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ENVIRONMENTAL CONSULTATION & REMEDIATION

KPRG and Associates, Inc.

RESPONSE LETTER

May 15, 2007

Mr. James C. Delwiche, P.G.
Wisconsin Department of Natural Resources
141 NW Barstow Street, Room 180
Waukesha, WI 53188

VIA FEDERAL EXPRESS

KPRG Project No. 13905

Re: Site Investigation Review Letter
S74 W16834 Janesville Road, Muskego, WI 53150
FID# 268077480, BRRTS# 02-68-543070

Dear Mr. Delwiche:

This response letter is written by KPRG and Associates, Inc. (KPRG) on behalf of Jill's Dry Cleaners. On February 14, 2007, KPRG submitted the Site Investigation (SI) Report for the above referenced Jill's Dry Cleaner site in Muskego, Wisconsin. On May 3, 2007, the Wisconsin Department of Natural Resources (WDNR) issued a SI report review letter consisting of three action items, two of which require additional site investigation work. Although we do not believe that any additional site investigation work being requested will substantively change the ultimate remedy required for achieving site closure, we do understand the need to fulfill all SI process requirements to the satisfaction of WDNR. As such, we will address each item in the referenced WDNR letter along with any suggestions for modification of the requested additional investigation work.

WDNR Item 1: Additional soil samples north of the source area will need to be collected in order to determine the degree and extent of soil contamination in both the lateral and vertical directions. Specifically samples should be collected north of samples HA-4 and HA-5 and beneath samples HA-1, HA-2 and HA-3. Samples should be analyzed for the chlorinated compounds previously detected.

Response: Based on a review of the soil data from sample locations HA-4 and HA-5 along the north property boundary of the Jill's facility, it is understood why the WDNR is requesting some additional soil sampling to the north of these locations. At this time one additional soil sample would be proposed to the north, half-way between the two noted locations. It is identified as proposed location HA-6 on Figure 1 in Attachment A.

Relative to the requested additional vertical definition sampling beneath sample locations HA-1, HA-2 and HA-3, it is believed that the additional requested data will not provide any substantive new information that would alter the anticipated site remedy. The report documents the presence of a shallow water table beneath the site and recognizes on page 11 that the PCE soil impacts beneath the facility extend to the saturated zone which is, based on water levels from monitoring well MW-1, anywhere from approximately 2.8 to 4.3 feet below ground surface (bgs), depending on the time of year. If any direct excavation of impacted soils from around the exterior of the north side of the facility would be considered as being required by the WDNR as part of remedy, the practical depth of the excavation would be limited by the incurrence of saturated conditions. Excavation below such depth would require dewatering activities which adds the complexity of impacted water handling issues.

In addition, there are some technical restrictions on the depth of sampling that can be achieved within the facility (locations HA-1 and HA-2). Both of these borings were performed by coring through the floor and using a hand held electric impact hammer due to lateral and overhead clearance issues (even the smallest diameter geoprobe unit that is mounted on a dolly requires approximately 9 to 10 feet of overhead clearance). With the nature of the clay materials beneath the site, refusal was occurring at approximately 5 feet below surface. Our sample within the main source area (HA-1) was collected from the 3.5 – 4.5 foot depth interval based on the highest photoionization detector (PID) field screening measurements. The PID measurement from the bottom interval at 5 feet was less than half of the PID measurement above it. *Additional indirect evidence that the vertical extent of soil impacts beneath the facility have been adequately defined is presented in the discussion to WDNR Item 2 below.* It is uncertain whether a deeper, meaningful sample can be obtained with the noted limitations.

Based on the above discussions, it is not believed that the additional requested vertical extent of impact sampling is warranted for this site. The WDNR is requested to reconsider this requirement.

WDNR Item 2: Additional groundwater investigation will also be necessary north of the source area. Due to the levels of tetrachloroethene (PCE) detected in well MW-1D, the Department will require an additional groundwater monitoring well be installed northeast of the property line and south of the tennis courts. The Department recommends a multi-level well be installed that would be screened at the water table in addition to multiple five foot intervals starting at the thirty five foot depth. In addition to determining the lateral and vertical extent of the chlorinated contamination the additional well/piezometer will determine of local supply wells are at risk. The Department appreciates the supply well logs for the area wells that have been submitted.

Response: As stated in the SI Report, it is believed that the noted levels of dissolved phase PCE impacts in well MW-1D are reflective of some impact pull-down from the drilling operation (the well is not double cased) which is subsequently being attenuated over time as opposed to substantial downward vertical migration of constituents. The

report also notes that the pond located just north of the site is acting as the local discharge point for near surface groundwater. This is illustrated with the water table maps provided in the SI Report based on the water level data obtained from the shallow water table wells. The water level data from deeper monitoring well MW-1D also suggests that water from this depth is following a flow path that would eventually lead to discharge to the pond. This observation is based on the estimated water level of the pond being slightly below that of the water level within monitoring well MW-6 which ranged in elevation from 795.40 to 801.87 feet. Over the course of the same time period, the water level within well MW-1D ranged from 800.34 to 801.90 feet. This potentiometric water level is generally at or above the water level within the pond reflective of a fairly standard, topographically driven, near surface groundwater flow system.

Relative to the concern raised of the potential risk to private water supply wells in the neighborhood to the north of the site and associated pond area, any potential impacts that could be associated with the Jill's Dry Cleaner site are believed to be highly unlikely. The basis for this statement is presented below.

A review of the boring log for the water well located on the Jill's Dry Cleaner site indicates approximately 159 feet of various clay materials underlain by carbonate bedrock. The well is completed within the carbonate rock and cased from the surface to the top of rock. A water sample collected from the on-site well did not detect any volatile organic compounds (VOCs).

The distance from the defined source area on the Jill's facility property to the estimated location of the nearest well in the subject neighborhood to the north is approximately 300 feet. A review of the boring logs from the neighborhood to the north of the site and pond indicates clay ranging from the surface to at least 90 feet bgs and up to 175 feet bgs. The clay generally overlies carbonate bedrock, however, in some cases there is a sand/gravel layer between the top of rock and the bottom of the clay layer. The depth to top of rock ranged from 139 feet bgs to 188 feet bgs. The wells are generally completed within the carbonate bedrock. All the wells are cased off from the surface to a depth ranging from 139 feet bgs to 188 feet bgs. The presence of the thick surficial clays and the depths and construction of the wells should preclude any impacts from shallower zones.

There are two basic transport mechanisms that could potentially move near surface PCE impacts from beneath the Jill's facility to depth. The first would be the downward migration of free phase PCE, which is heavier than water, through the 159 feet of clayey materials underlying the site and into bedrock. Studies performed and described in the literature (Dense Chlorinated Solvents in Porous and Fractured Media, Schwille, F., 1988) for free phase dense non-aqueous phased liquids (DNAPL), including PCE, show that in sandy and gravelly soils, there is fast and substantially uninhibited downward migration of product through the saturated zone until a less permeable material is reached, at which point it accumulates and/or migrates laterally along the top of the lower permeability material. Studies by Schwille, however, with less permeable saturated materials indicated that porous media with hydraulic conductivities less than

approximately 10^{-4} m/sec will often not allow DNAPL to penetrate into these materials, or will only penetrate very slowly. The only condition under which penetration is expected to occur into a low permeability medium is when the DNAPL exerts a relatively high pressure. This can only occur when high application rates are concentrated over a limited area. Although the primary source area beneath the Jill's facility can certainly be considered limited, the application rate and volume of DNAPL that would be required to penetrate 159 feet of clay beneath the facility is not representative of any typical dry cleaner site and is certainly not representative of this site. The concentrations of PCE detected in well MW-1D located just north of the source area, showed a continuous decreasing trend beginning at 540 ug/l during the first quarter of sampling down to 130 ug/l during the fourth quarter of sampling. The solubility of PCE in water is on the order of 200,000 ug/l (WDNR, April 2003. Publication RR-699). A general rule of thumb in DNAPL investigations is that if the observed concentration in groundwater is approaching or greater than 1% of the solubility, you are probably near a potential source of DNAPL (Cohen and Mercer, 1993. DNAPL Site Evaluation). Considering the proximity of well MW-1D to the suspect source area (approximately 15 feet) and the noted dissolved phase concentrations of PCE in the well, it does not appear indicative of free phase DNAPL progressing to any substantial depth beneath the site. It is also noted that, as stated above, the onsite water well which is screened within the carbonate aquifer did not have any VOC detections further documenting that there has not been a downward migration of free phase PCE from beneath the facility, through the clays and into the underlying bedrock aquifer.

