Caffoe, Todd (DEC)

From: Popham, William <William.Popham@arcadis-us.com>
Sent: Tuesday, September 23, 2014 7:26 AM
To: Caffoe, Todd (DEC)
Subject: Crosman Update
Attachments: Soil Boring results (082914).pdf; Soil Boring Results Table.pdf

Todd,

As you are aware, we recently completed implementation of the "second phase of soil borings" associated with the Soil Boring Work Plan at the Crosman facility. As presented in a previous email, the investigation was completed in accordance with the work plan, with a few minor modifications made necessary by difficult drilling conditions. Beneath the building, we encountered a dense glacial till at an average depth of about 8 ft bgs, therefore, if you recall, in lieu of drilling through the till until reaching the water table, then collecting groundwater samples, we advanced each boring to the vertical limit of the drill rigs that we could operate inside the building (thus groundwater samples were not obtained). This depth varied at each location, but was generally 20 – 25 feet below the surface (approximately 12-17 feet into the till). For samples where screening indicated elevated concentrations may be present, we modified the sampling to include samples from four different intervals (just below the concrete slab; from the overburden material lying on top of the glacial till; from the top interval of the glacial till; and from deeper within the glacial till). During this phase, we also collected samples of the till for geotechnical analysis, to evaluate the integrity of the unit as an aquitard

The results of the chemical analysis are presented on the attached table and figure. As shown on the figure, elevated concentrations of TCE were detected in the vicinity of the sub-slab soil vapor sample that prompted this soil boring investigation. As shown on the table, the results were compared to NYSDEC Part 375 Soil Cleanup Objectives (SCOs) for both Commercial and Residential Uses, and all concentrations detected in the samples collected are "below" the SCOs.

The geotechnical samples that were collected confirmed that the till is a tight formation that is an aquitard, which is not allowing any impacts to migrate downward from any potential overlying source area down to the groundwater. This is also supported by the additional chemical analyses that were performed, where concentrations reduced as we went deeper into the glacial till.

These chemical and geotechnical results of this soil boring investigation appear to show that no further investigation of soil or groundwater is needed at this location. However, as we had previously discussed, prior to implementation of this investigative work, since TCE is present in soils beneath the slab (even though within standards), which may continue to contribute to the already existing elevated sub-slab concentrations of TCE, it is likely that a vapor intrusion mitigation system will be required to address the sub-slab soil vapor results that were previously obtained at this location.

Based on the above, as a follow-up to this work, and in preparation of a potential design of a vapor mitigation system, we propose to perform a one day vacuum test in the vicinity of this localized area on the West side of the building, to determine the approximate "radius of influence", for use in determining the number and location of extraction points, should a system be installed.

I'll follow up with you to discuss these results and next steps forward.

Thanks

Bill

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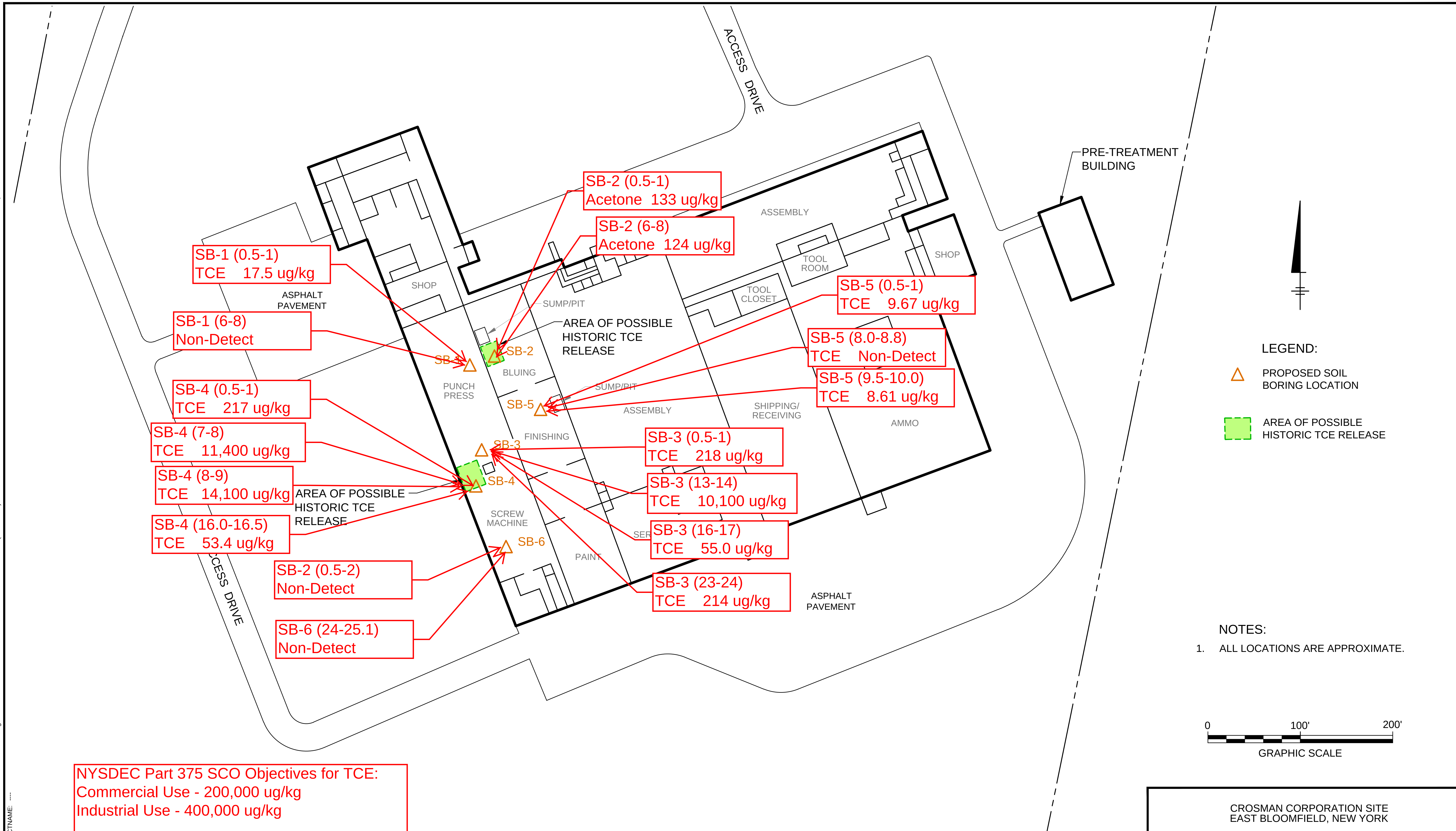
Table 1
Analytical Summary of Soil Boring Samples

