

April 10, 2014

Ms. Lynn Dittmer  
Metropolitan Area Planning Agency  
2222 Cuming Street  
Omaha, NE 68102

**Re: South Omaha Brownfields Coalition Assessment Grant  
Phase II ESA Report  
Vacant Warehouse  
2630 'N' Street, Omaha, NE**

Attention Ms. Dittmer:

The purpose of this letter is to summarize the Phase II Environmental Site Assessment (ESA) sampling activities that were performed by Alfred Benesch & Company (Benesch) at a vacant warehouse redevelopment site located at 2630 'N' Street, Omaha. This Phase II ESA is being prepared for the Metropolitan Area Planning Agency (MAPA) and was conducted as part of the South Omaha Brownfields Coalition Assessment Grant being administered by MAPA. A Phase I ESA (Benesch, January 2014) was previously prepared for this redevelopment site. The Phase I ESA report identified *recognized environmental conditions* associated with the historical use of the property as a printing business and a hide tanning facility, in addition to the historical presence of a gasoline underground storage tank (UST).

The activities conducted as part of the Phase II ESA included sub-surface soil, soil vapor and groundwater sampling, and asbestos and lead based paint surveys of all structures at the project site. Field work was performed in general conformance with ASTM Standard E1903-11 for Phase II Environmental Site Assessments, the *Phase II Investigation Work Plan, Vacant Warehouse at 2630 'N' Street, Omaha* (Benesch, 1/27/2014), the project and site specific QAPP, soil, soil vapor, groundwater, and asbestos containing materials (ACM) SOPs, and Nebraska Department of Human Services (NDHHS) Title 178 Chapter 23 for lead based paint (LBP) sampling. Field work for the soil, soil vapor, and groundwater sampling was conducted from March 10 to 18, 2014. Field work for the ACM and LBP surveys was conducted on March 18, 2014. Prior to field work, Benesch notified the Nebraska One Call System for utility locates and kept record of responses. The Phase II assessment project area is depicted on the attached Site Location Map (Figures 1 and 2).

## **Field Activities**

### *Soil Sampling*

Benesch advanced fifteen (15) borings SB-1 through SB-14, SB-16) around the warehouse building, including the gasoline UST area and the printing operation at the southwest quadrant of the project site, the tanning operation at the northeast and southeast quadrants of the project site, and the perimeter of

the project site. The boring locations are depicted on the attached Boring Location Diagram Map (Figure 3).

The project site borings were advanced in conformance with the Phase II Work Plan based on historic source areas, estimated contaminant migration, and parcel boundaries except for SB-16. Boring SB-16 was added after the Phase II Work Plan was prepared to assess the potential impacts in the area of a former railroad spur adjacent to the northwest corner of the warehouse building and an entrance to the building near this location. SB-15 was labeled as a duplicate soil sample, prior to the decision to add SB-16; therefore, there is no boring SB-15. The objective of advancing borings at the project site is to assess the potential presence of soil, soil vapor and groundwater impacts resulting from the historic uses of the warehouse building and assist with redevelopment planning. The project site is slated for redevelopment as a commercial property.

The borings were installed using a track mounted Geoprobe unit operated by Saberprobe, LLC of Omaha, NE. The samples were collected using Macro-Core samplers fitted with polyvinyl chloride (PVC) liners. With the exception of SB-4, SB-5, SB-6, SB-12, and SB-13, borings were advanced to a depth of 15' below ground surface (bgs). The Phase II Work Plan called for advancing the borings SB-6, SB-12, and SB-13 down to 30' bgs and collecting groundwater samples at these locations. However, no groundwater was encountered at these locations along with two other borings, SB-4 and SB-5, which were advanced to 30' and 20' bgs respectively, to attempt to find groundwater.

Composite samples were collected for field screening purposes from the 0-3', 3-7', 7-11' and 11-15' intervals. The composite soil samples were split into two aliquots with one aliquot placed in a glass jar, covered with aluminum foil and allowed to equilibrate at ambient temperature (minimum of 65 deg. F) for a minimum of 15 minutes. A headspace analysis of each equilibrated sample was conducted using a field photoionization detector (PID) equipped with a 10.7 eV bulb. The remaining aliquot was placed into one 4-ounce jar, sealed and packed on ice.

