



# Minnesota Pollution Control Agency

June 30, 2005

Mr. Jack Curtis  
Curtis Oil Company  
4997 Miller Trunk Highway  
Duluth, MN 55811

RE: Request For Additional Work  
Site: Junction Food-n-Fuel, 5493 Miller Trunk Hwy, Hermantown, MN 55811  
Site ID#: LEAK00003534

Dear Mr. Curtis:

The Minnesota Pollution Control Agency (MPCA) staff has reviewed the report titled, "Annual Monitoring Report Fact Sheet 3.26", dated February 8, 2005. Based upon the information provided in the report, it has been determined that additional work is required at the above-referenced property.

MPCA staff support the need for active remediation. Remediation goals would be no free product and dissolved petroleum concentrations below Class 2D chronic Standards and Criterion. However, since it appears that site might also be managed under a high risk aquifer scenario, MDH HRLs may apply as cleanup criteria. In addition, the MPCA has recently revised the guidance documents to include assessment of indoor vapor intrusion. Action is necessary to correct any verifiably detectable vapor impacts in living spaces. Available site data strongly indicate that residual petroleum is present at the site and may extend beneath the site building. Finally, MPCA staff note a proposed air sparge point located directly under the site building and are concerned that active sparging under the building could lead to adverse vapor impacts. Specifically, the following activities should be conducted at the site:

1. Continue MW ground water monitoring on a quarterly schedule but also observe surface water in the wetlands NE of the site for evidence of petroleum contamination such as sheens and rainbows on the same schedule. Prepare flow maps for each event honoring the data from all wells. Ground water samples collected from the MWs should be analyzed for BTEX, MTBE and GRO. Carefully evaluate ground water sample results from MW8 relative to surface water standards and concentration trends.
2. Continue nearby water well sampling on an annual schedule, including from PW2, and PWs 5497, 4621, 5492 and 5506A. Ground water samples collected from water wells must be analyzed for VOCs and GRO. Continue to determine available well construction data (e.g., depth, screen, etc.) usage for the nearby off-site water wells. Continued lack of petroleum contamination in nearby wells should be evaluated relative to a high risk aquifer scenario.
3. Complete a vapor intrusion assessment following MPCA Guidance Document 4-01a, *Vapor Intrusion Assessments Performed during Site Investigations*, focusing on the on-site building. Sub-slab air sampling is required, especially at the southerly extent of the building footprint. Indoor air sampling must be completed if indicated by the sub-slab sampling results.

4. Mobile and residual petroleum occurrence and extent in the subsurface must be investigated using Laser Induced Fluorescence (LIF) borings. A boring location grid using maximum 30 foot spacing is necessary. Instruct your consultant to contact the MPCA Hydrologist assigned to your site for further instruction and discussion regarding the use of LIF before completing this work.
5. Future site maps provided to the MPCA must show the footprint of the recently expanded building relative to the other sites features such as MWs and remediation points.
6. Please note the MPCA has recently revised guidance documents including reporting forms. Use of the updated guidance is required for all work done after May 15, 2005.

Within 180 days of the date of this letter, submit a complete Annual Monitoring Report form documenting completion of the above requested work. Include appropriate text, tables, figures and appendices from the Investigation Report Form as applicable and appropriate to document additional investigation work. If, depending on results of additional work, corrective action is recommended, submit MPCA Guidance Document 4-19 *Conceptual Corrective Action Design Worksheet* along with the AMR. The Conceptual CAD should address all potential impacts and risks presented at the site. MPCA staff realize that Air Sparge and Soil Vapor Extraction (AS/SVE) may be selected as an appropriate corrective action for the site and concede that the results for Roddy's Store appear impressive. However, MPCA staff are providing the following comments relative to the AS/SVE system proposed for the Junction Food-n-Fuel site.

Your consultant proposes that horizontal drilling methods be used to install the AS points due to "site infrastructure". At this point, MPCA staff do not understand why a more conventional AS point design cannot be employed so this rationale will need to be better explained before the MPCA can provide approval, especially since it appears that the SVE points will be installed using conventional methods. Moreover, MPCA staff have concerns about other aspects of the design such as multiple sparge points installed in a single boring, so, pilot testing will require use of AS/SVE point design consistent with the final design. In addition, it would be especially useful if your consultant can identify other sites where this method has been successfully utilized by them in the past.

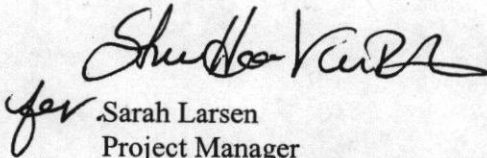
The MPCA's requires that SVE system air extraction rates be at least 5 times AS system injection rates in order to prevent potentially dangerous vapor migration. Although MPCA concede the wisdom of designing the system so as to continue to collect AS off-gases during periods when the SVE is not operating, staff generally do not approve of this operation method as a main design parameter for the SVE system. This is of particular concern given the proposal to inject air under the on-site building. Cross-sections should be prepared showing the configuration of the AS and SVE points under and around the building relative to the sub-slab environment including the building footings and varying water table depth as the building footings may prevent pneumatic connection between the sub-slab environment and the horizontal SVE wells located outside the building footprint. It appears that active sub-slab ventilation must be considered. MPCA staff suggest that if indoor air vapor intrusion is determined to be an additional risk factor at this site (via the above required assessment), appropriate indoor vapor intrusion mitigation methods may also be utilized to mitigate AS forced vapor migration. Vapor intrusion mitigation methods can consist of potential vapor entry point (e.g., cracks, utility lines, etc.) sealing, sump sealing and/or venting, active or passive sub-slab ventilation, and/or air exchanger installation and operation, among others.

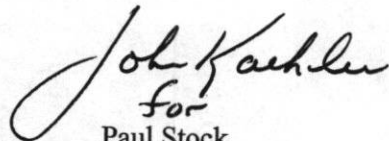
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MPCA staff have noticed that long vertical and horizontal (>10 ft) SVE screens often perform less than adequately at removing petroleum vapors due to excessive vacuum loss near the top of the screen and short-circuiting. Although staff realize that this may not be as much of a concern when SVE is used in a passive mode, we do note that the 3 proposed SVE points are composed of screens with total lengths of approximately 40, 100 and 150 feet, respectively. MPCA staff suggest that horizontal screens have a riser at the terminal end of the screen so that induced vacuum can be measured. Appropriately located vapor monitoring points, including appropriately screened MWs, could be used to effectively measure radius of pneumatic influence without or in addition to horizontal SVE point risers.

Failure to meet deadlines provided in this letter in a timely manner may result in reductions in Petrofund reimbursement or lead to MPCA enforcement actions. If you have any questions regarding this letter, please contact Sarah Larsen at (651) 296-7824 or Paul Stock, staff hydrogeologist, at (218) 846-0473. If you are calling long distance, you may reach the MPCA by calling 1-800-657-3864.

Sincerely,

  
for Sarah Larsen  
Project Manager  
Petroleum Remediation Unit 2  
Petroleum & Closed Landfill Section  
Remediation Division

  
for  
Paul Stock  
Hydrogeologist  
Petroleum Remediation Unit 1  
Petroleum & Closed Landfill Section  
Remediation Division

SL:PS:tf

cc: Tim Jefferson, Twin Ports Testing