Appendices

Appendix A – BERA Related Comment and Response Letters

BERA Related Comment and Response Letters List

October 26, 2010 NYSDEC Comment Letter on Honeywell's Revised Wastebeds 1-8 Site BERA Report (Redlined Document)

June 24, 2010 NYSDEC Comment Letter on Honeywell's Wastebeds 1-8 Site BERA Report

April 26, 2010 Honeywell's Wastebeds 1-8 Site BERA Cover Letter

January 16, 2009 Honeywell's Wastebed 1-8 Site Comment Response/Agreement Letter

December 19, 2008 NYSDEC Comment Letter on Wastebeds 1-8 Site Final BERA Work Plan

October 22, 2008 Honeywell's Wastebed 1-8 Site Final BERA Work Plan Cover Letter

September 8, 2008 NYSDEC Comment Letter on Wastebeds 1-8 Site Revised BERA Work Plan (Redlined Document)

February 14, 2008 Honeywell's Wastebed 1-8 Site Revised BERA Work Plan Cover Letter (Redlined Document)

January 8, 2008 NYSDEC Comment Letter on Honeywell's Wastebeds 1-8 Site Revised BERA Work Plan

October 10, 2007 Honeywell's Comment Response and Revised BERA Work Plan Cover Letter

September 5, 2007 NYSDEC Comments on the Wastebeds 1-8 Site BERA Work Plan

June 28, 2007 Honeywell's Wastebeds 1-8 Site BERA Work Plan Cover Letter

June 22, 2007 NYSDEC Comment Letter on Honeywell's Wastebeds 1-8 Site PFD Responses

May 30, 2007 Honeywell Responses to NYSDEC Comments on the Wastebeds 1-8 Site PFD

May 3, 2007 NYSDEC Comment Letter on the Wastebeds 1-8 Site PFD

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October 26, 2010

Mr. John McAuliffe
Honeywell International
301 Plainfield Road, Suite 330
Syracuse, New York 13212

Re: Wastebeds 1-8 Site, Site No. 734081, Syracuse, Onondaga County, NY
Baseline Ecological Risk Assessment, September 2010 (redlined/strikeout version)

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation and support agencies have reviewed the redline/strikeout version of the Baseline Ecological Risk Assessment Risk Assessment (BERA) Report for the Waste Beds 1-8 Site, dated September 2010, and have the following comments.

Comments on the modified (redline-strikeout) text are provided below followed by follow-up comments on NYSDEC's June 24, 2010 comments on the draft BERA.

Specific Comments

Typically, page numbering corresponds to complete paragraphs on a page, and begins with the first full paragraph on a page. Paragraph numbering typically includes the last paragraph on a page, even if that paragraph continues onto the next page. Bullets are considered part of the paragraph introducing them.

Executive Summary

1. Page xxiii, Paragraph 4, Sentence 1. Delete "of" after "for."

2. Page xxiv, Bullet 2, Sentence 2. Clarify what is meant by "(and presumably the EPC)," as calculations for the EPC could have been performed and presented.

Section 1: Introduction

No comments.

Section 2: General Site and Study Area Characterization

3. Page 12, Paragraph 4, Section 2.2.4. The third sentence of this paragraph should be corrected to indicate that there is a historical record for red pigweed, rather than straight-leaf pondweed. It can be added to the last sentence of the paragraph that the last observed occurrence of red pigweed was in 1940.

4. Page 12, Paragraph 5, Section 2.2.4. The 2004 USFWS response does not mention wild, recreational, or scenic rivers and therefore this text should be removed from the sentence. If a separate inquiry was made regarding rivers, it should be added to the appropriate section.

5. Figure 2-3. Based on the reference on Page 14, Paragraph 4, SYW-10 should be labeled in this figure.

Section 3: Screening-Level Ecological Risk Assessment (SLERA)

6. Page 24, Paragraph 4, Sentence 1, Section 3.1.3. Replace the second occurrence of "detected" with "found."

7. Page 25, Section 3.1.4 and Figure 3-1. There is some confusion regarding Section 3.1.4 and Figure 3-1. The presentation of columns for both direct contact and dermal contact is redundant. The sentence that was added to the text to address prior Comment 23, "*Inhalation is not considered a major exposure pathway to Site contaminants, and therefore is not represented on Figure 3-1*" is incorrect as the Inhalation column is presented on Figure 3-1. A key should be provided on Figure 3-1 to clarify the intent of "+" and "-" and it should be made clear both in the text and the figure which pathways are quantitatively evaluated in the BERA. Also, to avoid confusion, it is suggested that the Inhalation and Dermal Contact columns be removed from the figure and a note added on inhalation similar to the text above.

8. Page 37, Paragraph 1, Section 3.3.2.3. Please revise the newly added sentence to read as follows "The evaluation presented in Appendix E has been revised from the appendix contained in BERA Work Plan (O'Brien & Gere 2008c) based on NYSDEC comments (NYSDEC 2010)."

9. Page 39, Paragraph 4, Section 3.3.4; Page 40, Paragraph 1, Section 3.3.4.Tables should be listed in ascending order, i.e., Tables 3-3, 3-4, and 3-5.

10. Page 40, Paragraph 6, Section 3.3.5. As noted in the internal comment SEM94, aluminum in sediment should also be addressed in this paragraph.

Section 4: Baseline Assessment Problem Formulation

11. Page 49 on, Section 4.6. References to the 95% UCL concentrations were replaced with exposure point concentrations throughout this section. An explanation of exposure point concentrations (EPCs) as upper estimates of contaminant concentrations should be introduced in this section prior to use of the EPC terminology in measurement endpoints.

Section 5: BERA Study Design Process

No comments

Section 6: Exposure Characterization

12. Page 68, Paragraph 1, Section 6.4.4. Replace "BCF" with "UF" to match the equation.

Section 7: Effects Assessment

13. Page 85, Paragraph 1, Section 7.2.1. The Pattee (1984) study should be added to the references or the document where it is used (e.g., as cited in Sample et al. 1996) should be provided in the text.

Section 8: Risk Characterization

14. Page 121, Bullets 1 and 2, Section 8.7 and Paragraph 4, Bullets 1 and 2, Section 8.8. It should be noted that the EPCs for benzo(a)pyrene and benzo(k)fluoranthene are lower than the mean concentrations and thus the number of exceedances based on the mean is greater than the number of exceedances based on the EPC. Please add a sentence to Section 6.2 explaining that, in some instances, the EPC may be lower than the mean.

Section 9: Uncertainty Analysis

15. Page 127, Paragraph 2, Section 9.1.3.1. Correct the typo in "merucury" in the second sentence.

16. Page 127, Paragraph 6, and Page 128, Paragraph 1, Section 9.2 and Appendix E. As noted in the internal comment [SEM231], Appendix E needs to be checked to ensure that analyses presented in the main text are consistent with the results of the appendix.

17. Page 131, Table 9.1. Revisions were made to the table as a result of a prior comment. For thallium, which does not have an outlier according to this table, the value in the last column for percent change should remain 0.00 rather than 5.10.

18. Page 131, Paragraph 2, Section 9.5.1. The total number of inorganic COCs listed in this paragraph is 21, rather than 23. Fourteen, rather than 15 outliers, are listed for the two sample locations discussed (SS-02D and SS-29).

19. Tables 9.1 to 9.4 and Table 10.1. The line below the table stating "Source: O'Brien & Gere" should be removed, unless this information is derived from another report in which case a year for the reference should be provided.

20. Page 138, Table 9.3. The site value shown for lead (307 mg/kg) is greater than the maximum background value (50 mg/kg) but the cell is not shaded. It is believed that the maximum background value for urban areas included in the cited reference is 500 mg/kg.

21. Page 138, Paragraph 1, Last Sentence, Section 9.7.1. Clarify in this sentence that EPCs and not mean concentrations are being compared.

Section 10: Summary and Conclusions

22. Page 140, Paragraph 4, Section 10.2. Please check the values listed. Table 8-2 lists the ratio for vanadium, m & p-xylenes, and total xylenes as 15, 10, and 7 rather than 16, 9, and 6 provided in the text. Rounding of numbers should be consistent between the text and tables.

23. Page 143, Paragraph 4, Section 10.5. Please update the cadmium and chromium ratios to correspond to the values provided in Table 8-1. The dieldrin exceedance (Table 8-1) should also be mentioned. This paragraph should be consistent with paragraph 9 on this page, which contains the ratios provided in Table 8-1.

24. Page 144, Paragraph 3, Section 10.7. The LOAEL-based ratio for copper should be 4 rather than 5.

25. Page 145, Paragraph 1, Section 10.7. Table 8-1 lists 82 and 22 for the cadmium and chromium EPC ratios, rather than 83 and 23 cited in the text. These values are consistent with paragraph 7 on this page.

26. Page 148, Paragraph 3, Section 10.11. Begin a new paragraph after "NYS Fair parking areas." Also, mercury should be included in the highest exceedance list in the last sentence.

27. Page 148, Paragraph 5, Section 10.11. Delete this paragraph, as it was already included in paragraph 3.

28. Page 149, Paragraph 1, Section 10.12. Replace the existing sentence with "Table 10-1 presents summary information for inorganic COCs in Site surface and seep soil."

29. Page 150, Paragraph 1, Item 1, Section 10.12. Please check the 36% calculation, as aluminum has been eliminated since the initial calculation. At the end of the paragraph, add "and that background concentrations themselves may exceed HQs in some instances."

30. Page 169. For TAMS/Earth Tech, 2003, the title should be changed to "Remedial Investigation Report" rather than "Remedial Investigation/Feasibility Study." For this reference and the next one (TAMS/Earth Tech, 2002), the reference should be changed

from "TAMS Consultants, Inc. and Earth Tech" to "TAMS Consultants, Inc., New York, NY and YEC, Valley Cottage, NY" as is included for the BERA references above these.

Follow-up to June 24, 2010 Comments

31. **Comment 20.** Page 23, Paragraph 8, Section 3.1.3. Provide depth ranges for shallow, intermediate, and deep groundwater. More specific information should be provided for shallow groundwater (as was provided for intermediate and deep groundwater), as these samples were used in the BERA.

    Follow-up: Page 24, Paragraphs 2 and 3, Section 3.1.3. Clarification should be provided on how samples were divided into intermediate and deep groundwater groups. In particular, the first sentence of paragraph 2 provides a depth range of 22 to 74 ft bgs for some samples, while in the second sentence of paragraph 3, a range of 51 to 138 ft bgs is noted.

32. **Comment 52.** Page 1, Section 6.1 Media and Exposure Areas Evaluated: The section refers to Table 4-1b for the list of samples associated with each of the exposure areas; however there is no such table. Please provide a reference to the correct table.

    Follow-up: The text should refer to Table 3-7b, as Table 3-1b which the text has been revised to refer to, has been changed to Table 3-7b (as noted in the Table of Contents).

33. **Comment 59.** Page 4, Equations, Section 6.4.1. The Calder and Braun (1983) equations are missing units (L/day and kg). The terms should be defined with the units.

    Follow-up: Units were added to the Calder and Braun (1983) equation, but parameters in the equation such as WI, BW, etc. should be defined below the equation.

34. **Comment 69.** Page 25, Paragraphs 6 and 7, Section 7.2.1. The discussion of the avian TRVs **for lead that was in the BERA work plan has been deleted from the BERA and should be** reinserted to explain the basis for the NOAEL (3.85 mg/kg/day) and LOAEL (38.5 mg/kg/day) avian TRV values in Table 7-1.

    Follow-up: Although the text has been modified to provide details regarding the Study (Pattee,1984 http://www.springerlink.com/content/x161164167g3ugp3/fulltext.pdf) which the 50 ppm no adverse effect level (NOAEL) was derived from, additional details should be added to fully understand the derivation of the 3.85 mg/kg/day (NOAEL).

35. **Comment 72**. Page 30, Paragraph 1, First Sentence, Section 7.2.1. The first sentence should be revised based on NYSDEC's December 19, 2008 Comment 4.11 regarding selenium toxicity.

    Follow-up: The sixth sentence of the new paragraph on page 89 should be revised as follows: "It is thought that selenium and mercury can interact…" rather than "It is thought that these chemicals can interact…"

36. **Comment 91:** Page 67, Section 9.2 Selection of Media Evaluated: Please include a discussion on the uncertainty of using a subsurface soil depth of 0-13' bgs to evaluate risk to terrestrial plants.

Follow-up: Additional language has been added to the text noting that a depth of 0-13 feet bgs is likely conservative. However, it would be useful to note whether there are observed plant roots down to this depth. The text notes that vegetation was not identified on various surface materials, which does not enlighten the reader regarding what plants are expected to be present.

37. **Comment 115.** Table 7-1, Toxicity Reference Values: Please check the value for the mammalian LOAEL for methyl mercury; the *Baseline Ecological Risk Assessment Final Work Plan* (October 23, 2008) had a value of 0.014 for the TRV, rather than 0.14.

Follow-up: No modifications have been made to Table 7-1, comment should be addressed.

39. **Comment 116:** Table 8-1, Ratio of COC Concentrations in Surface Soil to Criteria for the Protection of Terrestrial Invertebrates and Wildlife: In order to make the calculations more transparent it would be useful to include the mean and 95% media concentration along with the actual screening values in the table.

Follow-up: No modifications have been made to Table 8-1, comment should be addressed.

40. **Comment 124**. Page 86, Table 10.1. It appears that the number of HQ exceedances for chromium and chromium VI are switched. Based on Tables 8-6 through 8-9, there are four exceedances for chromium and one for chromium VI. Please revise.

Follow-up: Based on Tables 8-6 through 8-9 there are four exceedances for chromium, not three as listed in Table 10.1.

41. **Comment 129.** Figure 2-2. The waters of Onondaga Lake should be labeled as depicted on NWI maps (L2UBH, L2UBG, and L1UBH). The mouth of Ninemile Creek should be labeled as a L2USC habitat.

Follow-up: The requested change was not made in Figure 2-3 (previously Figure 2-2).

42. **Comment 168**. Page 75, Paragraph 4, Section 9.7.1. Years for "(USEPA dates various)" should be inserted.

Follow-up: Page 137, Paragraph 3, Section 9.7.1. Only the EPA documents used (i.e., for antimony and silver) should be cited.

Reference

USEPA. 2003. Ecological Soil Screening Level for Aluminum, Interim Final, OSWER Directive 9285.7-60 US Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, DC. November. http://www.epa.gov/ecotox/ecossl/

Please submit a revised approvable BERA report that addresses all the concerns raised in the comments above.

If you have any questions regarding this letter, please call me at 518-402-9676.

Sincerely,

Susan Edwards

Susan Edwards
Project Manager

ec: D. Crawford, OBG
T. Conklin, OBG

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Alexander B. Grannis
Commissioner

June 24, 2010

Mr. John McAuliffe
Honeywell International
301 Plainfield Road, Suite 330
Syracuse, New York 13212

Re: Wastebeds 1-8 Site, Site No. 734081, Syracuse, Onondaga County, NY
Baseline Ecological Risk Assessment, April 2010

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation and support agencies have reviewed the Baseline Ecological Risk Assessment Risk Assessment (BERA) Report for the Waste Beds 1-8 Site and have the following comments.

General Comments

GS.1 The BERA does not mention that an Interim Remedial Measure planned for the Site will completely alter the Lakeshore Area, seep areas and Ditch A. Honeywell should create an addendum to the BERA or supply a narrative as part of the site-wide Feasibility Study, that would describe how changes The IRM will impact the risk and hazard presented in this document.

GS.2 **Uncertainty Implications**. The Baseline Ecological Risk Assessment (BERA) includes several discussions on sources of uncertainties and the implications of these uncertainties on the risk assessment. Specifically, the major issues of uncertainty are background concentrations of metals and concentrations of elevated levels of contaminants in a limited number of hot spots. Although these issues should be considered by the risk manager during Step 8 of the Ecological Risk Assessment Process (Risk Management), the text should clarify that despite these uncertainties the Wastebeds 1 through 8 Site still poses a potential risk to ecological receptors since there are metals above background concentrations which present potential risks to ecological receptors and removal of hot spots from the data set does not eliminate all risks (more detail should be provided).

Specific Comments

Typically, page numbering corresponds to complete paragraphs on a page, and begins with the first full paragraph on a page. Paragraph numbering typically includes the last paragraph on a page, even if that paragraph continues onto the next page. Bullets are considered part of the paragraph introducing them.

Table of Contents

1. List of Acronyms. Add NMCSG and SMU. An acronym should not be used for more than one meaning within a document. Delete "uncertainty factor" after "UF" as it is properly spelled out throughout the BERA (UF=uptake factor).

Executive Summary

2. General. Changes made to other sections affecting the Executive Summary should also be updated here.

3. Page xiii, Paragraph 1. A summary of LOAEL exceedances of metals should be added to this paragraph.

4. Page xiii, Paragraph 4. It is stated that the major source of contaminants at the site is "Solvay waste and other constituents generated at the former Main Plant." The presence of the organic wastes (e.g., BTEX, naphthalene, phenols) primarily at the base of the wastebeds and in stained/impacted soils in portions of the Lakeshore Area and the migration of these organics to shallow groundwater/seeps along the lakeshore should also be discussed in the Conceptual Site Model (CSM) here, similar to the text in the CSM discussion in Section 2.2 of the BERA work plan.

5. Page xix, Paragraph 1, Section ES6.6. The disproportionate influence of the Biosolids Area is a risk management issue and should be presented as such (see General Comment G.1).

6. Page xxi, Section ES6.10. Based on the diet and exposure pathways used for the mink, it should be considered semi-piscivorous (i.e., only 50% aquatic food sources). Therefore, the mink should be referred to as semi-piscivorous throughout the BERA.

7. Page xxii, Paragraph 1, Bullet 3, Section ES7. It is unclear why the methylmercury presence at 1% of the measured mercury concentration is considered to be a primary area of uncertainty, as the BERA provides the rationale for this assumption.

Section 1: Introduction

8. Page 3, Section 1.3. The references to the GB/NMC RI should be to TAMS/Earth Tech, 2003; the Onondaga Lake RI should be to TAMS/Earth Tech, 2002; and the GB/NMC FS should be to Parsons and Exponent, 2005.

9. Page 4, Paragraph 1, Bullets. The RAOs for the Focused FS should be revised consistent with NYSDEC's most recent correspondence regarding RAOs on the revised Focused FS.

Section 2: General Site and Study Area Characterization

10. Page 10, Paragraph 1, Section 2.2.2.2. Add the Latin name for thistle.

11. Page 11, Paragraph 3, Section 2.2.3.2. According to Table 2-1, the pH of both site surface water samples is quite high. This finding should be discussed in the text in the context of habitat suitability. Also, please revise the text to clarify that Table 2-1 only presents measurements from Drainage Ditch A, rather than all five site ditches, and the Ponded Area. According to the last sentence, all site ditches are labeled and shown on Figures 2-1, 2-2, and 2-3. However, these figures do not show these ditches. The text here should refer to other figures (e.g., Figure 1-4) that show these ditches.

12. Page 12, Paragraph 1, Section 2.2.3.3. Table 2-1 that presents physical and chemical data of water from the Ponded Area should be referenced.

13. Page 12, Paragraph 4, Section 2.2.4. Although the New York Natural Heritage Program (NYNHP) was contacted on January 30, 2007 and again on July 31, 2008 (Appendix D), it should be contacted again to obtain the most current information, as the letters from NYNHP recommend that responses should be updated annually if a project is still under development.

14. Page 15, Paragraph 4, Section 2.2.5. References for the New York State (NYS) Breeding Bird Atlas Project and Herpetological Atlas should be added to the text.

15. Page 19, Paragraph 4, Section 2.4.3; Page 38, Bullets 4 and 6, Section 3.3.4; Page 50, Paragraph 2, Bullet 4, Section 4.6.5; Page 51, Top Bullet, Section 4.6.6; Page 51, Paragraph 1, Bullet 4, Section 4.6.7; Page 51, Paragraph 2, Bullet 4, Section 4.6.8; Page 17, Paragraphs 3 and 4, Section 7.1.3. The date for the US Environmental Protection Agency's (USEPA's) Ecological Soil Screening Levels should be November 2003, when it was issued, rather than the date accessed.

Section 3: Screening-Level Ecological Risk Assessment (SLERA)

16. Page 22, Paragraph 2, Section 3.1.2.1 and Page 23, Paragraph 3, Section 3.1.2.2. Wind dispersion is listed as both a primary and secondary/tertiary migration pathway. Each pathway should be characterized as either a primary or secondary/tertiary migration pathway.

17. Pages 23 to 25, General, Section 3.1.3. References to where data can be found in the appendices should be made when discussing maximum concentrations, so that values can be checked.

18. Page 23, Paragraph 6, Section 3.1.3. The depth of surface soils should be defined here.

19. Page 23, Paragraph 7, Section 3.1.3. The depth of subsurface soils should be defined here.

20. Page 23, Paragraph 8, Section 3.1.3. Provide depth ranges for shallow, intermediate, and deep groundwater. More specific information should be provided for shallow groundwater (as was provided for intermediate and deep groundwater), as these sample were used in the BERA.

21. Page 24, Paragraph 4, Last Sentence, Section 3.1.3. It is stated that additional RI work will provide a better understanding of the extent of CPOIs in the Ponded Area. Since it is believed that all of the RI and Supplemental RI sampling has been completed, this sentence should be revised with the more recent results, or deleted.

22. Page 24, Paragraph 5, Section 3.1.3. It is stated that "A total of 104 seep location and nine pipes have been identified were observed." On page 16, paragraph 8, it states "There are more than 160 seeps identified at the Wastebeds 1-8 Site." Please reconcile the numbers and correct the wording (i.e., "have been identified were observed") on page 24.

23. Page 25, Paragraphs 5 and 6, Section 3.1.4. Potential exposure pathways include inhalation, but inhalation is not indicated as a pathway in Figure 3-1. Therefore, text should be added to indicate that inhalation was not considered a major exposure pathway to Site contaminants. In Figure 3-1, both dermal contact and direct exposure are listed as exposure routes. The text clarifies that dermal contact is considered one type of direct exposure; this should be clearly laid out in both the text and associated figure.

24. Page 25, Paragraph 7 and Title Heading, Section 3.2. As BERA has been used throughout this document, ERA should be changed to BERA in this section.

25. Page 29, Paragraph 1, Section 3.2.2. Although the woody tissue samples were not used in this risk assessment, these data should be discussed in this BERA with the assessment endpoint for the plant community.

26. Page 36, Paragraph 8, Section 3.3.2.3. Please see comments on Appendix E.

27. Page 36, Paragraph 10, Section 3.3.3. The text should clarify that chlordane concentrations were only calculated for surface and subsurface soils, as they were not detected in other media.

28. Page 37, Paragraph 2, Section 3.3.3. The text should clarify that PCB concentrations were only calculated for surface soil, subsurface soil, and sediment, as they were not detected in other media.

29. Page 37, Paragraph 6, Section 3.3.3. The review of speciated chromium (i.e., 2008 data) should be included in the appendices (e.g., in Appendix F).

30. Pages 38 to 39, Section 3.3.4. The specific screening table for each medium should be referred to in the introductory sentence before the sources (e.g., site soil screening should refer to Table 3-2, etc.).

31. Page 38, Paragraph 3, Section 3.3.4 and Table 3-3. For site surface and subsurface soil, there are two sources of screening criteria for plants (Efroymson et al. [1997a] and USEPA [2009b]) listed here and shown in Table 3-3. However, in Table 8-2, the ratio of COC concentrations was calculated using soil criteria selected from three sources. The third source of criteria, which is NYSDEC, 2006 (6 NYCRR Subpart 375-6), should also be listed here and used in Table 3-3 as screening criteria.

32. Page 38, Paragraph 4, Bullet 1, Section 3.3.4. Long and Morgan (1990) should not be listed separately, as it was not evaluated independently in Table 3-4, but rather as part of the NYSDEC sediment screening criteria.

33.

34. Page 40, Paragraph 1, Section 3.3.5. The first sentence refers to ecological receptors, but cites human health USEPA guidance. Please clarify this text.

35. Page 39, Section 3.3.5 Constituent Screening Methodology, Bioaccumulation Potential, and Section 9.3.2 COC Screening Process, page 68: The document should reference *Bioaccumulation Testing And Interpretation For The Purpose Of Sediment Quality Assessment Status and Needs*, EPA-823-R-00-001 (http://www.epa.gov/waterscience/cs/biotesting/bioaccum.pdf), rather than EPA Region 3 freshwater sediment benchmarks, for the list of bioaccumulative compounds.

36. Pages 39 to 40, Section 3.3.5. USEPA interim guidance (USEPA, 2003) states that aluminum should not be a soil COC at sites where the soil pH is greater than 5.5, which likely applies to the Wastebeds 1 through 8 site. It can also likely be eliminated from Site surface waters because it is biologically inactive in circumneutral to alkaline (pH 5.5 to 8.0) conditions (USEPA, 2003).

Section 4: Baseline Assessment Problem Formulation

37. Page 45, Paragraph 1, Section 4.3.3. Add an introductory sentence on what polycyclic aromatic hydrocarbons (PAHs) are from a chemical definition.

38. Page 45, Paragraph 4, Section 4.3.4. Add an introductory sentence on what polychlorinated biphenyls (PCBs) are from a chemical definition.

39. Page 46, Paragraph 3, Section 4.3.5. The HSDB reference is provided in the text as 2010 and in the references as 2009. Please revise for consistency.

40. Page 46 on, Section 4.4. Section 3.1.2 includes wind dispersion and volatilization of constituents. An explanation should be added to this section on why these exposure pathways were not evaluated in the BERA.

41. Page 48, Section 4.6 Assessment Endpoints, Risk Questions and Selection of Measurement Endpoints: The following words should be added to the end of the third bullet, "of the Site as a source for forage of wildlife." Thus the assessment endpoint for the benthic invertebrate community is considered similarly to the assessment endpoint for the terrestrial soil invertebrate community.

42. Page 49, Paragraph 4, Bullet 1, Section 4.6.3. Long and Morgan (1990) should not be listed separately, as it was not evaluated independently in Table 8-3, but rather as part of the NYSDEC sediment screening criteria.

43. Pages 50-52, Section 4.6.4 Viability and Function of the Fish Community, Section 4.6.5 Viability and Function of the Insectivorous Bird Community, Section 4.6.6 Viability and Function of the Predatory Bird Community, Section 4.6.7 Viability and Function of the Insectivorous Mammal Community, Section 4.6.8 Viability and Function of the Carnivorous Mammal Community, Section 4.6.9 Viability and Function of the Piscivorous Bird Community, Section 4.6.9 Viability and Function of the Piscivorous Mammal Community: Please indicate how shallow groundwater data will be considered in comparison to surface water data. It is noted in Section 5.2 Study Design, page 54 that shallow groundwater will not be used in the food chain calculations. Please note whether these data will be used for a qualitative assessment.

44. Page 52, Paragraph 1, Bullet 5, Section 4.6.10. Measurement endpoint 5 is appropriate, as the mink is not an exclusively piscivorous species. However, text should be added to clarify.

45. Page 52, Paragraph 2, Section 4.7. Please see the comment on Figure 3-1.

\ Section 5: BERA Study Design Process

46. Page 53, Paragraph 1, Section 5. References to the "Site's stakeholders" (here and elsewhere in the BERA) should be changed to Honeywell, NYSDEC, and USEPA.

47. Page 53, Paragraph 1, Section 5. References to the "Site's stakeholders" (here and elsewhere in the BERA) should be changed to Honeywell, NYSDEC, and USEPA.

48. Page 54, Section 5.2 Study Design, bullet number 3: In the third sentence the exposure medium should be defined as sediment collected from 0-0.5 feet below the sediment/surface water interface, rather than from 0 - 5 feet.

49. Page 54, Paragraph 2, Item 1, Section 5.2, Site Surface Soil Exposure Pathway. It is stated that the site surface soil dataset was used as model inputs for estimating risk to the short-tailed shrew, American robin, red-tailed hawk, and red fox. According to Figure 6-1 and the text, it is believed that the surface soil dataset was also used for estimating risks to the mink. The text should be revised accordingly.

Section 6: Exposure Characterization

50. General. The page numbering is inconsistent. Section 6 starts with page number 1, rather than continuing existing pagination (i.e., page 55). Please revise. (Note, comments below refer to the page number as shown in the BERA.)

51. Page 1, Paragraph 2, Section 6.1. In the first sentence, it is stated that the media and exposure areas are described in Section 4.1.3. However, there is no Section 4.1.3 in the text. Please revise.

52. Page 1, Section 6.1 Media and Exposure Areas Evaluated,: The section refers to Table 4-1b for the list of samples associated with each of the exposure areas; however there is no such table. Please provide a reference to the correct table.

53. Page 1, Section 6.2 Exposure Point Concentrations,: Table 3-11 should be referred to rather than 4-11. The third paragraph should reference the BERA rather than the HHRA (regarding multiple recommendations made by ProUCL)

54. Page 2, Paragraph 5, Bullet 1, Section 6.3.1. This bullet should be removed as the plant reference is not relevant to soil invertebrates.

55. Page 3, Paragraph 1, Bullet 1, Section 6.3.1. Long and Morgan (1990) should not be listed separately, but rather as part of the NYSDEC sediment screening guidance.

56. Page 3, Paragraph 2, Bullet 1, Section 6.3.1. The USEPA reference for *National Recommended Water Quality Criteria* should be updated from 2006a to 2009a to match the rest of the text.

57. Page 3, Paragraph 3, Section 6.3.2. The discussion of using "backwards calculations" to determine acceptable media concentrations should stress that these are a limited number of values used to evaluate wildlife exposure to sediments and water, so as not to confuse them with the hazard quotients (HQs) calculated in the risk assessment that are discussed in Section 6.4.

58. Page 4, Paragraph 3, Second Sentence, Section 6.4 and Paragraph 4 (section title and text), Section 6.4.1. Please revise the portion of the sentence after the colon to say: …through incidental or intentional (i.e., water) ingestion of affected media.

59. Page 4, Equations, Section 6.4.1. The Calder and Braun (1983) equations are missing units (L/day and kg). The terms should be defined with the units.

60. Page 5, Paragraph 5, Section 6.4.2. It is stated that Tables 6-7a and 6-7b present the uptake factors. The text should be revised to indicate that Table 6-7b presents the octanol-water partitioning (Kow) coefficients used in the calculation of the uptake factors in Table 6-7a.

61. Page 8, Paragraph 4, Section 6.4.3. Revise the second and third sentences to simply indicate that BSAFs were preferentially used over BCFs. The justification used for benthic invertebrates is not appropriate for fish, as many fish derive much of their contaminant load from the water column.

62. Page 9, Section 6.4.4 Indirect Uptake via Terrestrial Pathway, and Page 11, *Small Mammals*: Mink should also be considered for inclusion in this discussion, as per Figure 6-1 and Section 6.3.2 Higher Trophic Level Receptors, mink are noted as being exposed to site surface soils.

63. Page 11, First and Second Equations, Section 6.4.4. UF_{s-i} should be used in the equations for invertebrates rather than BCF for consistency in terminology with the other pathways (e.g., plants and mammals).

64. Page 14, Section 6.5.3 American Robin: Please include the second paragraph from the *Baseline Ecological Risk Assessment Final Work Plan* (October 23, 2008) which provides a summary of the robin's diet and notes that for this BERA the diet is assumed to consist of 93 percent invertebrates and 7 percent vegetable matter.

65. Pages 13 to 15, Section 6.5. Comment 3.10 of NYSDEC's December 19, 2008 comments on the work plan stated that "*Pages 28 to 31, Section 3.4.3 All life history parameters listed in Table 3-6 should be briefly discussed in the text. For example, body weight, food ingestion rate, water ingestion rate, and sediment ingestion rate are not discussed for the short-tailed shrew. If a common approach was used to determine ingestion rates, this approach can be discussed once and referenced for subsequent receptors*." This section does not discuss all life history parameters contained in Table 6-8 and should be updated to do so.

Section 7: Effects Assessment

66. Page 22, Paragraphs 4 and 5, Section 7.2.1. The TRVs selected for chromium III and chromium VI should be clearly separated and discussed individually (i.e., the last sentence of the fourth paragraph is out of place since this paragraph and the fifth paragraph discuss chromium III). Also, the citation provided for the chromium VI values is incorrect – it should be USEPA, 2003 or 2009a rather than 2008a.

67. Page 23, Paragraph 5, Section 7.2.1. Provide a reference for the aquatic toxicity values discussed in this paragraph.

68. Page 23, Paragraph 5, Section 7.2.1. The term LC_{50} should be briefly explained the first time it is used.

69. Page 25, Paragraphs 6 and 7, Section 7.2.1. The discussion of the avian TRVs for lead that was in the BERA work plan has been deleted from the BERA and should be reinserted to explain the basis for the NOAEL (3.85 mg/kg/day) and LOAEL (38.5 mg/kg/day) avian TRV values in Table 7-1.

70. Page 27, Paragraph 8, Section 7.2.1. Reference to "this Wastebed B/Harbor Brook BERA" should be changed to Wastebeds 1 through 8.

71. Page 28, Paragraph 6, Section 7.2.1. The studies used to derive the molybdenum TRVs should be cited (Schroeder and Mitchner [1971] for mammals and Lepore and Miller [1965] for birds).

72. Page 30, Paragraph 1, First Sentence, Section 7.2.1. The first sentence should be revised based on NYSDEC's December 19, 2008 Comment 4.11 regarding selenium toxicity.

73. Page 42, Between Paragraphs 4 and 5, Section 7.2.4. The title of 4-Chloroaniline is missing.

74. Page 43, Paragraph 3, Section 7.2.4 and Table 7-1. The avian TRVs for 4-methylphenol are not presented in Table 7-1. It is unclear why these avian TRVs were not used for 2-methylphenol as the mammalian 2-methylphenol TRVs were used for 4-methylphenol.

75. Page 43, Paragraph 5, Section 7.2.4. Please cite the study used in the HSDB to derive the acetophenone mammalian NOAEL and LOAEL.

76. Page 43, Paragraph 8, and Page 45, Paragraphs 2 and 3, Section 7.2.4. Please cite the original authors of the studies summarized here.

77. Page 49, Paragraph 1, Section 7.2.6. An introductory sentence should be added to the beginning of the section stating that general VOC toxicity information on plants, aquatic organisms, mammals, and birds is provided here with specific information on aquatic organisms, mammals, and birds provided for each COC. A statement should also be added that no relevant plant ecotoxicity information was available for VOCs, with the exception of xylene and toluene, as described in the text.

78. Page 51, Paragraph 1, Section 7.2.6. Text should be added on the selection of the mammalian TRV values from IRIS.

79. Page 51, Paragraph 8, Section 7.2.6. The Nawrot and Staples (1979) study summarized in Sample et al. (1996) should be briefly described here, as was done for other studies taken from that report.

Section 8: Risk Characterization

80. Page 57, Paragraph 3, Bullets 3 and 4, Section 8.2. These bullets should be discussed in Section 10, as the rest of this section focuses on a direct comparison to measurement endpoints.

81. Page 57, Section 8.2 Assessment Endpoint: Viability and Function of the Terrestrial Plant Community: It is indicated in the fourth bullet that aluminum is not considered to pose risk because the concentration present on site is below the typical background concentration found in the United States. Data may be compared to site-specific background concentrations, but should not be screened against continental background values.

82. Page 58, Paragraph 2, Bullet 2, Section 8.3. 2-Methylnaphthalene should be listed with the SVOCs rather than the metals.

83. Page 58, Paragraph 3, Bullet 3, Section 8.4. It should be added that toluene also greatly exceeded screening SCGs when the EPC was used (Table 8-4).

84. Page 59, Paragraph 2, Bullet 3, Section 8.5; Page 60, Paragraph 1, Bullet 3, Section 8.6; Page 61, Bullet 3, Section 8.7; Page 61, Paragraph 4, Section 8.8; Page 62, Paragraph 3, Bullet 3, Section 8.9; Page 63, Paragraph 2, Bullet 3, Section 8.10. These bullets should be made into sentences after the bullets, as they interpret the results, in contrast to the previous bullets that present direct comparisons.

85. Page 63, Paragraph 3, Bullet 1, Section 8.10. The text states that 12 COCs had NOAEL-based HQs greater than one and Table 8-12 shows 12 HQs in bold, which should indicate a value above one. However, the HQ for mercury is listed as 1.6E-01. Please check this HQ and revise the text and/or table as appropriate.

Section 9: Uncertainty Analysis

86. Page 65, Paragraph 2, Sentence 1, Section 9. Replace "accurate, deterministic" with "precise deterministic."

87. Page 67, Paragraph 1, Section 9.1.3. The analyses performed for Wastebeds 1 through 8 and other sites surrounding Onondaga Lake indicate that mercury and chromium do exist in more than one form at the Site. Therefore, the first sentence should be revised to read "Two constituents, mercury and chromium, exist in more than one form at the Site."

88. Page 67, Paragraph 3, Section 9.1.3.2. As noted in Section 3.3.3, site-derived ratios of 1% and 11% were used to estimate hexavalent chromium from total chromium when hexavalent chromium was not analyzed. Since this is based on site-specific data (it is believed including non-detects) and the ratios are low, this should not be considered overly conservative.

89. Page 67, Paragraph 6, First Sentence, Section 9.2. Revise "most appropriate" to "an appropriate."

90. Page 67, Paragraph 7, Second Sentence, Section 9.2. Revise to read "This comparison demonstrated that 78% of the COCs had a higher EPC in the 0 to 6 inch range relative to the 0 to 12 inch interval (Appendix E, Table E-2)."

91. Page 67, Section 9.2 Selection of Media Evaluated: Please include a discussion on the uncertainty of using a subsurface soil depth of 0-13' bgs to evaluate risk to terrestrial plants.

92. Page 68, Paragraph 7, Section 9.4. A conservative bias is only introduced into the BERA if areas with poor or unsuitable habitat have higher concentrations of contaminants than the rest of the site. If this is the case, then that point should be added; otherwise habitat suitability may not introduce a bias.

93. Page 69, Paragraphs 2 and 3, Section 9.5.1. The analysis presents the impacts of outliers for inorganics on the mean concentrations used for the comparisons to screening values. There should also be a discussion of the potential impact on the 95% UCL values which are used as the EPCs for the food chain models.

94. Page 70, Paragraph 2, Section 9.5.1. Figure 3-5 should be referenced for the location of the two samples with outliers. This paragraph should also introduce the concept of hot spots, described in the subsequent section.

95. Page 71, Paragraph 1, Section 9.5.2. Please clarify the intent of the uncertainty analysis related to spatial hot spots. Although the data clearly indicates that some inorganic COCs are concentrated in certain areas, it does not necessarily follow that risk to ecological receptors at other areas is below target levels. If this analysis is intended to assist in risk management decisions, further work should be performed in subsequent reports (e.g., FS).

96. Page 75, Paragraph 4, Section 9.7.1. This paragraph should clarify that comparisons are being made to maximum background concentrations, which are not "typical." The last sentence should be deleted to avoid conclusions that are not substantiated here.

97. Page 76, Paragraph 1, Section 9.7.1. This paragraph should clarify that comparisons are being made to 95% UCL concentrations at the reference locations, which are not "typical." Table 11-2 of the Onondaga Lake BERA also presents mean values for the two reference locations and these should also be presented in Table 9.4. The last sentence should be deleted to avoid confusion.

