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Pamela Mylotta
Wisconsin Department of Natural Resources
2300 North Dr. Martin Luther King, Jr. Drive
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Subject:

Scope of Work and Cost Estimate for Closure Activities, 7215 West Center Street,
Wauwatosa, Wisconsin
BRRTS: 02-41-307576

ACTION: 43 Subslab vapor results
112 Interim Action + closure request
213 Subslab depressurization system

Dear Ms. Mylotta:

ENVIRONMENT

Date: February 10, 2010

On August 17, 2009, ARCADIS submitted a letter summarizing the results of soil sampling activities completed in May 2009. At the time of the letter, ARCADIS had made multiple attempts to obtain access to complete vapor sampling at the west adjacent (Johnson) property and to complete both soil and vapor sampling at the eastern adjacent (Viruet) property.

Contact:
Brian Maillet
Ed Buc

In October 2009, WDNR was able to contact Juan Viruet, the owner of the eastern adjacent property, and ARCADIS was granted access in November 2009. ARCADIS was also granted access in October 2009 to collect a vapor sample from the Johnson property.

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This letter presents the results of the sampling activities at the adjacent properties. The investigation activities completed to date indicate that limited impacts are present on the subject property and adjacent properties. ARCADIS proposes to address the identified impacts through engineering controls, including a subslab depressurization system installed at the subject property that will mitigate the potential vapor intrusion pathway. A scope of work and cost estimate for installing the subslab depressurization system and completing subsequent air sampling are included in this letter. The work plan was prepared in accordance with ch. NR 169 (Dry Cleaner Environmental Response Program [DERP]). Costs associated with this investigation are eligible for reimbursement under the DERP.

Our ref:
WI001109.0003

Investigation Data

Consistent with our previous discussions, this letter simply transmits the collected investigation data for your review to reduce reporting costs. The field activities for

Imagine the result

the supplemental investigation were completed in November 2009. These activities included:

- Collection of one subslab soil gas sample (SS-1) on the Johnson property and one subslab soil gas sample (SS-2) on the Viruet property to assess soil vapor conditions.
- Advancement of two Geoprobe borings (GP-111 and GP-112) on the Viruet property to further define potential offsite impacts in the sand seam.

The attached information presents the results of the supplemental investigation. Figure 1 depicts the soil gas sample and boring locations. Table 1 summarizes the soil analytical results. No chlorinated hydrocarbons were detected in soil collected from the Viruet property. In addition, no tetrachloroethene (PCE) or trichloroethene (TCE) were found at levels above the Table 3C Screening Value presented in the United States Environmental Protection Agency's Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway in the vapor sample collected from the Viruet property. Both PCE and TCE were detected above the screening values in the vapor sample collected from the Johnson property. Table 2 summarizes the subslab soil vapor analytical results.

Conclusions and Recommendations

The following are conclusions and recommendations from this investigation:

- Soils impacted with chlorinated hydrocarbons are limited to the subject property.
- Soil vapor impacted with chlorinated hydrocarbons is present beneath the subject property and may have migrated to the western adjacent property.

Previous investigations also found that the extent of groundwater impacts was also limited to the subject property.

The investigation results indicate that active soil or groundwater remediation is not warranted. Engineering and institutional controls, coupled with natural attenuation, should be sufficient to address the identified impacts. ARCADIS has developed a strategy to obtain site closure based on potential exposure pathways:

- A subslab depressurization system installed at the subject property will mitigate potential vapor intrusion into the building on the subject property and adjacent properties.
- Natural attenuation to manage the residual soil and groundwater constituents in place.
- Listing of the subject property on the WDNR Geographic Information System (GIS) of closed sites.

Proposed Scope of Work

A request for closure was submitted in 2005 and outlined the use of natural attenuation and the WDNR GIS database of closed sites. ARCADIS has developed the following scope of work for implementing vapor mitigation and obtaining final closure:

- Install a subslab depressurization system at the subject property.
- Collect two quarterly ambient air samples at the subject property and the Johnson property to evaluate the effectiveness of the system.
- Submittal of a letter report summarizing field activities and results with a recommendation for additional work or site closure.

Additional information regarding each task is provided in the following sections.

Installation of Subslab Depressurization System

To mitigate potential future risk to air quality related to non-dry cleaning operations at the former Hoffman Cleaners facility, ARCADIS will install a subslab depressurization system. The system installed in the former Hoffman Cleaners facility would be considered an 'interim action' under DERP and would also create a vapor capture zone to mitigate potential vapor exposure at the Johnson property. The subslab depressurization system would consist of 4-inch schedule 40 polyvinyl chloride ventilation pipe connected to the existing sump and vented above the finished roof under the power of a vapor ventilation suction fan secured on the outside of the

building. The subslab depressurization system at the facility would begin operating once installed.

Evaluation of System Effectiveness

The effectiveness of the system would be evaluated through the collection of two quarterly rounds of ambient air samples from the Johnson building. It is understood that if vapor levels are below the Table 3C Screening Values previously discussed, the system will be deemed adequate as a control for the adjacent space. Continual operation and maintenance of the subslab depressurization system at the Valet Cleaners facility would be part of site closure.

