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May 28, 1999

Commanding Officer
Attn: Mark Taylor/1861MT
SOUTHNAVFACENGCOM
2155 Eagle Drive
P.O. Box 190010
North Charleston, SC 29419-9010

Subject: CTO-094; NSA Mid-South RFI, Millington, Tennessee

Document Transmittal: *RCRA Facility Investigation Report — Northside Landfill; SWMU 60 (Revision 3)*, May 28, 1999

Reference: Contract N62467-89-D-0318 (CLEAN II)

Dear Sir:

Please find enclosed one copy of revised text, covers and spines for the *RCRA Facility Investigation Report — Northside Landfill; SWMU 60 (Revision 3)*. These should be inserted in your existing binder to replace the Revision 2 text, cover and spine. Since the Revision 2 appendices did not change, they should be retained, and the enclosed human health risk assessment memo should be added as Appendix I. Responses to USEPA comments are also enclosed. As requested, copies have been distributed to the BRAC Cleanup Team (BCT) and others as shown on the attached NSA Mid-South RFI Distribution List.

If you have any questions or comments of a technical nature, please contact me or Ben Brantley at 901/372-7962. Comments or questions of a contractual nature should be directed to Debra Blagg at the same number.

Sincerely,

EnSafe Inc.

Lawson M. Anderson

By: Lawson M. Anderson, CHMM
Task Order Manager

Enclosures: As Stated
cc: Contracts File: CTO-094 (w/out enclosure)
Project File: 0094-22131 (w/out enclosure)
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EPA Comments
RFI Report for SWMU 60 Revision: 2 dated April 7, 1998

Comment:
Page 7-37, 2nd bullet — This bullet seems out of place for the differences between RME and CT (is used to adjust the ingestion rate to reflect other sources of drinking water).

Response: The text has been modified accordingly.

Comment:
Page 7-38, Section 7.8, 1st paragraph — This paragraph references Section 7.5.5 which does not exist. It appears that correct reference should be 7.5.4.

Response: The text has been modified to include the correct reference.

Comment:
Table 7.5 — Some chemicals such as arsenic and beryllium were retained as COPCs despite their maximum concentrations not exceeding their background value. It appears these chemicals should have been screened from being COPCs.

Response: Agreed. These elements have been removed from the HHRA.

Comment:
Table 7.34 and 7.35 — There are inconsistencies with significant figures in these tables.

Response: Agreed. The significant figures have been corrected.

Comment:
Table 8.1 — The reference concentrations in this table do not match the background concentrations in Table 7.5 (see arsenic and beryllium)

Response: The reference concentrations in Table 8.1 have been updated. These changes were minor and did not require revisions to the ERA.

Comment:
Table 8.1 — The maximum concentration for arsenic, beryllium, chromium, and mercury did not exceed their reference concentrations; however, they were retained as ECPCs. It appears these chemicals should have been screened from being ECPCs.

Response: SWMU 60 constituents designated as ECPCs in Table 1 were selected based on their maximum concentration exceeding literature-derived ecological benchmarks. The maximum concentrations of As, Cr, and Hg did exceed the lowest benchmark, therefore were considered ECPCs. Beryllium was not considered an ECPC.

As recommended, the ECPC selection criteria for SWMU 60 has been revised to include only those contaminants which exceed both their respective background concentration and an ecological benchmark. Under this criteria, As, Cr, Hg, and V no longer qualify as ECPCs at SWMU 60.

Comment:
Page 8-9, 3rd sentence — It appears that cadmium should be changed to vanadium.

Response: The text has been revised.

Q:\T.094\SWMU.60\SWMU 60 RFI Revision 3\Revision 2.RPT\response to epacom.wpd

SWMU 60

2.0 GENERAL COMMENTS

The references to sampling events in the text is not clear or consistent. Different names are assigned to sampling events throughout the text, and the sampling dates are often inconsistently reported. Therefore, it is difficult to follow discussion of sampling events and results. For example, the table below lists the dates associated with groundwater sampling events as provided in various sections of the text. It is recommended that extensive review should be conducted of all sampling information, and consistent information should be presented in the text. Additional inconsistencies and errors of this nature are provided in the Specific Comments Section.

Sample Event	Dates Provided in Section 3	Dates Provided in Table 4-1	Dates Provided in Section 4.2
Initial groundwater sampling	January 1995	Jan-March 1995	March 1995
First round long-term sampling	March 1995	Nov-Dec 1995	November 1995
Second round long-term sampling	June 1995	April 1996	April 1996

Response: Sections 3 and 4 have been revised accordingly.

Contradictory statements are made in the text regarding the use of micropurging as a groundwater sampling technique. Section 4.2 (page 4-21) presents the following rationale defending the fact that several wells were not micropurged prior to sampling:

> Micropurging techniques are based upon the premise that stagnanat water in the well casing does not completely mix with groundwater flowing through the screen...Recent studies have shown that water chemistry results from micropurging results are comparable to traditional sampling methods. It is therefore unneccessary to purge three casing volumes using the low flow method.

However, comparison of chemical analysis results between wells indicated differences in contaminant concentrations for some metals. The text in later sections attributes the differences in concentrations to the fact that some wells were micropurged and others were not. The text should be changed to

delete the argument that micropurging is not necessary.

Response: The text in Section 4.2 is presenting the rationale *for* micropurging and why it is a preferred sampling method over conventional sampling methods (removal of three well volumes) due to the lower turbidity in collected samples. However, due to the low yield of the aquifer and the relatively small draw down tolerances called for in the procedure, micropurging was not a feasible alternative for all the SWMU 60 monitoring wells. Therefore, some wells were micropurged while others underwent a three volume purge or were bailed dry. Those wells that were micropurged, generally contained less turbidity (and associated metals) than those that were not micropurged.

The text (Section 7.6.4) states that "construction workers would be exposed to the media assessed in this HHRA Report, and the current site worker scenario is a generally conservative estimate of their exposure and resulting risk/hazard." However, future road construction workers are likely to be exposed to subsurface soils. Subsurface soil has not been adequately evaluated in this HHRA Report. Road construction workers are also likely to have higher dermal and ingestion exposures. Therefore, it is not sufficient to assume that the evaluation of current site workers is sufficient to characterize the exposure of future construction workers. Finally, as was agreed upon in the meeting between representatives from EPA, the State of Tennessee, and the Navy, a future construction worker scenario should be incorporated into all risk assessments for this facility. As agreed, the exposure duration should be 3 years with ingestion rates of subsurface soil of 480 mg/day for 6 months and 150 mg/day for 30 months for an average soil ingestion rate of 200 mg/day. Chronic toxicity values for COPCs should be used in risk characterization. If contact with groundwater is anticipated, then the additional exposure pathways of incidental ingestion of groundwater and inhalation of volatile organic compounds in groundwater should be included.

Response: The construction worker scenario has been addressed in the revised HHRA.

The HHRA Report uses a "fraction ingested/fraction contacted" (FI/FC) factor of 0.2 to decrease the "exposure unit area concentrations" for contaminants that were detected in one sample only. The use of this modifier may underestimate the actual exposure significantly (up to 80%), especially considering the limited data available, and should not be applied in this risk assessment. The text states (p.7-25) that unmodified calculations have been made. The unmodified calculations should be presented in the text, and used in the risk assessment, and the modified values should be deleted.

Response: Agreed

The ecological risk assessment describes a wetland adjacent to SWMU 60. This wetland was identified in a wetland inventory of the site. According to the document, ecological risk was not evaluated for this area because a U.S. Fish and Wildlife Service representative determined that the area is not a naturally occurring wetland. Although the wetland is not naturally occurring, it provides

habitat for wildlife. Red-winged blackbirds have been observed in this area. These birds consume aquatic insects and vegetation (Terres 1995) and may be exposed to contaminants via ingestion of contaminated invertebrates, vegetation, water, and soil/sediment. The wetland should be sampled for contamination and a screening level ecological risk assessment should be conducted for the wetland to determine if potential ecological risk exists.

Response: The small intermittent wetland adjacent to SWMU 60 has been sampled and associated risks have been evaluated and presented in the RFI report.

