

Lemont, Stephen

From: Lemont, Stephen
Sent: Tuesday, December 01, 2015 4:01 PM
To: 'skibinskij@leidos.com'
Cc: 'Cherry, Robert N CIV USARMY IMCOM HQ (US)'; James Prikryl; 'aminor@swri.org'; 'bwerling@swri.org'
Subject: RE: NRC Request for Clarifications on Army Responses to JPG EIS RAIs AQ-2, POH-1, POH-3, and CB-5 - Further Clarification of RAI AQ-2 Response
Attachments: JPG Other Tables AQ-2 11252015.xlsx; JPG Table AQ-2-1 11252015.docx
Follow Up Flag: Follow up
Flag Status: Flagged
Categories: Yellow Category, Green Category, Purple Category, Blue Category, Orange Category, Red Category

Joe,

Thank you for the clarifications and additional information provided in your November 29, 2015, email below. After reviewing this information, NRC staff has the following requests for further clarification of the response provided:

1. In your November 29, 2015, response, the perimeter fence inspection activity levels in Table AQ-2-2 and the annual emission estimate in Table AQ-2-6 (see both tables in the "JPG Other Tables AQ-2 11252015" attachment to this email) were revised (basically doubled) compared to the estimates provided for this activity in the October 7, 2015 response. However no explanation appears to be provided in the November 29, 2015, response as to why this was done. In addition, perimeter fence inspection emission estimates in Table AQ-2-1 (attached) of the November 29, 2015, response were not updated to reflect the revisions in Tables AQ-2-2 and AQ-2-6. **Please clarify why the perimeter fence inspection activity levels in Table AQ-2-2 and associated emission estimates in Table AQ-2-6 were revised. Also, please clarify why Table AQ-2-1 was not updated to reflect the revisions to Tables AQ-2-2 and AQ-2-6.**
2. The last two rows of emission estimates in Table AQ-2-6 contain "#REF" rather than numerical values. **Please provide the numerical values.**
3. NRC staff is unclear as to whether the emission estimates in Table AQ-2-1 for the line items "Onsite Inspection Worker Vehicles" and "Biannual ERM Worker Vehicles" are for emissions associated with supporting this activity (i.e., "supporting" emissions defined as transporting workers in and around JPG to conduct these activities), or for commuting (i.e., travel between a worker's home and JPG), or for both. The response in your October 7, 2015, email below indicated that the environmental monitoring and onsite inspection activities only would generate emissions from worker vehicles while commuting. Based on this statement in your October 7, 2015, response, it was NRC staff's understanding that the estimates for these two activities presented in Table AQ-2-1 were for commuting. Your November 29, 2015, response below indicated that (1) supporting emissions occur for these two activities; (2) in the case of the biannual sampling, some of the supporting emissions occur in the southern part of the Cantonment Area; and (3) supporting emissions for both of these activities are negligible. However, the estimated emissions for these two activities in Table AQ-2-1 are the same in both your October 7 and November 29 responses. In addition, your November 29 response did not specify whether the emission estimates were for supporting activities, commuting, or

both. **Please clarify whether the emission estimates in Table AQ-2-1 for onsite inspections and environmental sampling are for supporting emissions, commuting, or both.**

4. NRC staff is unclear as to whether the emissions for “Onsite Inspection Worker Vehicles” in Table AQ-2-1 are associated with the Army’s institutional control activities or for periodic inspections conducted by the NRC under the current NRC materials license (SUB-1435). As described in RAI AQ-2 in the NRC’s May 8, 2015, RAIs, NRC staff has classified emissions into three categories: environmental sampling, onsite inspections, and institutional controls. In the NRC staff’s Basis discussion for this RAI, it is explained that institutional controls are part of both the proposed action and the no-action alternative whereas environmental sampling and onsite inspection are only part of the no-action alternative. In the context of RAI AQ-2, when NRC staff specify onsite inspections, they are referring to the periodic inspections conducted by the NRC under the current materials license rather than Army’s institutional controls. Text in your November 29, 2015, response below appears to associate the onsite inspections with institutional controls [i.e., see the statement, “The onsite inspection activities (or perimeter fence inspection and associated maintenance)...”)]. **Please clarify if the Onsite Inspection Worker Vehicle category specified in Table AQ-2-1 is associated with the Army’s institutional controls or with the NRC’s periodic onsite inspections under the current materials license. If the emission estimate is for the institutional controls, provide the emission estimate for the onsite inspections or justify why it is not needed.**

We appreciate your continued assistance in clarifying the response to RAI AQ-2. If you need to discuss any of the above requests with us, I will gladly arrange for a conference call at your convenience.

Thanks,
Steve

Stephen Lemont, Ph.D.

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From: Skibinski, Joe N. [mailto:JOSEPH.N.SKIBINSKI@leidos.com]
Sent: Sunday, November 29, 2015 9:14 PM
To: Lemont, Stephen <Stephen.Lemont@nrc.gov>; 'Cherry, Robert N CIV USARMY IMCOM HQ (US)' <robert.n.cherry.civ@mail.mil>
Cc: James Prikryl <jprikryl@swri.org>; aminor@swri.org; bwerling@swri.org
Subject: RE: NRC Request for Clarifications on Army Responses to JPG EIS RAIs AQ-2, POH-1, POH-3, and CB-5 - Further Clarification of RAI AQ-2

Steve,

The statement made in the October 7, 2015 response that “the environmental monitoring and onsite inspection activities only would generate emissions from worker vehicles while commuting” was intended to indicate that the emissions generated from these activities would be negligible. Following the review of the NRC’s request for further clarification, the activities (including those involving transportation in and around JPG) and associated emissions calculations were reviewed. The onsite inspection activities (or perimeter fence inspection and associated maintenance) were already included in the revised Table AQ-2-1 with the clarification response provided via email on October 7, 2015. The environmental monitoring (or biannual ERM sampling) also was included, but it was called “Env. Inspection Worker

Vehicles." It has been revised to "Biannual ERM Worker Vehicles" for clarity in the attachments. The biannual ERM sampling would include the use of light duty trucks to transport workers in and around JPG (including the southern part of the Cantonment Area) to complete this task. Emission calculations for these activities have been included in the attached MS Excel file. The estimates are believed to be conservative and no additional activities associated with the environmental monitoring or onsite inspections are proposed by the Army at this time.

