

MEMORANDUM

TO: Mark Bohne, PBOW RAB Co-chair and RAB members

FROM: Julie Weatherington-Rice, Ph.D., RAB TAPP Coordinator

RE: Draft Baseline Human Health Risk Assessment and Ecological Risk Assessment Work Plans, Reservoir No. 2 Burning Ground, Former Plum Brook Ordnance Works, Sandusky, Ohio – JE Jacobs

DATE: July 11, 2008

Per our current contractual arrangement with US ACE which require both a technical memorandum for each report and an educational explanation to the RAB, this memorandum constitutes the educational review of the J E Jacobs May 2008 "Draft Baseline Human Health Risk Assessment and Ecological Risk Assessment Work Plans, Reservoir No. 2 Burning Ground, Former Plum Brook Ordnance Works, Sandusky, Ohio" documents. Please forward these comments to the other RAB members.

General Comments

These documents are a continuation of the numerous draft baseline human health and ecological risk assessment work plans that we have been reviewing for the site. I have developed more substantive comments describing the "Risk Assessment" process in previous memos and so those comments will not be repeated here. By their very nature, these risk assessments are "boilerplate" or "cut and paste" documents, based on previous reports generated for the Reservoir No. 2 Burning Ground, for the PBOW site as a whole and/or for other sites where Jacobs has undertaken Human Health and Ecological Risk Assessments in the past. The documents benefit from all the strengths of the previous documents, such as the excellent background description of historical activities at the site located in section 1.2 "Background" of each of these documents and the excellent graphics. However, since this is simply a rehashing of historical documents, new information, such as the research on the properties of the carbonate bedrock formations under the PBOW site, is not incorporated into the documents.

For instance, all of the information presented in the Human Health Risk Assessment in Section 1.3.2 "Groundwater Use" resubmits the historic conclusions that the wells at the Reservoir No. 2 Burning Grounds are incapable of sufficient yields of ground water for a potable ground water source and so therefore, ground water contamination can be ignored at this site, rather than the fact that the wells simply are not drilled deep enough and/or correctly drilled/developed to intersect available ground water. The general ground water views of the Shaw 2003 and 2004 reports are used as the basis of these decisions, even though we know that those reports are outdated and that better information has been developed for the site in the intervening years.

Another limitation to using a “boilerplate” work plan document is that it is not clear the last time Jacobs undertook a comprehensive literature review to determine the most current considerations in human health and ecological risk assessments. The latest general reference I saw was dated 2005. Is that the date of the most current general reference that has been published or does 2005 reflect the last time Jacobs updated their basic risk assessment documents. It would be extremely helpful if a section was included in these documents that noted the last thorough literature review on these topics.

**Specific Comments - Baseline Human Health Risk Assessment Work Plan,
Reservoir No. 2 Burning Ground**

1.3.2 Groundwater Use

1. This section is based on outdated information. Please update this section to reflect the more recently gathered information reflecting the behavior of the carbonate aquifer at the site in light of pumping activities at the PBOW and at local offsite locations. It is expected that if wells at the Reservoir No. 2 Burning Grounds were deepened and/or correctly installed/developed, sufficient ground water would be available for future potable use at this site.

2.1.1 Available Data – bottom page 2-1

2. This section about the behavior of the three bedrock wells does not reflect the more recent understanding of ground water behavior at the site. Please update.

3.1 Conceptual Site Exposure Model – 3rd paragraph page 3-2 “Although natural hydrocarbons are known to be present within the bedrock limestone and shale formations...”

3. This topic of “natural hydrocarbons” was supposed to be the subject of a “hydrocarbon fingerprinting” study. Please include the results of that fingerprinting study either here and/or at some other location in this report and/or reference the report that contains the information of the “fingerprinting” study and/or present the time line for the ongoing “fingerprinting” study, whichever one applies.
4. Top of page 3-3. Please update this section beyond the Shaw 2004 report to reflect the most modern understanding of the conditions of the carbonate formations at the PBOW site. The photographs of cores for wells with low yields are not significantly different than the photographs of cores for wells with higher yields. Therefore, there is little visual support for the statement that the bedrock wells at the Reservoir No. 2 Burning Grounds “show few fractures, low porosity, etc.” since that statement is not made for many of the other carbonate wells at the site which have higher ground water yields.

Page 3-19

5. Page break fault here. Please correct.

Page 3-35

6. Page break fault here. Please correct.

Table 3-1 On-Site Resident – please revise

7. The on-site resident SHOULD be expected to be exposed to the soil through “incident ingestion and dermal contact”. Any on-site resident who undertakes landscaping and/or gardening will have this exposure route. This is especially true of on-site residents who undertake vegetable and fruit gardening.
8. Groundwater exposures for “ingestion and dermal contact” SHOULD be added for consideration. While it has been established that the monitoring wells that were installed at the Reservoir No. 2 Burning Grounds were inadequate to successfully monitor the ground water at the site, that condition does not preclude a future resident from installing a properly sited and developed well, allowing ground water as the potable water supply for the property.
9. Surface Water and Sediment “Incidental ingestion and dermal contact” routes SHOULD be addressed. While we understand the limited nature of the intermittent surface water at the site which has impacted the ability for successful sampling of these materials, a future on-site resident will live at the site the year round and so, therefore, will be expected to be at the site when the surface water ditches are flowing as well as when they are dry. Kids play in water, even if it is not there all the time. These routes must be considered.

This concludes my educational comments on these Draft Baseline Human Health Risk Assessment and Ecological Risk Assessment Work Plans, Reservoir No. 2 Burning Ground, Former Plum Brook Ordnance Works, Sandusky, Ohio documents. If you have any questions and/or need further clarification on any point discussed in this memorandum, please feel free to contact me.