assessment of contamination, estimated release quantities, an assessment of any contamination, estimated quantities of recovered materials, actions taken to prevent similar occurrences, and actions to amend the PPC plan to ensure proper spill response and notification.

On May 3, 2011, soil samples were collected at 11 soil borings along the rail spur and asphalt work area. Samples were collected from 1 to7.5 feet. Heptane concentrations ranged from non-detect to 1,100 mg/kg.

On May 9, 2011, the facility supplied the PADEP with background information on the spill and the initial response efforts to contain and remediate the release. This letter was prepared in response to the recommendation for a follow-up investigation of the spill area per a discussion between the PADEP and Spray Products.

During the March 2012 site visit, three excavation areas were observed within the rail spur. Six 55-gallon drums containing heptane and groundwater were stored on a pallet within the rail spur. In addition, seven 55-gallon drums of heptane-impacted soil and aggregate from the initial excavations were also stored on pallets in the western storage area until the release is closed. The facility representative stated that he was given permission from the PADEP to spread the soil onsite; however, this was not done as of the time of the March 2012 site visit.

Heptane Spill Remediation Plan (2012): On March 27, 2012, Stantec prepared this confirmation sampling plan to address the above-referenced spill incident. Upon approval from PADEP, Stantec proposed to advance soil borings to depths ranging from four to eight feet bgs using direct-push methods. The borings would be drilled adjacent to previous test locations where the highest concentrations of heptane were detected (SB-2, SB-4, SB-5, SB-6, and SB-9). Soil samples selected for laboratory analysis would be collected based on field screening evidence. The two sample intervals from each borehole exhibiting the highest VOC readings will be submitted for analysis of VOCs. If no PID readings are detected, samples will be obtained from the same intervals as were previously collected. A summary report will document the field activities and findings from the investigation. The findings from this confirmatory sampling program may serve as documentation that remediation of the spill area is complete and will be incorporated into the planned Act 2 closure for the site.

On April 9, 2012, PADEP approved the proposed sampling plan via email and requested additional sampling locations downgradient from SB-5 and upgradient of SB-9 to delineate the lateral extent of the contamination. The additional sampling was completed in May 2012, and a report of findings is in preparation.

Diesel Spill (2011): On June 1, 2011, a PADEP Incident Notification form was completed following a 200 gallon diesel spill to soil. A tractor trailer owned by Joint Express, Inc. drove off the edge of the facility's parking lot into a grass-covered area. When the wheels of the truck sank into the soil, the trailer tipped over and one of its fuel tanks was punctured on an inactive light stanchion.

On August 11, 2011, Stantec sent the PADEP a summary of the emergency response services that were conducted following the spill. The truck driver estimated 140 gallons of diesel fuel was released to a grass-covered drainage ditch on the northern boundary of the property. PSC Environmental Services LLC (PSC) provided emergency response services by covering the area of the release with plastic sheeting and placing absorbent booms around the spill area to protect the nearby storm drains from run-off in the event of rainfall.

Excavation activities commenced on June 6, 2011. Fifty-seven (57) tons of impacted soil was excavated and containerized on-site in two 20-yard and one 30-yard lined roll-offs. Excavation limits were guided by field screening the soils for total detectable VOCs using a calibrated PID. PID readings obtained at the excavation limits did not exceed 3.0 ppm. The excavation area was 40 feet by 15 feet. Excavation depths ranged from 1.5 to 12 feet bgs. Three post-excavation soil samples were collected and analyzed for PADEP's Short List of Petroleum Products for diesel fuel. No compounds were detected above PADEP Non-Residential Direct Contact and Non-Residential Soil to Groundwater MSCs. The excavation was backfilled, and the area was restored on June 7, 2011. Stantec sent PADEP figures the showing the area of the diesel release, the extent of the excavation and the sample locations on August 25, 2011.

During the 2012 site visit, the area of the diesel release outside of the asphalt drive/parking lot was covered in large crushed rock.

Groundwater: Residents within a three-mile radius of the facility obtain water from the public water system and two private water systems (NUS, 1989). Aqua PA (formerly PSWC) supplies potable water to the facility and the surrounding areas. Aqua PA obtains water from seven surface sources (Chester, Ridley, Crum, Pickering, Perkiomen, and Neshaminy Creeks, and the Schuylkill River), and a number of groundwater wells (4 are located within a three mile radius). The Schuylkill River intake is located 2.3 miles to the west-northwest and upstream of the facility. Others are outside a three-mile radius and downstream of the facility.