Let me know if you have any questions or concerns.

Thanks,
Joe

From: Lemont, Stephen [<mailto:Stephen.Lemont@nrc.gov>]
Sent: Friday, November 13, 2015 12:08 PM
To: 'Cherry, Robert N CIV USARMY IMCOM HQ (US)'; Skibinski, Joe N.
Cc: James Prikryl; aminor@swri.org; bwerling@swri.org
Subject: RE: NRC Request for Clarifications on Army Responses to JPG EIS RAIs AQ-2, POH-1, POH-3, and CB-5 - Further Clarification of RAI AQ-2

Bob and Joe,

Thank you for the clarifications and additional information provided in Joe's October 7, 2015 email below. After reviewing this information, we have a request for further clarification of the response "NRC Request for Clarification #1 (RAI AQ-2)" below.

In that response, a statement is made that the environmental monitoring and onsite inspection activities only would generate emissions from worker vehicles while commuting. This statement implies that vehicles generating combustion emissions are not and would not be used to transport people in and around JPG to conduct either of these activities. For the air quality impact analysis in the EIS, NRC staff considers both the quantity(ies) of emissions and the location(s) where these emissions occur (e.g., whether any emissions occur in the southern part of the Cantonment Area). Please indicate whether any vehicles are or would be used to transport people in and around JPG to conduct environmental monitoring or onsite inspections (beyond the worker commuting aspect addressed in the October 7, 2015 response below) and, in particular, whether vehicles are or would be used during the environmental monitoring events to transport staff to and from the two monitoring wells located in the southern part of the Cantonment Area (MW-DU-004 and MW-DU-008). In addition, please provide the detailed air emission inventory for any activities in and around JPG other than worker commuting associated with environmental monitoring or onsite inspections, as applicable.

If possible, please provide the requested additional information within the next two weeks. Please contact me if you have any questions or need additional information.

Thanks,
Steve

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From: Skibinski, Joe N. [<mailto:JOSEPH.N.SKIBINSKI@leidos.com>]

Sent: Wednesday, October 07, 2015 6:48 AM

To: Lemont, Stephen; Cherry, Robert N CIV USARMY IMCOM HQ (US)

Subject: RE: NRC Request for Clarifications on Army Responses to JPG EIS RAIs AQ-2, POH-1, POH-3, and CB-5

Steve,

Please find responses below for NRC's request for clarification sent via email on 29 July 2015. Let me know if you have further questions or concerns.

Take Care,
Joe

NRC Request for Clarification #1 (RAI AQ-2)

In the response to RAI AQ-2, the U.S. Department of the Army (Army) provided a detailed air emission inventory for certain maintenance activities, travel to and from Jefferson Proving Ground (JPG) associated with Big Oaks National Wildlife Refuge (BONWR) visitation, and Indiana Air National Guard aircraft operations. However, the inventory did not provide emission estimates for the following activities identified in the RAI:

- JPG perimeter fence replacement [i.e. the complete fence replacement that occurs about once every 30 years, as identified in Section 7.2 of the Army's Environmental Report (ER)];
- Environmental monitoring;
- Onsite inspections; and
- Supporting activities, such as combustion emissions from commuter vehicle associated with these various activities.

Please provide the detailed air emission inventory for the above activities.

Army Response to NRC Request for Clarification #1 (RAI AQ-2)

In response to this request for clarification, since these activities would occur in the future at JPG, the Army provides estimates of their annual emissions. The associated emission calculation methods are the same as those used in the original Army response to the NRC RAI's submittal provided on July 6, 2015. The environmental monitoring and onsite inspection activities only would generate emissions from worker vehicles while commuting. Table AQ-2-1 (attached) presents updated estimates of annual operational emissions that would occur from proposed activities at JPG.

NRC Request for Clarification #2 (RAI AQ-2)

In the response to RAI AQ-2, the air emission inventory provided by the Army did not include any emission estimates for institutional controls within the JPG site. Some activities associated with managing the depleted uranium at JPG, such as the Environmental Radiation Monitoring (ERM) program conducted under the no-action alternative, require access within the JPG site. Institutional control activities within JPG are currently delegated to the U.S. Fish and Wildlife Service (USFWS) and U.S. Air Force (USAF) under a Memorandum of Agreement (MOA) with the Army [Appendix B of the Army's Decommissioning Plan (DP)]. As stated in RAI AQ-2, consideration should be given to air emissions associated with any activities the Army would need to perform to implement institutional controls within JPG should the MOA between the Army, USFWS, and USAF be terminated (see also RAI CB-5). Institutional control activities within the JPG site identified in the MOA include the following:

- Barricading all JPG interior roads approaching the DU Impact Area
- Placing radiation warning signs within the JPG site
- Maintaining JPG interior roads, including the road accessing the ERM program wells in the DU Impact Area.

