Ryan, Nancy D - DNR

From: Donald P. Gallo [dgallo@reinhartlaw.com]
Sent: Friday, May 21, 2010 8:00 AM
To: Ryan, Nancy D - DNR; 'Bill Scott'
Cc: Michelle L. Williams; JBannantine@Geosyntec.com
Subject: FW: Express Cleaners Memo
Attachments: Express Cleaners Review Memo - Final.pdf

Nancy and Bill;

We represent PDQ and attached is an analysis from PDQ's expert for this case, Jim Bannantine of Geosyntec, which analyses and critiques the proposals that the Erlich Family trust received last year and has submitted for WDNR review and approval. Given the very high levels of contamination under the building, the age of the current proposals, the short-comings of these proposals including their incomplete scope and shortcoming is in their remedial approach as discussed in the attached technical memorandum, and the very close proximity of this contamination to adjacent properties (some of which are currently impacted) we feel that better proposals can be and should be obtained. We all know that there is no better way to waste money, waste time and come up with a less than satisfactory final closure than to implement inappropriate and incomplete remedial activities.

Please do not hesitate to contact us if you have any questions regarding the attached technical analysis.

Donald P. Gallo
Reinhart Boerner Van Deuren s.c.
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Reinhart
Attorneys at Law

From: JBannantine@Geosyntec.com [mailto:JBannantine@Geosyntec.com]
Sent: Thursday, May 20, 2010 3:10 PM
To: Michelle L. Williams
Cc: Donald P. Gallo
Subject: Express Cleaners Memo

Michelle, Don,

Attached is the memo for the Express Cleaners project. Please contact us if you have any questions or require any additional information. Two hard copies of this document will be sent standard overnight via Fed Ex.

Thank you,
Jim

Jim Bannantine
Senior Hydrogeologist

Geosyntec Consultants
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Technical Memorandum

Date: 20 May 2010

To:

Jerry Archer
Mike Arnold
PDQ Food Stores, Inc.
7601 Discovery Drive
P.O. Box 620997
Middleton, WI 53562

c/o

Donald P. Gallo, Esq.
Reinhart Boerner Van Deuren S.C.
N16 W23250 Stone Ridge Drive
Suite One
Waukesha, Wisconsin 53188

cc:

William P. Scott, Esq.
Gonzalez, Saggio & Harlan, LLP

Nancy Ryan
Hydrogeologist
Wisconsin Department of Natural Resources

From: James E. Bannantine, P.G., Senior Professional
Greg Johnson, CHMM, P.H., P.G., P.E., Senior Engineer
Geosyntec Consultants

Subject: Review of Consultant Remediation Proposals
Express Cleaners
3941 North Main Street
Racine, Wisconsin
FID#252010000
BRRTS# 02-52-547631

This *Technical Memorandum* was prepared at the request of Reinhart Boerner Van Deuren S.C. (Reinhart) for PDQ Food Stores, Inc. (PDQ) by Geosyntec Consultants (Geosyntec) for the above referenced site (hereinafter referred to as the "site").

The purpose of this *Technical Memorandum* is to provide an independent review and provide considerations regarding proposed remediation approaches for tetrachloroethene (PCE) impacted soil and groundwater and vapor intrusion mitigation. This *Technical memorandum* includes a summary of salient background information, a review summary of consultant remediation proposals and a summary of general remediation considerations for the site.

BACKGROUND INFORMATION

Geosyntec reviewed the following documents provided by Reinhart:

- *Additional Investigation Activities*, prepared by Bonestroo/Northern Environmental (Bonestroo), dated 9 June 2009;
- *Ehrlich Family Limited Partnership – Remedial Action Plan* prepared by Bonestroo, Inc., dated 24 July 2009;
- *Remedial Action Bid Proposal, Express Cleaners* prepared by GZA GeoEnvironmental, Inc. (GZA), dated 24 July 2009;
- *Remedial Action Bid Proposal Submittal*, prepared by Environmental Resource Management (ERM), dated 24 July 2009;
- *Proposal for Site Remediation and Well Installation*, prepared by RSV Engineering, Inc. (RSV), dated 24 July 2009; and
- *Addendum to RSV's July 24, 2009 Proposal for Site Remediation and Well Installation*, prepared by RSV; dated 1 April 2010.

