

N00207.AR.003914
NAS JACKSONVILLE
5090.3a

LETTER REGARDING U S EPA REGION IV REVIEW AND COMMENTS ON DRAFT
REMEDIAL INVESTIGATION REPORT ADDENDUM FOR OPERABLE UNIT 3 (OU 3) NAS
JACKSONVILLE FL
11/13/2014
U S EPA REGION IV



**U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION 4
61 Forsyth Street, SW
Atlanta, Georgia 30303**

Official Correspondence - This electronic message is being sent in lieu of regular mail

November 13, 2014

4WD-FFB

Ms. Adrienne Wilson
Code OPDE3/AW
DEPARTMENT OF THE NAVY
NAVAL FACILITIES SOUTHEAST
ATTN: AJAX STREET, BLDG 135N
P.O. BOX 30A
JACKSONVILLE, FL 32212-0030

Dear Ms. Wilson:

The U.S. Environmental Protection Agency has reviewed the Draft Remedial Investigation Report Addendum for Operable Unit 3. EPA is requesting additional information or clarification to verify that the risk assessment followed EPA's risk assessment procedures. Attached are EPA's comments on the report.

If you have any questions regarding this letter, I can be reached at (404) 562-8508 or at dao.peter@epa.gov.

Sincerely,

A handwritten signature in red ink, appearing to read "Peter Dao".

Peter Dao
Remedial Project Manager

cc: Mr. Tim Curtin, NAS Jacksonville
Ms. Jennifer Conklin, FDEP
Mr. Mark Peterson, TtNUS
Mr. Eric Davis, CH2MHill
Mr. Todd Haverkorst, Resolution

**TECHNICAL REVIEW OF THE
DRAFT REMEDIAL INVESTIGATION ADDENDUM FOR OPERABLE UNIT 3
DATED JUNE 2014**

**JACKSONVILLE NAVAL AIR STATION
JACKSONVILLE, FLORIDA**

I. GENERAL COMMENTS

1. As discussed in Section 6.1, Summary of Original Human Health Risk Assessment, the original human health risk assessment (HHRA) was conducted in 2000. Given that the risk assessment was conducted in 2000, the Draft Remedial Investigation Addendum for Operable Unit 3 (OU 3), dated June 2014 (Draft OU-3 RI Addendum) should discuss pertinent updates to risk assessment methodology and toxicological criteria, as well as the sources of uncertainty and the impact to the quantitative estimates of risk and hazard. Revise the Draft OU-3 RI Addendum accordingly.
2. A conceptual site model (CSM) figure for OU 3 is not included in the HHRA. As such, the relationship between sources of contamination, release and transport mechanisms, exposure media and routes, and all potential receptors (both previously and currently being assessed) is unclear. For clarity and completeness, provide a current CSM for OU 3. Section 6 should refer the reader to the CSM as appropriate. It's unusual to have a risk assessment that does not include or reference the location of the CSM on which the risk assessment is based. However, the CSMs in Section 5 is insufficient given their format (CSMs in picture form). They don't clearly list all current/future potential receptors, exposure media, and which pathways are complete/incomplete/potentially complete to support the risk assessment.
3. Based on review of Section 6.1, Summary of Original Human Health Risk Assessment; Table 6-13, Summary of Potential Exposure Pathways, for the original HHRA; and, Section 6.2, Soil Quality and Groundwater Data – Human Health Risk Assessment Update, it is unclear if potentially complete exposure pathways were overlooked in the HHRA, as current and future land use assumptions for OU 3 are not discussed, nor is justification provided for the exposure pathways evaluated. For example,
 - a. It is unclear why the groundwater exposure pathway (i.e., incidental ingestion, dermal contact, and inhalation of vapors under trenching conditions) was not assessed for a construction worker (See Table 6-13).
 - b. It is unclear why dermal contact was not considered in the evaluation of the groundwater exposure pathway for an occupational worker (See Table 6-13).
 - c. It is unclear why inhalation of vapors in storm sewers was not considered in the evaluation of the storm sewer water exposure pathway for a utility worker (See Table 6-13).
 - d. It appears that only ingestion was considered in the evaluation of the groundwater exposure pathway for a future resident (See Section 6.2.2). It is unclear why dermal contact and inhalation of vapors were not also assessed.

Revise the HHRA to discuss current and future land use assumptions for OU 3. In addition, revise the HHRA to justify all exposure assessment assumptions, citing applicable activity and use assumptions for each receptor population.