The document did not adequately evaluate potential ecological risk. Site contaminant concentrations should be compared with ecologically-based screening benchmark values to provide a preliminary evaluation of risk. An example of this type of comparison using actual data is attached. Generally, if site concentrations exceed benchmark values, further analysis is required. The following paragraphs summarize potential ecological risk at SWMU 60. Only the chemicals present above screening levels are discussed.

Response: The ecological risk assessment for SWMU 60 has been expanded and revised to include a preliminary evaluation of risk and a comparison to available ecologically-based benchmarks.

As shown in Table 1, antimony was detected in site soil at 11.9 milligrams/kilogram (mg/kg). This concentration exceeds the plant benchmark value of 5.0 mg/kg, indicating that antimony may pose a risk to plants. However, antimony was only detected in one sample, at a location adjacent to the area that is currently proposed to undergo remediation and close to the railroad spur. Because antimony was detected in only one sample at the site, it does not appear that it is a contaminant closely associated with SWMU 60. Further, there is only one ecologically based screening level (EBSL) available for antimony. Will and Suter (1995) note that this benchmark value is based upon unspecified toxic effects on plants grown in surface soil, causing them to have low confidence in the value. A more in-depth literature review regarding antimony toxicity should be conducted. Alternately, the proposed remediation in this area could be extended to resolve this hot spot.

Cadmium was detected in 9 of 11 soil samples. The maximum concentration was 4.5 mg/kg. This concentration exceeds soil and plant benchmark values of 4.0 and 3.0 mg/kg, but is below other screening values (Table 1). In addition, the average concentration of cadmium is 2.7 mg/kg, which is below all screening values. The locations of elevated concentrations of cadmium are associated with either poor habitat on SWMU 60 or the railroad spur. As a result, it is unlikely that ecological receptors would be significantly exposed to cadmium at the site. Therefore, based on the relatively low exceedance of some screening values by the maximum concentrations and the low quality habitat of the site, it is unlikely that cadmium poses an ecological risk at the site.

Lead was detected in all soil samples at the site. The maximum detected value was 60.6 mg/kg,

which exceeds the plant benchmark value of 50.0 mg/kg, but is under other screening level benchmarks. Again, the value screened is a maximum concentration and is located near the center of the landfill. The average lead concentration at SWMU 60 is 27.7 mg/kg. This closely approximates the background concentrations of 26 mg/kg. Because the maximum detected value is located in an area of poor habitat quality, and average concentrations of lead are below ecologically-based screening criteria, it is unlikely that lead presents an ecological risk at SWMU 60.

Zinc was detected in all eleven soil samples collected at the site. The maximum detected concentration was 103 mg/kg. This concentration exceeds soil and plant benchmark values of 100 and 50 mg/kg, respectively. The average zinc concentration at the site is 49 mg/kg, which is below background concentration of 98 mg/kg and below all ecological screening values. The maximum detected value was detected at the same location as the antimony detection. This area (sample # 060S0006) is adjacent to the railroad spur and the northwest corner of the landfill proposed for remediation. It is possible that this excavation could be extended to resolve this hot spot. Alternatively, a more in-depth review of zinc and toxicity to plants should be considered for this location.

Benzo(a)anthracene was detected in 3 of 12 samples, ranging from 0.046 to 2.3 mg/kg. The maximum detected concentration of 2.3 mg/kg exceeds the benchmark value of 1.0 mg/kg. However, a complete set analytical data was not presented in the report, preventing further evaluation. This and other semivolatile organic compounds (SVOCs), such as benzo(a) pyrene should be further evaluated to determine potential ecological risk.

Benzo(a) pyrene was detected in 5 of 12 samples, ranging from 0.056 to 1.4 mg/kg. The maximum detected concentration of 1.4 mg/kg exceeds the benchmark value of 1.0 mg/kg. However, a complete set analytical data was not presented in the report, preventing further evaluation. This and other SVOCs, such as benzo(a) anthracene should be further evaluated to determine potential ecological risk.

Many of the compounds in Table 1 do not have associated benchmarks. An evaluation of the nature and extent of contamination and potential ecological risk should be conducted for those chemicals.

