Hercules 009 Landfill Superfund Site
Five-Year Review Study Provides No Assurances on Effectiveness of Cleanup

June 2004

Executive Summary

The Hercules 009 Five Year Review for the landfill cells (called the Five-Year Review, Second Five-Year Review for Hercules 009 Landfill), dated February 2004, was received for review. This document, prepared at the direction of the Environmental Protection Agency by the U.S. Army Corps of Engineers, Savannah District, consists of reviewing five years of sampling data, performs a simple—but not independent—above ground site inspection (usually called a "walk-around"), and performs some simple interviews, often only by telephone. No new, independent, or third-party analyses were performed at the site. No review of the existing soil or water chromatographic data was performed by an independent third-party reviewer; any past conclusions on the data were accepted by the government agency without disagreement. The Five-Year review is a legal requirement of Superfund law imposed because hazardous waste still present on the site has the potential to move off-site if the remedy fails.

The conclusion of the Five-Year review is that the "*remedies continue to operate as intended"* (page 1, last line). However there are a number of issues noted in the report that either contradict this conclusion or make it impossible to understand how the conclusion was reached with the information available. The report itself is poorly organized, the study's authors skip around from issue to issue presenting observation and opinion in no particular order.

This "review of the review" for the Glynn Environmental Coalition will begin with the site borders and institutional controls, work inward to the site cap and surface soils, then downward to the study's discussion of subsurface soils, and finally address groundwater concerns arising from spread of contamination by toxic colloid transport.

Site Borders: Section III of the report states: "*Land use in the area is predominantly commercial and residential, with a shopping mall, bank, and restaurant located approximately 1,000 feet north of the site."* And, on page 10, section VI, subsection Site Inspection, the report states: "*An inspection…was performed by Mr., Steve Bath and Mrs. Sherry McCumber-Kahn, both with the US Army Corps of Engineers…The entire area inside the fenced boundary was visually inspected.*"

It is surprising the USACE could note the presence of nearby malls and banks "1,000 feet" from the site, but missed a car dealership and elementary school adjacent to the site along the "fenced boundary." The investigators should have seen both the school and the dealership when performing the walk-around. Obviously there is a serious problem with either the site description, or the inspection, or both. In fact, the site description is merely copied from old material in the pre-Remedial Investigation reports, and the Corps of Engineers did not conduct a site analysis. Accordingly, no actual Phase I environmental assessment was performed under this Five-Year review, making it less plausible than the background checking associated with a typical real estate transaction.

Institutional Controls: This site is legally defined as a toxic waste landfill. The Record of Decision requires "institutional controls," a system of fences and gates that isolate the site from any public

access. The USACE report correctly notes that the EPA and the responsible party have had five-years to comply with the legal deed restrictions, but have not done so (page 6). Further, the site inspection found holes in the fences, damage from fallen a tree, and that many areas of the fence were "leaning outward" (page 11). However, the Review states that the remedy is "functioning as intended." It is impossible to understand how the remedy could be functioning as intended and at the same time be incomplete and falling apart.

Cap: The report's Executive Summary (unpaginated) states: "*The landfill cap appears to be in fairly good condition, requiring only minor maintenance…"* However, in the Site Inspection the same authors observed: "*…large areas with little to no vegetative cover…"* and "*…several areas of erosion were detected…"* This is not a trivial matter. Maintenance problems have been described in every annual report since the first. A cap that is supposed to last decades has shown problems of erosion since the beginning, and after 5 years still does not support grass in some areas. Note that landfill construction was not the monolithic structure called for in the Record of Decision, or the extraction and re-landfilling alternative called for in the ROD, but rather was an *ex situ* mixing system added after public review. The surface holes through the cap could easily be from movement and settling of the *ex situ* cells, which would mean that movement within the site is continuing. The USACE has no data showing this landfill treatment is stable, and, visibly, it is not.

Surface Soils: On page 6 the Army Corps of Engineers make an incorrect statement regarding origins of the soils of the landfill cover: "*The landfill cover was constructed from soils excavated from the residential drainage ditch areas."* Since no references were provided for this statement it is not clear where the USACE obtained this information. In fact, the cap is constructed of toxaphene contaminated surface and subsurface soils from a neighborhood cleanup, toxaphene contaminated access roads, toxaphene contaminated surface soils from activities around the landfill, toxaphene contaminated dredge spoil piles removed from the adjacent creek, and toxaphene contaminated surface soils from the adjacent schoolyards. Accordingly, the landfill cover is toxaphene contaminated. Had the USACE performed a thorough review they would have known the toxic origins of these materials. Erosion of the cap exposing underlying cover materials is serious since it is possible the eroded materials have some contamination associated with them. Appropriate action is to order representative surface soil sampling in the cap erosion areas to assure no contamination has occurred from the breach. The USACE failed to make appropriate recommendations regarding testing of eroded areas of the landfill cover.