4. Review of the HHRA indicates that only risks and hazards to an adult residential receptor attributable to exposure to soil and groundwater were evaluated in the Draft OU-3 RI Addendum. It is unclear why risks and hazards to a child residential receptor were not also assessed, given the sensitivity of this subpopulation. Revise the HHRA to assess risks and hazards to a child residential receptor, or justify the exclusion of this receptor population.
5. On February 6, 2014, EPA issued OSWER Directive 9200.1-120, which contains updated standard default exposure parameters and “supersedes and replaces certain portions of OSWER Directive 9285.6-03, issued March 25, 1991 and updates the Risk Assessment Guidance for Superfund, Part E, issued July 2004 (RAGS, Part E).” For example, this directive includes updates to adult bodyweight and adult residential exposure duration as well as updates to RAGS, Part E-related parameters, such as skin surface area. It is noted that the values for these exposure parameters cited in the text and tables of the HHRA are out-of-date. Please note that this list of example deficiencies is not exhaustive. Revise the HHRA to ensure that the most current guidance is cited in the revision of the HHRA, and that the updated exposure parameters are considered in the revision of the HHRA.
6. The HHRA does not appear to include an evaluation of detection limits, reporting limits or, preferably, sample quantitation limits (SQLs) for constituents in soil, groundwater, and storm sewer water in comparison to applicable health-based screening criteria. Elevated sample quantitation limits may result in some constituents not being identified as constituents of potential concern (COPCs). To ensure that constituents were not overlooked in the risk assessment, please revise the HHRA to include an evaluation of non-detect results as a function of sample quantitation limits in comparison to the most relevant health-based screening criteria. Non-detect results associated with SQLs which exceed the most relevant health-based screening criteria will result in additions to the site-specific COPC list. This list of COPCs predicated on non-detect results can be further refined in consideration of a data review of contributing/receiving media, a review of historical land use at the site, or an assessment of potential breakdown/daughter products from known site COPCs, among other phenomena within the context of the data evaluation or uncertainty assessment.
7. The ecological risk assessment (ERA) Update states “The FDEP Class III Predominantly Marine Waters Criteria were used as the preferred choice for marine surface water ESVs. FDEP Class III criteria noted as an annual average value are protective of human health and are not ESVs [Ecological Screening Values].” Ecologically-based ESVs should be used preferentially for the benchmark comparison in the ERA Update. Note that the summary of the original ERA references the Florida Surface Water Criteria as the source of ESVs. Amend the text to explain why the ERA Update uses human health-based criteria as the first source for surface water benchmarks and does not first consider ecologically-based ESVs.
8. The ERA Update states that “if the maximum detected concentration of a chemical in storm water or sediment pore water was less than the ESV [ecological screening value] the chemical was eliminated from further consideration. If the maximum concentration equaled or exceeded the ESV, or if a screening value was not available, the chemical was then

considered to be an ecological COPC and was retained for further evaluation.” The text also states that “no chemicals were detected in any surface water samples collected in the vicinity of both groundwater plumes and no chemicals were detected in pore water samples collected in the vicinity of the groundwater plumes... Therefore, these samples are not further discussed in this ERA.” The Reporting Limits (RLs) for non-detected chemicals need to be compared to ESVs to insure that the RLs do not exceed the ESVs. Revise Tables 7-2 and 7-3 of the ERA Update to include all analyzed parameters regardless of whether they are detected or not. For non-detected chemicals, compare 1/2 the maximum RL to the ESV. Discuss in the uncertainty section of the ERA Update any non-detected parameter with ½ the maximum RL exceeding the ESV. Revise the text and tables accordingly.

9. The vapor intrusion portion of the Draft OU-3 RI Addendum does not include a discussion that explains how the risk assessment update for the vapor intrusion pathway presented in Section 6.4 and the associated subsections was integrated with other lines of evidence (e.g., sampling conducted to evaluate migration of volatile groundwater contaminants to indoor air, sampling conducted for Phase III of the vapor intrusion assessment) into a comprehensive vapor intrusion (VI) evaluation for OU 3. While Section 6.4 indicates that a comprehensive VI evaluation has been undertaken, no details of the evaluation are provided. A brief and concise summary should be included to demonstrate how the results of the risk assessment update support the comprehensive VI evaluation. The summary should:
 - Identify the lines of evidence that will be presented in the comprehensive VI assessment;
 - Describe how the lines of evidence will be weighted;
 - Describe how the data collected during Phase III of the VI assessment will be used (e.g., validate/contradict the results presented in Section 6.4); and
 - Identify any additional information needed to complete the VI assessment.