Information obtained from the Pennsylvania Department of Conservation and Natural Resources (DCNR) Groundwater Information System (PaGWIS) accessed on December 6, 2011 provided the following information regarding seven groundwater wells located within a 0.5 mile radius surrounding the facility. No potable water wells are on the Spray

Products property. There is one unused well to the south, which was drilled in 1915 and is 40 feet deep. Four wells are to the west that were drilled between 1900 and 1935 and range from 50 to 210 feet deep. One well is for industrial withdrawal and the remaining three are listed as unused. Four wells are located to the north. Three industrial wells were installed in 1974 and range from 310 to 605 feet deep. The fourth well is for domestic usage, drilled in 1987, and is 198 feet deep.

Based on the Addendum to the Site Characterization Report (Synergy, 2003), DVC has had a facility located downgradient of the facility on the west side of Conshohocken Road since 1988. DVC has two production wells that are pumped seasonally. One well has been there since DVC moved to the property, is 330 feet deep and pumps at rate of about 35 gallons per minute. The pumping rate was not sufficient for the facility's needs, so DVC uses two surge tanks (one 3,000-gallon tank and one 12,000-gallon tank) to provide additional volume, as needed. DVC also drilled a new well to supplement the water supply, but had limited success. According to DVC, the new well was originally drilled to approximately 300 to 400 feet, but was repeatedly shifted and stopped producing water in response to blasting that had occurred at the former Ivy Rock Quarry (currently a clean landfill). The well was re-drilled and deepened several times, and DVC estimated that the new well was approximately 600 feet deep. DVC indicated that the two production wells had to be drilled deep to avoid area-wide groundwater contamination stemming from a nearby steel production facility along Conshohocken Road.

Based on investigations completed at the facility, shallow groundwater occurs in the overburden materials composed of silty clay and silty sand. Groundwater in the shallow aquifer is seasonal and is present due to the semi-confined conditions of the deeper aquifer. Deeper groundwater occurs along bedding planes and in the fractures and joints in the underlying interbedded sandstone, mudstone, and shale of the Stockton Formation. These primary and secondary openings provide moderate to high total effective porosity and permeability. Groundwater flow in the shallow aquifer based on the onsite monitoring well network has been interpreted to be generally toward the northwest toward Diamond Run. Groundwater flow in the deeper fractured bedrock (shale) aquifer has been interpreted to be generally toward the southwest toward the Schuylkill River.

Various site investigations have been completed at the facility since approximately 1989 during which VOC-impacted groundwater has been identified in the unconsolidated and fractured bedrock aquifers underlying the facility. A source area has not been formally identified. However, the impacted groundwater has been attributed to: leakage from the former product storage USTs and associated transfer piping to the buildings; historical discharges by the former owner (Strouse) of process wastewater (bath water) to the former floor drains inside of the buildings and unpermitted discharge of the wastewater to the sewer system via piping that was found to be broken; and potentially the recently closed-in-place UST beneath the south building that may have received process wastewater in the past.

Twenty-two groundwater monitoring wells exist on-site. The most recent groundwater sampling of the 22 wells was completed in June 2005. VOCs detected in groundwater above the PADEP used-aquifer, total dissolved solids less than 2,500 mg/L residential and non-residential MSCs include: benzene; chloroethane; 1,1-DCA; 1,1-DCE; methylene chloride; PCE; toluene; 1,1,1-TCA; TCE, and vinyl chloride. The greatest number of VOCs and the highest concentrations have historically been detected at the MW-4S/4D well pair.

During the 2005 sampling event, monitoring wells in the unconsolidated aquifer with VOCs above the PADEP MSCs included:

- MW-3S: TCE, 9.6 ug/L
- MW-4S: benzene, 91.2 ug/L; chloroethane, 3,280 ug/L; 1,1-DCA, 27.1 ug/L; methylene chloride, 11.6 ug/L
- MW-5S: PCE, 10.5 ug/L
- MW-6S: 1,1-DCA, 28.5 ug/L
- MW-7S: PCE 22.4 ug/L
- MW-8S: chloroethane, 1,490 ug/L
- MW-12S: 1,1-DCA, 166 ug/L; 1,1,1-TCA, 1,200 ug/L
- MW-13S: benzene, 119 ug/L

Groundwater flow in the unconsolidated aquifer was interpreted to be toward the northwest. MW-12S and MW-13S are located near the northern (apparent downgradient) property boundary. Low levels of 1,1-DCA and TCE were detected in wells located on the eastern (apparent upgradient) property boundary.