Reporting

Based on the results of the evaluation of the subslab depressurization system, ARCADIS will prepare a letter report outlining the scope of work completed during this evaluation, the procedures followed in the field, and a summary of the results. If the evaluation findings are favorable, ARCADIS will re-submit for site closure in accordance with NR 726 and will include a revised site closure packet. A scope of work for closure activities, including revision of the GIS packet and well abandonment, will be included in the letter report.

Project Schedule

ARCADIS will begin work immediately following receipt of written authorization to proceed from the WDNR.

Estimated Costs

ARCADIS will conduct the additional scope of work for an estimated cost of \$13,169. Table 3 includes a breakdown of the project costs for the proposed work and the unit rates and estimates of hours to be worked by ARCADIS. In addition, Table 3 also presents unit rates and the estimated number of units (i.e., number of samples for analysis) for the subcontracted services. Included with this proposal are bids from two subcontractors for the installation of a subslab depressurization system.

Closing

ARCADIS appreciates your assistance with this project, and is looking forward to receiving Site closure. If the additional scope of work and associated costs are acceptable, please provide us with authorization to proceed. If you have any questions or require additional information, please contact us at your earliest convenience.

Sincerely,

ARCADIS



Brian J. Maillet
Project Scientist



Edmund A. Buc, PE
Senior Engineer

Table 1. Soil Analytical Results, Hoffman's Valet Cleaners, 7215 W. Center Street, Wauwatosa, Wisconsin.

Sample ID	SSL		SSL	GP-1	GP-2	GP-101		GP-102		GP-103	
Sample Depth (ft bls)	SSL	Vapor	Groundwater	6-8	4-6	7-11	11-15	4-8	12-16	8-12	12-16
Sample Date	Ingestion	Inhalation	Protection	02/07/02	02/07/02	09/12/02	09/12/02	09/12/02	09/12/02	09/12/02	09/12/02
Property Owner				Hoffman	Hoffman	Hoffman	Hoffman	Hoffman	Hoffman	Hoffman	Hoffman
VOCs											
cis-1,2-Dichloroethene	156,000	1,300,000	27	53	<10	<25	<25	<25	<25	<25	<25
Ethylbenzene	--	--	2,900	<10	<10	<25	<25	<25	<25	<25	<25
Fluorotrichloromethane	4,690,000	410,000	9,200	NA	NA	<25	<25	<25	<25	<25	<25
Methylene Chloride	8,520	2,700	0.98	21 Q	14 Q	<25	<25	<25	<25	<25	<25
Naphthalene	313,000	68,000	340	NA	NA	50 Q	<25	<25	<25	<25	<25
Tetrachloroethene	1,230	2,100	4.1	51	240	<25	<25	150	<25	400	<25
Xylenes, Total	--	--	4,100	<20	<20	<50	<50	<50	<50	<50	<50

Constituent concentrations are reported in micrograms per kilogram ($\mu\text{g}/\text{kg}$).

Concentration exceeds the Soil Screening Level for the protection of groundwater.

Bold Concentration exceeds the Soil Screening Level for vapor inhalation and ingestion.

ft bls Feet below land surface.

ID Identification.

NA Not analyzed.

SSL Soil Screening Level.

Q Analyte detected between the Limit of Detection and the Limit of Quantitation.

VOCs Volatile organic compounds.

Table 1. Soil Analytical Results, Hoffman's Valet Cleaners, 7215 W. Center Street, Wauwatosa, Wisconsin.

Sample ID Sample Depth (ft bls) Sample Date	SSL		SSL	GP-104		GP-105		MW-1	MW-2	MW-3
	SSL	Vapor	Groundwater	4-6	8-9	8-12	12-16	10-12	10-12	10-12
	Ingestion	Inhalation	Protection	09/12/02 Hoffman	09/12/02 Hoffman	09/12/02 Hoffman	09/12/02 Hoffman	01/19/05 Hoffman	01/19/05 Hoffman	01/19/05 Hoffman
VOCs										
cis-1,2-Dichloroethene	156,000	1,300,000	27	<25	<25	<25	<25	<29	<28	<31
Ethylbenzene	--	--	2,900	<25	<25	<25	<25	<29	<28	<31
Fluorotrichloromethane	4,690,000	410,000	9,200	61	<25	<25	<25	<29	<28	<31
Methylene Chloride	8,520	2,700	0.98	<25	<25	<25	<25	72	96	<62
Naphthalene	313,000	68,000	340	<25	<25	<25	<25	<29	<28	<31
Tetrachloroethene	1,230	2,100	4.1	41 Q	45 Q	130	<25	2,800	3,720	<31
Xylenes, Total	--	--	4,100	<50	<50	<50	<50	<58	<56	<62

Constituent concentrations are reported in micrograms per kilogram ($\mu\text{g}/\text{kg}$).

 Concentration exceeds the Soil Screening Level for the protection of groundwater.

