Prospective Purchaser Compliance Status Report

Revision 1

Former Square D Company Site
1401 Marietta Boulevard
Atlanta, Fulton County, Georgia

HSI # 10829

AEM Project No. 1408-1101-2

June 12, 2012

Prepared For:

Art Laminating and Finishing, LLC

Prepared By:

AEM
ATLANTA ENVIRONMENTAL MANAGEMENT, INC.
Environmental Consulting, Engineering, Hydrogeologic Services
2580 Northeast Expressway • Atlanta, Georgia 30345
Office (404) 329-9006 • Fax (404) 329-2057

PROFESSIONAL CERTIFICATION

I certify that I am a qualified groundwater scientist who has received a baccalaureate or post-graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by myself or by a subordinate working under my direction.

GEORGIA REGISTERED No. 28456 PROFESSIONAL ENGINEER ARTHUR W. PICKEN, III

Arthur W. Picken III, P.E.
Atlanta Environmental Management, Inc.
Georgia Registered Professional Engineer
Registration No. 28456

TABLE OF CONTENTS

TABLE OF CONTENTS
(CONTINUED)

LIST OF TABLES

TABLE

LIST OF FIGURES

FIGURE

LIST OF ATTACHMENTS

ATTACHMENT

SECTION 1.0
INTRODUCTION

The property that is the subject of this submission is an industrial property located at 1401 Marietta Boulevard, Atlanta, Fulton County, Georgia. In accordance with the Prospective Purchaser Corrective Action Plan (PPCAP) submitted on July 17, 2007, and the provisional limitation of liability (LOL) letter for the subject site issued by the Georgia Environmental Protection Division (EPD) on July 30, 2007, under the Georgia Hazardous Site Reuse and Redevelopment Act, O.C.G.A. § 12-8-200 et. seq. (Brownfields Act), to Art Laminating and Finishing, LLC (ALF, LLC) in advance of its purchase of the property that is the subject of this Prospective Purchaser Compliance Status Report (PPCSR), Atlanta Environmental Management, Inc. (AEM) has prepared this PPCSR on behalf of ALF, LLC. The contents of this report have been primarily based upon fieldwork, sampling, and analysis performed by or through ARCADIS on behalf of Schneider Electric USA, Inc. (Schneider), formerly Square D Company (Square D), under the auspices of the Georgia Hazardous Sites Response Act (HSRA). The field work, sampling, analysis, and associated site characteristics utilized to support the contents of this report have been submitted to and approved by Georgia EPD in prior reports submitted by Schneider. Although AEM cannot directly certify the field work and laboratory analysis that have been performed by or through ARCADIS, the results of which have been submitted to EPD by ARCADIS in prior reports, AEM understands that such work was performed in accordance with EPD-acceptable standards of practice and that EPD has approved such work.

This PPCSR has been prepared by AEM on behalf of ALF, LLC, pursuant to coordination between John and Lynn Buchanan (as sellers to ALF, LLC), ARCADIS, and ALF, LLC. As noted above, AEM has substantially relied upon the investigations and reports of ARCADIS in the preparation of this PPCSR.

The approved PPCAP submitted on behalf of ALF, LLC, specified the following requirements for submittal of a PPCSR:

After the completion of any soil remediation by Square D or at such other time as it is determined that the site soils meet an applicable Risk Reduction Standard (RRS), ALF, LLC, will submit a PPCSR documenting such soil RRS compliance. The PPCSR report will include information in the format required for submission to EPD. The PPCSR will include the following:

- A legal description and survey plat of the qualifying property
- A description of the geologic and hydrogeologic conditions at the site
- A description of known releases of regulated substances (i.e., chemicals of potential concern [COPC] at the site)
- A brief description of existing or potential human or environmental receptors
- A summary of actions taken to characterize, eliminate, control, and/or minimize the potential risk at the site

- A discussion of sampling procedures used to characterize soil and groundwater conditions at the site
- A summary of all corrective actions completed to bring the site into compliance with applicable soil risk reduction standards (RRS) under EPD rules
- A summary of all pertinent field and laboratory data used to demonstrate compliance with soil risk reduction standards
- Documentation of the proper characterization, transportation, and disposal of contaminated soils and/or hazardous wastes, if any
- Certification by a Professional Engineer or Professional Geologist registered to practice in the state of Georgia
- The prospective purchaser's certification of compliance with the applicable soil risk reduction standards
- Certification of the laboratory used to analyze CSI samples affirming compliance with NELAC standards and FAC Rule 64E-1. The procedures and methods used by the laboratory will be in compliance with EPA SW846 methods. Because AEM has not collected any samples from the site, this report has been prepared utilizing data submitted by Schneider and subsequently approved by EPD in previous submittals.

SECTION 2.0
BACKGROUND

Industrial operations were begun on the subject property around 1956 by Square D (now Schneider), which manufactured electrical switchboards and other electrical components. The Square D operations included a degreasing pit, painting areas, a cutting machine area, and an aboveground storage tank at which solvents or other chemicals of potential concern (COPCs) were stored or used. Potential sources for COPCs are believed to be associated with the operations of the degreasing pit, painting areas, cutting machine area, and storage areas. An EPD NOD issued on March 5, 2010, suspected an additional source area at the monitor well MW-2 location. Subsequent soil sampling conducted in August 2010 identified no soil impacts in the area. That August 2010 site investigation is discussed in Section 4.0. A site location map is included as Figure 1, and key features of the former Square D operations are shown in Figure 2.

In 1993, Square D sold the property to John and Lynne Buchanan, the principals of Art Laminating and Finishing, Inc. (ALF, Inc.), and ALF, Inc., operated a document finishing and lamination operation on the property.

The property lies in a historically industrial area. As a result of the industrial operations of one or more of the properties in the area, Woodall Creek, which runs through the area, was discovered to have been impacted by 1,1-dichloroethene (DCE) at concentrations that exceeded the then-existing instream water quality standards (ISWQS) for DCE, giving rise to EPD concerns regarding potential sources of the DCE found in Woodall Creek.

In the course of an environmental investigation in anticipation of a prospective sale of the subject property by the Buchanans in 2005, certain COPCs were identified in subsurface soil and groundwater that resulted in a HSRA notification to EPD by the Buchanans. Although EPD's Reportable Quantities Screening Method (RQSM) as applied to those detections did not yield results that dictated listing of the subject property on the HSRA Hazardous Site Inventory (HSI), by reason of the property lying within the Woodall Creek watershed, EPD exercised its discretion to place it on the HSI on January 13, 2006.[1] Because the COPCs at the subject property were the result of Square D's historic operations on the property, Schneider, acting through its environmental consultant ARCADIS, has taken primary responsibility for the conduct of investigations, reporting, and corrective actions relative to soil and groundwater at and downgradient of the property under the auspices of the HSRA program.

The Buchanans sold the property in August 2007 to ALF, LLC, a subsidiary of Bindagraphics, Inc., which has continued the document finishing and lamination operation at the

[1] It is our understanding that the ISWQS for DCE has subsequently been revised upward so that the detections of DCE in Woodall Creek are no longer in excess of the ISWQS. Nevertheless, at this time, EPD has not removed the subject property or other properties in the Woodall Creek watershed from the HSI.

property through the present date. This sale was made subsequent and pursuant to the submission by ALF, LLC, of the July 2007 PPCAP to EPD and EPD's approval of that PPCAP on July 30, 2007. The property is currently owned by ALF, LLC. A legal description and survey plat of the subject property are included in Attachment A.