Please clarify whether such controls inside the JPG site would continue if the MOA is terminated, and provide the emission inventory for any controls inside the JPG site that would continue should the MOA be terminated

Army Response to NRC Request for Clarification #2 (RAI AQ-2)

The comment requests that the Army clarify whether such controls inside the JPG site would continue upon termination of the MOA and to provide an emissions inventory for any controls inside the JPG site that would continue upon termination of the MOA.

In response to this comment, all of the above activities would occur in the future at JPG. The Army provides additional estimates of annual emissions for barricading and maintaining interior roads (activities identified in the first and third bulleted items above). Emissions due to placing radiation warning signs within the JPG site would occur as part of the Fence Sign Monitor and Repair activity and they were provided in the original Army response to the NRC RAI's July 6, 2015 submittal. The emission calculation methods are the same as those used in the original Army response to the NRC RAI's submittal provided on July 6, 2015. Table AQ-2-1 (attached) presents updated estimates of annual operational emissions that would occur from proposed activities at JPG.

NRC Request for Clarification #3 (RAI AQ-2)

In the Army's response to RAI AQ-2, Table AQ 2-5 specifies that best management practices (BMPs) would reduce fugitive dust emissions from land disturbance by 50%. Without knowing the specific BMPs that would be implemented, it is unclear if the 50% reduction in emissions is warranted. Therefore, please identify the specific mitigation to be implemented to reduce fugitive dust emissions and provide the basis for the 50% efficiency in reduction of these emissions. Furthermore, for the Army to take credit for BMPs to reduce fugitive dust emissions, the Army needs to clearly state their commitment to implement these specific mitigation measures in the additional response to RAI AQ-2.

Army Response to NRC Request for Clarification #3 (RAI AQ-2)

In response to this comment, the BMPs assumed in the analysis are ones that are designed to ensure that activities on JPG would comply with the requirements of the Indiana Department of Environmental Management (IDEM) Rules that pertain to fugitive dust. This includes Indiana Code Title 326 – Air Pollution Control Division – Article 6 – Rule 4 (Fugitive Dust Emissions). Rule 4 limits the amount of fugitive dust that may transport beyond the property line of a source, and if a source exceeds particulate concentration levels identified in the rule, it shall apply additional control measures to ensure that the source complies with these concentration levels (IDEM 2015). The IDEM Office of Air Quality (OAQ) enforces air quality rules in Indiana.

The following are typical measures that the Army would implement to reduce fugitive dust emissions from proposed activities when soil moisture would be low enough to generate fugitive dust. The Army would implement these measures as BMPs and not NEPA mitigations:

- Apply water to areas of actively disturbed ground to increase soil moisture and minimize dust emissions
- Suspend soil disturbance activities when winds exceed 25 mph or when visible dust plumes emanate from a site
- Limit traffic speeds of vehicles on unpaved roads to 15 mph
- Designate personnel to monitor dust suppression activities and increase watering as needed to prevent dust from transporting beyond the JPG property line.

Implementation of these measures would reduce fugitive dust emissions from uncontrolled levels by about 61 percent (Countess Environmental 2006). However, to be conservative, the analysis assumed a dust control efficiency of 50 percent.

Table AQ-2-1 (attached) presents updated estimates of annual operational emissions that would occur from proposed activities at JPG. The emissions are mainly due to aircraft operations that would occur over a large area and well above ground level. According to the Final Environmental Assessment (EA) completed by ANG, air emissions were not expected to result in an exceedance of an ambient air quality standard or in significant impacts (Final EA [page ES-2], Ohio Air National Guard 2001).

References (RAI AQ-2)

Countess Environmental. 2006. WRAP Fugitive Dust Handbook. Table 3-7. Available at http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf.

IDEM (Indiana Department of Environmental Management). 2015. Article 6 - Particulate Rules. Available at <http://www.in.gov/legislative/iac/T03260/A00060.PDF>.

NRC Request for Clarification (RAI POH-1)

In the response to RAI POH-1, the Army described how using different unit conversion factors would produce different results, but did not respond to the NRC's request to clarify the basis for the conversion factor (0.3 pCi/μg) that was used. Therefore, please provide, for example, by reference to the source or by explanation, the technical basis for the specific conversion factor of 0.3 pCi/μg that was used.

Army Response to NRC Request for Clarification (RAI POH-1)

Text in both the ER and the DP citing a value of 9 picocuries per liter (pCi/L) as equating to USEPA's Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCL) of 30 micrograms per liter (μg/L) should be changed to reflect a concentration of 10.8 pCi/L. This change is based on the specific activity of depleted uranium of 3.6×10^{-7} curies per gram (Ci/g), as specified in NRC Footnote 3 to 10 CFR 20, Appendix B for mixtures of DU in which the activities of U-234, U-235, and U-238 are not known. The conversion is completed as follows:

$$(30 \mu\text{g/L}) \times (3.6 \times 10^{-7} \text{ Ci/g}) \times (1 \text{ pCi} / (10^{-12} \text{ Ci})) \times ((10^{-6} \text{ g}) / \mu\text{g}) = 10.8 \text{ pCi/L}$$

Proposed document changes include:

Change 9 pCi/L to 10.8 pCi/L in Section 2.1.2 of the DP Appendix C (second bullet) Change "30 pCi/L Safe Drinking Water Act" to read "30 μg/L Safe Drinking Water Act" in the first paragraph of Section 3.8.5 of the DP.

Change 9 pCi/L to 10.8 pCi/L in Section 2.2.7 of the ER Appendix E (top line on page 2-24) Change "30 pCi/L Safe Drinking Water Act" to read "30 μg/L Safe Drinking Water Act" in the first paragraph of Section 6.1.3.2 of the ER.