A generalized site characterization based on the information reviewed is summarized as follows:

- A single-story building occupies the site. There are three tenant spaces within the building: 1) Express Cleaners, an active drycleaner in the northern space; 2) a former liquor store (currently vacant) in the center space; and 3) a nail and tanning salon in the southern space.
- The subsurface conditions generally consists of one foot of fill material (clay with some gravel) overlying approximately 5 to 6 feet of loose, silty sand, which overlies silty clay till to at least 13 feet below ground surface (bgs). The depth to groundwater ranges from approximately 3 to 5 feet bgs.
- Unsaturated soil is impacted with PCE and its breakdown (daughter) products trichloroethene (TCE) and cis-1,2-dichloroethene (cDCE). PCE soil concentrations range from 28

micrograms per kilogram (ug/kg) to 770,000 ug/kg. Figure 2 from the Bonestroo *Additional Investigation Activities* report, which depicts the distribution of PCE in soil is included as Attachment 1. PCE was detected in soil on the property to the east of the site, owned by S.C. Johnson and Sons, Inc. This property was formerly used for community farming, and is currently vacant and unused.

- Groundwater is impacted with PCE and its daughter products TCE and cDCE. Table 3 from the Bonestroo *Additional Investigation Activities* report which summarizes the groundwater analytical data and Figure 1 from the Bonestroo *Additional Investigation Activities* report which depicts the estimated lateral extent of PCE-impacted groundwater are included as Attachment 2.

REVIEW SUMMARY – SOIL AND GROUNDWATER REMEDIATION

Bonestroo Proposal

Remediation Objectives

Bonestroo stated that the remediation objectives were to reduce contaminant concentrations in the source area, improve groundwater quality, and prevent COC vapors from entering the building, with the ultimate objective of obtaining case closure. The proposed soil cleanup levels were the U.S. Environmental Protection Agency (EPA) site-specific soil screening levels for ingestion, 1,230 ug/kg for PCE. The proposed groundwater cleanup standards were those outlined in NR 140, Wis. Adm. Code.

Proposed Remediation Approach

Bonestroo proposes *in-situ* and *ex-situ* soil remediation at the site. *In-situ* soil remediation would be performed first and would consist of the application of RegenOx™ solution via direct push techniques to treat approximately 350 cubic yards (cy) of PCE-impacted soil. Two injection events are proposed at approximately one-month intervals. A total of thirty injection locations are proposed with a 5-foot radius of influence expected at each location. Bonestroo proposes to inject a total of 3,600 pounds of solid RegenOx™ in a 5% solution for the *in-situ* soil remediation.

The *ex-situ* soil remediation approach would be performed after the *in-situ* remediation field activities were completed. Approximately 390 cy of PCE-impacted soil within 4 feet of the ground surface would be treated by applying approximately 4,100 pounds of RegenOx™ and mechanically mixing the reagent into the soil with a backhoe. Post-treatment VOC performance sampling, consisting of collection of one soil sample from eight soil borings, would be performed one month after the soil remediation is completed.

The groundwater remediation approach consists of application of emulsified edible oil substrate (EOS) into the groundwater. The EOS would provide organic carbon to stimulate growth of a microbial community suited to treat PCE and its daughter products through sequential reductive

dechlorination. Approximately 53 injection locations are proposed to inject the EOS with a goal of treating contaminated groundwater contained within 2,600 cy of saturated soil.

Post-remediation groundwater monitoring will consist of two groundwater sample collection events. The first sample collection event would be performed approximately two months after the field injection activities were completed, and the second injection event would be performed approximately three months after the first event.

Considerations

- RegenOx™ consists of sodium percarbonate and sodium carbonate as the primary chemical oxidants. The oxidants are shipped separately from the activator chemicals, consisting of iron and silica gel. This is a relatively new method of oxidation, without an established track record.

- The proposal provides for two post-remediation groundwater monitoring events, and states "Additional groundwater monitoring will likely be required to document long-term contaminant trends and provide sufficient evidence to support case closure by the WDNR." Thus, this proposal does not appear to provide a complete "cost-to-closure".

- The injections for *in-situ* treatment are scheduled to be completed one month apart. It is not clear what information or criteria will be used to plan the second injection event. There appears to be no performance monitoring/sampling planned after the first injection event to provide a basis for evaluation and/or design of a second injection event.