98. Pages 75-76, Section 9.7. Inorganic Background Concentrations, Soil: The screening of site-specific inorganic data against background should be done using the mean or 95% UCL rather than the NYS maximum inorganic data. If this is not possible, than the use of the maximum background value should be discussed in the uncertainty section.

99. Pages 76-77, Section 9.7. Inorganic Background Concentrations, Sediment: As part of the refining of the contaminants of potential concern (COPC), as the process moves from the SLERA to the BERA, inorganic background concentrations may be compared to site background concentrations; where site inorganic concentrations are less than or equal to background concentrations these values may be dropped from the COPC list. This should be done, rather than discussing background inorganic sediment concentrations in the uncertainty section.

Section 10: Summary and Conclusions

100. Page 78, Paragraph 3, Section 10.1. Although some inorganic COCs are within background concentration levels and hot spots are present on the site, the BERA indicates the potential for adverse effects on the soil invertebrate community. This conclusion should be presented here.

101. Page 80, Paragraph 3, Section 10.4. It is stated that exceedances were distributed among constituent categories. Although this is correct, it should be noted that the highest exceedances for surface water and groundwater, as noted on page 79, are for the primary organics related to Honeywell operations (BTEX, naphthalene, phenols).

102. Page 80, Section 10.4 Assessment Endpoint: Viability and Function of the Fish Community, <u>Fish Summary</u>: The discussion should focus on the risk to the fish community based on surface water contaminant concentrations and should not include information about the proposed focused feasibility study which identifies interim remedial measures to mitigate site impacts to Onondaga Lake, Ditch A and Ninemile Creek.

103. Page 81, Paragraph 8, Third Sentence, Section 10.6. The food chain modeling and comparison of COCs to EcoSSLs do not indicate that risk to predatory birds is likely to be low as stated. Therefore, this sentence should be deleted.

104. Page 85, Paragraph 6, Section 10.11. As noted above, not all of the risks/exceedances are due to metals. There should be some discussion in this summary section pertaining to the primary organics related to Honeywell operations (BTEX, naphthalene, phenols).

105. Pages 86 and 87, Items 2 and 3, Section 10.12. The removal of a single outlier for some COCs reduces the exposure concentration, but the impact on whether the resulting HQ is still above one is not discussed. The same is true when considering localized areas of elevated concentrations. Although these issues represent uncertainty, there are still ecological risks associated with the Site, which should be stated here.

106. Page 87, Section 10.12 Additional Considerations Related to Metal Concentrations in Surface and Seep Soils: Although data from the Biosolids Area may have a disproportionate impact on the calculation of risk, the risk identified will need to be addressed.

References

107. The following reference should be added: Malcolm and Shore (2003) cited on page 75.

Tables *(note, the tables were reviewed against the database for select contaminants)*

108. Tables 2-7, 3-5, 3-6, and 3-7. The USEPA reference for *National Recommended Water Quality Criteria* should be updated from 2006 to 2009a to match the text.

109. Tables 3-1a and 3-1b. Location BT-SS-09 should be listed in this table under Subsurface Soil since samples were also collected from 1 to 2 ft and 2 to 3 ft from this location.

110. Table 3-1a. Location WB18-101-01 is shown in the Sediment column. According to the draft HHRA (page 28), the sample from this location was a seep sediment. Therefore, it should be shown in the Seep Sediment column in Table 3-1a and in the Site Soil (Surface Soil and Seep Sediment) column in Table 3-1b. The revisions should also be made in Appendix F1 and corresponding calculations.

111. Table 3-3, Mercury. There are 183 detected results out of 207 reported in the Detection Frequency column. However, according to the data provided in Appendix F1, there are 184 detections out of 208 total results and ProUCL shows 182 detections out of 206 samples. These should all be consistent.

112. Table 3-8. In the Site Subsurface Soil column, only one TOC result is reported for location BT-SS-09. Soil from this location was sampled from 0 to 0.5 ft, 1 to 2 ft, and 2 to 3 ft depth intervals, all of which should be included for subsurface soil in this table.

113. Table 3-10. It is stated in Notes a and b that this table includes only the constituents from Tables 4-5 through 4-9. However, these tables do not exist. It is believed that these notes should instead refer to Tables 3-2 through 3-7.

114. Table 6-7b. The source of each value should be provided, as the values provided in the Hazardous Substances Data Bank (HSDB) did not correspond to many of the values, and both the HSDB and USEPA estimation program KOWWIN were provided as references. This table should also note what form of each metal and which PCBs were used to determine the octanol/water partition coefficients.

115. Table 7-1, Toxicity Reference Values: Please check the value for the mammalian LOAEL for methyl mercury; the *Baseline Ecological Risk Assessment Final Work Plan* (October 23, 2008) had a value of 0.014 for the TRV, rather than 0.14.

116. Table 8-1, Ratio of COC Concentrations in Surface Soil to Criteria for the Protection of Terrestrial Invertebrates and Wildlife: In order to make the calculations more transparent it would be useful to include the mean and 95% media concentration along with the actual screening values in the table.

117. Table 8-4, Ratio of COC Concentrations in Site Surface Water to Screening Criteria for the Protection of Fish and Wildlife and Table 8-5 Ratio of COC Concentrations in Shallow Groundwater to Screening Criteria for the Protection of Fish and Wildlife: It is unclear how "Ratios" or hazard quotients can be derived when the value in the guidance/standards column is "NV" (no value). It is unclear whether values from Table 3-5 Data Summary and Screening of Constituents in Site Surface Water were used to derive some of the ratios. Please clarify.

118. Page 69 to 70, Table 9.1. The sample size used for each COC should be included in this table so it can be seen how many samples were used to calculate the means with and without the outliers.

119. Page 71, Table 9.2. It is unclear what data were used in these average concentration calculations. It is assumed that the surface soil data presented in Appendix F1 (surface soil sheet excluding seep sediment) were used. However, based on the averages for each of the areas, it appears that the data provided with the draft HHRA (Electronic Appendix A Site Dataset Rev5) were used. Some discrepancies exist between these two sets of data. For example, location WB18-SS-25 is a surface soil location utilized in the BERA; however it appears that this location was not used in the HHRA (it was marked in the HHRA as "outside an exposure area" although it was not clear why). Also, Appendix F1 does not include duplicate results while HHRA Appendix A does (e.g., there are two chromium results for location WB18-SS-19 at the depth of 0.5 to 1 ft [140 and 380 mg/kg] in the HHRA while in Appendix F1 there is only one result of 140 mg/kg).

120. Page 77, Table 9.4. The table should specify that 95%UCL values are presented for Upper Geddes Brook/Ninemile Creek and Otisco Lake reference locations. As noted in a comment above, the average values reported in the Onondaga Lake HHRA should also be shown. The source should be listed as TAMS (2002a) for the reference concentrations. It should be noted that the methylmercury values for the reference locations were measured (as compared to the derived values for Wastebeds 1 through 8).

121. Page 86, Table 10.1. The values in the Direction and Percent Change from Normal to Adjusted Average column for chromium, chromium VI, iron, silver, and thallium are inconsistent with Table 9.1. It appears that the value reported for iron corresponds to lead in Table 9.1. Please revise.

122. Page 86, Table 10.1. Five HQs greater than one are reported for aluminum. However, Note a indicates that this column is based on the HQs that exceed one for receptors exclusively exposed to surface soil (fox, robin, hawk, and shrew). However, according to Figure 6-1 and Table 6-8 and 8-12, mink is also exposed to surface soil. This table should be revised to indicate whether HQs are inclusive of mink (which appears to be the case for aluminum).

123. Page 86, Table 10.1. Only one HQ exceedance is reported for antimony. However, based on Tables 8-6 through Table 8-9, there are two exceedances – one for the short-tailed shrew (3.7) and one for the red fox (2.0). Please revise.

124. Page 86, Table 10.1. It appears that the number of HQ exceedances for chromium and chromium VI are switched. Based on Tables 8-6 through 8-9, there are four exceedances for chromium and one for chromium VI. Please revise.

125. Page 86, Table 10.1. Three HQ exceedances are reported for iron. However, based on Tables 8-6 through 8-9, an HQ was not calculated for iron since there are no TRV values. It is believed that these three exceedances correspond to lead, which is not listed in this table. Please revise.

126. Page 86, Table 10.1. It is unclear why some cells are shaded in this table.

Figures

127. Figure 1-1. Add the year of the USGS quadrangle to the source notes.

128. Figure 2-1. The covertype floodplain forest is difficult to discern. Background coloration or an alternative pattern should be used to enable easy identification of this area.

129. Figure 2-2. The waters of Onondaga Lake should be labeled as depicted on NWI maps (L2UBH, L2UBG, and L1UBH). The mouth of Ninemile Creek should be labeled as a L2USC habitat.

130. Figure 2-3. Ditches A through E should be labeled in this figure.

Appendices

131. Appendix B, Question III.3. It is stated that the Ponded Area is not accessible to the public and is not used. Since the public can access the Ponded Area (as stated in the HHRA) and it was considered in the exposure areas in the HHRA, this should be revised to only state that the Ponded Area is not used for recreation.

132. Appendix E. References should be provided at the end of the text.

133. Appendix E, Page 2, Paragraph 3. The selection of a ratio of less than 0.5 or more than 2.0 to establish significance is not justified based on statistical grounds. Statistical tests should have been run to determine whether significant differences exist between the two data sets and NYSDEC's September 8, 2008 Comment Letter (Comments 21 and 25) specifically requested statistical evaluation or comparisons.

134. Appendix F1, Subsurface Soil sheet. The location WB18-101-02 is included in the subsurface soil sheet. This location is a sediment sample and is not shown in either Table 3-1a or Table 3-1b. Please revise.

135. Appendix F1, Habitat Sediment sheet. The samples from 0.5 to 1 ft depth are marked as used in BERA. However, in Section 5.2 and Section 6.1, Bullet 3, it is stated that habitat sediment exposure medium was defined as sediment collected from 0 to 0.5 ft below the sediment/surface water interface. If the data below 0.5 ft were not used in the BERA, these samples should be marked as "No" in Appendix F1.

136. Appendix F4, Tables 4-4b and 4-5b. It is unclear why these tables (which are the only ones included for this Appendix F4) are numbered Tables 4-4b and 4-5b instead of F4-1 and F4-2.

137. Appendix F5, Tables 4-4c, 4-5c, and 4-6b. It is unclear why these tables are numbered Tables 4-4c, 4-5c, and 4-6b instead of F5-1 to F5-3.

138. Appendix F6, Table1, Surface Soil, Mercury ProUCL output. The number of valid observations is reported as 146. However, according to the data presented in Appendix F1, there are 147 results that are supposed to be used in the exposure point concentration determination. It appears that sediment location WB18-101-02 was not included. However, this location is shown in Table 3-1b as a Site Soil location, which it is not. Please revise.

139. Appendix F6, Table 1, Surface Soil, 4, 4-DDE ProUCL output. The number of valid observations is reported as 130 with two detected results. However, according to the data presented in Appendix F1, there are 131 results with 3 detections that are supposed to be used in the exposure point concentration determination. Also, Table 3-2 shows three detections out of 131 total results and Table 6-1 shows the potential UCL for use of 0.014 mg/kg that corresponds to the ProUCL output run for 131 observations. It is suspected that location WB18-SS-06 was not included because of the qualifier JN. Please revise.

140. Appendix F6, Table1, Surface Soil, 4,4-DDT ProUCL output. The number of valid observations is reported as 127 with 36 detected results. However, according to the data presented in Appendix F1, there are 131 results with 40 detections that are supposed to be used in the exposure point concentration determination. Also, Table 3-2 shows 40 detections out of 131 total results and Table 6-1 shows the potential UCL for use of 7.9E-03 mg/kg that corresponds to the ProUCL output run for 131 observations. It is suspected that the locations with the qualifier JN were not included in the Appendix F6 ProUCL output. Please revise.

141. Appendix F6 – Table 4, Surface Water, Arsenic. The ProUCL output shows 32 valid data and 3 detected data. However, according to the data provided in Appendix F1 and Table 3-5, there are 36 valid data and 7 detected data. This influences the ProUCL output reported in this appendix. The same issue is in Appendix F6 – Table 5. Please update.

142. Appendix F6 – Table 4, Surface Water, Naphthalene. The ProUCL output shows 34 valid data and 16 detected data. However, according to the data provided in Appendix F1 and Table 3-5, there are 36 valid data and 18 detected data. This influences the ProUCL output reported in this appendix. Please update.

Editorial Comments

143. Page xiii, Paragraph 5, Section ES.2 and Page 25, Paragraph 5, Section 3.1.4. Deleted the word "assorted" prior to "avian and mammalian predators."

144. Page xx, Paragraph 1, Section 6.8. Change "the risk to the carnivorous mammal" to "the risk to carnivorous mammal**s**."

145. Page xxi, Paragraph 1, Bullet 3, Section 6.10. Delete the "s" at the end of "SVOC."

146. Page 14, Paragraph 4, Section 2.2.4. Delete "as" before "part" in the last sentence.

147. Page 21, Section Heading. The section heading should use the same format that was used for the other sections.

148. Page 24, Paragraph 6, Last Sentence, Section 3.1.3. Change "measure" to "measured."

149. Page 36, Paragraph 9, Section 3.3.3. Replace "manipulation prior to the screening step" with "additional steps prior to screening."

150. Page 37, Paragraph 3, Section 3.3.3. The BERA database (Appendix F1) lists “methyl mercury [Derived]” rather than “methyl mercury [ratio applied]” as indicated in the text.

151. Page 37, Paragraph 6, Section 3.3.3. The BERA database (Appendix F1) lists “Chromium VI (Ratio Applied)” rather than “hexavalent chromium (ratio applied)” as indicated in the text.

152. Page 38, Paragraph 5, Section 3.3.4. Delete “Habitat” at the end of the second sentence.

153. Page 46, Paragraph 4, Last Sentence, Section 4.4. Remove “and” after “terrestrial exposure pathways,”.

154. Page 1, Paragraph 6, Section 6.2. “COPCs” should be “COCs.”

155. Page 11, Second Equation, Section 6.4.4. The “X” should be made lower case to indicate multiplication.

156. Page 15, Paragraph 4, Third Sentence, Section 6.6.3. This sentence is incomplete.

157. Page 22, Paragraph 2, Section 7.2.1. Replace the “0” in “of” with an “o.”

158. Page 37, Paragraph 2, First Sentence, Section 7.2.3. The reference “USEPA 2009c” should be “USEPA 2009a.”

159. Page 37, Paragraph 7, Second and Third Sentences, Section 7.2.3. The references “ATSDR 2002d” should be “ATSDR 2002b.”

160. Page 40, Paragraph 5, Section 7.2.3. Add “University” after “Cornell” (twice) for consistency with the references.

161. Page 43, Paragraph 4, First Sentence, Section 7.2.4. Remove the “s” after acetophenone and change the remainder of the sentence from plural to singular.

162. Page 47, Paragraph 4, Section 7.2.4. Remove the “b” after “IPCS 1994.”

163. Page 52, Paragraph 6, Section 7.2.6. Delete the reference to Table 7-1.

164. Page 67, Paragraph 5, Section 9.2. Remove the “b” after “2007.”

165. Page 72, Paragraph 5, Second Sentence, Section 9.6.1. Change “receptors” to “receptor’s.”

166. Page 73, Paragraph 1, Third Sentence, Section 9.6.1. Remove the comma after “red fox.”

167. Page 73, Paragraph 2, Fourth Sentence, Section 9.6.2. Replace “there absence” with “their absence.”

168. Page 75, Paragraph 4, Section 9.7.1. Years for “(USEPA dates various)” should be inserted.

169. Table 7-2. Correct the spelling of carbon disulfide.

Reference

USEPA. 2003. Ecological Soil Screening Level for Aluminum, Interim Final, OSWER Directive 9285.7-60 US Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, DC. November. http://www.epa.gov/ecotox/ecossl/

Please submit a revised approvable BERA report that addresses all the concerns raised in the comments above, within 45 days of the date of this letter.

If you have any questions regarding this letter, please call me at 518-402-9676.

Sincerely,

Susan Edwards
Project Manager

ec: D. Crawford, OBG

bec: R. Nunes, USEPA
A. Cirillo, USEPA
M. Sheen, NYSDEC, Region 7
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April 26, 2010

Ms. Susan Edwards
Project Manager
Remedial Bureau D
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, New York 12233-7016

RE: Wastebeds 1 – 8, Town of Geddes, Onondaga County, New York
Index # D-7-0002-02-08

Dear Ms. Edwards:

Honeywell has enclosed the Baseline Ecological Risk Assessment (BERA) Report for the Wastebeds 1 through 8 Site in Geddes, New York as per the above referenced Order on Consent. Please note that the report reflects the final BERA Work Plan and NYSDEC comments provided on the Wastebeds 1-8 Problem Formulation Document (PFD) submittal.

Please contact me at (315) 552-9785 or Doug Crawford of O'Brien & Gere at (315) 437-6100 with any questions.

Very truly yours,

John P. McAuliffe by ccc

John P. McAuliffe, P.E.
Program Director, Syracuse

Attachments (Elec, 1 unbound, 3 bound)

cc:	Mr. Robert Nunes	USEPA (4 copies)
	Mr. Gregg Townsend	NYSDEC Region 7 (1 copy, 1 CD)
	Mr. Mark Sergott	NYSDOH (1 copy, 1 CD)
	Mr. Geoffrey J. Laccetti	NYSDOH (ltr only)
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	Joseph J. Heath, Esq.	(1 copy, 1 CD)
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	Mr. Douglas M. Crawford	O'Brien & Gere (ec ltr only)
	Mr. Christopher C. Calkins	O'Brien & Gere (ec ltr only)
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January 16, 2009

Ms. Susan Edwards
Project Manager
Remedial Bureau D
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, New York 12233-7016

Re: Wastebeds 1 – 8, Town of Geddes, Onondaga County, New York
Index # D-7-0002-02-08

Dear Ms. Edwards:

In accordance with the New York State Department of Environmental Conservation's (NYSDEC) December 19, 2008 comment letter on the October 2008 *Wastebeds 1 through 8 Site Baseline Ecological Risk Assessment Final Work Plan* (BWP), this letter represents Honeywell's agreement to incorporate responses to the NYSDEC's comments into the forthcoming Baseline Ecological Risk Assessment (BERA) report in lieu of submitting a revised BWP.

We look forward to your approval of the BWP and preparation of the BERA report. If you have any questions or comments, please do no hesitate to contact Doug Crawford of O'Brien & Gere or me.

Sincerely,

John P. McAuliffe

John P. McAuliffe, P.E.
Program Director, Syracuse

cc: Mr. Alfred J. Labuz – Honeywell
Mr. William Hague – Honeywell
Brian D. Israel, Esq. – Arnold & Porter
Mr. Robert Nunes – USEPA, Region II (4)
Argie Cirillo, Esq. – USEPA
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Mr. Mark Sergott, NYSDOH
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Margaret Sheen, Esq – NYSDEC
Mr. David Coburn – Onondaga Co Dept of Env
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Alexander B. Grannis
Commissioner

December 19, 2008

John McAuliffe
Honeywell International
5000 Brittonfield Parkway
Suite 700
East Syracuse, NY 13057

Re: Waste Beds 1-8, Site No. 734083, Syracuse, NY
Comments on "Final Work Plan Wastebeds 1 through 8
Site Baseline Ecological Risk Assessment, Geddes, New York,"
Prepared by O'Brien & Gere for Honeywell, October 2008

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation and support agencies have reviewed the final version of the revised Baseline Ecological Risk Assessment (BERA) submitted to the NYSDEC on October 8, 2008. The following comments are provided such that they may be addressed during performance of the BERA and /or within the BERA Report.

General Comments

Comments made on the February 2008 Baseline Ecological Risk Assessment (BERA) Work Plan were generally addressed.

