DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Code (CA725)
Current Human Exposures Under Control

Facility Name: Former Simmonds Precision Products, Inc.
Facility Address: 155-160 Oakdale Road, Chester, NJ
Facility EPA ID#: NJD096873500

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EIs) are measures being used by the Resource Conservation and Recovery Act (RCRA) Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved) to track changes in the quality of the environment. The two EIs 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 objectives of the RCRA Corrective Action program, the EIs 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 is for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and does 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 determination status codes should remain in the RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

Facility Information

The former Simmonds Precision site is located on a 15.2-acre tract located on Oakdale Road in Chester, New Jersey. The site is bound to the north by the Black River Wildlife Management Area, freshwater wetlands, and the Lamington River (also known as the Black River); to the east by residential properties and undeveloped land; to the west/southwest by Hillside Road, residential properties and a tavern (Bernie's Tavern); and to the south by freshwater wetlands, residential properties, and undeveloped land. Oakdale Road bisects the center of the site. The site is generally flat and topography trends in the direction of the Lamington River. Oakdale Creek is also located along the eastern property boundary (Ref. 5).

From the late 1880s to the mid-1930s, the Delaware, Lackawanna, and Western Railroad (D.L. & W.R.R.) used the northern portion of the site as a depot and locomotive turn around. During this time, benzene was used as a solvent to maintain train engines. The portion of the site north of Oakdale Road was operated by H.S. Cyphers Coal and Lumber during that time. Edmund Sturzenegger Embroidery Manufacturing, which later became a fur factory, operated south of Oakdale Road and east of the original site. In the late 1930s, H.W. Cyphers Coal and Lumber ceased operations. From the mid-1940s to mid-1970s, Co-Operative Industries conducted operations, and Simmonds Precision purchased the site in 1977 (Ref. 3).

During the 1940s to early 1980s when Co-Operative Industries and Simmonds Precisions operated at the site, a variety of products were manufactured, including electrical wiring harnesses and conduit systems for the aerospace industry. Specific products manufactured included custom-wired cables, ignition harnesses, ignition leads, electrical connectors, coaxial cables, and related construction hardware. Operations consisted of braiding, molding, wire cutting, machining, metal finishing, and degreasing. Solvents used for molding, Teflon tech, and degreasing consisted primarily of tetrachloroethene (PCE), but also included acetone, Freon, methyl ethyl ketone, trichlorotrifluoroethene, toluene, and xylene (Ref. 3). Chlorinated solvents were used on the site between 1940 and 1990 (Ref. 4).

As a result of the detection of volatile organic compounds (VOCs) in residential wells at two adjacent properties, the former Sturznegger residence and the former Breitweiser residence (the Quimby property), Simmonds Precision acquired the properties in May and December of 1985, respectively. Hercules concurrently purchased the entire site including the former Sturznegger residence and the Quimby Building. The Quimby Building was owned and operated by Charles and Margaret Breitweiser from 1946 to 1985 as a manufacturing facility for the Quimby Company. The Quimby Company manufactured furniture polish, vibration pads and metal polish. After purchasing the property, Simmonds Precision utilized the Quimby Building as a machine shop and storage location until site operations ceased. The Quimby Building fell into disrepair and was completely demolished and removed in October 1997 (Ref. 1).

These property transfers in the 1980s initially triggered site investigations under the Environmental Cleanup Responsibility Act (ECRA, now known as the Industrial Site Recovery Act or ISRA). An Administrative Consent Order (ACO) between Simmonds Precision and the New Jersey Department of Environmental Protection (NJDEP) was executed on September 9, 1988 (Ref. 1). In December 1990, site operations were taken over by B.F. Goodrich and manufacturing operations ceased (Ref. 4).

References:

1. Remedial Action Report. Prepared by Roux Associates, Inc. Dated December 7, 1998.

2. Conceptual Approach, Remedial Investigation / Remedial Selection, January 2005.

3. Draft Site Sampling and Investigation Plan (SSIP), July 15, 2005.

4. Draft SSIP, Remedial Investigation / Remedial Action Selection, April 2008.

5. Site Sampling and Investigation Report, Former Simmonds Precision Incorporated Facility. Prepared by Arcadis. Dated April 2013.

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 (SWMUs), regulated units (RUs), and areas of concern (AOCs)), 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

Summary of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs):

Hercules initiated preliminary assessment (PA) and remedial investigation (RI) activities in 1989 that identified 12 areas of concern (AOCs) that warranted remedial action. In 2012, additional investigations were performed for soil, groundwater, surface water and sediment. Additionally, AOC boundaries were consolidated and renamed to five AOCs. A site map showing the consolidated and renamed AOCs is provided as Attachment 2; the current AOCs are outlined and labeled in red whereas the former AOCs are outlined and labeled in black.

AOC 1: This AOC is comprised of the area south of Oakdale Road and consists of Building No. 1, the former degreasing operations area, the former PCE aboveground storage tank (AST), the former 6,000-gallon fuel oil underground storage tank (UST), the septic system, the stormwater sewer, the debris disposal area, and former supply wells WW-1 and WW-4. AOC 1 includes the former AOC A which was located south of Building No. 1 and is the site of a former PCE storage tank and degreaser. VOCs were detected in soils during the RI in AOC A. Additional samples collected in 1997 were used to delineate the horizontal and vertical limits of VOC contamination. In August 1997, a cap was installed over areas where soil contamination exceeded NJ soil standards. NJDEP has agreed to grant a no further action determination for this AOC once a deed notice has been recorded with Morris County (Ref. 3). In 2012, 19 soil borings were advanced and 58 groundwater screening locations were installed within AOC 1. The highest PCE soil concentration was 37,000 milligrams per kilogram (mg/kg) and the highest PCE groundwater screening concentration was 230,000 micrograms per liter (µg/L) (Ref. 7).

AOC 2: This AOC encompasses Building No. 2 and the former Quimby Building located north of Building No. 2. AOC 2 also includes the former degreasing operations, a former 500-gallon PCE AST, loading docks A and B associated with Building No. 2, the scrap metal storage area, the western walkway, the cable saw exhaust, and former supply wells WW-2 and WW-5. AOC 2 includes:

- The former manufacturing building, Building No. 2, is located just north of Oakdale Road. Building No. 2 was constructed in 1952 and housed manufacturing and assembly operations for flexible metal hose core and conduits. According to the 2013 Arcadis Site Sampling and Investigation Report (SSIR), the 2004 Remedial Design Work Plan reported that a former 500-gallon AST located just north of Building No. 2 was previously used to store PCE. According to the 2013 SSIR, the AST was decommissioned and removed in 1983 (Ref. 7).
- The former Quimby Building, located north of Building 2, was used as a manufacturing facility for the Quimby Company, Inc. between 1946 and 1985. Simmonds Precision purchased the property in 1985 and used the Quimby Building as a machine shop and for storage until manufacturing activities ended in 1994. This structure currently houses the groundwater extraction, treatment, and discharge system (groundwater extraction system), which was installed in 1998 and is currently operational (Ref. 7).

- The former AOC 1 and AOC B, located in the northwest comer of the site and, consists of the section of the wetland area that is downgradient of a former stormwater catch basin discharge pipe. Metals were detected in sediments at this AOC during the RI. Excavation of contaminated sediments (approximately 168 tons) occurred in 1997 in accordance with a conditionally approved Remedial Action Work Plan Addendum (RA WP) (Ref. 3). No post-excavation sampling was performed before the area was backfilled with clean fill, so additional contamination may remain at depth (Ref. 2). A deed notice will be required if residual contamination exceeds NJ Residential Direct Contact Soil Cleanup Criteria (RDCSCC) (Ref. 3).
- The scrap metal storage area is located adjacent to the northwest corner of the former manufacturing building. Scrap metal from machine operations was historically stored in this area, and stained soil has been observed. Total petroleum hydrocarbons (TPH) and metals were detected in the soil during the RI. In 1997, approximately 15 tons of contaminated soil were excavated from this area. Post-excavation sampling indicated that the area had been remediated to levels below the applicable NJ soil standards (Ref. 2). Hercules has received an unconditional no further action determination for this AOC from NJDEP (Ref. 3).
- The western walkway is also located adjacent to the northwest comer of the former manufacturing building. Drums were historically stored in this area, and stained soils have been observed. TPH, metals, and semi-volatile organic compounds were detected in soil during the RI. Approximately 7 tons of contaminated soil were excavated from this area in 1997. Post-excavation sampling indicated that residual levels were below the applicable NJ soil standards (Ref. 2). Hercules has received an unconditional no further action determination for this AOC from NJDEP (Ref. 3).
- The cable saw exhaust, located adjacent to the south side of the former manufacturing building, is the point of a cable saw exhaust vent which discharged particles generated from the cutting of solder joints. Surface staining was observed in this area, and TPH and metals were detected in the soil during the RI. In 1997, approximately 16 tons of contaminated soil were excavated from this area. Results of post-excavation sampling indicated that residual levels were below applicable NJ soil standards (Ref. 2). Hercules has received an unconditional no further action determination for this AOC from NJDEP (Ref. 3).

In 2012, 18 soil borings were advanced and 63 groundwater screening locations were installed within AOC 2. The highest PCE soil concentration was 440,000 mg/kg from a boring located on the north side of the Quimby Building. PCE contamination is present in groundwater and also as free product within AOC 2; the highest PCE concentration quantified from the product was 880,000,000 µg/L (88%) from a sample collected in the previously excavated area. Two soil samples collected from the previously excavated area contained a maximum of 84,000 and 35,000 mg/kg PCE (Ref. 7).

AOC 3: AOC 3 encompasses Building Nos. 3 and 5, a 550-gallon former ethylene glycol UST, the fire pond, the former drum storage area, the wastewater discharge area, the former lagoon area, the septic system, and a solvent storage area. The former lagoon area is a 4,800-square foot lagoon, constructed in 1972, that was used as a settling pond for the precipitation of metal hydroxide sludges from electroplating operations. Wastes were discharged to the lagoon until 1982, at which time electroplating operations were discontinued at the site. Subsequently, a RCRA closure plan was developed and approved, and closure activities, including excavation, post-excavation sampling, and backfilling, were implemented in 1986. NJDEP accepted clean closure certifications for the lagoon on August 31, 1989 (Ref. 1). AOC 3 also includes the former AOC 2 which is a section of the wetland area that is downgradient of a former surface impoundment discharge pipe. Metals were detected in sediments at this AOC during the RI. In 1997, approximately 1,040 tons of contaminated sediment were excavated from the area; however, post-excavation samples were not collected so additional contamination may remain at depth. Following completion of the excavations, the area was backfilled with clean fill (Ref. 2). A deed notice will be

required if residual contamination exceeds NJ RDCSCC (Ref. 3). In 2012, nine soil borings were advanced and 58 groundwater screening locations were installed within AOC 3. The highest PCE soil concentration was 17 mg/kg and the highest PCE groundwater concentration was 51,000 µg/L (Ref. 7).