Subsurface Soils: The USACE incorrectly states that *in situ* stabilization took place at this landfill (page 5, Remedy Implementation, and elsewhere). In fact, every one of the 512 sub-cells were exhumed, stored above ground, and re-interred with above grade mixing. The process used, by definition, is *ex situ* (removal), not *in situ*, meaning "in place" treatment. In fact, site documents from the responsible party and the EPA state that field trials for *in situ* stabilization were a failure and *in situ* was a "technical impractability" for this waste. If the USACE performed an actual Phase I environmental assessment then they would have seen these documents, which were numerous, and then the USACE would not repeat the myth that *in situ* was used on this site. Accordingly, the public should have little confidence in the USACE's conclusion that this remedy is effective, since the investigators clearly have no engineering understanding of the actual remedy.

Groundwater: The Corps of Engineers noted a state of disrepair and questionable integrity in the wells at this site (page 11: "*It was evident that several of the monitoring wells requires maintenance. Well cover hinges have rusted and broken and the majority of the monitoring wells were not labeled."*). Further, the USACE noted the discrepancies between the Toxaphene Task Force (TTF) methodology

used on groundwater for this site and methods used elsewhere that generally report much higher values for toxaphene (page 14*: "Identifying everything associated with toxaphene, including weathered and altered toxaphene products, would allow for the most conservative level of protectiveness"*). Importantly, the report indicates that analytical tests for material at this landfill would only detect technical grade Toxaphene, not the off-grade product that was interred in the landfill, or 20-year old weathered toxaphene that would be expected in a closed landfill (page 14*: "... the modifications to Methods 8080 and 8081 by the Toxaphene Task Force focus on identifying technical grade toxaphene specific to the standard used by Hercules that most closely reflects their product. Therefore, anything that did not match the reference chromatogram (i.e., off-product or weathered or biologically degraded toxaphene) would not be identified as toxaphene*"). Finally, the report states that toxic colloids are the likely means of transport for his waste (page 10: "*Transport of toxaphene has been established to be through colloidal suspensions."*). So it is very difficult to understand why the USACE would offer the statement that: "*Sampling to date confirms the minimal contamination by technical toxaphene in the groundwater"* (Five-Year Review Summary Form) when it is shown beyond doubt the techniques used would not detect the type of toxaphene in the landfill or the method of transport. There is an obvious disconnect between the reports findings and its' conclusions; the only logical finding is that nothing can be concluded regarding toxaphene fate or transport at this landfill at this time.

Conclusions

Numerous other criticisms can be leveled at this report on actions EPA has failed to take to assure the public this site is safely cleaned up. It is fair to say that the many contradictions in the report render it useless as an objective view of the cleanup. Based on the site Background and Remedial Actions sections of the Five-Year Report the US Army Corps of Engineers did not perform a *bona fide* environmental assessment of the remedy at this site. Instead of conducting a thorough examination of issues they merely read a few old documents, made a few phone calls, met with a few interested parties, and produced an unclear and undocumented report on the state of the remedy at this site. Lack of an adequate methodology for testing the polychlorinated camphene buried at the site did not deter the USACE from concluding the remedy was meeting its goals. The lack of engineering drawings and samples from beneath the landfill did not impact their belief in the success of the remedy. Even the obvious erosion and failure of the cap to support life failed to stop the USACE from pressing their agenda of unqualified acceptance of this cleanup.

Page 19 of the report has a Protectiveness Summary (Section X.) that begins: "*The remedial actions at the site are expected to be protective of human health and the environment upon* ***proven attainment*** *of ground-water cleanup goals."* [Emphasis added]. Unfortunately, the report provides no proof of protectiveness, and fails to provide a framework for scientific provenance for this site. No assurances the remedy is working or will work can result from this Five-Year review.

Written by R. Kevin Pegg, Ph.D.; edited by Dr. Mary S. Saunders. Copies of the report are available from the GEC, at the Glynn County library, or at **www.enviro-isues.net** on the Internet.

Technical Assistance Report - Volume 13, Number 1, June, 2004 - "This project has been funded wholly or partly by the U.S. Environmental Protection Agency under Assistance Agreement Number V994050-92-0 to The Glynn Environmental Coalition, Inc. The contents of this document do not necessarily reflect the views and policies of the U.S. Environmental Protection agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use."