ARCADIS submitted a Compliance Status Report (CSR) referenced above to EPD in December 2006 in response to a previous CSR call-in letter from EPD to Schneider under EPD's HSRA authority. The CSR was reviewed by EPD, which issued a Notice of Deficiency (NOD) to Schneider for the CSR on May 4, 2007. The NOD cited concerns regarding insufficient sample data, documentation requirements, and risk reduction calculations, and it required submission by Schneider of a revised CSR by July 5, 2007.

Prior to issuance of the May 4, 2007, NOD letter by EPD, Schneider through ARCADIS had performed significant additional soil and groundwater sampling activities, and the results of that supplemental investigation were submitted to EPD on May 14, 2007. After review of the site investigation activities update letter, EPD issued a comment letter to Schneider, dated August 16, 2007. In the comment letter, EPD requested that a Corrective Action Plan (CAP) be prepared and that the CAP also address the comments in the CSR NOD. A CAP was submitted to EPD on January 30, 2008.

EPD issued an NOD letter to Schneider for the CAP on August 15, 2008. This NOD requested that a Revised CAP and CSR be submitted. ARCADIS and Schneider met with EPD on November 4, 2008, to review the NOD comments. A letter summarizing the meeting was submitted to EPD by ARCADIS on November 17, 2008. During the meeting, it was determined that one document could be submitted as both the revised CSR and the CAP to address EPD comments. The Revised CAP/CSR was submitted to EPD on March 12, 2009, and addressed the comments in the August 15, 2008, NOD. The Revised CAP and CSR identified and evaluated impacts to environmental media, revised the RRS presented in the CSR, provided a vapor intrusion assessment for the site and adjacent property, presented a conceptual site model, and presented corrective action strategy that included *in situ* treatment of groundwater.

ARCADIS and Schneider followed up the submittal of the CAP and CSR with a meeting with EPD and a subsequent meeting summary letter, dated February 12, 2010. EPD issued an NOD letter for the CSR dated March 5, 2010, and an approval letter for the CAP on March 26, 2010, based on the March 2009 CAP/CSR and the February 2010 meeting summary letter. On August 4, 2010, ARCADIS completed installation and sampling of eight additional direct-push borings on the subject property consistent with EPD's comments.

On August 16, 2010, ARCADIS/Schneider responded to the March 2010 CSR NOD, pursuant to which EPD issued a September 24, 2010, approval of the risk reduction standards (RRS) contained in the revised CSR as modified by the August 16, 2010, ARCADIS/Schneider response. Since July 2010, ARCADIS has performed additional work involving the direct-push borings referenced above, the installation of bedrock monitoring wells, and the installation of groundwater remediation injection wells on the subject property. The Annual Corrective Action

Update submitted by ARCADIS to EPD on August 4, 2011, describes those site activities through that date.

SECTION 3.0
SITE GEOLOGY AND HYDROGEOLOGY

This section provides a description of the environmental setting for the site, including a discussion of regional geology, regional hydrogeology, site geology, and site hydrogeology. The contents of this section were adopted from the ARCADIS CAP and CSR dated March 12, 2009.

3.1 REGIONAL GEOLOGY

The Square D site lies within the Southern Piedmont Physiographic Province, which extends southeast of the Brevard fault zone (roughly corresponding with the Chattahoochee River in the Atlanta area) to the Fall Line. Rocks of the Southern Piedmont consist of Proterozoic to Middle Paleozoic gneisses, quartzites, amphibolites, phylites, schists, and metagabbros (200 million years to 700 million years old). The site is underlain by Norcross gneiss, part of the Atlanta Group (Late Proterozoic to Lower Paleozoic), characterized by light-gray epidote-biotite-muscovite-plagioclase gneiss with localized amphibolite inclusions (McConnell and Abrams, 1984). The Atlanta Group loosely correlates with the Sandy Springs Group (Northern Piedmont) to the north of the Brevard fault zone.

3.2 REGIONAL HYDROGEOLOGY

There have been several studies addressing the hydrogeologic conditions specific to the Atlanta region, either by area or by county. Specific aquifer unit names have not been assigned in the Atlanta area. Water-bearing units have been described by rock type, rather than by hydrogeologic zone assigned by depth and/or stratigraphic unit. Cressler et al. (1983) described the potential of various rock units to produce groundwater based on topography and location. The main groundwater-producing rock unit in the Southland Circle area is described as biotite gneiss.

The occurrence and the movement of deeper groundwater in unweathered bedrock are generally restricted to fractures, because these materials have little primary porosity.

Groundwater within competent bedrock in the Atlanta area occurs in two types of transmissive fractures caused by structural deformation. Steeply dipping joint fractures may produce groundwater but most joints are shallow with secondary mineralization that inhibits groundwater flow. The more transmissive fractures are parallel to foliation and are therefore subhorizontal to horizontal, i.e., have a low dip angle. Production wells in the Lawrenceville area can produce up to 400 gallons per minute from foliation plane fractures.

3.2.1 Site Geology

The geology beneath the site consists of weathered residuum, saprolite, and bedrock. From the boring logs, three distinct stratigraphic units have been identified beneath the site:

Residuum—A micaceous sandy silt to clayey silt that is fine- to medium-grained.

Saprolite—Occurs near the transition from residuum to bedrock. Saprolite contains weathered gneiss fragments, shows increases in mica content, and displays relic foliation from the parent gneiss.

Bedrock—Characterized as massive gneiss with few fractures. Depth to bedrock ranges from 0 feet bgs to 28 feet bgs across the site, with the shallowest depths near the injection area on the southeastern portion of the site where bedrock meets the surface. The depth to bedrock increases to the west to MW-1, to the north to MW-3, and to the northeast to MW-21, -20A, and -20B. The bedrock ridge extends from the south of the site to the middle portion of the site with a northerly orientation. This orientation is consistent with the topographic high present to the south.

The fractured transition zone from saprolite to bedrock is sharp and the bedrock unit has few fractures. The fractured transition zone usually serves as the primary conduit for contaminant movement in the Piedmont. The absence of this zone indicates that contaminant movement beneath the site in the bedrock is limited.

The thickness of the residuum and saprolite increases to the west, north, and east of the site. Monitoring wells installed on the Brodnax Cartage property indicate that the thickness of the residuum/saprolite ranges from 20 feet to 28 feet. A map showing the locations of geologic cross sections is presented on Figure 3. Geologic cross sections A–A′ and B–B′ are presented on Figures 4 and 5, respectively.

3.2.2 Site Hydrogeology

Groundwater beneath the ALF property occurs primarily in the bedrock unit approximately 30 feet bgs. The saprolite and residuum units are unsaturated beneath the site except along the northeastern corner, where the bedrock surface drops in elevation beneath MW-4. Toward Woodall Creek, the groundwater table elevation drops by approximately 50 feet and the depth to water is shallower beneath the Brodnax Cartage property. In addition, the saprolite unit becomes saturated to the north of the site. Along the northeastern corner of the site and downgradient of the site, the water unit above the bedrock unit is referred to as the residuum/saprolite unit. The depth to water in the residuum/saprolite unit beneath the Brodnax Cartage property ranges from 3 feet bgs to 20 feet bgs.