Although the concentration of 10.8 pCi/L more accurately equates to USEPA's drinking water standard of 30 μg/L, use of the 9 pCi/L value is 20 percent lower and, therefore, results in a more conservative comparison. As such, although the 9 pCi/L value is conservative, it is notable that it not unduly so and has not resulted in excessive conservatism. It is worth noting that the conclusions about surface water concentrations do not change whether using 9 or 10.8 pCi/L for the comparison because the concentrations in question ranged from 36 ± 3.6 to 51 ± 4.9 pCi/L.

Total uranium concentrations in four surface water samples collected from location JP-W-05 exceeded the SDWA MCL. These samples were collected from a point in the vicinity where overland flow from 500 Center trench intersects with Big Creek. These samples were collected from standing pools of water (i.e., limited or no water flow). Two of the surface water samples were collected on 16 July 2008 (unfiltered sample SAIC10 and filtered sample SAIC10F) and two of the samples were collected on 21 October 2008 (unfiltered sample SAIC11 and filtered sample SAIC11F). In a further evaluation of the isotopic uranium concentrations, the amount of DU present in these samples is determined using the attached spreadsheet (U-238-U-234 activity ratios.xlsx), which is predicated on the assumption that natural uranium in the samples are in secular equilibrium. The weighted mean of the U-238/U-234 ratio in samples SAIC10 (7.3 +/- 2.6) and SAIC10F (6.8 +/- 2.4) is 7.0 +/- 1.8 and the weighted mean of the U-238/U-234 ratio in samples SAIC11 (6.5 +/- 2.2) and SAIC11F (6.7 +/- 2.2) is 6.6 +/- 1.6. According to figure in attached spreadsheet with 95 percent certainty, 95 percent of the uranium in samples SAIC10 and SAIC10F is DU and 88 percent of the uranium in samples SAIC11 and SAIC11F is DU.

NRC Request for Clarification (RAI POH-3)

The Army's response to POH-3 did not address the issue raised in the RAI regarding the parenthetical in the table entry label for "Fraction of Drinking Water from Well Water (all uses including irrigation)." The RAI noted that the table entry is confusing because drinking water is a single water use (i.e., water used only for drinking); and the fraction of drinking

water obtained from well water is controlled by a single input parameter in the model and, therefore, the parameter selection as described by the label could not apply to any other non-drinking water uses such as irrigation or household use.

Because this is a minor clarification issue, the NRC staff is not requesting that the Army make additional corrections. Rather, the NRC staff is providing a description of our understanding of what the Army documented in its response to RAI POH-3, and is requesting confirmation from the Army that the NRC staff's understanding is correct or, if not correct, is requesting that the Army provide the necessary clarification to ensure that the NRC staff understand the intended meaning of the documentation. In this regard, it is the NRC staff's understanding, based on review of the Army's RESRAD dose modeling files and the documentation in Table 3-5 in Appendix C of the DP, that the Army's revision to the Table 3-5 entry for "Fraction of Drinking Water from Well Water (all uses including irrigation)" that retains the original wording of the label is addressing several input parameter choices that identify the source of water for each water use by the receptor (such as drinking, household use, livestock, dairy cow, irrigation for each agricultural area). Therefore, the NRC staff interprets the table entry as addressing the fraction of water obtained from well water for all uses.

Army Response to NRC Request for Clarification (RAI POH-3)

Yes, the understanding of NRC Staff for the Army's revision to Table 3-5 for "Fraction of Drinking Water from Well Water (all uses including irrigation)" is correct. The fraction of water obtained from well water is for all uses. The word "Drinking" should be removed from the entry label so that the new entry label reads "Fraction of Water from Well Water (all uses including irrigation)."

NRC Request for Clarification (RAI CB-5)

In the response to RAI CB-5, the Army indicates that if the Army-USFWS-USAF MOA is terminated, institutional controls will be limited to the JPG boundary or perimeter (i.e., the controls identified in Section 7.2 of the ER and Appendix F of the DP). These controls include barricades, signage, and infrastructure maintenance. The MOA specifies that the USAF and USFWS are responsible for similar controls inside the JPG site. Under the MOA, the USAF is responsible for barricading all roads approaching the DU Impact Area and marking with signs, and both the USAF and USFWS are responsible for maintaining JPG interior roads including the road accessing the ERM program wells in the DU Impact Area. Please clarify whether such controls inside the JPG site would continue if the MOA is terminated. Also, please provide the costs for any controls inside the JPG site that would continue should the MOA be terminated.

Army Response to NRC Request for Clarification (RAI CB-5)

The Army has determined that the controls within the perimeter of JPG will continue to be maintained if the MOA with USAF and USFWS were to be terminated. These controls include maintenance of the swing gate barricades, radiation warning signs, and the interior roads accessing the DU Impact Area and the ERM monitoring wells. Appendix F of the DP should incorporate the additional costs, as presented below. The estimated annual cost to be incurred by the Army if the MOA were to be terminated is approximately \$370,000, as shown in Table CB-5-1.

Present value analysis is a method to evaluate the potential costs, either capital or operations and maintenance related, that occur over different time periods through the duration of a project. The analysis allows for cost comparisons of different alternatives or scenarios on the basis of a single cost figure. This single number, referred to as the present value or present worth, is the amount needed to be set aside at the initial point in time (base year) to ensure that the funds will be available in the future as they are needed, assuming certain economic conditions. The total estimated present worth costs for the Army to implement the annual institutional controls between 1 and 100 years within an annual discount rate of 7 percent is approximately \$5,600,000. Use of longer time periods does not increase the present worth costs substantially. The total estimated present worth costs for the Army to implement the annual institutional controls over 1,000 years, discounted at 3 percent for years 100 to 1,000, is approximately \$5,900,000. The discount rates were selected based on guidance in Appendix N of NUREG 1757 (NRC 2006). It should be noted that based on a discount rate of 1.4 percent (OMB 2015), the total estimated present worth costs for the Army to implement the institutional controls through a 1,000-year period are approximately \$26,000,000.