- Chemical oxidants are non-selective and will oxidize any reduced compounds with which they contact. There is typically natural oxidant demand (NOD) in the subsurface consisting of naturally occurring organic matter, clays, and reduced metals such as ferrous iron. The COCs to be treated often represent a small portion of the NOD. Thus, much of the oxidant can be "wasted" if there is not an understanding of NOD. Based on the data reviewed, NOD analysis has not been conducted at the site.

- Chemical oxidation in an aqueous-based technology. RegenOx™ is shipped as a bulk dry solid. For the *ex-situ* mixing application with unsaturated soils, water may need to be added to facilitate the desired oxidation reaction with the COCs.

- For *ex-situ* treatment, removing soil to an aboveground location for treatment could result in the generation of hazardous waste. This consideration does not appear to be addressed in the proposal.

- The proposal for groundwater remediation does not state the amount of EOS to be injected or the solution concentration to be applied.

- The goal of EOS is to provide a source of organic carbon over a period of months to stimulate biodegradation. This material will add to the NOD at the site. The proposed remediation schedule shows the application of chemical oxidants within one month after groundwater EOS application. The potential exists for the chemical oxidant to react with the EOS, thereby reducing the effectiveness of both reagents to remediate COCs.

GZA Proposal

Remediation Objectives

10 ppm PCE

GZA stated that the objective for the project is to obtain regulatory closure. The soil remediation goal is to reduce overall COC mass by 85 to 90%. The groundwater remediation goal is to establish post-remediation groundwater trends that establish plume stability. GZA states that closure for the site will likely include application of the "Flexible Closure" rules including geographical information systems (GIS) registration for residual soil and groundwater impacts.

Proposed Remediation Approach

GZA proposes to remediate PCE-impacted groundwater and unsaturated soil via injection of 33,000 gallons of an approximate 3% potassium permanganate solution through a series of five horizontal injection wells. The actual quantity of permanganate and the concentration of the solution would be determined by bench scale testing, and could vary from the proposed quantities. Since chemical injection rates would be expected to be on the order of several hundred gallons per day, GZA states that there will be a temporary rise in the water table, thereby allowing treatment of unsaturated soils beneath the building. The permanganate solution will be mixed on site in 1,000 gallon batches, and will require 7,000 pounds of dry chemical. The solution would be delivered over a period of ten days.

Considerations

- As with the Bonestroo proposal, chemical oxidants are non-selective and will oxidize any reduced compounds with which they contact. The COCs often represent a small portion of the NOD, thus, much of the oxidant can be "wasted" by oxidizing NOD.

- WDNR will likely require that the water used for reagent mixing be tested for VOCs, specifically trihalomethanes which may be present from chlorination of the municipal water supply. If these compounds are present, the water may have to be pre-treated prior to injecting into the subsurface. This could add to the project cost and extend the time frame for project completion.

- As a condition of the WPDES permit approval, the WDNR will likely require pre-remediation testing of dissolved chromium (a common impurity in permanganate) and other metals to evaluate the potential for increased mobilization due to oxidation.

No post-treatment soil sampling
No treatment east side SCT prop.

- If potassium permanganate is stored in quantities of over 400 pounds, the client may have additional reporting and security requirements under the Department of Homeland Security Chemical Facility Anti-Terrorism Standards as outlined in 6 CFR Part 27. This consideration was not addressed in the proposal.

* Needs injection permit.

ERM Proposal

Remediation Objectives

ERM states that soil cleanup objectives will utilize non-industrial cleanup standards for the protection of human health, and groundwater cleanup objectives will be in accordance with NR 140 Wis. Adm. Code. -treat area PCE > 100 ppb. unsat.

- "Risk review" includes tracer test.
- Confirm Sampling

Proposed Remediation Approach

ERM proposes to remediate PCE-impacted soil and groundwater by chemical oxidation using sodium permanganate. The oxidant would be delivered through an infiltration gallery consisting of a single header pipe connected to a series of perforated lateral pipes installed beneath the building. Sodium permanganate will be injected outside the building through a series of direct push soil borings. ERM recommended total oxidant demand (TOD) and bench-scale testing to determine the quantity and concentration of oxidant to be applied to the site. The number of direct push borings and the chemical loading will be determined after completion of bench-scale testing.

2 years gw mon. incl. Closure fee

Considerations

- As with the Bonestroo and GZA proposals, chemical oxidants are non-selective and will oxidize any reduced compounds with which they contact. The COCs often represent a small portion of the NOD, thus, much of the oxidant can be "wasted" by oxidizing NOD.

- As with the GZA proposal, WDNR will likely require that the water used for reagent mixing be tested for VOCs, specifically trihalomethanes. If these compounds are present, the water may have to be pre-treated prior to injecting into the subsurface. This could add to the project cost and extend the time frame for project completion.

- A Wisconsin Pollution Discharge Elimination System (WPDES) permit and an exemption to NR 140.28 (prohibition against injection of material into the subsurface) are required for injection projects. These items were not addressed in the text of the proposal.

Soil disposal

- The proposal describes saw-cutting, concrete removal and disposal, and concrete replacement within the building. The potential to disrupt the active dry cleaner business should be considered.

- Sodium permanganate is typically shipped as a 20% or 40% solution and then diluted on-site to the desired concentration. Sodium permanganate is a stronger oxidizer and is typically

more concentrated than potassium permanganate due to its higher solubility. The potential health and safety risks associated with a strong oxidizer should be considered.

RSV Proposal

Remediation Objectives

Specific remediation objectives were not identified in this report.

Proposed Remediation Approach

The RSV proposes excavation and landfill disposal of an estimated 387 tons of PCE-impacted soil. For groundwater, RSV proposes to inject EOS in an area measuring 12,025 square feet to a depth of 15 feet bgs. The injection process is planned to be completed in 2 to 3 days, and would be followed by a 2-year post-remediation monitoring plan. RSV indicates an expected timeframe for remediation is 2 to 5 years.

Considerations

- It is possible that a portion of the excavated soil may require hazardous waste management. Pursuant to *Guidance for Hazardous Waste Remediation* (WDNR PUBL-RR-705), a "contained-out" determination can be obtained from WDNR for excavated soil (to allow management in an approved solid waste landfill) when the contaminant concentrations are below certain health-based levels. The proposal does not address the "contained-out" determination. In addition, based on a cursory review of the soil sample analytical data, there is a potential for soil impacts to exceed the "contained-out" level and that a portion of the may require management as a hazardous waste.

- A portion of the most impacted soil is located under the (active) dry cleaner portion of the building, and would be difficult to remove.

- The proposed remediation approach is planned for 2 to 5 years. However, the post-remediation monitoring plan is for two 2 years, which appears inconsistent.

- The amount of EOS to be injected is not detailed in the proposal.

- The proposal states that EOS injection will be performed to a depth of 15 feet bgs. EOS injection into the clay soil at depths below approximately 9 feet bgs would likely be limited and would not likely address impacts in this zone.

REVIEW SUMMARY - VAPOR INTRUSION MITIGATION

Proposed Mitigation Approach

All four proposals include the installation of a vapor mitigation system beneath the dry cleaner to address the potential for vapor intrusion. The proposed vapor mitigation systems generally of a proposed sub-floor slab vapor collection piping system connected to a blower.

Considerations

- None of the proposals appear to address the potential for vapor intrusion in the other tenant spaces within the building. The need for vapor mitigation systems beneath the other two spaces within the building should be evaluated.

- The effectiveness of sub-slab vapor mitigation would be limited if PCE is used during active dry cleaning operations.

GENERAL CONSIDERATIONS

In addition to the proposal-specific considerations above, the following should be considered in selecting a remediation approach for the site.

- The proposed remediation proposals appear to address potential off-site impacts. Additional off-site investigation may be required by WDNR prior to closure.

- There appears to be underground utility (water and electric) lines extending west from the building toward North Main Street. The WDNR may be concerned that these utilities are acting as preferential contaminant migration conduits and may require further investigation and mitigation in this regard.

- The proposed chemical oxidation remediation approaches are subject to the following considerations:

  - ✓ oxidant can be "wasted" on NOD, increasing project cost;
  - ✓ generally not effective as stand-alone technology for achieving WDNR groundwater quality standards;
  - ✓ contaminant concentration rebound is common, resulting in the need for multiple applications/injections;
  - ✓ although chemical oxidation can typically be accomplished in a shorter time frame than enhanced biodegradation, the costs to achieve the same level of contaminant reduction using chemical oxidation are generally higher than for enhanced bioremediation;
  - ✓ permanganate solutions are incompatible with natural fibers and rubbers and the presence of sodium permanganate in the subsurface may accelerate chloride corrosion of metals or carbon steel (these factors should be considered in the design); and
  - ✓ chemical oxidation has the potential to oxidize subsurface metals, making them more mobile; therefore, the WDNR will likely require that pre- and post-remediation groundwater testing include dissolved metals to evaluate the potential for migration.

