ARCADIS
Infrastructure · Water · Environment · Buildings

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Mr. Todd Caffoe
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 8
6274 East Avon-Lima Road
Avon, New York 14414-8696

Subject:
West Side Soil Boring Investigation Work Plan
Crosman Corporation Site
East Bloomfield, New York

Date:
June 11, 2014

Contact:
William B. Popham

Phone:
585.662.4022

Email:
bill.popham@arcadis-us.com

Our ref:
B0041501.0001

Dear Mr. Caffoe:

On behalf of Crosman Corporation and New Coleman Holdings, Inc. (collectively, Crosman), ARCADIS is submitting this West Side Soil Boring Investigation Work Plan (Work Plan) for the Crosman site, located in East Bloomfield, New York (Site). Based on the preliminary results of a recent vapor intrusion (VI) investigation performed at the Crosman facility, this Work Plan has been prepared by ARCADIS to address the request of the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) to perform a soil boring investigation at the west end of the manufacturing building on the Site to investigate for the possible presence of one or more source area(s), if any, beneath the floor of the building.

Background

As requested by the NYSDEC and NYSDOH, ARCADIS performed a soil VI investigation at the Site in late January 2014. The results of this VI investigation were shared with the NYSDEC and NYSDOH, and are summarized in Table 1 and on Figure 1. As a result of an elevated concentration of trichloroethene (TCE) observed in the sub-slab vapor sample collected at the west end of the building (sample ID: SS-4), the NYSDEC and NYSDOH requested that a subsurface investigation be performed to identify, if any, potential source area(s) beneath the west end of the manufacturing building.

As requested by the NYSDEC and NYSDOH, ARCADIS and Crosman personnel initially discussed possible historical factors that may have resulted in a TCE source area being present at this portion of the plant. Based on previous Site investigation work and interviews with long-tenured Crosman personnel, four areas were identified at the west end of the building as potential historical release points; a sump/pit located in the Finishing Room; another sump/pit located in the Bluing Room; a former aboveground TCE storage tank in the Bluing Room, which may have released TCE

to the concrete floor; and a piece of machinery that was formerly located in between the Screw Machines and the Punch Press, which used large quantities of TCE and was reported to have released TCE to the concrete floor. Figure 2 identifies the approximate location of these potential release points.

After completing the above, ARCADIS, NYSDEC, and Crosman representatives met at the Site on May 16, 2014 to discuss these potential release points, and, after reviewing these areas, agreed to six locations where soil borings would be advanced to collect soil and groundwater samples. Details for the Work Plan are discussed below.

Objective

The objective of this soil boring investigation is to determine whether one or more TCE source areas, if any, are located beneath the west end of the manufacturing building.

Scope of Work

Pre-Mobilization

ARCADIS will perform a subsurface utility location, utilizing ground-penetrating radar and electromagnetic detection to identify potential utilities and/or obstructions at the six proposed sampling locations.

Site Preparation and Mobilization

Two low-clearance drill rigs will be mobilized to the site to complete the soil boring and sampling activities. The concrete floor at each proposed location will be cored to remove concrete and allow access to the underlying soils. As discussed later herein, a decontamination area will be constructed to accommodate decontamination activities, as required.

Soil Boring Activities

Six soil borings are proposed to be advanced beneath the west end of the manufacturing building, as shown on Figure 2. Soil borings will be advanced using hollow-stem augers, with macro-core tooling utilized to collect samples continuously in new, clean acetate liners.

Upon completion of each soil boring and collection of samples, each boring will be tremie-grouted to seal the open borehole with concrete placed at the top 6 to 8 inches to match the existing concrete floor. Tooling will be decontaminated between soil boring locations, as described herein. Boring logs and the location of each soil boring will be recorded.