References

OMB (Executive Office of the President, Office of Management and Budget). 2015. 2015 Discount Rates for OMB Circular Number A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs. Online: http://www.whitehouse.gov/omb/circulars_a094/a94_appx-c/
NRC (Nuclear Regulatory Commission). 2006. NUREG-1757, "Consolidated Decommissioning Guidance, Decommissioning Process for Material Licenses, Final Report." Vol. 1, Rev. 2. ADAMS Accession No. ML063000243; Vol. 2, Rev. 1, ADAMS Accession No. ML063000252; Vol. 3, Rev. 1, ADAMS Accession No. ML12048A683.
U.S. Army. 2000. Memorandum of Agreement between the U.S. Army, U.S. Air Force, and U.S. Fish and Wildlife Service.

From: Lemont, Stephen [<mailto:Stephen.Lemont@nrc.gov>]

Sent: Tuesday, October 06, 2015 10:07 AM

To: Cherry, Robert N CIV USARMY IMCOM HQ (US)

Cc: Skibinski, Joe N.

Subject: RE: NRC Request for Clarifications on Army Responses to JPG EIS RAIs AQ-2, POH-1, POH-3, and CB-5

Bob,

This is to remind you about the RAI clarifications requested in my July 29th email below. I hadn't reminded you about these sooner because I thought they might be addressed in the Army's October 1, 2015, additional RAI responses.

Do you think we can receive responses within the next week or two?

Thanks,
Steve

Stephen Lemont, Ph.D.

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From: Lemont, Stephen

Sent: Wednesday, July 29, 2015 2:24 PM

To: 'Cherry, Robert N CIV USARMY IMCOM HQ (US)'

Cc: 'skibinskij@leidos.com'; Trefethen, Jean; James Prikryl; 'aminor@swri.org'; Pat LaPlante (plaplante@swri.org); 'bwerling@swri.org'

Subject: NRC Request for Clarifications on Army Responses to JPG EIS RAIs AQ-2, POH-1, POH-3, and CB-5

Bob,

The NRC and CNWRA staff have completed their review of the Army's July 6, 2015, responses to the NRC's JPG EIS RAIs. Based on this review, we have the requests for clarifications presented below on the Army's responses to RAIs AQ-2, POH-1, POH-3, and CB-5. Some of these requests relate to information that had been requested in the original RAIs but that may not have been provided in the responses. Note I have copied Joe Skibinski on this email.

We look forward to receiving the Army's responses. Please contact me if you or the Army's contractors have any questions or need additional information. We would be glad to have a conference call on these matters if

necessary. Note that I will be on leave next week, August 3-7, and will not have access to phone messages or email during that time. I will be returning to work on Monday, August 11.

REQUEST FOR CLARIFICATIONS ON ARMY'S RAI RESPONSES DATED JULY 6, 2015

AIR QUALITY (AQ)

RAI AQ-2

Please provide the requested information and/or clarifications as necessary for the following three items:

1. In the response to RAI AQ-2, the U.S. Department of the Army (Army) provided a detailed air emission inventory for certain maintenance activities, travel to and from Jefferson Proving Ground (JPG) associated with Big Oaks National Wildlife Refuge (BONWR) visitation, and Indiana Air National Guard aircraft operations. However, the inventory did not provide emission estimates for the following activities identified in the RAI:
 - JPG perimeter fence replacement [i.e. the complete fence replacement that occurs about once every 30 years, as identified in Section 7.2 of the Army's Environmental Report (ER)];
 - Environmental monitoring;
 - Onsite inspections; and
 - Supporting activities, such as combustion emissions from commuter vehicle associated with these various activities.

Please provide the detailed air emission inventory for the above activities.

2. In the response to RAI AQ-2, the air emission inventory provided by the Army did not include any emission estimates for institutional controls within the JPG site. Some activities associated with managing the depleted uranium at JPG, such as the Environmental Radiation Monitoring (ERM) program conducted under the no-action alternative, require access within the JPG site. Institutional control activities within JPG are currently delegated to the U.S. Fish and Wildlife Service (USFWS) and U.S. Air Force (USAF) under a Memorandum of Agreement (MOA) with the Army [Appendix B of the Army's Decommissioning Plan (DP)]. As stated in RAI AQ-2, consideration should be given to air emissions associated with any activities the Army would need to perform to implement institutional controls within JPG should the MOA between the Army, USFWS, and USAF be terminated (see also RAI CB-5). Institutional control activities within the JPG site identified in the MOA include the following:
 - Barricading all JPG interior roads approaching the DU Impact Area
 - Placing radiation warning signs within the JPG site
 - Maintaining JPG interior roads, including the road accessing the ERM program wells in the DU Impact Area.

Please clarify whether such controls inside the JPG site would continue if the MOA is terminated, and provide the emission inventory for any controls inside the JPG site that would continue should the MOA be terminated.

3. In the Army's response to RAI AQ-2, Table AQ 2-5 specifies that best management practices (BMPs) would reduce fugitive dust emissions from land disturbance by 50%. Without knowing the specific BMPs that would be implemented, it is unclear if the 50% reduction in emissions is warranted. Therefore, please identify the specific mitigation to be implemented to reduce fugitive dust emissions and provide the basis for the 50% efficiency in reduction of these emissions. Furthermore, for the Army to take credit for BMPs to reduce fugitive dust emissions, the

Army needs to clearly state their commitment to implement these specific mitigation measures in the additional response to RAI AQ-2.