Medium-depth monitoring wells in the intermediate fractured bedrock aquifer with VOCs above the PADEP MSCs included:

- MW-4D: benzene, 163 ug/L; chloroethane, 1,870 ug/L, 1,1-DCA, 372 ug/L; 1,1-DCE, 120 ug/L; methylene chloride, 47.7 ug/L; PCE, 47.9 ug/L; toluene, 3,110 ug/L; 1,1,1-TCA, 402 ug/L; TCE, 103 ug/L
- MW-16DD: 1,1-DCA, 105 ug/L
- MW-10D: 1,1-DCE, 13.7 ug/L; TCE, 126 ug/L, VC, 2.4 ug/L

Groundwater flow in the intermediate fractured bedrock aquifer was interpreted to be toward the southwest toward the Schuylkill River. MW-16DD is near the north (apparent upgradient) property boundary and MW-10DD is near the south (apparent downgradient) property boundary.

Monitoring wells in the deeper fractured bedrock aquifer with VOCs above the PADEP MSCs included:

- MW-17DD: 1,1-DCE, 22.3 ug/L, TCE, 70 ug/L
- MW-10DD: 1,1-DCE, 109 ug/L, methylene chloride, 21.3 ug/L
- MW-18DDD: 1,1-DCE, 20.3 ug/L, TCE 187 ug/L

Groundwater flow in the deeper fractured bedrock aquifer was interpreted to be toward the southwest toward the Schuylkill River. MW-10DD and MW-18DDD are near the southern (apparent downgradient) property boundary.

There have been no offsite investigations completed to date. The facility intends to obtain a PADEP Land Recycling Program (Act 2) release of liability for the contamination identified in soil and groundwater. However, the PADEP rejected the facility's Site Characterization Report submitted in 2003. In 2005, a Notice of Intent to Remediate was submitted to PADEP. The most recent documentation in the public files is from 2005, which includes additional groundwater monitoring data for the onsite monitoring wells. Per the PADEP Land Recycling Program website (accessed December 30, 2011), a Final Report and associated release of liability has not been issued for the facility. In 2012, Stantec completed an evaluation of the wells and have included in their work plan to the facility provisions to abandon several wells that were deemed beyond repair, and install three new wells. The work plan also provides for initiation of a sampling program. The facility stated that this work is on hold until the heptane release remediation work is completed due to budget restraints.

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"2 as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

X If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):
Four new wells installed in 2005 to aid in the horizontal and vertical delineation of the VOC-impacted groundwater. These wells appear to have been sampled only once (June 2005). One well (MW-18-DDD) is the deepest well onsite in the downgradient direction. This well contains high concentrations of TCE and 1,1-DCE that are migrating offsite. Intermediate depth well MW-10DD has also shown high concentrations of TCE, 1,1-DCE, and VC are present at the downgradient (southern) property boundary. In addition, concentrations of facility-related VOCs in groundwater above the PADEP MSCs have been detected in the shallow monitoring wells located on the northern property boundary. Accordingly, the horizontal and vertical extent of the facility-related groundwater plume has not been defined. (Note: Low levels of 1,1-DCA and TCE have been identified in shallow and intermediate monitoring wells located in the apparent upgradient direction (east and northeast). It unknown if area-wide VOC contamination exists and to what extent, if any, it may have impacted the facility. The nearby quarry, Ivy Rock Quarry, previously indicated that their production wells had to be drilled deep to avoid area-wide groundwater contamination stemming from a nearby steel production facility along Conshohocken Road.)

While the wells have been sampled on numerous occasions, there appears to have been no consistency in the number of wells sampled and the frequency at which they are sampled, and the well have been installed in a phased approach. There are limited data available on which to determine whether the VOC-impacted plume has stabilized.

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[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,5 appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

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[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

____ YE Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **Spray Products Corporation** facility, EPA ID # **PAD042716084**, located at **1323 Conshohocken Road, Norristown, PA 19401**. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater". This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

X IN - More information is needed to make a determination.