Specific Comments

Typically, page numbering corresponds to complete paragraphs on a page, and begins with the first full paragraph on a page. Paragraph numbering typically includes the last paragraph on a page, even if that paragraph continues onto the next page. Bullets are considered part of the paragraph introducing them.

Section 1: Introduction

1.1 Page 2, Paragraph 4, Section 1.1. This paragraph should reference Figure 1-3.

1.2 Page 2, Paragraph 9, Section 1.1. Clarify if the "pioneering" species referred to are representative of disturbed or poor quality soils.

Section 2: Problem Formulation Summary

2.1 Page 5, Paragraph 6, Section 2.1. The revised wetland delineation report (O'Brien and Gere, 2008) is currently under review. The changes made in the revised report should be incorporated into the BERA.

2.2 Page 5, Paragraph 8, Section 2.1. The location of the "ponded area" should be provided (e.g., downstream of Ditch E at the boundary between the New York State Fair Parking Area and Upland Old Field Successional Area.)

2.3 Page 7, Paragraph 3, Section 2.2.1. A table listing selected samples by media should be referenced (i.e., Table 3-1b).

2.4 Page 7, Paragraph 4, Section 2.2.1. Delete "sediment greater than 6 inches," as the exclusion is based on the analysis performed in Appendix C, rather than being based on an incomplete pathway.

2.5 Page 7, Paragraph 6, Section 2.2.2. Since subsurface soils (2-13 feet) will be evaluated for phytotoxic effects, subsurface COPECs should be included in Section 2.5.1 :Selected COCs, page 11, Tables 2-2 : List of Culled COPECs (add a box for subsurface soil), and Table 2-3: Summary of BERA COCs (add a column to the direct contact side of this table) . Or, as an alternative to updating the tables, a separate table for subsurface soils could be presented.

2.6 Page 10, paragraph 1. It is noted that shallow ground water and seep water will also be evaluated. Clearly indicate whether these media will be screened against surface water values.

2.7 Page 10, Paragraph 2, Section 2.4. Benthic invertebrates, fish, and other aquatic organisms may be exposed to COCs in both surface water and sediments. The last two sentences should be revised to reflect this.

2.8 Page 10, Paragraph 3, Section 2.4. Herbivores and insectivores (e.g., shrews) should be discussed separately in the second sentence.

2.9 Page 10, paragraph 2, Section 2.4 Ecological Receptors. As Section 2.3.2 Aquatic Exposures (page 9) distinguishes between "Site surface water" and "Habitat surface water," it is recommended that when discussing ecological receptors expected to be exposed to COCs in surface water, clearly indicate in the BERA that aquatic exposure would be associated with "Habitat surface water."

2.10 Pages 12 to 14 Risk Questions, Sections 2.6.1 to 4.5.11. Replace "adverse alterations" with "adverse effects."

2.11 Pages 12 to 14, Sections 2.6.3, 2.6.4, 2.6.5, 2.6.6, 2.6.9 and 2.6.10. A measurement endpoint should be added to address whether measured concentrations of chemicals in surface water exceed standards, criteria, and guidance for the protection of wildlife and/or aquatic organisms.

2.12 Section 2.6.8 Viability and Function of the Fish Community, page 13: The risk question should specify that exposure to the fish community will be from Ditch A, rather than Site ditches.

Section 3: Study Design and Exposure Assessment

3.1 Page 16, paragraph 2. The last sentence in the second paragraph should refer to Table C-1 in Appendix C, rather than Table 2-1.

3.2 Page 17, Section 3.2.1 Derivation of Exposure Point Concentrations, please clarify whether 95% UCL of all data were used for a particular constituent, or 95% UCL of the mean constituent concentration was calculated. If the latter, this should be clearly indicated in the discussion of measurement endpoints in Section 2.6 Assessment Endpoints, Risk Questions and Selection of Measurement Endpoints.

3.3 Page 17, Paragraphs 3 and 4, Section 3.2.1. The comparison of sediment depth intervals presented in Appendix C should be referenced, including Table C-2.

3.4 Page 19, Paragraph 1, Section 3.2.2. Sediment samples collected by Honeywell in the West Flume, ditches, and ponded areas/wetlands at the LCP Bridge Street site in 1995 and 1996 and in Wetland SYW-18 in 1998 that provided part of the basis for a wetland mercury methylation rate of 1 percent should be discussed.

3.5 Page 19, paragraph 2, 1st bullet. The reference to NOAA SQuiRTs should be updated to November 2006 (http://response.restoration.noaa.gov/book_shelf/122_NEW-SQuiRTs.pdf). All tables should have been be updated with these new values. Please use these updated values in the BERA. In addition, subsurface soil screening values (for phytotoxicity) should also be referenced in Table 3-2 Summary of Surface Soil Screening Values for consistency purposes.

3.6 Page 20, Paragraphs 4 and 5, Section 3.4.1. These paragraphs should distinguish that bioconcentration factors refer to uptake through water alone, while bioaccumulation factors refer to uptake via all means. The units for bioconcentration are generally mg/L.

3.7 Page 21, Log BCF equation, Section 3.4.1. The "ow" in Kow should be a subscript.

3.8 Page 24, Section 3.4.1 Biota Uptake, Fish, The footnote indicates that the value of percent lipids selected for fish is based on data available from the Onondaga Lake RI report (December 2002). Please discuss whether any biota-sediment accumulation factors were

developed for Onondaga Lake and whether their use would be appropriate for these waterbodies associated with Wastebeds 1 through 8.

3.9 Page 26, Section 3.4.1 Biota Uptake, Terrestrial Invertebrates. An equation that illustrates how the soil-invertebrate BCF is utilized to determine the concentration of the contaminant in a terrestrial invertebrate should be provided (e.g. $BCF_{terrestrial\ invert}$ X $Conc_{soil}$).

3.10 Pages 28 to 31, Section 3.4.3. All life history parameters listed in Table 3-6 should be briefly discussed in the text. For example, body weight, food ingestion rate, water ingestion rate, and sediment ingestion rate are not discussed for the short-tailed shrew. If a common approach was used to determine ingestion rates, this approach can be discussed once and referenced for subsequent receptors.

3.11 Page 29, Paragraph 1, Section 3.4.3. A weight range of 4.0 to 4.2 kilograms is provided for the red fox followed by a sentence that the male outweighs the female by about one kilogram. USEPA (1993) also contains this statement, but provides a weight range of 3 to 7 kilograms.

3.12 Page 29, Paragraph, 3, Third Sentence, Section 3.4.3. This sentence should be revised to state that an area and temporal use factor of one was used as the American robin is exposed to site contaminants during a sensitive period of reproduction and growth.

3.13 Page 30, Paragraph 1, Last Sentence, Section 3.4.3. This sentence should be revised to state that an area and temporal use factor of one was used as the red-tailed hawk is exposed to site contaminants during a sensitive period of reproduction and growth.

3.14 Page 30, Paragraph 5, Last Sentence, Section 3.4.3 This sentence should be revised to state that an area and temporal use factor of one was used as the belted kingfisher is exposed to site contaminants during a sensitive period of reproduction and growth.

3.15 Page 31, Paragraph 2, Last Sentence, Section 3.4.3 This last sentence does not provide any explanation as to why an area use factor of one is considered conservative.

3.16 Page 31, Paragraph 3, Sentence 4, Section 3.4.3. Substitute "Generally" with "In parts of their range."

3.17 Page 31, Paragraph 4, Section 3.4.3. This paragraph should describe what the mink is sensitive to.

Section 4. Effects Assessment and Selection of TRVs

4.1 Page 32, Paragraph 2, Section 4.1. It is not necessary to cite specific studies in the general introduction, as they should be cited during discussion of specific TRVs. Only general references that were used as prime sources should be listed.

4.2 Page 33, Paragraph 4, Section 4.1. Please elaborate on the evaluation that Honeywell is

currently conducting for the LOAEL-to-NOAEL conversion. Any new factors must be approved by NYSDEC prior to their inclusion in the BERA.

4.3 Page 33, Paragraph 7, Section 4.2. Although the objective of this section (ecological effects of COCs) is to "... review is to present a general understanding of the potential toxic effects of COCs rather than specifically estimate threshold values or critical toxicity endpoints" the profiles for many of the constituents, particularly organics, focus on TRV studies, rather than providing a general understanding.

4.4 Page 34 on, Section 4.2. The same information should be provided for all COCs briefly covering general aquatic toxicity and terrestrial toxicity. If information is not available for a particular type of toxicity, a statement should be added to that effect. For example, the antimony profile does not discuss information on toxicity to aquatic organisms.

4.5 Page 35, Paragraph 1, Section 4.2.1. A new paragraph should be started after the second sentence to separate aquatic and domestic animal toxicity.

4.6 Page 38, Paragraph 5, Section 4.2.1. A new paragraph should be started between Daphnia and domestic animal toxicity (between sentences 2 and 3).

4.7 Page 39, Paragraphs 3 and 4, Section 4.2.1. The text should be placed into perspective. In paragraph 3, what were the other aquatic organisms tested? In paragraph 4, were there comparisons between several species of carnivorous and herbivorous birds? References should be provided for both statements.

4.8 Page 40, Paragraph 2, Section 4.2.1. A new paragraph should be started before the discussion of aquatic toxicity (between sentences 2 and 3).

4.9 Page 41, Paragraph 2, Section 4.2.1. As almost all mercury in fish is present as methylmercury, as noted in Section 4.2.2, this discussion should clearly differentiate between organic and inorganic mercury.

4.10 Page 42, Paragraph 6, Section 4.2.1. Specify what "exposed" species are being referred to. If it refers to all species, a statement that selenium can bioaccumulate is sufficient.

4.11 Section 4.2.1 Metals, Selenium: More information related to selenium toxicity should be provided. There is a wealth of information on selenium toxicity to birds at the Kesterson National Wildlife Refuge in the San Joaquin Valley, California as well as in Eisler 2000, (Volume 3). Refer to the below references on selenium.

4.12 Page 46, Paragraph 4, Sentence 3, Section 4.2.2. Replace "further modify" with "applied an uncertainty factor to."

4.13 Page 46, Paragraph 5, Section 4.2.2. The conclusion by Halbrook et al. (1997) that adverse effects on mink in their study were not related to mercury exposure does not disprove other

studies. As this study is not being using to derive a TRV, it should be deleted from this section.

4.14 Page 48, Paragraph 2, Section 4.2.3. The aquatic organism discussion is placed between two paragraphs on the mink and should be moved prior to the mink discussion.

4.15 Page 48, Paragraph 5, Section 4.2.3. The basis for and relevance of (i.e., acute toxicity) of the first sentence is unclear.

4.16 Page 49, Paragraph 4, Section 4.2.4. The method used by USEPA (2007) to derive the DDT and metabolites TRVs should be discussed (i.e., highest bounded NOAEL below the lowest bounded LOAEL).

4.17 Page 49, Paragraph 5, Sentence 3, Section 4.2.4. The original source for this sentence is Lundholm (1987), rather than TAMS (2002).

4.18 Page 50, Paragraph 2, Section 4.2.4. A NOAEL and LOAEL were selected for fish for DDT and metabolites. However, no direct comparisons were performed of fish intakes to TRVs in the BERA.

4.19 Page 50, Paragraph 6, Section 4.2.4. The method used by USEPA (2007) to derive the avian and mammalian TRVs for dieldrin should be discussed (i.e., highest bounded NOAEL below the lowest bounded LOAEL.

4.20 Page 52, Paragraph 2, Sentence 1, Section 4.2.5. This sentence should be rewritten to clearly indicate that PAHs compounds differ in their toxicity.

4.21 Page 52, Paragraph 2, Sentences 4 and 5 and Page 53, Paragraph 2, Sentences 1 and 2, Section 7.2.5. The information contained in these sentences only needs to be presented once.

4.22 Page 52, Paragraph 5, Section 4.2.5. This paragraph should be rewritten to clearly convey its points.

4.23 Page 52, Paragraph 8, Section 4.2.5. References should be provided for the studies cited. The information contained here directly conflicts with the information in the fourth paragraph of page 53 which states that mallards fed 4,000 ppm PAHs showed significant liver effects.

4.24 Page 55, Section 4.2.5. Remove the page break after the first paragraph.

Section 5: Risk Characterization

5.1 Page 63, Paragraph 5, Section 5.3. The significance of the default assumptions used to assess exposure should be discussed in the uncertainty assessment, rather than in the risk description.

5.2 Page 64, Paragraph 2, Section 5.5. Clarify how future conditions at the Site will also be incorporated into the conclusions of the BERA.

Tables

T.1 Table 2-1. Potentially Applicable Criteria, Standards and/or Guidance: Please update the EPA Eco-SSLs to USEPA, 2008.

T.2 Table 4-1. The Wobeser et al. (1976) methylmercury mammalian TRVs should be presented along with the Dansereau et al. (1999) TRVs, as noted on Page 46, Paragraph 3.

Figures

F.1 Figure 1-3. The "spit of land along Ninemile Creek" should be labeled.

F.2 Figure 2-1. Approximate Extent of Stained Soils and Solvay Waste: The low lying areas of the Lake Shore Area are mostly "unshaded," indicating that this material is not stained waste. However, based on comments from the NYSDEC on the April 2008 RI Report, additional sampling in this area is warranted. An updated figure should be used in the BERA that incorporates the findings of this sampling effort.

F.3 Figure 2-4, Aquatic Pathway. The primary receptor boxes for the aquatic pathway should be combined, as there are also bottom dwelling fish exposed to sediments. Alternatively, additional species may be added to each box. Please specify what "larger aquatic invertebrates" are, as they appear to be considered independently from benthic macroinvertebrates. Secondary wildlife receptors should be divided into herbivorous and piscivorous receptors.

F.4 Figure 2-4, Terrestrial Pathway. Primary and secondary terrestrial receptors should be divided into plant ⇨ herbivorous wildlife and invertebrates ⇨ insectivorous wildlife.

Appendices (only appendices with comments are cited below)

Appendix A

A.1 The September 5, 2007 comment letter from NYSDEC has lost some of its formatting in the electronic pdf file submitted with the report.

References

Dansereau M., N. Lariviere, D. Du Tremblay, D. Belanger. 1999. Reproductive performance of two generations of female semidomesticated mink fed diets containing organic mercury contaminated freshwater fish. Arch Environ. Contam. Toxicol. 36:212-226.

Halbrook R. S., L. A. Lewis, R. I. Aulerich, S. J. Bursian. 1997. Mercury accumulation in Mink fed fish collected from streams on the Oak Ridge Reservation. Arch Environ. Contam. Toxicol. 33:312-316.

Lundholm, E., 1987. Thinning of eggshells of birds by DDE: Mode of action on the eggshell gland. Comp. Biochem. Physiol. 88C: 1-22.

O'Brien & Gere. 2008. Wastebeds 1 through 8; Geddes, New York. Revised Wetland Delineation and Floodplain Assessment. O'Brien & Gere, Syracuse, New York. October 2008.

United States Environmental Protection Agency (USEPA). 2007. Ecological Soil Screening Level (Eco-SSLs).http://www.epa.gov/ecotox/ecossl/

USEPA. 1993. Wildlife Exposure Factors Handbook, Volumes I and II. EPA/600/R-93/187. Office of Research and Development, Washington, DC.

United States Geological Survey (USGS). 1999. Selected Elements and Organic Chemicals in Bed Sediment and Fish Tissue of the Tualatin River Basin, Oregon, 1992-96. United States Geological Survey. Water-Resources Investigations Report 99-4107, 61 pages.

Wobeser, G., N.O. Nielsen, and B. Schiefer. 1976. Mercury and mink. II: experimental methyl mercury intoxication. Can. J. Comp. Med. 40:34-45.

Selenium References:

Cavitt, J.F. 2008. Concentration and effects of selenium on shorebirds at Great Salt Lake, UT. Report to Utah Department of Environmental Quality, Salt Lake City, UT.

Conover, M.R., J. Luft, and C. Perschon. 2008. Concentration and effects of selenium in California gulls breeding on the Great Salt Lake. Report to Utah Department of Environmental Quality, Salt Lake City, UT.

Detwiler, S. J. 2002. Toxicokinetics of selenium in the avian egg: comparisons between species differing in embryonic tolerance. PhD dissertation, University of California, Davis, CA. 185 pp.

Ohlendorf, H.M. 2003. Ecotoxicology of selenium. Pp. 465-500 in: D.J.Hoffman, B.A. Rattner, G.A. Burton, Jr., and J. Cairns, Jr., (Eds.), Handbook of Ecotoxicology (2nd Edition). Lewis Publishers, Boca Raton, FL.

Ohlendorf, H.M., R.L. Hothem, C.M. Bunck, T.W. Aldrich, and J.F. Moore. 1986. Relationships between selenium concentrations and avian reproduction. Trans. N. Am. Wildl. Nat. Res. Conf., 51:330-342.

In lieu of updating the BERA Work Plan to address the above comments, it is suggested that Honeywell provide a letter to the Department stating that the above comments will be addressed during performance of the BERA and/or as part of the BERA Report. This will allow the BERA to proceed in a more efficient manner. Upon receipt of such letter, the Department will approve the final BERA Work Plan. If you have any questions, please contact me at 518-402-9676.

Sincerely,

Susan Edwards

Susan Edwards
Project Manager

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October 22, 2008

Ms. Susan Edwards
Project Manager
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Re: Wastebeds 1 – 8, Town of Geddes, Onondaga County, New York
Index # D-7-0002-02-08

Dear Ms. Edwards:

In accordance with the November 2006 NYSDEC-approved Remedial Investigation/Feasibility Study Work Plan for the Wastebeds 1 through 8 Site, this letter presents the final *Baseline Ecological Risk Assessment Work Plan* (BWP) for the above referenced Site. The final BWP has incorporated applicable responses to New York State Department of Environmental Conservation (NYSDEC) comments on the revised BWP redlined document that were submitted to Honeywell in a letter dated September 8, 2008. Comments identified in the September 8, 2008 letter have been responded to in the following sections of the final BWP:

Comments originally fom the NYSDEC's January 8, 2008 comment letter
Response to comments 21 and 25 are provided in Section 3.2.1 of the final BWP. Sections 4.2.6 and 4.2.7 and Table 4-1 have been revised to incorporate comments 45 and 3. Additionally, editorial revisions were made to Sections 4.2.2 and 4.2.7 to reflect comment 48 and the General Comment.

Comments on Honeywell's February 14, 2008 letter
Response to comment 9 is also provided in Section 3.2.1 of the final BWP. Section 4.2.7 was revised to incorporate comment 1, while Table 3-3 and the References were revised to reflect comments 2 and 3 in the final BWP.

The required copies of the final BWP are enclosed for your review. We look forward to preparation of the next Ecological Risk Assessment deliverable, the BERA report. Please contact Doug Crawford or me if you have any questions.

Sincerely,

John P. McAuliffe

John P. McAuliffe, P.E.
Program Director, Syracuse

Attachments (Electronic and 4 hardcopies)

cc: Alfred J. Labuz – Honeywell
William Hague – Honeywell
Brian D. Israel, Esq. – Arnold & Porter
Gregg Townsend – NYSDEC, Reg 7
Margaret Sheen, Esq. – NYSDEC (letter only)
David Coburn – Onondaga County DOE
Robert Nunes – USEPA, Region II (4 copies)
Douglas M. Crawford – O'Brien & Gere
George Shanahan, Esq. – USEPA, Region II (letter only)
Christopher C. Calkins – O'Brien & Gere
Michael Spera - Earthtech
Mark Sergott, NYSDOH (letter only)
Geoffrey Laccetti, NYSDOH (Elec & hardcopy)

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Alexander B. Grannis
Commissioner

September 8. 2008

John McAuliffe
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Re: Comments on Honeywell's Responses to NYSDEC's January 8, 2008 Comments and Redlined Text of "Revised Work Plan Wastebeds 1 through 8 Site Baseline Ecological Risk Assessment, Geddes, New York," Prepared by O'Brien & Gere for Honeywell, February 14, 2008

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation and support agencies have reviewed the red-lined version of the revised Baseline Ecological Risk Assessment submitted to the NYSDEC on February 14, 2008. The following comments are provided such that they may be addressed in the final BERA Work Plan.