- The site would appear to be suitable for enhanced bioremediation based on the presence of PCE breakdown daughter products (TCE and cDCE) in the soil and groundwater. The geochemical conditions appear to support a microbial population capable of reductive dechlorination.

- The site (and any off-site impacted properties) will likely be subject to WDNR's GIS Registry of Closed Remediation Sites with residual soil and groundwater contamination.

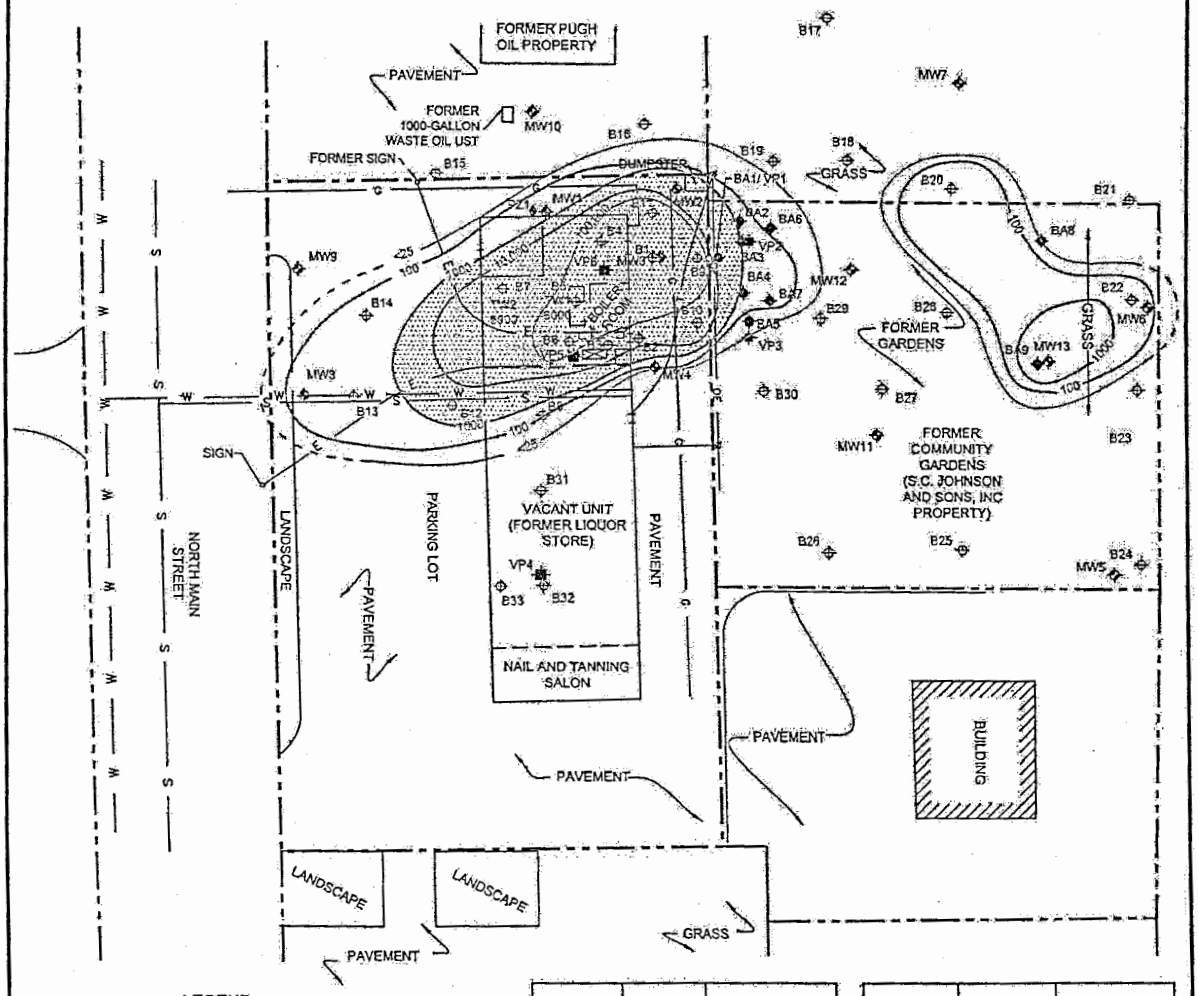
QUALIFICATIONS

This document is based solely on a general review of the indicated documents provided to Geosyntec by Reinhart Boerner Van Deuren S.C.

