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Date: March 24, 2004

To: Nancy Peters, Hopkinton Board of Health

From: Jesse Schwalbaum, Earth Tech

CC: Dick Jubinville, Earth Tech

Subject: Review of Harvey Landfill Long-Term Monitoring Plan

At the request of the Hopkinton Board of Health, Earth Tech has reviewed the long-term monitoring plan that E.L. Harvey & Sons has proposed to the Department of Environmental Protection, as outlined in a letter from Brown & Caldwell dated March 15, 2004. The sites that are being monitored are referred to in the letter as the “old Westborough burn dump” and the “old Westborough landfill.” These sites include a portion of land located in the Town of Hopkinton, adjacent to Cedar Swamp.

An initial round of sampling and testing was conducted on five old “monitoring wells” on the site. I have placed the term “monitoring wells” in quotes because these are not the kinds of wells that DEP generally approves as landfill monitoring wells. The wells were installed in an open hole and consist of 4-inch diameter PVC with “field slotted” screen. This is a crude method of well construction. In addition, there is no information on the current viability of these wells. They do not appear to have been re-developed or tested. According to the Brown & Caldwell letter, the wells were “purged” prior to sampling, but the purge volumes appear to have been far less than the volume of water in the wells. The water samples were reported to have been taken by the EPA low flow sampling technique but there is no data provided on the field parameters or volume of water taken during the sampling.

Due to the uncertain functionality of the wells and the sampling method there is some question about the validity of the water quality results. We recommend that the wells be re-developed and tested prior to any future sampling. We also question the validity of using the low flow technique when there is uncertainty about the exact nature of the well screen. These wells should be replaced with standard 2-inch diameter monitoring wells installed in accordance with DEP standards.

According to the excavation logs, each of the test pit wells were installed in areas containing trash, in one case the trash included 55-gallon drums. This suggests that none of the wells are completely downgradient of the refuse. We recommend that before a final monitoring plan is implemented, the full extent of the refuse should be determined. Based on that determination, it

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may be prudent to install additional monitoring wells downgradient of the extent of the refuse.

Since the existing wells were installed within test pits, there is no data regarding the thickness of the aquifer. We recommend that at least one boring, directly downgradient of the landfill, be completed to bedrock. And if the depth to bedrock is sufficient, shallow and deep monitoring wells should be installed. This is standard practice for these types of investigations. In addition, the bedrock should be cored in order to determine if the shallow bedrock is a potential pathway for contaminants. If the shallow bedrock is sufficiently fractured, a monitoring well should be installed in the bedrock. Even if there are upward gradients in the aquifer at this location, the deep wells will help to confirm that there is no contamination from dense non-aqueous phase liquids (DNAPLs).

We also noted that there is no monitoring well directly upgradient of the landfill. This too is standard practice and would help to establish whether contaminants found downgradient of the landfill are actually derived from the landfill. We recommend that an upgradient monitoring well be installed.

With regard to the water quality reported, although Brown & Caldwell notes that none of the drinking water MCLs were exceeded, that is not the sole criteria for evaluating water quality. It is clear that the groundwater in this area is impacted by landfill leachate. In addition, there are significant levels of volatile organic compounds. Continued monitoring is clearly advisable.

The proposed surface water locations along Piccadilly Brook are not shown on the accompanying map. We would like to see those proposed locations before commenting on that aspect of the monitoring plan. However, the brook is not the only surface water body to which contaminants may flow. In some areas, groundwater impacted by leachate is likely to discharge directly to the wetlands surrounding the former landfill site. Therefore, we recommend that several locations within the wetland itself be considered for sampling.

Brown & Caldwell has recommended one additional sampling round and then yearly sampling after that. However, experience has clearly shown us at this landfill and other landfills that one or two rounds of sampling are not adequate to evaluate the water quality downgradient of a landfill. We therefore recommend that one year of quarterly sampling be required and that the long-term monitoring consist of twice yearly sampling.

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