An assessment of Honeywell's February 14, 2008 responses to NYSDEC's January 8, 2008 comments on the revised work plan is provided below, with the original NYSDEC comment, followed by the Honeywell response, the NYSDEC response/assessment, and a final NYSDEC follow-up comment. Only comments that are not completely resolved are listed here.

Comments Addressed in Honeywell's February 14, 2008 Cover Letter

NYSDEC Revised BWP Comment 9: Appendix B, Table B-2, Derivation of Surface Water Exposure Point Concentrations. It should be confirmed that all available samples for the site surface water were included in the EPC calculations. Using Table B-6 in the revised work plan to determine the locations included in the calculations, and using data from these stations from the October 2007 version of the database suggests discrepancies in the total number of samples included. For example, Table B-2 reports a total of 34 samples for antimony; however, there were 36 samples for antimony (excluding field duplicates) in the October 2007 database. Additionally it should be confirmed that all of the available data are included in the revised version of the database. For example, using the mercury data from the October 2007 database for the site surface water stations listed in Table B-2 reports that were a total of 60 samples for mercury. Due to the apparent discrepancies noted above, the EPC calculations for site surface water were not confirmed.

Honeywell Response: Regarding Derivation of Surface Water Exposure Point Concentrations for antimony, although 36 samples are present (excluding field duplicates), 2 of them are "B" qualified for blank contamination, resulting in only the 34 usable samples listed in Appendix B, Table B-2. Regarding surface water samples in general (including mercury), the database has been updated since August 2007 to include only validated samples and to remove repeated sample entries. The database submitted for the RI in December of 2007 will be used to update the surface water table (Appendix B, Table B-2).

NYSDEC Final Response: Although two of the surface water samples were qualified "B" (blank contamination) for antimony, it is unclear whether they were rejected (i.e., flagged with "R") during the validation process, as these samples are reported as being usable samples ("Y" in the USE_FLAG field) in the December 2007 database. Please provide further details on these samples and the associated data validation.

General Comments from NYSDEC's January 8, 2008 Letter

Presentation of Toxicity Reference Values (TRVs). The ecotoxicity profile section (Section 4.1) should be combined with the selection of TRVs section (Section 4.2) to present a brief overview of each contaminant and the toxicity study used to select the contaminant-specific TRV for each receptor. The text for each contaminant can begin with a general overview of the compound and then discuss toxicity for plants, aquatic invertebrates, fish, birds, and mammals.

Honeywell Response: Sections 4.1 and 4.2 have been combined in accordance with the comment for the Revised BWP.

NYSDEC Response: The current text has integrated the ecotoxicity profile section with the selection of the TRV section. However, not all the studies used to select TRVs are described in the text. Brief descriptions of the avian study for arsenic and the mammalian study for barium should be added to the work plan. It should be noted in the report that no avian TRVs were available for antimony and beryllium. A short introduction/profile should be provided for semi-volatile chemicals of concern (COCs) (Section 4.6) and volatile COCs (Section 4.7), which currently only contain the studies used to derive TRVs (with the exception of bis(2-ethylhexyl)phthalate [BEHP] and xylenes).

NYSDEC Follow-up Response: The introductory paragraph for the volatile COCs (Section 4.7) on page 58 should be corrected to refer to VOCs, rather than SVOCs in the third and fourth sentences.

Specific Comments from NYSDEC's January 8, 2008 Letter

Typically, paragraph numbering corresponds to complete paragraphs on a page, and begins with the first full paragraph on a page. Page numbering typically includes the last paragraph on a page, even if that paragraph continues onto the next page. Bullets are considered part of the paragraph that introduced them.

21. Page 16, Bullet 1, Section 3.2.1. An additional site soils exposure area should be added that includes all soil data in the top 0 to 2 ft, as a characterization of general and burrowing wildlife exposure to contaminants in all surface soil.

Honeywell Response: Please refer to the response to specific comment 20.

NYSDEC Response: Honeywell can continue to evaluate soil exposure of ecological receptors in the top 12 inches of soil if an analysis is first completed to determine that exposure to contaminants in the top 0-2 ft does not present an increased risk to receptors exposed relative to the 0-12 interval.

NYSDEC Follow-up Response: Text should be added to Section 3.2.1 stating that as part of the surface soil evaluation, a statistical evaluation of the datasets from the 12 to 24 inch and 0 to 12 inch intervals will also be performed to assess if exposure to COCs in the 12 to 24 inch interval presents an increased risk to receptors relative to the 0 to 12 inch interval. The additional text added to the February 2008 submittal describes the upper 12 inches as the zone of greatest biological activity; however biological activity can still occur within the 12 to 24 inch depth interval, which is not covered in the current text.

25. Page 16, Bullet 2, Section 3.2.1. An additional sediment exposure area should be added that includes all sediment data deeper than 6 inches, as a characterization of potential wildlife exposure to subsurface sediments.

Honeywell Response: For the purposes of the BERA, the sediment exposure area includes evaluation of COC concentrations measured in the top 6 inches of sediment. Data from this interval will be utilized in the assessment of risk to aquatic receptors including aquatic vegetation, benthic invertebrates and the agreed upon upper trophic level receptors selected for the BERA (e.g., kingfisher, heron, mink). The 0-6 inch sediment interval has been the interval evaluated to date in the previous steps of the BERA (FWIA/PFD) performed at this and other Honeywell sites. Honeywell has not received NYSDEC comments concerning the assessment of additional sediment intervals up to this point in the BERA process. Therefore, the addition/revision of the sediment interval evaluated for the BERA is not appropriate at this stage of the assessment..

NYSDEC Response: Honeywell can continue to evaluate sediment exposure of ecological receptors in the top 6 inches of sediment if an analysis is first completed to determine that exposure to contaminants in below 6 inches does not present an increased risk to receptors exposed relative to the 0-6 inch interval.

NYSDEC Follow-up Response: Additional text should be added to the last paragraph of page 16 of the revised report (redline file) to read as follows: "This analysis will include a statistical comparison of the data from the 0 to 6 and 6 to 12 inch intervals and a qualitative assessment of the potential for biological activity in sediments below 6 inches, *unless increased contaminant concentrations are seen at depths below 12 inches, in which case a statistical comparison will also be performed for the 12 to 24 inch interval.*"

45. Page 40, Paragraph 2, Section 4.1.5. Mammalian TRVs for hexachlorobenzene (HCB) are presented here, in contrast to the majority of the section, which does not present TRVs. The TRVs in this section are about two orders-of-magnitude lower than those presented in Table 4-1 (0.014 and 0.14 mg/kg-day versus 1.6 and 16 mg/kg-day) and should be used to be protective of wildlife.

Honeywell Response: The mammalian TRVs for HCB have been changed to 0.014 mg/kg-day for the mink and 1.6 mg/kg-day for the shrew for the NOAEL. The corresponding LOAELs for mammals have been changed to and 0.14 mg/kg-day (mink) and 3.2 mg/kg-day (shrew). The discussion of the critical studies from Sample et al. 1996 (Bleavins et al. 1984 and Grant et al. 1977) used to determine these TRVs are included in Section 4.0 of the Revised BWP.

NYSDEC Response: Please indicate why the Grant et al. (1977) rat study was selected to derive TRVs for the shrew and the fox.

NYSDEC Follow-up Response: All studies used to derive TRVs for hexachlorobenzene were based on dietary exposure to hexachlorobenzene. This includes the Grant et al. (1977) and Bleavins et al. (1984) studies for mammals and the Vos et al. (1971) study for birds. Section 4.6.9 and Table 4-1 should be corrected to reflect that the toxicity values are based on hexachlorobenzene studies, rather than using benzene hexachloride (Delta-BHC) as a surrogate. Section 4.4.2 should also be corrected to reflect that animals were dosed with hexachlorobenzene rather than BHC.

48 Page 43, Paragraphs 2 and 3; Pages 45 to 46, Section 4.2.2; and Table 4-1. As noted by Honeywell/O'Brien & Gere, the avian PCB and mammalian methylmercury TRVs are currently under discussion. Currently, NYSDEC is awaiting a response to their June 22, 2007 comments.

Honeywell Response: Outstanding responses to NYSDEC's June 22, 2007 comments, including the selected avian PCB and mammalian methyl mercury TRVs, are presented herein following the responses to the specific comments.

NYSDEC Response: With respect to the follow-up response to Comment 78 of NYSDEC's June 22, 2007 comments on the Wastebeds 1 through 8 Problem Formulation Document (PFD), there are various potential interpretations of the results of the Dahlgren et al. (1972) study. The TRVs derived from this study using both NYSDEC's and Honeywell's interpretations have been previously used in other ecological risk assessments. NYSDEC continues to support the use of NOAEL and LOAEL values of 0.18 and 1.8 mg/kg-day, respectively, but will allow Honeywell to use avian PCB NOAEL and LOAEL values of 1.8 and 7.1 mg/kg-day, respectively, in the Wastebeds 1 through 8 BERA based on their interpretation of the Dahlgren et al. (1972) study.

Regarding the follow-up response to Comment 79 of NYSDEC's June 22, 2007 comments on the Wastebeds 1 through 8 PFD related to methylmercury, the use of the Dansereau et al. (1999) study in the uncertainty section was recommended to provide consistency with the BERA previously performed for Onondaga Lake. To accommodate both consistency between the BERAs and the associated remediation goals and the additional comprehensive study, both sets of TRVs can be presented to provide a range of mercury hazard quotients for mammalian receptors.

NYSDEC Follow-up Response: Please revise the sentence inserted on page 46 that reads "Although Dansereau *et al.* (1999) is a more suitable study for the derivation of TRV values, ..." to "Although Dansereau *et al.* (1999) was selected as the primary study for the derivation of TRV values, ..."

Part 2 of January 8, 2008 NYSDEC Comment Letter: New Comments on the Revised October 2007 BERA Work Plan

3. Page 54, Section 4.6.9 and Page 55, Sections 4.7.7 and 4.7.10. Please add a sentence providing the rationale for using TRVs from other compounds for hexachlorobenzene, ethylbenzene, and o-xylene.

NYSDEC Follow-up Response: See Comment 45 above regarding hexachlorobenzene. Please include the TRVs used for ethylbenzene and o-xylene in the text of Sections 4.7.7 and 4.7.10, respectively. The order of xylene and o-xylene may be switched to facilitate this.

Part 3: New Comments on the Revised February 14, 2008 BERA Work Plan

1. Page 60, Paragraph 3, Section 4.7.7. Please clarify whether ethylbenzene toxicity data are available for domesticated mammals. If so, these data should be used to derive TRVs, or a surrogate compound may be considered if no studies are available.

2. Table 3-3. Delta-BHC was selected as a COC in the surface water screening. However, only beta-BHC is listed in Table 3-3. Please clarify the screening value used for delta-BHC, adding any necessary footnotes to the table.

3. References. Please identify where Sittig (1991) is cited in the text or tables.

References

Bleavins, M. R., R. J. Aulerich, and R. K. Ringer. 1984. Effects of chronic dietary hexachlorobenzene exposure on the reproductive performance and survivability of mink and European ferrets. Arch. Environ. Contam. Toxicol. 13: 357-365.

Dahlgren, R.B., R.L. Linder, and C.W. Carlson. 1972. Polychlorinated biphenyls: Their effects on penned pheasants. Environ. Health Perspect. 1:89-101.

Dansereau M., N. Lariviere, D. Du Tremblay, D. Belanger. 1999. Reproductive performance of two generations of female semidomesticated mink fed diets containing organic mercury contaminated freshwater fish. Arch Environ. Contam. Toxicol. 36:212-226.

Grant, D. L., W. E. J. Phillips, and G. V. Hatina. 1977. Effects of hexachlorobenzene on reproduction in the rat. Arch. Environ. Contam. Toxicol. 5: 207-216.

Sittig, M. 1991. Handbook of Toxic and Hazardous Chemicals and Carcinogens. Volumes 1 and 2, Third Edition. Noyes Publications, Park Ridge, NJ.

Vos, J. G., H. L. Van Der Maas, A. Musch, and E. Ram. 1971. Toxicity of hexachlorobenzene in Japanese quail with special reference to porphyria, liver damage, reproduction, and tissue residues. Toxicol. Appl. Pharmacol. 18: 944-957.

Please revise the BERA Work Plan to address these comments and submit to the NYSDEC. If you have any questions regarding these comments, please call me at 519-402-9676.

Sincerely,

Susan Edwards

Susan Edwards
Project Manager

cc: C. Calkins, OB & G ✓

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February 14, 2008

Ms. Susan Edwards
Project Manager
Remedial Bureau D
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, New York 12233-7016

Re: Wastebeds 1 – 8 Site, Town of Geddes, Onondaga County, New York
Index # D-7-0002-02-08 – Revised Baseline Ecological Risk Assessment Work Plan (Redlined Document)

Dear Ms. Edwards:

The purpose of this letter is to present the revised Baseline Ecological Risk Assessment Work Plan (BWP) for the above-referenced Site. The revised BWP has been redlined in response to New York State Department of Environmental Conservation (NYSDEC) comments that were submitted to Honeywell in a letter dated January 8, 2008. Specific responses to the NYSDEC's comments have been incorporated into the revised BWP redline document.

Tables 4-1 and 3-1b, Figures 1-2, 1-3, and 2-2 have been revised to reflect Part 2 comment numbers 5, 6, and 7. The revised versions are attached. Comment responses associated with Appendices A and B (63, Part 2: 8, 9, 10, and 11) require explanation and are included below. Revised Appendix B tables are also attached.

NYSDEC BWP Comment 63: *Although coordinates were provided for most samples, there are still some locations where this information is missing. These include the following: From WB18_Database Download.xls, coordinates are missing for WB- 101-01 through WB18-101-04 and MW-19BR. A map depicting the NYSDEC sampling locations WB-101-01 through 04 will be provided to Honeywell. From WB18_database Download2.xls, coordinates are missing for MW- 23, SB-24BR, SB-47, SS19A through D, SS20A through D, and TW-02.*

Honeywell Response: This data was provided in a revised Database download that was submitted to the NYSDEC as part of the December 10, 2007 Wastebeds 1 through 8 monthly report.

NYSDEC 2nd Comment: *Although coordinates have been added to the revised October 2007 database for some of the locations noted above, there are still some locations that are missing coordinates. From WB18_Database Download.xls, coordinates for MW19BR are missing. From WB18_Database Download_2, coordinates are still missing for MW-23, SB-24BR, SB-47, SS19A through D, and SS20A through D. In addition to the missing coordinates, it was noticed that in the revised database, groundwater data for TW-01S and TW-02 are no longer included. These were groundwater samples that had been included in the August 2007 version of the database. According to Table 3-1b of the revised October 2007 BERA work plan, data from TW-01S were used for the EPC calculations in shallow groundwater. Please review the October 2007 database to ensure all site data currently available are included and revise as necessary for the next database submission.*

Honeywell 2nd Response: The coordinates for WB18-MW-19BR are: 920489.71 (Easting), 1121088.42 (Northing). These will be added to the database. Coordinates for MW-23, SB-24BR, SB-47, SS19A through D, and SS20A through D have already been included in the database submitted for the RI in December of 2007.

Data for TW-01S and TW-02 are no longer included in the database because this data is not validated and is therefore not appropriate for inclusion. The groundwater table (Appendix B, Tables B-5 and B-6) that previously included TW-01S data will be updated using the database submitted for the RI in December of 2007.

NYSDEC Revised BWP Comment 8: *Appendix A (new). Honeywell/O'Brien & Gere included copies of the NYSDEC comment letters and Honeywell responses in this new appendix as per Specific Comment 4. The draft versions of the NYSDEC letters included should be replaced with final, signed versions issued by NYSDEC on May 3, 2007, June 22, 2007, and September 5, 2007.*

Honeywell Response: A revised Appendix A will be submitted with the Final BWP.

NYSDEC Revised BWP Comment 9: *Appendix B, Table B-2, Derivation of Surface Water Exposure Point Concentrations. It should be confirmed that all available samples for the site surface water were included in the EPC calculations. Using Table B-6 in the revised work plan to determine the locations included in the calculations, and using data from these stations from the October 2007 version of the database suggests discrepancies in the total number of samples included. For example, Table B-2 reports a total of 34 samples for antimony; however, there were 36 samples for antimony (excluding field duplicates) in the October 2007 database.*

Additionally it should be confirmed that all of the available data are included in the revised version of the database. For example, using the mercury data from the October 2007 database for the site surface water stations listed in Table B-2 reports that were a total of 60 samples for mercury. Due to the apparent discrepancies noted above, the EPC calculations for site surface water were not confirmed.

Honeywell Response: Regarding Derivation of Surface Water Exposure Point Concentrations for antimony, although 36 samples are present (excluding field duplicates), 2 of them are "B" qualified for blank contamination, resulting in only the 34 usable samples listed in Appendix B, Table B-2.

Regarding surface water samples in general (including mercury), the database has been updated since August 2007 to include only validated samples and to remove repeated sample entries. The database submitted for the RI in December of 2007 will be used to update the surface water table (Appendix B, Table B-2).

NYSDEC Revised BWP Comment 10: *Appendix B, Table B-3, Derivation of Habitat Sediment Exposure Point Concentrations. The calculations for the mercury EPC in sediment should be verified. According to this table, there was one sample where mercury was not detected; however, in the October 2007 version of the database, mercury was reported as being detected for the eight samples included in the calculations.*

Honeywell Response: Of the 8 mercury samples in habitat sediment (WB18-SED-01 to WB18-SED-08), seven are detected, and one (WB18-SED-03) was listed in the database with an ambiguous result: 0.15 J mg/kg with a detect flag of "N". This ambiguous result was verified and determined to be 0.15

U mg/kg, so it's initial characterization as a non-detect was correct. The qualifier will be corrected in the database, and Table B-3 will not need to be resubmitted.

NYSDEC Revised BWP Comment 11: *Appendix B, Table B-3, Derivation of Ground Water Exposure Point Concentrations. Please confirm that all available shallow groundwater data were included in the EPC calculations. Review of Table B-5 suggests that typically 18 samples were included in the calculations; however, review of the October 2007 database files indicate that there are more samples available. For example, Table B-5 reports that there were 18 samples included for mercury. Using Table B-6 in the revised work plan for a list of stations included for each pathway, and using data for six of the seven shall wells listed in the last column of Table B-6 (see note below) from the October 2007 database results in mercury data for 25 samples (from three to five sampling dates per well), excluding two rejected results. Please update the calculations as necessary to include all available data or provide an explanation as to why some were excluded. It should be noted that due to this apparent discrepancy, the calculations for groundwater pathway were not checked.*

In addition, please note that there appear to be data missing from the October 2007 version of the database. According to Table B-6 of the revised BERA work plan, shallow groundwater data from TW-01S were included in the EPC calculations; however, data for this location are not in the revised database. Data for this sample had been included in the August 2007 version. Although data for TW-02 were not used in these calculations, it was noticed that data for this location are also missing from the revised database tables.

Honeywell Response: The additional ground water data samples for mercury are due to the inclusion of data collected in July of 2007 in the database which were not present in the August 2007 database. The groundwater table (Appendix B, Table B-5) has been updated using the database submitted for the RI in December of 2007.

We believe the revised BWP redline document addresses the agency's concerns. Following your review and approval of this BWP submittal, we will submit the final BWP We look forward to performance of the next step in the process, preparation of the draft BERA report. Please contact me if you have any questions or comments.

