SUBJECT: Response to review comments for the Interim Final Site Characterization Report, Remedial Investigation Part 1, at Reservoir No. 2 Burning Ground, Former Plum Brook Ordnance Works (PBOW), Sandusky, OH, September 2004, Prepared by Jacobs Engineering Group, Inc., Contract Number DACW62-03-D-0004-0002

Reviewer: Lannae Long, USACE CELRN

1. Appendix L. Formatting data tables in the text: As you have suggested, it may be too late to re-format these tables for this document, but it is expected that the tables in future documents will be formatted as App L USACE - Nashville #27 comments suggests. Using the CDQR, as suggested in the response, is sufficient for this report, however, since I am not a chemist, I am not familiar with all the notations in the CDQR.

Response: The tables will be reformatted for the final version and the data qualifers will be defined

2. Appendix L) Footnotes on tables are still missing. Please footnote all abbreviations and citations.

Response: Data qualifiers will be defined as a footnote on each page.

3. The recommendations should be changed to reflect the plan of conducting an EECA non-time critical removal of contaminated soils.

Response: The EE/CA will be added to the recommendations section.

4. In the recommendations, only Human Health Risk Assesment was recommended. It should read human health and ecological risk assessment should be evaluted. Note, that eventhough the previous comment was to recommend an EE/CA NTCRA, this does not exempt PBOW from the RI/FS process. An EE/CA temporarily suspends the AOC from the RI/FS process, then when the NTCRA is completed, the AOC steps back into the RI/FS process at where it left. After the EE/CA both human health and ecological assessments should be evalated.

Response: Ecological risk will be added. The recommendation will include evaluation after the EE/CA is completed.

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Reviewer: Sam Bass, Geologist - HTRW Center of Expertise

Comment # 1: Page 2-3, Section 2.3.1, second paragraph, second sentence. This sentence ("Water levels in the Plum Brook Shale...") appears to contradict the conclusion stated at the bottom of page 7-3, which states "Release of contaminants into the deeper bedrock groundwater is unlikely because of the highly impermeable clay layer beneath the site...". Further, no wells were installed in the Plum Brook Shale at the 2BG site; all three wells were screened in the Delaware Limestone. Please clarify the text to be consistent with the existing data.

Response: This statement is based on data from other wells at PBOW that are completed in the Plum Brook Shale. The sentence will be revised to indicate that the Plum Brook Shale is not hydrologically isolated from the overburden.

Comment # 2: Page 7-3, Section 7.4, sixth paragraph on page. The document should clarify if the statements made here have been substantiated by sampling results. If they have, reference the supporting information. If they have not, then the text needs to be modified because the transport and leaching potential has not been realized and does not represent a realistic pathway. If there is no data to support or refute the transport/leaching pathway then a data gap exists. The recommendations should include collection of data to address the data gap or the report should explain why collection of additional data is not needed. Figure 7-1 should be modified as necessary to reflect changes in pathways and to be consistent with the text and vice versa.

Response: This pathway has not been proven or refuted because of the lack of shallow groundwater data and the reviewer is correct, this does represent a data gap. However, the Plum Brook team decided that shallow monitoring wells were not practical. Based on the site conceptual model this mode of contaminant transport for soluble contaminants is the most likely release mechanism at the site, with the exception of excavation. The shallow silt zone at 7' to 9' would likely serve as the primary route of lateral transport. The text will be revised to indicate the uncertainty due to the data gap.

Comment # 3: Page 7-4, Section 7.5, second bullet. If site-related contaminants are not present in bedrock ground water (as stated in Section 7.2), the collection of water level data from bedrock wells appears to be of limited benefit. If project dollars are limited (as implied in responses to comments on the draft document), money that would be spent monitoring water levels and waiting for bedrock wells to stabilize could be spent collecting and analyzing background soil samples for PAHs. This is data that could directly impact risk assessment results and the direction of the project, more so that bedrock ground water that does not appear to be impacted by site activities.

Response: Need resolution to OEPA comment #1

Comment # 4: Page 7-4, Section 7.5, fourth bullet. Clarify that existing ground water data will not be used to perform a human health risk assessment, as stated in Sections 7.0 and 7.2.

Response: The human health risk assessment will not be performed. Funds will be used to conduct an EE/CA for the remediation of site soil.

Comment # 5: Appendix C. Drill logs for holes that were cored should note the location of mechanical fractures (those caused by drilling, usually along natural parting planes); natural fractures and the presence of any in-filling or stained material that may be indicative of ground water flow; and top and bottom of each core run and core recovered. The term "TD" should not be used until the bottom of the boring. The logs should note in the remarks column whether borings were drilled with water or air. If drilled with water, the significance of "wet" partings decreases.

Response: Cored intervals will be indicated on the logs in the final version. Since these wells were drilled with water all partings were wet.

Comment # 6: Appendix F. Using the information provided here for point locations (Ohio State Plane North Zone, NAD 83, U.S. Survey Feet), the given northings and eastings were converted to latitude and longitude using CorpsCon for Windows, v. 5.11.08. The calculated lats and longs placed samples near Green Bay, WI. Please verify the conversion from the Plum Brook coordinate system to State Plane coordinates, then do a reality check on the conversion to ensure samples can be re-located correctly. Sample locations should be around 41.374 degrees north latitude and 82.7 degrees west longitude.

Response: During conversion of the data to state plane the eastings and northings were inadvertently reversed in the Appendix presentation. The data will be corrected for the final version.

Comment # 7: Appendix L, Response to Bass comment #3. The response is not acceptable. According to ER 200-3-1, the FUDS program operates under CERCLA. Under CERCLA we are not permitted to remediate sites below background concentrations. This implies that background conditions must be known. PAHs can and do occur naturally and can also originate from anthropogenic activities (road construction, controlled burns of vegetation, etc.). While it may be true that collection of background samples was not included in the scope of work for this field effort and report, that does not mean they cannot be included in the scope of future field efforts. Considering that USACHPPM noted potential concerns regarding background in their comments, and also considering the limited nature of "exceedances" above screening levels outside the burn area, future field efforts should include collection of appropriately-located background samples from soil types that are similar to those found on site. Finally, USACE is the lead agency on this project. If USACE needs to collect background data in order to meet project requirements, we can do so without negotiations with the State of Ohio, i.e., such negotiations are not required.

Response: PAHs are not the driver for potential remediation of soil at the site. Other contaminants, such as lead, PCBs, and nitroaromatics exceed the PRGs at every location where there is a PAH exceedance, with the exception of one location BH-16.