Revise the Draft OU-3 RI Addendum to address this issue.

10. In general, the risk assessment update for the VI pathway presented in Section 6.4 provides a technically sound and defensible analysis of potential risk and hazard via the VI pathway. However, two areas that require additional consideration were identified during the technical review of Section 6.4. It appears the estimated risks and hazards are based on the results of a single sampling event. It is recommended that risk and hazard estimates for the VI pathway consider multiple sampling events to address uncertainties associated with temporal variations in site and building conditions. Information taken from a 2014 draft technical memorandum describing a comprehensive VI evaluation that was used to address the uncertainty associated with temporal variations is presented in Section 6.6. This information includes the assertion that “the variability in indoor air concentrations was within the range observed at other Navy industrial sites and in the literature” as well as information that illustrates a decline in estimated risk from winter 2013 (approximately 2×10^{-6} risk) to winter 2014 (approximately 1×10^{-6} risk). However, no information supporting the above assertion (e.g., tabulated comparison of variability at OU3, other Navy sites, and sites identified in the literature) is provided. Also, no seasonal data and/or risk estimates are provided; thus, variability throughout the year due to changing site and building conditions is unknown.

In addition, the potential for acute health effects should be addressed in the risk assessment update.

Revise the VI assessment to address the uncertainties associated with temporal (i.e., seasonal) variations in site and building conditions. Also, include a discussion of the potential for acute health impacts on receptors via the VI pathway.

**TECHNICAL REVIEW OF THE
DRAFT REMEDIAL INVESTIGATION ADDENDUM FOR OPERABLE UNIT 3
DATED JUNE 2014**

**JACKSONVILLE NAVAL AIR STATION
JACKSONVILLE, FLORIDA**

II. SPECIFIC COMMENTS

1. **Section 6.2.1, Soil – Human Health Risk Assessment Update, Page 6-3.** According to this section, arsenic was the only contaminant retained as a COPC in soil at the time of the original HHRA, and as such, was the only COPC in soil evaluated in the HHRA update for a future resident. However, review of Table 6-1, Selection of Human Health Chemicals of Potential Concern, indicates that contaminant detections were previously screened against industrial-use based screening criteria (i.e., EPA Region 3 Industrial Risk-Based Concentrations and Florida’s industrial use-based Soil Cleanup Goals). Given that the current HHRA assesses risk to a residential receptor, this COPC screening basis is inappropriate. While Section 6.2.1 provides a comparison of the maximum detected concentration of arsenic to its 2013 EPA Regional Screening Level (RSL), the HHRA should be revised such that all contaminants detected in soil are screened against current EPA RSLs for residential soil to demonstrate that no COPCs were inappropriately excluded from the assessment. Revise the HHRA to select COPCs for soil based on a comparison of contaminant concentrations to current EPA RSLs for residential soil.
2. **Section 6.2.2, Groundwater – Human Health Risk Assessment Update, Page 6-5.** This section states that the COPCs in groundwater evaluated in the current HHRA are the 15 analytes listed in the OU 3 Records of Decision; however, this section does not discuss whether additional contaminants were detected during the 2013 sampling event at concentrations which exceed EPA RSLs for tap water. Section 6.2.2 should be revised to clarify whether any additional COPCs were identified based on the 2013 groundwater sampling data that warrant evaluation in the current HHRA. Revise Section 6.2.2 accordingly and provide supporting documentation.
3. **Section 7.5 Tier 1, Step 2: Screening-Level Exposure Estimate, Page 7-6.** This section provides information on the analytical data evaluated in the ERA Update. It does not summarize the total number of samples collected at each area or what parameters each group of samples were analyzed for. Tables 7-2 and 7-3 provide frequency of detection (FOD), which varies greatly between parameters. For example, 1,1-Dichloroethane was detected in 2 out of 45 samples while 1,2-dichlorobenzene was only analyzed in eight samples. Revise this section to clearly summarize the number of samples collected at each sample collection area and include which parameters were analyzed in each area and why all samples were not analyzed for the same list of parameters.
4. **Section 6.4, Indoor Air Vapor Intrusion Pathway – Human Health Risk Assessment Update, Pages 6-12 and 6-13.** The second paragraph of Section 6.4 states that a comprehensive evaluation of the potential for VI into the twelve buildings at OU 3 was performed and references the Phase II Vapor Intrusion Investigation Report Operable Unit 3 dated 2013 and the Draft Phase III Vapor Intrusion Investigation, Operable Unit 3, dated June 2014 for documentation of the evaluation. The