Figures 6 and 7 show the water level contours developed from the measured depths to water during the December 2008 gauging event. Water levels were collected using an electronic water level indicator accurate to within 0.01 foot. The water level indicator was field-decontaminated with Alconox® detergent and distilled water between wells. Site-wide water levels were collected on the same day. Figure 6 shows that groundwater in the saturated portion of the residuum/saprolite flows to the northeast toward Woodall Creek. Figure 7 illustrates the bedrock piezometric surface and shows that groundwater within the bedrock also flows to the north toward Woodall Creek. Water table elevation data are provided in Table 1. Well construction details are presented in Table 2.

Based on the measured depth to water and calculated water level elevations, the hydraulic gradient in the residuum/saprolite unit from the eastern end of the site toward Woodall Creek is 0.057 foot per foot (ft/ft) and approximately 0.077 ft/ft within the bedrock unit. Slug tests were performed on three site monitoring wells to evaluate the permeability of the two groundwater units beneath the site. Slug tests (both slug in and slug out) were performed on MW-1, -7, and -8. A total of four tests were performed on each well: two tests with a targeted initial displacement of 1.5 feet and two tests with a targeted initial displacement of 3 feet. Displacement curves for the analysis and raw data were submitted by Square D in the CSR and were included as Appendix E. Based on the water level data from the slug test, the hydraulic conductivities of the residuum/ saprolite water unit ranged from 0.48 foot/day to 1.93 feet/day (MW-7) and from 5.07 feet/day to 9.93 feet/day for the bedrock (MW-7). Hydraulic conductivity values derived from water level data from the slug tests in MW-1, which is screened across the saprolite/bedrock contact, ranged from 0.94 foot/day to 1.52 feet/day. With the range of hydraulic conductivities and calculated hydraulic gradients, the groundwater velocities beneath the site ranged from 0.12 foot/day to 0.47 foot/day for the residuum/saprolite and from 3.95 feet/day to 7.74 feet/day for the bedrock (20 percent effective porosity for the residuum/saprolite and 5 percent effective porosity for the bedrock).

Falling head and low flow pumping tests were conducted at IW-1 and IW-2 to further assess the hydraulic conductivity in the upper bedrock and to establish the hydraulic connectivity of the injection wells to the groundwater impacts identified at MW-2 prior to conducting the injection test. The results of these tests confirm the results from the previous slug tests and show that the bedrock unit is characterized by a very low-permeability unit with very low groundwater yield.

Geophysical logs from wells IW-1 and MW-27 (previously submitted as Appendix F in the CAP/CSR by Square D) suggest that there are more fractures in the upper 20 feet of both wells. Some of the shallow fractures show steeper dip angles and therefore are considered to be a combination of joints and foliation plane fractures. Deeper transmissive fractures in both wells are more horizontal and therefore are considered mostly foliation plane fractures. As previously discussed, published research suggests that the foliation plane fractures are more transmissive. Initial data from the heat pulse flowmeter logs suggest that foliation plane fractures in these two wells are more transmissive. This includes the transmissive fracture at 59 feet depth in MW-27 and the fracture at 49 feet depth in IW-1.

Strike and dip angles of transmissive fractures in MW-27 suggest that none of the transmissive fractures would extend to the area of the former degreasing pit to the north of MW-27. This was confirmed by MW-26, which contained no transmissive fractures. There are fewer transmissive fractures in MW-27 compared to IW-1. It appears that the bedrock under the building may have limited transmissive fractures.

SECTION 4.0
NATURE AND EXTENT OF IMPACTS

This section presents a summary of the results of previous investigations that focused on both soil and groundwater beneath the property. Information in this section is derived from 1992 and 2005 Phase II environmental investigations at the property as well as the ARCADIS investigations documented in the 2006 ARCADIS CSR and the 2008 ARCADIS CAP, and additional investigations thereafter that have been reported to EPD by ARCADIS. Only data from the ALF property are evaluated for purposes of this PPCSR under the Brownfields Act.

4.1 SOIL

Comprehensive investigations of soil at the property by ARCADIS have been performed in the form of soil sampling conducted in late 2006 and early 2007, a soil vapor survey conducted by ARCADIS in 2007 at EPD's request (included as Attachment B), and significant soil sampling events in 2008, 2009, and 2010, all as documented in prior ARCADIS reports to EPD. The soil sample boring logs, sampling procedures, and laboratory analytical reports are contained in those ARCADIS reports. Summaries of the soil sampling data are presented on Figure 8 and in Tables 3, 4, 5, and 6 of this PPCSR. These reports and data document that a thorough soil investigation has been performed, no residual COPC source material exists at the property, and no COPCs are present in the soils outside the existing manufacturing building at concentrations above RRS Types 1-4. Under the manufacturing building, 10 soil samples detected 1,4-dioxane at concentrations in excess of RRS Types 1-4, and two soil samples dating back to the 2005 sampling event contained trichloroethene (TCE) concentrations in excess of RRS Types 1-4. Additional points to consider with respect to the soil investigation are as follows:

- Focusing on the possibility of a residual source area in the vicinity of the former degreaser or elsewhere, ARCADIS performed DPT soil sampling in 2007 around the former degreaser and in areas identified by the soil vapor survey as potentially having elevated levels of chlorinated solvents in the soil. Additional DPT soil sampling was performed in December 2008 to provide delineation of the soil impacts under the building. Also, in January 2009, two soil borings were performed using hollow-stem augers through the weathered rock to the top of competent bedrock directly under the degreaser. As noted above and discussed further below, the results of the comprehensive soil investigation performed by ARCADIS to EPD's satisfaction (see Figures 8 and 12 and Tables 3, 4, 5, and 6) indicate that all COPCs detected by ARCADIS in the soil under and outside the building are below a Type 1-4 RRS, with the exceptions of 1,4-dioxane at 10 sampling locations in the vicinity of the former degreaser and elsewhere under the building and TCE at two locations in the vicinity of the degreaser.
- TCE was detected above the Type 1-4 RRS for soil in only two samples, P-3 and P-4, in 2005, at a depth of 6 feet below the degreaser. TCE was not detected in the degreaser area above the Type 1-4 RRS in any of the seven samples collected by ARCADIS in that area in 2007 through 2009.

- The principal groundwater COPC detected on the property, 1,1,1-TCA, at MW-2 at the southeast corner of the property, had a historical maximum concentration of 320 mg/L in October 2008, compared to the maximum 1,1,1-TCA soil concentration of 0.32 mg/kg. No 1,1,1-TCA was detected in soil above the Type 1 RRS at any location on the property.
- The COPC soil impacts are limited by the bedrock surface, and the groundwater under the building is in the bedrock below the soil impacts.
- All COPCs have been delineated in soil to non-detect on the subject property, with the exceptions of TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride, which were identified in DP-8 on the eastern property line. These detections at DP-8 are less than applicable Type 1 RRS values. An isocontour line representing delineation to non-detect for COPCs on the subject property is included on Figure 12. These limited RRS exceedences result exclusively from the hypothetical risk presented by the leaching to groundwater pathway, not from direct contact pathway for soil. A map showing the locations of soil boring geologic cross sections is presented as Figure 9. Vertical distribution of COPCs is presented on geologic cross sections C–C′ and D–D′ shown on Figures 10 and 11, respectively.
- Vertical soil delineation has been completed for all COPCs to either bedrock or groundwater. Groundwater is encountered within the bedrock at approximately 23 to 38 feet below ground surface across the site.
- Strike and dip angles of transmissive fractures in MW-27 suggest that none of the transmissive fractures would extend to the area of the former degreasing pit to the north of MW-27. This was confirmed by MW-26, which contained no transmissive fractures.