Fill material, including a mixture of crushed rock, sand, clay, gravel, brick, concrete and rubble was observed within the upper 1 to 5 feet of the project site borings. Some cinders or coal pieces were also observed at within the upper 1 to 5 feet of the project site borings. Discolored soils (black and green) or odors indicative of petroleum contamination were observed in various project site borings; however, PID readings were generally low in all of the soil samples. Boring logs for all project site borings advanced during field work are provided as an attachment to this report. All borings advanced at the project site were backfilled with hydrated bentonite chips upon completion, and the surface was generally restored to its original condition. Because low PID readings were observed at all borings, soil cuttings were not containerized and were left at the project site.

Soil samples were collected from the 0-3' interval from borings at SB-4 and SB-13 for Total RCRA metals plus mercury analysis by EPA method 6010C/7471B. Soil samples were collected from SB-2 (3'-7'), SB-5 (0-3'), SB-8 (7'-11'), SB-13 (0-3'), SB-9 (5'-9'), SB-11 (7'-11'), SB-12 (3'-7'), SB-14 (3'-7'), and SB-16 (7'-11') for analysis of VOCs by EPA method SW8260B, and total extractable hydrocarbons (TEH) by Iowa Method OA-2. Surface soil samples were also collected from the 0-6" interval from borings SB-1, SB-2, SB-3, SB-5, SB-6, SB-7, SB-9, SB-10, SB-11, and SB-16 for total lead analysis by EPA method 6010C. All samples were labeled, packed on ice, and submitted under chain of custody to Test America Laboratories in Cedar Falls, Iowa. The laboratory reports and chain of custody documentation is provided as an attachment to this report.

Three (3) soil vapor points were installed in SB-9, SB-12, and SB-16 and soil vapor samples were collected from these location using SUMMA® canisters for VOCs analysis by EPA method TO-15.

## Findings

The constituents detected in the soil and soil vapor samples are summarized in table 1 together with their respective Nebraska Department of Environmental Quality (NDEQ) Remedial Goals (RGs) for residential and Industrial standards.

<b>TABLE 1</b> <b>Laboratory Detections for Soil and Soil Vapor Sampling</b> <b>&amp;</b> <b>NDEQ VCP Remedial Goals (RGs)</b>					
Boring	Media	Constituent	Result	VCP Residential Standard	VCP Industrial Standard
SB-1 (0-6")	Soil	Lead	134 mg/kg	400 mg/kg	750 mg/kg
SB-2 (0-6")	Soil	Lead	222 mg/kg	400 mg/kg	750 mg/kg
SB-2 (3-7')	Soil	Naphthalene	1.01 mg/kg	4.3 mg/kg	220 mg/kg
SB-2 (3-7')	Soil	1,2,4-Trimethylbenzene	0.0175 mg/kg	19 mg/kg	310 mg/kg
SB-2 (3-7')	Soil	TEH, total	37,200 mg/kg	*	*
SB-2 (3-7')	Soil	TEH as gasoline	1,300 mg/kg	*	*
SB-2 (3-7')	Soil	TEH as diesel	9,270 mg/kg	*	*
SB-2 (3-7')	Soil	TEH as waste oil	26,600 mg/kg	*	*
SB-3 (0-6")	Soil	Lead	185 mg/kg	400 mg/kg	750 mg/kg
SB-4 (0-3')	Soil	Arsenic	<b>16.8 mg/kg</b>	0.39 mg/kg	16 mg/kg
SB-4 (0-3')	Soil	Barium	206 mg/kg	3,800 mg/kg	100,000 mg/kg
SB-4 (0-3')	Soil	Chromium	<b>26.7 mg/kg</b>	0.29 mg/kg	55 mg/kg
SB-4 (0-3')	Soil	Lead	40.2 mg/kg	400 mg/kg	750 mg/kg
SB-4 (0-3')	Soil	Mercury	0.0582 mg/kg	3.1 mg/kg	160 mg/kg
SB-5 (0-6")	Soil	Lead	278 mg/kg	400 mg/kg	750 mg/kg
SB-5 (0-3')	Soil	TEH, total	25.3 mg/kg	*	*
SB-5 (0-3')	Soil	TEH as gasoline	11.3 mg/kg	*	*
SB-5 (0-3')	Soil	TEH as waste oil	14 mg/kg	*	*
SB-6 (0-6")	Soil	Lead	192 mg/kg	400 mg/kg	750 mg/kg
SB-7 (0-6")	Soil	Lead	340 mg/kg	400 mg/kg	750 mg/kg
SB-8 (7-11')	Soil	TEH, total	11.4 mg/kg	*	*
SB-8 (7-11')	Soil	TEH as waste oil	11.4 mg/kg	*	*
SB-9 (0-6")	Soil	Lead	122 mg/kg	400 mg/kg	750 mg/kg
SB-9 (5-9')	Soil	TEH, total	109 mg/kg	*	*
SB-9 (5-9')	Soil	TEH as diesel	35.8 mg/kg	*	*
SB-9 (5-9')	Soil	TEH as waste oil	73.5 mg/kg	*	*
SB-11 (7-11')	Soil	TEH, total	22 mg/kg	*	*
SB-11 (7-11')	Soil	TEH as waste oil	22 mg/kg	*	*
SB-13 (0-3')	Soil	Barium	131 mg/kg	3,800 mg/kg	100,000 mg/kg