AOC 4: AOC 4 includes the areas formerly known as AOC 3 and AOC D as well as Building No. 4, the former leach field, former degreasing operations, loading dock C, a former 1,000-gallon AST, the septic system, and the process waste system. The area formerly known as AOC 3 consists of a section of the wetland area that is along a natural drainage pathway north of the parking lot area and adjacent to the northeast comer of Building No. 4. Sediments are contaminated with metals in this area. Approximately 400 tons of contaminated sediment were excavated from this area in 1997; however, no post-excavation samples were collected (Ref. 2), so additional contamination may remain at depth. A deed notice is required if residual contamination exceeds NJ RDCSCC (Ref. 3). The area formerly known as AOC D was originally comprised of four noncontiguous subareas along the eastern edge of the site, close to the former leach fields. PCE was detected in the soil in this area at concentrations exceeding NJ soil standards during the RI. In 1997, additional soil samples were collected to establish the horizontal and vertical limits of contaminated soil. Results of this sampling confined the remedial scope to a single cap surrounding one subarea. Capping of this subarea was performed in August 1997 (Ref. 2). NJDEP has agreed to grant a no further action determination for this AOC once a Declaration of Environmental Restriction (DER; deed notice) has been recorded with Morris County (Ref. 3). In 2012, one soil boring was advanced and 50 groundwater screening locations were installed within AOC 4. The PCE soil concentration was 11,000 mg/kg and the highest PCE groundwater concentration was 75,000 µg/L located in the previously excavated area (Ref. 7).

AOC 5: AOC 5 encompasses the former leach field, septic system, and parking lot all formerly associated with AOC C and the debris area located east of the former leach pond. AOC C was the location of a former sanitary leach field, which was located in the northeast comer of the site near the fire lane. The leach field was decommissioned in 1988, and VOCs were detected in this area during the RI. In 1998, approximately 300 cubic yards of contaminated soil were excavated from the wetland transition area within this AOC. Hercules conducted pilot testing of soil vapor extraction (SVE) for VOC-contaminated soil in this AOC in 1998, and subsequently removed the system following the pilot test and disposed of the treated soils off site. This technology did not achieve desired soil cleanup levels (Ref. 5), and a remedial technology for contaminated soil in this area will be established following completion of the phased RI (Ref. 6). In addition, a deed notice will be filed for this area to denote contamination exceeding NJ RDCSCC (Ref. 3). The former debris area is an artificially mounded area composed of soil mixed with miscellaneous debris. Solid wastes such as construction demolition debris, scrap metal, and drums containing metal powders were disposed here. Characteristically hazardous wastes (D006 and D007) were discovered in a drum in this area in 1997. Subsequently, drums and surrounding soil (approximately 25 cubic yards) were removed and disposed off site. Sampling performed in 1997 indicated that metals were present in soil at levels exceeding applicable NJ soil standards. Excavation of contaminated soil and sediment, off-site disposal, and post-excavation sampling was proposed for this area (Ref. 4). It is unknown whether these activities occurred. In 2012, 22 soil borings were advanced and 59 groundwater screening locations were installed within AOC 5. The highest PCE soil concentration was 8,900 mg/kg and the highest PCE groundwater concentration was 250,000 µg/L (Ref. 7).

References:

1. Letter from Irene Kropp, NJDEP, to Dan Salvito, Simmonds Precision, re: Department Approval of Lagoon Closure Certifications, NJPDES/DGW Permit No. NJ0002330. Dated August 31, 1989.

2. Remedial Action Report, Former Simmonds Precision Facility. Prepared by Roux Associates, Inc. Dated December 7, 1998.

3. Letter from Gary Lipsius, NJDEP to Carolyn Cooper, Hercules, Inc., re: Simmonds Precision Site, Chester Morris County, Remedial Action Report Dated December 1998. Dated May 25, 1999.

4. Revised Remedial Action Workplan Addendum, Area of Concern C and Debris Area, Former Simmonds Precision Facility. Prepared by Roux Associates, Inc. Dated February 17, 2000.

5. Memorandum from John Prendergast, NJDEP, to Gary Lipsius, NJDEP, re: Revised Remedial Action Work Plan Addendum, Area of Concern C and Debris Area, Hercules (Former Simmonds Precision Facility), Chester, New Jersey, February 17, 2000. Dated April 13, 2000.

6. Letter from John A. Lucey, Roux Associates, Inc., to Barry Tornick, U.S. EPA Region 2, re: Information for USEPA's Updated Assessment of Environmental Indicator Status, Former Simmonds Precision Site. Dated April 5, 2004.

7. Site Sampling and Investigation Report, Former Simmonds Precision Incorporated Facility. Prepared by Arcadis. Dated April 2013.

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)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			VOCs
Air (indoors)[2]		X		
Surface Soil (e.g., <2 ft)	X			VOCs
Surface Water	X			VOCs
Sediment	X			VOCs, metals
Subsurface Soil (e.g., >2 ft)	X			VOCs, metals
Air (Outdoor)		X		

___ 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.

__X__ 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.

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

Rationale:

Investigations have been performed for groundwater, surface soil, subsurface soil, surface water, and sediment at the former Simmonds site. A brief outline of the impacts to each media is presented below. According to the 2013 SSIR, the purpose of the 2013 Site Sampling and Investigation was to comprehensively evaluate the presence of site-related VOCs attributed to historical manufacturing operations to establish the current baseline environmental conditions so that future efforts are targeted toward remedy selection, implementation, and effectiveness verification (Ref. 15).

[1] "Contamination" and "contaminated" describe 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 Department 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.

Groundwater

The geology beneath the former Simmonds facility consists of 40 to 100 feet of unconsolidated glacial sediments (sand and gravel with clay lenses) overlying folded and faulted metamorphic basement rock (gneiss and quartzite) of Precambrian and lower Cambrian age (Ref. 1). Three water-bearing zones have been identified at the site: (1) an upper shallow aquifer hosted by the unconsolidated sediments where the depth to groundwater ranges from one to eight feet below ground surface (bgs); (2) an upper bedrock aquifer where the potentiometric surface is at or above the land surface (i.e., flowing artesian conditions); and (3) a deeper bedrock aquifer encountered at depths of 150 to 200 feet bgs (Refs. 1, 2, 9). The horizontal component of groundwater flow is toward the north in both the shallow and bedrock aquifers where groundwater discharges to the Lamington River and the wetlands of the Black River Wildlife Management Area (Ref. 2). Vertical hydraulic gradients are in the upward direction where the bedrock aquifers recharge the shallow aquifer (Ref. 1). In contrast to the shallow aquifer, groundwater flow in the bedrock aquifers is restricted to zones of secondary porosity created by rock fracture. Accordingly, the yield of bedrock wells is highly variable, and dependent on the number and spacing of the fractures intersecting the screened interval of the well (Ref. 1). Aquifer pumping tests performed at the site have shown that the lower bedrock aquifer lacks significant hydraulic communication with the upper bedrock and shallow aquifers (Refs. 1, 3, 9). However, the fact that wells completed in the deep bedrock aquifer (e.g., RW-3D and RW-7) are impacted with site-related contaminants indicates a complex site hydrogeology with at least some hydraulic connection with the deep bedrock aquifer (Refs. 1, 3, 9).

Groundwater at the site has been classified by NJDEP as Class II-A aquifer (protected for use as a potable water supply). In June 1997, the facility petitioned NJDEP to establish a Classification Exemption Area (CEA) pursuant to the New Jersey Ground Water Quality Criteria (NJ GWQC) [N.J.A.C. 7:9-6] and the NJDEP Technical Requirements for Site Remediation [N.J.A.C. 7:26E(a) 17] (Ref. 5). The purpose of the CEA is to provide public notice that constituent standards for Class II-A groundwater will not be met in a local area for a designated period of time, and that aquifer use will be suspended in the affected area for the term of the CEA. Because groundwater beneath the site flows in a northerly direction and discharges to the Lamington River, the area of groundwater exceeding the NJ GWQC extends from the south end of the site to the river, and vertically to a depth of 200 feet (Ref. 5). A figure of the overburden groundwater flow is included as Attachment 3. NJDEP has indicated to Hercules that it will not approve a CEA for the site until groundwater delineation is complete (Ref. 10).

Chlorinated VOCs have been detected in groundwater beneath the facility at concentrations exceeding NJ GWQC. In general, monitoring wells in the western portion of the facility have consistently shown the highest concentration of organic contaminants. The most recent VOC groundwater monitoring data available during the EI file review for the former Simmonds facility was collected during the 2012 site-wide sampling event (Ref. 15). Two sampling events took place in 2012 from January through March and September through August. Based on these results, PCE, trichloroethene (TCE), vinyl chloride, and cis-1,2-dichloroethene (DCE) are the most consistently detected VOCs above applicable NJ GWQC, but other chlorinated solvents (e.g., chloroform, 1,1-DCE, 1,1-dichloroethane [DCA], and others) were detected sporadically above NJ GWQC site wide. The 2013 SSIR included results from sampling performed from 2009 through 2012 and analysis of 550 groundwater screening samples, 31 groundwater samples from packer tests, 118 groundwater monitoring well samples, and 40 groundwater monitoring well samples via passive diffusion bags (PDBs) (Ref. 15).

Table 1 below provides the highest concentration of constituents detected above regulatory values in temporary groundwater screening samples collected from 2009 through 2011. The highest concentration of PCE detected in temporary groundwater screening samples was 250,000 µg/L in AOC 5 and the highest concentration of TCE was 29,000 µg/L in AOC 1. A figure showing the temporary groundwater screening locations is included as Attachment 4.

Table 1: Concentration of Constituents in the Overburden (Upper Shallow) Aquifer Above the PQL or NJ GWQC Detected in Temporary Groundwater Screening Samples

Location	Depth (ft bgs)	AOC	Constituent	Date	Highest Detected Concentration (µg/L)	Higher of PQL or GWQC (µg/L)
A-23	6-8	AOC 1	1,1,1-TCA	7/15/2009	140 J	30
A-23	6-8	AOC 1	1,1,2,2-PCA	7/15/2009	110 J	1
A-11	16-18	AOC 1	1,1-DCA	8/10/2009	520	50
A-23	6-8	AOC 1	1,1-DCE	7/15/2009	460	1
B-36	5-7	AOC 2	1,2-Dichloropropane	8/4/2009	1.8 J	1
A-31	8-10	AOC 1	Benzene	7/16/2009	51	1
A-11	16-18	AOC 1	Bromomethane	8/10/2009	660	10
A-31	8-10	AOC 1	Chlorobenzene	7/16/2009	790	50
A-30	4-5	AOC 1	Cis-1,2-DCE	7/13/2009	41,000	70
E-44	4-8	AOC 5	Methylene Chloride	6/27/2011	60 JB	3
E-33	8-12	AOC 5	PCE	8/18/2011	250,000 BD	1
A-30	4-5	AOC 1	Trans-1,2-DCE	7/13/2009	290 J	100
A-41	9-11	AOC 1	TCE	7/21/2009	29,000 D	1
A-30	4-5	AOC 1	Vinyl Chloride	7/13/2009	3,200	
B-52	16-19	AOC 2	Diethylphthalate	12/20/2010	17,000 TBJN	6,000

D – Compound quantitated using a secondary dilution.
J – Result is less than the Reporting Limit but greater than or equal to the Maximum Detection Limit and the concentration is an approximate value.
T – Result is a tentatively identified compound (TIC) and an estimated value.
B – Analyte was also detected in the associated method blank.
N – This flag indicates the presumptive evidence of a compound.
PQL – Practical Quantitation Limit
GWQC – NJ Ground Water Quality Criteria

Table 2 below provides the highest concentration of constituents detected above regulatory values during groundwater packer tests performed in 2009-2011. Packer tests were performed to evaluate the distribution of site-related constituents in water-bearing intervals in the bedrock borehole prior to completing the installation of bedrock monitoring wells. The highest concentration of PCE (210,000 µg/L) was detected in borehole BB-4, 219-253 feet below ground surface (bgs) in AOC 2. TCE was detected in CB-2 at 217-245 feet bgs at 2,900 µg/L. A figure showing groundwater packer test locations is included as Attachment 5.