Completed by	(signature)	CDraghicu	Date	7/30/13
	(print)	CAMELIA DRAGHICIU		
	(title)	Geologic Specialist		
Supervisor	(signature)	Mohamad Mazid	Date	8/1/2013
	(print)	MOHAMAD MAZID		
	(title)	Env. Eng. Mgr		
	(EPA Region or State)	PADEP/SERO		

Locations where References may be found:

USEPA Region III
Waste and Chemical Mgmt. Division
1650 Arch Street
Philadelphia, PA 19103

PADEP
South East Regional Office
2 E Main Street
Norristown, PA 19401

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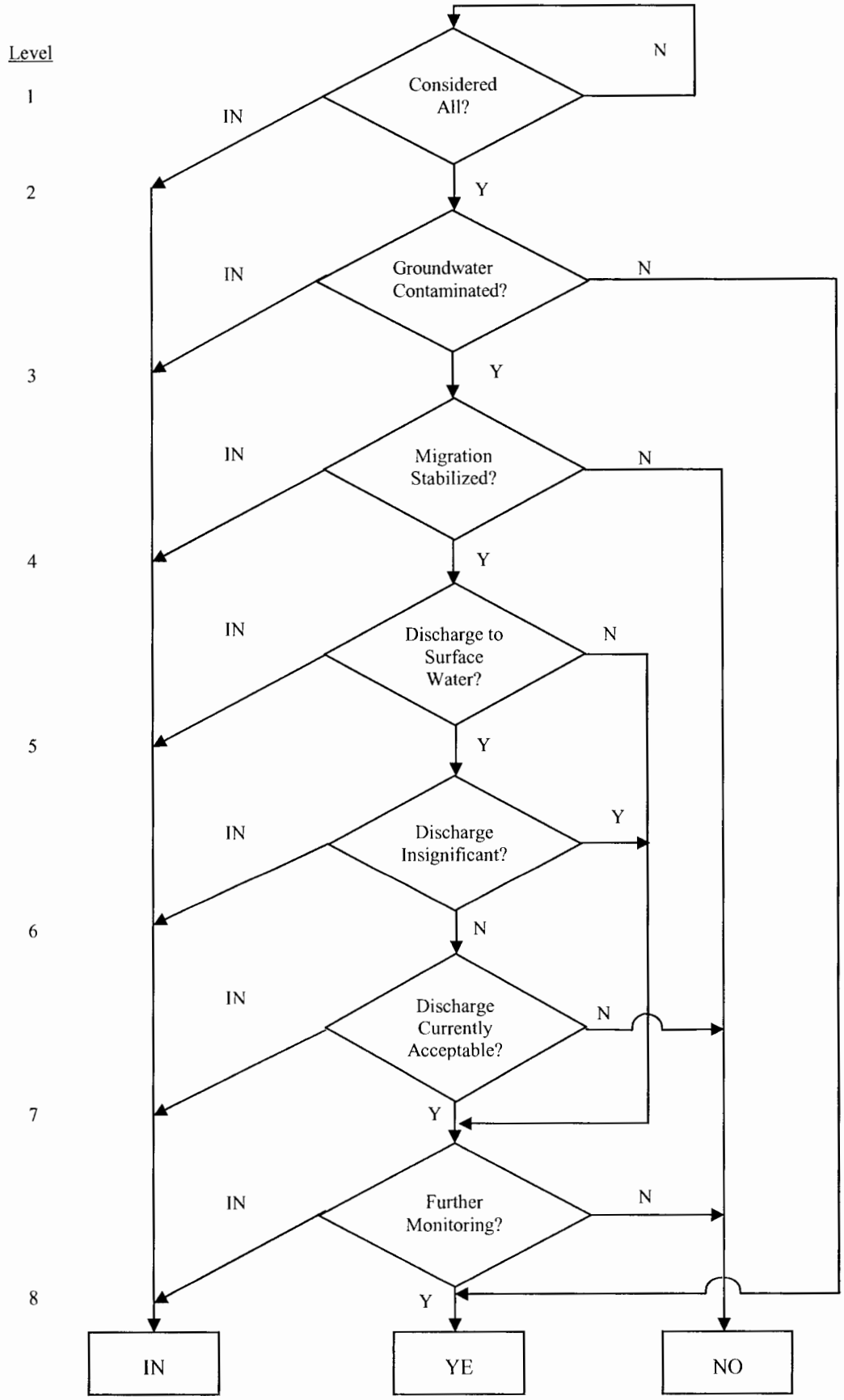
Facility Name:	Spray Products Corporation
EPA ID#	PAD042716084
City/State	Norristown, PA 19401

MIGRATION OF CONTAMINATED GROUNDWATER UNDER CONTROL (CA 750)