Responses to the January 2009 Comments on the Screening Level Ecological Risk Assessment Kentucky Avenue Wellfield Site Koppers Pond

Preface

The General and Specific Comments provided in the January 2009 comment document from EPA and NYSDEC were enumerated for clarity. In some cases, individual comments were divided into subparts to provide complete responses (e.g., Specific Comment #9). To the extent possible, the changes that were made to the revised SLERA are presented under each response. These responses include results of discussions from the 26 February 2009 conference call among the Koppers Pond consultants, EPA, and NYSDEC related to these comments.

GENERAL COMMENTS:

General Comment #1: The possibility of PCB as a surface water contaminant of potential concern can not be determined because the method detection limit is higher than NYSDEC criteria for this contaminant. EPA method 1668a has a low detection limit and can be used to determine if Total PCB exceeds NYSDEC criteria. The report concludes that PCB is a CoPEC from the review of the sediment and fish tissue data; however, surface water should be reviewed as well because there may be a potential to impact water flowing in the outlet channel. A review of the chosen laboratory methods is encouraged to ensure that all methods are capable of detecting contaminants at criteria levels.

Response: It was agreed during independent discussions between EPA and NYSDEC following the release of the agency comments that the analytical method (SW846 Method 8082) and detection limits for PCBs (and mercury) were acceptable for this project.

General Comment #2: The characterization document lacks clarification on how Total Organic Carbon (TOC) is used in the Equilibrium Partitioning equation. It appears that TOC was measured for each sample; however, the specific TOC percentage for each sample has not been supplied. Equilibrium partitioning can not be preformed on samples that have greater than 12% TOC. Because these data were not supplied for individual sediment samples, it is not known if equilibrium partitioning is an appropriate measure of sediment toxicity. Percent TOC must be supplied for each sample. It is not clear if one generalized value of TOC is used in the Equilibrium Partitioning equation, or if individual TOC results adjusted their respective samples. How TOC is used in the Equilibrium Partitioning equation must be explicitly stated.

Response: The TOC results for the individual sediment samples are shown in Tables 20 and 26 for Koppers Pond and the Outlet Channels (respectively) in the draft *Site Characterization Summary Report*. The summary of these results were inadvertently not included in the sediment summary tables provided with the draft SLERA. This information has been added to Table 3-3c in the revised SLERA.

The average TOC was not used to calculate the sediment ESVs that were based on the NYSDEC organic carbon-normalized criteria. The procedure used for the chemical screening was to first identify the sample with the largest chemical result, and then calculate

the corresponding sample-specific ESV based on the reported TOC of the sample. This was not discussed in detail in the draft SLERA. Clarifying text was added to Section 3.2.2 of the revised SLERA summarizing this methodology.

In those cases where a sample with the maximum positive result of an evaluated chemical had a corresponding TOC concentration that was greater than 12%, an alternate benchmark that was independent of the sample's TOC was used. The alternate ESVs and associated samples are shown on Tables 3-5b and 3-9 (respectively).

General Comment #3: The NYSDEC sediment and tissue criteria for PAHs and PCBs are explicitly stated as Total PAHs and Total PCBs rather than individual PAHs and individual PCBs. The evaluation of these contaminants as CoPEC needs to be recalculated using ESVs of the TPAH and TPCB. Corrections regarding these contaminants need to be corrected throughout all three documents. TPAH and TPCB evaluations are needed in the HQ screenings.

Response: PAHs were evaluated in the sediments and surface water, but not the in the fish tissues (due to their low bioaccumulation potential; see 2007 *RI/FS Work Plan*). Total PAHs in the sediments and surface water were summarized in the revised SLERA. Revisions were made to Table 3-2a (surface water data summary) and 3-3a (sediment data summary) to include the total PAH results. The individual Aroclor PCB results and the total PCB results were already reported on Table 3-3b (for sediments) and Table 3-10a (for forage fish). These revisions were also made to the corresponding tables in the *Pathways Analysis Report* for the BHHRA.

General Comment #4: The Koppers Pond site resides within Chemung County. It is not appropriate to use generalized background values for Yates County, nor any other county, nor generalized values for New York State as a surrogate for the site background.

Response: The National Lake Fish Tissue Survey mercury results were summarized for two nearby counties (Onondaga and Yates Counties), and statewide, to put the Koppers Pond fish results into a regional context because fish samples from a reference pond have not yet been collected. This information was presented in the *Site Characterization Summary Report* and was not discussed in the SLERA.

Unfortunately, there were no fish samples collected from Chemung County as part of the National Lake Fish Tissue Survey. It was agreed during the 26 February 2009 conference call to include additional "western tier" counties (those generally west of the Catskill Mountains)[1] when summarizing the mercury results.

General Comment #5: Ingestion of surface water and sediments can not be ruled out as a potential exposure route for Higher Trophic level Receptors. These exposure routes need to be noted in Figure 2-2 and evaluated.

[1] The "western tier" counties are defined as those west of Delaware, Otsego and Oneida counties and encompass NYSDEC regions 7, 8 and 9.

Response: Agreed. We were not dismissing the potential for direct exposures to sediments or surface water by higher trophic level organisms (e.g., direct exposure to both sediments and surface water were included on Figure 2-1 in the draft SLERA). Additional clarifications were added to Figure 2-1, and Figure 2-2 (Potential Food Chain Exposure Pathways) has been corrected in the revised SLERA.

General Comment #6: Individual samples of surface water, sediment, and fish tissue should be shown in tables, along with a column that include criteria values, and the footnote as to where those criteria were derived from. Samples which exceed criteria should be highlighted or bolded.

Response: The individual sample results were reported in the SCS tables. References were added to the SLERA summary tables to direct the reader to the appropriate SCS tables that contain the sample-by-sample results.

The data sources for the ESVs were presented in summary tables (e.g., Table 3-5a for surface water ESVs) in the draft SLERA. Although the data sources for the ESVs were discussed in detail in the text, additional references were added to the table footnotes for clarity.

We disagree that there is a need to show the number or identify those samples that exceed the ESVs at this stage. The primary focus of the SLERA is to compare the maximum observed positive result to the ESV and determine whether future evaluation of potential risks is warranted.