Table 2: Summary of Groundwater Packer Test Concentrations Above the PQL or NJ GWQC in the Bedrock Aquifer

Location	Depth (ft bgs)	AOC	Constituent	Date	Highest Detected Concentration (µg/L)	Higher of PQL or GWQC (µg/L)
EB-2	53-73	AOC 5	1,1,1,2-PCA	7/13/2011	1.2	1
BB-4	219-253	AOC 2	PCE	4/14/2010	210,000	1
CB-2	217-245	AOC 3	TCE	4/19/2010	2,900	1
CB-2	217-245	AOC 3	Cis-1,2-DCE	4/19/2010	210 J	70

J – Result is less than the Reporting Limit but greater than or equal to the Maximum Detection Limit and the concentration is an approximate value.
PQL – Practical Quantitation Limit
GWQC – NJ Ground Water Quality Criteria

The highest concentration for constituents detected above the Practical Quantitation Limit (PQL) or NJ GWQC in monitoring wells for the upper shallow aquifer during the 2012 sampling events are provided below in Table 3. The highest concentration of PCE (29,000 µg/L) was detected in AOC 2 at PW-1, 11 feet bgs. The highest concentration of TCE (5,800 µg/L) above regulatory values was detected in AOC 1 at MW-1, 14.5 feet bgs. A figure showing the shallow aquifer groundwater monitoring well locations is included as Attachment 5.

Table 3: Concentration of Groundwater Constituents Above the PQL or NJ GWQC in Monitoring Wells for the Upper Shallow Aquifer

Location	Depth (ft bgs)	AOC	Constituent	Date	Highest Detected Concentration (µg/L)	Higher of PQL or GWQC (µg/L)
MW-12	11.5	AOC 4	1,1,1,2-PCA	1/6/2012	1.5	1
MW-14	13.5	AOC 1	1,1-DCE	8/28/2012	50	1
MW-14	13.5	AOC 1	1,1-DCA	8/28/2012	80	50
MW-1	14.5	AOC 1	Cis-1,2-DCE	8/21/2012	2,100	70
MW-1	14.5	AOC 1	PCE	8/21/2012	39,000	1
MW-1	14.5	AOC 1	TCE	8/21/2012	5,800	1

PQL – Practical Quantitation Limit
GWQC – NJ Ground Water Quality Criteria

The highest concentration for constituents detected above the PQL or NJDEP GWQC in monitoring wells for the bedrock aquifer during the 2012 sampling events are provided below in Table 4. The highest concentration of PCE (140,000 µg/L) was detected in AOC 2 at BB-4, 235 feet bgs. The highest concentration of TCE (4,900 µg/L) above regulatory values was detected in AOC 2 at RW-3D, 142.5 feet bgs. A figure showing the bedrock aquifer groundwater monitoring well locations is included as Attachment 5.

Table 4: Concentration of Groundwater Constituents Above the PQL or NJ GWQC in Monitoring Wells for the Bedrock Aquifer

Location	Depth (ft bgs)	AOC	Constituent	Date	Highest Detected Concentration (µg/L)	Higher of PQL or GWQC (µg/L)
BB-4	219 - 235	AOC 2	PCE	4/14/2010	210,000	1
RW-3D	142.5	AOC 2	TCE	1/19/2012	4,900	1
CB-2	242 - 247	AOC 3	Cis-1,2-DCE	9/20/2012	6,000	70
CB-1	51.5	AOC 3	1,1-DCE	1/11/2012	11	1
CB-2	222 - 227	AOC 3	Chloroform	8/24/2012	330 J	70

J – Result is less than the Reporting Limit but greater than or equal to the Maximum Detection Limit and the concentration is an approximate value.
PQL – Practical Quantitation Limit
GWQC – NJ Ground Water Quality Criteria

Inorganic contaminants, while of secondary concern at the former Simmonds facility, have been detected at concentrations exceeding NJ GWQC. The most recent inorganic groundwater monitoring data available from the former Simmonds facility during the EI file review was collected during the March 1997 sampling event (Ref. 5); in addition, limited data was also available from the March 2000 sampling event (Ref. 8). Groundwater monitoring for inorganics at the facility had included the sampling and analysis of 23 monitoring wells completed in the shallow unconsolidated aquifer, 5 bedrock monitoring wells, 2 piezometers, and 2 former extraction wells (Ref. 9). In general, monitoring wells in the eastern and southeastern portion of the facility contained the highest concentration of inorganic contaminants. The

maximum detected concentration of the three principal inorganic contaminants of concern (COCs) were: arsenic (31 µg/L in well MW-3, GWQC = 3 µg/L); cadmium (18 µg/L in well MW-1, GWQC = 4µg/L); and lead (232 µg/L in well P-3, GWQC = 5µg/L).

In addition, several well searches and associated sampling of private groundwater supply wells have been performed for residences within a 0.5-mile radius of the site; the most recent sampling event occurred in 2012 and is summarized in response to Question No. 4.

In 1997, Roux installed a Groundwater Recovery System (GWRS) as part of the remedial action for groundwater. The GWRS consists of six overburden pumping wells (PW-3, PW-4, PW-5, PW-6, PW-7 and MW-El) and two bedrock pumping wells (RW-2A and RW-3). The total combined flow from the overburden and bedrock wells is approximately 20 gallons per minute. The effluent from the GWRS is treated by air stripping and activated carbon and discharged to Oakdale Creek in accordance with New Jersey Pollutant Discharge Elimination System (NJPDES) permits (Ref. 12). However, this is not effectively controlling the off-site migration of contaminated groundwater, and additional remedies for groundwater will be considered following implementation of the phased RI (Ref. 14).

Indoor Air

The facility has not been operational since 1994, and most on-site buildings have been demolished. The two current remaining structures on the site include the Former Administration Building (Building No. 1) located in AOC 1 and the former Quimby Building, which now houses the groundwater treatment system and is located in AOC 2 (Ref. 3). The Vapor Intrusion Investigation Technical Memorandum identified five off-site residences located within 100 feet laterally of exceedances of the New Jersey Ground Water Screening Levels (GWSLs) at temporary on-site groundwater screening points installed during phases IA and IB of the 2009-2010 Site Sampling and Investigation Plan (SSIP) implementation (Ref. 13). The VOCs that were detected above applicable GWSLs at these five groundwater screening points included PCE, TCE, vinyl chloride, and cis-1,2-DCE (Ref. 13). As part of the SSIR, in 2012 indoor air samples were collected at the two remaining on-site buildings (the Former Administration Building located at 155 Oakdale Road and the former Quimby Building located at 160 Oakdale Road) and three residences near the Hercules site (135 Oakdale Road, 152 Oakdale Road, and 43 Pleasant Hill Road) (Ref. 15).

Two indoor air samples and one ambient air sample were collected at the Former Administration Building. PCE was detected on the first floor at concentrations of 38 and 27 micrograms per cubic meter ($\mu g/m^3$). Indoor analytical results exceeded the March NJDEP Nonresidential Rapid Action Level (RAL) for PCE of 30 $\mu g/m^3$, indicating an immediate environmental concern (IEC) was present at the Former Administration Building. Although an IEC requires the implementation of an interim mitigation within 14 days, the commercial building was vacant and secured, controlled, and owned by Hercules. Because there was no ongoing regular access to the building, Hercules planned to delay any interim or final mitigation until the building was occupied. However, in January and March 2013, NJDEP updated the Nonresidential RAL for PCE from 30 to 360 $\mu g/m^3$ and the Nonresidential Indoor Air Screening Level (IASL) for PCE from 3 to 47 $\mu g/m^3$. Therefore, the IEC classification and mitigation at 155 Oakdale Road was no longer warranted. However, the NJDEP-approved SSIR states that if occupancy conditions change, Hercules will work with NJDEP to implement confirmatory sampling and/or mitigation controls to ensure that all exposures are within health-based limits (Refs. 15, 16).

The former Quimby Building located at 160 Oakdale Road currently houses the site's operating groundwater extraction system. The building is secured, controlled, and owned by Hercules. The building is occupied by a technician approximately two to three hours per week for ongoing maintenance of the groundwater extraction system. During the indoor air investigation, two sub-slab soil gas samples were collected. An indoor air sample was not collected because the PCE-contaminated groundwater is treated

in the building and PCE is expected in the indoor air due to the groundwater extraction system. PCE was detected in the sub-slab soil at 240 and 1,400 μg/m^3, which exceeded the March 2007 NJDEP Nonresidential Soil Gas Screening Level (SGSL) for PCE of 36 μg/m^3, indicating that a vapor concern was present within the building. However, in January and March 2013, NJDEP updated the Nonresidential Soil Gas Screening Level for PCE from 36 to 2,400 μg/m^3; therefore, the vapor concern classification was no longer warranted. However, the NJDEP-approved SSIR states that if occupancy conditions change, Hercules will work with NJDEP to implement confirmatory sampling and/or mitigation controls to ensure that all exposures are within health-based limits (Refs. 15, 16).

Two indoor air samples (crawl space and first floor) and one ambient air sample were collected at the residential home located at 43 Pleasant Hill Road on March 22, 2012. PCE was detected on the first floor and crawlspace at concentrations of 8 and 7 μg/m^3, respectively. These indoor air analytical results exceeded the March 2007 NJDEP Residential IASL for PCE of 3 μg/m^3, indicating that a vapor concern was present at the 43 Pleasant Hill Road property. Hercules submitted a Vapor Mitigation Plan to NJDEP within 60 days of obtaining the results (Ref. 15).

In January and March 2013, the NJDEP updated the Residential IASL based on the latest USEPA Regional Screening Levels, which increased the PCE IASL from 3 to 9 μg /m^3. As of March 2013, the PCE concentrations previously detected in March 2012 in the 43 Pleasant Hill Road residence were below the NJDEP Residential IASL. The NJDEP-approved SSIR concluded that the vapor concern classification and the need for a mitigation action at 43 Pleasant Road was no longer warranted (Refs. 15, 16).

One indoor air sample (ground floor) and one ambient air sample were collected from the residential home located at 135 Oakdale Road. Methylene chloride, benzene, and ethylbenzene were detected in the ground floor at concentrations of 19, 5, and 6 μg/m^3, respectively. These constituents were determined to be non-site related and detections were attributed to indoor sources that were observed during the building survey; therefore, the results did not meet the criteria of a vapor concern. The NJDEP-approved SSIR concluded that no mitigation is warranted at the time (Refs. 15, 16).

Two indoor air samples (basement and crawlspace) and one ambient air sample were collected from the residential home located at 152 Oakdale Road. Methylene chloride was detected in the basement at concentrations of 5 μg/m^3 in the concrete slab area and 4 μg/m^3 in the earthen crawlspace area. This constituent was determined to be non-site related and detections were attributed to indoor sources that were observed during the building survey; therefore, the results did not meet the criteria of a vapor concern. The NJDEP-approved SSIR concluded that no mitigation was warranted at the time (Refs. 15, 16).