4.2 GROUNDWATER

Chlorinated VOC compounds and other organic compounds have been documented in groundwater underlying the subject property in the previously submitted ARCADIS reports. Groundwater analytical results are set forth in Table 7 of this PPCSR. Currently, ARCADIS is addressing those groundwater impacts at the site with *in situ* groundwater treatment. Under the Brownfields Act, neither ALF, LLC, nor its successors-in-interest have responsibility for groundwater remediation and RRS compliance so long as the soils on the property are shown to meet an applicable risk reduction standard. Accordingly, no further discussion of groundwater RRS compliance is necessary in this PPCSR, and any further groundwater RRS references are for contextual purposes.

SECTION 5.0
RISK ASSESSMENT

This section presents the results of the risk assessment and calculation of soil RRSs as performed by ARCADIS and accepted by EPD.

5.1 INTRODUCTION

A comparison of COPC concentrations detected in soil and groundwater to RRS Types 1 through 4 was completed for the site as required by the Rules of Georgia EPD, Chapter 391-3-19-.06 (Hazardous Site Response Act [HSRA]). The COPCs at the site include those constituents that are regulated under HSRA and have been detected in soil and groundwater at or in the vicinity of the property during previous and current investigations.

Soil and groundwater samples at the site have been collected and analyzed for VOCs. Based on the results of the analyses, the following constituents are considered to be COPCs for soil for purposes of this PPCSR and risk evaluation:

Acetone	1,4-Dioxane
1,1-Dichloroethane (1,1-DCA)	Ethylbenzene
1,2-Dichloroethane (1,2-DCA)	Tetrachloroethene
1,1-Dichloroethene (1,1-DCE)	Toluene
cis-1,2-Dichloroethene (cis-1,2-DCE)	1,1,1-Trichloroethane (1,1,1-TCA)
trans-1,2-Dichloroethene (trans-1,2-DCE)	Trichloroethene (TCE)
Vinyl chloride	Xylenes

5.1.1 Objective

The primary objective of the risk assessment as applicable to this PPCSR was to compile the available analytical data for the regulated substances that were detected in soil and groundwater and to compare the soil data to RRS Types 1 through 4 for soil. First, the maximum detected soil concentration for each COPC was compared to the Type 1 soil RRS for residential receptors and the Type 3 soil RRS for nonresidential receptors. Second, Type 2 and Type 4 soil RRS were calculated for each COPC and compared to the maximum detected concentrations of each COPC in each soil sample. As discussed elsewhere in this report, the only COPCs detected in soil that exceeded each of the Type 1 through 4 RRS were 1,4-dioxane in 10 samples under the building and TCE in 2 samples under the building. Because of the impracticability of undertaking remediation of these soils under the existing building, as discussed further below, a Type 5 RRS evaluation has been conducted as to such soils. The Type 5 RRS evaluation is discussed in Section 5.5.

5.1.2 Organization

The remainder of this risk evaluation is organized as follows:

- **Section 5.2: Potential Receptors**—Human receptors that might be exposed to the COPCs at the site are identified.
- **Section 5.3: Type 1 through Type 4**—The exposure and toxicity assessments are presented. Maximum detected concentrations for each COPC in soil are compared to the Type 1 through 4 RRS for soil.
- **Section 5.4: Vapor Intrusion Risk Assessment—**The EPA-approved Johnson and Ettinger vapor intrusion risk assessment model was run for the COCs in soil.
- **Section 5.5: Type 5 Risk Assessment**—A Type 5 RRS risk evaluation is performed for those COPCs not meeting Type 1 through 4 RRS. The risk evaluation will include engineering controls to mitigate exposure.

5.2 POTENTIAL RECEPTORS

An evaluation of potential risks to possible receptors from exposure to COPCs at the site was prepared after review of the site setting and the reports and data referenced above.

5.2.1 Site Setting and Operations

As stated above in the Background section of this PPCSR, the property is currently used for industrial purposes as a manufacturing facility. The building and surrounding asphalt-covered parking areas were constructed in 1956 by Square D Company (now Schneider) to manufacture electrical switchboards and panel boards. The building is constructed on a poured-in-place concrete slab-on-grade foundation. The Square D operation involved the use of chlorinated solvents. The facility was sold to the Buchanans in 1993. The Buchanans formed ALF, Inc., which conducted different types of manufacturing operations involving document finishing and lamination. The property was sold by the Buchanans to ALF, LLC, in August 2007. ALF, LLC, has continued document finishing and lamination operations similar to those performed by ALF, Inc. The building on the property houses the document finishing and lamination operations, equipment, and personnel, together with a small office space. The building has a roof and a concrete slab-on-grade floor. The rest of the property is covered with asphalt pavement and a minor amount of landscaping.

5.2.2 Water Wells and Surface Water

The nearest surface water bodies are Woodall Creek to the east and northeast of the site and an unnamed tributary to Woodall Creek to the west and northwest of the site. Neither of these creeks runs within or adjacent to the site.

A water supply well survey was conducted to determine the locations of water supply wells in the vicinity of the site. Data from the U.S. Geological Survey (USGS) indicate that there is one well within ½ mile of the site; however, this well was part of a USGS study by Cressler et al. (1983) in the early 1980s and its existence has not since been verified by USGS (Teck, 2006). A 2006 field survey by ARCADIS did not locate the well, and its status is unknown. In addition, the location of the purported well is on the opposite side of and upgradient of Woodall Creek. The property and all nearby properties are located within the City of Atlanta and are served by municipal water supply. No drinking water wells are potentially impacted by groundwater coming from the site, and there is no reason to believe that any drinking water supply well would be installed in the vicinity. Likewise, Woodall Creek is not used as a potable water source. Ecological receptors in the creek were the sole source of concern for the groundwater pathway, which gave rise to the listing of this property on the Hazardous Site Inventory.

5.2.3 Exposure Pathways

Consistent with the soil focus of the Brownfields Act, the scope of this risk assessment is limited to evaluation of risks arising from the presence of concentrations of COPCs in certain areas of soil at the ALF property, most of which is covered by the facility building and paved areas. The list of COPCs is composed of various chlorinated and petroleum compounds whose presence in the soil is primarily underneath the building foundation.

As discussed both above and below, all COPCs detected in soil at the property are in concentrations that would not present an unacceptable risk under Type 2 (residential) or Type 4 (commercial) RRS as applied to direct human soil contact (i.e., ingestion and inhalation). As discussed further below, the only reason that any COPCs in soils exceed a Type 1 through 4 RRS is based on the hypothetical pathway by which certain COPCs (1,4-dioxane and TCE) in soil might leach to groundwater utilized as a drinking water supply. Because the existing building structure and building slab overlie those soils (and also because the groundwater in the area is not reasonably susceptible to groundwater use), this exposure pathway is not complete but will nonetheless be considered. A third potential exposure pathway that will be evaluated is the risk of volatilization of certain COPCs in soil under the building slab that might result in migration of COPC vapors into the workspace of the facility.