PUBLIC AND OCCUPATIONAL HEALTH (POH)

RAI POH-1

In the response to RAI POH-1, the Army described how using different unit conversion factors would produce different results, but did not respond to the NRC's request to clarify the basis for the conversion factor (0.3 pCi/μg) that was used. Therefore, please provide, for example, by reference to the source or by explanation, the technical basis for the specific conversion factor of 0.3 pCi/μg that was used.

RAI POH-3

The Army's response to POH-3 did not address the issue raised in the RAI regarding the parenthetical in the table entry label for "Fraction of Drinking Water from Well Water (all uses including irrigation)." The RAI noted that the table entry is confusing because drinking water is a single water use (i.e., water used only for drinking); and the fraction of drinking water obtained from well water is controlled by a single input parameter in the model and, therefore, the parameter selection as described by the label could not apply to any other non-drinking water uses such as irrigation or household use.

Because this is a minor clarification issue, the NRC staff is not requesting that the Army make additional corrections. Rather, the NRC staff is providing a description of our understanding of what the Army documented in its response to RAI POH-3, and is requesting confirmation from the Army that the NRC staff's understanding is correct or, if not correct, is requesting that the Army provide the necessary clarification to ensure that the NRC staff understand the intended meaning of the documentation. In this regard, it is the NRC staff's understanding, based on review of the Army's RESRAD dose modeling files and the documentation in Table 3-5 in Appendix C of the DP, that the Army's revision to the Table 3-5 entry for "Fraction of Drinking Water from Well Water (all uses including irrigation)" that retains the original wording of the label is addressing several input parameter choices that identify the source of water for each water use by the receptor (such as drinking, household use, livestock, dairy cow, irrigation for each agricultural area). Therefore, the NRC staff interprets the table entry as addressing the fraction of water obtained from well water for all uses.

COST-BENEFIT (CB)

RAI CB-5

In the response to RAI CB-5, the Army indicates that if the Army-USFWS-USAF MOA is terminated, institutional controls will be limited to the JPG boundary or perimeter (i.e., the controls identified in Section 7.2 of the ER and Appendix F of the DP). These controls include barricades, signage, and infrastructure maintenance. The MOA specifies that the USAF and USFWS are responsible for similar controls inside the JPG site. Under the MOA, the USAF is responsible for barricading all roads approaching the DU Impact Area and marking with signs, and both the USAF and USFWS are responsible for maintaining JPG interior roads including the road accessing the ERM program wells in the DU Impact Area. Please clarify whether such controls inside the JPG site would continue if the MOA is terminated. Also, please provide the costs for any controls inside the JPG site that would continue should the MOA be terminated.

Thanks,
Steve

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Table AQ-2-1. Annual Operational Emissions for Activities at the JPG – Year 2015

<i>Activity/Source</i>	<i>Air Pollutant Emissions (Tons per Year)*</i>						
	<i>VOC</i>	<i>CO</i>	<i>NOx</i>	<i>SO2</i>	<i>PM10</i>	<i>PM2.5</i>	<i>CO2 (mt)</i>
<i>Maintenance Activities</i>							
Concrete Pavement Repairs	0.00	0.00	0.01	0.00	0.00	0.00	2
Perimeter Mowing	0.05	0.97	0.08	0.00	0.00	0.00	8
Perimeter Fence Inspection	0.03	0.54	0.05	0.00	0.00	0.00	4
Perimeter Fence Repair	0.00	0.06	0.01	0.00	0.00	0.00	0
Fence Sign Monitor and Repair	0.01	0.08	0.01	0.00	0.00	0.00	1
Maintain Interior Roads	0.01	0.14	0.02	0.00	0.00	0.00	3
Replace Barricades on Interior Roads	0.00	0.00	0.00	0.00	0.00	0.00	0
Replace Perimeter Fence	0.01	0.05	0.08	0.00	0.01	0.01	24
<i>Vehicle Trips</i>							
Visitor Vehicles	0.30	6.28	1.00	0.01	0.07	0.02	464
Onsite Inspection Worker Vehicles	0.00	0.03	0.00	0.00	0.00	0.00	2
Biannual ERM Worker Vehicles	0.00	0.01	0.00	0.00	0.00	0.00	1
<i>Aircraft Operations</i>							
JPG MOA A	2.30	3.30	20.10	0.70	0.20	0.20	1,954
JPG MOA B	1.30	2.00	11.90	0.50	0.10	0.10	1,396
R-3403 (JPG Range) – Net Increase	1.10	1.50	9.00	0.30	0.10	0.10	838
Total Annual Emissions	5.14	15.50	42.29	1.51	0.48	0.43	4,701
Notes: CO = carbon monoxide, CO2 = carbon dioxide, mt = metric tons, NOx = nitrogen oxides, PM10 = particulate matter less than or equal to 10 microns in diameter, PM2.5 = particulate matter less than or equal to 2.5 in diameter, SO2 = sulfur dioxide, VOC = volatile organic compound.							
* All annual emissions are in units of tons per year, except CO ₂ emissions are in metric tons per year.							