The NJDEP-approved SSIR concluded that the vapor concern classification and/or the need for a mitigation action at 155 Oakdale Road, 160 Oakdale Road, and 43 Pleasant Hill Road were no longer warranted due to an increase in the Nonresidential and Residential IASLs and the Nonresidential Soil Gas Screening Level for PCE. Additionally, the SSIR concluded that non-site-related constituents were detected at 152 and 135 Oakdale Road and can be attributed to indoor sources (Refs. 15, 16).

Surface/Subsurface Soil

Surface soil occurs from 0 to 2 feet bgs. Subsurface soil is defined as soil occurring at depths below 2 feet bgs. Levels of contamination in soil within former AOCs A and D (now part of AOCs 1 and 4, respectively) are below NJ RDCSCC outside of the asphalt caps that were installed in 1997. The former AOC C and the Debris Area (now AOC 5) contain soil contamination above NJ soil standards. Soil contaminants detected in these areas above NJ soil standards include TCE, PCE, polychlorinated

biphenyls (PCBs), benzo(a)pyrene, benzo(a)anthracene, copper, and cadmium. All remaining areas have been issued no further action status.

In 2012, soil sampling was conducted at 74 locations based on the results of the groundwater screening discussed above. Soil samples were collected to identify areas where soils are contributing site-related constituents to groundwater on an ongoing basis. The highest concentration for each constituent above regulatory values in soil above the water table is presented below in Table 5. Although soil sampling results from previous site investigations were compared to the NJDEP Soil Cleanup Criteria (i.e., RDCSCC, Non-Residential Direct Contact Soil Cleanup Criteria [NRDCSCC]), results from the NJDEP-approved 2012 soil sampling were compared to the NJDEP Soil Remediation Standards (i.e., Residential Direct Contact Soil Remediation Standard [RDCSRS], Non-Residential Direct Contact Soil Remediation Standard [NRDCSRS]). The highest concentration for each constituent above regulatory values in soil below the water table is presented below in Table 6. A figure showing the soil boring locations is included as Attachment 4.

Table 5: Concentration of Soil Constituents Above Soil Remediation Standards Located Above the Water Table

Location	Depth (ft bgs)	AOC	Constituent	Date	Highest Detected Concentration (mg/kg)	RDCSRS (mg/kg)	NRDCSRS (mg/kg)
ES-1	0-2	AOC 5	Antimony	12/2/2010	99	31	450
ES-1	0-2	AOC 5	Cadmium	12/2/2010	2,400	78	78
ES-1	0-2	AOC 5	Copper	12/2/2010	160,000	3,100	45,000
ES-1	0-2	AOC 5	Lead	12/2/2010	100,000	400	800
ES-1	0-2	AOC 5	Nickel	12/2/2010	42,000	1,600	23,000
ES-1	0-2	AOC 5	Zinc	12/2/2010	29,000	23,000	110,000

RDCSRS – Residential Direct Contact Soil Remediation Standard
NRDCSRS – Non-Residential Direct Contact Soil Remediation Standard

Table 6: Concentration of Soil Constituents Above Soil Remediation Standards Located Below the Water Table

Location	Depth (ft bgs)	AOC	Constituent	Date	Highest Detected Concentration (mg/kg)	RDCSRS (mg/kg)	NRDCSRS (mg/kg)
B-33	9-12	AOC 2	PCE	8/4/2009	440,000	2	5

RDCSRS – Residential Direct Contact Soil Remediation Standard
NRDCSRS – Non-Residential Direct Contact Soil Remediation Standard

Surface Water/Sediment

Excavations of metals-contaminated sediment occurred in former AOCs 1, 2, and 3 (now AOCs 2, 3, and 4, respectively). Post-excavation sampling was performed in 2010 and 2012 to confirm the effectiveness of the removal action.

The overburden groundwater aquifer generally flows towards and discharges to the Lamington River. It is suspected that a small component of shallow groundwater discharges towards the Oakdale Creek. Oakdale Creek is located on the eastern portion of the site and flows to the north, discharging into the wetlands adjacent to the Lamington River. The Lamington River drains into the Raritan River, approximately 16 miles south of the site. The Raritan River then flows for approximately 25 miles and discharges into the Raritan Bay (Ref. 15). The Black River Wildlife Management Area is located approximately 500 feet north of the site and encompasses a portion of the Lamington River and its

wetlands. Shallow groundwater in this area is most likely impacted due to wastewater that was discharged to the wetlands area behind Building No. 2, and spills and disposals at various areas around the site that have caused contaminants to leach to the groundwater table. From 1988 until site operations ceased, all sanitary wastes generated at the site were trucked to and disposed at a publicly owned treatment works and no wastewaters were discharged to the site (Ref. 4).

In 1997, VOCs exceeding NJ SWQC were detected downgradient of the site in Oakdale Creek and the Lamington River (Ref. 11). VOCs have not been detected upgradient from the site. Contaminated sediment was excavated from former AOCs 1, 2, and 3 (now AOCs 2, 3, and 4, respectively) in 1997, but no post-excavation samples were collected after the final excavations were complete. Levels of PCBs, VOCs, and metals exceeding National Oceanic and Atmospheric Administration (NOAA) sediment guidelines have been detected in sediment within the former AOC C and the Debris Area (now AOC 5).

During a July 2004 sampling event, PCE was detected in downgradient wells MW-10 and MW-21, and in the surface water samples collected from Oakdale Creek. Surface water samples with detections of PCE were collected north of Oakdale Road and there was one non-detect sample collected upstream of Oakdale Road. These detections seem to indicate that there are site-related contaminant discharges occurring at the Wetlands and site surface waters. There were also detections of toluene in samples collected from the Lamington River during the July 2004 sampling event. Samples collected between Pleasant Hill Road and Hillside Road all had detections of toluene (Ref. 11).

In May 2010, surface water and sediment sampling was performed at 11 locations in Oakdale Creek and 9 locations in the Lamington River; see Tables 7 and 8 for a summary of the results exceeding applicable regulatory standards. Nine of the 11 surface water samples in Oakdale Creek contained PCE at concentrations above the New Jersey Fresh Water Surface Water Quality Standards (SWQS) of 0.34 µg/L for human health; all the PCE results for samples in Oakdale Creek were below the aquatic chronic SWQS of 45 µg/L. The maximum PCE level in surface water in Oakdale Creek was 30 µg/L. PCE was detected in several of the sediment samples in Oakdale Creek; however, none of the results exceeded the freshwater lowest effects level (LEL) screening value (Ref. 15).

Oakdale Creek flows north and spreads out into several smaller channels that flow into the Lamington River. These channels enter the Lamington River as it flows adjacent to AOC 4, along a distance of 250 feet or more. The sample locations in the Lamington River include 4 locations upstream of the confluence with Oakdale Creek and 5 locations at or downstream of this confluence (Ref. 15).

None of the samples upstream of the confluence contained PCE in surface water or sediment. All of the samples downstream of the confluence contained PCE in surface water. The concentrations were 1.8 µg/L or less. PCE was detected in one sediment sample in the Lamington River. The result in this sample, SED-14 (3,100 micrograms per kilogram [µg/kg]), exceeded the freshwater LEL screening value of 991 µg/kg (Ref. 15). A figure showing the sediment and surface water sampling locations is included as Attachment 6.

Table 7: Highest Concentration of Constituents Detected Above Regulatory Values in Sediment (May 2010)

Location	Constituent	Date	Highest Concentration Detected (mg/kg)	Fresh Water LEL Sediment Screening Value (mg/kg)	Fresh Water SEL Sediment Screening Value (mg/kg)
SED-08	Aluminum	5/12/2010	15,000	2.55	--
SED-01	Arsenic	5/13/2010	7.7	6	33
SED-01	Cadmium	5/13/2010	7.2	0.6	10
SED-01	Chromium	5/13/2010	29	26	110
SED-01	Copper	5/13/2010	59	16	110
SED-01	Lead	5/13/2010	50	31	250
SED-02	Nickel	5/13/2010	25	16	75
SED-01	Silver	5/13/2010	5.3	0.58	--
SED-01	Zinc	5/13/2010	160	120	820
SED-14	PCE	5/11/2010	3,100 (µg/kg)	990.8 (µg/kg)	--

Table 8: Highest Concentration of Constituents Detected Above Regulatory Values in Surface Water (May 2010)

Location	Constituent	Date	Highest Concentration Detected (µg/L)	Fresh Water Aquatic Acute SW Quality Standards (µg/L)	Fresh Water Aquatic Chronic SW Quality Standards (µg/L)	Fresh Water Human Health SW Quality Standards (µg/L)
SW-06	PCE	5/10/2010	30	--	45	0.34
SW-05 and SW-06	TCE	5/10/2010	1.5	--	47	1
SW-05	Mercury	5/10/2010	0.00014 J (mg/L)	0.0014 (mg/L)	0.00077 (mg/L)	0.00005 (mg/L)

In September and October 2012, surface water and sediment pore water samples were collected from 12 locations in Oakdale Creek, and 14 locations for surface water and 12 locations for sediment pore water in the Lamington River; see Table 9 for a summary of the results exceeding applicable regulatory standards. All 12 surface water samples collected in Oakdale Creek contained PCE at a concentration above its SWQS human health criterion of 0.34 µg/L (Ref. 15). PCE was detected in pore water in all samples collected from Oakdale Creek. The downstream pore water PCE concentrations were 22 µg/L or below, which suggests that groundwater recharge is contributing to PCE concentrations found in Oakdale Creek surface water.

In the Lamington River, two surface water samples were collected upstream of the confluence with Oakdale Creek and 12 samples were collected downstream of the confluence. No PCE was detected in the upstream surface water samples and PCE was detected in 10 of the 12 downstream samples. Nine of these samples were above the SWQS human health criterion of 0.34 µg/L and all these samples were below the aquatic chronic SWQS of 45 µg/L. The highest PCE concentration in surface water was 21 µg/L, which was in sample SW-16S located adjacent to the area where Oakdale Creek flows into the Lamington River.

The only pore water sample in the Lamington River with detectable PCE was SW-PDB13, adjacent to AOC 5 and the most upstream sample in the river during this sampling event. This sample contained 2.3 µg/L of PCE, which is indicative of some contribution of PCE via groundwater recharge in this area. No PCE was detected in surface water at this location.

Surface water at location SW-8S, located in the wetlands in AOC 5, contained 0.59 µg/L of PCE, above the human health criterion but below the aquatic chronic criterion. No PCE was detected in the pore water sample at this location.

Table 9: Highest Concentration of Constituents Detected Above Regulatory Values in Surface Water and Sediment Pore Water (2012)

Media	Location	Constituent	Date	Highest Concentration Detected (µg/L)	Fresh Water Aquatic Acute SWQS (µg/L)	Fresh Water Aquatic Chronic SWQS (µg/L)	Fresh Water Human Health SWQS (µg/L)
Surface Water	SW-4S	PCE	9/26/2012	30	--	45	0.34
Surface Water	SW-4S	TCE	9/26/2012	2.7	--	47	1
Surface Water	SW-8S	Vinyl Chloride	9/26/2012	19	--	930	0.082
Sediment Pore Water	SWPDB-3	PCE	10/4/2012	940 D	--	45	0.34
Sediment Pore Water	SWPDB-1	TCE	10/4/2012	61	--	47	1
Sediment Pore Water	SWPDB-6	Vinyl Chloride	10/3/2012	2.5	--	930	0.082

Outdoor Air

In 1989, outdoor air quality monitoring was conducted in several selected areas of the site, including the areas north of Building No. 2, north of Building No. 3, and north of Building No. 4. The northern perimeter of each building was traversed with an organic vapor meter, and no VOCs were detected in any of the three areas (Ref. 2). Based on the nature and extent of contamination in soil and groundwater, and the fact that the facility has been inactive since 1994, significant migration of volatile emissions and/or contaminated particulates is not expected to be of concern at this site.