Part of the conceptual model for the site is disclosed on Page 14 of the SI Report. A discussion is presented relative to the noted temporal trend of dissolved phase PCE in shallow well MW-1 which is clustered adjacent to MW-1D. The concentration trend for PCE at MW-1 shows a substantial decrease in PCE concentration from the spring sampling event (3,700 ug/l or 3.7 mg/l) through the early summer and early fall events (1,800 ug/l [1.8 mg/l] and 810 ug/l [0.810 mg/l], respectively). The concentration then rebounds to 3,300 ug/l (or 3.3 mg/l) during the winter sampling event. This trend in concentrations is directly related to changes in the observed depth to water at this location (see Table 1 in the SI Report). The highest water levels were recorded during the spring and winter sampling events with depth to water being less than three feet bgs. The depth to water in the summer and fall sampling events were 4.2 and 4.33 feet bgs, respectively. The soil sampling data presented in Section 4.1 of the SI Report indicates that the primary residual soil impacts generally occur between two and four feet bgs beneath the location of the dry cleaning machine. Therefore, as the groundwater table rises to above four feet at this location, it comes into contact with more impacted soils which are reflected in the higher noted PCE concentrations. When the water table drops during dryer periods, the noted PCE concentrations decrease due to the groundwater no longer being in direct contact with the overlying residually impacted soils. It is also noted that when the water table is high, the PCE concentrations are above the 1% solubility concentration rule of thumb previous mentioned as an indicator of potential residual free phase DNAPL in the vicinity. In this case it is sorbed within the near surface clay materials beneath the slab of the building in the vicinity of the dry cleaning machine. *This*

also provides indirect evidence that the vertical extent of residual soil impacts beneath the facility is limited to generally within four feet bgs and has been adequately defined (see discussion for WDNR Item 1 above).

The second potential transport mechanism is through dissolved phase migration of PCE from the source area, through the saturated clay units, both horizontally and vertically, and then eventually to the receptor well (it is noted that once in dissolved phase, the PCE will move with groundwater and will not behave as a DNAPL). This scenario is also believed to be highly unlikely based on the following:

- The previous discussion at the beginning of this response provides the basic interpretations of the near surface groundwater flow conditions with the discharge point being the surface pond located between the subject neighborhood and the Jill's facility.

- Monitoring well MW-6, which is located approximately 60 feet immediately downgradient of the source area did not have any detections of PCE and only one low level detection of the PCE breakdown product of cis-1,2-dichloroethene (DCE) that was above the NR 140 Preventative Action Limit (PAL) but substantially below the Enforcement Standard (ES). The monitoring well actually located between the Jill's facility and the nearest potential receptor well is well MW-5. Three rounds of groundwater samples from this well did not detect any VOCs.

- Based on the slug test data presented in the report, horizontal seepage velocity estimates within the saturated clay materials beneath the site ranges from approximately 7.79×10^{-3} ft/day to 9.18×10^{-4} ft/day. Assuming a straight line flow path from the source area to the nearest potential receptor well (which is actually located somewhat sidegradient and not directly downgradient of the source area) would result in a travel time of approximately 105 years using the more conservative seepage velocity value (i.e., the higher value). This does not take into account the need for the water to travel vertically down through the entire thickness of the clay and into bedrock (vertical clay permeabilities are generally lower than the horizontal permeabilities). This also does not account for any retardation or natural degradation of contaminants throughout that entire distance or the sorption capacity of the clays. There is evidence from on site groundwater monitoring data that the natural biodegradation process of reductive dechlorination is occurring beneath the site and total organic carbon concentrations from near surface clay units at unimpacted locations ranging from 4,400 mg/kg to 21,000 mg/kg (see SI Report).

Based on this discussion, the need for an additional downgradient deep piezometer, especially a multi-port piezometer, does not appear to be appropriate or necessary. The WDNR is requested to reconsider this requirement.

WDNR Item 3: The Department concurs with the recommendations in the report that call for another year of quarterly groundwater monitoring in addition to installing a foundation venting system for the building to address vapor intrusion pathways.

Response: Jill's Dry Cleaners is ready to proceed with the implementation of these recommendations. Should the proposed budget for these items be provided to the WDNR at this time and be completed as part of the site investigation activities or will this be considered as remediation under DERF and require obtaining a new series of competitive bids prior to initiation?

Jill's Dry Cleaners appreciates the opportunity for providing this response letter for WDNR consideration with respect to the additional site investigation work initially outlined to be required. We look forward to progressing with this project in the most technically sound and expedient manner toward closure. If there are any questions, or if you would like to meet directly to discuss this matter, please contact me at 262-781-0475 or Ms. Jill Fitzgerald at 262-679-2121.

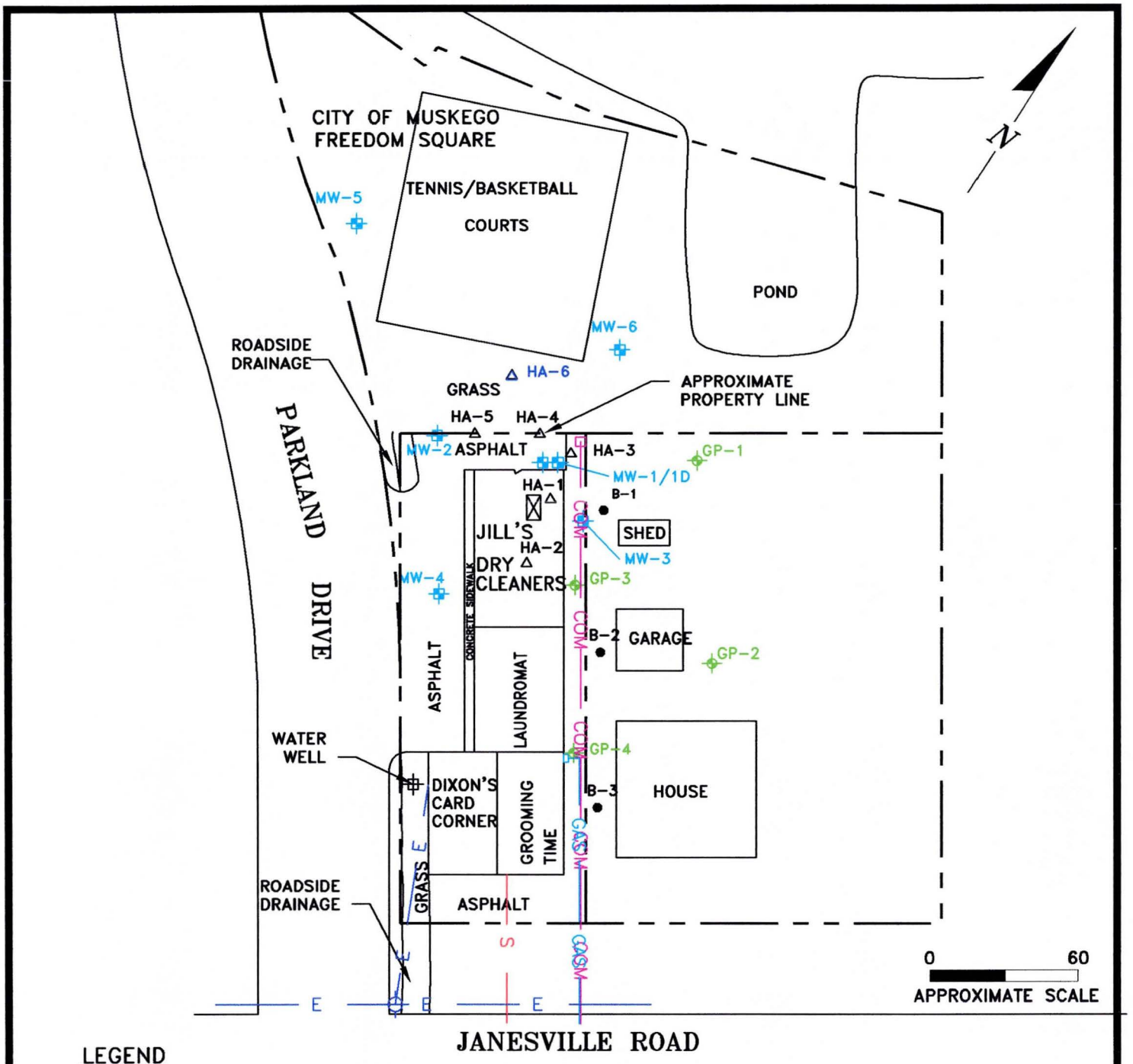
Sincerely,
KPRG and Associates, Inc.

Richard R. Gnat

Richard R. Gnat, P.G.
Principal

Cc: Ms. Jill Fitzgerald, Jill's Dry Cleaners
Donald P. Gallo, Esq., Reinhart Boerner Van Deuren, SC

ATTACHMENT A
Proposed Location for HA-6



LEGEND

- LOCATION OF DRY CLEANING MACHINE
- B-1 — BENCHMARK ENVIRONMENTAL BORING WITH PCE SOIL CONCENTRATIONS IN mg/kg
- HA-1 — HAND AUGER BORING. HA-6 IN BLUE PROPOSED
- GP-2 — GEOPROBE BORING
- MW-4 — MONITORING WELL LOCATION
- OVERHEAD ELECTRIC
- SANITARY SEWER
- GAS
- COMMUNICATIONS

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PROPOSED HA-6 LOCATION

JILL'S DRY CLEANERS
MUSKEGO, WISCONSIN

Scale: SEE BARSCALE | Date: May 14, 2007

KPRG Project No. 13905 | FIGURE 1