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ENVIRONMENT

Mr. George Jacob
Remedial Project Manager
Central New York Remediation Section
U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, New York 10007-1866

Subject:
Revised Vapor Intrusion Re-Sampling Work Plan, JCI Jones Chemicals, Inc., 100 Sunny Sol Boulevard, Caledonia, New York

Date:
February 28, 2013

Contact:
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Our ref:
TL003165.0032

Dear Mr. Jacob:

As requested in your October 16, 2012 correspondence, and in response to recent comments on the work plan submitted January 29, 2013, ARCADIS U.S., Inc. (ARCADIS), on behalf of JCI Jones Chemicals, Inc. (JCI), has prepared this revised Vapor Intrusion (VI) Re-Sampling Work Plan for the JCI Superfund site located in Caledonia, New York ("the Site"). This work plan provides a scope of work for collecting paired sub-slab soil-gas and indoor air samples at on- and off-site sampling locations. The VI sampling is proposed to be conducted the week of March 11, 2013.

Background

From February 24 through 26, 2009, the U.S. Environmental Protection Agency (USEPA) Region II conducted sub-slab sampling at the Site and its vicinity at 13 residential/business locations, including homes along Iroquois Road and Hardwood Avenue (Figure 1). All samples were analyzed for volatile organic compounds (VOCs) using USEPA Method T0-15. On May 15, 2009, the USEPA provided the analytical results of the sub-slab soil-gas samples, which indicated detections of chlorinated solvents, petroleum compounds, methane, acetone, chloroform, and other compounds in a number of samples. Some of the VOCs detected in the sub-slab samples were also detected in the quality assurance/quality control (QA/QC) samples.

On November 30, 2010, the USEPA requested that JCI prepare and submit a sampling work plan for evaluating indoor air quality at some of the 2009 sub-slab

soil-gas sample locations exhibiting detections. The VI sampling work plan was submitted on February 4, 2011.

After receiving USEPA's approval of the work plan on February 22, 2011, ARCADIS conducted paired sub-slab soil-gas and indoor air sampling from March 21 to 24, 2011. Sampling was conducted at eight on- and off-site locations (Figure 1). Results of the sampling were presented and discussed in the VI Investigation Report prepared by ARCADIS (June 2011). Results were compared to the New York State Department of Health (NYSDOH) Guidance Matrices to determine future action. Based on NYSDOH guidelines, re-sampling was recommended at four locations (JCI-1 to JCI-4) and No Further Action was recommended at the remaining four sampling locations (JCI-5 to JCI-8).

On October 16, 2012, USEPA provided review comments and recommended re-sampling at the JCI-1 to JCI-4 and also requested re-sampling at JCI-6. In addition, USEPA recommended that data from the JCI-6 sampling location (Sickles Corporation) be considered and evaluated as mixed residential/commercial building use rather than just commercial.

Remedial Efforts

Remediation to treat chlorinated solvent-affected soil and groundwater has been ongoing since 1996. The groundwater pump-and-treat system was started in 1996 with additional wells piped in March 2004. A soil-vapor extraction (SVE) system operated between April 2004 and May 2008 to treat affected soil in the source area. Since 2005, in situ chemical oxidation (ISCO) treatment using sodium permanganate has been conducted annually in the source area. A sub-slab depressurization system to mitigate VI was installed in the office complex of the Site in December 2012.

Objective

The objective of the re-sampling at previously sampled locations (JCI-1 through JCI-6) is to evaluate potential variability in the indoor air and sub-slab soil vapor concentrations. The proposed paired sampling and analysis program at four of the five locations is intended to provide concurrent sub-slab soil and indoor air sampling data. The value of re-sampling these structures is to confirm the soil VI pathway characteristics derived from the March 2011 sampling, evaluate variability in sub-slab and indoor air concentrations, and demonstrate the effectiveness of the sub-slab

depressurization system installed in December 2012 at JCI-1 (where an indoor air sample will be collected).

Additional sampling locations have been added to this revised work plan to address agency concerns provided in comments from February 20, 2013, along with follow-up via conference call and email communications. The purpose of expanding the soil vapor and indoor air investigation to further side-gradient locations is to position the Site for closure.