Outdoor ambient air sampling was conducted in 2012 to confirm whether outdoor air quality is a pathway of concern. Two grab samples were collected on March 22, 2012, and one continuous 24-hr sample was collected on November 20, 2012. All constituents were below the NJDEP Residential IASLs for VOCs (Ref. 15), which is consistent with the sampling previously performed. For this reason, outdoor air quality will not be considered further in this EI determination.

References:

1. Phase II Hydrogeologic Investigation Work Plan, Volume I, Simmonds Precision, Inc., Chester, New Jersey. Prepared by Roux Associates, Inc. Dated May 7, 1990.

2. Draft Remedial Investigation Report, Simmonds Precision, Inc., Chester, New Jersey. Prepared by Roux Associates, Inc. Dated June 11, 1992.

3. Draft Feasibility Study Report, Simmonds Precision, Inc., Chester, New Jersey. Prepared by Roux Associates Inc. Dated February 9, 1993.

4. Remedial Action Work Plan. Prepared by Roux Associates, Inc. Dated May 12, 1994.

5. Letter from Carolyn L. Cooper, Hercules, to Gary Lipsius, NJDEP, re: Classification Exception Area Submittal, Former Simmonds Precision Facility. Dated June 27, 1997.

6. Letter from Gary Lipsius, NJDEP, to James Bevis, Hercules, Inc., re: Debris Area RAW. Dated October 21, 1999.

7. Revised Remedial Action Workplan Addendum, Area of Concem C and Debris Area, Former Simmonds Precision Facility. Prepared by Roux Associates, Inc. Dated February 17, 2000.

8. March 2000 Quarterly Groundwater Monitoring Report, Former Simmonds Precision Facility, Chester, New Jersey. Prepared by Montgomery Watson. Dated July 28, 2000.

9. Technical Memorandum, Characterization of Site-Wide Groundwater Quality, Hercules Inc., Former Simmonds Precision Facility, Chester, New Jersey. Prepared by Montgomery Watson. Dated December 2000.

10. Letter from John A. Lucey, Roux Associates, Inc., to Barry Tornick, U.S. EPA Region 2, re: Information for USEPA's Updated Assessment of Environmental Indicator Status, Former Simmonds Precision Site. Dated April 5, 2004.

11. Conceptual Approach, Simmonds Precision Site, Chester, New Jersey. Prepared by The Louis Berger Group, Inc. Dated January 2005.

12. Draft Site Sampling and Investigation Plan, Simmonds Precision Site, Chester Township, New Jersey. Prepared by The Louis Berger Group, Inc. Dated April 2008.

13. Vapor Intrusion Investigation Technical Memorandum. Prepared by Arcadis. Dated July 2011, Revised October 2011.

14. RCRA GPRA 2020 Corrective Action Report for Simmonds Precision Incorporated. Data input by Erica Bergman, NJDEP Case Manager. Report run on March 20, 2013.

15. Site Sampling and Investigation Report, Former Simmonds Precision Incorporated Facility. Prepared by Arcadis. Dated April 2013.

16. Letter from Erica Bergman, NJDEP, to John Hoffman, Ashland Incorporated, re: Remedial Investigation Report Approval. Dated July 24, 2013.

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	Trespasser	Recreation	Food[3]
Groundwater	No	No	No	Yes	No	No	No
~~Air (indoor)~~							
Surface Soil (e.g. < 2 ft)	No	No	No	Yes	Yes	No	No
Surface Water	No	No	No	Yes	No	Yes	No
Sediment	No	No	No	Yes	No	Yes	No
Subsurface Soil (e.g., > 2 ft)	No	No	No	Yes	No	No	No
~~Air (outdoors)~~							

Instruction 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. These spaces instead have dashes ("--"). 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).

_X_ 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:

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

The former Simmonds facility ceased operations in 1994, so on-site workers are not a receptor of concern for the purposes of this EI determination. The nearest daycare facility (Little Lambs Christian Nursery School) is located nearly one mile east/southeast of the facility.

Groundwater

Groundwater is not used on site for potable purposes, and trespassers and recreational receptors would not be able to access contaminated site-related groundwater. The most recent well search was conducted in 2012 to assess the potential for residential exposure to site-related contaminated groundwater located downgradient of and cross gradient to the site. Site access was granted at 8 out of 11 residences identified in the well search, and samples of pre-treated water located closest to the impacted well (wherever possible) were collected in December 2011. The samples were analyzed for Target Compound List (TCL) VOCs and results were compared to NJ GWQC. All results were below laboratory method detection limits and less than applicable NJ GWQC (Ref. 3).

It should be noted that one of the residences, located at 154 Oakdale Road, that refused access in the 2012 potable well sampling event had previously reported NJ GWQC exceedances of PCE in 1997 and 1998 (Ref. 2). Concentrations had declined to below NJ GWQC and then below method detection limits in late 1998 and early 1999, but at the request of NJDEP, Hercules installed a point-of-entry treatment (POET) system at the potable well for this residence on February 3, 1999 (Ref. 1). From 1999 through 2008, sampling of this well that was conducted both prior to and after the POET system indicated that no VOCs, including PCE, were detected above the method detection limit (with the exception of acetone in July 2008, which was detected at 5.3 µg/L compared to the NJ GWQC of 6,000 µg/L) (Ref. 2). Therefore, exposure to site-contaminated groundwater is an incomplete pathway for residents.

Remedial workers (considered to be construction workers for the purposes of this EI determination) conducting intrusive cleanup activities have the potential for exposures to contaminated groundwater, so this pathway is being considered potentially complete.

Surface/Subsurface Soil

Surface soil and subsurface soil remain on site in excess of applicable NJ soil criteria. Asphalt caps are present in former AOCs A and D (now AOCs 1 and 4 respectively) to prevent direct contact with contaminated surface soil. As shown in Table 5, all the exceedances of RDCSRS and NRDCSRS in surface soil occur at sampling location ES-1, which was collected on 12/2/2010 from 0-2 feet bgs. As a result, trespassers have the potential for exposure to contaminated surface soil, so this pathway is being considered potentially complete.

Remedial workers (considered to be construction workers for the purposes of this EI determination) conducting intrusive cleanup activities have the potential for exposures to contaminated surface and subsurface soil, so this pathway is being considered potentially complete.

Surface Water/Sediment

Consumption of fish exposed to site-related contaminants in the Oakdale Creek and Lamington River could be a potentially complete pathway for the food receptor, but no fishing has been observed in Oakdale Creek or the Lamington River (Ref. 5). Additionally, NJDEP has established fish advisories for consumption of four species of fish caught in the Lamington River for the general population and high-risk populations including brown trout, smallmouth bass, redbreast sunfish, and American eel (Ref. 4). Therefore, contact with contaminated surface water and sediment is not considered a potentially complete pathway for food receptors.

Remedial workers (considered to be construction workers for the purposes of this EI determination) conducting intrusive cleanup activities and people conducting recreational activities (e.g., boating, swimming, wading) in Oakdale Creek and the Lamington River have the potential for exposures to contaminated surface water and sediment, so these two pathways are being considered potentially complete.

References:

1. Letter from Carolyn J. Cooper, Hercules, to Gary Lipsius, NJDEP, re: Installation of Point of Entry Treatment System – Anderson Residence. Dated February 4, 1999.

2. Letter from Edward D. Meeks, Hercules, to Robert Hayton, NJDEP, re: Annual Groundwater Monitoring – Anderson Potable Well. Dated August 28, 2008.

3. Letter from Bradley D. Pierce, Arcadis, to Erica Bergman, NJDEP, re: Potable Well Sampling Results Letter, Former Simmonds Precision Facility, Chester, New Jersey. Dated March 26, 2012.

4. 2013 Fish Smart, Eat Smart: A Guide to Health Advisories for Eating Fish and Crabs Caught in New Jersey Waters. Prepared by NJDEP. Last accessed at http://www.nj.gov/dep/dsr/fishadvisories/2013-final-fish-advisories.pdf on July 3, 2014.

5. Email from Edward. D. Meeks, Ashland Incorporated, to Sam Abdellatif, USEPA Region 2, re: Simmonds Precision-Chester NJ “CA725”. Dated June 5, 2014.

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?

_X_ If no (exposures cannot 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:

As stated in the response to Question No. 3, remedial workers conducting intrusive cleanup activities have the potential for exposures to contaminated surface/subsurface soil, groundwater, and surface water/sediment. However, Hercules has indicated that they require all construction (i.e., remedial) personnel to be Hazardous Waste Operations and Emergency Response (HAZWOPER) trained and to adhere to the protective measures specified by the Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.120 to control potential exposures within acceptable limits (Refs. 1, 2). Thus, it is not anticipated that remedial workers would have significant exposure to contamination in any site-impacted media during any intrusive remedial activities that may be conducted.

Trespassers may be potentially affected by contaminated surface soils because the perimeter of the facility is not fenced. Antimony, cadmium, copper, lead, nickel and zinc are significantly above the NRDCSRS in sample location ES-1. ES-1 is located in a dense marshy area adjacent to the parking lot along the former septic system line in AOC 5 that ran to the leach field farther east (see Attachment 4; this sampling location is outlined in a red oval). The area is near the former railroad line and according to the facility, sources of contamination observed at ES-1 may be attributable to historical fill used as the rail bed (Ref. 3). The facility has not seen evidence of trespassers in this area (Ref. 3) and exposures are not reasonably expected to be significant given that only one sample location showed surface soil exceedances, and the area would likely be considered undesirable by trespassers given the dense marsh.

Recreators wading or swimming in shallow waters in the Oakdale Creek and Lamington River may be exposed to elevated levels of PCE, TCE, vinyl chloride, and mercury in surface water. Recreators may also be exposed to elevated levels of PCE, aluminum, arsenic, cadmium, chromium, copper, lead, nickel, silver and zinc in sediment. However, according to the facility, Lamington River is narrow

[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.

(approximately 10 feet wide) adjacent to the site and is not conducive for recreational swimming. The bottom of the Lamington River is comprised of soft mud and cannot be walked on with waders. The Lamington River is bordered by dense marsh that is difficult to penetrate and no trails have been observed leading to the water edge. The only apparent access points to the Lamington River are two bridges at the site property boundaries (Hillside Road and Pleasant Hill Road). The heights of the bridges are low and will not allow a canoe or kayak to pass underneath. A small access point does exist adjacent to the Pleasant Hill Bridge; however, the facility has only observed investigation workers use this area to access the Lamington River. Additionally, this small access point would allow a limited distance for any potential boaters or fisher between the shallow bridges (located approximately 2,000 feet apart). The facility has not observed any recreators in the Lamington River (Ref. 2). Additionally, Oakdale Creek is very shallow and often less than one foot in depth. Storm drains feed the Oakdale Creek along Oakdale Road, which ultimately discharges to the Lamington River in a manner similar to a delta. The defined Oakdale Creek channel breaks up after entering the wetlands into several small streamlets that disperse into the wetlands. No creek channel enters the Lamington River that can be accessed by a recreator wading or fishing (Ref. 3). Since recreators are unlikely to be swimming or wading in the Oakdale Creek or Lamington River, significant exposure is not anticipated for these receptors.

