

**Comments on Time-Critical Removal Action  
to Dispose of Retrieved Waste from a Hanford Burial Ground**

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It is my understanding that this action was initiated in April, 2004, as time-critical under CERCLA to expedite the disposition of retrievably stored LLW and MLLW drums retrieved from 218-W-4C and associated waste burial trenches, by avoiding multiple handling and shipping steps. However, the discovery of quantities of free liquids in a significant number of the retrieved drums has prevented the planned shipment of the drums directly to ERDF for disposal, thus the time-critical aspects of this action would seem moot. Disposal of wastes from 218-W-4C is on going, by transporting the wastes to PecoS for sorting and compaction, so these retrieved wastes are currently being disposed in ERDF in a timely and space-effective manner. As a result, it would seem more appropriate to proceed in the normal fashion, with development of a Focused Feasibility Study (FFS) and a Proposed Plan for dealing with these retrieved wastes.

My comments on this action are focused primarily on the Value Engineering Study (VES) which was performed to select the preferred alternative for treating and disposing of the retrieved waste drums. The other supporting documents (Sampling and Analysis Plan, Data Quality Objectives, and the Removal Action Plan) appeared to be reasonable, considering the treatment and disposal alternative that was selected by the VES.

The usual approach to developing a disposal action would be to identify a number of alternative ways (options) to achieve the desired endpoint, and use the nine CERCLA criteria to evaluate the viability of the proposed options, in a FFS. This approach was short-circuited in this action by performing a VES on a suite of possible approaches. The participants brainstormed a set of options, agreed upon criteria against which to evaluate the options, and developed weights to be assigned to each criterion. Then, the value of performance of each option under a given criterion was assigned by consensus of the group participating in the VES, and the sum of the weighted performance values for each option were compared to rank the options. While a VES is a useful technique, the VES approach is far less rigorous than a FFS, and in this case resulted in a poor set of criteria and poorly balanced weights for those criteria, poor choices for performance values under those criteria, and a poor choice for the preferred option.

First of all, because this is an action under CERCLA, the criteria used in the selection process should have been the five CERCLA balancing criteria. Instead, the VES team made up their own nine criteria, including two that are not subject to graded performance. These two (Compatibility with Hazard Classification, and Regulatory Compliance), like the first two CERCLA criteria, are GO/NO GO criteria, and should be excluded from Table 3-1 where the criterion weights are developed and the weights reevaluated. The 8<sup>th</sup> criterion (Use of Existing Infrastructure) was assigned a weight of 6% in Table 3-1, but was assigned a weight of 16% in Table 3-3 where the weighted total value for each option was developed, resulting in a significant overweighting of that criterion in the overall evaluation. If the two GO/NO GO criteria are eliminated from Table 3-1, and the weights recalculated for use in Table 3-3, and the error in the weight of the 8<sup>th</sup> criterion is corrected, the rankings in Table 3-3 change. Option 4 becomes #5 instead of #7, Option 6 becomes #7 instead of #5, and Option 1 becomes #7 instead of #6.

The above changes do not reflect the possible impact of adjusting the values assigned under another criterion (Landfill Space Requirements) which were misvalued. The options that employed super-compaction were assigned performance values of 9 and 10, while those options that did not employ super-compaction were assigned performance values ranging from 5 to 7,

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instead of values in the range of 2 that would have better reflected the nominal 5:1 volume reduction arising from compaction. This criterion was assigned a weight of 7%, less than half the weight assigned to most of the criteria. Considering the value of ERDF space, it would appear that this criterion was significantly underweighted.

The preferred option arising from the above-discussed selection process is one that is very wasteful of ERDF space. The bottom line for this discussion is that the selection process should be revisited, using the normal five CERCLA balancing criteria, in a more rigorous analysis of the family of proposed options.

The preferred option, in my opinion, should be either the procurement and installation of a sorter and super compactor at the ERDF site, or continuation of the current shipments to PecoS for sorting and compaction. The first of these alternatives would minimize the transport and handling of the retrieved drums, remove any unallowed materials from the waste stream, and minimize the space used in ERDF. The second alternative merely continues the present process.

The cost estimates developed for the various options are said to be Rough Order of Magnitude (ROM) in precision, i.e., + 50%, -30%. If these upper and lower bounds are applied to the estimated costs for each option, all of the option costs except Option 5 lie within those envelopes. Thus, within the precision of the estimates, cost is not a discriminator. Option 5 cost is much higher than the others due to the cost of the High Integrity Containers postulated to be used.

The cost for the compactor and its facility was estimated in the VES to be about \$3 million dollars, or about 36% of the total cost for that particular option. That cost could be amortized over not just the drums arising from the retrievably stored waste trenches, but also the drums of newly-created LLW and CLLW arising from ongoing cleanup operations, and probably over the drums of LLW and CLLW that will arise from the retrieval of the pre-1970 burial trenches which are presently being ignored.

The urgency for a quick selection of the preferred option has gone away, as a result of the delays caused by the problem of free liquids contained within some of the drums. Thus, let's redo the selection process in the proper manner, keeping in mind the potential for future long-term use of any new treatment capabilities at ERDF.