



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

September 16, 2008

Mr. William Kowalewski, PE, PMP, Project Manager
Buffalo District, U.S. Army Corps of Engineers
1776 Niagara Street
Buffalo, NY 14207-3199

Dear Mr. Kowalewski:

The purpose of this letter is to transmit the rest of the comments of the U.S. Environmental Protection Agency (EPA) based on our review of the Baseline Risk Assessment (BRA) Report related to the Niagara Falls Storage Site (NFSS), dated December 2007. This completes our review of the Remedial Investigation Report (RIR) and BRA for the NFSS. Our detailed comments on the BRA are attached.

Overall, the data coverage and the methodology used by the USACE for this BRA is professional, thorough and of high quality. Though, depending on the additional data that will be collected as part of the RIR efforts both on-site and off-site, this BRA may need to be revised, or amended.

The methodology used to identify Site Related Contaminants (SRCs) seems to be inappropriate [see comment G1]. The recommended risk assessment policy does not provide for background comparison as a method to select contaminants of concern (COCs) in the human health or ecological risk assessment. The EPA recommended policy is to include all radionuclides and chemicals that exceed human health and ecological risk-based screening values in the risk assessment and discuss any comparisons to background in the Uncertainty Section of the report. Although, this may not impact the current outcome of the report (i.e., concluding unacceptable risks due to SRC), this may become of concern during the late phases of NFSS future remedial actions. Risk management shouldn't be part of the BRA, rather it should be part of the Feasibility Study [see comment G5].

Recommendations

We recommend that a revision or a supplement to the BRA be provided by the USACE which includes and portrays additional data collected from on-site and off-site locations. Such a supplement needs to re-look at the appropriateness of the groundwater model used. Off-site groundwater monitoring and sampling would be necessary to assure that modeling did not inappropriately extrapolate out contamination plumes.

We recommend that the cognizant and responsible Federal and State agencies convene to determine potential courses of action for vicinity properties that have been remedied and cleared in the past, but where newer data suggests further review, and possibly even further remediation,

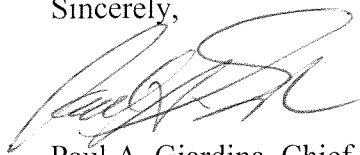
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may be necessary.

Out detailed comments follow. We appreciate the opportunity to provide comment to this RIR.

Should you have any questions, please feel free to contact me at 212-637-4010

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul A. Giardina', written in a cursive style.

Paul A. Giardina, Chief
Radiation and Indoor Air Branch

Attachments [1]

cc.: John Rintoul, Deputy Commander, USACE, Buffalo District
Robert Phaneuf, Director, New York State Department of Environmental Conservation

GENERAL COMMENTS

- G1 – It is inappropriate in the Baseline Risk Assessment (BRA) to compare the detected contaminant concentrations to background concentrations when identifying site-related constituents (SRCs). Recommended risk assessment policy does not provide for background comparison as a method to select contaminants of concern (COCs) in the human health or ecological risk assessment. The EPA recommended policy is to include all radionuclides and chemicals that exceed human health and ecological risk-based screening values in the risk assessment and discuss any comparisons to background in the Uncertainty Section of the report. This could result in the addition of radionuclides or chemicals to the list of SRCs and potentially increase the calculated values of the Baseline Risk Assessment.
- G2 – The drinking water exposure parameters for the subsistence adult and child and the resident adult and child of 2.3 and 0.5 L/day are not recommended by EPA Region 2. An adult drinking water ingestion rate of 2 L/day and a child's ingestion rate of 1 L/day are the recommended values. The use of these values in the risk assessment calculations will change the cancer risk and non-cancer hazard index values (which are already greater than target levels) for the receptors potentially exposed to groundwater.
- G3 – The equation for the calculation of the PRGs for the subsistence farmer could not be found in the appendices of the BRA. EPA would like to check this equation so that a spot check of the PRGs can be performed.
- G4 – For illustration purposes only, the upper water-bearing zone groundwater chemical concentrations should be compared to surface water screening criteria in the ecological risk assessment to determine if any potential exceedances may exist.
- G5 – The screening ecological risk assessment contains a Weight of Evidence Assessment (Section 4.6) that attempts to understand the contexts of the risks based on various pieces of evidence and aims to “extend the separate findings from risk assessment towards the holistic view of risk management.” Risk management is something that needs to be presented in a separate document (e.g. Technical Memo or the Feasibility Study) where the risk assessment results and other considerations (economic, future land use, community acceptance, etc.) are discussed and weighed to determine if remedial actions are necessary. Since this Weight of Evidence Assessment presents information for use in risk management decisions, it should be removed from this risk assessment report.
- G6 – There should be an explanation in the ecological risk assessment as to why carnivorous fish are not included as receptors of concern. It seems that the aquatic habitats at the site may not be suitable for fish survival but it is not stated specifically.
- G7 – The statements presented in Section 4.2.1.1 Terrestrial Habitats need to be verified.

The section states that areas of the site exhibit wetlands characteristics but their federal jurisdictional status has not been determined. The conclusion of the section is that "... no federally designated wetlands exist on NFSS (NYSDEC 2004)." It seems that wetlands delineation is necessary for the site to determine if federally regulated wetlands are present or absent.