5.2.4 Summary of Potential Receptors Considered

Because this PPCSR is submitted under the Brownfields Act program, only potential receptor exposures arising from COPCs in soil will be considered. Accordingly, potential receptor exposures to COPCs in groundwater are substantially beyond the scope of this PPCSR. Groundwater exposure and remediation considerations are being addressed by Schneider, ARCADIS, and other past or present property owners in the Woodall Creek watershed with Georgia EPD oversight under the auspices of the HSRA program.

In conclusion, the potential or hypothetical receptors that will be considered in this PPCSR with respect to COPC-impacted soil at the property are as follows:

1. Potential direct human exposure to COPCs in soil via ingestion or inhalation of soil
2. Potential indirect human exposure to COPCs in soil due to potential leaching of COPCs in soil to groundwater and subsequent theoretical ingestion of groundwater by humans
3. Potential volatilization of COPCs in soil and migration of COPC vapors into enclosed space and resulting inhalation of vapors by humans

Because the current use of the property is for industrial purposes, this PPCSR will primarily consider potential industrial worker exposures through application of RRS applicable to non-residential properties, although some reference to the residential RRS will also be made for purposes of consideration of hypothetical future residential use of the property.

5.3 TYPE 1 THROUGH TYPE 4 RRS

To assess whether conditions at the site may pose an unacceptable health risk to current and future site workers and hypothetical future residents, a comparison was made to the commercial (Types 3 and 4) and residential (Types 1 and 2) RRS.

5.3.1 RRS Assessment

In accordance with Georgia EPD guidance, default criteria for Types 1 and 3 RRS were identified. For Types 2 and 4 RRS, exposure factors from Georgia EPD guidance (Georgia EPD, 1999) or U.S. EPA guidance (U.S. EPA, 1997a) were used. These RRS values are considered to be conservatively protective of human health so that exposure to the identified and/or calculated concentrations would be highly unlikely to cause unacceptable risk of incremental carcinogenic or noncarcinogenic effects.

5.3.1.1 Soil Exposure

In accordance with Georgia EPD guidance, the Types 2 and 4 RRS for carcinogenic effects from potential direct contact to soil are typically calculated using Equation 6 from Part B of the Risk Assessment Guidance for Superfund (RAGS) Part B (U.S. EPA, 1991). The Types 2 and 4 RRS for noncarcinogenic effects from potential exposure to COPCs in soil are typically calculated using Equation 7 from RAGS Part B. For each constituent of concern, the lowest RRS from Equation 6 or Equation 7 was used as the Type 2 RRS. The equations and parameter values used to calculate the RRS for exposure to COPCs in soil are presented in Table 1 of the 2010 ARCADIS Response to Notice of Deficiency dated March 5, 2010 (ARCADIS, 2010) and are included as Attachment C.

In that ARCADIS 2010 response, the Type 2 RRS for COPCs were calculated separately for adults and children, and the lesser of the two values was identified as the Type 2 RRS (Georgia EPD, 1999). The exposure factors used to calculate Type 2 RRS included 70 kilograms (kg) of body weight for an adult and 15 kg for a child, 30 years of exposure duration for an adult and six years for a child, incidental soil ingestion of 100 milligrams per day (mg/day) for an adult and 200 mg/day for a child, and an inhalation rate of 15 cubic meters per day (m^3/day) for an adult. These exposure factors were obtained from EPD guidance (Georgia EPD, 1999). An inhalation rate of 8 m^3/day was used for a child; this value was obtained from U.S. EPA's Child-Specific Exposure Factors Handbook (U.S. EPA, 2002). It was also assumed that residents would be home 350 days per year.

The exposure factors used to calculate Type 4 (i.e., commercial/industrial) RRS are based on industrial exposure and include a body weight of 70 kg, 25 years of exposure duration, an incidental soil ingestion rate of 50 mg/day, an inhalation rate of 20 m^3/day, and an exposure period of 250 days per year. Exposure factors were obtained from Georgia EPD and U.S. EPA guidance (Georgia EPD, 1999; U.S. EPA, 1997a).

5.3.1.2 Groundwater Exposure

Potential human exposure to groundwater via ingestion and inhalation was considered in order to calculate appropriate RRS for COPCs in soil for purposes of protection against potential leaching of COCs in soil to groundwater and subsequent ingestion of such groundwater by human receptors.

In the ARCADIS 2010 response, the Type 2 and 4 RRS for carcinogenic and noncarcinogenic effects from potential exposure to groundwater were calculated using Equations 1 and 2, respectively, from RAGS Part B (U.S. EPA, 1991). The lowest criterion from Equation 1 or 2 was used as the Types 2 and 4 RRS. The equations and parameter values used to calculate the RRS for exposure to groundwater are presented in Table 2 of the 2010 response.

The exposure factors used to calculate the Type 2 (i.e., residential) RRS include a body weight of 70 kg for an adult and 15 kg for a child, 30 years of exposure duration for an adult and 6 years for a child, a water intake rate of 2 liters per day (L/day) for an adult and 1 L/day for a child, an inhalation rate of 15 m^3/day for an adult and 8 m^3/day for a child, and an exposure period of 350 days per year.

The exposure factors used to calculate Type 4 (i.e., commercial/industrial) RRS are based on industrial exposure and include a body weight of 70 kg, 25 years of exposure duration, a water intake rate of 1 L/day, an inhalation rate of 20 m^3/day, and an exposure period of 250 days per year. Exposure factors for both Types 2 and 4 RRS were obtained from Georgia EPD and U.S. EPA guidance (Georgia EPD, 1999; U.S. EPA, 1997a).

5.3.2 Toxicity Assessment

The toxicity values used to calculate Type 2 and Type 4 RRS (i.e., cancer slope factors [CSF] and reference doses [RfD]) were obtained from the U.S. EPA IRIS database (U.S. EPA, 2009). If a value was not available from IRIS, other U.S. EPA sources such as the U.S. EPA Regional Screening Levels (RSLs) (U.S. EPA, 2010) and the U.S. EPA Health Effects

Assessment Summary Tables (HEAST) (U.S. EPA, 1997b) were used. The toxicity values are listed in Table 3 of the 2010 response and are included as Attachment C.

The toxicity values for TCE were obtained from the U.S. EPA (2010) RSL table and were developed by the California Environmental Protection Agency (Cal/EPA). The use of these values is supported by the U.S. EPA in a memo from Susan Parker Bodine, Assistant Administrator, to regional administrators, dated January 15, 2009. In the memorandum, the U.S. EPA recommends the use of the Cal/EPA values until such time that the U.S. EPA issues toxicity values on IRIS. The use of the Cal/EPA values results in an increase in the RRS values for TCE, as the toxicity values are lower than the draft levels proposed by the U.S. EPA.

Comments were received from Georgia EPD requesting the use of provisional toxicity values for 1,1,1-TCA in the derivation of the RRS. ARCADIS was unable to verify the values proposed by EPD, and therefore they were not incorporated into this document. EPD indicated that a provisional inhalation reference dose was available. ARCADIS reviewed the list of available provisional toxicity values and none were available for 1,1,1-TCA. Additionally, the toxicity values for 1,1,1-TCA were revised on IRIS in 2007 and were repeated in the EPA 2010 RSL table. Therefore, these values were used in the derivation of the soil RRS for 1,1,1-TCA.