General Comment #7: Game fish tissue needs to be evaluated in the HQ screening.

Response: The gamefish results are not relevant to the SLERA (or BERA) because the ecological receptors will be evaluated for exposure to whole organisms, and not the game fish fillets (those will be evaluated in the BHHRA). Based on discussions during the 26 February 2009 conference call, it was agreed to assess whether any of the preliminary COPECs identified in the SLERA would change based on evaluating the gamefish results. This analysis (and associated tables) was added to the uncertainty portion of the revised SLERA.

General Comment #8: There is some indication that some screening values may be from older sources. EPA has a screening value of 0.3 ppm for fish tissue; however, a value of 0.5 is reported in Table 3-5c. The NYSDEC water quality criterion for mercury is 0.0026 in dissolved form. Table 3-5a needs to be modified to note the correct criteria. Use of outdated or alternative screening values may have resulted in mischaracterization of wildlife risks for some chemicals and receptors. These screening values should be reviewed and updated if necessary.

Response: The EPA screening value of 0.3 mg/Kg for mercury in fish tissue is based on human consumption and is not relevant to the SLERA. The mercury ESV for fish tissue used in the SLERA (0.5 mg/Kg) was from the Ontario Ministry of the Environment, and was a fish tissue residue criterion developed to protect aquatic life and fish-consuming birds.

The surface water mercury value used in the draft SLERA (0.77 µg/L) was the chronic criteria for protection of aquatic life from TOGS 1.1.1. The value quoted in the comment (0.0026 µg/L) was for the dissolved phase only and was derived based on the bioaccumulation potential of mercury and subsequent food-chain transfer to higher trophic level organisms.

As requested in the comment, the data sources were re-examined during the preparation of the revised SLERA. For example, there was an update of the USACE ERED on-line database that was released in November 2008 but this was not available when the draft SLERA was submitted. Any of the ESVs that required changes based on the November 2008 version of the ERED database were updated for the revised SLERA. The 2008 and 1999 versions of the NOAA SQuiRT tables had the same values for the two inorganics (barium and vanadium) that used this reference as the source of the ESVs.

General Comment #9: After reviewing the screening values for sediment, surface water, and fish tissue, laboratory methods may need to be reviewed to ensure that the methods used have the ability to detect contaminants at levels low enough to determine if they present a concern to fish and wildlife, in particular detection limits for mercury and PCBs may be above NYSDEC screening values.

Response: The determination of the suitability of the detection limits for evaluating the chemical results in all components of the RI/FS (including the ERA steps) was part of the DQO development presented in the agency-approved 2007 *Quality Assurance Project Plan.* These DQOs were based on the *anticipated* detection limits, and not the actual detection limits that were achieved in these samples (i.e., they do not reflect matrix issues, dilutions, moisture content, etc).

During the 26 February 2009 conference call, it was agreed to add a new subsection under the Uncertainty Assessment of the Revised SLERA that provides a comparison of the detection limits to the ESVs for those chemicals that were not detected in any of the samples and have ESVs that are readily available.

General Comment #10: The Koppers Pond area supports a variety of wildlife at varying trophic levels and different feeding guilds. It is expected that future sections of the SLERA report will represent this variety in the assessment such as piscivorous, herbivorous, omnivorous, and benthivorous wildlife, and include aquatic organisms in of themselves as an end receptor. Such wildlife species are known to ingest a considerable amount of sediment while foraging and therefore may be at greater risk than piscivorous wildlife from many contaminants. Useful endpoint species to add to the assessment might include the muskrat (herbivorous mammal), raccoon (omnivorous mammal), mallard (omnivorous bird), and spotted sandpiper (benthivorous shorebird). The report should include some analysis of what local species would be representative of the most sensitive species (or several species that would be most sensitive to the multiple COPECs).

Response: The development of assessment and measurement endpoints is not relevant to the SLERA (ERAGS Steps 1 and 2). The assessment and measurement endpoints, along with candidate receptors, will be discussed in subsequent steps of ERAGS process.

SPECIFIC COMMENTS:

Specific Comment #1: Section 1.1 Purpose of Report, page 2: While the report does fulfill legal obligations as stated, the authors should mention up front that the specific objective of the report is to conduct a SLERA. The objectives of an SLERA are not stated until Section 3.0 and it is suggested that they be moved to this section as well.

Response: This comment is not correct. The objectives of the SLERA are listed on page 2 of the draft report. No changes were required for the revised SLERA.

Specific Comment #2: Section 2.1.4 Rare, Threatened or Endangered Species, page 6: Please add the scientific name of the bald eagle to the empty parenthesis. Further, as per the December 2, 2008 email message from Mary Jo Crance (NYSDEC) to Tara Salerno (NYSDEC) the endangered plant, slender pondweed, may also be found at this Site, and should be included in this section.

Response: A copy of the 2 December 2008 email exchange concerning the addition of the slender pondweed was not available when the SLERA or the 19 November 2008 correspondence from NYNHP was submitted to EPA and NYSDEC. This information was added to Appendix A (Correspondences with the New York Natural Heritage Program) of the revised SLERA. Section 2.1.4 (Rare, Threatened or Endangered Species) of the revised SLERA was also updated to reflect this new information.

Specific Comment #3: Section 2.2.1 Industrial Drainageway, page 7: Additional information should be added to the second sentence of the second paragraph, as the sentence is incomplete.

Response: Agreed. The text was changed (revision is underlined) to read as follows:

"The underground piping was installed in the 1960s."

Specific Comment #4a: Section 2.3 Potential Fate and Transport Mechanisms, pages 9 and 10:

Although parts of Koppers Pond may represent a "solids sink" it should also be noted that in some of the eastern portions of the pond, further from the shoreline, little to no sediment was present. The section states "...because impacted sediments were removed from the Industrial Drainageway in 2001 and 2002, the sediment bed load in the drainageway no longer represents a source of CoPEC to Koppers Pond." Please provide the sediment and surface water data to backup this statement. Please provide any monitoring data available for the drainageway, or state that no monitoring data is available.