Response: For those ecological constituents of potential concern (ECPCs) identified in either site surface soil or wetland sediment samples, an estimate of risk has been added to the SWMU 60 risk assessment. For those ECPCs which could not be compared to a toxicological benchmark, risk could not be assessed. A complete set of analytical data is provided in the revised report.

The presence or absence of rare, threatened, or endangered species is not discussed in the document. The presence or absence of special status organisms at the site should be determined. In addition, methods for deriving this information should be presented in the text.

Response: The potential for rare, threatened, or endangered species to occur on or near SWMU 60 has been added to the "Ecosystem at Risk" discussion.

3.0 SPECIFIC COMMENTS

Section 3.2.7 - The October 1995 (3rd phase) should be included in this section.

Section 4.1, Page 4-7, Paragraph 2. The text states that:

As previously discussed, the extent of contamination in soil above the water table was assessed through three phases. Soil sampling associated with monitoring well installations and a surface soil investigation was performed between January 31 and February 13, 1995.

First, soil samples collected as part of the monitoring well installation does not appear to be previously discussed in the text. Second, the date given in Section 3.2.6 for the surface soil investigation is March 1995. The appropriate corrections should be made.

Response: Soil sampling conducted as part of monitoring well installation was performed between January and February 1995. This was the first soil sampling phase. The second soil sampling phase was performed in March 1995 when surface and subsurface soil samples were collected with hand augers from three locations over the landfill. The third soil-sampling phase was performed in September 1995 when 23 surface-soil samples were collected with hand augers from locations over the landfill. The final RFI soil sampling phase was performed in October 1995 when surface and subsurface soil samples were collected using a Geoprobe from 21 locations. The text in Sections 3, 4, and 6 have been revised accordingly.

Section 4.1, Page 4-7, Paragraph 3. The text states that "twenty-three surface-soil samples were collected during a second soil sampling phase (September 1995)". The date of this sampling event is the same as that given in Section 3.2.7 as "Geoprobe Soil Sampling". However, Figure 4-2 on page 4-13 indicates that only 21 Geoprobe soil samples were collected at the site.

Response: See response to previous comment. The 23 surface-soil samples were collected in September 1995 with hand augers, not a Geoprobe sampler. This actually constituted the third soil sampling phase (or second hand auger phase). Figure 4-2 has been revised to reflect the sample dates associated with each sampling phase.

Table 4.1 and 4.2, and Table 6.6. The analytical methods used for determining analyte concentrations in various media are presented in Tables 4.1 and 4.2. As shown in these tables, groundwater was not analyzed using a low concentration drinking water method, but was analyzed using the standard SW-846 method 8240. In this method, detection limits frequently exceed both

MCLs and risk-based concentrations. Therefore, concentrations which may exceed MCLs or pose risks to human receptors may not be detected using this analytical method. All further groundwater analyses should use a low concentration method for volatile organic compounds if the data is intended to be used for risk based evaluations. In addition, the uncertainty resulting from using regular detection limit methods for groundwater samples in this study should be discussed in the uncertainty section.

Response: Analytical methods used during the investigation are consistent with those outlined in the approved *Comprehensive RFI Work Plan* (E/A&H, 1994) and the *Assembly A Site Investigation Plans* (E/A&H, 1994). Even though the practical quantitation limits (PQL) may exceed the MCLs or risk-based concentrations, detections below the PQLs and down to the method detection limit are reported (as "J" flagged), which are usually below the MCL and risk-based concentrations. These values are weighted similarly as non "J" values in the risk assessment.

Table 6-10, Page 6-44, Summary of Inorganics Detected in Groundwater. The table includes a "6" superscript footnote indicator in the MCL and RBC columns for lead data. There is no corresponding "6" footnote. The "6" should be replaced with an "f".

Response: The table has been revised accordingly.

Section 7.2.1, Page 7-2. This section does not include cadmium on its list of COPCs identified in soil. However, cadmium is identified as a COPC in Tables 7.3 and 7.6. Appropriate changes should be made.

Response: Cadmium is not a COPC in the revised report.