Geosyntec did not review the proposals to determine if they met the requirements of the Dry Cleaner Environmental Response Program (DERP) proposal requirements.

*****

ATTACHMENT 1



LEGEND

- SUBJECT PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARIES
- OE — OVERHEAD ELECTRIC LINE
- X — FENCE
- G — UNDERGROUND GAS LINE
- W — WATERMAIN
- E — BURIED ELECTRIC LINE
- S — BURIED SANITARY SEWER
- T — BURIED TELEPHONE LINE
- UTILITY POLE
- FORMER DRY CLEANING MACHINE LOCATION
- EXISTING DRY CLEANING MACHINE
- VP1 — SOIL VAPOR SAMPLING POINT LOCATION AND IDENTIFICATION
- BA1 — HAND AUGER NEAR SURFACE SAMPLE LOCATION AND IDENTIFICATION
- B5 — BOREHOLE LOCATION AND IDENTIFICATION
- B3 — GABRIEL ENVIRONMENTAL BOREHOLE LOCATION AND IDENTIFICATION
- MW1 — 2" MONITORING WELL LOCATION AND IDENTIFICATION
- PZ1 — PIEZOMETER LOCATION AND IDENTIFICATION
- TW2 — 1" TEMPORARY MONITORING WELL LOCATION
- 1000 — SOIL PCE ISOCONCENTRATION LINE IN MICROGRAMS PER KILOGRAM
- UNSATURATED SOIL REMEDIATION AREA BY IN-SITU INJECTION TREATMENT
- UNSATURATED SOIL REMEDIATION AREA BY EX-SITU SOIL TREATMENT AND MIXING

Sample Location	Sample Depth (feet)	Soil PCE Concentration (ug/kg)
PZ1	1-3	370
MW1	3.5-5.5	430
MW2	1-3	1740
MW3	1-3	8400
MW4	1-3	<25
MW6	2-4	48
MW8	1-3	330
MW12	1-3	<18
B1	4	121,000
B2	2	5900
B2	12	465
B3	4	21,100
B4	2-4	270,000
B4	4-6	1,380
B4	14-16	270
B5	2-4	66,000
B5	10-12	505
B6	2-4	336,000
B6	12-14	174
B7	2-4	10,200
B7	6-8	77,000
B8	2-4	67
B9	0-2	92,000
B9	8-10	770,000
B10	2-4	14,000
B10	8-10	28
B11	2-4	63,000
B11	6-8	590,000
B12	2-4	1370
B13	2-4	112
B13	6-8	68,000
B14	2-4	131
B15	2-4	<25
B15	4-6	<25
B16	2-4	<25

Sample Location	Sample Depth (feet)	Soil PCE Concentration (ug/kg)
B17	2-4	<25
B18	2-4	<25
B19	2-4	<25
B20	2-4	104
B21	2-4	<25
B22	2-4	670
B23	2-4	<25
B24	2-4	<25
B25	2-4	<25
B26	2-4	<25
B27	2-4	<25
B28	2-4	<25
B29	2-4	<25
B30	2-4	<25
B31	2-4	<25
B32	2-4	<25
B33	2-4	<25
MW8	2-4	48
MW8	1-3	330
BA1	2	130
BA2	0.5	650
BA2	2	700
BA3	0.5	1200
BA3	2	1300
BA4	0.5	690
BA4	2	100
BA5	30	43
BA6	0.5	56
BA6	2	74
BA7	0.5	84
BA7	2	380
BA8	1.5	<25
BA9	0.5	33
BA9	2	1200

SCALE IN FEET
20 0 20 40

Northern Environmental
Hydrologists • Engineers • Surveyors • Scientists
330 South 4th Avenue, Park Falls, Wisconsin 54552
Phone: 800-498-3913 Fax: 715-762-1844
WISCONSIN ▲ MINNESOTA ▲ ILLINOIS ▲ IOWA

DATE: 04/15/08 | DRAWN BY: BMP | REVISED: 07/21/09 MSM

SOIL REMEDIATION AREA

EXPRESS CLEANERS, INCORPORATED
3941 N. MAIN STREET
RACINE, WISCONSIN

PROJECT NUMBER: 003592-09001-0 | FIGURE 2

ATTACHMENT 2

Table 3 Groundwater Quality Analytical Results, Express Cleaners, Racine, Wisconsin