Vapor Boring Investigation
Crosman Corporation
East Bloomfield, NY

			Acetone	TCE
NYSDEC Part 375 SCOs		**Commercial Use**	**500,000**	**200,000**
		Industrial Use	**1,000,000**	**400,000**
Location	**Depth Interval**	**Interval Description**		
SB-1	0.5-1.0	Below slab	31.7 U	**18**
SB-1	6.0-8.0	Overburden	42.3 U	8.47 U
SB-2	0.5-2.0	Below slab	**133**	7.80 U
SB-2	6.0-8.0	Overburden	**124**	7.61 U
SB-3	0.5-1.0	Below slab	40.3 U	**218**
SB-3	13.0-14.0	Bottom of overburden	4,680 U	**10,100**
SB-3	16.0-17.0	Top of Glacial Till	44.8 U	**55.0**
SB-3	23.0-24.0	Glacial Till	42.6 U	**214**
SB-4	0.5-1.0	Below slab	41.3 U	**217**
SB-4	7.0-8.0	Bottom of overburden	4,080 U	**11,400**
SB-4	8.0-9.0	Top of Glacial Till	7,560 U	**14,100**
SB-4	16.0-16.5	Glacial Till	47.1 U	**53.4**
SB-5	0.5-1.0	Below slab	44.2 U	**9.7**
SB-5	8.0-8.8	Bottom of overburden	46.4 U	9.27 U
SB-5	9.5-10.0	Glacial Till	41.4 U	**8.6**
SB-6	0.5-2.0	Below slab	42.3 U	8.45 U
SB-6	24.0-25.1	Glacial Till	36.2 U	7.24 U

Notes:
1. All results are reported in micrograms per kilogram (μg/kg).
2. All depths are presented in feet below top of slab.
3. Bold indicates a detected concentration.
4. NYSDEC = New York State Department of Environmental Conservation
5. SCO = Soil Cleanup Objective
6. U = Not detected at the reporting limit.


ACCESS DRIVE
PRE-TREATMENT BUILDING
ASSEMBLY
SHOP
TOOL ROOM
TOOL CLOSET
SHOP
ASPHALT PAVEMENT
SUMP/PIT
AREA OF POSSIBLE HISTORIC TCE RELEASE
BLUING
PUNCH PRESS
SUMP/PIT
ASSEMBLY
SHIPPING/ RECEIVING
AMMO
FINISHING
SCREW MACHINE
PAINT
ASPHALT PAVEMENT
SB-1 (0.5-1) TCE 17.5 ug/kg
SB-1 (6-8) Non-Detect
SB-2 (0.5-1) Acetone 133 ug/kg
SB-2 (6-8) Acetone 124 ug/kg
SB-4 (0.5-1) TCE 217 ug/kg
SB-4 (7-8) TCE 11,400 ug/kg
SB-4 (8-9) TCE 14,100 ug/kg
AREA OF POSSIBLE HISTORIC TCE RELEASE
SB-4 (16.0-16.5) TCE 53.4 ug/kg
SB-2 (0.5-2) Non-Detect
SB-6 (24-25.1) Non-Detect
SB-5 (0.5-1) TCE 9.67 ug/kg
SB-5 (8.0-8.8) TCE Non-Detect
SB-5 (9.5-10.0) TCE 8.61 ug/kg
SB-3 (0.5-1) TCE 218 ug/kg
SB-3 (13-14) TCE 10,100 ug/kg
SB-3 (16-17) TCE 55.0 ug/kg
SB-3 (23-24) TCE 214 ug/kg
SB-1
SB-2
SB-3
SB-4
SB-5
SB-6
LEGEND:
PROPOSED SOIL BORING LOCATION
AREA OF POSSIBLE HISTORIC TCE RELEASE
NOTES:
1. ALL LOCATIONS ARE APPROXIMATE.
0
100'
200'
GRAPHIC SCALE
NYSDEC Part 375 SCO Objectives for TCE:
Commercial Use - 200,000 ug/kg
Industrial Use - 400,000 ug/kg

CROSMAN CORPORATION SITE
EAST BLOOMFIELD, NEW YORK

PROPOSED SOIL BORING INVESTIGATION SAMPLE LOCATIONS

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FIGURE
2