Conceptual Site Model

The Site lies in the Erie-Ontario lowlands physiographic province of western New York; the regional physiography shows the profound effects of recent periods of glaciation. Depths to groundwater range between 14 and 18 feet below ground surface; groundwater occurs under unconfined conditions. Soil lithology above the water table consists of a gravel-sand-silt mixture that ranges in color from dark gray to grayish brown and is typically well graded (poorly sorted); the gravel size ranges from few millimeters to more than 3 inches.

The Remedial Investigation (LFR 1999) indicated that chlorinated solvents (including tetrachloroethene and its breakdown products) were the primary chemicals of concern at the Site. The highest concentrations in soil and groundwater were found to be associated with the former tank pad area located in the western portion of the Site. Large production buildings, warehouses, and office structures are present to the east of the source area. No basement or crawlspace is present beneath these buildings on the Site. Since the implementation of the remedy (SVE, groundwater pump-and-treat, and ISCO) in 1996, soil and groundwater concentrations have declined significantly. A sub-slab depressurization system was installed in December 2012 in the office complex of the Site to mitigate VI.

Land use to the northeast is primarily agricultural. To west, southwest, and northwest, land use is mixed-residential, commercial, and industrial.

Sampling Locations

To meet the objective, ARCADIS proposes to collect sub-slab soil-gas and indoor air samples at previously sampled locations (JCI-2 through JCI-6) and indoor air at JCI-1 as discussed previously. Additionally, the expanded scope includes the five proposed locations on Iroquois Road (JCI-9 through JCI-13) as shown on Figure 1

and in Table 1. JCI has sent letters requesting site access to the owners of each of these locations, and only those locations where the owner has granted JCI site access will actually be sampled. Figure 1 also provides all previously sampled locations at the Site for reference, including USEPA samples from 2009 and the locations sampled in 2011 by JCI. The proposed re-sampling locations are based on previous USEPA sub-slab soil-gas sampling and ARCADIS paired SVE sampling results. The new off-site locations are based on comments from USEPA intended to reach No Further Action for soil vapor activities at the Site.

As detailed in Table 1, 12 sub-slab soil-gas samples and 13 indoor air samples will be collected from the Site and nearby residences. The paired sub-slab and indoor air samples will be collected concurrently with the outdoor ambient samples at equivalent durations (24 hours for residential locations and 8 hours for industrial settings as shown on Table 1). Details of the sampling protocols are provided below.

Sampling Methods and Documentation

Sampling activities will be performed following NYSDOH (2006) guidance, except as regards USEPA procedures for sub-slab installation points as detailed in Standard Operating Procedures 2082 (March 29, 2007), which requires permanent points be installed depending on access. All samples will be analyzed at ALS Environmental, Inc. (ALS), Rochester, New York—a full-service environmental laboratory with National Environmental Laboratory Accreditation Conference certification. Upon collection, all samples will be hand-delivered to ALS under routine chain of custody for the analysis of VOCs using USEPA Method T0-15.

Indoor Air Samples

A total of 13 indoor air samples will be collected and, where appropriate, concurrently with the sub-slab soil-gas samples, except at JCI-1 where a depressurization system has been installed in the JCI office. The sample locations are shown on Figure 1 and summarized in Table 1. In addition, two duplicate indoor air samples will be collected—one from location JCI-4 and another from the residence at JCI-6.

Batch-certified, pre-cleaned, 6-liter SUMMA canisters provided by ALS will be used to collect the indoor air samples. All SUMMA canisters will be placed at approximately breathing height (3 to 5 feet above grade) by propping on stools or boxes. The canisters and flow controllers will be calibrated and the samples will be collected at a flow rate not exceeding 0.2 liter per minute. Samples from the

residential locations will be collected over a period of 24 hours, and samples from the industrial locations will be collected over a period of 8 hours.

Sub-Slab Soil-Gas Samples

A total of 12 sub-slab soil-gas samples will be collected from on-site and off-site residences as shown on Figure 1 and summarized in Table 1. In addition, duplicate samples will be collected—one concurrently with the sub-slab sample collected on the Site at JCI-4, and another collected concurrently with the sub-slab sample at the location JCI-6. Duplicate sample durations will be equivalent to their affiliated primary sample duration.