References:

1. Letter from John A. Lucey, Roux Associates, Inc., to Barry Tornick, U.S. EPA Region 2, re: Information for USEPA's Updated Assessment of Environmental Indicator Status, Former Simmonds Precision Site. Dated April 5, 2004.

2. Email from Edward. D. Meeks, Ashland Incorporated, to Sam Abdellatif, USEPA Region 2, re: Simmonds Precision-Chester NJ "CA725". Dated June 5, 2014.

3. Email from Edward. D. Meeks, Ashland Incorporated, to Sam Abdellatif, USEPA Region 2, re: Simmonds Precision-Chester NJ "CA725". Dated June 25, 2014.

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 and 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:

This question is not applicable; please see the response to Question No. 4.

References:

6. Check the appropriate RCRAInfo 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):

_X_ 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 Simmonds Precision site, EPA ID# NJD096873500, located at 100 Oakdale Road in Chester, NJ, 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."

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

Completed by: _____ Date:_____
Mary Woodruff
Associate
Booz Allen Hamilton

Reviewed by: _____ Date:_____
Amy Brezin
Associate
Booz Allen Hamilton

Also reviewed by: _____ Date:_____
Sam Abdellatif, RPM
Hazardous Waste Programs Branch
EPA Region 2

Approved by: _____ Date:_____
Adolph Everett, Chief
Hazardous Waste Programs Branch
EPA Region 2

Locations where references may be found:

References reviewed to prepare this EI determination are identified after each response. Reference materials are available at U.S. EPA, Region 2.

Contact telephone and e-mail numbers: Sam Abdellatif
(212) 637-4103
Abdellatif.Sameh@epa.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.

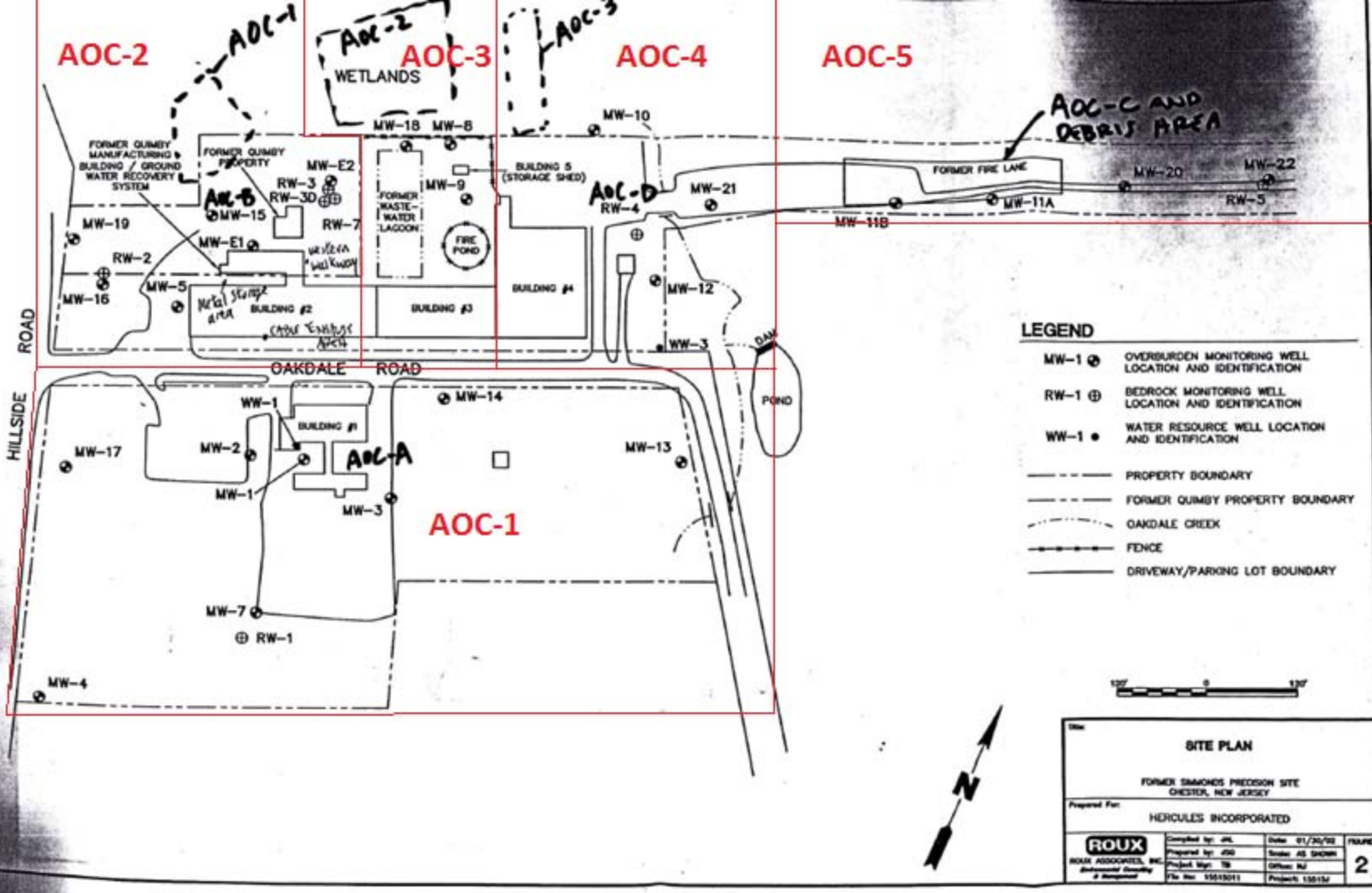
Attachments

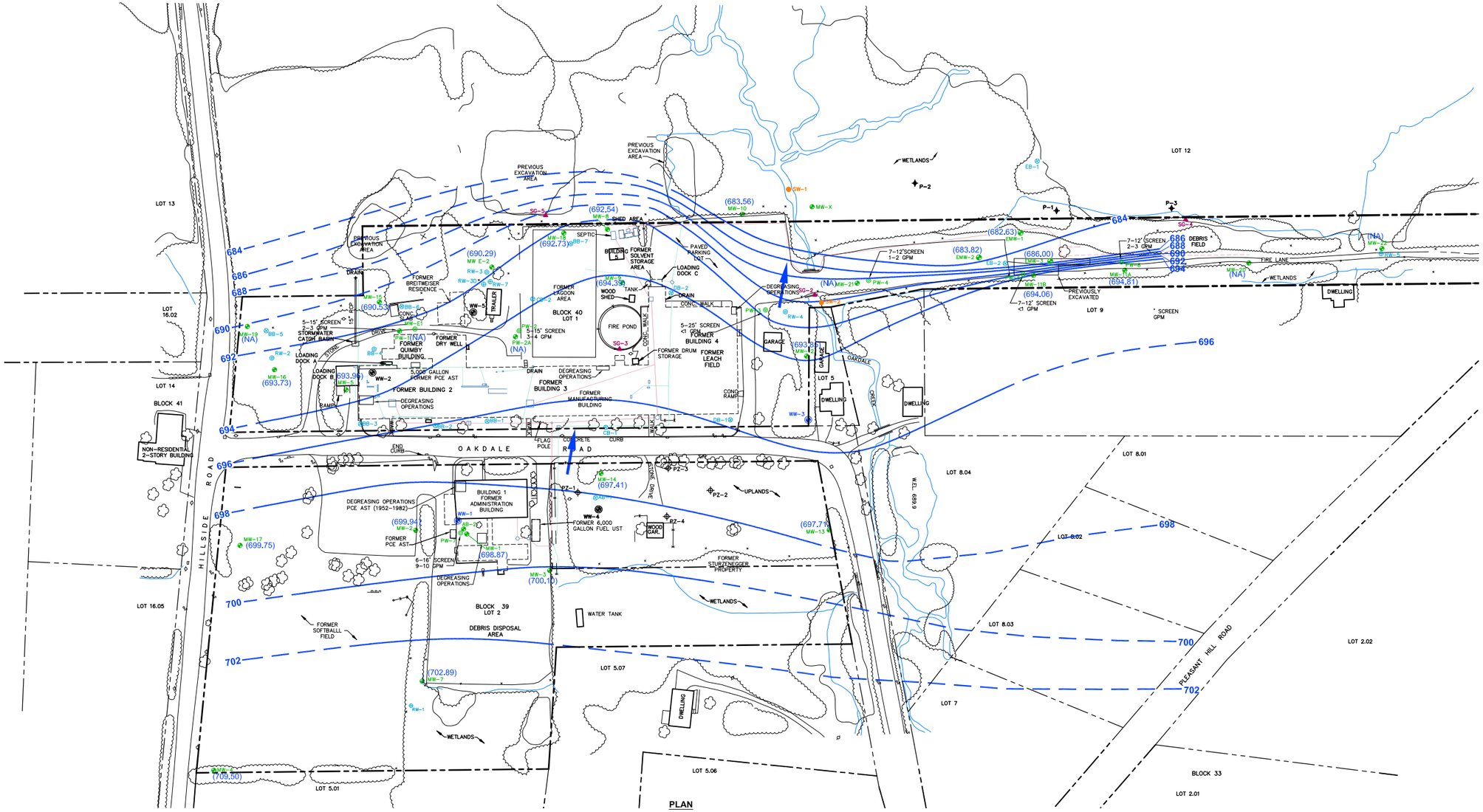
The following attachments have been provided to support this EI determination:

- Attachment 1 – Summary of Media Impacts Table
- Attachment 2 – Map of Areas of Concern at former Simmonds Precision Site
- Attachment 3 – Map of the Overburden Groundwater Flow Direction
- Attachment 4 – Map of Soil Boring and Temporary Groundwater Screening Locations
- Attachment 5 – Map of Shallow and Bedrock Aquifer Monitoring Well Locations
- Attachment 6 – Map of Sediment, Sediment Pore Water, and Surface Water Sampling Locations

Attachment 1: Summary of Media Impacts Table

AOC	GW	AIR (Indoors)	SURF SOIL	SURF WATER	SED	SUB SURF SOIL	AIR (Outdoors)	CORRECTIVE ACTION MEASURE	KEY CONTAMINANTS
AOC 1	Y	N	N	N	N	N	N	• An asphalt cap was installed in 1997	VOCs
AOC 2	Y	N	Y	N	N	Y	N	• Soil and sediment excavation was performed in 1997	VOCs
AOC 3	Y	N	N	N	N	N	N	• UST removal and soil and sediment excavation were performed in 1997 • Former lagoon sediments were removed and stabilized for off-site disposal	VOCs
AOC 4	N	N	N	Y	Y	N	N	• Soil and sediment excavation was performed in 1997 • Wetlands restoration was performed in this area • A groundwater treatment system was installed to treat contaminated groundwater from WW-3	VOCs
AOC 5	Y	N	Y	N	Y	N	N	• Soil excavation and ex situ vapor extraction activities were performed in this area in 1998 • Drums and excavated soil were collected and disposed off site in 1997	VOCs, PCBs, PAHs, and metals