<b>TABLE 1 (continued)</b> <b>Laboratory Detections for Soil and Soil Vapor Sampling</b> <b>&amp;</b> <b>NDEQ VCP Remedial Goals (RGs)</b>					
SB-13 (0-3')	Soil	Chromium	<b>16.7 mg/kg</b>	0.29 mg/kg	55 mg/kg
SB-13 (0-3')	Soil	Lead	239 mg/kg	400 mg/kg	750 mg/kg
SB-13 (0-3')	Soil	Mercury	0.61 mg/kg	3.1 mg/kg	160 mg/kg
SB-16 (0-6")	Soil	Lead	26.7 mg/kg	400 mg/kg	750 mg/kg
SB-16 (7-11')	Soil	TEH, total	12.3 mg/kg	*	*
SB-16 (7-11')	Soil	TEH as gasoline	12.3 mg/kg	*	*
SB-9	Vapor	Acetone	520 µg/m <sup>3</sup>	309,000 µg/m <sup>3</sup>	26,400,000 µg/m <sup>3</sup>
SB-9	Vapor	2-Butanone (MEK)	21 µg/m <sup>3</sup>	49,900 µg/m <sup>3</sup>	4,260,000 µg/m <sup>3</sup>
SB-9	Vapor	Chloroform	34 µg/m <sup>3</sup>	47.2 µg/m <sup>3</sup>	1,040 µg/m <sup>3</sup>
SB-9	Vapor	Methylene Chloride	4.3 µg/m <sup>3</sup>	2,300 µg/m <sup>3</sup>	508,000 µg/m <sup>3</sup>
SB-9	Vapor	Toluene	12µg/m <sup>3</sup>	49,900 µg/m <sup>3</sup>	4,260,000 µg/m <sup>3</sup>
SB-9	Vapor	1,1,1-Trichloroethane	2.1 µg/m <sup>3</sup>	49,900 µg/m <sup>3</sup>	4,260,000 µg/m <sup>3</sup>
SB-9	Vapor	1,2,4-Trimethylbenzene	2.9 µg/m <sup>3</sup>	69.8 µg/m <sup>3</sup>	5,960 µg/m <sup>3</sup>
SB-12	Vapor	Acetone	98 µg/m <sup>3</sup>	309,000 µg/m <sup>3</sup>	26,400,000 µg/m <sup>3</sup>
SB-12	Vapor	2-Butanone (MEK)	8.8 µg/m <sup>3</sup>	49,900 µg/m <sup>3</sup>	4,260,000 µg/m <sup>3</sup>
SB-12	Vapor	Methylene Chloride	6.1 µg/m <sup>3</sup>	2,300 µg/m <sup>3</sup>	508,000 µg/m <sup>3</sup>
SB-12	Vapor	Toluene	13 µg/m <sup>3</sup>	49,900 µg/m <sup>3</sup>	4,260,000 µg/m <sup>3</sup>
SB-12	Vapor	Trichlorofluoromethane	4 µg/m <sup>3</sup>	6,980 µg/m <sup>3</sup>	596,000 µg/m <sup>3</sup>
SB-16	Vapor	Acetone	80 µg/m <sup>3</sup>	309,000 µg/m <sup>3</sup>	26,400,000 µg/m <sup>3</sup>
SB-16	Vapor	Benzene	13 µg/m <sup>3</sup>	139 µg/m <sup>3</sup>	25,600 µg/m <sup>3</sup>
SB-16	Vapor	2-Butanone (MEK)	10 µg/m <sup>3</sup>	49,900 µg/m <sup>3</sup>	4,260,000 µg/m <sup>3</sup>
SB-16	Vapor	Carbon Disulfide	1.8 µg/m <sup>3</sup>	6,980 µg/m <sup>3</sup>	596,000 µg/m <sup>3</sup>
SB-16	Vapor	n-Hexane	2.6 µg/m <sup>3</sup>	6,980 µg/m <sup>3</sup>	596,000 µg/m <sup>3</sup>
SB-16	Vapor	Toluene	14 µg/m <sup>3</sup>	49,900 µg/m <sup>3</sup>	4,260,000 µg/m <sup>3</sup>
SB-16	Vapor	Trichlorofluoromethans	5.6 µg/m <sup>3</sup>	6,980 µg/m <sup>3</sup>	596,000 µg/m <sup>3</sup>
SB-16	Vapor	1,2,4-Trimethylbenzene	3.4 µg/m <sup>3</sup>	69.8 µg/m <sup>3</sup>	5,960 µg/m <sup>3</sup>
SB-16	Vapor	2,2,4-Trimethylpentane	2.2 µg/m <sup>3</sup>	*	*

