E-Mail from current consultant to Excalibur, 5/27/15

The best answer to give pertaining the need for a risk assessment as part of the remedial goal is that it is not required per the PADEP. However, we have included it as part of the approach for demonstration of attainment written in the RAP (see below). This approach was done as a means to eliminate any unnecessary Activity Use Limitations (AULs) with the best interest of the client in mind.

We have identified that complete pathways exist and that remediation for these pathways is required. The complete pathways include groundwater ingestion and worker exposure of groundwater sourced vapors in trench. The groundwater ingestion cannot be addressed through risk quantification due to regulations; this will require complete remediation to SHS or elimination of pathways. However, the trench worker exposure can be quantified (post remediation) and potentially found to not be a risk. If a quantified risk assessment is completed for the worker exposure and no risk is identified, less AULs are needed. However, this exercise is not required if you jump right to implementing an AUL for trench worker safety.

If the client wishes minimize the AULs for deeds then a risk assessment will be required. I would think that most property owners would see minimizing the AULs as a desirable outcome.

The RAP is written with the primary active remediation goal as stable groundwater plume. Secondary goal (not explicitly outlined in the RAP) could be to remediate to point of no risk exposure to workers in trench, however it is not required to close the site.

Section 11 of the RAP:

Attainment of a Site Specific Standard (SSS) for the COC's has been identified as the remediation goal. Demonstration of SSS attainment will entail the combination of three key concepts:

- *Stable or shrinking groundwater contaminant plume*
- *Updated risk assessment to identify any complete unacceptable risk pathways to receptors*
- *Elimination of all complete unacceptable risk pathways to receptors through institutional control(s)*

Once remediation through air sparge and SVE has demonstrated significant COC removal in groundwater and a stable or shrinking groundwater plume (after remedial system shut down and rebound observations are favorable), soil samples will be collected to evaluate the site post-remediation soil concentrations. A new risk assessment will be conducted using the post-remedial soil and groundwater COC concentrations.

The risk assessment will evaluate all exposure sources, pathways, and receptors with the exception of potable groundwater use. Exposure to impacted groundwater from potable groundwater use cannot be eliminated through quantitative risk evaluation as per PADEP Chapter 245.307 regulations.

Future potable wells within the groundwater plume are anticipated to be impacted by site groundwater. These complete exposure pathways will be addressed through institutional controls such as activity use limitations and post remediation care plans.

Note there is no scenario for calculating site specific numeric values. Only risk evaluations to determine if complete pathways have exposure values above risk thresholds. Robin has noted that calculating a numeric SSS for groundwater will entail 8 quarters of attainment sampling. This does not seem to be an appropriate path for this site.

In closing, the best answer that I can give is that a risk assessment is recommended post remediation to determine exposure to workers in trench. It is up to the client if they wish to make the outcome of worker exposure in a trench risk assessment contingent as a remedial goal.

Pertinent log notes from a phone call between PADEP and current consultant, 4/14/15

- Robin spoke with the PADEP Risk Assessment reviewer, who said that the November 2014 Risk Assessment comments (submitted under cover dated March 4, 2015) were suggestions for improving report clarity and citing references or resources (Virginia Trench) to aid in Department review. The reviewer was comfortable with the calculations performed, and was not concerned with the use of the Virginia Trench Model. Future reporting should include reference to the Virginia risk assessment guidance, or a copy of the guidance as an attachment.

- The PADEP does not issue "blanket approvals" for risk assessment/quantification methods. Each site/report is evaluated independently.

- If no additional receptors are identified, the RACR should refer to original Risk Assessment and quantification of risk should only performed for a construction worker in a trench using newly collected analytical data following the termination of active remediation.

- Following the termination of active remediation, exposure to a construction worker may be reevaluated using "worst case" analytical data from a new data set collected after system termination. If the risk is acceptable, the pathway is eliminated. If unacceptable risk remains following active remediation, exposure may be eliminated through an environmental covenant mandating use of proper PPE by construction workers in areas of concern. Samples beyond the "worst case" region will be needed to delineate the area(s) where the institutional control applies.

- Alternatively, to attain a site specific numeric standard, systematic random sampling is required following termination of remedial efforts along with the derivation of site specific numbers. This approach is expected to require a larger investment in comparison to the calculation of risk using quantified data following remedial termination.

- Robin offered to review a draft copy of the evaluation of risk to a trench worker performed following collection of new data after termination of active remediation.

E-Mail from current consultant to PADEP, 4/10/15

We are anxious to reach a resolution in terms of what PADEP will approve for a SSS closure at the L&L Fuel site in Stewartstown. In an effort to move forward I have prepared a general outline of what we feel will be necessary to achieve SSS closure for soil and groundwater through pathway elimination and risk assessment, with recent PADEP comments on the HHRAR in mind.

- Remedial system operation until results of monitoring support that dissolved phase stabilization is achievable following system shutdown. After which, groundwater attainment sampling will be performed to demonstrate stable and/or decreasing trends.
- SSS Closure for groundwater by pathway elimination through post remedial groundwater monitoring and regional water supply source reconnaissance within the projected plume footprint.
- SSS Closure for groundwater and soil by pathway elimination through implementation of institutional controls including potential onsite soil management plan and potential AULs for trench work onsite and within the PADDOT ROW (if warranted through results of RA).
- Assessment of on and offsite building vapor intrusion and potential soil vapor mitigation for current or future buildings (if warranted through results of RA).

With the interest of the property owner in mind, we wish to evaluate the need for land usage restrictions quantitatively as to address through controls only what is truly necessary. Exposures to a trench worker and to indoor occupants of a building are expected to require evaluation through risk assessments to determine need for control measures.

If the Department agrees, I would like to discuss next what is appropriate in terms of acceptable quantitative risk assessment methodology. One big question is in regards to the Virginia Trench Model, and if it is considered acceptable by the PADEP. I should say that our proposed assessment would solve for risk, rather than an in situ media concentration (e.g. site specific value). If results show to be unacceptable, control measures would be put in place to eliminate exposure.

E-Mail from current consultant to PADEP, 4/1/15

The numeric risk assessment was performed to highlight those exposure pathways that show to be unacceptable under current and reasonably anticipated future conditions, and without incorporation of pathway control measures, in an effort to avoid unwarranted land usage restrictions, engineering control measures or remedial actions under SSS closure. It is recognized now that exposure to an impacted groundwater supply source should not be included in a numeric assessment of risk because of rules under Ch. 245 that require the replacement of such supplies in the event of impact, regardless of the degree of exposure risk associated. This will be considered in future reporting. However, soil and soil vapor concentrations can be examined through quantitative risk assessment to most effectively and efficiently achieve SSS closure (e.g. remedial action, pathway elimination, post-remedial care plan, demonstration of acceptable risk of exposure or a combination thereof). This was done through the calculation of exposure risk per receptor as opposed to the calculation of an acceptable numeric standard threshold for each compound of interest. Both methods identify unacceptable risk and associated exposure pathways, after which decisions can be made as to how each should be addressed.

It is recognized that some exposure routes may be eliminated through institutional or engineering control measures, or through post remedial care plan; however it is my understanding that it is not practical to eliminate exposure to a construction worker in a trench through institutional means as in an emergency situation it would be unlikely that a records search would be performed. A protective alternative is the calculation of numeric risk through use of the Virginia Trench Model, from which the need for exposure control measures, or remedial attention, can be determined.

To answer your last question, the intention moving forward is to address residually impacted media and current or probable exposure routes (with the exception of exposure to a groundwater source) through

the appropriate means (pathway elimination, post-remedial care plan or demonstration of acceptable risk or calculation of a numeric standard). The "appropriate means" are not yet determined and dependent upon an understanding the Department's position on what is and is not an approved method for effectively demonstrating SSS closure. A telephone conversation regarding the acceptable methods for addressing residual impact under the SSS would be extremely beneficial in redirecting focus and streamlining closure efforts.

E-Mail from PADEP to current consultant, 3/30/15

I would like some additional information regarding the pathway to closure that is being pursued for this site. Very few of our sites need to complete full Risk Assessments because they are pursuing the site specific standard through pathway elimination and risk assessments are not needed if the pathway is eliminated. Also, under the Storage Tank act impacted water supplies have to be replaced in quality and quantity and a risk evaluation is not an option for this pathway. The only time a complete Risk Assessment is really needed is if you are trying to develop site specific numeric standards. I just want to make sure that the Risk Assessment is needed for the site before a significant amount of time and money is spent on it both on your end and ours. I have forwarded your comments to the person who helped review the Risk Assessment and will get back to you when we have some dates. Please let me know if you are planning on developing site specific numeric standards or if another path to closure will be pursued.

E-Mail from current consultant to PADEP, 3/26/15 (attachment is the annotated document that comprises the rest of Attachment 3O)

Attached is a PDF copy of the PADEP comments to our 2014 HHRAR for the Former L&L Fuel Service Center in Stewartstown (Facility ID No. 67-62730). Within this document are notes in response to the comments presented. Some notes are included to acknowledge points made by the reviewer and some notes prompt the need for discussion through a phone conference, as mentioned previously. Notes prompting discussion are found in response to PADEP comments on report format and use of the Virginia DEQ Risk Assessment Guidance and associated calculations.

I ask that you share this document with the risk assessment reviewer and respond with available dates to hold our phone conference. I understand this will require some planning and I appreciate your time in organizing this meeting. We have an interest in holding this call as soon as practical, and are eager to gain a clearer understanding of the Department's expectations in risk assessment reporting as we move forward.

