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TRANSMITTAL LETTER REGARDING FINAL RCRA FACILITY INVESTIGATION REPORT  
SOLID WASTE MANAGEMENT UNIT 15 (SWMU 15) NSA CRANE IN  
11/17/2006  
TETRA TECH

**TETRA TECH NUS, INC.**

661 Andersen Drive • Pittsburgh, PA 15220  
Tel 412.921.7090 • Fax 412.921.4040 • www.tetrattech.com

PITT-11-6-018

November 17, 2006

Project No. 112GN1245

Mr. Tom Brent  
NSWC Crane  
Code 09510 Building 3245  
300 Highway 361  
Crane, Indiana 47522-5009

Reference: CLEAN Contract No. N62467-94-D-0888  
Contract Task Order No. 0331

Subject: Final Resource Conservation and Recovery Act (RCRA) Facility  
Investigation (RFI) Report for SWMU 15 (Roads and Grounds Area)

Dear Mr. Brent:

Modifications have been made to the draft version of the SWMU 15 RFI Report to address Indiana Department of Environmental Management (IDEM) comments. The following are enclosed:

Volume I of II

- Replace the existing spine and cover dated February 2006 with the enclosed spine and cover dated November 2006.
- Replace the existing Signatory Page and Table of Contents dated February 2006 with the enclosed signed Signatory Page and Table of Contents dated November 2006.
- Replace existing Table 3-5 with the enclosed Table 3-5.
- Replace existing Table 3-6 with the enclosed Table 3-6.
- Replace existing Table 6-2 with the enclosed Table 6-2.
- Replace existing Pages 7-1 and 7-2 with the enclosed Pages 7-1 and 7-2 (double sided).
- Replace existing Table 7-8 with the enclosed Table 7-8.
- Replace existing Table 7-9 with the enclosed Table 7-9.
- Replace entire existing Section 8 dated February 2006 with the enclosed Section 8 dated November 2006.



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PITT-11-6-018  
Mr. Tom Brent  
NSWC Crane  
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Volume II of II

- Replace the existing spine and cover dated February 2006 with the enclosed spine and cover dated November 2006.
- Replace the existing Table of Contents dated February 2006 with the enclosed Table of Contents dated November 2006.
- Replace the existing CD for Appendices I-J with the enclosed CD for Appendices I-J.

Final Responses to IDEM's Comments (Dated June 9, 2006)

- These responses have been modified (and RFI) were modified to include the recommendations made by IDEM in an approved e-mail dated November 3, 2006.

Four copies of the changes to Volumes I and II are enclosed. In addition, one complete set of Volumes I and II are also enclosed.

Please contact me at (412) 921-8308 (email: [Ralph.Basinski@ttnus.com](mailto:Ralph.Basinski@ttnus.com)) or Joe Lucas at (412) 921-8882 (email: [Joe.Lucas@ttnus.com](mailto:Joe.Lucas@ttnus.com)) regarding any questions or comments.

Sincerely,

Ralph R. Basinski  
Task Order Manager

RRB/mlg  
Enclosures

cc: **Mr. Howard Hickey** (letter, Volume I and Volume II, and response to comments)  
Ms. Debra Humbert, TtNUS (letter only)  
Mr. Mark Perry, TtNUS (1 copy of changes to Volumes I and II unbound and response to comments)  
Mr. Ralph Basinski, TtNUS (1 copy of changes to Volumes I and II and response to comments)  
Project File – CTO 0331 (letter and response to comments)  
NSWC Crane Library (Volume I and Volume II)

**RESPONSES TO  
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
COMMENTS DATED JUNE 9, 2006 ON  
(FEBRUARY 2006) RFI REPORT FOR  
ROADS AND GROUNDS AREA (SWMU 15)  
NSWC CRANE**

Indiana Department of Environmental Management (IDEM) comments, dated June 9, 2006, are shown in bold font. Navy responses to each comment are shown in regular font. Text changes to the RFI are shown in italic font enclosed in quotation marks in the response.

**P.3 of the Executive Summary: "Although there may be risks to aquatic organisms from PAHs in the surface water, because PAHs in the surface water do not appear to be related to site activities, PAHs in surface water are eliminated as COPCs for further evaluation."**

**1) I have found no justification in the text for stating that PAHs don't come from a site that has an asphalt batch plant with a known release.**

Response: The greatest concentrations of PAHs in surface water were in the samples collected at 15SW010 and 15SW011 (see Table 3-14). These locations are immediately downgradient of a paved parking lot and do not receive runoff from the batch plant (see Figure 5-1). Pyrene was the only PAH detected in the samples collected at 15SW009 (Table 3-14) and 15SW005 (Table 3-15), which are downgradient of the batch plant, and the concentrations of pyrene at both locations were less than the criteria. The parking lot was paved/sealed in late summer 2004 and the samples were collected during early January, 2005. As can be seen from the attached articles, it is common for PAHs to be found in surface water and sediment downgradient of recently paved/sealed parking lots, due to the abrasion of the sealant by vehicles on the parking areas. This is especially true if the lot is sealed with coal tar-based sealants. For these reasons, the Navy believes that the current source of PAHs is likely from runoff from the parking lot and not from the batch plant. However, based on observations of asphalt along the stream bank downgradient of the batch plant, it is likely that the batch plant was a past source of PAHs to the sediment. The amount of PAHs in the sediment related to the batch plant compared to the parking lot runoff is not known.

No changes were made in response to this comment.

**2) It doesn't matter whether they came from the batch plant; they clearly did come from Crane activities, and must be addressed.**

Response: If the source of the PAHs in the surface water and sediment is from parking lot sealant, it is not clear how this would be addressed. Parking lot sealant is applied to parking lots and roads all over the country, and it is not typically addressed in water bodies affected by runoff from those areas.

No changes were made in response to this comment.

**P. 8-8 Benthic Macroinvertebrates...second sentence: "Their presence in the intermittent drainageways will be ephemeral because of lack of suitable habitat and waterflow." I can see from the pictures that the creeks in tributaries 1-3 are fairly rocky, but from the pictures I do not see indications that the streams are ephemeral. Provide justification for the statement.**

Response: The amount of time that the tributaries contain water is not known but because the tributaries are located along the top of the slope, they are likely to be intermittent throughout the year. Some of the drainage ways, however, are clearly dry for most of the year such as at

locations 15SD018 and 15SD019. Therefore, the referenced sentence has been changed as follows:

*"Their presence in the drainageways that are intermittent will be ephemeral because of a lack of suitable habitat and water flow."*

The subtle change implies that the presence of benthic invertebrates will be ephemeral only in drainageways that are intermittent, not that all drainageways are intermittent.

**The eco screening level for benzo(a)pyrene in sediment is 150. I realize these screening levels are conservative, but every sample in all three tributaries is above 200, most far above. (Figure 5-1 summarizes the sediment concentrations.) Benzo(a)pyrene is clearly a significant concern and must be addressed.**

Response: The toxicity tests were conducted because the concentrations of several PAHs in the sediment, not only benzo(a)pyrene, were detected at concentrations greater than their respective screening levels. The toxicity tests were conducted to address the concern related to the PAHs.

No changes were made in response to this comment.

**Section 8.4.1.2 is an acute toxicity test (amphipods), which the report says shows that the sediments are not a problem, but the table on page 8-37 shows Total PAH concentrations in the sediment used for the toxicity testing that are far below the BaP concentrations in the sediments. Explain why the sediments used for testing were not representative of the site conditions.**

Response: The units on the table on page 8-37 should be mg/kg not ug/kg as indicated. Table 8-7 of the report has the correct units, which shows that the concentrations in the sediment used were representative of site conditions. As can be seen from Table 8-7, the maximum BaP concentration in the samples selected for toxicity testing was 4,500 ug/kg, which also was the maximum detected concentration in the sediment samples (see Table 8-3).