Sampling and Analysis

Continuous, 4-foot-long soil samples, using clean, new acetate liners will be collected throughout the entire depth of each soil boring. Each soil boring will be advanced into saturated soil, as observed within the soil samples. Upon retrieval of the soil samples, the acetate liner will be cut open and the soil will be initially screened from each interval using a photoionization detector (PID) equipped with an 11.7-electron volt bulb. From each 2-foot interval, a soil sample will be collected and placed into laboratory-provided glassware, and an aliquot of soil will be placed into resealable plastic bags (i.e., Ziploc™ bags). After approximately 3 to 5 minutes, each bagged soil sample will have an additional soil headspace reading obtained with the PID and recorded.

Upon completion of each soil boring, the field data (e.g., soil headspace readings, soil type, any soil staining) will be reviewed. Based on this review, the depth intervals to be submitted for laboratory analysis for that boring location will be determined. It is anticipated that two depth intervals will be analyzed for each soil boring.

Prior to removing the hollow-stem augers from each boring, a polyethylene bailer will be utilized to collect an unfiltered sample of groundwater at the bottom of the boring. Collected groundwater will be placed into laboratory-provided 40-milliliter vials for analysis.

Soil and groundwater samples collected for analysis will be packaged and transported to Paradigm Environmental Services, Inc. Samples will be analyzed for volatile organic compounds via United States Environmental Protection Agency Method 8260 on a standard turnaround basis.

Air Monitoring

Due to the minimal potential for generation of soil vapors (minimal soil disturbance), and the minimal potential for offsite migration (working indoors), it is proposed that a Community Air Monitoring Plan will not be implemented during these work activities.

Air monitoring of the work zone will be conducted, and in the event that action levels specified in the site-specific *Health and Safety Plan* (HASP) are exceeded, appropriate actions specified in the HASP will be implemented prior to continuing the investigation.

Decontamination

The drilling and sampling equipment will be cleaned: (i) prior to mobilization to the Site, (ii) between each soil boring, and (iii) at the completion of the soil boring activities. Cleaning water and residuals will be appropriately containerized onsite for subsequent characterization and disposal.

Investigation-Derived Wastes

Investigation-derived wastes (e.g., drill cuttings, decontamination materials, used acetate liners and polyethylene bailers, personal protective equipment) will be placed into 55-gallon steel drums, characterized, profiled, and transported offsite for disposal.

Reporting

Upon completion of this work and receipt of the laboratory analytical results, a summary report will be prepared for submittal to the NYSDEC. The report will include:

- summary of the sampling activities
- summary of all soil and groundwater results
- soil boring logs documenting the soil lithology encountered at each soil boring
- findings, conclusions, and recommendations

Schedule

Crosman has requested that all soil boring activities be performed on the weekend to avoid affecting manufacturing activities. As a result, it is anticipated that the soil boring activities will be completed over 2 weekends (with two drill rigs working at the same time). Unfortunately, due to scheduling conflicts, the weekends will not be consecutive.

ARCADIS is tentatively scheduled to perform the subsurface utility location on June 21, 2014. At this time, the soil boring activities are scheduled to begin the weekend of July 19, 2014, and conclude the weekend of August 2, 2014. ARCADIS will follow-up with the NYSDEC to confirm these dates. In an effort to maintain this schedule, your review and approval of this Work Plan at your earliest convenience is much appreciated.

If you have any questions, please contact me at 585.662.4022.

Sincerely,

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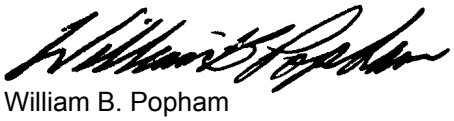

William B. Popham
Senior Vice President

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Table

Table 1
Analytical Summary of Indoor Air and Sub-Slab Soil Vapor Samples

West Side Soil Boring Investigation Work Plan
Crosman Corporation
East Bloomfield, New York