Bold Concentration exceeds the Soil Screening Level for vapor inhalation and ingestion.

ft bls Feet below land surface.

ID Identification.

NA Not analyzed.

SSL Soil Screening Level.

Q Analyte detected between the Limit of Detection and the Limit of Quantitation.

VOCs Volatile organic compounds.

Table 1. Soil Analytical Results, Hoffman's Valet Cleaners, 7215 W. Center Street, Wauwatosa, Wisconsin.

Sample ID	SSL		SSL	GP-3		GP-106	GP-107	GP-108	GP-109	GP-110
	Sample Depth (ft bls)	Vapor	Groundwater	8-10	10-12	10-12	12-14	14-16	12-14	14-16
Sample Date	Ingestion	Inhalation	Protection	01/08/07	01/08/07	05/01/09	05/01/09	05/01/09	05/01/09	05/01/09
				Hoffman	Hoffman	ARC	Johnson	Johnson	City	City
VOCs										
cis-1,2-Dichloroethene	156,000	1,300,000	27	<35	<54	<26	<28	<28	<28	<29
Ethylbenzene	--	--	2,900	80	130	<26	<28	<28	<28	<29
Fluorotrichloromethane	4,690,000	410,000	9,200	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	8,520	2,700	0.98	<69	<110	<53	<56	<56	<56	<57
Naphthalene	313,000	68,000	340	<69	<110	<53	<56	<56	<56	<57
Tetrachloroethene	1,230	2,100	4.1	2,500	5,200	<26	<28	<28	<28	<29
Xylenes, Total	--	--	4,100	320	550	100	<95	<95	<96	<98

Constituent concentrations are reported in micrograms per kilogram ($\mu\text{g}/\text{kg}$).

 Concentration exceeds the Soil Screening Level for the protection of groundwater.

Bold Concentration exceeds the Soil Screening Level for vapor inhalation and ingestion.

ft bls Feet below land surface.

ID Identification.

NA Not analyzed.

SSL Soil Screening Level.

Q Analyte detected between the Limit of Detection and the Limit of Quantitation.

VOCs Volatile organic compounds.

Table 1. Soil Analytical Results, Hoffman's Valet Cleaners, 7215 W. Center Street, Wauwatosa, Wisconsin.

Sample ID	GP-111	GP-111	GP-112	GP-112
Sample Depth (ft bls)	10-12	14-16	10-12	14-16
Sample Date	11/13/09	11/13/09	11/13/09	11/13/09
	Viruet	Viruet	Viruet	Viruet
VOCs				
cis-1,2-Dichloroethene	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25
Fluorotrichloromethane	NA	NA	NA	NA
Methylene Chloride	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25
Xylenes, Total	<50	<50	<50	<50

Constituent concentrations are reported in micrograms per kilogram ($\mu\text{g}/\text{kg}$).

Concentration exceeds the Soil Screening Level for the protection of groundwater.

Bold Concentration exceeds the Soil Screening Level for vapor inhalation and ingestion.

ft bls Feet below land surface.

ID Identification.

NA Not analyzed.

SSL Soil Screening Level.

Q Analyte detected between the Limit of Detection and the Limit of Quantitation.

VOCs Volatile organic compounds.

Table 2. Summary of Vapor Probe Sampling Analytical Results, Hoffman's Valet Cleaners, Wauwautosa, Wisconsin.

Sample Name	Table 3C		Basement Sump		SG-1		SS-1		SS-2	
	Screening Levels		07/26/06		07/28/06		10/21/09		11/16/09	
Sample Date			Hoffman		Hoffman		Johnson		Viruet	
Property Owner										
Units	ppbv	µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³
Acetone	150,000	350,000	230	550	<500	<1,200	<20	<43	NA	NA
Carbon disulfide	220,000	700,000	40	120	<50	<160	<20	<64	0.693	2.16
Cyclohexane	NE	NE	53	180	<20	<69	<20	<69	<0.5	<1.7
1,2-Dichloroethene (total)	NE	NE	7	28	<20	<79	<20	<79	<0.5	<1.7
cis-1,2-Dichloroethene	NE	NE	7	28	<20	<79	<20	<79	<0.5	<1.7
n-Hexane	57,000	200,000	26	110	<50	<180	<20	<70	0.97	3.42
Isopropyl Alcohol	NE	NE	400	980	<500	<1,200	<500	<1,200	NA	NA
Methyl Ethyl Ketone	340,000	1,000,000	18	53	<50	<150	<50	<150	NA	NA
Toluene	110,000	400,00	13	49	<20	<75	<20	<75	0.627	2.36
Tetrachloroethene	120	810	750	5,100	3,000	20,000	36,000	244,000	12	81
Trichloroethene	4.1	22	10	54	<20	<110	<20	<110	<0.5	<2.7

Results are reported in parts per billion by volume (ppbv) and micrograms per cubic meter (µg/m³).

Note: Only analytes detected in vapor samples are presented.

Vapor Probe Samples analyzed for VOCs by EPA Method TO-15.

Value is above the Table 3C Screening Value presented in the U.S. EPA's Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway