



Van Reed Office Plaza  
2209 Quarry Drive, Suite C-35  
Reading, PA 19609  
Phone: (610) 670-7310/Fax: (610) 670-7311  
E-mail: [jleed@leedenvironmental.com](mailto:jleed@leedenvironmental.com)  
[www.leedenvironmental.com](http://www.leedenvironmental.com)

October 19, 2007

**By Electronic Mail and First Class Mail**

Ms. Doreen Bolze  
Executive Director  
Harpeth River Watershed Association  
1164 Columbia Avenue  
P.O. Box 1127  
Franklin, TN 37065

**Re: Egyptian Lacquer – Groundwater Corrective Action Plan**

Dear Ms. Bolze:

Thank you for sending the information to Leed Environmental, Inc. related to the subsurface release of solvents from the Egyptian Lacquer Manufacturing Company (ELMCO) facility in Franklin, Tennessee. At your request, I have reviewed the documents and am providing my comments and questions for your use.

My comments and questions on the Groundwater Corrective Action Plan which Triad Environmental Consultants (Triad) issued to the Tennessee Department of Environment and Conservation (Tennessee DEC) on August 28, 2007 on ELMCO's behalf are as follows:

**1. Investigations for Contaminant Releases**

Page 6 of the Groundwater Corrective Action Plan indicates that it is ELMCO's and Triad's understanding that Tennessee DEC has concluded, based on investigations conducted to date, that no further investigations for contaminant releases at the property are necessary. If the Tennessee DEC has concluded that further investigations of contaminant releases are not required, that definitive conclusion is premature at this time. Furthermore, there is no need to make that definitive conclusion at this time. If the Tennessee DEC believes that further investigations of potential releases are not required at this time, the potential for further investigations at a later date should not be ruled out as a possibility if future work at the property indicates that further investigations are required.

**2. Elimination of Release Mechanism**

- Page 6 of the Groundwater Corrective Action Plan indicates that ELMCO removed about 50 feet of each underground solvent pipeline from the ground near the end of the tank farm. Page 2 of the Groundwater Corrective Action Plan indicates that the tank farm is located about 350 feet west of the building. Why is it not necessary

to remove the other 300 feet of underground pipeline between the tank farm and the building. Although the other 300 feet of underground pipe may not have leaked, wouldn't it be a prudent, preventative measure to remove all potential solvent sources to the subsurface?

- How is solvent currently conveyed from the tank farm to the building? Are double-walled aboveground pipes being used? Are the pipes being inspected frequently?
- Page 2 of the Groundwater Corrective Action Plan indicates that the 12 solvent-containing tanks in the tank farm are situated on a concrete pad and are surrounded by "low, concrete block secondary containment walls." What is the current condition of the concrete pad? Since the facility was constructed in 1978, what were the historical conditions of the concrete pad? Why is the secondary containment structure "low?" Is the structure sufficient to contain tank leaks and/or ruptures? If a tank would leak near the middle or the top of the tank, is the height of the containment structure sufficient to prevent the solvent from spraying or flowing out above the top of the containment structure and onto the adjacent ground surface?
- Can the public be assured that Tennessee DEC will prevent ELMCO from using underground pipelines to convey solvent from the tank farm to the building?

### **3. Volume of Release**

- Page 7 of the Groundwater Corrective Action Plan indicates that ELMCO's solvent inventory controls were "inadequate," "problematic," and "inaccurate." Are these types of procedures satisfactory to Tennessee DEC? Are they sufficient to comply with ELMCO's air permits? If inventory controls are not required by Tennessee DEC's regulations, wouldn't a requirement in the Consent Agreement and Order be appropriate?
- Page 7 of the Groundwater Corrective Action Plan indicates that "the time of the [solvent] release is unknown" and "all that can be established is that the pipe elbows at the tank farm end were corroded and leaking when they were inspected in March 2007." This statement is incorrect. Based on the information included on page 6 of the report, it would be correct to state that a phase II investigation was performed at the site in November 2006 and significant VOC concentrations were detected in the area west of the tank farm.

### **4. Preliminary Remediation Goals**

Page 9 of the Groundwater Corrective Action Plan indicates that the preliminary remedial goals (PRGs) for acetone in tap water are 5.5 mg/l (there is no maximum contaminant level, MCL) and the toluene PRG is 0.72 mg/l for tap water (the MCL is 1.0 mg/l). Since the seeps discharge to Liberty Creek and the Harpeth River, why is there no mention of concentrations protective of aquatic life?

## **5. Soil Investigation**

Page 14 of the Groundwater Corrective Action Plan indicates that a column of contaminated soil was detected during the soil investigation in the area of the solvent release. The document also indicates that the solvent, upon completing its migration through the soil column, spread out along the top of rock following the top of rock contours. Figures 2 and 3 are deceptive in that they show the approximate zone of contaminated soil but not the movement of contamination in groundwater, fractures, etc. away from the contaminated soil.

## **6. Soil Remediation**

Pages 14-15 of the Groundwater Corrective Action Plan describe the injection of a liquid reagent to treat contaminated soil. Further, the report indicates that a report of this remedial action was submitted to Tennessee DEC in June 2007. Due to the relationship between the solvent release into the soil and the subsequent effect on groundwater, it would be appropriate to present a summary of the results of the soil remediation in the Groundwater Corrective Action Plan, the status of the soil remediation work, whether soil remediation is ongoing, whether PRGs for soil have been achieved, etc.

## **7. Seep Monitoring**

Pages 11-13 of the Groundwater Corrective Action Plan describe changes in seep behavior over time and as a function of drought conditions. Further, the Groundwater Corrective Action Plan describes other contaminants in addition to toluene and acetone (including benzene, 1,1,2-trichloroethane, naphthalene, and 1,2,4-trimethyl benzene) that have been detected in the seeps at various times. In general, the sources of the other contaminants have not been identified, and an investigation of the potential extent of these contaminants is not included in the plan. Why?

## **8. Groundwater Investigations**

The results of phase I and phase II groundwater investigations at the ELMCO facility are described on pages 15-17 of the Groundwater Corrective Action Plan. In general, it does not appear that the extent of potential groundwater contamination has been defined. Specifically, page 16 indicates that groundwater elevations measured to date do not allow a potentiometric map to be prepared. Further, it appears that all of the wells are impacted to some extent by solvent constituents. Yet there is no plan for additional wells, no plan for sampling additional wells, no plan for additional delineation of groundwater impacts. Why?

## **9. Fractures**

The site conceptual model on pages 17-18 of the Groundwater Corrective Action Plan indicates that solvents have migrated along subsurface fractures. Have the fractures been sufficiently defined to be certain that solvents haven't migrated to additional areas? Indeed, the Groundwater Corrective Action Plan indicates on page 18 that the "exact migration pathways of the free-product and dissolved-phase components of the plume cannot be established with certainty."

#### **10. Risk Evaluation – Vapors**

Page 20 of the Groundwater Corrective Action Plan indicates that there is a minimal risk to human health by contact with, or inhalation of vapors from, the free-product component of the groundwater plume as it surfaces in the channel of Liberty Creek. The report also indicates that the area of the creek valley where high concentrations of solvent could occur is on private property not generally accessible to the public. Does this imply that exposure to high solvent concentrations is acceptable on private property?

#### **11. Risk Evaluation – Ecological Risk**

Page 21 of the Groundwater Corrective Action Plan indicates that the groundwater plume poses no significant risk to ecological receptors in the Liberty Creek or the Harpeth River. This conclusion is incorrect in light of the Harpeth River Watershed Association's (HRWA) determination that the dissolved oxygen concentrations in the Harpeth River are impacted as a result of the seeps.

#### **12. Toxicity Studies**

Page 21 of the Groundwater Corrective Action Plan indicates that the groundwater plume poses no risk to ecological receptors based on acute toxicity studies. Have chronic studies been performed? Why not?

#### **13. Monitoring of Seeps**

Page 28 of the Groundwater Corrective Action Plan indicates that seeps and river sampling will be performed on a monthly basis and that the three downgradient monitoring wells will be monitored semi-annually. A site-specific sampling and analysis plan should be prepared for stakeholder review and comment.