The error in the units of the table in Section 8.4.1.2 has been corrected.

**Toxicity testing must address chronic toxicity, rather than acute.**

Response: Acute toxicity tests were selected for the sediment toxicity testing at SWMU 15 for several reasons. The 10-day test is a standard test for determining the acute toxicity of sediment and based on the elevated concentrations of PAHs in the sediment (i.e., greater than the ER-M), it was believed that the sediment was likely to be acutely toxic. The substrate in the water bodies downstream of SWMU 15 consists of rocks, with little sediment present (see photographs in Appendix A of the RFI report). That, coupled with the likely intermittent nature of the water, indicates that the water bodies are not conducive for a significant benthic invertebrate community. Also, because it is believed that the most of the water bodies are intermittent, the exposure of benthic organisms to PAHs in the sediment would be more of an acute exposure versus a chronic exposure. Finally, because a significant benthic invertebrate community is not expected at the site, a severe toxicological response likely would be needed to warrant a remedial action at the site. Therefore, with all of these factors in mind, the Navy believes that the acute toxicity tests were sufficient to make risk assessment and risk management decisions at SWMU 15. Note that Mr. Dan Sparks from the U.S. Fish and Wildlife service (U.S. FWS) indicated during the October 3, 2006 site visit at SWMU 15 that he believes the 10-day *Hyaella azteca* toxicity test is acceptable for characterizing the sediments at this site.

No changes were made in response to this comment.

**P. 8-57 says "No chemicals initially selected as COPCs in sediment at SWMU 15 were retained as COPCs for further evaluation for risks to benthic invertebrates." As stated above benzo(a)pyrene appears to be a significant risk driver and must be addressed.**

Response: No PAHs, including benzo(a)pyrene, were selected as COPCs in the sediment for reasons discussed in the ERA. This was based primarily on the results of the toxicity tests.

No changes were made in response to this comment.

**The comments above show major problems with the risk assessment, so I asked Dan Mazur to look at it to make sure I was evaluating the document in a way that was consistent with what EPA has been telling you at Crane. The following are comments from Dan Mazur.**

**Draft Comments on SWMU #15  
June 7, 2006**

**1. Section 5.1.2 Surface Water and Sediment Upgradient Concentrations, Page 5-4, 1<sup>st</sup> Paragraph**

**Discussion needs to present specific information on approximate length of time for the presence or absence of water flow and/or pools to support ephemeral characterization. Section 2.12.2 (Estimation of Stream Flow) of this report does not provide any supporting information to characterize an actual period of ephemeral stream/ pools or period of no water flow/ pools.**

Response: Information is not available to determine the approximate length of time for the presence or absence of water flow and/or pools to support ephemeral characterization based on the available information.

The information presented in Section 2.13.2 and referenced surface water sample log sheets was intended only to describe the techniques used to measure stream flow at the time that the surface water samples were collected. Observations were not made over several months.

See also the response to IDEM's comment and proposed text change on page 8-8.

**2. Section 5.4 Sediment Contamination, Metal and Cyanide, Page 5-9**

**Since the lead concentration exceeded the screening benchmark additional risk analysis is needed. Please provide supporting information to show that a lead concentration three times greater than the screening benchmark will not have an adverse effect on benthic fauna or other receptors in the potential food web.**

Response: Note that Section 5-9 is the nature and extent section of the report and does not discuss risk, other than discussing the comparison of chemical concentrations to screening levels. Section 8.4.1.2 presents the ecological risk discussion for benthic invertebrates in sediment, and 8.4.2.2 presents the ecological risk discussion for piscivorous receptors. As can be seen in section 8.4.2.2, lead was not a concern for piscivorous wildlife. Note that the one location where lead was elevated, 15SD009, was in a drainage channel that does not support aquatic receptors (see photograph A-2G in Appendix A). The following text specific to lead has been added to the Section 8.4.1.2, as the next to the last paragraph:

*"Lead was detected at two sample locations at concentrations that exceeded its sediment screening level (35.8 mg/kg). At 15SD006, the lead concentration (39.7 mg/kg) was just slightly greater than the screening level so potential impacts to sediment invertebrates are not likely. At 15SD009, the lead concentration (133 mg/kg) was almost four times greater than the screening level. However, 15SD009 was located in a drainage channel that does not support aquatic*

receptors (see photograph A-2G in Appendix A). Therefore, impacts to sediment invertebrates from lead are not expected."