REVISED Table AQ-2-2. Off-road Equipment Maintenance Activity Data for JPG - Year 2015

Activity/Equipment Type	Hp Rating	Ave. Daily Load Factor	Number Active	Hourly Hp-Hrs	Hours/Day	Daily Hp-Hrs	Work Days	Total Hp-Hrs
Road Maintenance								
Concrete Paver	25	0.42	1	11	4	42	3	126
Concrete Pump Truck, 110' Boom	285	0.42	1	120	3	359	3	1,077
Concrete Vibrator	8	0.42	1	3	4	13	3	40
Loader	215	0.36	1	77	3	232	3	697
Water Truck - 5000 Gallons	175	0.38	1	67	2	133	3	399
Fugitive Dust (1)	NA	NA	0.1	NA	8	NA	3	0.3
Perimeter Mowing								
Mower	40	0.33	1	13	7	92	108	9,979
Perimeter Fence Inspection								
Specialty Cart (Gator)	50	0.58	2	58	7	406	26	10,556
Fence Repair								
Specialty Cart (Gator)	50	0.58	1	29	7	203	3	609
Fence Sign Monitor/Replace								
Specialty Cart (Gator)	50	0.58	1	29	7	203	4	812
Maintain Interior Roads								
Grader - 160H	200	0.41	1	82	7	574	5	2,870
Mower	40	0.33	1	13	7	92	15	1,386
Replace Barricades on Interior Roads								
Crane-Mounted Truck	225	0.25	1	56	1	56	6	338
Replace Perimeter Fence (2)								
Chain Saw	4	0.75	1	3	4	12	36	432
Crane-Mounted Truck	225	0.25	1	56	4	225	240	54,000

Notes: (1) Number Active is acres disturbed at one time and Total Hp-Hrs is acre-days for the entire activity.

(2) This activity would occur over a 2-year period and the analysis presents emissions that would occur within a calendar year.

REVISED Table AQ-2-3. On-road Truck Maintenance Activity Data for JPG - Year 2015

Activity/Equipment Type	Miles/ Round Trip	Daily Trips	Daily Miles	Work Days	Total Miles
Road Maintenance					
Concrete Trucks	15	3	49	3	147
Supply Trucks	20	1	20	3	60
Replace Barricades on Interior Roads					
Supply Trucks	20	1	20	2	40
Replace Perimeter Fence					
Supply Trucks	20	3	60	240	14,400

REVISED Table AQ-2-4. Visitor Traffic Activity Data for JPG - Year 2015

Activity	Max 1-Time Capacity	Max Events/Yr	Average Distance (Mi)	Max Distance per Year (Mi)
Deer Hunting	500	15	24	180,000
Spring Turkey Hunting	220	15	24	79,200
Fall Turkey Hunting	500	14	24	168,000
Squirrel Hunting	72	35	24	60,480
Fishing	200	70	37	518,000
Collecting (Mushrooms, etc.)	2	80	24	3,840
Wildlife Observation	80	80	18	115,200
Guided Tours	50	10	18	8,750
Total Distance for Autos (1)				566,735
Total Distance for Light Duty Trucks (1)				566,735

Notes: (1) Assumes that the visitor vehicle fleet would consist of 50/50 percent autos/light duty trucks

This assumes no ridesharing - 1 person/vehicle

NEW Table. Worker Vehicle Data for Maintenance Activities at JPG - Year 2015

Activity/Equipment Type	Miles/ Round Trip	Daily Trips	Daily Miles	Work Days	Total Miles
Onsite Inspection					
Worker Vehicle (1)	24	2	48	104	4,992
Biannual ERM					
Worker Vehicle (1)	24	2	48	52	2,496

Notes: (1) Assumes the worker vehicle fleet would consist of 50/50 percent autos/light duty trucks.

This assumes no ridesharing - 1 person/vehicle

REVISED Table AQ-2-5. Air Emission Factors for JPG Maintenance Activities and Visitor Trips - Year 2015

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)							References
		VOC	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	
Year 2015									
Concrete Paver (16 < hp <=25)	D	0.05	2.40	4.46	0.00	0.35	0.34	595	(1)
Off-highway Trucks (175 < hp <= 300)	D	0.02	0.27	1.13	0.00	0.10	0.10	536	(1)
Surfacing Equipment (6 < hp <=11)	D	0.06	4.73	4.35	0.00	0.39	0.38	594	(1)
Other Construction Equipment (175 < hp <= 300)	D	0.22	0.86	2.63	0.00	0.16	0.16	536	(1)
Front Mowers (25 < hp 40)	G	4.48	87.82	7.39	0.01	0.07	0.06	775	(1)
Specialty Vehicles/ Carts (40 < hp < 50)	G	5.88	92.64	7.77	0.01	0.07	0.06	780	(1)
Passenger Cars - 25 mph	G	0.16	2.88	0.36	0.01	0.07	0.01	377	(2)
Passenger Cars - 25 mph	G	0.10	2.63	0.37	0.01	0.02	0.01	300	(2)
Composite - Passenger Cars	G	0.13	2.75	0.36	0.01	0.05	0.01	338	(3)
Passenger Trucks - 25 mph	G	0.46	7.83	1.21	0.01	0.10	0.02	525	(2)
Passenger Trucks - 25 mph	G	0.23	6.79	1.25	0.01	0.04	0.02	433	(2)
Composite - Passenger Trucks	G	0.34	7.31	1.23	0.01	0.07	0.02	479	(3)
Short Haul Truck >33k Lb. - 10 mph	D	1.43	3.65	9.42	0.02	1.25	0.67	2,233	(2)
Short Haul Truck >33k Lb. - 25 mph	D	0.68	2.07	5.31	0.01	0.55	0.34	1,331	(2)
Short Haul Truck >33k Lb. - 55 mph	D	0.39	1.34	3.25	0.01	0.25	0.19	851	(2)
Composite - Short Haul Truck >33k Lb.	D	0.66	2.01	5.10	0.01	0.53	0.33	1,277	(4)
All Years									
Disturbed Ground - Fugitive Dust						27.50	2.75		(5)

Notes: (1) Emissions factors estimated with the use of the EPA NONROAD2008a model via MOVES interface for Indiana.