Response: We agree that some portions of Koppers Pond are not as likely to serve as significant solids sink compared to other portions. Because of the V-shape of the pond, and the fact that the Industrial Drainageway enters the western "wing" of the pond, it is more likely that sediments that have historically entered the pond from the Industrial Drainageway are more likely to accumulate in the western portion of the pond, rather than the eastern portion (the latter would likely accumulated and soil runoff from the adjoining properties).

The sediment and surface results were presented in the *Site Characterization Study* Report. As discussed during the 26 February 2009 conference call, post-removal sediment samples were not collected from the Industrial Drainageway because clean borrow material was used to bring the Drainageway back to grade. Clarifying text was added to Section 2.3 of the revised SLERA.

Specific Comment #4b: The section states, "Cycling of the chemicals, via uptake by emergent vegetation and bioturbation by benthic aquatic organisms and food chain transfer to higher trophic level organisms, represent the principal mechanisms that cycle CoPECs within Koppers Pond." Direct ingestion of surface water and sediments are additional principal mechanisms of CoPEC uptake. These pathways need to be evaluated as such. This needs to be corrected throughout the document.

Response: We agree that direct ingestion of surface water and sediments can represent additional exposure pathways when COPECs are present. In fact, these exposure routes were included in Figure 2-1 of the draft SLERA. For consistency and clarity, Figure 2-2 was updated to clearly show that direct exposure to surface water and sediment will be evaluated in the ERAGS process.

Specific Comment #4c: Use of the term "cycling" to describe the migration of contaminants from one matrix to another is not an appropriate. In the context of this paragraph, it implies that contaminant movement is circular, and part of a biogeochemical process that exists naturally. It is suggested that the term be replaced by "movement," "transfer" or "migration" when discussion the movement of contaminants from one matrix to another or through the food chain.

Response: The referenced paragraph was a general discussion of the potential fate and transport that may occur at Koppers Pond. We do agree that there may be some misinterpretation when the term "cycling" is used. Therefore, the text was adjusted in the revised SLERA to replace the word "cycling" with "transfer."

Specific Comment #4d: It is inappropriate to make assumptions regarding natural attenuation without data on the transport of sediment within the Industrial Drainageway. The statement beginning with "As [un]impacted sediment (e.g., bed load from the Industrial Drainageway continues..." is speculative and should be deleted.

Response: We disagree with the need to delete the text that briefly discusses the sediment bed load transport. The potential input of sediments from upstream areas that can be carried by the Industrial Drainageway to Koppers Pond should not be rejected. The soft texture of the sediments near the Industrial Drainageway input point (i.e., western wing of the pond) suggests a sediment load entering the pond from these upstream areas.

Specific Comment #4e: The section states "...sediments samples collected from the outlet channels show significantly reduced CoPEC concentrations compared to Koppers Pond sediments." and "surface soils samples collected in the periodically inundated low-lying areas around the pond also show CoPEC concentrations much lower than in pond sediments." Please provide the data demonstrating these points in a summary table.

Response: The individual sample results are shown in tables in the Site Characterization Study Report. Tables 22 through 26 present the Outlet Channel sediment results and Tables 15 through 20 present the Koppers Pond sediment results. Given that the COPEC screening that was performed in the SLERA used the maximum positive results of the chemicals by media, the SLERA sediment summary tables (Tables 3-3a through 3-3c) did not distinguish whether the samples originated from the Koppers Pond or Outlet Channels.

Specific Comment #5: Figure 2-1 Preliminary Conceptual Site Model: Ingestion of sediments and surface water by higher trophic level Receptor(s) should be considered a complete pathway. Delete the reference to "de minimis" pathway. In addition, there is a distinction between a minor exposure ("de minimis") and an incomplete pathway; please revise Figure 2-1 to reflect this. Please provide a key to this figure (e.g., dashed line incomplete exposure pathway, solid dot complete exposure, etc.).

Response: The term *de minimis* was defined not only to reflect exposure potential but also to reflect the media concentrations. There were few detectable concentrations of chemicals in the surface water samples collected at this site. Thus, although the exposure pathway may exist, there is little potential for any exposure (and therefore, risk) because the medium has low or no detectable levels of chemicals of interest. However, the direct surface water pathway will be evaluated as part of the ERAGS process.

Specific Comment #6: Figure 2-2 Potential Food Chain Exposure Pathways Add a link between surface water and emergent plants and surface water and aquatic invertebrates. Add a legend to indicate the meaning of the dotted line.

Response: Figure 2-2 was updated in the revised SLERA to include the direct exposure route from the surface water to the receptors, and a legend was added defining the solid and dashed lines.

Specific Comment #7: Section 2.4.1 Preliminary Conceptual Site Models, page 11: Please cite the draft Site Characterization Summary Report within the bullet "Leaching from Old Horseheads Landfill." Further, the last paragraph in this section indicates that more data will be collected and additional field observations will be made. Please provide a rationale for the collection of this additional information.

Response: Reference to the SCS Report was added to the bullet "Leaching from Old Horseheads Landfill."

The statement concerning the potential for collecting additional field data was in reference to the refinement of the CSM to support the ERA. The need for and type(s) of additional field work will be described in later steps of the ERAGS process.

Specific Comment #8: Section 2.4.1 Preliminary Conceptual Site Models, page 11: The section states "The redissolution of CoPECs from sediments to overlying water may be a *de minimus* pathway due to the absence of dissolved chemical concentrations above water quality criteria or screening benchmarks." Currently there are several method detection limits that are above the criteria or screening benchmarks; therefore, the statement should be removed.

Response: We disagree with the request to remove this statement because many of the chemicals that were detected in the sediments were not detected in the surface water using the approved analytical methods.

Specific Comment #9a: Section 2.5 Conclusions From ERAGs Step 1, Environmental Setting and contaminants known or suspected to exist at the site and the maximum concentrations present (for each medium), page 12: The first paragraph indicates that PAHs identified in pond sediment are associated with road runoff and pesticides identified in sediment are from insect treatment. The purpose of the SLERA is to identify contaminants of concern, which are those contaminants identified at concentrations greater than their respective screening values, or those contaminants for which screening values are not available. Please remove this discussion of the source of contaminants.