*Note: Soil results and standards are in mg/kg and soil vapor results and standards are in µg/m<sup>3</sup>. \*The NDEQ has not established VCP standards for this constituent.*

*Items in bold denote VCP exceedance.*

Arsenic was detected in soil boring SB-4. The arsenic concentration, 16.8 mg/kg, was above the NDEQ Remedial Goals (RGs) for the Voluntary Cleanup Program (VCP) residential standard and industrial standard, which are 0.39 mg/kg and 16 mg/kg, respectively. The arsenic level observed, although above the residential and industrial RGs, may be typical of background levels in areas of Nebraska which are known to range from 5 to perhaps 50 mg/kg in native soils and fill material. As such, observed arsenic concentrations in project site soil is not a significant concern with respect to property liability and/or constructability concerns with the projected redevelopment of the project site into commercial property.

Chromium was detected in soil borings SB-4 and SB-13 at 26.7 mg/kg and 16.7 mg/kg, respectively. The chromium concentrations exceeded the residential RG of 0.29 mg/kg but was below the industrial

standard of 55 mg/kg. Concentrations of chromium above the residential RG at two locations are considered isolated and not widespread. Therefore, observed chromium concentrations in project site soils are not a significant concern with respect to property liability and/or constructability concerns with the redevelopment of the project site.

Lead was detected in soil borings SB-1, SB-2, SB-3, SB-4, SB-5, SB-6, SB-7, SB-9, SB-13, and SB-16. The lead concentrations ranged from 26.7 mg/kg to 340 mg/kg and were all below the residential RG. There is no indication that the project site has been impacted by contamination from the Omaha Lead Site (OLS), a USEPA NPL site related to the former Asarco lead smelting operation in downtown Omaha. Therefore, observed lead concentrations in project site soils are not a significant concern with respect to property liability and/or constructability concerns with the redevelopment of the project site.

Total extractable hydrocarbons (TEH) as gasoline, diesel, and waste oil were detected in soil borings SB-2, SB-5, SB-8, SB-9, SB-11, and SB-16. Note however that the NDEQ has not established residential or industrial standards for TEH in soils at VCP sites. In addition, the NDEQ standards for RBCA Tier I Site Assessments for petroleum sites in Nebraska do not include look up tables and values for TEH in soils at remedial action class three (RAC-3) sites, where there is no industrial or potable water use in the area. In summary, the presence of TEH in soils at SB-2, SB-5, SB-8, SB-9, SB-11, and SB-16 are generally considered of insignificant concentrations, and are not a significant concern with respect to property liability and/or constructability concerns with the redevelopment of the project site.