5.3.3 Type 1 through 4 Soil Risk Reduction Standards

The soil risk reduction standards were prepared by ARCADIS and were approved by EPD on September 24, 2010. A copy of the approved risk reduction calculations is included as Attachment C. The following sections describing the calculations were taken from the March 12, 2009, CAP and CSR.

The following further describes the Types 1 through 4 RRS for soil.

5.3.3.1 Type 1 RRS

The Type 1 RRS (default residential criteria) for soil were determined using the definition in Rule 391-3-19-.07(6)(c) of Georgia EPD's HSRA regulations (1999). Initially, the concentrations of the COPCs detected in soil above the water table were compared to the Type 1 RRS for such COPCs. The Type 1 RRS for those COPCs were determined as follows. If a criterion was available in Table 2 of Appendix III of the rule, then that RRS was used. Otherwise, the largest of the Appendix I allowable concentration for a particular COPC or 100 times the allowable Type 1 groundwater RRS for the COPC was compared to the calculated Type 1 carcinogenic and noncarcinogenic criteria, and the least of these values was selected as the Type 1 RRS for such COPC. A comparison of detected concentrations and the source of the Type 1 RRS is presented in Table 5 of Attachment C. Of the COPCs, only 1,4-dioxane and TCE were detected at concentrations greater than the Type 1 RRS for soil. Therefore, Type 2, 3, and 4 RRS were calculated for 1,4-dioxane and TCE, but there was no need to calculate Type 2, 3, or 4 RRS for the remaining COPCs, all of which meet the Type 1 RRS for such COPCs.

5.3.3.2 Type 2 RRS

The equations and input parameters used to calculate a Type 2 RRS for 1,4-dioxane and TCE in soil are presented in Table 1 of Attachment C. The Type 2 carcinogenic and noncarcinogenic criteria for soil are calculated in Table 6 of Attachment C for adults and in Table 7 of Attachment C for children. For each of these COPCs, the least of the carcinogenic and noncarcinogenic criteria was selected as the criterion for each receptor (adults and children), and the lower of the adult or children criterion was selected as the Type 2 RRS. The comparison of maximum detected concentrations of 1,4-dioxane and TCE in soil to their respective Type 2 RRS is presented in Table 5 of Attachment C. 1,4-Dioxane and TCE were detected at concentrations greater than their respective Type 2 RRS for soil, so the Type 3 and 4 RRS were calculated for those COPCs.

5.3.3.3 Type 3 and 4 RRS

The equations and input parameters used to calculate a Type 3 RRS for the COPCs in the soil are presented in Table 8 of Attachment C. The Type 4 carcinogenic and noncarcinogenic criteria for soil are calculated in Table 9 of Attachment C for adults. 1,4-Dioxane and TCE were detected at concentrations greater than the Type 3 and 4 RRS for soil.

5.3.4 Type 1 through 4 RRS for Soil Summary

A summary of the soil Type 1 through Type 4 RRSs is presented in Table 8.

As reflected in that table and as stated above, the only COPCs that exceeded the soil Type 3 and 4 RRS were 1,4-dioxane and TCE and these are chemicals of concern (COC).

In calculating the Type 2, 3, and 4 RRS for 1,4-dioxane and TCE in soil and comparing those calculations to the detections of those COCs in soil, please note that but for the leaching to groundwater criteria applicable to those calculations, which criteria assume exposure of overlying soil to rainfall, the soil concentrations of those COCs would have been lower than the allowable Type 2, 3, and 4 RRS criteria. These soils meet the criteria of the RRS that are based upon protection of human health from direct human contact with COC-impacted soils via inhalation or ingestion.

5.4 VAPOR INTRUSION PATHWAY

With the exception of 1,4-dioxane, the COPCs are classified as VOCs. The Henry's Law coefficient for 1,4-dioxane is 3.16×10^{-6} and its molecular weight is 88.11. Only those chemicals whose Henry's Law Coefficient is greater than 10^{-5} <u>and</u> whose molecular weight is less than 200 are considered to be a VOC. Because the remaining COPCs are considered VOCs, the potential exists for vapors from those VOCs in soil to migrate upward through pore spaces in the soil into overlying interior air space. If such vapors were to be contained in the interior space at concentrations that presented an unacceptable risk to human health via inhalation, then appropriate vapor intrusion mitigation measures should be considered to mitigate such risk.

EPA has developed a spreadsheet model known as the Johnson and Ettinger (JE) model[2] to calculate the potential VOC concentrations that may migrate into interior air space from underlying soil and groundwater and then compare the resulting concentrations (considering input models relative to assumed air exchange rates within the building) to conservative human health risk protection criteria. The JE model is acknowledged by EPA to be a very conservative model in that it tends to predict higher VOC concentrations in a building than would likely be measured through actual indoor air sampling. The JE model can be run to evaluate vapor intrusion health risks for both commercial and residential building occupants, with variations being these different types of occupants based on assumed differences in building and occupant characteristics such as air exchange rates and human exposure duration.

ARCADIS on behalf of Schneider performed a JE model evaluation of vapor intrusion potential for VOCS into the Art Laminating Property, the report of which is included in this PPCSR as Attachment D. Table 9 of this PPCSR presents the results of the ARCADIS JE vapor intrusion model for the ALF, LLC, property. Only the COCs yielding calculated vapor intrusion concentrations that presented an Incremental Lifetime Cancer Risk (ILCR) greater than 1×10^{-7} or a Hazard Index (HI) greater than 0.01 for either a residential or commercial occupant are displayed in the table.

5.4.1 Industrial Occupant Exposure

It can be seen in Table 9 that the ILCR is less than 1×10^{-5} and the HI is less than 1 for a commercial building occupant for all VOCs detected in soil or groundwater under the facility building. EPA deems such results to not present an unacceptable risk to commercial (including industrial) building occupants.

5.4.2 Residential Occupant Exposure

The ILCR that was calculated for potential vapor intrusion of VOCs from groundwater for a possible future residential occupant was 7×10^{-6} and the HI for such residential occupant was 1.0, with TCE, vinyl chloride, and 1,1-dichloroethene concentrations in groundwater being the principal drivers of these results. An ILCR of 9×10^{-5} and an HI of 25 were calculated for a potential residential occupant based upon use of the JE model to calculate potential vapor intrusion resulting from the maximum soil VOC concentrations underlying the building, with PCE, TCE, 1,1,1-TCA, and chloroform being the principal drivers of these results. These latter ICLR and HI results exceed the target ICLR of 1×10^{-5} and the target HI of 1.

The values referenced above resulted from the use of data inputs of the maximum VOC concentrations in soil underlying the building, regardless of the depth of such soil and without

[2] United States Environmental Protection Agency (U.S. EPA). 2004. *User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings.* Office of Emergency and Remedial Response, Washington, DC. June 19.

consideration of any soil concentration averaging. A more realistic JE model approach to assessment of vapor intrusion risk from VOCs in soil is one that considers VOC concentrations in shallow soil (i.e., 0–2 feet depth) which is far more likely to result in vapor intrusion into the building than VOC concentrations in deeper soils. Utilizing this alternative JE model approach to input maximum VOC concentrations in shallow soil resulted in an ILCR of 4×10^{-7} and an HI of 0.07 for a potential residential occupant, which reflect acceptable risks relative to the target acceptable ICLR of 1×10^{-5} and HI of 1. As noted above, these acceptable vapor intrusion risk results are based on maximum VOC concentrations in shallow soil as compared to a more realistic soil concentration averaging approach that would yield even lower risk values.