Previously installed sampling ports (from 2011) will be used where possible. If the sampling ports are not available or unusable, or in the case of new off-site locations, additional procedures described below will be followed to collect the sub-slab soil-gas samples:

- All sample locations will be cleared for utilities.
- A hand-held hammer drill will used to core a 3/8-inch hole through the concrete slab and advance approximately 3 inches into the sub-slab material to create an open cavity. During sampling, the hole will be swept clean as necessary. A shop vacuum will only be used to clean the floor area away from the hole or prior to the hole reaching completely through the slab to ensure that soil gas is not inadvertently pulled out during installation of the sample point.
- New Teflon tubing will be inserted into the concrete slab at each sample location, approximately 1 inch above the sub-slab material.
- All sub-slab penetrations should be sealed with air-tight material; in this case, ARCADIS prefers an inert modeling clay that acts as a flowable sealant to ensure the penetration does not act as a conduit for sub-slab vapor intrusion into the structure. Sealed penetrations will be documented with photographs and descriptions of the seal on sampling forms. If on-site penetrations are intended to remain accessible for (potential) future sampling, and the resident agrees, a permanent sub-slab sampling point will be constructed with stainless-steel tubing, swagelock-type fittings, a Teflon tape-sealed threaded plug, and seated in an appropriate seal.

- The tubing will be sealed to the surrounding concrete slab, as described above, after it is positioned at the desired depth, using inert clay. The clay will provide an air-tight seal between the sample tubing and the concrete slab.
- Prior to sampling, the sampling tube will be purged of three volumes of air. Purging or sampling flow rates will not exceed 0.2 liter per minute to minimize ambient air infiltration during sampling.
- Batch-certified, pre-cleaned, 6-liter SUMMA canisters provided by ALS will be connected directly to the tubing to collect the sub-slab soil-gas samples.
- The duplicate sub-slab samples will be collected using a “T” connection.
- A tracer gas (e.g. helium) will be used as part of sub-slab soil-gas sampling to verify that the soil vapor sample has not been diluted by outside air. Using a plastic pail or other container, the atmosphere in the immediate vicinity of the area in which the probe intersects the ground surface will be enriched with the tracer. Soil vapor from the probe will be measured for the tracer using a portable monitoring device to ensure the soil vapor sample is not diluted. A minimum concentration of 90% helium will be maintained within the container. Tracer gas concentrations in the sampling train will be kept below 10% helium during pre-sampling checks. Should the tracer gas be measured outside these target concentrations, the location will be re-installed until the targets are reached with the intent to reach 100% helium in the container and 0% helium in the sampling train.
- The SUMMA canister will be opened and the sub-slab samples will be collected over the appropriate sampling period using a flow controller (i.e., either 24 hours or 8 hours depending on residential or industrial settings, respectively). Flow rate will not exceed 0.2 liter per minute. All canisters will be labeled and contact information provided to clarify that the canister should remain undisturbed during sampling. After each SUMMA canister is filled (approximately 5 inches of mercury), it will be closed, labeled, and hand-delivered to ALS for analysis. Vacuum left in the canister could be used as a means for the laboratory to verify the canister did not leak while in transit.
- Upon completion of sampling, core debris, tubing, and all sampling material will be removed and properly disposed. The drilled holes may either be capped for potential future monitoring or filled with concrete grout flush to the surface. The area will be swept clean of any debris and returned to pre-sampling conditions.

Ambient Air Samples

Seven ambient air samples will be collected from locations upwind of the sampling locations as shown on Figure 1. The ambient air samples will be collected using the methods described for indoor air samples and consistent with the indoor air and sub-slab sampling periods as determined by the type of location (residential at a 24-hour duration and industrial at an 8-hour duration).

Documentation

Documentation of all field activities (e.g., sampling techniques, environmental and building conditions) will be prepared and kept in site-specific field logs provided by USEPA. ARCADIS will complete and review the Indoor Air Quality Questionnaire and Building Inventory Form provided in the NYSDOH (2006) guidance prior to conducting the sampling. If required, sampling locations may be adjusted based on information collected in consultation with USEPA, NYSDOH, and New York State Department of Environment and Conservation (NYSDEC).

In addition, the field sampling team will note the following details for each sample collected:

- Sample identification
- Date and time of sample collection
- Sampling depth
- Identification of each SUMMA canister
- Sampling methods and devices
- Sub-slab soil-gas purge volumes
- Vacuum of canisters before and after sampling
- Floor plan sketches that include the floor layout with sample location
- Photographs of each sample location
- Any other pertinent information, such as spills, floor stains, chemicals stored, odor, and reading from field instrumentation (e.g., photoionization detector)
- Chain-of-custody

Schedule and Reporting

Following USEPA's approval of this work plan, the paired sub-slab and indoor air sampling is scheduled to be performed on March 11, 2013. The field activities are expected to take approximately five days to complete. Laboratory results will be available approximately four to six weeks after sampling is completed. A summary report discussing the sampling results, comparison to relevant screening level, and potential for VI will be prepared for submittal to USEPA, NYSDEC, and NYSDOH within 90 days of receipt of all analytical results.