The laboratory reports and chain of custody documentation for soil sampling is provided as an attachment to this report.

#### *Soil Vapor*

Based on field screening results and field conditions, soil vapor points were installed in borings SB-9, SB-12 and SB-16 to assess the soil vapor to enclosed space pathway. The vapor points were set at 6' bgs and vapor samples were collected using 1L SUMMA® canisters. Soil vapor samples were collected according to *Environmental Standard Operating Procedures for Soil Vapor Sampling* (Benesch). Once the samples were collected, the tubing was removed from the boring and the surface was restored to its original condition.

The vapor samples were labeled and submitted under chain of custody to Test America Laboratories in Knoxville, TN for full VOC analysis by EPA method TO-15. The rationale for vapor sampling locations is as follows: Boring SB-9 is situated at the portion of the project site that was previously utilized for tanning operations, SB-12 is located near the former gasoline storage tank and adjacent to the portion of the project site that was formerly utilized for a printing operation, and SB-16 is located along a former railroad spur on the project site. Seven (7), nine (9), and five (5) VOC constituents were detected in the soil vapor samples collected from the project site at SB-9, SB-12, and SB-16, respectively. The laboratory concentrations of these constituents were minimal and considerably lower than the NDEQ soil vapor VCP RGs for residential use and are not considered a significant concern with respect to property liability and/or constructability concerns with the redevelopment of the project site. The laboratory reports and chain of custody documentation for soil vapor sampling is provided as an attachment to this report.

### *Groundwater Sampling*

No groundwater was encountered at the project site down to 30 feet bgs. Therefore, no groundwater samples were collected.

### *Quality Assurance/Quality Control*

Duplicate samples for soil, soil vapor, and building materials and rinsate samples were collected for quality assurance and quality control (QA/QC) purposes and were submitted for the same analysis as the parent samples. These duplicate samples were submitted for analysis to assess the precision of the analysis and the variability of the media. Based on review of the duplicate sample data, all data can be relied upon for its intended purpose. Data validation sets are included as an attachment to this report.

### *Summary of Laboratory Results for Constituents Exceeding the NDEQ VCP Remedial Goals*

Based on laboratory results, the following table provides information for the locations where soil samples exceeded the NDEQ VCP RGs.

<b>TABLE 2</b>					
<b>Laboratory Results for Soil and Soil Vapor Sampling</b>					
<b>Sample Locations Exceeding NDEQ VCP Remediation Goals (RGs)</b>					
Boring	Media	Constituent	Result	VCP Residential Standard	VCP Industrial Standard
SB-4 (0-3')	Soil	Arsenic	16.8 mg/kg	0.39 mg/kg	16 mg/kg
SB-4 (0-3')	Soil	Chromium	26.7 mg/kg	0.29 mg/kg	55 mg/kg
SB-13 (0-3')	Soil	Chromium	16.7 mg/kg	0.29 mg/kg	55 mg/kg

### *Asbestos Survey*

An asbestos survey was conducted to determine the presence of Asbestos Containing Material (ACM) within the project site structures. An asbestos containing material is defined by the State of Nebraska, EPA, and OSHA regulations as any material or product that contains more than 1% asbestos. ACM was found to be present in five locations within the structure.

Note that all the above described ACM were observed to be non-friable and in generally good condition, and therefore, the Property ACM do not pose an immediate threat to human health. If the ACM materials will be disturbed during construction, renovation, or structure demolition, such ACM should be removed according to Nebraska Asbestos Control Program Regulations and with proper notification provided to NDHHS and the City of Omaha. Please refer to the attached Asbestos Surveys for 2630 'N' Street, Omaha, Nebraska for additional details regarding the ACM survey.

### *Lead Based Paint Survey*

A lead based paint (LBP) survey was conducted to determine the presence of lead in the paints on the project site structures. A LBP is defined by the United States Department of Housing and Urban Development (HUD) as a paint that contains lead in the amount of 5,000 parts per million (ppm) and/or

0.5% by weight. LPB was identified on the surface of three areas from within the structure. If the site structures were to be renovated as part of the redevelopment of this site, a LBP abatement would be required. The LBP abatement shall be conducted as per Title 178 of the Nebraska Health and Human Services regulations. Please refer to the attached Lead Based Paint Survey for 2630 'N' Street, Omaha, Nebraska for additional details regarding the LBP survey.