Table 7.2, Page 7-3, Summary of Well Designations. This table indicates that there are 5 loess groundwater wells. This conflicts with Table 7-4 and the text in Section 7.3.5, which indicates that there are 6 loess groundwater wells. Further, the footnote indicates that monitoring well locations are presented in Figure 4-2, which is also incorrect. These discrepancies should be corrected.

Response: The appropriate corrections have been made to the report.

Section 7.2.3, Page 7-8. The text states that barium is the only COPC identified in fluvial deposit groundwater. However, Table 7-5 identifies bis(2-ethylhexyl)phthalate as a COPC as well. This compound is also not identified as a COPC in Table 7-6. These inconsistencies should be corrected or explained.

Response: Barium and manganese were identified as the only COPCs in the fluvial deposits

groundwater. The risk assessment was performed on the initial data set because it was the only FSA data set for loess and fluvial deposits groundwater. BEHP was not detected during the initial sampling event.

Section 7.3.5, Page 7-14, Paragraph 0. The text states that "the number of SVOC, pesticide, and PCB samples is 12, rather than 11, as described in Sections 3 through 6." The correct information should be presented throughout the text.

Response: Section 7 has been revised accordingly and is consistent with Sections 3 and 6.

Section 7.3.5, Page 7-14, Paragraph 1. The text states that "intake calculations were incorporated into risk estimates, and chronic daily intake is not presented separately." The chronic daily intake values and their calculations should be presented in the text to facilitate evaluation of each step of the risk estimates.

Response: Intake multipliers were presented in the revised report.

Figure 7-5, Page 7-23, Antimony, PCB, and MCPA in Soil. Sample #060S0003 is indicated on the drawing, but it has no reported detected concentration of any of the three contaminants in the figure's title. The sample appears to be irrelevant to the figure, and it should be deleted to avoid confusion.

Response: The figure has been revised accordingly.

Section 7.5.1, Page 7-34, Paragraph 1. The text states that "no carcinogenic COPCs were identified in fluvial deposits groundwater." Table 7-5 identifies bis(2-ethylhexyl)phthalate as both a COPC and a carcinogen. See comment above.

Response: Barium and manganese were identified as the only COPCs in the fluvial deposits groundwater. The risk assessment was performed on the initial data set because it was the most comprehensive (only data set with FSA data for loess and fluvial deposits groundwater) which did not include the BEHP detection from the first-period of long term monitoring.

Table 7-14, Page 7-41, Risk Estimates Ingestion of Groundwater from the Fluvial Deposits. The notes at the bottom of the table include an acronym for the compound bis(2-ethylhexyl)phthalate, but the compound is not included in the table. The table does not include risk estimates for bis(2-ethylhexyl)phthalate, although it has been identified as a COPC (see Specific Comments 8 and 12 above). Risk estimates for the compound should be included in the table, or an explanation should be given for not evaluating the compound should be presented.

Response: See previous response.

Section 7.5.5, Page 7-46, Paragraph 2. The text states that "although dieldrin and BEQ risk estimates exceed the 1 E-6 cumulative risk threshold in soil, these chemicals were not identified as chemicals of concern." There is no rationale presented in the text justifying the removal of these compounds from evaluation. This statement requires an explanation of why the two compounds should be eliminated from being enumerated as COCs.

Response: Dieldrin and BEQ were retained in the revised HHRA.

Section 7.6.4, Page 7-51, Paragraph 2. The text states that "a road will soon be constructed across SWMU 60." This is the only reference to the future road construction in the HHRA Report. It does not appear that this future land use was evaluated in the "Exposure Assessment" portion of the HHRA Report. This potentially significant opportunity for exposure to surface and subsurface soils should be described in detail in appropriate sections of the HHRA Report.

Response: Subsurface soil was addressed in the revised HHRA.

Section 7.6.4, Page 7-55, Paragraph 2. The text states that "Figures 7-1 through 7-5 show the distribution of COPCs." The referenced figures illustrate the distribution of the COPCs in soil only. The text should be amended accordingly.

Response: Agreed. The text has been revised accordingly.

