MEMORANDUM

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

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

RE: Site-Specific Sampling and Analysis Plan & Site-Specific Health and Safety Plan Waste Water Treatment Plants 1 and 3 and Ash Pits 1 and 3 Phase 1 Remedial Investigation Former Plum Brook Ordnance Works Sandusky, Ohio – Shaw Environmental, Inc.

DATE: October 6, 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 Shaw Environmental, Inc. September 2008 Draft "Site-Specific Sampling and Analysis Plan & Site-Specific Health and Safety Plan Waste Water Treatment Plants 1 and 3 and Ash Pits 1 and 3 Phase 1 Remedial Investigation Former Plum Brook Ordnance Works Sandusky, Ohio" documents. Please forward these comments to the other RAB members.

This review is completed in several sections. The first review designed to discuss the Site-Specific Sampling and Analysis Plan consists of both a general review and a specific review which references specific language in the text for change. The review of the Site-Specific Health and Safety Plan is more problematic. There have been historic legal challenges and assignment of responsibility to outside reviewing firms when they have made sustentative changes to health and safety plans where they had no on-site program review. Since Bennett & Williams does not act as an on-site reviewer of activities at the Plum Brook Ordnance Works and has no interaction with the work as performed, I have taken the more prudent position of reading the Site-Specific Health and Safety Plan and relegating my comments to the identification of typographical errors. Therefore there can be no question of Bennett & Williams or my explicit or implicit approval of this plan. Any untoward events that may occur at the site that are caused and/or aggravated by any shortcomings in this Site-Specific Safety and Health Plan are NOT the responsibility of Bennett & Williams Environmental Consultants Inc. or me. We neither approve nor disapprove this plan.

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General Comments

1. 1.2.1 Waste Water Treatment Plant Areas beginning on page 1-2

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This section provides a general description of the Waste Water Treatment Plans, what areas they served and how they worked.

2. 1.2.1.1 WWTP1 page 1-4 & 1.2.1.2 WWTP3 page 1-5
Again review documents reference elevated "background levels" of arsenic at the PBOW site. While there are historically higher levels of arsenic in Ohio contaminated by natural events, this setting is NOT a typical location expected to be affected by arsenic enhanced Canadian materials and/or heavy metals bio-accumulation in coal measures. Naturally occurring arsenic levels at this site should NOT be above the PRG levels in soil and sediment. It is expected that the locally elevated "background levels" of arsenic may be attributed to the burning of coal with less than modern smokestack scrubbers. If arsenic is going to continue to be an issue for "clean-up" standards at the site, the community surrounding PBOW would be better served to have an "off-site" arsenic background established to insure that local clean-up standards are not being skewed by historical land-use patterns.

3. 1.2.2 Ash Pit Areas page 1-5
Are the ash pits lined? If so, with what? Should we be expecting additional leaching of contaminants out of the bottom and sides of the Ash Pit 3 because of the additional cooling water?

4. 2.3.3 Conceptual Site Model beginning page 2-2
Why have hunters been excluded from the list of people possibly impacted by these sites? Are these areas "off limits" to hunters who come on to the facility? How do we know that they will not be exposed to contamination in the soil, sediment and surface water runoff? What about the drainage to Pipe Creek? If it is currently or has been contaminated in the past, is this an "off site" risk to the greater community? Clarification should be added here.

5. 3.1.1 WWPT 1 and 3 beginning page 3-1
How will the drillers/samplers determine "original land surface below fill"? A USDA soils description process would help with that delineation. This is a different classification than the USCS classification system required by EPA but has been used in tandem with the USCS system at other sites around Ohio to help with just this type of a determination.
The natural questions to ask at this point are "What kind of drilling?" as some systems work better than others. "What are the specifications on the piezometers?" While these issues are later discussed in the report, it would be extremely helpful to note that fact here and reference the locations of those discussions later in the report. By not including the later citation, the reader is left hanging with unanswered questions.

6. 3.2.1 Direct-Push Soil Sampling beginning on page 3-4
In discussing the installation and completion process for the piezometers, the follow statements are made; "No filter pack material will be placed around the

well screen. The top 1-2 feet of the borehole will be sealed with bentomite or other noncontaminated material to prevent surface water from infiltration into the borehole". Given the nature of the natural materials expected to be intersected by the direct-push soil sampler and into which the piezometers are to be set, we SHOULD NOT expect the formation to collapse around the outside of the well screen creating a "natural pack" well. Therefore, since at least some annulus space is expected to be preserved between the inside of the bore hole and the outside of the well screen, how will the installers prevent the bentonite from moving down the boring annulus and clogging the PVC screen? Are they going to install some kind of packer or seal around the PVC to prevent migration downward? More explanation of installation and completion technique is needed here.

7. 3.2.1.1 Lithologic Sampling page 3-5
A natural question arises from the reading of this section. Are the cuttings going to be drummed in case of contamination for later disposal? This issue is addressed later in the report but it would help to have a link to that section included here.

8. 3.3.5 Groundwater Sampling Procedures beginning on page 3-7
At what level below the top of the screen will the sampling be conducted? Will that location be adjusted depending on the type of sampling undertaken? Where 10-foot screens are used, will the wells be sampled both high on the well screen and also at the bottom? More clarification as to the "location" of the sampling efforts would help here.

9 3.7 Abandonment beginning on page 3-10
Will the materials be tremie piped to the bottom of the hole for abandonment or will some other process be used? If so, what process? What is the cement/bentonite/water mix ratio used for the abandonment mix? If granulated bentonite is used, will it be turned into slurry (at what ratio) and how will it be emplaced in the boring?

10. 4.3 Decontamination Procedures beginning on page 4-2
Will wash and rinse water be drummed for later testing and disposal? That issue is discussed later but the question from the reader comes here so a reference to this topic at this point would be helpful.

Specific Comments

1. 1-2 Summary of Existing Site Data page 1-2
"It is emphasized that RBSCs do not infer a regulatory limit or mandated cleanup level." This sentence stipulates that the ground water cleanup levels at the sites could be set at higher contamination levels than those which have been mandated by US EPA for Region 9's preliminary remediation goal (PRG) tap water criteria. If this concept is held for the clean-up effort and the

ground water is later used as a potable water supply, this situation may create conflicts. Why is this phrase added to the text?

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What is the status of the transmission lines from settling basins TNTA and TNTB to WWTP1? Will the bedding of those lines be investigated for leaks in this remediation project or at a later period of time? If later, what project will undertake this potential contamination site review?

3. Figure 1-2
The associated waste water sewer lines shown don't have any mention of when/if they will be investigated as part of the remedial investigation process. If they are to be included at a later point in time, perhaps a notation or color coding could be included on this figure.

These comments conclude my review and recommendations to the text, figures, and tables of the "Site-Specific Sampling and Analysis Plan Waste Water Treatment Plants 1 and 3 and Ash Pits 1 and 3 Phase 1 Remedial Investigation Former Plum Brook Ordnance Works Sandusky, Ohio" – Shaw Environmental, Inc.

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"The depth of the water in the pit his not known." Change "his" to "is", typo.

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MEMORANDUM

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

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