#### **14. Planned Corrective Action**

The proposed groundwater remedy for the site is described beginning on page 24 of the Groundwater Corrective Action Plan. The proposed remedy involves the use of an interception/ recovery trench (already constructed and in operation) to address the free-product component of the plume prior to entry into Liberty Creek. There is no treatment remedy (other than natural attenuation) proposed in the Groundwater Corrective Action Plan to address dissolved contaminants in groundwater prior to discharge into Liberty Creek and the Harpeth River. The Groundwater Corrective Action Plan indicates on page 27 that, over time, the dissolved phase component of the plume will be diluted or removed from the groundwater by natural flow to Liberty Creek and the Harpeth River and by natural, physical, chemical, and biological degradation. Comments related to the lack of an active treatment remedy for the solvents are addressed in subsequent portions of this letter.

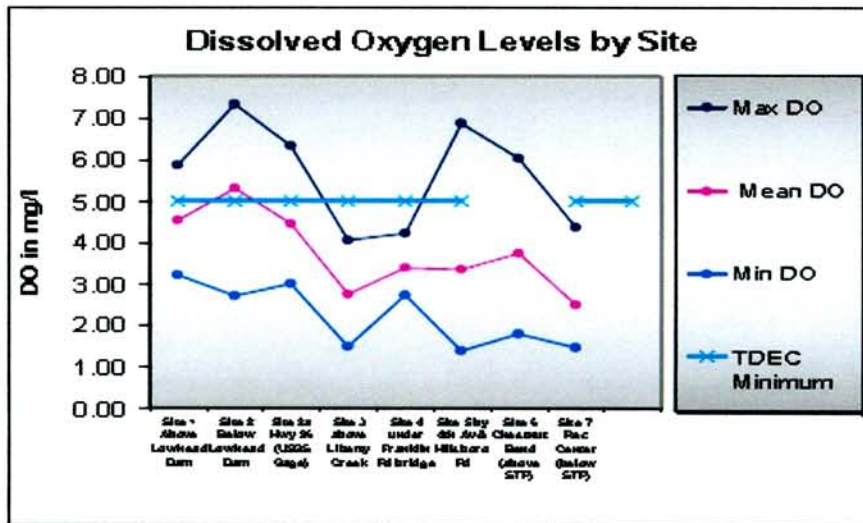


**15. Tennessee DEC's May 17, 2007 Letter to HRWA**

- In the May 17, 2007 letter from Mr. Chuck Head, Tennessee DEC's Senior Director, Land Programs, Bureau of Environment, the HRWA, the Tennessee DEC (or the "Department") indicated on page 6 of the letter that:

"The Department does not believe that the levels of toluene or acetone currently discharged into Liberty Creek and the Harpeth River will have a measurable impact on the dissolved oxygen levels in either stream this summer. Since the source of the release has been eliminated, the contaminant levels have decreased and should continue to do so."

The HRWA's Dissolved Oxygen Study June – July 2007 includes the following graph summarizing the results of the study:



Since the seeps of acetone into the river have been documented to cause a decrease in the dissolved oxygen levels which have in turn caused an impact to the aquatic organisms in the river, how can a "no treatment" remedy for the acetone seeps into the Harpeth River which will continue to affect aquatic life be justified? Has Tennessee DEC considered all potential remedial options (i.e., air stripping, air sparging, etc.) to address the acetone? Has the groundwater been sufficiently characterized to make these determinations at this time? Since some VOCs, such as acetone, with high solubilities in water are more difficult to treat, have treatability studies been performed to evaluate potential treatment scenarios?

- Tennessee DEC's May 17, 2007 letter to the HRWA also indicates the following:

"Tennessee DEC has worked with its own contractor and ELMCO to minimize the migration of solvents into both streams. . . Migration of toluene at Liberty Creek has been substantially reduced and vapors in the area have been mostly eliminated. Dissolved acetone continues to migrate into the Harpeth River and Liberty Creek (at reduced levels). After discussions with the Division of Water Pollution Control, including the review of sample

results from both streams, the levels of acetone and toluene in the streams are below concentrations that are harmful to fish and aquatic life. We believe the toxicity testing completed by the Department was appropriate for this situation and provided the information we needed to make important water quality decisions.”