Response: We disagree with the request to remove this statement. It is important to include discussion regarding potential alternate sources of chemicals detected in the environmental media. For example, the 2007 *Preliminary Conceptual Site Model* (PCSM) indicates that potential sources of chemicals (other than historical input from the Industrial Drainageway) include industrial and urban runoff, which could provide metals, PAHs, and other constituents. The PCSM also mentions that the pesticides that were detected in the historical surface water samples from Koppers Pond (α-BHC and β-BHC) were likely attributed to historical area-wide or local applications.

Specific Comment #9b: Previous comments regarding "solids sink," use of the term "cycling," and additional evaluation of the limits of affected downstream areas apply here as well.

Response: We agree with the need to further evaluate the sedimentation potential in Koppers Pond, but such an effort was beyond that typical of a SLERA. For example, in the BERA we will examine the spatial distribution of COPEC results and observations on sediment thickness and texture to assess any inter-relationships between sediment quality, chemical results, and potential transport pathways.

Specific Comment #9c: Please add ingestion of surface water and incidental ingestion of sediment to the section entitled: The complete exposure pathways that might exist at the site from contaminant sources to receptors that could be affected.

Response: Agreed. There was no intention to exclude these direct exposure routes. In fact, these exposure pathways were shown on Figure 2-1 in the draft SLERA. Figure 2-2 in the draft SLERA indicated that these were likely minor exposure pathways due to the low detection frequency of Site-related chemicals in the surface water and absence of results exceeding relevant screening benchmarks.

Specific Comment #9d: The authors use the term "refined ERA" in this section and in other sections of this report. It is assumed that they are referring to a Baseline Ecological Risk Assessment. If this is the case, they should simply state this.

Response: A SLERA, as implemented under ERAGS, is a conservative screening assessment to determine whether subsequent steps of the ERAGS process are warranted. The phrase "refined ERA" refers to refinements that are made subsequent to the preparation of the SLERA. As an example, refinement of the preliminary COPECs might be performed as part of the ERAGS Step 3 to reduce the COPEC list for quantitative evaluation in ERAGS Step 6 (the Baseline Ecological Risk Assessment).

Specific Comment #10: Figure 2-2 Potential Food Chain Exposure Pathways: As the screening level ecological assessment should err on the conservative side, the mink should be considered a piscivorous mammal, with a dietary source of 100% fish. The figure should indicate that emergent plants and aquatic invertebrates are exposed to surface water.

Response: Discussions related to the assumptions to be used in the desktop modeling (e.g., food chain models used in risk calculations) are not relevant to the SLERA. These will be discussed in detail in the ERAGS Step 3 report.

Specific Comment #11: Section 3.0 Step 2: Preliminary Exposure Estimate and Screening Risk Calculation, page 14: Please note that the Step 2 concludes with a SMDP at which it is determined that: (1) ecological threats are negligible; (2) the ecological risk assessment should continue to determine whether a risk exists; or (3) there is a potential for adverse ecological effects, and a more detailed ecological risk assessment, incorporating more site-specific information, is needed (ERAGs 1997).

Response: Additional text that discusses the SMDP has been added to the revised SLERA.

Specific Comment #12a: Section 3.1 Empirical Data Collection, page 14: It should be noted that the Draft Site Characterization Report compared data from 2003 to 2008 to determine its usability. It is unclear why only data from the 2008 sediment sampling event were considered in this SLERA, rather than data from both sampling events.

Response: It was agreed during the 26 February 2009 conference call that the 2008 surface water, sediment and fish data are appropriate to use for the RI/FS and risk assessments. In addition, it was agreed to reference data collected prior to 2008 for historical perspective, as was done in Section 4.3 of the Site Characterization Study Report which presented a comparison of the 2003 and 2008 fish results.

Specific Comment #12b: The terms gamefish and forage fish are used here and in several other sections of this report. They should be clarified, especially since it appears that gamefish tissue values were not used in this SLERA.

Response: Gamefish are those species and samples that came from individual fish that have the potential to be consumed by a recreational angler and thus, will be evaluated in the Baseline Human Health Risk Assessment (BHHRA). Consequently, the gamefish samples, which consisted of carp, white sucker, largemouth bass, and black crappie, were prepared and analyzed as fillet samples by the analytical laboratory. The forage fish were smaller specimens of fish (pumpkinseed and bluegill sunfish) that may serve as prey for ecological

receptors. They were prepared and analyzed as whole body samples by the analytical laboratory.

As discussed in response to General Comment #7, the gamefish results are not relevant to the SLERA (or BERA) because the ecological receptors will be evaluated for exposure to whole organisms, and not the game fish fillets (which will be evaluated in the BHHRA). Based on discussions during the 26 February 2009 conference call, it was agreed to assess whether any of the preliminary COPECs identified in the SLERA would change based on evaluating the gamefish results. This analysis (and associated tables) was added to the uncertainty portion of the revised SLERA.

Specific Comment #13: Section 3.1 Empirical Data Collection, page 15: The text refers to Figures 3-1 & 3-2, however Figure 3-2 is not included in this document, nor is it mentioned in the Table of Contents. Please correct this discrepancy.

Response: Figure 3-2 was inadvertently referenced in the draft SLERA text (this figure showed the upgradient sediment collection locations that were predominantly collected from the sewer lines and not relevant to the ERA), and was removed from the revised SLERA.

Specific Comment #14a: Section 3.2 Screening Values, page 15: Please note that "frequency of detection" should not be used to refine the list of contaminants of concern in a screening level ecological risk assessment.

Response: Frequency of detection was not used for the initial COPEC screening, but can be used for refining the COPECs. The limited discussion concerning this COPEC refinement (e.g., pesticides in SW) in the draft SLERA was removed in the revised SLERA. The refined screening will be performed as part of ERAGS Step 3.

We feel that it is important to retain the frequency of detection information on the data summary tables to provide insight about the relative extent of the different chemicals. Therefore, the detection frequency information was retained on the summary tables provided in the SLERA.

Specific Comment #14b: A table should be provided that directly compares the detection limits with the ecological screening values. If the detection limit is greater that the screening value, the usability of the dataset for this SLERA and the BERA should be discussed.