**3. Section 5.4 Sediment Contamination, Pesticides and PCBs, Page 5-10**

Please note that the USEPA Region 5, RCRA ecological screening level (ESL) for DDT in soil was recently revised and the new value is 170 ug/kg. Please update report as needed.

Response: The appropriate tables/text have been changed to reflect the new value. Note that DDT has been eliminated as an ecological COPC because the maximum detected concentration in surface soil is 14 ug/kg. Please provide the reference for the new value because the ESL document on the Region 5 web site still lists the old value.

**4. Section 5.4 Sediment Contamination, SVOC's, Page 5-10 and Figure 5-1**

The report uses sample 15SD014 to represent upgradient conditions, but most of the PAH data for this location is 3 to 4 times higher than that for sample 15SD005 with 11 out of 17 of the individual PAH values (at 15SD014) exceeding the ecological screening criteria. Additional discussion is needed to explain the rationale of using 15SD014 as a control when the majority of the PAH data exceeds the ESLs suggests that it may be a contaminated location.

Response: Section 5 is intended to provide a discussion of the nature and extent of contamination that is attributable to SWMU 15 operations. Therefore, upgradient samples of sediment were collected to provide information on contaminants that may be entering the site. The upgradient data are used to assess whether contaminants in sediment locations adjacent to SWMU 15 are likely to have originated from SWMU 15 operations or have actually originated in off-site upgradient locations. Therefore, for purposes of nature and extent, 15SD014 is appropriate as a reference upgradient location.

No changes were made in response to this comment.

**5. Section 8.2.1.1 Basewide Environmental Setting, Threatened and Endangered Species, Page 8-3**

This discussion needs to reference the informal consultation provided by the USFWS (Oct 25, 2005) along with the rationale (see 3<sup>rd</sup> paragraph of USFWS letter) that the RCRA CA projects at Crane are not likely to adversely affect the two federally threatened and endangered species.

Response: The following text has been added to the end of the Threatened and Endangered Species section in Section 8.2.1.1:

*"The Navy sent a letter to the U.S. Fish and Wildlife Service detailing the ongoing RCRA projects at Crane and requesting informal consultation on possible impacts to the federally endangered Indiana bat and federally threatened bald eagle. The U.S. FWS responded, in a letter dated October 18, 2005, that the likelihood of Indiana bats or bald eagles at Crane being exposed to contaminants from SWMUs is very remote (i.e., discountable) and if some exposure were to occur, it is anticipated that it would not rise to the level of take (i.e., insignificant) (See Appendix J.1)."*

**6. Section 8.4 Step 3A – Refinement of Conservative Exposure Assumptions, Sediment, Page 8-18**

Of the three comparisons, the last comparison considers if the concentration is "less than the upgradient concentration." If this last comparison is applied, the risk characterization will need to report these chemicals at the upgradient site exceeded the ecological screening benchmarks.

Response: A comparison of chemical concentrations in the site samples to upgradient concentrations is presented in Section 8.4.1.2, as necessary. Table 3-17 presents the ecological screening levels on the descriptive statistics table for the upgradient samples and Tables 8-8 and 8-9 present the ecological screening levels and the maximum detected concentration in the upgradient samples. The following sentence has been added after the third sentence in the last paragraph in Section 8.4.1.2: *"As can be seen from Table 8-9, several parameters were detected in the upgradient samples at concentrations that exceeded the Region 5 ESL and/or the NOEC."*

**7. Section 8.4.1.1 Soil Invertebrates and Terrestrial Vegetation – Surface Soil Risk, 4,4-DDT, Page 8-26**

Please note that the Region 5, RCRA ecological screening level for DDT in soil was recently revised and the new value is 170 ug/kg. Please update report as needed. This repeats comment 3.