If the fish in the river near the seeps can't breathe due to insufficient oxygen (as indicated in the HRWA's report) and the depressed oxygen levels in the river are a result of the seeps, how can the Department claim that the conditions in the stream are not harmful to fish and aquatic life?

- Tennessee DEC's May 17, 2007 letter also indicates the following:

“ELMCO is subject to investigating and resolving the environmental problems caused by the release of solvent at their facility. The release of a commercial chemical product that becomes a hazardous waste upon entering the environment is governed under Rule 1200-1-11-.06(1)(b)2.vii(l). Specifically, ELMCO had an accidental release of a solvent into the environment and is required to investigate and resolve the resulting environmental problem.”

“The Department is requiring ELMCO to follow EPA RCRA guidance for the remediation of hazardous waste as described in the EPA document “Management of Remediation Waste Under RCRA” dated October 14, 1998. Specifically, the release of commercial chemical solvents (acetone and toluene) into soil, groundwater and surface water generates a listed hazardous waste when the contaminated media is removed.”

If the release of acetone into the subsurface environment constitutes the release of a hazardous waste and the removal of contaminated groundwater also constitutes the removal of a hazardous waste, then the discharge of acetone through the seeps into the river also constitutes the release of a hazardous waste. If the acetone seeps are not addressed, under what authority is ELMCO allowed to discharge listed hazardous waste into the environment? Aren't Tennessee DEC's regulations intended to prohibit the discharge of hazardous waste into the environment? Wouldn't the seeps be classified as a listed hazardous waste? How will the discharge be listed or delisted?

- Tennessee DEC's May 17, 2007 letter to HRWA also indicates the following:

“Initial indications are that the subsurface characteristics of the site will allow successful treatment of soil and groundwater in place. Preliminary discussions have been conducted between ELMCO and Tennessee DEC about the type and scope of the remedial action. The remedial action design will be proposed to Tennessee DEC once the areal and vertical extent of contamination has been defined, the subsurface geology determined, and contaminant treatment strategy developed. The contaminant treatment methodology used is important to us because we need to understand the effectiveness of the technology, we do not want to

transfer contamination from one media to another (i.e. air stripping is commonly used to remove solvents from groundwater but this action may cause odor problems in the neighborhood). We need to have an accurate estimate of the time to complete remediation and we need to have an accurate estimate of costs to complete the work.”

Several comments and questions:

- ELMCO’s Groundwater Corrective Action Plan indicates that the areal and vertical extent of groundwater contamination is not known. Therefore, how can Tennessee DEC select a final groundwater remedy at this time?
  - ELMCO has provided no estimate of the time to complete the remediation nor any estimate of the costs. How can Tennessee DEC select a final remedy without this information?
  - If Tennessee DEC’s “initial indications” were that the solvents could be successfully treated in place, why would Tennessee DEC select a “no treatment” remedy for acetone?
- Tennessee DEC’s May 17, 2007 letter to HRWA also indicates the following:

“The cleanup criteria for soil and groundwater will be established taking into account the relative risk of the contaminants to public health and the environment, including the impact on fish and aquatic life in Liberty Creek and the Harpeth River.”

How will the documented effect of the acetone seeps on dissolved oxygen concentrations in the Harpeth River and subsequent impacts be addressed?

In addition to my specific comments on the Groundwater Corrective Action Plan provided above, I am also providing the following additional comments on several other communications that are pertinent to the corrective action process at the ELMCO facility:

### **1. RCRA Corrective Action**

The May 17, 2007 letter from the Tennessee DEC to the HRWA indicates that “ELMCO is a small quantity generator of hazardous waste in Tennessee as defined in Tennessee Rule 1200-1-11-.03(2)(a) and is required to follow the requirements for hazardous waste generators defined in Tennessee Rule 1200-1-11-.03.” Tennessee DEC’s letter also indicates that the release of commercial chemical solvents (acetone and toluene) at the ELMCO facility constitutes the discharge of hazardous waste into the environment and that ELMCO is responsible for taking corrective action to address the unauthorized discharge.