(2) Estimated with the use of the EPA MOVES2014 model and based upon annual default parameters for Ripley County. Units are in grams per mile.

Particulate emission factors include emissions from break and tire wear.

(3) Equal to 50/50% 25/55 mph factors.

(4) Equal to 10/60/30% 10/25/55 mph factors.

(5) Units in lbs/acre-day from section 11.2.3 of AP-42 (USEPA 1995). Emissions reduced by 50% from uncontrolled levels to simulate implementation of best management practices (BMPs) for fugitive dust control

REVISED Table AQ-2-6. Annual Emissions due to Maintenance Activities at JPG - Year 2015

Construction Activity/Equipment Type	Tons per Year						
	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO ₂
Road Maintenance (Off-road Equipment)							
Concrete Paver	0.00	0.00	0.00	0.00	0.00	0.00	0.08
Concrete Pump Truck, 110' Boom	0.00	0.00	0.00	0.00	0.00	0.00	0.64
Concrete Vibrator	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Loader	0.00	0.00	0.00	0.00	0.00	0.00	0.41
Water Truck - 5000 Gallons	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Fugitive Dust					0.00	0.00	
Concrete Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.21
Supply Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.08
Total - Road Maintenance	0.00	0.00	0.01	0.00	0.00	0.00	1.68
Perimeter Mowing							
Mower	0.05	0.97	0.08	0.00	0.00	0.00	8.52
Total - Perimeter Mowing	0.05	0.97	0.08	0.00	0.00	0.00	8.52
Perimeter Fence Inspection							
Specialty Cart (Gator)	0.07	1.08	0.09	0.00	0.00	0.00	9.07
Total - Perimeter Fence Inspection	0.07	1.08	0.09	0.00	0.00	0.00	9.07
Fence Repair							
Specialty Cart (Gator)	0.00	0.06	0.01	0.00	0.00	0.00	0.52
Total - Fence Repair	0.00	0.06	0.01	0.00	0.00	0.00	0.52
Fence Sign Monitor/Replace							
Specialty Cart (Gator)	0.01	0.08	0.01	0.00	0.00	0.00	0.70
Total - Fence Sign Monitor/Replace	0.01	0.08	0.01	0.00	0.00	0.00	0.70
Maintain Interior Roads							
Grader - 160H	0.00	0.00	0.01	0.00	0.00	0.00	1.70
Mower	0.01	0.13	0.01	0.00	0.00	0.00	1.18
Total - Maintain Interior Roads	0.01	0.14	0.02	0.00	0.00	0.00	2.88
Replace Barricades on Interior Roads							
Crane-Mounted Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.20
Supply Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Total - Replace Barricades on Interior Roads	0.00	0.00	0.00	0.00	0.00	0.00	0.26
Replace Perimeter Fence							
Chain Saw	0.00	0.02	0.00	0.00	0.00	0.00	0.18
Crane-Mounted Truck	0.00	0.01	0.03	0.00	0.00	0.00	15.96
Supply Trucks	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Total - Replace Perimeter Fence	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!

Notes: Off-road Equipment Emission Formula: Annual Emission (tpy) = Usage (hp-hr/yr) * EF (g/hp-hr) / 453.6 (g/lb) / 2,000 (lb/ton)

REVISED Table AQ-2-7. Visitor and Worker Vehicle Activity Data for JPG - Year 2015

Vehicle Type	Tons per Year						
	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO ₂
Visitor Trips							
Automobile	0.08	1.72	0.23	0.00	0.03	0.01	211.43
Light Duty Truck	0.21	4.57	0.77	0.01	0.04	0.01	299.51
Total - Visitor Trips	0.30	6.28	1.00	0.01	0.07	0.02	510.95
Onsite Inspection Worker Vehicles							
Automobile	0.00	0.01	0.00	0.00	0.00	0.00	0.93
Light Duty Truck	0.00	0.02	0.00	0.00	0.00	0.00	1.32
Total - Onsite Inspection Worker Vehicles	0.00	0.03	0.00	0.00	0.00	0.00	2.25
Biannual ERM Worker Vehicles							
Automobile	0.00	0.00	0.00	0.00	0.00	0.00	0.47
Light Duty Truck	0.00	0.01	0.00	0.00	0.00	0.00	0.66
Total - Biannual ERM Worker Vehicles	0.00	0.01	0.00	0.00	0.00	0.00	1.13

Notes: On road Vehicle Emission Formula: Annual Emission (tpy) = Usage (mi/yr) * EF (g/mi) / 453.6 (g/lb) / 2,000 (lb/ton)

REVISED Table AQ-2-8. Annual Emission from Proposed Air National Guard Actions in JPG - Year 2015

Airspace/Scenario	Tons per Year						CO ₂
	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	(mt)
JPG MOA A							
Proposed	2.30	3.30	20.10	0.70	0.20	0.20	1,954
JPG MOA B							
Proposed	1.30	2.00	11.90	0.50	0.10	0.10	1,396
R-3403 (JPG Range)							
Proposed	6.10	8.80	53.30	1.90	0.60	0.60	5,305
Baseline	5.00	7.30	44.30	1.60	0.50	0.50	4,467
Net Change	1.10	1.50	9.00	0.30	0.10	0.10	838
Total Net Increase - All Airspaces	4.70	6.80	41.00	1.50	0.40	0.40	4,188

Notes: All data from ANG Actions in Ohio and Indiana EA Table 4.5-1, except CO₂ emissions estimated from SO₂ emissions.