Sample Type:	Indoor Air						Sub-Slab Soil Vapor						Ambient Air
Sample ID:	IA-1	IA-2	IA-3	IA-4_2	IA-5	IA-6	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	AMB-012714
Sample Date:	1/28/2014	1/28/2014	1/28/2014	1/28/2014	1/28/2014	1/28/2014	1/28/2014	1/28/2014	1/28/2014	1/28/2014	1/28/2014	1/28/2014	1/28/2014
Units:	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3
Vinyl Chloride	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1,400 U	4.6 U	0.10 U	0.10 U
1,1-Dichloroethene	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	11,000 U	36 U	0.79 U	0.79 U
Acetone	**13**	12 U	**36**	**19**	**93**	**72**	12 U	12 U	12 U	160,000 U	540 U	12 U	12 U
Methylene Chloride	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	24,000 U	79 U	1.7 U	1.7 U
trans-1,2-Dichloroethene	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	11,000 U	36 U	0.79 U	0.79 U
1,1-Dichloroethane	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	11,000 U	37 U	0.81 U	0.81 U
cis-1,2-Dichloroethene	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	11,000 U	36 U	0.79 U	0.79 U
1,2-Dichloroethene (total)	0.79 U	0.79 U	0.81 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	11,000 U	**48**	0.79 U	0.79 U
1,1,1-Trichloroethane	1.1 U	1.1 U	0.79 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	15,000 U	49 U	**1.1**	1.1 U
Carbon Tetrachloride	**0.52**	**0.36**	**0.47**	**0.32**	**0.52**	**0.51**	**0.34**	**0.48**	**0.57**	3,400 U	11 U	0.25 U	**0.45**
Benzene	0.64 U	0.64 U	**0.86**	**0.73**	**3.8**	**0.77**	**0.83**	**2.0**	**0.67**	8,700 U	**98**	**8.4**	0.64 U
Trichloroethene (TCE)	**0.25**	**0.88**	**0.76**	**11**	**2.4**	**1.1**	**15**	**1.4**	**260 D**	**12,000,000 D**	**27,000 D**	**0.94**	0.21 U
Toluene	**1.3**	**2.8**	**6.9**	**2.7**	**17**	**6.0**	**4.0**	**4.7**	**2.2**	10,000 U	**270**	**32**	**1.1**
Tetrachloroethene (PCE)	1.4 U	1.4 U	**2.7**	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	18,000 U	61 U	1.4 U	1.4 U
Chlorobenzene	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	13,000 U	42 U	0.92 U	0.92 U
Xylene (m,p)	2.2 U	2.2 U	**3.2**	**12**	2.2 U	**2.4**	**5.7**	**3.9**	2.2 U	30,000 U	**230**	**31**	2.2 U
Xylene (o)	0.87 U	0.87 U	**1.1**	**4.4**	0.87 U	0.87 U	**1.5**	**1.2**	0.87 U	12,000 U	**81**	**8.5**	0.87 U
Bromoform	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	28,000 U	94 U	2.1 U	2.1 U
1,1,2,2-Tetrachloroethane	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	19,000 U	62 U	1.4 U	1.4 U

Notes:
Samples were analyzed using USEPA Method TO-15.
Bold results indicate a detection.
D = Concentration is the result of a dilution.
U = Not detected at the reporting limit.
µg/m^3 = micrograms per cubic meter
USEPA = United States Environmental Protection Agency