In the HRWA’s May 1, 2007 letter, the HRWA requested that the Tennessee DEC require ELMCO to conduct “the equivalent of a full RCRA facility assessment and RCRA facility investigation.” Although ELMCO is a hazardous waste generator and was not required to obtain a permit for the treatment, storage, or disposal of hazardous waste, the release of commercial chemical products from the ELMCO facility constitutes the unauthorized disposal of listed hazardous wastes. Thus, it seems appropriate (as

Tennessee DEC has indicated it would do) that Tennessee DEC should require ELMCO to perform the "equivalent of" a RCRA facility assessment and RCRA facility investigation to allow all stakeholders to understand the full scope of the environmental problem and all potentially feasible remedial alternatives.

As the Tennessee DEC knows, the process of implementing RCRA corrective action involves the following four steps, in order of implementation:

- RCRA facility assessment;
- RCRA facility investigation;
- Corrective measures study; and
- Corrective measures implementation.

Due to the severity of the problem at ELMCO, Tennessee DEC should strongly mandate that ELMCO address the situation at its facility in a manner that is equivalent to the RCRA corrective action process.

## **2. RCRA Facility Investigation**

A RCRA facility investigation is step #2 of the RCRA corrective action process and is detailed investigation to determine the nature, extent, and rate of migration of contaminant releases; to determine the contamination source(s); and to provide sufficient data to choose appropriate response actions. The results of phase I and phase II groundwater investigations at the ELMCO facility are described on pages 15 – 17 of the Groundwater Corrective Action Plan. In general, the Groundwater Corrective Action Plan indicates that the extent of potential groundwater contamination has not been defined. Specifically, page 16 of the Groundwater Corrective Action Plan indicates the groundwater elevations measured to date do not allow a potentiometric map to be prepared. Further, it appears that all of the wells are impacted to some extent by solvent constituents. Yet, there is no plan for additional wells, no plan for sampling additional wells, and no plan to delineate the full extent of groundwater impacts. Clearly, the groundwater investigation performed at ELMCO does not achieve the requirements of a RCRA facility investigation, or equivalent study, needed to fully define the nature and extent of groundwater contamination.

## **3. Corrective Measures Study and Implementation**

After a comprehensive RCRA facility investigation is performed, the RCRA corrective action process requires that a corrective measures study be performed to identify and evaluate potential remedial alternatives. Remedies that are evaluated and compared in the corrective measures study must address the following elements:

- An evaluation of performance reliability, ease of implementation, and potential impacts of one or more potential remedies;
- As assessment of the effectiveness of potential remedies in achieving adequate control of sources and cleanup of the hazardous waste and hazardous waste constituents released from solid waste management units;
- An assessment of the time required to begin and complete the remedy;
- An assessment of the costs of remedy implementation; and



- An assessment of institutional requirements (e.g., state or local permit requirements) which may substantially affect implementation of the remedy.

During the remedy evaluation phase of the corrective measures study, potential remedies are screened to determine if they meet four threshold criteria:

- They must be protective of human health and the environment;
- They must attain applicable media cleanup standards;
- They must control the source(s) of releases so as to reduce or eliminate further releases of hazardous wastes and hazardous constituents that may pose a threat to human health and the environment; and
- They must comply with applicable standards for waste management.

Remedies that meet the four threshold criteria are then evaluated using the following five balancing criteria to identify the remedy that provides the best relative combination of attributes:

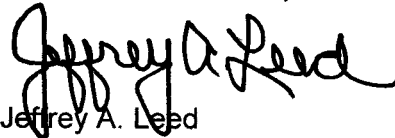
- Long-term reliability and effectiveness;
- Degree of reduction of toxicity, mobility, or volume of wastes;
- Short-term effectiveness;
- Implementability; and
- Cost.

The ELMCO Groundwater Corrective Action Plan simply bypasses many of the important components of the RCRA corrective action and corrective measures study process. Because the required information has not been prepared and presented, it is impossible for the Tennessee DEC, the HRWA, the public, and other stakeholders to make an informed decision about the proposed remedy at this time. The Tennessee DEC should require ELMCO to prepare and provide a complete, comprehensive corrective measures study. Only then can an informed decision be made regarding the best means to correct the environmental problem at the property and surrounding areas.

Thank you for the opportunity to provide these comments. Please let me know if you have questions or need additional information or clarification.

Very truly yours,

**Leed Environmental, Inc.**



Jeffrey A. Leed  
President