Sincerely,

John P. McAuliffe

John P. McAuliffe, P.E.
Program Director, Syracuse

Attachment

cc: Mr. Alfred J. Labuz – Honeywell
Brian D. Israel, Esq. – Arnold & Porter
Mr. William Hague – Honeywell
Mr. Robert Nunes – USEPA, Region II
Mr. Gregg Townsend – NYSDEC, Region 7
Mr. David Coburn – Onondaga Co. Dept. of Env.
Mr. Mark Van Valkenburg, NYSDOH
Mr. Christopher C. Calkins – O'Brien & Gere
Carol Conyers, Esq. – NYSDEC
George Shanahan, Esq. – USEPA
Ms. Henriette Hamel, NYSDOH

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Alexander B. Grannis
Commissioner

January 8, 2008

John McAuliffe
Honeywell International
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Suite 700
East Syracuse, NY 13057

Re: Comments on Honeywell's Responses to NYSDEC's September 5, 2007 Comments and "Revised Work Plan Wastebeds 1 through 8 Site Baseline Ecological Risk Assessment, Geddes, New York," Prepared by O'Brien & Gere for Honeywell, October 10, 2007

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation and support agencies have reviewed your letter of October 10, 2007 regarding the Baseline Ecological Risk Assessment and have the following comments.

Part 1: An assessment of Honeywell's October 10, 2007 responses to NYSDEC's September 5, 2007 comments on the draft June 2007 work plan is provided below, with the original NYSDEC comment, followed by the Honeywell response, and then the NYSDEC response/assessment. Only comments that are not completely resolved are listed here.

General Comments

G.1. Presentation of Toxicity Reference Values (TRVs). The ecotoxicity profile section (Section 4.1) should be combined with the selection of TRVs section (Section 4.2) to present a brief overview of each contaminant and the toxicity study used to select the contaminant-specific TRV for each receptor. The text for each contaminant can begin with a general overview of the compound and then discuss toxicity for plants, aquatic invertebrates, fish, birds, and mammals.

Honeywell Response: Sections 4.1 and 4.2 have been combined in accordance with the comment for the Revised BWP.

NYSDEC Response: The current text has integrated the ecotoxicity profile section with the selection of the TRV section. However, not all the studies used to select TRVs are described in the text. Brief descriptions of the avian study for arsenic and the mammalian study for

barium should be added to the work plan. It should be noted in the report that no avian TRVs were available for antimony and beryllium. A short introduction/profile should be provided for semi-volatile chemicals of concern (COCs) (Section 4.6) and volatile COCs (Section 4.7), which currently only contain the studies used to derive TRVs (with the exception of bis(2-ethylhexyl)phthalate [BEHP] and xylenes).

G.2. **Review of Calculations, including Exposure Point Concentrations (EPCs).** Appendix A presents the summary statistics for the data to be used in the BERA along with the EPCs. It appears that the data used include results from the Preliminary Site Assessment (PSA), Focused Remedial Investigation (FRI), and RI. Since the RI data were collected after the most recent electronic data submission to NYSDEC (November 2006), not all data used for the calculations in this BERA work plan are currently available to NYSDEC in an electronic format. Thus, the calculations and EPCs were not reviewed by NYSDEC. The electronic data submission should be updated to include the more recent RI data (August 2007) as well as to address NYSDEC comments on the database as provided at the end of this letter. NYSDEC may then provide comments on the Appendix A tables at a later date or during review of the draft BERA.

Honeywell Response: A compact disk (CD) that includes the electronic data submission revised in accordance with the NYSDEC's comments contained in this letter is included with this submittal. An additional update of the dataset, to include the August 2007 ground water data, will be submitted to the NYSDEC when Honeywell receives the validated data. However, the EPC calculations for the other media (surface soil, surface water and sediment) presented in Appendix B of the Revised BWP may be reviewed as additional samples from these media are not proposed for collection.

NYSDEC Response: These tables are now contained in Appendix B of the work plan. Comments on these tables are provided with the Appendix B comments in Part 2 of this letter below.

Specific Comments

Typically, paragraph numbering corresponds to complete paragraphs on a page, and begins with the first full paragraph on a page. Page numbering typically includes the last paragraph on a page, even if that paragraph continues onto the next page. Bullets are considered part of the paragraph that introduced them.

5. Page 5, Paragraphs 6 and 7, Section 2.1. There appears to be some discrepancy regarding the extent of wetlands on the site partly based upon the apparently variable nature of the site bounds. The site description in the BERA work plan is not sufficiently detailed enough to understand the exact limits of the site, especially along Ninemile Creek. The 2006 wetland delineation report (O'Brien & Gere, 2006) contains a different site boundary than this work plan. Additionally, it is unclear if the site does or does not contain the entire bank of Ninemile Creek. The two delineations that have been conducted recently in the area (O'Brien & Gere, 2004 and Terrestrial Environmental Specialists [TES], 2005) and the 2006 wetland

delineation state that wetlands are present on the small spit of land along Ninemile Creek extending into the lake and on the bank of Ninemile Creek along the entire site.

A clear and unambiguous resolution is needed on where the boundaries of the Wastebeds 1 through 8, Onondaga Lake, and Geddes Brook/Ninemile Creek sites begin and end. For site boundary purposes, the NYSDEC considers the flood plain along Ninemile Creek to be part of the Ninemile Creek Site, and therefore, any wetlands identified thereon are part of the Ninemile Creek Site. Once that resolution is achieved, a document review for each site is needed to ensure that no portion of the affected lakeshore and riverbank is left unassigned and that all sections will be appropriately remediated. This document may then need to be revised to clearly describe the wetland habitats that are present on the site. It is NYSDEC's understanding at this time that the "spit of land along Ninemile Creek", and the "ponded area" are being included in the BERA, but these areas are actually part of the Ninemile Creek Site and thus results of this assessment and ultimately the remediation of these areas will be addressed under the Ninemile Creek Site.

Honeywell Response: For the purposes of the BERA, the western Site boundary abuts the Ninemile Creek Site which, as described in the comment, is represented as the Ninemile Creek floodplain boundary. The floodplain boundary is assumed to be depicted as the wetland boundary delineated by TES (2005). The "ponded area" is delineated as wetland by TES (2005), but will be evaluated in the Wastebeds 1 through 8 BERA. The "spit of land along Ninemile Creek" is not part of the Wastebeds 1-8 Site and, therefore, will not be evaluated in the Wastebeds 1 through 8 BERA.

NYSDEC Response: The work plan should clarify that although the "ponded area" is being included in the Wastebeds 1 through 8 BERA, it is actually part of the Geddes Brook/Ninemile Creek site. Thus, results of this assessment and ultimately the remediation of this area will be addressed under the Geddes Brook/Ninemile Creek site, as is the "spit of land along Ninemile Creek."

6. Page 5, Paragraphs 6 and 7, Section 2.1. The portion of the site between the northern berm of the wastebeds and the shoreline of Onondaga Lake, referred to as the general lakeshore area, was identified in the 2006 wetland delineation report as a potential wetland habitat. This area was not classified as a wetland by O'Brien & Gere because "*indicators of wetland hydrology (i.e., presence of water in the upper substrate) in the general lakeshore area were not frequently observed in the soil borings performed there*" and "*a significant layer of organic material (decomposing vegetation) typical of many wetland habitats, was not observed*" (see Section 2.4.1, page 10 of the wetland report).

The general approach used (i.e., focusing on positive indicators of hydrophytic vegetation and wetland hydrology since "*the presence of these waste materials likely precludes the presence of hydric soils*," per Section 2.3.1 Site Soils, page 8, paragraph 2 of the wetland report) is reasonable since this area contains wastes (which may now support wetlands in certain areas) on top of the historic marsh/wetland. Photos taken by Earth Tech during the wetland reconnaissance conducted in September 2004 (O'Brien & Gere and Parsons, 2004)

strongly suggest the presence of wetland areas in a portion the lakeshore area in the southeastern half of the site.

Additionally, the delineation form for plot ID SLSB2 (see Photo 4 of the wetland report) indicates that both wetland vegetation (at 100 percent) and wetland hydrology (saturated conditions in top 12 inches) are present, yet O'Brien & Gere's overall determination is that this point is not in a wetland since hydric soils were not present. However, since this is not consistent with the specified approach noted above (*"the presence of these waste materials likely precludes the presence of hydric soils"*), this area, and possibly others in the lakeshore area, should be re-evaluated and possibly characterized as a wetland.

Additional comments on the Wetland Delineation report (OB&G, 2006) will be forthcoming from the NYSDEC in a separate letter.

Honeywell Response: Honeywell recognizes the difficulty in wetland determinations performed for the areas within the Lakeshore portion of the Site and has discussed these difficulties in the associated delineation report and in subsequent conversations with the NYSDEC. However, we maintain the position presented in the delineation report that wetland habitats, identified in accordance with the Corps methodology and with the use of professional judgement, are not present on the Site (excluding the "ponded area" which was delineated by TES (2005)). Honeywell believes that discussion of the technical issues associated with the delineation is best left to correspondence to be prepared in response to the forthcoming NYSDEC comments on the delineation report.

NYSDEC Response: Please refer to NYSDEC's comments on the wetland delineation and floodplain assessment dated November 7, 2007. The final work plan should state that NYSDEC provided comments on the wetland delineation and that these comments will be addressed and the delineation finalized prior to completion of the BERA.

7. Page 5, Paragraph 7, Section 2.1. Wetlands in the vicinity of the site are to be assessed as part of a separate risk assessment (Geddes Brook/Ninemile Creek and Onondaga Lake) according to the Problem Formulation Document (page 23). It may be useful to evaluate any potential impacts from this site on adjacent wetlands. Understanding the impact of this Site on those wetlands may allow for a better evaluation of source control when those wetlands are addressed.

Honeywell Response: Potential impacts to wetlands adjacent to the Site will be qualitatively discussed in the BERA.

NYSDEC Response: Please indicate in the work plan that potential impacts to wetlands adjacent to the site will be qualitatively discussed in the BERA.

20. Page 16, Bullet 1, Section 3.2.1. The site soils exposure area should be modified to include the contaminant concentrations in the top 6 inches of soils, as a characterization of general wildlife exposure to contaminants in surface soils.

Honeywell Response: Honeywell requests clarification from the NYSDEC on Comments 20, 21, 22, 23, 25.

For the purposes of the BERA, the site soils exposure area includes evaluation of COC concentrations measured in the top 12 inches of surface soil. Data from this interval will be utilized in the assessment of risk to terrestrial receptors including plants, soil invertebrates and the agreed upon upper trophic level receptors selected for the BERA (e.g., robin, shrew, fox, hawk). It is unclear to Honeywell how the requested soil horizon depths were established or what scientific studies were used to determine the applicability of these depths for the chosen ecological receptors.

The 0-12 inch soil interval has been the interval evaluated to date in the previous steps of the BERA (FWIA/PFD) performed at this and other Honeywell sites. Honeywell has not received NYSDEC comments concerning the assessment of additional soil intervals up to this point in the BERA process. Therefore, the addition/revision of the surface soil interval evaluated for the BERA is not appropriate at this stage of the assessment.

NYSDEC Response: Honeywell can continue to evaluate soil exposure of ecological receptors in the top 12 inches of soil if an analysis is first completed to determine that exposure to contaminants in the top 6 inches does not present an increased risk to receptors exposed relative to the 0-12 interval.

21. Page 16, Bullet 1, Section 3.2.1. An additional site soils exposure area should be added that includes all soil data in the top 0 to 2 ft, as a characterization of general and burrowing wildlife exposure to contaminants in all surface soil.

Honeywell Response: Please refer to the response to specific comment 20.

NYSDEC Response: Honeywell can continue to evaluate soil exposure of ecological receptors in the top 12 inches of soil if an analysis is first completed to determine that exposure to contaminants in the top 0-2 ft does not present an increased risk to receptors exposed relative to the 0-12 interval.

22. Page 16, Bullet 1, Section 3.2.1. An additional site soils exposure area should be added that includes all soil data in the 2 to 6.5 ft interval, as a characterization of burrowing wildlife and forest communities exposure to contaminants in subsurface soil.

Honeywell Response: Please refer to the response to specific comment 20. Forest communities have not been identified as an assessment endpoint for the Wastebeds 1-8 Site. It is unclear how soil data from this depth interval would be used to evaluate the "exposure" of forest communities to subsurface soil. Lastly, it is unclear to Honeywell how this interval would be incorporated given that the chosen ecological receptors for the Site are not expected to be exposed to these soils.

NYSDEC Response: Contaminants in soil below two feet are not completely removed from potential exposure to terrestrial ecological resources. Numerous species burrow to depths

below two feet and tree roots can act as a conduit to carry sub-surface contaminants to the surface. Therefore, an analysis is needed to determine if contamination in the sub-surface layers of the wastebed present risk to these ecological receptors. This analysis could be done using screening-level assumptions and if demonstrated not to present a risk, then additional analysis in the BERA would not be necessary.

23. Page 16, Bullet 1, Section 3.2.1. An additional site soils exposure area should be added that includes all soil data in the 6.5 to 13 ft interval, as a characterization of forested communities exposure and contaminant mobilization potential to the surface.

Honeywell Response: Please refer to the response to specific comment 20. It is unclear how soil data from this depth interval would be used to evaluate the "exposure" of forest communities to subsurface soil. In addition, Honeywell would like clarification on the rationale for assuming that contaminants at a depth of 13 ft. would be mobilized in a manner which would make them available to ecological receptors.

NYSDEC Response: See response in No. 24

25. Page 16, Bullet 2, Section 3.2.1. An additional sediment exposure area should be added that includes all sediment data deeper than 6 inches, as a characterization of potential wildlife exposure to subsurface sediments.

Honeywell Response: For the purposes of the BERA, the sediment exposure area includes evaluation of COC concentrations measured in the top 6 inches of sediment. Data from this interval will be utilized in the assessment of risk to aquatic receptors including aquatic vegetation, benthic invertebrates and the agreed upon upper trophic level receptors selected for the BERA (e.g., kingfisher, heron, mink).The 0-6 inch sediment interval has been the interval evaluated to date in the previous steps of the BERA (FWIA/PFD) performed at this and other Honeywell sites. Honeywell has not received NYSDEC comments concerning the assessment of additional sediment intervals up to this point in the BERA process. Therefore, the addition/revision of the sediment interval evaluated for the BERA is not appropriate at this stage of the assessment.

NYSDEC Response: Honeywell can continue to evaluate sediment exposure of ecological receptors in the top 6 inches of sediment if an analysis is first completed to determine that exposure to contaminants in below 6 inches does not present an increased risk to receptors exposed relative to the 0-6 inch interval.

26. Page 16, Bullets 3 and 4, Section 3.2.1. The difference between "site surface water" and "habitat surface water" is unclear, especially since surface water in the Ponded Area and Ditch A appears to fall into both categories. It is likely that all surface water is present for most of the year and provides some habitat. Even if fish are not present, the water bodies still may provide breeding areas for amphibians and some aquatic insect larvae. The text should discuss how each of these exposure areas ("site surface water" and "habitat surface water") would be used in the BERA.

Honeywell Response: "Site surface water" refers to any area where surface water samples have been collected at the Site and includes seeps, ditches, the Ponded Area and Ditch A. The "Site surface water" dataset will be utilized in the BERA for comparison to standards and criteria and to calculate exposure point concentrations for terrestrial receptors.

"Habitat surface water" includes areas where fish and benthic invertebrates can be found and upper trophic level receptors (e.g., heron, kingfisher, mink) may forage. Surface water samples collected from the Ponded Area and Ditch A comprise the "habitat surface water" dataset. This dataset will be utilized in the BERA to model risk to the aforementioned upper trophic level receptors. Seep and ditch surface water samples (not including Ditch A) were excluded as "habitat surface water" because these areas do not truly reflect aquatic habitats due to the intermittent presence of water in the ditches and seeps and lack of natural substrate. In short, it is unlikely that aquatic organisms live in these areas.

NYSDEC Response: It is noted that seep and ditch surface water samples were excluded as "habitat surface water" because these areas do not truly reflect aquatic habitats due to the intermittent presence of water in the ditches and seeps. Please discuss the seasonal use of these habitats, and note whether they may be considered vernal pools and potentially provide habitat for amphibian breeding.

34. Page 24, Paragraph 2, Section 3.4.1. The soil-invertebrate bioconcentration factor equation presented should only be used for organic compounds with no field or laboratory data available. For inorganic compounds with no field or laboratory data available, the recommended bioconcentration factor (BCF) value is equal to the arithmetic average of the available BCF values for other inorganics as specified in Table C-1 of USEPA (1999). The citation for this equation should be Southworth et al. (1978).

Honeywell Response: The equation presented in this paragraph referencing USEPA 1999 is used for organic compounds where we do not have data from other sources, with two exceptions. In Table 3-5, the USEPA 1999 is incorrectly cited for naphthalene and indeno(1,2,3-CD)pyrene. The values (both are 0.18) should reference the same source used for other PAHs, Ma et al. 1998.

USEPA 1999 is also used for one inorganic compound (methyl mercury). There are no cases where the average value of available BCF values for other inorganics (as presented in USEPA 1999) is required. Although NV is presented for arsenic, USEPA 1999 presents a recommended value of 0.22 for arsenic, which will be utilized and presented on Table 3-5 in the Revised BWP.

NYSDEC Response: The Honeywell response is acceptable. However, it should be noted that methylmercury is an organic form of mercury.

39. Page 34, Paragraph 3 on, Section 4.1.1. Since mercury and methylmercury generally do not behave the same in regard to toxicity, uptake and depuration, it is recommended that they be discussed separately.

Honeywell Response: Discussions on mercury and methyl mercury were separated and are presented as such in the text of the Revised BWP.

NYSDEC Response: The Honeywell response is acceptable. However, a sentence should be added to the first paragraph of Section 4.1.12 (mercury) to indicate that methylmercury is discussed separately (Section 4.2).

44. Page 39, Paragraph 1, Section 4.1.4. A short discussion on high and low molecular weight polycyclic aromatic hydrocarbons (PAHs) should be added to this section, in light of the PAH TRVs (see page 44).

Honeywell Response: The text of the revised BWP has been revised to include the following:

While non-polar narcosis is the primary mode of toxicity for LMW PAHs, many HMW PAHs may also be associated with mutagenic, carcinogenic, and teratogenic effects (Eisler 2000). There is evidence that methyl-substituted PAHs tend to be much more toxic than their parent compound (Environment Canada and Health Canada 1994).

NYSDEC Response: (Now Section 4.5.) The sentence on how PAHs are divided into LMW and HMW (number of rings) from page 51, paragraph 6, sentence 2 of the revised work plan should be added prior to the new text in the first paragraph of Section 4.5.

45. Page 40, Paragraph 2, Section 4.1.5. Mammalian TRVs for hexachlorobenzene (HCB) are presented here, in contrast to the majority the section, which does not present TRVs. The TRVs in this section are about two orders-of-magnitude lower than those presented in Table 4-1 (0.014 and 0.14 mg/kg-day versus 1.6 and 16 mg/kg-day) and should be used to be protective of wildlife.

Honeywell Response: The mammalian TRVs for HCB have been changed to 0.014 mg/kg-day for the mink and 1.6 mg/kg-day for the shrew for the NOAEL. The corresponding LOAELs for mammals have been changed to and 0.14 mg/kg-day (mink) and 3.2 mg/kg-day (shrew). The discussion of the critical studies from Sample et al. 1996 (Bleavins et al. 1984 and Grant et al. 1977) used to determine these TRVs are included in Section 4.0 of the Revised BWP.

NYSDEC Response: Please indicate why the Grant et al. (1977) rat study was selected to derive TRVs for the shrew and the fox, rather than the Bleavins et al. (1984) mink study.

48. Page 43, Paragraphs 2 and 3; Pages 45 to 46, Section 4.2.2; and Table 4-1. As noted by Honeywell/O'Brien & Gere, the avian PCB and mammalian methylmercury TRVs are currently under discussion. Currently, NYSDEC is awaiting a response to their June 22, 2007 comments.