- G8 – The BRA addresses the on-site conditions and the potential migration of contaminant to off-site locations. There is a potential for the presence of contamination at vicinity properties, off-site underground utilities, and at outfall locations that are not addressed in the RIR or the BRA. The off-site areas should be investigated and the BRA revised or amended if deemed necessary.
- G9 – At other sites, when radium-226 or radium-228 are present, elevated levels of radon-222 and radon-220 were measured in people's homes due to site related contamination. At times, the contaminated material was brought in indoors and reused in the house structures. Other times, the radon entered the homes via, cracks, unfinished floors, or basement sumps. Please, provide a justification why the radon pathway was not considered in the BRA given that radium-226 is the primary site contaminant.

SPECIFIC COMMENTS

- S1 – Page 1-2, Section 1.1: The strategy and objectives are tailored to address the contaminants with the NFSS site boundary and the potential for off-site contaminant migration. Depending on the results of future off-site investigations, the strategy and objectives may need to be expanded to include vicinity properties, underground utilities, and outfalls. Also, off-site groundwater monitoring and sampling is necessary as the groundwater modeling may not be appropriate for this application.
- S2 – Page 3-3, Section 3.1.1, last paragraph: The paragraph discusses the finding of the hot rock about the size of a dime that contained over 800,000 pCi/g of radium-226 and similar elevated concentrations of other radionuclides. The paragraph then provides a justification that such results were not used in the risk/dose assessment because the rock was effectively removed. The USACE needs to discuss the likelihood of similar rocks to be present in surface and subsurface soils at the site or consider to include such results in the risk/dose assessment.
- S3 – Page 4-13, Section 4.2.4.1, Section 4.2.4.1, Soil Dwelling Invertebrates Terrestrial Exposure Class: The fact that earthworms and other soil dwelling invertebrates serve as food items for insectivorous birds and mammals can be added to this section.
- S4 – Page 4-16, Section 4.2.4.2, Aquatic Biota-Eating Predator Exposure Class: An upper trophic level fish species is missing as a selected receptor of concern for this

exposure class. There should be a discussion of the reason(s) why no fish are evaluated through the food chain pathway. This comment relates to the General Comment mentioned above.

- S5 – Page 4-19, Section 4.3.2.1, Screening Steps for COPCs, Steps 2 and 3: Both of these screening steps state that HQs should be summed “... separately for organic and inorganic COPCs to obtain HIs for soil, sediment, and surface water.” EPA ecological risk assessment guidance recommends that all HQs be summed together to calculate a Hazard Index.
- S6 – Page 4-19, Section 4.3.2.1, Screening Steps for COPCs, Step 3: This step states that the lower of the RME or maximum concentration will be used to calculate average daily doses. EPA guidance recommends that the average concentration be used in the risk assessment calculations when the maximum concentration is not used (less conservative screening).
- S7 – Section 4.3.2.3, Exposure Evaluation for COPCs: The ADD equations need to be revised to include parentheses around the BAFs or BCFs and the corresponding media/biota intake value.
- S8 – Page 4-21, Section 4.3.2.3, Exposure Evaluation for COPCs: The ADD equation for terrestrial animals needs to be corrected; the term BCFa is present in the equation and BAFa in the definition of terms.
- S9 – Table 2.2: There is no information on the source of the toxicity values used in this table. They should be included so that these values can be verified as the most up-to-date EPA approved values.
- S10 – Table 2.6: The resident child HI from ingestion of food items of 0.08 does not agree with the value of 0.8 presented on page 2-41. Please correct this discrepancy.
- S11 – Table 2.7: The total RME ILCR for the construction worker presented here is 1.4E+02. The correct value should be 9.4E-04. Please correct this discrepancy.
- S12 – Table 2.8: The subsistence farmer adult and child HI values from ingestion of food items of 0.1 and 0.3 do not agree with the values presented on page 2-45 (0.01 and 0.03). Also, the recreational adolescent HI from exposure to surface soil of 0.0004 does not agree with the value on page 2-47 of 0.0003. Please correct these discrepancies.
- S13 – Table 2.10: The surface water HIs for the construction worker and maintenance worker of 0.00005 do not agree with the values (0.00004) presented on pages 2-52 and 2-53. Please correct this discrepancy.
- S14 – Table 3.7 through Table 3.17: The footnotes state “*Values are provided if the exposure pathway is identified as complete in the conceptual site model, otherwise*”

"--" is shown". For all the receptors, sometimes either "--" is shown for risk with the associated dose or vise-versa. It is unclear how can the exposure pathway can be identified for the dose assessment and not identified for the risk assessment or vise-versa. Please revise or explain with justification.

S15 – Table 4.2:

- a) The management goals for both the terrestrial and aquatic populations and communities mention "... past MED activities"; this should be changed to NFSS instead.
- b) The decision rules for assessment endpoints 3, 4, 5, 6, 7, and 8 are missing text describing the outcome if the sum of fractions **or** sum of HQs is greater than 1.
- c) Assessment Endpoint 7 is missing the selected receptor of mallard duck.

S16 – Table 4.3 through Table 4.11: Conservative wildlife exposure parameters need to be used in the calculation for average daily dose in a screening ecological risk assessment. In order to maximize the dose, the minimum body weight and the maximum ingestion rate for each selected receptor needs to be used. A review of these tables indicates that several average values (body weight, food ingestion rate, and water ingestion rate) were used instead of the most conservative values for the short-tailed shrew, red fox, red-tailed hawk, mallard duck, raccoon, great blue heron, and eastern cottontail. The American robin had its diet divided into a plant fraction and animal fraction of 50% each. In order to be conservative, the most contaminated dietary component, either plant or animal, should be used as 100% of the diet.

S17 – Throughout the more appropriate acronym for Screening-Level Ecological Risk Assessment is SLERA. Consider replacing "SERA" with "SLERA".