Section 7.6.5, Page 7-57, Paragraph 3. The text states that "parameters which do not have corresponding RBCs due to the lack of approved toxicological values were not included in the CDI calculation data." The chronic daily intake (CDI) calculations are not presented in the text. Further, it is not acceptable to eliminate a parameter based upon the lack of an RBC value. In the absence of an RBC, alternative criteria should be used to evaluate the potential risks associated with contaminants. The use of alternative criteria should be documented in the text.

Response: This sentence referred to essential nutrients and was reworded for clarity.

Section 8.2, Ecosystem at Risk, Page 8-1. This section describes the ecosystem at risk and states that ecologically significant habitat at SWMU 60 is negligible. This statement is not accurate. While SWMU 60 is covered with gravel and asphalt and does not likely provide suitable habitat for ecological receptors, a small wetland and an upland community are proximate to SWMU 60. This adjacent habitat can support wildlife, particularly birds and small mammals. These organisms may be exposed intermittently to surface contaminants at SWMU 60. The document should be revised to reflect these conditions.

The description is also too abbreviated. The description should include the community structure at

and adjacent to the site, species identified at and proximate to the site, and local meteorological data. Sources of information should also be cited.

Response: The text has been revised to provide greater detail on the ecosystems associated with SWMU 60.

Section 8.2, Stressor Characteristics, Pages 8-5 through 8-7. It is unclear whether this section is intended to provide a broad overview of stressor characteristics or if it provides the foundation of the ecological risk assessment. The stressor characteristics section does not include adequate information about site-specific ecological chemicals of potential concern (ECPCs), nor information specific to the ecosystem at risk. This section should discuss the potential effects of the site-specific ECPCs on the ecosystem at risk, and it should provide examples of the levels at which adverse effects may occur.

Response: The text has been revised to better address site-specific ECPCs and their potential effects on ecological receptors present at SWMU 60.

Section 8.2, Page 8-7, Paragraph 1. The text states that no information is available on the toxicological effects associated with antimony, nickel, selenium, or silver. However, several toxicity studies in the literature contain information for these elements. This information should be included in the risk assessment.

Response: The SWMU 60 ERA has been updated to include the 1997 preliminary remediation goals (PRGs) for ecological endpoints in soil and sediment from the Department of Energy and Oak Ridge National Laboratories as well as USEPA's Region III Ecological Screening Values for Sediment (1995).

Section 8.2, Page 8-7, Paragraph 3. The text states that food chain biomagnification for organochlorine pesticides is low, but does not support this statement by citing a literature source. This statement should be supported by literature references. This statement should be revised if not supported.

Response: Supporting text regarding the biomagnification and bioaccumulation has been added.

Section 8.3, Pathways and Exposure Scenarios, Pages 8-7 through Page 8-8. This section discusses routes of migration and exposure pathways for ECPCs found on the site. Potential leaching of contaminants from soil to nearby surface water and potential erosion of surface soil into adjacent surface water were not determined as routes of migration in Section 8.3, although both were identified as potential migration routes in Section 9.2 (Contaminant Fate and Transport). In addition, the pathway and exposure scenario for the wetland proximate to SWMU 60 was not discussed. The pathway and exposure scenario for the wetland and potential routes of migration should be discussed

in this section or justification for eliminating these pathways should be provided.

Response: Text regarding the soil-to-surface water contaminant migration pathway has been added.

Section 8.4, Ecological Effects Assessment, Page 8-8, Paragraph 3. The document states that because soil maximum concentration levels are not available for ecological receptors, literature values will be used to predict ecological risk. Screening level concentrations for some chemicals are available through the Oak Ridge National Laboratory (Beyer 1990, Will and Suter 1995a, and Will and Suter 1995b), as shown in Table 1. Literature values derived from relevant studies can also be used as screening criteria, assuming that the endpoints are applicable and uncertainty factors are applied. This should be conducted for those chemicals in Table 1 that do not have any screening level criteria established.

Further, the document assumes that if lower-level invertebrates are not at risk, no adverse effects to other food web components will occur. This statement does not address the biomagnification of organochlorine pesticides and other chemicals in the food web and is not supported by scientific literature. Potential food web effects should be considered, particularly for organochlorine pesticides.