Response: The determination of the suitability of the detection limits for evaluating the chemical results in all components of the RI/FS (including the ERA steps) was part of the DQO development presented in the 2007 *Quality Assurance Project Plan*. These DQOs were based on the *anticipated* detection limits, and not the actual detection limits that were achieved in these samples. The revised SLERA includes a new subsection under the Uncertainty Assessment that provides a comparison of the detection limits to the ESVs for those chemicals that were not detected in any of the samples and have ESVs that are readily available.

Specific Comment #15: Section 3.2.1 Screening Values for Surface Water Samples, page 16: There appears to be some inconsistencies between the values and statements made in the paragraph beginning "The screening values to assess..." and Table 3-5a. Please confirm the accuracy of this section and reconcile with Table 3-5a.

Response: Table 3-5a was rechecked and minor revisions were made based upon this comment.

Specific Comment #16: Section 3.2.1.1 Hardness-Dependent Screening Values, page 16 & Table 3-6 Calculation of Hardness-dependent NYSDEC Class C Criteria for Inorganics: It is unclear why the hardness values for the samples with the maximum positive results were used to calculate the screening value. Hardness values should be recalculated either using the mean hardness value (249 mg/l) or by calculating a sample specific screening value for each location based on location –specific hardness values. A hardness calculation is also available for silver (exp (1.72[ln (ppm harness)] -6.52) for Class D waters (water conditions suitable for fish and wildlife survival) and should be included in this table. Further, please check the calculations conducted in Table 3-6.

Response: The approach that was taken in the draft SLERA to assess the surface water results was to first select the surface water sample that had the highest reported chemical concentration, calculate its ESV based on the sample-specific hardness value, and then determine whether the reported concentration was greater than the ESV. It was felt that this was reasonable because the hardness concentrations were not highly variable for these samples (range of 234 to 262 mg/L). For clarity, we also added a new Table 3-2d that summarizes the general chemistry parameters, including hardness.

We focused on the Class C surface water quality criteria when the surface water ESVs were developed given that this is the current classification of Koppers Pond. Per the 26 February 2009 conference call, it was agreed that there was no need to derive the dissolved phase silver ESV based on the Class D calculation method.

During our re-evaluation of the surface water ESVs, we identified some slight calculation errors in the hardness-based values. The cadmium and copper ESVs went down slightly, and the chromium, nickel, and zinc ESVs went up slightly. There was no change in the COPEC screening results, except for cadmium. One of the unfiltered samples (SW08-02; 7.1 µg/L) was greater than its corresponding ESV (4.35 µg/L based on sample-specific hardness of 254 mg/L). We have corrected the text and associated tables (e.g., Tables 3-6, 3-8b) to show that cadmium was retained as a preliminary SLERA COPEC in surface water. These results will be examined in more detail in ERAGS Step 3.

Specific Comment #17: Section 3.2.2 Screening Values for Sediment Samples, page 17 &Table 3-5b Compilation of Sediment Screening Benchmarks and Selected Screening Values: Please note that NOAA's screening quick reference tables (SQuiRTs) have been recently updated, (http://response.restoration.noaa.gov/SQuiRTs) and some of the values provided in Table 3-5b are no longer included in the NOAA SQuiRT.

Response: The latest version of SQuiRT was released at about the same time the draft SLERA was submitted. SQuiRT was referenced as an ESV source for only three metals: aluminum; barium, and vanadium. For each of these three metals, the SQuiRT values are

unchanged between the version of SquiRT that was used for the draft SLERA and the one used in the revised SLERA. We have updated the reference in the revised SLERA.

Specific Comment #18: Section 3.2.3 Screening Values for Fish Samples, NYSDEC Benchmarks, page 19 – The section states "...The focus of this effort was the development of tissue benchmarks for 19 organochlorine chemicals that were detected..." These benchmarks, which include DDT, should be used for the fish tissue criteria.

Response: Review of Table 3-5c shows that the NY fish criteria values were used to assess the fish tissue concentrations unless more conservative values were available from the USACE ERED database. No change was required for the referenced text, but the concentration units in the revised Table 3-5c were corrected (see response to **Specific Comment #32** for additional detail).

Specific Comment #19: Section 3.2.3 Screening Values for Fish Samples, page 19: Please note the last data update for the USACE Environmental Residue-Effects Database was November 2008, rather than September 2007. Further, Canadian Tissue Residue Guidelines for methyl mercury, dioxins, and furans were identified on-line, but values for total DDT and PCBs were not found.

Response: The November 2008 update for the USACE-ERED database was not available when the draft SLERA was submitted. We have included the November 2008 update in the revised SLERA and have checked whether there are any impacts to the reported ESVs.

We concur about the absence of Canadian tissue guidelines for PCBs. We have corrected the text in the revised SLERA to remove the reference to the PCBs.

Specific Comment #20: Section 3.2.3 Screening Values for Fish Samples, page 20: The fish screening benchmarks are found in Table 3-5c, rather than Table 3-5d. Please correct this discrepancy.

Response: The table reference was corrected in the revised SLERA.

Specific Comment #21: Section 3.3.1 Surface Water Screening Results, page 20: The section states, "Surface water samples collected from Koppers Pond and from the pond outlet channels were combined for this screen". Please clarify what this means. Also the section states "The HQ_{screen} values were calculated using the maximum positive result for each detected chemical concentration in these samples" Evaluations of HQ_{screen} values that rely on laboratory methodologies with insufficient detection limits (above accepted criteria) should be eliminated and those chemical constituents need to be considered CoPECs.

Response: For the SLERA the chemical results for surface water (and sediments) collected from the pond itself and the pond outlets were combined for the chemical screening. This was done in order to have a consistent list of CoPECs for a given media. These two areas will be evaluated separately in the BERA using the same CoPEC list.

Per the discussions during the 26 February 2009 conference call between the Koppers

Pond consultants, USEPA and NYSDEC, and the subsequent separate call between USEPA and NYSDEC, it was agreed that the analytical methods that were used for this site and their associated detection limits were appropriate. The revised SLERA includes a new Section 3.4.5 that compares the reporting limits to the ESVs for those chemicals that were not detected in the sampled media.