Honeywell Response: Outstanding responses to NYSDEC's June 22, 2007 comments, including the selected avian PCB and mammalian methyl mercury TRVs, are presented herein following the responses to the specific comments.

NYSDEC Response: With respect to the follow-up response to Comment 78 of NYSDEC's June 22, 2007 comments on the Wastebeds 1 through 8 Problem Formulation Document (PFD), there are various potential interpretations of the results of the Dahlgren et al. (1972) study. The TRVs derived from this study using both NYSDEC's and Honeywell's interpretations have been previously used in other ecological risk assessments. NYSDEC continues to support the use of NOAEL and LOAEL values of 0.18 and 1.8 mg/kg-day, respectively, but will allow Honeywell to use avian PCB NOAEL and LOAEL values of 1.8 and 7.1 mg/kg-day, respectively, in the Wastebeds 1 through 8 BERA based on their interpretation of the Dahlgren et al. (1972) study.

Regarding the follow-up response to Comment 79 of NYSDEC's June 22, 2007 comments on the Wastebeds 1 through 8 PFD related to methylmercury, the use of the Dansereau et al. (1999) study in the uncertainty section was recommended to provide consistency with the BERA previously performed for Onondaga Lake. To accommodate both consistency between the BERAs and the associated remediation goals and the additional comprehensive study, both sets of TRVs can be presented to provide a range of mercury hazard quotients for mammalian receptors.

63. Although coordinates were provided for most samples, there are still some locations where this information is missing. These include the following:

From WB18_Database Download.xls, coordinates are missing for WB-101-01 through WB18-101-04 and MW19BR. A map depicting the NYSDEC sampling locations WB-101-01 through 04 will be provided to Honeywell.

From WB18_database Download2.xls, coordinates are missing for MW-23, SB-24BR, SB-47, SS19A through D, SS20A through D, and TW-02.

Honeywell Response: The comments have been responded to in a revised Database download, which is included with this submittal.

NYSDEC Response: Although coordinates have been added to the revised October 2007 database for some of the locations noted above, there are still some locations that are missing coordinates. From WB18_Database Download.xls, coordinates for MW19BR are missing.

From WB18_Database_Download_2, coordinates are still missing for MW-23, SB-24BR, SB-47, SS19A through D, and SS20A through D.

In addition to the missing coordinates, it was noticed that in the revised database, groundwater data for TW-01S and TW-02 are no longer included. These were groundwater samples that had been included in the August 2007 version of the database. According to

Table 3-1b of the revised October 2007 BERA work plan, data from TW-01S were used for the EPC calculations in shallow groundwater. Please review the October 2007 database to ensure all site data currently available are included and revise as necessary for the next database submission.

78. Table 3-7. The avian Aroclor 1254 LOAEL recommended for use is 0.18 mg/kg-day based on Dahlgren et al. (1972).

Honeywell Response: Honeywell has evaluated the Dahlgren et al. (1972) study and determined that the NOAEL for Aroclor 1254 is 1.8 mg/kg/day. The selection of this TRV is consistent with the Hudson River BERA (TAMS 2000) but not with Sample et al. 1996 or the Onondaga Lake BERA (TAMS 2002). Both of these latter evaluations (Sample et al. and Onondaga Lake BERA) state that the 12.5 mg/week dose caused a significant reduction in egg hatchability. Honeywell does not agree with this interpretation. Refer to Attachment 3 for further discussion of this issue.

NYSDEC Follow-up Response: (Note, "LOAEL" in the original Comment 78 should have been "NOAEL.") NYSDEC does not concur with the reevaluation of the Dahlgren et al. (1972) results presented by Honeywell that result in increasing the PCB avian NOAEL by an order of magnitude and the LOAEL by a factor of four. Dahlgren et al. (1972) concluded that PCBs given to laying pheasant hens adversely affected egg production, hatchability, and viability of the embryo about the time of hatching. Honeywell only reevaluated the hatchability data, and even these data showed a clear decrease in hatchability between the control birds and birds receiving the 12.5 mg dose in 1970 (Table A.4). It is noted that another comparison of control birds in 1971 (Table A.2) did not show a statistically significant decrease, although the hatchability of control birds was higher. It should also be noted that some reproductive effects may not show up until the second generation (e.g., Peakall et al., 1972), which was not evaluated in the Dahlgren et al. (1972) study. Therefore, NYSDEC requests that the original NOAEL and LOAEL values of 0.18 and 1.8 mg/kg-day, respectively, be retained. Please note that the proposed mink TRVs for PCBs (Attachment 3, Section 2.1.1) are currently under review by NYSDEC (see Attachment 3 comments).

Honeywell Follow-up Response: Honeywell respectfully disagrees with NYSDEC's assessment of Dahlgren et al. (1972). At issue is not whether the authors of the Dahlgren et al. (1972) paper conclude that PCB's given to laying pheasants adversely affected egg production, hatchability and viability of the embryos – they do. The issue is - what is the lowest experimental PCB dose at which adverse effects occur (LOAEL)? Honeywell continues to maintain that the LOAEL dose from the Dahlgren et al. (1972) paper is 50 mg (or 7.1 mg/kg BW/day).

Honeywell's May 30, 2007 reevaluation focused on hatchability to determine the LOAEL because a reading of the Dahlgren et al. (1972) paper indicates that this measurement is the only response variable that might be impacted by the 12.5 mg dose. This interpretation (that hatchability is the key variable for determining the LOAEL) is supported by both Sample et al. (1996) and the Onondaga Lake BERA. For example, the Onondaga Lake BERA (TAMS 2002) states:

"The avian TRVs selected for this BERA are based on a 16-week study by Dahlgren et al. (1972) that examined the effects of Aroclor 1254 on pheasants. In this study, ring-necked pheasants were dosed once a week with either 12.5 or 50 mg/bird-week Aroclor 1254. No impact on chick growth, egg production, or survivability was reported at the lower dose; however, egg hatchability was slightly lower at this dose." (Emphasis added by Honeywell, Source: Onondaga Lake BERA, Volume 1, December 2002, page 9-64)

With respect to the reevaluation of hatchability, Honeywell still does not agree with NYSDEC's contention that the Dahlgren et al. (1972) data show a clear decrease in hatchability with the administration of the 12.5 mg dose.

As stated in Honeywell's May 30, 2007 response letter and repeated here, the statistics in the Dahlgren et al. (1972) paper are unclear on this issue. There are no analyses within this paper that indicate that the 12.5 mg dose caused a statistically significant reduction in hatchability. Likewise, the text of the Dahlgren paper (presented below) states that the 50 mg dose reduced hatchability but does not mention the 12.5 mg dose:

"Hatchability in both 1970 and 1971 was highest in control groups and lowest in groups in which hens had received 50 mg PCBs. In 1970, these differences tested by chi-squared were not significant ($P>0.05$), while in 1971 hatchability was reduced ($P<0.01$) among the hens given PCBs." (Dahlgren et al. 1972, page 90-91)

Thus, Honeywell is left with a re-analysis of the Dahlgren et al. (1972) data as the only way to evaluate the difference between the control and the 12.5-mg dose with respect to hatchability. This re-analysis is presented in Tables A2, A3, A4, and A5 of Attachment 3 in Honeywell's May 30, 2007 response letter.

There are four opportunities within the Dahlgren paper to evaluate the impact of the 12.5 mg dose on egg hatchability. These opportunities are:

1) The 1970 data where the male PCB dose was held constant at 0 mg per week (Table A2 in Honeywell's May 30, 2007 response letter),

2) The 1970 data where the male PCB dose was held constant at 25 mg per week (Table A3 in Honeywell's May 30, 2007 response letter),

3) The 1971 data where the male PCB dose was held constant at 0 mg per week (Table A4 in Honeywell's May 30, 2007 response letter), and

4) The 1971 data where the male PCB dose was held constant at 25 mg per week (Table A5 in Honeywell's May 30, 2007 response letter).

The NYSDEC's June 22, 2007 comment letter seems to overlook Tables A3 and A5, which show data from experiments where the dose given to the male bird is held constant at 25 mg/week. Given the fact that the male dose was held constant in these comparisons, Honeywell contends that these data sets (Table A3 and A5) can be used to evaluate the

impact of the 12.5 mg dose on egg hatchability. Three of the four comparisons (Tables A2, A3 and A5 in the May 30, 2007 submittal) demonstrate that the number of unhatched eggs is independent of the 12.5 mg PCB dose that was administered to the hen. In contrast, the analysis comparing the 1971 data where the PCB dose administered to the male pheasant was held constant at 0 mg (Table A4 in the May 30, 2007 submittal) demonstrated that the number of unhatched eggs was dependent (and higher) in the 12.5 mg/week treatment. However, in this case, the 12.5 mg hens were considerably more productive (128 eggs vs. 82 eggs, same number of hens/treatment, same time period/treatment) which resulted in no difference in fecundity [65 hatched (0 mg) vs. 64 hatched (12.5 mg)].

In sum, a review of the Dahlgren et al. (1972) paper and a statement in the Onondaga Lake BERA (quoted above) clearly identify hatching success as the variable responsible for determining the TRVs in this study. There are four opportunities to compare the impact of the 12.5 mg dose on hatching success and 75% of these comparisons demonstrate no statistically significant difference between the control dose and the 12.5 mg dose. Further, for an unknown reason, the 12.5 dose brought about an 8% increase in the production of fertile eggs [444 eggs (0 mg PCB) vs. 480 eggs (12.5 mg PCB), across both years and both male doses]. Thus, Honeywell maintains that the 12.5-mg dose caused no appreciable adverse effect in this study and considers this dose to be the appropriate chronic NOAEL.

NYSDEC Follow-up Response: See response to Comment 48.

A.6. For IRIS references, additional uncertainty factors are requested to minimize the distortion that could occur when applying these values. The following compounds should be adjusted by an uncertainty factor of 3 to adjust for various deficiencies in the database: pyrene, acenaphthene, anthracene, fluorene, fluoranthene, naphthalene, 2,4- dimethylphenol, and phenol.

Honeywell Response: Honeywell maintains that the TRVs taken from IRIS do not require adjustments other than those shown on Table A3-1 of Honeywell's May 30, 2007 submittal and presently Table 4-2 of the BWP. The proposed adjustments in this comment were taken directly from the uncertainty section of the IRIS database. Honeywell is unfamiliar with the use of these adjustments (e.g., "lack of a study in a second species," or "lack of developmental studies" or "lack of neurotoxicity data") in an ecological risk setting. For example, the only adjustment that Sample et al. (1996) applies to study TRVs is a subchronic-to-chronic adjustment. Even in the cases where non-reproductive parameters (liver/kidney toxicity, weight loss, growth and blood chemistry) are used as the endpoint (11% of all TRV studies), Sample et al. (1996) still does not apply an uncertainty factor other than the subchronic-to-chronic adjustment. Honeywell maintains that TRVs taken from IRIS should be treated in the same manner as those selected from Sample et al. (1996). If NYSDEC still requires the inclusion of these uncertainty factors, Honeywell requests that NYSDEC provide examples of ecological risk assessments that utilize this approach so that the justification for the approach can be evaluated.

NYSDEC Response: USEPA's Integrated Risk Information System (IRIS) provides information on human health risks (e.g., references to original toxicity studies) and regulatory

information (e.g., reference doses and cancer potency factors) for a variety of chemicals. IRIS values constitute the first tier of the recommended hierarchy as the generally preferred source of human health toxicity values (USEPA, 2003). There is no specific guidance available regarding the use of studies in the IRIS database to derive mammalian TRVs for an ecological risk assessment. The uncertainty factors suggested by NYSDEC were based on providing the same adjustments for mammalian receptors as for human receptors.

Sample et al. (1996) is a widely used tool for ecological risk assessment, but is not a state or federal regulatory standard. The general method used by Sample et al. (1996) was based on USEPA methodology for deriving human toxicity values from animal data and included a limited number of adjustments or uncertainty factors. Although the use of TRVs for human receptors from the IRIS database is considered to be more protective of wildlife receptors, it is recognized that this level of protection (i.e., additional adjustments) was not applied by Sample et al. (1996), the primary reference used to identify TRVs in the work plan. Consequently, the TRVs presented in Table 4-2 of the revised work plan may be used.

A.7. The NOAEL and LOAEL of 0.35 and 3.5 mg/kg-day, respectively, for 2-methylnaphthalene should be adjusted by an uncertainty factor of 10 to account for uncertainty associated with deficiencies in the database, which lacks adequate studies of oral developmental toxicity, reproductive toxicity, and neurotoxicity. The database also lacks a two-generation reproductive toxicity study.

Honeywell Response: Honeywell maintains the NOAEL and LOAEL of 0.35 and 3.5 mg/kg-day, respectively, for 2- methylnaphthalene are applicable for this assessment. See Honeywell's response to comment A.6, immediately above, for the rationale behind this response.

NYSDEC Response: See NYSDEC's response to Comment A.6 above.

Part 2: New Comments on the Revised October 2007 BERA Work Plan

1. Page 42, Paragraph 4, Last Sentence, Section 4.1.15. The last sentence of this section (Thallium) should be revised to read that no appropriate avian studies were available to derive TRVs for thallium.

2. Page 47, Paragraph 4, Sentence 2, Section 4.4. This sentence should be removed, as toxicity literature for the pesticides are not more limited than for some of the inorganic COCs. A short ecotoxicity profile (two or three sentences) should be added for delta-benzene hexachloride, dieldrin, endosulfan sulfate, and gamma chlordane.

3. Page 54, Section 4.6.9 and Page 55, Sections 4.7.7 and 4.7.10. Please add a sentence providing the rationale for using TRVs from other compounds for hexachlorobenzene, ethylbenzene, and o-xylene.

4. Page 54, Paragraph 3, Section 4.6.9. The text should be corrected to refer to Section 4.4.2, rather than 4.3.2, for delta-benzene hexachloride.

5. Table 4-1 provides an avian selenium LOAEL of 18 mg/kg-day. This value should be corrected to 1.0 mg/kg-day to reflect the value discussed in the text.

6. Figure 1-2 (and others). The Wastebeds 1 through 8 site boundary line along Ninemile Creek should be moved in slightly to show that the floodplain and ponded area are not part of the Wastebeds 1 though 8 site.

7. Figure 1-3. Since the wetland area at the mouth of Ninemile Creek is not part of this site, the color depicting that area as "Upland Old Field Successional Area" should be removed. Also, proceeding in a southeasterly direction along the lakeshore, it is not clear why the "Lakeshore Area" abruptly ends and turns to "Upland Old Field Successional Area." The figure should be revised to show that the "Lakeshore Area" extends along the shoreline to the Ditch A area. See attached aerial photo from late 2003. See also the extent of Wastebeds 1 and 2 shown on Figure 2-1A.

8. Appendix A (new). Honeywell/O'Brien & Gere included copies of NYSDEC comment letters and Honeywell responses in this new appendix as per Specific Comment 4. The draft versions of the NYSDEC letters included should be replaced with final, signed versions issued by NYSDEC on May 3, 2007, June 22, 2007, and September 5, 2007.

9. Appendix B, Table B-2, Derivation of Surface Water Exposure Point Concentrations. It should be confirmed that all available samples for the site surface water were included in the EPC calculations. Using Table B-6 in the revised work plan to determine the locations included in the calculations, and using data from these stations from the October 2007 version of the database suggests discrepancies in the total number of samples included. For example, Table B-2 reports a total of 34 samples for antimony; however, there were 36 samples for antimony (excluding field duplicates) in the October 2007 database.

   Additionally, it should be confirmed that all of the available data are included in the revised version of the database. For example, using the mercury data from the October 2007 database for the site surface water stations listed in Table B-6 results in data for 42 samples (excluding field duplicates). Table B-2 reports that there were a total of 60 samples for mercury.

   Due to the apparent discrepancies noted above, the EPC calculations for site surface water were not confirmed.

10. Appendix B, Table B-3, Derivation of Habitat Sediment Exposure Point Concentrations. The calculations for the mercury EPC in sediment should be verified. According to this table, there was one sample where mercury was not detected; however, in the October 2007 version of the database, mercury was reported as being detected for the eight samples included in the calculations.

11. Appendix B, Table B-5, Derivation of Ground Water Exposure Point Concentrations. Please confirm that all available shallow groundwater data were included in the EPC calculations. Review of Table B-5 suggests that typically 18 samples were included in the calculations; however, review of the October 2007 database files indicates that there are more samples available. For example, Table B-5 reports that there were 18 samples included for mercury. Using Table B-6 in the revised work plan for a list of stations included for each pathway, and using data for six of the seven shallow wells listed in the last column of Table B-6 (see note below) from the October 2007 database results in mercury data for 25 samples (from three to five sampling dates per well), excluding two rejected results. Please update the calculations as necessary to include all available data or provide an explanation as to why some were excluded. It should be noted that due to this apparent discrepancy, the calculations for the groundwater pathway were not checked.

    In addition, please note that there appear to be data missing from the October 2007 version of the database. According to Table B-6 of the revised BERA work plan, shallow groundwater data from TW-01S were included in the EPC calculations; however, data for this location are not included in the revised database. Data for this sample had been included in the August 2007 version. Although data for TW-02 were not used in these calculations, it was noticed that data for this location are also missing from the revised database tables.

Editorial Comments on the Revised BERA Work Plan

12. Pages ii and 48, Section 4.4.2. The typo in "hexachloride" should be corrected.

13. Page 52, Paragraph 3, Sentence 1, Section 4.6.1. Replace "avian" with "mammalian," as the sentence refers to mammalian values.

14. Page 53, Paragraph 6, Sentence 1, Section 4.6.5. Ringed dove should be in lower case.

15. Page 54, Paragraph 3, Section 4.6.9. The typo in "chloride" should be corrected.

16. Page 54, Paragraph 4, Sentence 2, Section 4.6.10 and Page 55, Sections 4.7.4, 4.7.5, and 4.7.8. Remove "or mammalian" as mammalian TRVs were presented in the previous sentence.

17. Page 54, Paragraph 7, Section 4.7.2. Please insert the correct spelling of methyl (3 times).

References

Dahlgren, R.B., R.L. Linder, and C.W. Carlson. 1972. Polychlorinated biphenyls: Their effects on penned pheasants. Environ. Health Perspect. 1:89-101.

Dansereau M., N. Lariviere, D. Du Tremblay, D. Belanger. 1999. Reproductive performance of two generations of female semidomesticated mink fed diets containing organic mercury contaminated freshwater fish. Arch Environ. Contam. Toxicol. 36:212-226.

O'Brien & Gere Engineers. 2006. Wetland Delineation and Floodplain Assessment Wastebeds 1 through 8 Site, Geddes, New York. Draft. Prepared for Honeywell, Morristown, New Jersey. May.

Sample, B.E., D.M.. Opresko, and G.W. Suter. 1996. Toxicological Benchmarks for Wildlife: 1996 Revision. Oak Ridge National Laboratory, Oak Ridge, TN. ES/ER/TM.

US Environmental Protection Agency (USEPA). 2003. Human Health Toxicity Values in Superfund Risk Assessments, OSWER Directive 9285.7-53. Office of Solid Waste and Emergency Response. December 5.

Please submit a revised "red-line" version of the BERA Work Plan which addresses these comments. If you have any questions regardng these comments, please call me prior to your submittal of the Work Plan such that the NYSDEC and support agencies may answer your questions and/or resolve any final concerns.