### **Analysis and Recommendations**

Observed levels of arsenic in subsurface soils at the project site above residential and industrial soil RGs may be typical of background levels in areas of Nebraska. As such, observed arsenic concentrations in project site soils are not a significant concern with respect to property liability and/or constructability concerns with the projected redevelopment of the project site into commercial property.

Concentrations of chromium above the residential RG at two locations are considered isolated and not widespread. Therefore, observed chromium concentrations in project site soils are not a significant concern with respect to property liability and/or constructability concerns with the redevelopment of the project site.

Concentrations of lead were below the residential RG. Therefore, observed lead concentrations in project site soils are not a significant concern with respect to property liability and/or constructability concerns with the redevelopment of the project site.

Total extractable hydrocarbons (TEH) as gasoline, diesel, and waste oil diesel were detected in soil boring SB-2, SB-5, SB-8, SB-9, SB-11, and SB-16. Note however that the NDEQ has not established residential or industrial standards for TEH in soils at VCP sites. In addition, the NDEQ standards for RBCA Tier I Site Assessments for petroleum sites in Nebraska do not include look up tables and values for TEH in soils at remedial action class three (RAC-3) sites, where there is no industrial or potable water use in the area. In summary, the presence of TEH in soils at SB-2, SB-5, SB-8, SB-9, SB-11, and SB-16 are of generally insignificant concentrations, and not a significant concern with respect to property liability and/or constructability concerns with the redevelopment of the project site.

Concentrations of VOC constituents in the soil vapor were considerably lower than the residential RGs. Therefore, observed VOC concentrations in project site soil vapors are not a significant concern with respect to property liability and/or constructability concerns with the redevelopment of the project site.

Observed ACM in project structures is currently non-friable and in generally good condition, and therefore, the Property ACM do not pose an immediate threat to human health. If the ACM materials will be disturbed during construction, renovation, or the structure demolition, such ACM should be removed according to Nebraska Asbestos Control Program Regulations and with proper notification provided to NDHHS and the City of Omaha.

LPB on the project structures will need to be abated if the site structures were to be renovated. If the LBP abatement is required, it should be removed in accordance with NDHHS Title 178 Chapter 23.

With the exception of the ACM and LBP at the site as noted above, there are no concerns with respect to property liability and/or constructability concerns with redevelopment of the project site as a result of the findings of this Phase II ESA; therefore, no further assessment of this site is recommended. However, the condition of the soils encountered for this assessment may not be representative of the soils across



the site. The potential exists that impacted soils or buried tanks or other waste may be encountered during excavation or redevelopment activities, and if encountered should be properly handled in accordance with all local, state and/or federal requirements.

If you have any questions regarding the conduct or conclusions of this assessment, please do not hesitate to contact either of the undersigned at (402) 333-5792.

Respectfully Submitted,



Chin Lim, P.E.  
Project Manager



Brian Fettin  
Project Scientist II

## Attachments:

Figures  
Boring Logs  
Field Notes  
Lab Data  
Data Validation Sets  
ACM Survey  
LBP Survey

## Sources (not provided as an attachment; previously submitted or referenced in report):

ASTM International, *ASTM Standard E1903-11, Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process*.  
Benesch, *Phase I ESA, 2630 'N' Street, Omaha, NE*, January 2014.  
Benesch, *Phase II Investigation Work Plan for 2630 'N' Street*, 1/24/2014.  
Benesch, *QAPP Version 0, Brownfields Coalition Assessment Grant, MAPA, SORA, Omaha, NE*, 5/21/12.  
Benesch, *QAPP Supplement 4, Brownfields Coalition Assessment Grant, MAPA, SORA, Omaha, NE*, 1/27/2014.  
NDEQ, Nebraska Voluntary Cleanup Program, VCP Remediation Goals (RGs), residential and industrial values (2012).  
USEPA Environmental Response Team, *Standard Operating Procedures, Soil Sampling*, SOP 4230.03.  
Benesch, *Environmental Standard for Soil Vapor Sampling*.  
NDHHS Title 178 Chapter 22- ACM Sampling.  
NDHHS Title 178 Chapter 23- LBP Sampling.

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