AOC-2
AOC-3
AOC-4
AOC-5
AOC-1
AOC-A
AOC-B
AOC-C AND DEBRIS AREA
AOC-D
WETLANDS
FORMER QUIMBY MANUFACTURING BUILDING / GROUND WATER RECOVERY SYSTEM
FORMER QUIMBY PROPERTY
FORMER WASTE-WATER LAGOON
BUILDING 5 (STORAGE SHED)
FIRE POND
FORMER FIRE LANE
BUILDING #1
BUILDING #2
BUILDING #3
BUILDING #4
POND
DAM
OAKDALE ROAD
HILLSIDE ROAD
MW-1
MW-2
MW-3
MW-4
MW-5
MW-7
MW-8
MW-9
MW-10
MW-11A
MW-11B
MW-12
MW-13
MW-14
MW-15
MW-16
MW-17
MW-18
MW-19
MW-20
MW-21
MW-22
MW-E1
MW-E2
RW-1
RW-2
RW-3
RW-3D
RW-4
RW-5
RW-7
WW-1
WW-3
LEGEND
MW-1 OVERBURDEN MONITORING WELL LOCATION AND IDENTIFICATION
RW-1 BEDROCK MONITORING WELL LOCATION AND IDENTIFICATION
WW-1 WATER RESOURCE WELL LOCATION AND IDENTIFICATION
PROPERTY BOUNDARY
FORMER QUIMBY PROPERTY BOUNDARY
OAKDALE CREEK
FENCE
DRIVEWAY/PARKING LOT BOUNDARY
120' 0 120'
N
SITE PLAN
FORMER SIMMONDS PRECISION SITE
CHESTER, NEW JERSEY
Prepared For:
HERCULES INCORPORATED
ROUX
ROUX ASSOCIATES, INC.
Compiled by: JML
Prepared by: JDO
Project Mgr: TB
File No: 15015011
Date: 01/30/02
Scale: AS SHOWN
Office: NJ
Project: 15015
FIGURE
2



PLAN

LEGEND

- MW-1 OVERBURDEN MONITORING WELL LOCATION AND IDENTIFICATION
- PW-5 OVERBURDEN EXTRACTION WELL LOCATION AND IDENTIFICATION
- RW-2 BEDROCK MONITORING WELL LOCATION AND IDENTIFICATION
- RW-3 BEDROCK EXTRACTION WELL LOCATION AND IDENTIFICATION
- SW-2 SURFACE WATER SAMPLING LOCATION AND IDENTIFICATION
- PZ-2 WETLAND PIEZOMETER LOCATION AND IDENTIFICATION
- P-2 WETLAND PIEZOMETER LOCATION AND IDENTIFICATION
- SG-2 STAFF GAUGE LOCATION AND IDENTIFICATION
- WW-3 WATER SUPPLY WELL LOCATION AND IDENTIFICATION
- WW-4 ABANDONED WATER SUPPLY WELL LOCATION AND IDENTIFICATION
- SIGN
- UTILITY POLE
- DRAINAGE INLET
- FENCE
- GUIDERAIL
- TREELINE
- ADJOINING PROPERTY LINES
- PROPERTY BOUNDARY
- WATER LINE
- PROCESS WASTE LINE
- SEPTIC LINE
- 700 GROUNDWATER CONTOUR LINE (DASHED WHERE INFERRED)
- (702.89) GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GENERAL FLOW DIRECTION
- (NA) INFORMATION NOT AVAILABLE

NOTES

1. TOPOGRAPHY SHOWN HEREON WAS COMPILED BY PHOTOGRAMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED MARCH 2, 1995.
2. VERTICAL DATUM IS N.G.V.D. 1929 BASED ON MONUMENT T-24 AT THE SOUTHEAST CORNER OF ROUTE 206 AND HILLSIDE ROAD IN THE TOWNSHIP OF CHESTER, MORRIS COUNTY, N.J.
3. PROPERTY LINES SHOWN HEREON ARE BASED ON THE TOWNSHIP OF CHESTER TAX MAP SHEET No. 36.
4. NEW JERSEY STATE PLANE COORDINATE VALUE @ APPROXIMATE CENTER OF SITE = 715,750' NORTH, 1,990,250' EAST
5. ACTIVE WATER SUPPLY WELLS ARE SHOWN IN BLUE.
6. ABANDONED WATER SUPPLY WELLS ARE SHOWN IN GREEN.

REFERENCES

1. "WETLANDS MAP, LOTS 2 AND 3, BLOCK 39; LOT 1, BLOCK 40; TOWNSHIP OF CHESTER, MORRIS COUNTY, NEW JERSEY". PREPARED BY THE CHESTER PARTNERSHIP, MICHAEL C. NOLAN, P.L.S., NJ LIC. NO. 34488, SCALE 1" = 50'; LAST REVISED APRIL 4, 1995.
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5. SITE FEATURES FROM SITE PLAN/AREA OF CONCERN KEY BY THE LOUIS BERGER GROUP, INC. DATED 8/5/08.
6. PARCEL BLOCK AND LOT LAYERS ARE SHAPE FILES IMPORTED FROM MORRIS COUNTY BOARD OF TAXATION AND THE DEPT. OF PLANNING, DEVELOPMENT & TECHNOLOGY. STATE OF NJ COMPOSITE OF PARCEL DATA, NJ STATE PLANE NAD83.
7. WELL AB-2 IS SCREENED IN THE OVERBURDEN BUT WAS USED FOR THE DEEP BEDROCK GROUNDWATER CONTOURING ONLY.

WATER WELLS

WW-1 – WATER WELL ADJACENT TO BLD NO. 1 – PUMP AND PIPING REMOVED.
WW-2 – WATER WELL IN BLD NO. 2 – ABANDONED.
WW-3 – ANDERSON WELL – STILL IN USE.
WW-4 – STURZENEGGER WELL – ABANDONED.
WW-5 – BREITWEISER/QUIMBY WELL – ABANDONED.

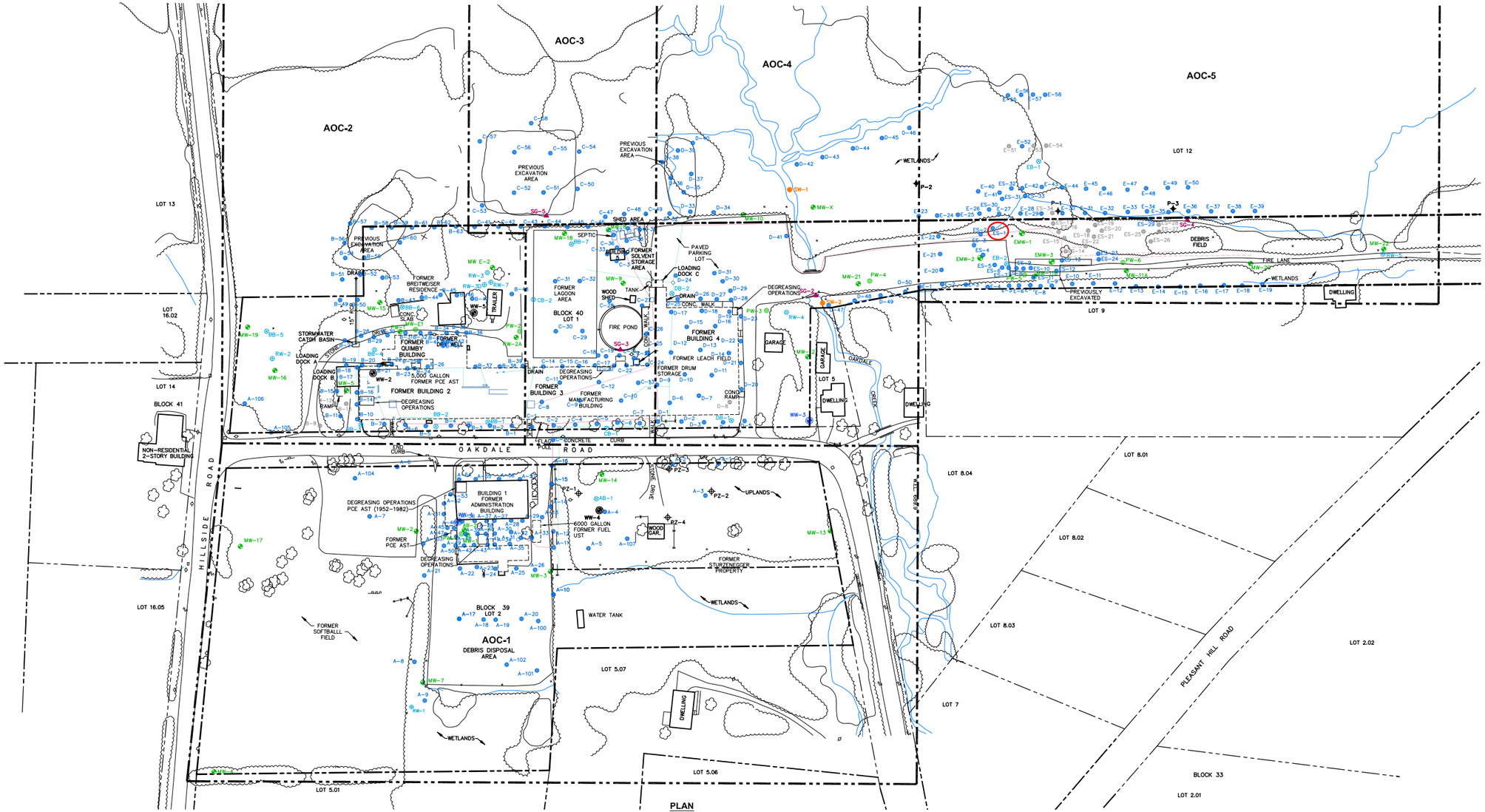
0 80' 160'
GRAPHIC SCALE

FORMER SIMMONDS PRECISION FACILITY
CHESTER, NEW JERSEY
SITE SAMPLING AND INVESTIGATION REPORT

OVERBURDEN GROUNDWATER ELEVATION AND GENERAL FLOW DIRECTION JANUARY 2012

ARCADIS

FIGURE
37



PLAN

LEGEND

- MW-1 OVERBURDEN MONITORING WELL LOCATION AND IDENTIFICATION
- PW-5 OVERBURDEN EXTRACTION WELL LOCATION AND IDENTIFICATION
- RW-2 BEDROCK MONITORING WELL LOCATION AND IDENTIFICATION
- RW-3 BEDROCK EXTRACTION WELL LOCATION AND IDENTIFICATION
- SW-2 SURFACE WATER SAMPLING LOCATION AND IDENTIFICATION
- PZ-2 WETLAND PIEZOMETER LOCATION AND IDENTIFICATION
- P-2 WETLAND PIEZOMETER LOCATION AND IDENTIFICATION
- SG-2 STAFF GAUGE LOCATION AND IDENTIFICATION
- WW-3 WATER SUPPLY WELL LOCATION AND IDENTIFICATION
- WW-4 ABANDONED WATER SUPPLY WELL LOCATION AND IDENTIFICATION
- SOIL/GROUNDWATER BORING LOCATION
- BORING LOCATIONS NOT SAMPLED
- SIGN
- UTILITY POLE
- DRAINAGE INLET
- FENCE
- GUIDERAIL
- TREELINE
- ADJOINING PROPERTY LINES
- PROPERTY BOUNDARY
- WATER LINE
- PROCESS WASTE LINE
- SEPTIC LINE

NOTES

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5. ABANDONED WATER SUPPLY WELLS ARE SHOWN IN BLACK.

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WATER WELLS

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WW-4 – STURZENEGGER WELL – ABANDONED.
WW-5 – BREITWEISER/QUIMBY WELL – ABANDONED.