Specific Comment #22: Section 3.3.1.1 Surface Water Volatile and Semivolatile Organics Screen: Speculation regarding the source of a contaminant in the SLERA and the use of that speculation to eliminate the contaminant from further consideration is outside the scope of a SLEAR and the sentence starting with "Review of Figure 3-1 shows that this sample..." should be deleted.

Response: Per the discussions during the 26 February 2009 conference call between the Koppers Pond consultants, USEPA and NYSDEC it was agreed to include the more detailed evaluation of the spatial distribution of the results to the refined screening performed as part of ERAGS Step 3.

Specific Comment #23: Section 3.3.1.2 Surface Water Inorganics Screen, page 22: The use of data collected on-site and downstream of the site as background is not appropriate and the two paragraphs beginning with phrase "All of the filtered surface water results..." and "The comparability of the results..." as well as the Magnesium Concentration in Filtered Water Table should be deleted.

Response: Per the discussions during the 26 February 2009 conference call between the Koppers Pond consultants, USEPA and NYSDEC it was agreed to remove the discussion of the magnesium results from the SLERA. The magnesium results in surface water will be re-screened as part of the refined screening performed as part of ERAGS Step 3.

Specific Comment #24: Section 3.3 Chemical Results and Abiotic Screen, page 20: The last three sentences in the first paragraph which discuss the applicability of the screening benchmarks and interpretation of the hazard quotient should be moved to an uncertainty section. A discussion discounting hazard quotients greater than one during the screening process is not appropriate for this step in the ecological risk assessment process.

Response: Per the discussions during the 26 February 2009 conference call between the Koppers Pond consultants, USEPA and NYSDEC it was agreed to remove the three sentences in this paragraph starting with "*Note that an HQ_{screen} of greater than 1.0 does not indicate ...*"

Specific Comment #25a: Section 3.3.2.1 Sediment VOCs and SVOCs, page 22: The section states, "The sample with the maximum acetone concentration (SD08-15) contained a substantially higher TOC content (22 percent), which is outside the upper limit (10 percent) of the EqP method. Therefore, as an alternative the USEPA Region 6 sediment screening benchmark (60,030 micrograms per kilogram...) was used." EqP-based criteria should only be derived for sediments with organic carbon fractions between approximately 0.2 – 12%. The use of the 60 ppm benchmark is not accepted by NYSDEC.

Response: Per the discussions during the teleconference call on 26 February 2009 conference call between the Koppers Pond consultants, USEPA and NYSDEC it was agreed to retain the acetone results as a SLERA COPEC but further evaluate these results using an alternate screening benchmark as part of the ERAGS Step 3 report.

Specific Comment #25b: The use of frequency of detection to eliminate contaminants in a SLERA is not appropriate. All contaminants that exceed screening values should be carried through to the BERA where frequency of detection may be considered.

Response: For the SLERA none of the chemicals were screened out using frequency of detection alone, except for the sediment pesticide results (the three pesticides were detected in only one of the 20 sediment samples). Per the discussions during the 26 February 2009 conference call between the Koppers Pond consultants, USEPA and NYSDEC, it was agreed to retain the three pesticides detected in the sediments and re-assess these results as part of the refined screening performed in ERAGS Step 3.

Specific Comment #26: Section 3.3.1.2 Surface Water Inorganics Screen, page 22: It is unclear how the maximum concentration for the filtered surface water sample for magnesium (14,400 ppb) is greater than the unfiltered maximum concentration (14,200 ppb). As upstream unimpacted samples were not collected for this risk assessment, it is unclear how a background concentration can be derived from magnesium concentrations identified in the pond and outlet. The use of a less conservative screen may be done as part of the baseline ecological risk assessment during the refining of the list of the potential contaminants of concern (as per Section 3.5 Scientific/Management Decision Point, page 29), but should not be done during the SLERA.

Response: The filtered concentration is slightly greater than the unfiltered concentration is within analytical variability. The results are similar between the filtered and unfiltered results because the magnesium is present only in the dissolved state in water. The magnesium results will be further evaluated as part of the refined screening performed as part of the ERAGS Step 3 report.

Specific Comment #27: Section 3.3.2.2 Sediment Pesticides/PCBs, page 23: The section states that although the pesticides had HQ values greater than 1, they were not considered significant because the chemicals were only detected in one sediment sample. Given the sediment sampling scheme, it is not appropriate to dismiss these pesticides as insignificant. Sediments that have contaminants above levels that are protective of fish and wildlife should be part of the remedial effort.

Response: Per the discussions during the teleconference call on 26 February 2009 between the Koppers Pond consultants, USEPA and NYSDEC it was agreed to retain the two sediment pesticides that exceeded the ESVs and evaluate these results further as part of the refined screening performed in the ERAGS Step 3 report. The determination of the need to include any pesticides retained after the refined screening will be performed following the preparation of the BERA.

Specific Comment #28: Section 3.3.2.3 Sediment Inorganics, page 23: This section should clarify where the ESV value originated for each contaminated considered, and the value stated in the text.

Response: Due to the large number of chemicals that were included in the SLERA screen, it was better to represent the information concerning the ESVs as tables. We have added references to the table that shows the screening values that were used in the revised SLERA. These tables are also referenced in the screening tables (e.g., a footnote was added to Table 3-9a for the sediment VOCs and SVOC screening that references the sediment ESVs in Table 3-5b).

Specific Comment #29: Section 3.3.2.1 Sediment VOCs and SVOCs, pages 22 - 23: As previously discussed, frequency of detection should not be used to screen out potential contaminants in a SLERA. While no contaminants were screened out based on frequency of detection, it is inappropriate to discuss this method of refining contaminants of concern in a SLERA.

Response: As per discussions from the 26 February 2009 conference call with USEPA and NYSDEC, it was agreed to limit the initial screening of the chemicals to the comparison to the conservative ESVs (which was the method used for all chemical results in the draft SLERA, with the exception of the pesticide results in the sediments), and further evaluate these preliminary SLERA COPECs as part of ERAGS Step 3. Those chemicals that are retained following the refined ERAGS Step 3 screening will be assessed in the BERA.