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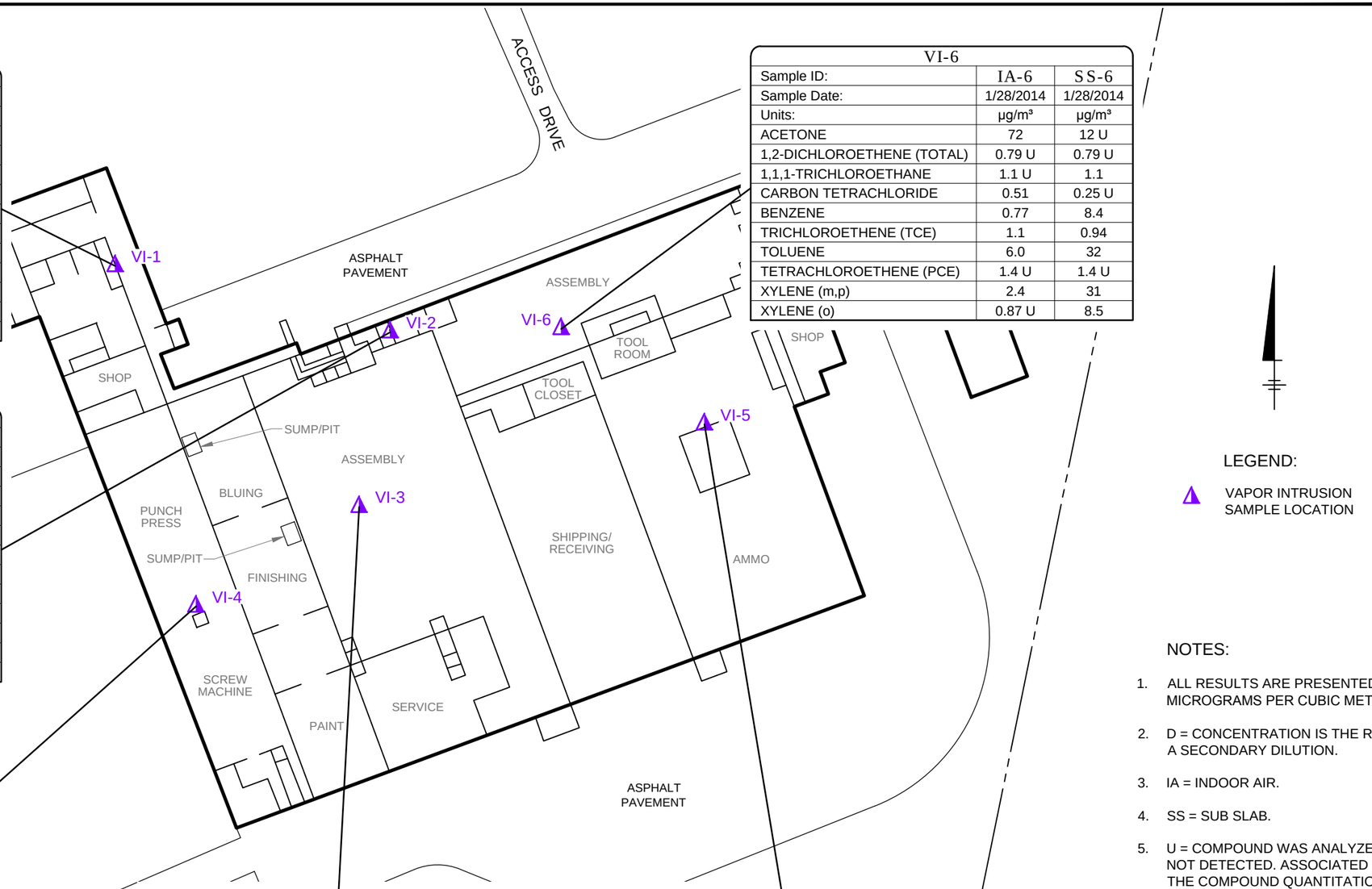
Figures

VI-1		
Sample ID:	IA-1	SS-1
Sample Date:	1/28/2014	1/28/2014
Units:	µg/m³	µg/m³
ACETONE	13	12 U
1,2-DICHLOROETHENE (TOTAL)	0.79 U	0.79 U
1,1,1-TRICHLOROETHANE	1.1 U	1.1 U
CARBON TETRACHLORIDE	0.52	0.34
BENZENE	0.64 U	0.83
TRICHLOROETHENE (TCE)	0.25	15
TOLUENE	1.3	4.0
TETRACHLOROETHENE (PCE)	1.4 U	1.4 U
XYLENE (m,p)	2.2 U	5.7
XYLENE (o)	0.87 U	1.5