Response: Please see response to EPA comment No. 3.

**8. Section 8.4.1.2 Benthic Invertebrates – Sediment Risk, Page 8-37**

Significant to severe risk may be determined using an acute (10-day *Hyalella azteca*) toxicity test. The risk assessment also needs to distinguish when there is no adverse effect or no significant risk from contaminants of concern and include sensitive endpoints such as reproduction. Since the acute sediment toxicity tests are not adequate for demonstrating no significant risk and they do not evaluate reproductive endpoints, sediment toxicity needs to be evaluated using a chronic test (42-day *Hyalella azteca*).

Response: The Navy believes the 10-day *Hyalella azteca* toxicity test is acceptable for characterizing the sediments at this site. Please see the response to IDEM's comment regarding the rationale for selecting an acute toxicity test.

**9. Section 8.4.1.2 Benthic Invertebrates – Sediment Risk, Page 8-38, 5<sup>th</sup> paragraph**

It needs to be noted in the report that amphipod growth for site samples 15SD022-0006 (same as 15SD001) and 15SD023-0006 (same as 15SD016) were significantly different than the project reference site 15SD026-0006 (same as 15SD014) which is consistent with the information presented in Table 8-6. The last sentence of this paragraph needs to be revised as follows: "... and none of the samples are considered "severely toxic."

Response: The referenced paragraph indicates that two sediment samples have lower growth than the reference sample. There are several reasons why it was determined that amphipods are not being impacted by chemicals in the sediment at SWMU 15 and none of the samples are considered "toxic" as follows:

- The growth rates in the site samples were not lower than the growth rate in the laboratory control sample. Typically, samples with survival and growth rates similar to laboratory control samples are not considered toxic regardless of their survival and growth rates as compared to the reference samples.
- The sample with the greatest PAH concentration had the greatest growth rate so it is not likely that the PAHs were the cause of the decreased growth.

The last sentence in Section 8.4.1.2 has been revised as suggested.

**10. Section 8.4.1.2 Benthic Invertebrates – Sediment Risk, Page 8-38, 1<sup>st</sup> sentence of last paragraph**

Since an acute sediment toxicity test is not adequate for demonstrating no significant risk, a reproductive endpoint was not evaluated and amphipod growth was significantly different than the reference site, as noted in comments 8 & 9, the maximum detected concentrations in the toxicity test samples can not be considered NOECs. This statement needs to be deleted along with any analysis of data against these NOECs or

**related discussion. Likewise, the presentation of data in Tables 8-7, 8-8 and 8-9 as NOECs is not supported and needs to be deleted.**

Response: Because none of the samples were acutely toxic, the maximum concentration can be considered a NOEC for acute survival. Also, as discussed in the response to EPA Comment No. 9, it does not appear that chemicals in the sediment at SWMU 15 were responsible for the reduced growth that was observed in two of the samples so the maximum concentration can be considered a NOEC for growth.

The following text also has been added to Section 8.6, Benthic Invertebrates-Sediment Risk: *"As part of the review process, IDEM asked Mr. Dan Sparks from the U.S. Fish and Wildlife Service (FWS) to review the site data and conduct a site visit to determine whether he agreed with the conclusions of the ERA and to provide recommendations regarding the need to further characterize the site and/or conduct a remedial action. The site visit occurred on October 3, 2006. The minutes/notes from the site visit, along with a follow-up letter dated October 10, 2006 from the U.S. FWS, are provided in Appendix J-8. In summary, the letter from U.S. FWS stated that there are several factors involved with the stream area that argue against taking any kind of expansive remedial effort."*