In conclusion, based on the existing commercial use of the property and using highly conservative data inputs consisting of maximum VOC concentrations in soil, regardless of depth, and groundwater, the JE model reflects a minimal and acceptable level of vapor intrusion risk. Similarly, if shallow soil maximum VOC concentrations are used as data inputs for the JE model as applied to a hypothetical future residential occupant, then the JE model reflects a minimal and acceptable level of vapor intrusion risk. Only if maximum VOC concentrations in deeper soil are used as data inputs in a JE model run with respect to a hypothetical future residential occupant does a JE model risk exceedence result. In the event of future residential use or redevelopment of the property, further vapor intrusion risk analysis involving soil and exposure area averaging and depth considerations, subslab soil vapor sampling, or indoor air sampling may be performed to confirm the absence of a bona fide health risk associated with the possibility of vapor intrusion in a residential use setting, or vapor intrusion mitigation measures could be installed, if necessary. One simple measure to mitigate such theoretical risk would be the use of a basic vapor barrier in the construction of the subfloor of a residential building, as we understand to have been used in connection with the construction of the nearby M-West residential development.

5.5 TYPE 5 RRS ASSESSMENT

Because 1,4-dioxane and TCE concentrations in soil under the building exceed Type 1 through 4 RRSs for soil because of the theoretical potential of leaching from soil to groundwater and the highly conservative assumption that the groundwater under the building might some day be a source of drinking water, consideration has been given to a Type 5 RRS involving corrective action through the use of institutional and engineering controls to protect against such leaching as appropriate under this PPCSR. Under the HSRA and Brownfields rules applicable to consideration of a Type 5 RRS, a demonstration must first be made that it is impracticable to remediate these COCs in soil through other means.

In this instance, remediation of 1,4-dioxane in soil under the building is impracticable primarily because of the inaccessibility of such soil under the foundation slab, the disruption that would be caused by destruction of the building floor and slab, the undue expense that would be involved, and the lack of bona fide risk presented by the continued presence of such soils under the slab. As discussed above, only the leachability pathway causes an exceedence of Type 1 through 4 RRS for 1,4-dioxane, but the very same building foundation that makes remediation of the 1,4-dioxane impractical also serves to protect against the leachability to groundwater pathway. Accordingly, the building slab serves as an engineering control protecting against that pathway, and, as discussed further below, an institutional control in the form of an environmental covenant will be adopted that calls for maintenance of that engineering control and annual inspections and reports to EPD to verify such maintenance.

As to TCE in soil under the building, as discussed above, it is possible that the two detections of TCE in such soil from a single sampling event in 2005 are anomalies; notwithstanding significant additional soil sampling in that area, no additional TCE detections have been found at that order of magnitude. Assuming that the 2005 detections of TCE were reflective of actual soil concentrations that remain in place today notwithstanding the volatility of TCE, it would be impractical to remediate such TCE in soil under the building for the same reasons discussed above as to 1,4-dioxane. Again, the theoretical leaching to groundwater pathway was the sole reason that TCE in soil exceeded Type 1 through 4 RRS, and, again, the same slab that makes remediation of that TCE via excavation and soil removal impractical serves to protect against the leachability pathway. Even if one considered the installation of a soil vapor extraction (SVE) system to attempt to reduce the concentrations of TCE to levels below a Type 1 through 4 RRS, such installation would be impracticable because of the ineffectiveness of SVE to reduce the relatively low TCE concentrations in question (≤0.96 mg/kg) to the extremely low concentrations that would be required to meet a Type 1 through 4 RRS.[3]

By reason of the impracticability of undertaking active remediation of 1,4-dioxane and possible TCE in soil under the building slab, a Type 5 RRS is proposed in the form of maintenance of the existing building slab as a corrective action. The HSRA rules applicable to a Type 5 RRS for soil compliance include the following requirements:

- Long-term monitoring and maintenance of the selected corrective action plus a restrictive covenant provided in accordance with Rule 391-3-19-.08(7).
- Type 1, 2, 3, or 4 risk reduction standards, as applicable, must be met beyond the boundary of the area for which compliance with Type 5 standards is sought. Because no soil COCs have been detected in soil at the property outside the footprint of the building in excess of a Type 1 RRS, this requirement is met.
- The Type 5 RRS corrective action for COCs in soil should be consistent with the general requirements of EPD Rule 391-3-19-.07 so as to meet the following performance criteria:
    1. **Carcinogens.** For COCs that are carcinogens, the measures shall be expected to prevent exposures that exceed the upper boundary on an estimated excess cancer risk of 1×10^{-5} (1×10^{-4} for class C carcinogens) for individual carcinogenic substances and individual exposure pathways. The cumulative excess cancer risk for multiple carcinogenic substances and exposure pathways shall not be greater than 1×10^{-5}.

[3] 1,4-Dioxane is not susceptible to remediation via SVE, because it is not a VOC.

2. **Systemic toxicants.** For COCs that are not carcinogens but instead are systemic toxicants, the measures shall be expected to prevent exposures that exceed the dose to which the human population (including sensitive subgroups) could be exposed on a daily basis without appreciable risk of deleterious effect during a lifetime. Exposure shall not exceed a hazard quotient of 1 or a hazard index of 1. The hazard quotient is the ratio of a single systemic toxicant exposure level for a specified time period to a reference dose for that systemic toxicant derived from the same time period. The hazard index is the sum of the hazard quotients for one or more systemic toxicants that affect the same target organ or that act by the same method of toxicity through one or more media exposure pathways.

3. **Air.** With respect to the present non-residential use of the building, the applicable air protection measure is either OSHA permissible exposure limits, threshold limits, or other criteria applicable to an industrial exposure setting within the property boundary, and concentrations that satisfy Items 1 and 2 of Rule 391-3-19-.07(10)(d) at the property boundary. As discussed above, the JE model as applied to the existing industrial use of the building reflects that the risk of vapor intrusion from the maximum concentrations of the COCs in question does not present a risk in excess of acceptable criteria.

4. **Soil.** For soil COCs for which a Type 5 standard is sought, exposure area averaging using methods recognized by the U.S. EPA and approved by the Director may be used to demonstrate compliance with soil criteria, provided that the engineering and institutional controls for soil will maintain exposure conditions consistent with those used to calculate such criteria. Because the Type 5 RRS corrective action proposed herein is equally protective against the maximum COC concentrations in soil and average COC concentrations in soil, there is no reason to address exposure area averaging further in this PPCSR.

   As discussed above, the only exceedence of the Type 1-4 RRS for soil at the property pertains to the potential leaching-to-groundwater pathway of certain soils underlying the building, and the engineering control consisting of the maintenance of the existing building slab, discussed below, protects against this pathway. There are no exceedences of the Type 1-4 RRS due to direct exposure to the soil within the first four feet below the surface for either carcinogenic or systemic effects.