discussion at the top of page 6-13 of the Draft OU-3 RI Addendum indicates the comprehensive VI evaluation was focused on the commercial/industrial receptor. Based on the information furnished in the Draft OU-3 RI Addendum, it is not clear why the comprehensive VI evaluation did not include the residential receptor addressed in the VI pathway risk assessment update described in the subsections of Section 6.4. Revise Section 6.4 to explain why residential receptors (adult and child) addressed in the VI pathway risk assessment update were not included in the comprehensive VI evaluation.

5. **Section 6.4, Indoor Air Vapor Intrusion Pathway – Human Health Risk Assessment Update, Page 6-12.** Section 6.4 and the associated subsections do not specifically mention a residential child receptor. Thus, it is unclear whether a child receptor was considered in the future residential exposure scenario addressed in the VI pathway risk assessment update. Revise Section 6.4 to explain how residential child receptors were included in the VI pathway risk assessment update. If child receptors were not considered, revise the text to explain why this receptor population was not addressed.
6. **Section 6.4.2.1, Contaminant Air Concentrations, Page 6-14.** The third paragraph of Section 6.4.2.1 indicates the exposure concentrations for residential receptors were calculated while the second paragraph states that measured indoor air concentrations were used to estimate risks for commercial/industrial receptors. It is not clear why exposure concentrations for residential receptors are calculated rather than based on measured indoor air concentrations. Revise Section 6.4.2.1 to explain why calculated exposure concentrations are used for residential receptors rather than measured values.
7. **Section 6.4.2.1, Contaminant Air Concentrations, Page 6-14.** The third paragraph of Section 6.4.2.1 indicates the exposure concentrations for indoor air used in estimating risks for residential receptors were calculated based on a site-specific attenuation factor of 0.001. While the text cites the Phase II Vapor Intrusion Investigation Report, Operable Unit 3, as the source of this value, the Draft OU-3 RI Addendum does not indicate whether the value was verified by the subslab soil gas and indoor air results obtained from the Phase III sampling event. Revise Section 6.4.2.1 to address whether the results of the Phase III sampling event were used to verify the site-specific attenuation factor of 0.001 or revise the assessment, utilizing the standard default soil gas-to-indoor air attenuation factor of 0.1.
8. **Section 6.4.4.2, Results of the Risk Characterization – Vapor Intrusion, Page 6-18.** Section 6.4.4.2 refers parenthetically to Table 6-19 for the cancer estimates applicable to commercial/industrial receptors; Table 6-20 is referenced for the cancer estimates applicable to residential receptors. While the text identifies the buildings in which the target hazard index of 1 was exceeded, references to the tables that list the hazard estimates for the two receptor populations are not provided. To clarify the presentation, revise Section 6.4.4.2 to reference Table 6-19 for a listing of the hazard estimates applicable to commercial/industrial receptors and Table 6-20 for a listing of the hazard results for residential receptors.
9. **Table 6-15, Exposure Factors – Indoor Air Exposure.** Table 6-15 lists two exposure factors for residential receptors that are no longer recommended by US EPA. OSWER Directive 9200.1-120 dated February 2014 recommends using an exposure duration (ED) of 26 years to estimate age-adjusted risks and hazards for residential receptors in risk assessments conducted for US EPA (6 years for child exposure and 20 years for adult-only exposures). An averaging time for estimating non-cancer hazard for residential receptors (AT_N) of 9,490 days is recommended in the directive. The VI pathway risk assessment addendum uses values of 30 years and 10,950 days for ED and AT_N ,

respectively. It is not clear from the text when the risk assessment described in Section 6.4 and the associated subsections was performed. If performed after February 2014, the analysis should be revised to use the values of ED and AT_N recommended in OSWER Directive 9200.1-120. If performed prior to the release of the directive, the difference in risk and hazard estimates due to the changes in these two parameters should be addressed in the uncertainty analysis (Section 6.6). Revise the Draft OU-3 RI Addendum to address this issue.