Well ID	Date Sampled	Water Table Elevation (feet above mean sea level)	Detected Volatile Organic Compounds (micrograms per liter)					
			Chloroform	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Tetra-chloroethene	Trichloro-ethene (TCE)	Vinyl Chloride
NR 140, Wis. Adm. Code Preventive Action Limit			1	7	20	1	0.5	0.02
NR 140, Wis. Adm. Code Enforcement Standard			6	70	100	10	5	0.2
MW1	04/27/07	611.79	<4.8	13.6 "J"	<9.5	330	<4.4	<2
	01/15/08	610.82	<4.8	13.9 "J"	<9.5	179	<4.4	<2
MW2	04/27/07	611.91	<4.8	<6.8	<9.5	370	16.2	<2
	01/15/08	611.30	<4.8	21.1 "J"	<9.5	223	14.7	<2
MW3	04/27/07	612.26	<24	1100	<47.5	2520	279	<10
*	04/27/07		<24	1090	<47.5	2410	284	<10
	01/15/08	611.18	<9.6	3800	54 "J"	2380	410	5.6 "J"
*	01/15/08		<9.6	3600	42 "J"	1990	340	<4
MW4	04/27/07	612.38	<0.48	<0.68	<0.95	<0.52	<0.44	<0.2
	01/15/08	611.31	<4.8	<0.68	<0.95	<0.52	<0.44	<0.2
MW5	01/15/08	610.49	<0.48	<0.68	<0.95	<0.52	<0.44	<0.2
MW6	01/15/08	610.28	<0.48	<0.68	<0.95	2.42	1.67	<0.2
MW7	01/15/08	611.27	<0.48	<0.68	<0.95	<0.52	<0.44	<0.2
MW8	01/15/08	608.66	0.55 "J"	220	8.6	826	36	<0.2
MW9	01/15/08	609.17	<0.48	<0.68	<0.95	<0.52	<0.44	<0.2
MW10	01/15/08	610.77	<0.48	<0.68	<0.95	<0.52	<0.44	<0.2
MW11	05/19/09	610.66	<1.48	<0.68	<0.61	<0.42	<0.39	<0.2
MW12	05/19/09	610.52	<1.48	7.3	<0.61	22.6	0.62 "J"	<0.2
MW13	05/19/09	610.22	<1.48	<0.68	<0.61	<0.42	<0.39	<0.2
PZ1	04/27/07	596.53	<4.8	<0.68	<9.5	<0.52	<0.44	<2
	01/15/08	606.65	<0.48	<0.68	<0.95	1.16 "J"	<0.44	<0.2
TW1	04/27/07	611.67	<24	310	<47.5	6000	92	<10
TW2	04/27/07	611.30	<24	1250	<47.5	5900	162	<10

Note:

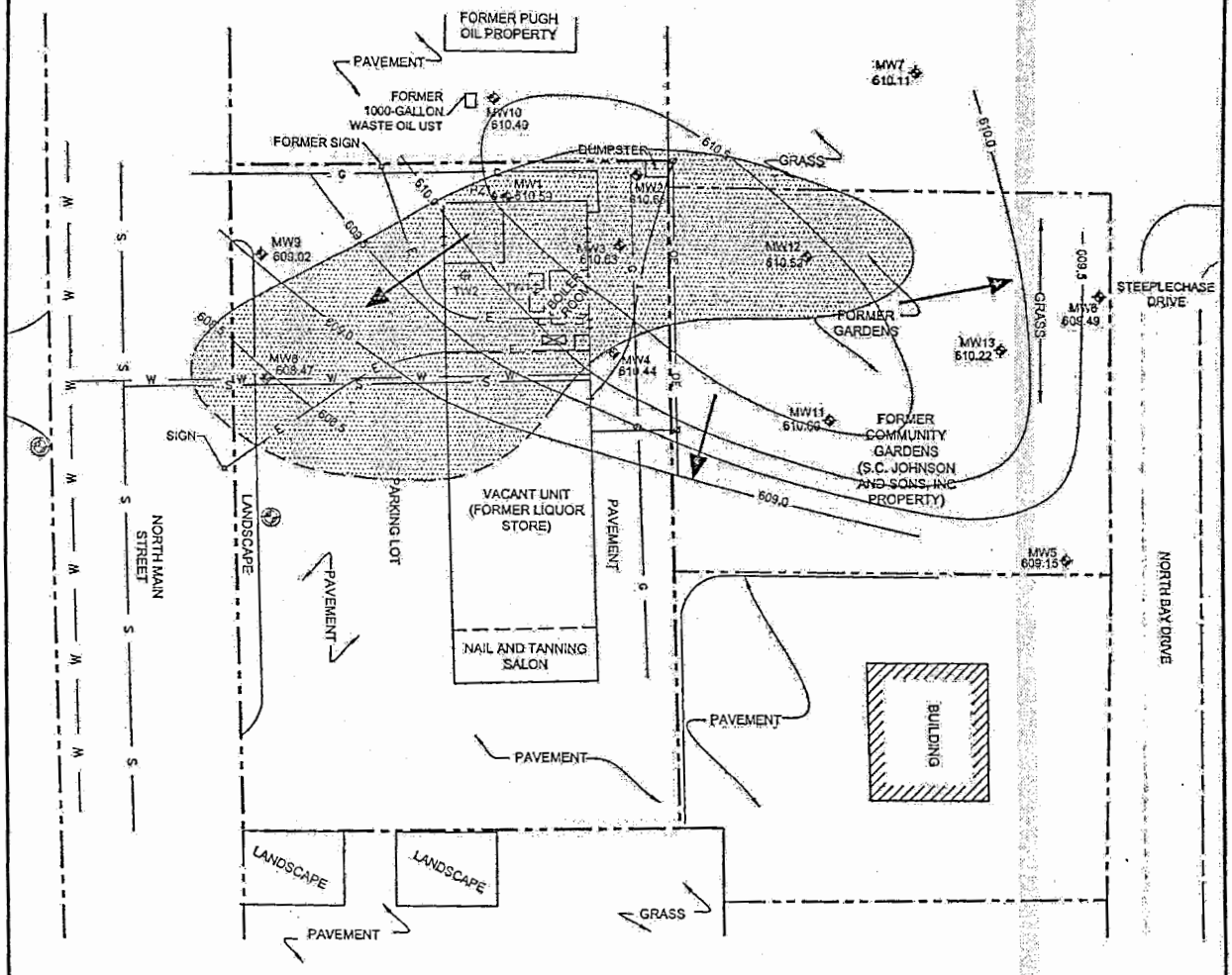
<x = not detected above laboratory Limit of Detection of X

"J" = analyte detected between limit of detection and limit of quantitation

* = duplicate sample

XXX = exceeds Chapter NR 140, Wisconsin Administrative Code (NR 140, Wis. Adm. Code) preventive action limit

XXX = exceeds NR 140, Wis. Adm. Code enforcement standard



LEGEND

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- BURIED SANITARY SEWER
- BURIED TELEPHONE LINE
- UTILITY POLE
- FORMER DRY CLEANING MACHINE LOCATION
- EXISTING DRY CLEANING MACHINE
- MW1 610.59 — 2" MONITORING WELL LOCATION AND IDENTIFICATION WITH GROUNDWATER ELEVATION
- PZ1 — PIEZOMETER LOCATION AND IDENTIFICATION
- TW2 6000 — 1" TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION
- PROPOSED GROUNDWATER MONITORING WELL LOCATION
- GROUNDWATER FLOW DIRECTION
- 608.5 — GROUNDWATER ELEVATION CONTOUR
- ESTIMATED EXTENT OF GROUNDWATER WITH PCE CONCENTRATIONS EXCEEDING NR140 ES AND EOS INJECTION AREA

N

SCALE IN FEET

20 0 20 40

Northern Environmental
*Hydrologists * Engineers * Surveyors * Scientists*
330 South 4th Avenue, Park Falls, Wisconsin 54552
Phone: 800-498-3913 Fax: 715-762-1844
WISCONSIN ▲ MINNESOTA ▲ ILLINOIS ▲ IOWA

GROUNDWATER REMEDIATION AREA

EXPRESS CLEANERS, INCORPORATED
3941 N. MAIN STREET
RACINE, WISCONSIN

DATE:	DRAWN BY:	REVISED:	PROJECT NUMBER:	FIGURE
04/15/08	BMP	07/23/09 MSM	003592-09001-0	1