Specific Comment #30: Section 3.3.2.2 Sediment Pesticides/PCBs, page 23: As noted above, frequency of detection should not be used to screen out potential contaminants in a SLERA. Please retain gamma-BHC (lindane) and gamma-chlordane as COPCs. Frequency of detection may be discussed in the uncertainty section, and used to refine the COPC list as the risk assessment process continues on to the BERA stage (as per Section 3.5 Scientific/Management Decision Point, page 29).

Response: As per discussions from the 26 February 2009 conference call with USEPA and NYSDEC, it was agreed to limit the initial screening of the chemicals to the comparison to the conservative ESVs, and further evaluate these preliminary SLERA COPECs as part of ERAGS Step 3. Those chemicals that are retained following the refined ERAGS Step 3 screening will be assessed in the BERA.

Specific Comment #31: Tables 3-8a Screening of Volatile and Semivolatile Organic COPECs from Unfiltered Surface Water, Table 3-8b Screening of Inorganic COPECs from Unfiltered Surface Water, Table 3-8c Screening of Inorganic COPECs from Filtered Surface Water, Table 3-9a COPEC Screening of Volatile and Semivolatile Organics from Sediments, Table 3-9b COPEC Screening of Pesticides and PCBs from Surface Sediments, and Table 3-9c COPEC Screening of Inorganics from Sediments: It would be useful to include a column in these tables which indicates how many of the sample locations exceeded screening values.

Response: We disagree that there is a need to show the number or identify those samples that exceed the ESVs at this stage. The primary focus of the SLERA is to compare the

maximum observed positive result to the ESV and determine whether future evaluation of potential risks is warranted.

Specific Comment #32: Table 3-10a Screening for Pesticide and PCB COPECs in Forage Fish Samples: Please include a column which indicates how many fish samples exceeded the ecological screening value. Please check the place values; the fish ecological screening value for total PCBs should be 0.11 ug/kg, not 110 ug/kg. As per Table 3-5c, the ecological screening value for endrin aldehyde should be 265 ppb, rather than 370 ppb.

Response: Because the maximum detected results were used for the chemical screening, reporting the number of individual results that exceed the ESV is not relevant for the SLERA. Therefore, this information is not reflected in the revised SLERA tables.

As per discussions during the 26 February 2009 conference call, it was agreed to use the standard laboratory reporting units for the samples results (e.g., µg/Kg for organics, mg/Kg for metals). Organic fish ESVs reported by Newell et al. (1987) and USACE-ERED database were converted from mg/Kg to µg/Kg in Table 3-5c of the revised SLERA. We concur that the NYSDEC fish criterion for total PCBs is 110 µg/Kg (shown as 0.11 mg/Kg in Newell et al., 1987).

We concur that the USACE-ERED fish benchmark for endrin aldehyde was 265 µg/Kg and was incorrectly shown as 370 µg/Kg in Table 3-10a of the draft SLERA. Based on further evaluation of the results, the more conservative fish criterion of 25 µg/Kg (Newell et al., 1987) will be used to assess the endrin aldehyde results in the revised SLERA.

Specific Comment #33: Section 3.3.3.3 Screening of Inorganics in Forage Fish, page 25: It is not appropriate to eliminate any contaminant with an HQ value greater than one in the SLERA. All contaminants that exceed screening values should be carried through to the BERA where other factors may be considered.

Response: As per discussions from the 26 February 2009 conference call with USEPA and NYSDEC, it was agreed to limit the initial screening of the chemicals to the comparison to the conservative ESVs, and further evaluate these preliminary SLERA COPECs as part of ERAGS Step 3. Therefore, the two inorganics (aluminum and iron) that slightly exceeded their corresponding fish ESVs will be retained as SLERA COPECs at this stage.

Specific Comment #34: Section 3.3.4 Summary of COPECs Identified in SLERA Steps 1 and 2 pages 25 - 26: All contaminants without screening values should be retained as contaminants of potential ecological concern. Further, contaminants identified at the Site and found in Table 4-2 "Important Bioaccumulative Compounds," (*Bioaccumulation Testing and Interpretation For The Purpose Of Sediment Quality Assessment Status and Needs* EPA-823-R-00-001) should also be retained during the SLERA.

Response: As per discussions during the 26 February 2009 conference call with USEPA and NYSDEC, it was agreed to retain the limited number of chemicals that lacked ESVs as preliminary COPECs for the SLERA, but to further evaluate these as part of the ERAGS Step 3 report. Based on the refined screen that will be performed as part of ERAGS Step 3,

some or all of these chemicals may not be retained for further assessment as part of the ERAGS process.

Clarification on the use of chemicals listed under Table 4-2 of *Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment: Status and Needs* (USEPA, 2000) was also provided during the 26 February 2009 conference call. We have added some additional text to section 3.3.4 of the revised SLERA indicating whether the preliminary COPECs are also included in USEPA (2000).

Specific Comment #35: Table 3-11 Compilation of Preliminary COPECs based on the SLERA Screening: Please note that all contaminants for which screening values are not available should be carried through the SLERA and discussed in the uncertainty section. There are no tables which contain surface water screening benchmarks for PCBs and pesticides; nor are there tables which screen PCB and pesticides in water to screening values for surface water. Therefore it is unclear how PCBs were selected as COPECs.

Response: A new subsection (3.4.5) was added to the uncertainty discussion that discusses and the compares the detection limits for those chemicals not detected in the sampled media to the ESVs. Additional tables were added to the revised SLERA presenting the results of these comparisons.

PCBs and pesticides were not detected in any of the surface water samples (see Table 3-2a) so there was no need to include these chemicals in the tables (Table 3-8 series) that compared the maximum positive results to the ESVs. Table 3-11 was updated in the revised SLERA to exclude total PCBs as a surface water COPEC.

Specific Comment #36: Table 3-5c. Compilation of Fish Benchmarks and Selected Screening Values: The Aroclor and total PCB values should be reported in ppm (mg/kg). The correct ecological screening value is 0.11 ppm, rather than 0.11 ppb. Please note that NYSDEC Niagara River Benchmark reference does provide a fish criterion of 0.5 ppm for chlordane and 0.025 for endrin. Further, the USACE-ERED database also listed no observed effect doses for barium and nickel. Please provide a complete reference for CCME (1999).