Please contact Shekhar Melkote at 570.961.9433 if you have any questions or comments.

Sincerely,

ARCADIS U.S., Inc.

Shekhar Melkote
Principal Hydrogeologist

Katherine Potter
Staff Geologist

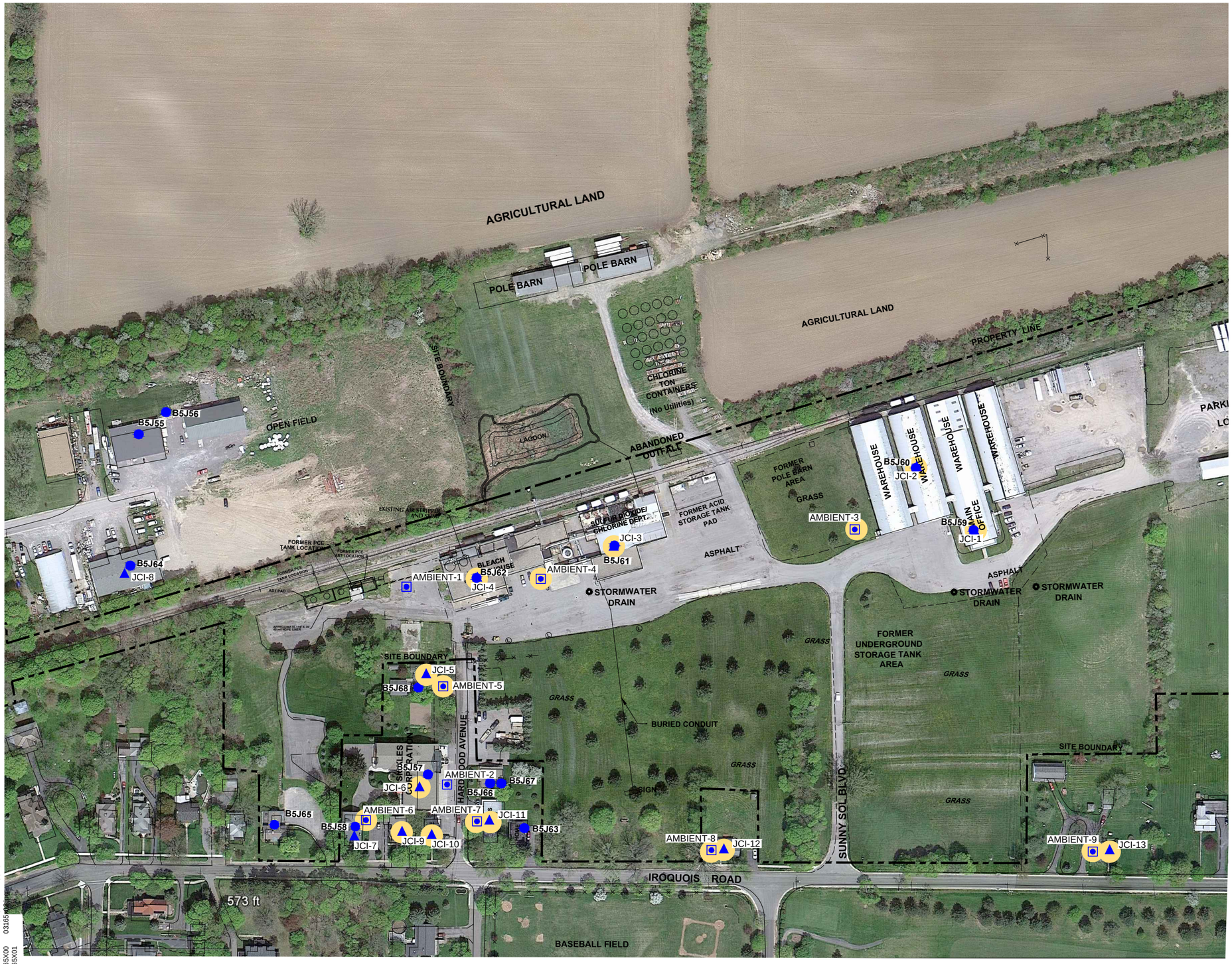
Copies:
Tom Festa; NYSDEC
Tim Gaffney; JCI
Kevin M. Warner, P.E.; ARCADIS