VI-2		
Sample ID:	IA-2	SS-2
Sample Date:	1/28/2014	1/28/2014
Units:	µg/m³	µg/m³
ACETONE	12 U	12 U
1,2-DICHLOROETHENE (TOTAL)	0.79 U	0.79 U
1,1,1-TRICHLOROETHANE	1.1 U	1.1 U
CARBON TETRACHLORIDE	0.36	0.48
BENZENE	0.64 U	2.0
TRICHLOROETHENE (TCE)	0.88	1.4
TOLUENE	2.8	4.7
TETRACHLOROETHENE (PCE)	1.4 U	1.4 U
XYLENE (m,p)	2.2 U	3.9
XYLENE (o)	0.87 U	1.2

VI-6		
Sample ID:	IA-6	SS-6
Sample Date:	1/28/2014	1/28/2014
Units:	µg/m³	µg/m³
ACETONE	72	12 U
1,2-DICHLOROETHENE (TOTAL)	0.79 U	0.79 U
1,1,1-TRICHLOROETHANE	1.1 U	1.1
CARBON TETRACHLORIDE	0.51	0.25 U
BENZENE	0.77	8.4
TRICHLOROETHENE (TCE)	1.1	0.94
TOLUENE	6.0	32
TETRACHLOROETHENE (PCE)	1.4 U	1.4 U
XYLENE (m,p)	2.4	31
XYLENE (o)	0.87 U	8.5



VI-4		
Sample ID:	IA-4	SS-4
Sample Date:	1/28/2014	1/28/2014
Units:	µg/m³	µg/m³
ACETONE	19	160,000 U
1,2-DICHLOROETHENE (TOTAL)	0.79 U	11,000 U
1,1,1-TRICHLOROETHANE	1.1 U	15,000 U
CARBON TETRACHLORIDE	0.32	3,400 U
BENZENE	0.73	8,700 U
TRICHLOROETHENE (TCE)	11	12,000,000 D
TOLUENE	2.7	10,000 U
TETRACHLOROETHENE (PCE)	1.4 U	18,000 U
XYLENE (m,p)	12	30,000 U
XYLENE (o)	4.4	12,000 U

VI-3		
Sample ID:	IA-3	SS-3
Sample Date:	1/28/2014	1/28/2014
Units:	µg/m³	µg/m³
ACETONE	36	12 U
1,2-DICHLOROETHENE (TOTAL)	0.81 U	0.79 U
1,1,1-TRICHLOROETHANE	0.79 U	1.1 U
CARBON TETRACHLORIDE	0.47	0.57
BENZENE	0.86	0.67
TRICHLOROETHENE (TCE)	0.76	260 D
TOLUENE	6.9	2.2
TETRACHLOROETHENE (PCE)	2.7	1.4 U
XYLENE (m,p)	3.2	2.2 U
XYLENE (o)	1.1	0.87 U

VI-5		
Sample ID:	IA-5	SS-5
Sample Date:	1/28/2014	1/28/2014
Units:	µg/m³	µg/m³
ACETONE	93	540 U
1,2-DICHLOROETHENE (TOTAL)	0.79 U	48
1,1,1-TRICHLOROETHANE	1.1 U	49 U
CARBON TETRACHLORIDE	0.52	11 U
BENZENE	3.8	98
TRICHLOROETHENE (TCE)	2.4	27,000 D
TOLUENE	17	270
TETRACHLOROETHENE (PCE)	1.4 U	61 U
XYLENE (m,p)	2.2 U	230
XYLENE (o)	0.87 U	81

LEGEND:

VAPOR INTRUSION SAMPLE LOCATION

NOTES:

1. ALL RESULTS ARE PRESENTED IN MICROGRAMS PER CUBIC METER (µg/m³).
2. D = CONCENTRATION IS THE RESULT OF A SECONDARY DILUTION.
3. IA = INDOOR AIR.
4. SS = SUB SLAB.
5. U = COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT.
6. ALL LOCATIONS ARE APPROXIMATE.