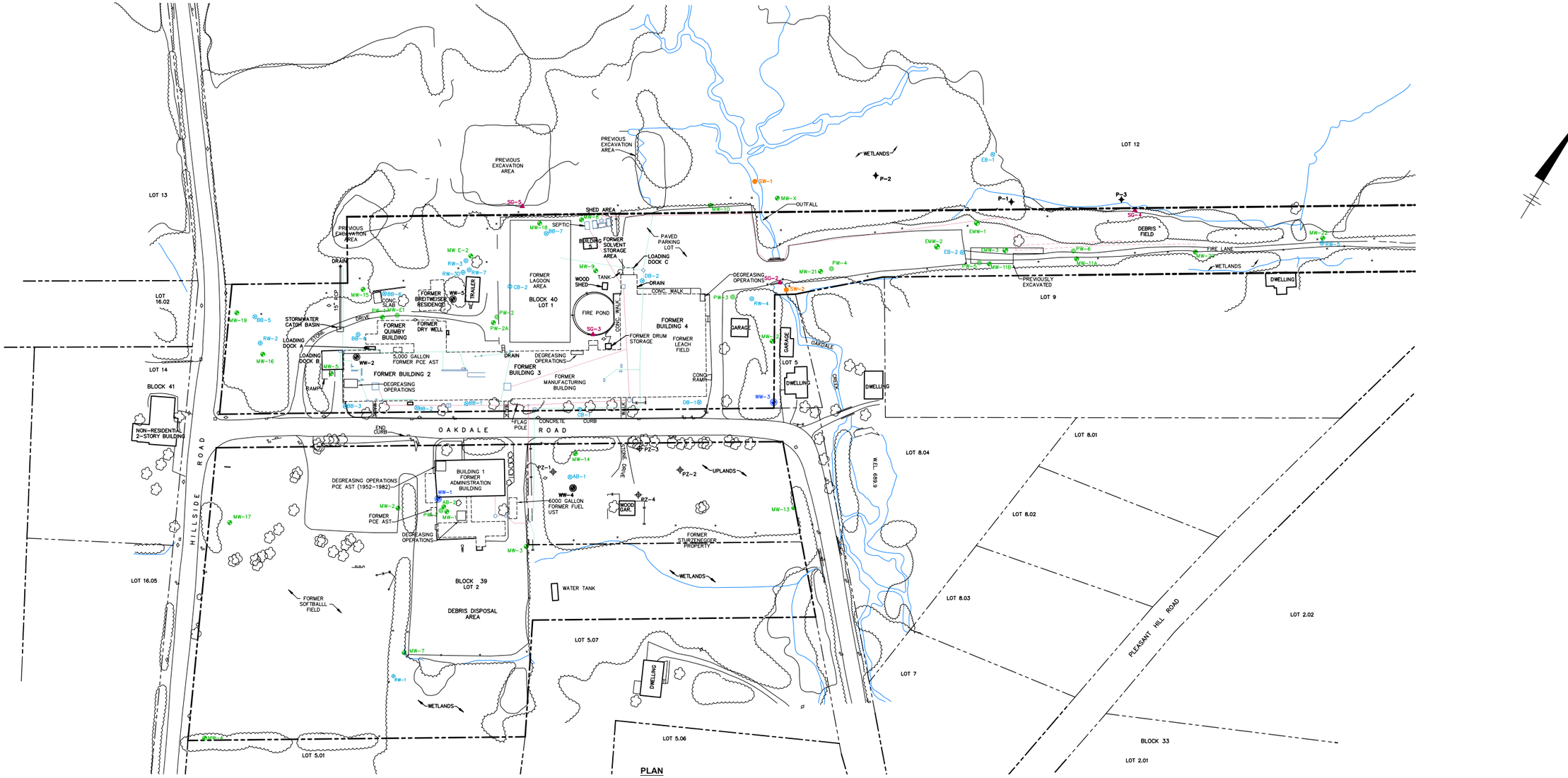
0 80' 160'
GRAPHIC SCALE

FORMER SIMMONDS PRECISION FACILITY
CHESTER, NEW JERSEY
SITE SAMPLING AND INVESTIGATION REPORT

SOIL BORING AND GROUNDWATER SCREENING LOCATIONS

ARCADIS

FIGURE 6



LEGEND

- MW-1 OVERBURDEN MONITORING WELL LOCATION AND IDENTIFICATION
- PW-5 OVERBURDEN EXTRACTION WELL LOCATION AND IDENTIFICATION
- RW-2 BEDROCK MONITORING WELL LOCATION AND IDENTIFICATION
- RW-3 BEDROCK EXTRACTION WELL LOCATION AND IDENTIFICATION
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- P-2 WETLAND PIEZOMETER LOCATION AND IDENTIFICATION
- SG-2 STAFF GAUGE LOCATION AND IDENTIFICATION
- WW-3 WATER SUPPLY WELL LOCATION AND IDENTIFICATION
- WW-4 ABANDONED WATER SUPPLY WELL LOCATION AND IDENTIFICATION

- SIGN
- UTILITY POLE
- DRAINAGE INLET
- FENCE
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- PROPERTY BOUNDARY
- WATER LINE
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WW-3 – ANDERSON WELL – STILL IN USE.
WW-4 – STURZENEGGER WELL – ABANDONED.
WW-5 – BREITWEISER/QUIMBY WELL – ABANDONED.

0 80' 160'
GRAPHIC SCALE

FORMER SIMMONDS PRECISION FACILITY
CHESTER, NEW JERSEY
SITE SAMPLING AND INVESTIGATION REPORT

SITE PLAN

ARCADIS

FIGURE
2

CITY: SYRACUSE, NY DIV/GROUP: ENV/IM-DV DB: N. SMITHGALL, K. SARTORI, P. LISTER PM: B. PIERCE TM: S. KELLY TR: K. LEPKOWSKI LYR: ON=*;OFF=*REF*
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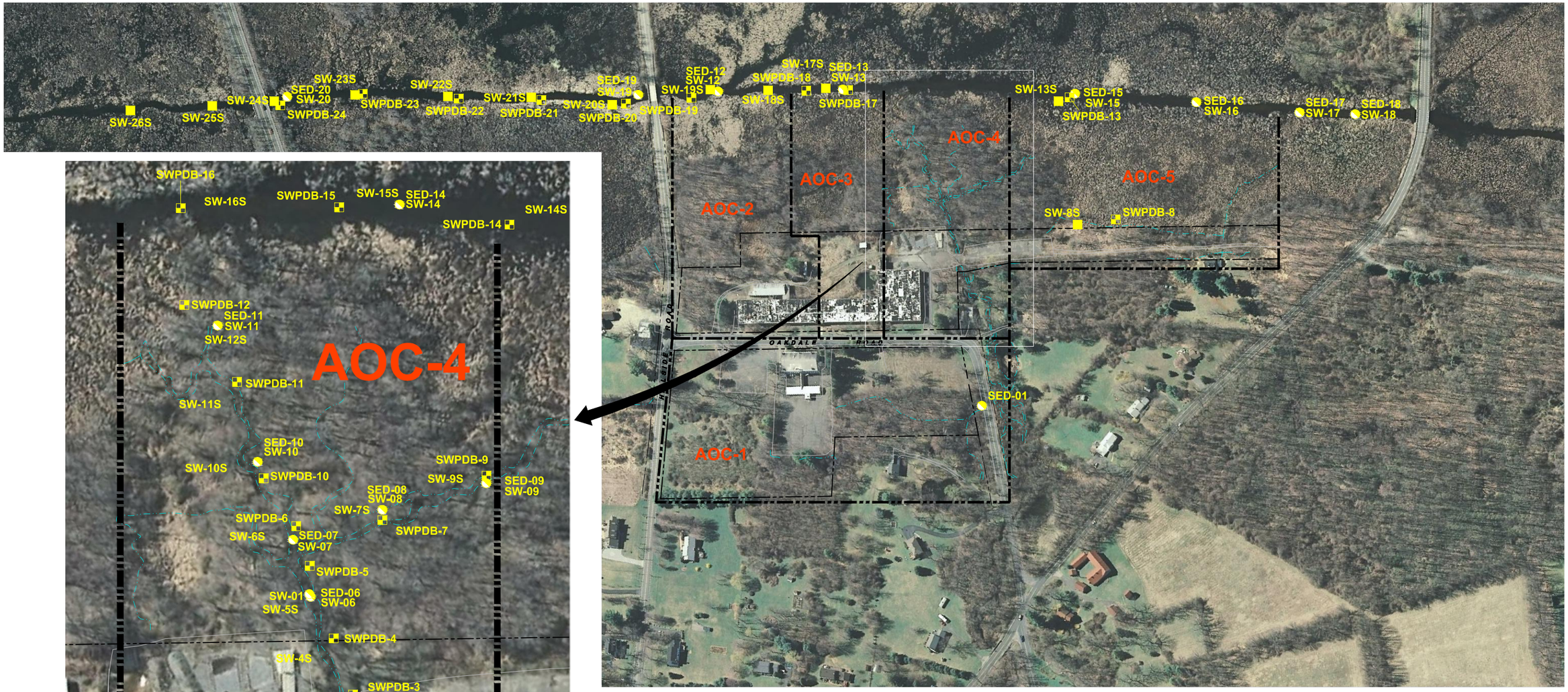

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2. VERTICAL DATUM IS N.G.V.D. 1929 BASED ON MONUMENT T–24 AT THE SOUTHEAST CORNER OF ROUTE 206 AND HILLSIDE ROAD IN THE TOWNSHIP OF CHESTER, MORRIS COUNTY, N.J.
3. PROPERTY LINES SHOWN HEREON ARE BASED ON THE TOWNSHIP OF CHESTER TAX MAP SHEET No. 36.
4. BASEMAP FROM ELECTRONIC FILE PROVIDED BY URS CORPORATION FILE NAME: CHESTER 2–5 BASE 1.DWG ON 4/12/11.
5. SITE FEATURES FROM SITE PLAN/AREA OF CONCERN KEY BY THE LOUIS BERGER GROUP, INC. DATED 8/5/08.

LEGEND:

- AOC BOUNDARY LINE
- PROPERTY BOUNDARY
- ADJOINING PROPERTY LINES
- SURFACE WATER LINE
- 2010 SEDIMENT/SUFACE WATER SAMPLE LOCATIONS
- SWPDB-1 — SURFACE WATER SAMPLE LOCATION UTILIZING PASSIVE DIFFUSION BAGS
- SW-15 — SURFACE WATER SAMPLE LOCATION
- SEDIMENT/SURFACE WATER SAMPLE LOCATIONS

FORMER SIMMONDS PRECISION FACILITY
CHESTER, NEW JERSEY
SITE SAMPLING AND INVESTIGATION REPORT

SURFACE WATER, SEDIMENT PORE WATER, AND SEDIMENT SAMPLE LOCATIONS MAY - AUG 2010 AND SEPT - OCT 2012

ARCADIS

FIGURE 10

CITY: SYRACUSE, NY DIV/GROUP: ENV/IM-DV DB: N. SMITHGALL, K. SINSABAUGH, P. LISTER PM: B. PIERCE TM: S. KELLY TR: K. LEPKOWSKI LYR: ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACTIVE\060000\NJ84\003000\DWG\060000C05.dwg LAYOUT: 10 SAVED: 1/15/2013 2:31 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/21/2013 1:08 PM BY: LISTER, PAUL
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