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

MAR 0 9 2015

March 4, 2015

Mr. Donald Scarborough
SGL Investment Group
51A South Main Street
PO Box 369
Stewartstown, PA 17363

Re: Storage Tank Program
Former L&L Service Center
Facility ID No. 67-62730
51A South Main Street
Stewartstown Borough, York County

Dear Mr. Scarborough:

Your Human Health Risk Assessment Report dated November, 2014, has been reviewed. The Department has the following comments on the Human Health Risk Assessment Report.

Overall, the risk assessment is poorly organized and difficult to follow. It is repetitive in locations, such as in describing potential receptors and exposure routes. It would be helpful to have a figure showing their site model of impacted media, exposure routes, and receptors.

- The risk assessment evaluated the risk for exposure to groundwater contamination through the use of private wells. Chapter 245.307 requires that an affected or diminished water supply be restored or replaced. Exposure to impacted groundwater through use of a current or future potable wells cannot be eliminated through a risk evaluation.

- There are a number of places (in the text and in the tables with exposure factors) where they discuss using the Virginia Department of Environmental Quality's Risk Assessment Guidance with no explanation of why this was done. We don't have this guidance and therefore cannot evaluate the work or determine if it would be acceptable in PA.

- Section 2.1 – It describes part of the current and future use of the property as residential, but does not describe the nature of that use (*i.e.*, apartments or where they are located).

- Section 3.3 – There are two equations for carcinogenic risk, mutagenic and non-mutagenic. You only list the non-mutagenic equation. This is probably because you only

have non-mutagenic contaminants, but this should be included in the discussion. You don't need to show both equations, just identify that they're only using one and why.

- Section 3.3 – The wrong section is cited for inhalation of vapor from groundwater source well. It should be §250.307, not §250.306.

- Section 3.4 – The tables listing the exposure assumptions lists the resource for the "Lifetime in Years" input as being "chemical specific."

- Section 3.4 – The only exposure route identified for the trespasser in Section 2.2 was outdoor inhalation of vapor emissions from soil, and the Table in this section lists a number of input values unnecessary for that exposure route. Alternatively, Section 2.2 discusses exposure routes for groundwater for other receptors and the input values are not included in the table, it only has the soil values.

- Section 3.5.7 – On page 22, it references Section 9.2.5.5 for the concentration of within a trench. Section 9.2.5.5 of what document? The Site Characterization Report goes from Section 9.2 to 9.3 with no subsections and there is not Section 9.2.5.5 in the Risk Assessment.

- Section 3.5.7, page 23 – The IF equations should be included here.

- Section 3.6.3 – What exposure routes were used to determine the risk for the current on-site commercial worker of 1.4×10^{-6} (carcinogenic) and 6.4×10^{-3} (non-carcinogenic)? The only route of exposure discussed in section 2.2.1 and in this section for the current commercial worker is inhalation, and these risks do not match those given earlier in Section 3.6.3.

- Section 3.7, page 33 – This refers the reader to Section 9.2.5.1 for more discussion. What document is this referencing?

- Section 3.7 – The summed risk for Offsite Residential Exposure for Vapor Inhalation from soil does not match the Tables in Section 3.8 or Appendix C.

- Table 4 – Many of the Residential Soil Vapor RSLs conversions appear to be wrong.

- Appendix A – The flowchart does not follow the usual pathway. These normally start with timeframe (current/future), then to medium, then exposure medium, exposure point, receptor, receptor age, exposure route, type of analysis, rationale. This is from Appendix A, Table 1 of EPA's RAGS Part D.

The following comments are for Appendix B:

- Table 3.12 – For the CA parameter, the Default Value refers to note (6) and note (6) then refers the reader to Section 3.2.2 of the "risk assessment guidance". Which guidance is this? Also, for the same parameter, the User Defined Column refers to Table 3.7. What Table is this, from which document?

- Table 3.13 – This table references VRP in a number of places. What is VRP? It also references DEQ, which is probably the VA Department of Environmental Quality. Again, why are you using a guidance document from another state?

- Table 3.13 – The reference notes at the bottom contain a number of references not relevant to the Table. It would make the table easier to follow if these were removed.

The following comments are for Appendix C:

- Table 2.6 – The tapwater RSLs do not appear to match the EPA tables. Also, the * note indicates that the non-carcinogenic RSLs were divided by 10 to account for multiple constituents and it doesn't look like this was actually done.

- Table 3.10 – This table is for dermal contact with groundwater for residents, and the notes at the bottom indicate a skin surface area for head, hands, and forearms. Is this the surface area that was used? If so, the surface area should be for the whole body to account for showering. If these notes are not relevant (the whole body surface area was used), then they should be removed.

If you have any questions, contact me at 717.705.4837.

Sincerely

Robin L. Yerger
Licensed Professional Geologist
Environmental Cleanup and Brownfields Program

cc: Amanda Michelone, Mountain Research LLC ✓