Table 1
Proposed Indoor Air and Sub-Slab Sampling Locations
JCI Jones Chemicals, Inc.
Caledonia, New York

Location	Property Use	Sample ID	Previous USEPA ID	Indoor Air	Sub-Slab
JCI – Office Area	Industrial	JCI-1	B5J59	X	NA
JCI - Warehouse	Industrial	JCI-2	B5J60	X	X
JCI – Office Area	Industrial	Ambient-3 (linked with JCI-1 and JCI-2)	None	NA	NA
JCI -Production 1	Industrial	JCI-3	B5J61	X	X
JCI-Production 2	Industrial	JCI-4	B5J62	X	X
JCI-Production 2	Industrial	Dup – 1 (duplicate of JCI-4)	None	X	X
JCI Site	Industrial	Ambient-4 (linked with JCI-3 and JCI-4)	None	NA	NA
210 Hardwood Ave.	Mixed Residential/Commercial	JCI-5	B5J68	X	X
210 Hardwood Ave.	Mixed Residential/Commercial	Ambient-5 (linked with JCI-5)	None	NA	NA
218 Hardwood Ave.	Mixed Residential/Commercial	JCI-6	B5J57	X	X
218 Hardwood Ave.		Dup – 2 (duplicate of JCI-6)	None	X	X
218 Hardwood Ave.	Mixed Residential/Commercial	Ambient-6 (linked with JCI-6, JCI-9, and JCI-10)	None	NA	NA
3255 Iroquois Road	Residential	JCI-9	None	X	X
3259 Iroquois Road	Residential	JCI-10	None	X	X
3271 Iroquois Road	Residential	JCI-11	None	X	X
3271 Iroquois Road	Residential	Ambient-7 (linked with JCI-11)	None	NA	NA
3293 Iroquois Road	Residential	JCI-12	None	X	X
3293 Iroquois Road	Residential	Ambient-8 (linked with JCI-12)	None	NA	NA
3333 Iroquois Road	Residential	JCI-13	None	X	X
3333 Iroquois Road	Residential	Ambient-9 (linked with JCI-13)	None	NA	NA

Notes:

1. Sub-slab and indoor air samples from residential locations will be collected over a 24-hour period; samples from industrial locations will be collected over an 8-hour period.
2. All sub-slab soil-gas, indoor air, and ambient air samples will be collected at a flow rate not exceeding 0.2 liter per minute.



LEGEND:

- SITE BOUNDARY OF JCI JONES CHEMICALS, INC.
- JCI-6 ▲ PAIRED SUB-SLAB/ INDOOR AIR SAMPLE
- AMBIENT AIR SAMPLE
- PROPOSED 2013 SAMPLING LOCATION
- B5J61 ● U.S. EPA SUB-SLAB SAMPLES (FEBRUARY 2009)

NOTES:

1. AERIAL PHOTOGRAPH OBTAINED FROM NEW YORK STATE GEOGRAPHIC INFORMATION SYSTEMS (NYS GIS) WEBSITE, DATED 2009.
2. ALL LOCATIONS ARE APPROXIMATE.
3. JCI-1 THROUGH JCI-8, AMBIENT-1 AND AMBIENT-2 WERE PREVIOUSLY SAMPLED BY ARCADIS IN 2011.

0 150' 300'

GRAPHIC SCALE

JCI JONES CHEMICALS, INC. - SUPERFUND SITE
CALEDONIA, NEW YORK
SOIL VAPOR INTRUSION INVESTIGATION REPORT

PROPOSED PAIRED SUB-SLAB/INDOOR AIR RESAMPLE LOCATIONS

ARCADIS

FIGURE 1

CITY:Syracuse DIV/GROUP:Env/CAD DB:W.Berndgen, A.Schilling, W-JONES LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Tallahassee-FL\ACTIVITY\03165\000310000\103165B01.dwg LAYOUT: 1 (2) SAVED: 2/28/2013 3:14 PM ACADVER: 18.1S (LMS TECH)
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