0 100' 200'

GRAPHIC SCALE

CROSMAN CORPORATION SITE
EAST BLOOMFIELD, NEW YORK

VAPOR INTRUSION INVESTIGATION ANALYTICAL RESULTS

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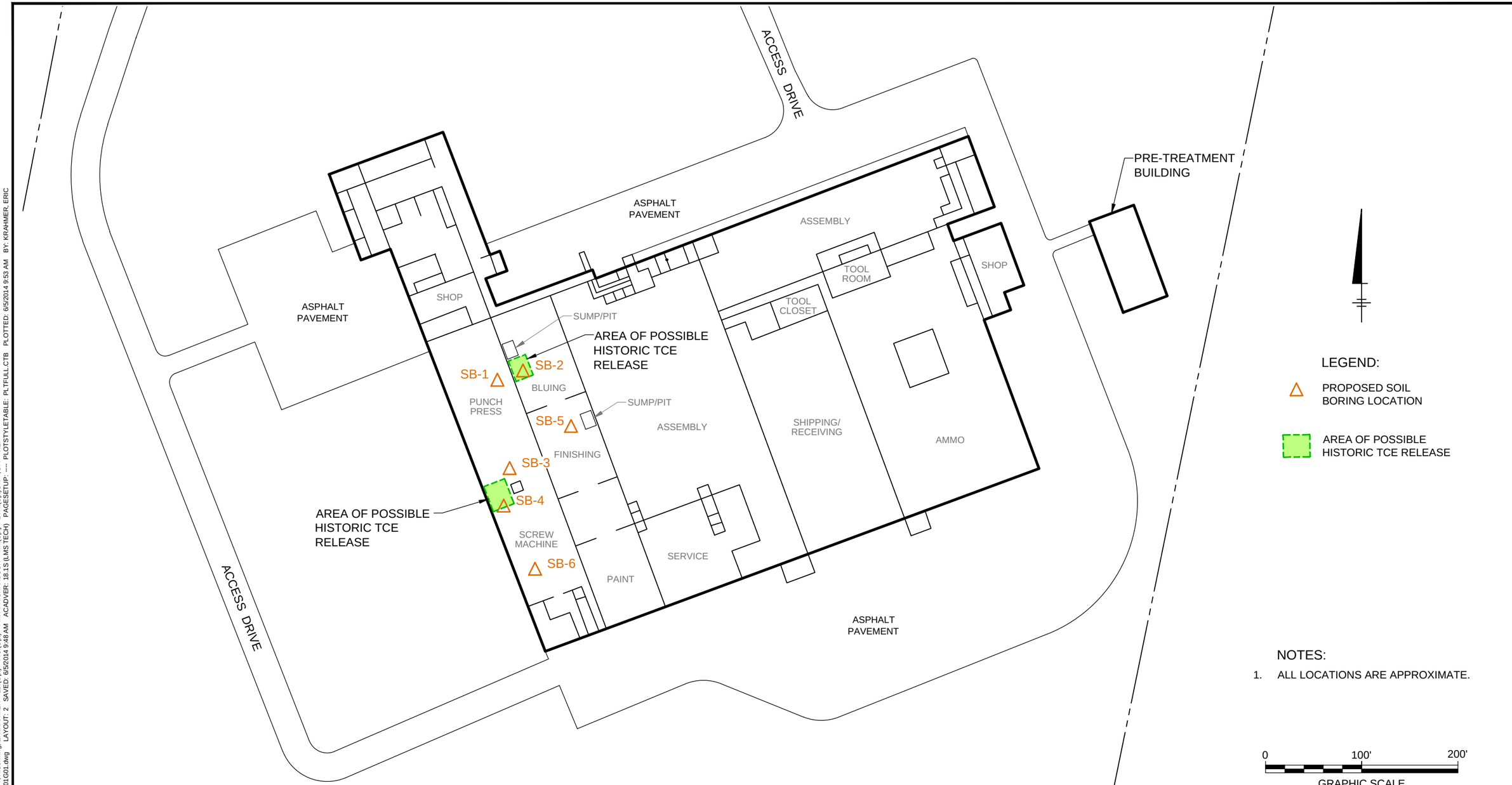
FIGURE 1



CROSMAN CORPORATION SITE
EAST BLOOMFIELD, NEW YORK

PROPOSED SOIL BORING INVESTIGATION SAMPLE LOCATIONS

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FIGURE
2