Response: As per discussions during the 26 February 2009 conference call, it was agreed to use the standard laboratory reporting units for the samples results (e.g., µg/Kg for organics, mg/Kg for metals). Organic fish ESVs reported by Newell et al. (1987) and USACE-ERED database were converted from mg/Kg to µg/Kg in Table 3-5c of the revised SLERA.

The NYSDEC fish criteria (Newell et al., 1987) for chlordane (500 µg/Kg) and endrin (25 µg/Kg) were added to Table 3-5c of the revised SLERA. The chlordane value was not selected as the screening ESV because the USACE-ERED value was more conservative (290 µg/Kg). The endrin value (used as a surrogate for endrin aldehyde) was lower than the USACE-ERED value, thus 25 µg/Kg was used as the screening ESV for endrin aldehyde in the revised SLERA. Table 3-10a (Summary of Fish Screen) was updated in the revised SLERA to show the new ESV for endrin aldehyde. The observed maximum endrin aldehyde result was lower than the revised ESV, thus, endrin aldehyde was not retained as a COPEC.

The USACE-ERED value for barium (0.15 mg/Kg) was not considered to be suitable because it was based upon a biochemical endpoint. As stated in Section 3.2.3 of the draft SLERA, the ESVs were based on growth, reproduction and/or survival endpoints.

Subsequent re-evaluation of the nickel data in the USACE-ERED databases shows that there is one nickel value that is based upon relevant endpoints (70 mg/Kg). This value was added to Tables 3-5c and 3-10b of the revised SLERA. None of the observed fish results were greater than the nickel ESV so nickel was not retained as a fish COPEC.

The CCME (1999) was not used during the selection of fish ESVs. Therefore, it was removed from the revised SLERA Table 3-5c.

Specific Comment #37: Table 3-7 Adjusted NYSDEC Sediment Criteria based on Sample-Specific Organic Carbon Content: As per NYSDEC Sediment Guidance, "EP-based criteria should only be derived for sediments with organic carbon fractions between approximately 0.2 - 12% (EPA SAB, 1992).

Outside of this range, other factors that the EP methodology does not account for may influence contaminant partitioning." Therefore, TOCs greater than 120,000 mg/kg may not be used. Further, sample-specific TOC adjusted screening values should be used for each sample location.

Response: The "working range" of the EqP approach was added to Section 3.2.2 (*Screening Values for Sediment Samples*) in the revised SLERA. The following three shallow (0-6 in) sediment samples had greater than 12% TOC:

- SD08-01 (13.5%), collected from Koppers Pond
- SD08-05 (12.6%), collected from Koppers Pond
- SD08-14 (22.2%), collected from the outlet channel

Therefore, alternate ESVs that were not based on the TOC were used to evaluate the results in these samples if the maximum positive results were reported in these samples. These are shown on the revised Table 3-5b. ESVs based on sample-specific TOC adjusted screening values were not presented for each sample location because the maximum sample results were used for this screening.

Specific Comment #38: Table 3-12 Comparison of BERA and SLERA COPEC Screening Media: Please note that 15 inorganics in sediment were retained in the SLERA, rather than 13.

Response: Table 3-12 and the associated text were reviewed and updated for the revised SLERA. Please note that Table 3-12 from the draft SLERA was renamed to Table 3-14 because new tables were inserted into the revised SLERA to address General Comment #7. Table 3-14 was also reformatted to show the media specific results to improve clarity.

Specific Comment #39: Section 4.0 COMPONENTS OF ERAGS STEP 3: It is not entirely clear what documents the authors are citing as USEPA 1997 and USEPA 1998c are not in the reference section. However, per the Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (Interim Final) June 5,

1997, Step 3 of the process includes: 1) refining the preliminary list of contaminants of ecological concern, 2) further characterizing the ecological effects of contaminants, 3) refining information on contaminant fate and transport, complete exposure pathways, and ecosystems potentially at risk, 4) selecting assessment endpoints, and 5) developing a conceptual model with working hypotheses or questions that the site investigation will address.

Response: These references were inadvertently removed from the draft SLERA. They have been added to the revised SLERA (the citation for USEPA 1998c was changed to USEPA 1998 in the revised document based on the citations in the revised text).

In lieu of repeating the ERAGS guidance, the referenced section provided some additional discussion related to how the five components listed in this comment are implemented in the ERAGS Step 3 report. The latter will include the components listed above.

Specific Comment #40: Section 4.1 Supplemental Screening of COPECs, page 31: Please provide the complete reference in the Reference Section for USEPA, 1997 and 2001c.

Response: These references were inadvertently removed from the draft SLERA. They have been added to the revised SLERA (the citation for USEPA 2001c was changed to USEPA 2001 in the revised document based on the citations in the revised text)..

Specific Comment #41: Section 4.3 Developing a Refined Conceptual Site Model, page 32: Please add a discussion on desktop modeling which should be conducted in the next deliverable to determine whether there is risk to upper trophic level receptors.

Response: Discussions related to desktop modeling (e.g., food chain models used in risk calculations) are not relevant to the SLERA. These will be discussed in detail in the ERAGS Step 3 report.

Specific Comment #42: Section 4.7 ERAGS Step 3 Report, page 33: The authors are proposing that ERAGS Steps 3 through 5 be included in the next deliverable. These steps include the baseline risk assessment problem formulation, the study design and data quality objectives and, field verification of the sampling design. By this, it is assumed that additional field activities are anticipated and that additional data are needed to conduct the BERA.

Response: It was agreed during the 26 February 2009 conference call with USEPA and NYSDEC that the ERAGS Step 3 through 5 reports can be combined as the deliverable that follows the submission of the revised SLERA. The ERAGS Step 4 portion of the combined report will discuss any additional field activities that may be needed, such as the identification and collection of samples from a reference pond, reconnaissance to determine whether the endangered pondweed may be present in Koppers Pond, and other activities to support the preparation of the ERA.