   Implementation of a Type 5 RRS corrective action in the form of maintenance of the existing building slab over the 1,4-dioxane and TCE detections in soil under that slab as confirmed pursuant to the monitoring and maintenance plan (MMP) set forth below, in conjunction with entry of an environmental covenant (EC) in the form attached hereto (see Attachment E), will serve to satisfy each of these criteria. As discussed above, the detected concentrations of these COCs in soils underlying the building do not give rise to unacceptable direct contact or inhalation risks that exceed any of the risk criteria referenced above. Only the leaching-to-groundwater pathway is of potential concern, and that concern is well addressed through maintenance of the existing building slab.

SECTION 6.0
CORRECTIVE ACTION IMPLEMENTATION

6.1 IN-PLACE CAP FOR IMPACTED SOILS

In order to achieve the Type 5 RRS for 1,4-dioxane and TCE that have been detected in soil underlying the facility building at concentrations in excess of Type 1 through 4 RRS so as to protect against the leaching of those COCs into groundwater and hypothetical human receptor exposure via extended use of such groundwater as drinking water, the only corrective action needed is the maintenance of the existing concrete slab and/or building that serve to prevent rainfall from causing such leaching. Following approval of this PPCSR, permanent markers will be installed along the exterior edge of the in-place engineered control cap to delineate the restricted area. The maintenance of this engineering control will be ensured through a monitoring and maintenance plan and an institutional control consisting of an environmental covenant as discussed below. The proposed area of the cap is outlined on Figure 13.

6.2 MONITORING AND MAINTENANCE PLAN

The protections provided by the cap referenced above will be ensured by the conduct by ALF, LLC, or its successor-in-interest, of an annual inspection of the building facility within thirty (30) days of the anniversary of EPD's approval of this PPCSR so as to confirm that the slab and/or building remain in place in a physical condition that prevents exposure of the underlying soils in question to rainfall. Within thirty (30) days following the effective date of the environmental covenant and annually thereafter, ALF, LLC, or its successor-in-interest shall submit a report to EPD, on the form attached hereto as Attachment F, that confirms such inspection and finding or that identifies the need and schedule for any improvements to the cap to protect against rainfall exposure to the impacted soils. In the event that the soil in question becomes accessible for purposes of removal as the result of the demolition of the building and foundation slab, ALF, LLC, or its successor-in-interest will handle such soils in accordance with applicable law, regulation, and EPD requirements thereunder at such time. In the event that the use of the existing building is changed to residential use, then ALF, LLC, or its successor-in-interest shall inform EPD of such changed use and shall perform such other investigation, analysis, and/or mitigation measures with respect to potential vapor intrusion consideration discussed above as are necessary and consistent with applicable law, regulation, and EPD requirements thereunder at such time.

6.3 ENVIRONMENTAL COVENANT

In order to maintain the impervious cap over the impacted soil area, an institutional control in the form of an environmental covenant, attached hereto as Attachment E, will be executed, which covenant will ensure that the cap remains in place or that the impacted soils are removed in the event of demolition of the cap. The environmental covenant will provide for the conduct of annual inspections and reports as per the terms of the monitoring and maintenance plan referenced above and EPD Rule 391-3-19-.08(7). The covenant will be recorded with the real estate records Clerk of the Fulton County, Georgia, Superior Court, and notices consistent with those required under the terms of the attached covenant will be provided. The environmental covenant will run with the land and be binding on the successors and assigns of ALF, LLC.

SECTION 7.0
CERTIFICATION STATEMENT

I certify under penalty of law that this report and all attachments were prepared under my direction in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Based on my review of the findings of this report with respect to the risk reduction standards of the Rules for Hazardous Site Response, Rule 391-3-19-.07, I have determined that the soil at this site/property is in compliance with Type 1 or Type 5 risk reduction standards.

6-13-12

Purchaser | Date
Art Laminating and Finishing, LLC

By: Matt Anson
Matthew Anson

Title: Secretary

Seller:

John E Buchanan "by R.L. Buchanan with express permission"
John Buchanan

R. L...
R. Lynne Buchanan

SECTION 8.0
REFERENCES

ARCADIS. 2006. Compliance Status Report, Former Square D Site, December 22, 2006.

—. 2007. Update on Site Investigation Activities, Former Square D Site, May 14, 2007.

Bradley, P. M., and F. H. Chappelle. 1996. Anaerobic mineralization of vinyl chloride in Fe(III)-reducing aquifer sediments. *Environmental Science and Technology*, Vol 30: 2692–2696.

—. 1998. Effect of contaminant concentration on aerobic microbial mineralization of DCE and VC in stream-bed sediments. *Environmental Science and Technology*, Vol 30, no. 5: 553–557.

Cressler, C. W., C. J. Thurmond, and W. G. Hester. 1983. Groundwater in the Greater Atlanta Region, Georgia. Information Circular 63.

Georgia Environmental Protection Division. 1999. Hazardous Site Response Act, Georgia Department of Natural Resources, Environmental Protection Division, Chapter 391-3-19.

Heath, R. C. 1984. “Ground-Water Regions of the United States.” USGS Water Supply Paper 2242, 78p.

—. 1988. “Hydrogeologic Setting of Regions.” In Back, W., Rosenshein, J. S., and Seaber, P. R., eds., *Hydrogeology, Geological Society of America, The Geology of North America*, Vol. 0–2.

LeGrand, H. E. 1954. “Geology and Ground Water of the Statesville Area, North Carolina.” North Carolina Dept. of Conservation Bull. 68 p.

—. 1967. “Ground Water of the Piedmont and Blue Ridge Provinces in the Southeastern States.” USGS Circular 538, 11 p.

—. 2004. “A Master Conceptual Model for Hydrogeological Site Characterization in the Piedmont and Mountain Region of North Carolina.” North Carolina Dept of Environment and Natural Resources, 40 p.

McConnell, Keith I., and Charlotte E. Abrams. 1984. Geology of the Greater Atlanta Area. Georgia Geologic Survey Information Circular 96.

Teck, Michael. 2006. Personal Communication.

U.S. Environmental Protection Agency (U.S. EPA). 1991. Human Health Evaluation Manual, Part B: Development of Risk-Based Preliminary Remediation Goals. Office of Solid Waste and Emergency Response, Washington, DC. OSWER Directive 9285.7-01B. December 13.

—. 1997a. Exposure Factors Handbook. Exposure Assessment Group, Office of Research and Development. National Center for Environmental Assessment, Washington, DC. EPA 600/P-95-002. 002FA. August.

—. 1997b. Health Effects Assessment Summary Tables (HEAST), FY-1997 Update. Office of Research and Development and Office of Emergency and Remedial Response, Washington, DC. EPA/540/R-97/036. OERR 9200.6-303(97-1). NTIS No. PB97-921199. July.

—. 1999. Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites. OSWER Directive 9200.4 17P. April.

—. 2000. Supplemental Guidance to RAGS: Region 4 Bulletins. Human Health Risk Assessment, Interim, Office of Health Assessment, Atlanta, Georgia.

—. 2002. Child-Specific Exposure Factors Handbook (Interim Report), U.S. Environmental Protection Agency, Office of Research and Development, Washington, DC, EPA-600-P-00-002B, September.

—. 2004. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings. Office of Emergency and Remedial Response, Washington, DC. June 19.

—. 2008. Regional Screening Levels. Internet Access: [http://epa-prgs.ornl.gov/chemicals/download.shtml].

—. 2009. Integrated Risk Information System (IRIS). Office of Research and Development, National Center of Environmental Assessment (NCEA). Internet Access: [http://www.epa.gov/iris].