Response: The screening levels used to predict ecological risk have been revised to include screening levels derived from both ORNL's *Toxicological Benchmarks for Terrestrial Wildlife* and/or ORNL's *Preliminary Remediation Goals for Ecological Endpoints* (1997). Also, the potential adverse effects of biomagnification to upper-level receptors has been addressed.

Table 8.2, Section 8.5, Risk Characterization, Exposure Analyses, Page 8-10. The title "Summary of Chemical Effects Studies on Terrestrial Informal Invertebrate" should be corrected to read "Summary of Chemical Effects Studies on Terrestrial Infaunal Invertebrates."

This table presents a summary of chemical effects studies on terrestrial receptors. The table is incomplete as presented. Only a small number of the chemicals contained in the table are chemicals of concern at the site (42 chemicals were identified as ECPCs and only 9 are presented in the table). In addition, the most recent study is 4 years old. This table should contain the most recent toxicity information relevant to the ECPCs at the site.

Response: The typographical error in the title has been corrected. Furthermore, Table 8.2 has been revised to only present those studies pertaining to SWMU 60 ECPCs.

Section 8.5, Risk Characterization; Ecological Exposure Evaluation, Page 8-11, Paragraph 4. This section discusses the potential risk to soil organisms from volatile organic compounds (VOC). If VOCs are predicted to have no impact on soil organisms, data should be presented to support this assertion. An analysis of the predicted half-life of these compounds in soils, or other fate and

transport properties, should be included. In addition, the document states that the only information available regarding the potential effects of VOCs are inhalation studies related to human health. Documentation supporting this assertion should be presented in the text, or this statement should be removed from the document.

Response: The discussion of predicted impacts to soil organisms from VOCs has been revised and the statement pertaining to VOC inhalation studies has been deleted.

Section 8.5, Risk Characterization, Pages 8-12 through 8-13. The discussion on these pages focuses on the potential ecological risks posed by polychlorinated biphenyls (PCBs) and pesticides. Again, the information presented is not site-specific. Dichlorodiphenyltrichloroethane (DDT) is the focus of the discussion, but additional pesticides are of concern at the site. The discussion of chemical effects should be specific to site contaminants. Further, paragraph 1 on Page 8-13 compares site chemical concentrations to a DDT value of 1,000 milligrams per kilogram (mg/kg). This DDT value is inappropriate for the several reasons: (1) DDT is not the only pesticide at SWMU 60. Aldrin, dieldrin, endrins and others were also identified. Compound-specific toxicity values should be obtained or substantial justification for doing otherwise should be presented. (2) Risk assessments (particularly at the screening level) should strive to be conservative in their assessment of potential risk. Using the highest DDT value (based on an median lethal concentration [LC_{50}] value) presented in Table 8-2 does not provide a conservative estimate. (3) DDT and other chemicals bioaccumulate and may cause adverse effects in the food web. Potential bioaccumulative effects should be addressed in the document.

Response: The Risk Characterization has been revised to include more site-specific information on the ECPCs identified at SWMU 60.

Section 8.5, Page 8-13, Paragraph 3. The text states that, "typically, adverse effects to upper-level invertebrate and vertebrate species will occur at concentrations well above those levels indicated by the previously discussed soil-infaunal studies." The meaning of this statement is not clear. Based on what is known about dose-response relationships, adverse effects always occur at higher concentrations. This statement should be revised for clarification and supported by literature citations.

Response: This statement has been deleted.

Section 8.5, Page 8-14, Paragraph 1. The document states that "biotransfer of contaminants up the food chain should not be a concern because contaminant concentrations do not indicate accumulation." This conclusion cannot be supported based on the information presented in this document. Documentation supporting this assertion or site-specific bioassay data should be presented in the text or this statement should be removed from the document.

Response: This statement has been deleted.

<u>Section 8.6, Uncertainty, Page 8-14</u>. The uncertainty section should discuss the sources of uncertainty in this risk assessment, not simply enumerate sources of uncertainty. It should also indicate whether the source of uncertainty is likely to significantly affect the outcome of the risk assessment. This section should include a gauge of whether the uncertainty associated with a topic is low, medium, or high and whether it would result in an over or under-estimation of risks at the site.

Response: The uncertainty section has been revised as requested.