Sincerely,

Susan Edwards

Susan Edwards. P.E.
Project Manager

Enclosure
Copy: A. Labuz, Honeywell
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October 10, 2007

Ms. Susan Edwards
Project Manager
Remedial Bureau B
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, New York 12233-7016

Re: Wastebeds 1 – 8 Site, Town of Geddes, Onondaga County, New York
Index # D-7-0002-02-08 – Revised Baseline Ecological Risk Assessment Work Plan

Dear Ms. Edwards:

The purpose of this letter is to present the revised Baseline Ecological Risk Assessment Work Plan (BWP) for the above-referenced Site. The BWP was revised based on New York State Department of Environmental Conservation (NYSDEC) comments that were submitted to Honeywell in a letter dated September 5, 2007. Specific responses to the NYSDEC's comments are presented as Attachment 1. Additionally, responses to comments 78, 79 and A1 through A7, as presented in the NYSDEC's June 22, 2007 letter presenting comments on the Problem Formulation Document, are contained in Attachment 1 and have also been incorporated into the revised BWP. A compact disc containing the revised BERA Database is included.

In accordance with the November 2006 NYSDEC-approved Remedial Investigation/Feasibility Study Work Plan for the above-referenced Site, the required copies of a revised BWP are enclosed.

We believe the revised BWP and comment responses address the agency's concerns and look forward to performance of the next step in the process, preparation of the draft BERA report. Please contact me if you have any questions or comments.

Sincerely,

John P. McAuliffe

John P. McAuliffe, P.E.
Program Director, Syracuse

Enc. (5)

cc:	Mr. Alfred J. Labuz – Honeywell	w/ attachment
	Brian D. Israel, Esq. – Arnold & Porter	"
	Mr. William Hague – Honeywell	"
	Mr. Robert Nunes – USEPA, Region II	w/ attachment (4)
	Mr. Gregg Townsend – NYSDEC, Region 7	w/ attachment

Ms. Henriette Hamel, NYSDOH	"
Mr. Mark Van Valkenburg, NYSDOH	"
Mr. Christopher C. Calkins – O'Brien & Gere	"
Mr. David Coburn – Onondaga Co. Dept. of Env.	"
Carol Conyers, Esq. – NYSDEC	w/o attachment
George Shanahan, Esq. – USEPA	"

New York State Department of Environmental Conservation

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September 5, 2007

John McAuliffe
Honeywell International
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Suite 700
East Syracuse, NY 13057

Re: Comments on Draft "Work Plan Wastebeds 1 through 8 Site Baseline Ecological Risk Assessment, Geddes, New York" Prepared by O'Brien & Gere for Honeywell, June 2007

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation and support agencies have reviewed the Waste Beds 1-8 Baseline Risk Assessment Work Plan, dated June 18, 2007 and have comments as detailed below which need to be addressed in a revised BERA Work Plan.

General Comments

G.1. **Presentation of Toxicity Reference Values (TRVs).** The ecotoxicity profile section (Section 4.1) should be combined with the selection of TRVs section (Section 4.2) to present a brief overview of each contaminant and the toxicity study used to select the contaminant-specific TRV for each receptor. The text for each contaminant can begin with a general overview of the compound and then discuss toxicity for plants, aquatic invertebrates, fish, birds, and mammals.

G.2. **Review of Calculations, including Exposure Point Concentrations (EPCs).** Appendix A presents the summary statistics for the data to be used in the BERA along with the EPCs. It appears that the data used include results from the Preliminary Site Assessment (PSA), Focused Remedial Investigation (FRI), and RI. Since the revised RI data was only recently received by the NYSDEC, not all data used for the calculations in this BERA work plan were readily available to NYSDEC at the time of the review. Thus, the calculations and EPCs were not reviewed by NYSDEC. The electronic data submission should be updated to include the more recent RI data (August 2007) as well as to address NYSDEC comments on the database as provided at the end of this letter.

NYSDEC may then provide comments on the Appendix A tables at a later date or during review of the draft BERA.

Specific Comments

Typically, paragraph numbering corresponds to complete paragraphs on a page, and begins with the first full paragraph on a page. Page numbering typically includes the last paragraph on a page, even if that paragraph continues onto the next page. Bullets are considered part of the paragraph that introduced them.

1. Page 1, Paragraph 3, Section 1.1 and Figure 1-2. It should be clarified that the small spit of land on the wastebed side of Ninemile Creek and between the wastebeds and Onondaga Lake is part of the floodplain portion of the Geddes Brook/Ninemile Creek site.

2. Page 2, Paragraph 6, Section 1.1. It should be noted that the Crucible Landfill area will not be included in the quantitative BERA.

3. Page 2, Paragraph 7, Section 1.1. Further clarification should be provided as to what area is considered the unvegetated area "***east of the mouth of Ninemile Creek that contain exposed Solvay waste***," as the area just east of the mouth of Ninemile Creek contains a wetland.

4. Page 3, Paragraph 7 (continued on to top of page 4), Section 1.3. The text should be revised to indicate that NYSDEC's April 24, 2007 comments on the Problem Formulation Document (PFD) were draft and that the PFD comments were finalized by NYSDEC on May 3, 2007. Also, as the PFD is not being revised to address the comments and resubmitted, the NYSDEC letters of May 3, 2007 and June 22, 2007 and Honeywell's May 30, 2007 responses should be included in an appendix.

5. Page 5, Paragraphs 6 and 7, Section 2.1.

   There appears to be some discrepancy regarding the extent of wetlands on the site partly based upon the apparently variable nature of the site bounds. The site description in the BERA work plan is not sufficiently detailed enough to understand the exact limits of the site, especially along Ninemile Creek. The 2006 wetland delineation report (O'Brien & Gere, 2006) contains a different site boundary then this work plan. Additionally, it is unclear if the site does or does not contain the entire bank of Ninemile Creek. The two delineations that have been conducted recently in the area (O'Brien & Gere, 2004 and Terrestrial Environmental Specialists [TES], 2005) and the 2006 wetland delineation state that wetlands are present on the small spit of land along Ninemile Creek extending into the lake and on the bank of Ninemile Creek along the entire site.

A clear and unambiguous resolution is needed on where the boundaries of the Wastebeds 1 through 8, Onondaga Lake, and Geddes Brook/Ninemile Creek sites begin and end. For site boundary purposes, the NYSDEC considers the flood plain along Nine Mile Creek to be part of the Nine Mile Creek Site, and therefore, any wetlands identified thereon are part of the Nine Mile Creek Site. Once that resolution is achieved, a document review for each site is needed to ensure that no portion of the affected lakeshore and riverbank is left unassigned and that all sections will be appropriately remediated. This document may then need to be revised to clearly describe the wetland habitats that are present on the site. It is NYSDEC's understanding at this time that the "spit of land along Nine Mile Creek", and the "ponded area" are being included in the BERA, but these areas are actually part of the Nine Mile Creek Site and thus results of this assessment and ultimately the remediation of these areas will be addressed under the Nine Mile Creek Site.

6. Page 5, Paragraphs 6 and 7, Section 2.1. The portion of the site between the northern berm of the wastebeds and the shoreline of Onondaga Lake, referred to as the general lakeshore area, was identified in the 2006 wetland delineation report as a potential wetland habitat. This area was not classified as a wetland by O'Brien & Gere because "***indicators of wetland hydrology (i.e., presence of water in the upper substrate) in the general lakeshore area were not frequently observed in the soil borings performed there***" and "***a significant layer of organic material (decomposing vegetation) typical of many wetland habitats, was not observed***" (see Section 2.4.1, page 10 of the wetland report).

The general approach used (i.e., focusing on positive indicators of hydrophytic vegetation and wetland hydrology since "***the presence of these waste materials likely precludes the presence of hydric soils***," per Section 2.3.1 Site Soils, page 8, paragraph 2 of the wetland report) is reasonable since this area contains wastes (which may now support wetlands in certain areas) on top of the historic marsh/wetland. Photos taken by Earth Tech during the wetland reconnaissance conducted in September 2004 (O'Brien & Gere and Parsons, 2004) strongly suggest the presence of wetland areas in a portion the lakeshore area in the southeastern half of the site.

Additionally, the delineation form for plot ID SLSB2 (see Photo 4 of the wetland report) indicates that both wetland vegetation (at 100 percent) and wetland hydrology (saturated conditions in top 12 inches) are present, yet O'Brien & Gere's overall determination is that this point is not in a wetland since hydric soils were not present. However, since this is not consistent with the specified approach noted above ("***the presence of these waste materials likely precludes the presence of hydric soils***"), this area, and possibly others in the lakeshore area, should be re-evaluated and possibly characterized as a wetland.

Additional comments on the Wetland Delineation report (OB&G,2006) will be forthcoming from the NYSDEC in a separate letter.

7. Page 5, Paragraph 7, Section 2.1. Wetlands in the vicinity of the site are to be assessed as part of a separate risk assessment (Geddes Brook/Ninemile Creek and Onondaga Lake) according to the Problem Formulation Document (page 23). It may be useful to evaluate any potential impacts from this site on adjacent wetlands. Understanding the impact of this Site on those wetlands may allow for a better evaluation of source control when those wetlands are addressed.

8. Page 6, Paragraph 2, Section 2.1. The text should state whether any evidence of bald eagle foraging, breeding, nesting, or roosting has been observed on site.

9. Page 6, Paragraph 5, Bullets, Section 2.2. The potential source areas should be referenced on a figure (e.g., Figure 2-1 or 2-2).

10. Page 7, Paragraph 2, Section 2.2.1 and Page 15, Paragraph 3, Section 3.1. Please provide general information on the data that were not used in the BERA (e.g., subsurface soils).

11. Page 8, Paragraph 4, Section 2.3.1. Section 1.1 indicated that the majority of the site is vegetated. Please reconcile the statement that there are "significant unvegetated areas" with the assessment made on page 2 (i.e., "***The New York State Fairgrounds uses a portion of the Site for parking; while the remainder is currently vegetated, except the wastebed slopes along the shore of Onondaga Lake and east of the mouth of Ninemile Creek that contain exposed Solvay waste and minimal vegetation***").

12. Page 8, Paragraphs 5 and 6, Section 2.3.2. While the relatively small size of the aquatic habitat may not support upper trophic level receptors, it should be recognized that this habitat is part of the larger Onondaga Lake Site and these on-site habitats may contribute to the overall risk for these upper trophic level receptors. It is indicated that "***potential food chain exposure to the receptors will be evaluated for the Ponded Area and Ditch A as part of the BERA***." However, as previously discussed, Ditch A will be remediated; therefore it is already assumed that there is a complete pathway for exposure and the focus should be on establishing sediment clean-up strategies.

13. Page 9, Paragraph 5, Section 2.4. Piscivorous receptors may also be exposed to COCs via incidental ingestion of sediment pathway, in addition to exposure through ingestion of contaminated prey (fish).

14. Page 10, Paragraph 2, Section 2.5. The laboratory contaminants section states that acetone will be retained as a COC because it is a degradation product of benzene; however, Table 2-2 indicates that acetone was eliminated as a COC in sediments. Acetone should be retained as a COC in the sediments.

15. Page 10, Paragraph 5, Section 2.5. Calcium and sodium have been removed from the COC list based on the justification of their "essential nutrient" status. Given that the main waste mass at the site is composed of calcium chloride, calcium carbonate, and

sodium chloride in an abundance far above “naturally occurring levels,” and that calcium in the form of Solvay waste and oncolites was identified as a stressor of concern in Onondaga Lake and Ninemile Creek, these two elements should be retained for consideration in the BERA. Not only are these elements likely to be present in such abundance that they inhibit terrestrial plant and invertebrate growth, there is overwhelming evidence that the site is a major contributor to the ongoing impacts of these elements in the lake and stream.

Chloride should also be added as a COC in site media because of the abundance of chlorides in the waste mass and the known water quality impacts in Ninemile Creek and Onondaga Lake.

16. Page 10, Paragraph 6, Section 2.5.1. The number of selected COCs in the BERA Work Plan (WP) text does not correspond with Table 2-3 or the PFD (page 35, Section 4.1.1), with the exception of the terrestrial wildlife COCs (see table below). Please reconcile the number of COCs for each exposure pathway and provide an explanation of these differences.

Number of COCs	**WP Text**	**WP Table 2-3**	**PFD**
Surface soil	36	38	36
Surface water	18	30	16
Sediment	29	39	29
Terrestrial wildlife	41	41	41
Aquatic wildlife	18	16	19

17. Pages 11 to 14, Section 2.6, Field Observation Measurement Endpoints. Field observations should incorporate both indications of stress and abundance and diversity of communities. Field measurement endpoints that focus only on one aspect (e.g., terrestrial plant, benthic invertebrate, fish, and piscivorous bird communities) should be revised to reflect this.

18. Page 13, Bullet 2, Section 2.6.7 and Bullet 1, Section 2.6.8. The surface water comparison should also include a qualitative evaluation of NY State narrative standards.

19. Page 13, Bullet 2 of Section 2.6.9. This measurement endpoint should consist of a straight comparison of measured average and 95% UCL concentrations of COCs in surface water to NY State and federal water quality criteria, without incorporation of field observations of stress.

20. Page 16, Bullet 1, Section 3.2.1. The site soils exposure area should be modified to

include the contaminant concentrations in the top 6 inches of soils, as a characterization of general wildlife exposure to contaminants in surface soils.

21. Page 16, Bullet 1, Section 3.2.1. An additional site soils exposure area should be added that includes all soil data in the top 0 to 2 ft, as a characterization of general and burrowing wildlife exposure to contaminants in all surface soil.

22. Page 16, Bullet 1, Section 3.2.1. An additional site soils exposure area should be added that includes all soil data in the 2 to 6.5 ft interval, as a characterization of burrowing wildlife and forest communities exposure to contaminants in subsurface soil.

23. Page 16, Bullet 1, Section 3.2.1. An additional site soils exposure area should be added that includes all soil data in the 6.5 to 13 ft interval, as a characterization of forested communities exposure and contaminant mobilization potential to the surface.

24. Page 16, Bullet 1, Section 3.2.1. Please provide the rationale for placing the seep sediment with the site soil and clarify whether the material is more similar to a soil or sediment (i.e., it is referred to as a soil in the text, but as sediment in Tables 3-1a and 3-1b).

25. Page 16, Bullet 2, Section 3.2.1. An additional sediment exposure area should be added

    that includes all sediment data deeper than 6 inches, as a characterization of potential wildlife exposure to subsurface sediments.

26. Page 16, Bullets 3 and 4, Section 3.2.1. The difference between “site surface water” and “habitat surface water” is unclear, especially since surface water in the Ponded Area and Ditch A appears to fall into both categories. It is likely that all surface water is present for most of the year and provides some habitat. Even if fish are not present, the water bodies still may provide breeding areas for amphibians and some aquatic insect larvae. The text should discuss how each of these exposure areas (“site surface water” and “habitat surface water”) would be used in the BERA.

27. Page 16, Paragraph 2, Sentence 4, Section 3.2.1. Please list the COCs that were selected, but not detected.

28. Page 17, Paragraph 1, Section 3.2.2. This discussion should also reference the Geddes Brook/Ninemile Creek BERA (TAMS, 2003; Section 6.3.1.1), where based on the literature and LCP Bridge Street site/Wetland SYW-18 data, a wetland mercury methylation rate of 1 percent was considered to be protective for use in the BERA.

29. Page 18, Paragraph 6, Section 3.4.1. It should be noted that for the aquatic environment, the sediment-biota uptake factor will be used, rather than the soil-biota uptake factor.

30. Page 21, Bullet 2, Section 3.4.1 and Page 30, Paragraph 2, Section 4.1. Please note that the Eisler "Contaminated Hazards Review Series" has been updated and was published as the "Handbook of Chemical Risk Assessment" (three volumes) in 2000.

31. Page 21, Paragraph 2, Section 3.4.1. Honeywell's response to NYSDEC's Comment 23 on the PFD (May 30, 2007) indicated that the US Geological Survey (USGS, 1999) biota-sediment accumulation factors (BSAFs) would not be used in the BERA. Consultation should have occurred with NYSDEC prior to their use in this document.

32. Page 23, Bullets 4 and 5, Section 3.4.1. It is unclear why there are two references for radioactive contaminants, as they have not been identified as potential COCs.

33. Page 24, Paragraph 1, Bullet 5, Section 3.4.1 and Page 30, Paragraph 2, Section 4.1. The last reference provided is specific to sediment-associated contaminants, so it is unclear what information contained within the document will assist in determining soil-uptake factors. Further, if there is useful information contained within this publication, the more recent March 2000 Second Edition should be referenced (available at http://www.epa.gov/waterscience/cs/freshmanual.pdf).

34. Page 24, Paragraph 2, Section 3.4.1. The soil-invertebrate bioconcentration factor equation presented should only be used for organic compounds with no field or laboratory data available. For inorganic compounds with no field or laboratory data available, the recommended bioconcentration factor (BCF) value is equal to the arithmetic average of the available BCF values for other inorganics as specified in Table C-1 of USEPA (1999). The citation for this equation should be Southworth et al. (1978).

35. Pages 27 to 29, Section 3.4.3 Area use factors (AUFs) are discussed for the belted kingfisher and the mink, but no information is provided for the great blue heron or any of the terrestrial receptors (i.e, short-tailed shrew, red fox, American robin, red-tailed hawk). Please include a discussion of AUFs for all receptors of concern.

36. Page 27, Paragraph 6, Last Sentence, Section 3.4.3. The percent of invertebrates in diet used is based on the summer ingestion rate provided in USEPA (1993). Use of the spring ingestion rate is recommended to provide a conservative estimate, as this period covers important reproduction and growth events. The percent of invertebrates in the diet in spring is 93% with 7% vegetable matter.

37. Pages 30 to 40, starting with Paragraph 2, Section 4.1. Despite the heavy reliance on ATSDR (2004) and Eisler (1985-1995; see Comment 30), individual reports for each contaminant should still be cited when they are used as a direct source of information.

38. Page 33, Paragraph 6; Page 34, Paragraph 1; Page 38, Paragraph 1; and Page 39, Paragraph 3. Section 4.1. Information that is not directly relevant to a general overview or the specific TRV selection can be removed (e.g., ***"Representative species of***

mammals displayed acute oral LD50 that ranged between 2 and 3.6 mg HCN/kg body weight"). (Also see General Comment 1.)

39. Page 34, Paragraph 3 on, Section 4.1.1. Since mercury and methylmercury generally do not behave the same in regard to toxicity, uptake and depuration, it is recommended that they be discussed separately.

40. Page 34, Paragraph 5, Sentence 1, Section 4.1.1. The statement regarding the uptake of mercury in fish may be misleading. As stated in Eisler 2000a (page 331) "***uptake was primarily from aqueous sources during the spring and fall and was dominated by food sources in the summer (Post, 1996)***."

41. Page 35, Paragraph 4, Sentence 3, Section 4.1.1 The text indicates that information on selenium toxicity to aquatic organisms was not available. Please use the following query manager for information on aquatic toxicity: http://cfpub.epa.gov/ecotox/quick_query.htm. Numerous studies assessing the toxicity of selenium to toxicity receptors are contained in this database.

42. Page 37, Paragraph 6, Section 4.1.2. As indicated previously, the Eisler reference has been updated. The text states that "***the mink is usually considered one of the most sensitive mammals to PCB exposure, with sub-lethal effects on reproduction reported at 2 ppm in the diet (Eisler 1986)***." However, in Eisler 2000b (page 1298) it is noted that river otter ***(Lutra lutra***) is considered the most vulnerable of all mustelids to PCBs because of their diet (Leonards et al., 1998) and that PCB congeners 126 and169 are selectively retained in the livers of otters, stoat or short tailed weasel (***Mustela erminea***) and weasels (***Mustela*** spp.), as well as mink. Additionally, Eisler notes effects of PCBs on mink: "***mink (Mustela vison) had reduced growth when fed 100 ug Aroclor 1254/kg BW daily and reduced survival at 50μg PCB 169/kg diet***." This information should be included in the ecotoxicity profile for PCBs.

43. Page 38, Paragraph 6, Section 4.1.3. The avian TRVs for DDT are presented in this paragraph, in contrast to the majority of the section which does not present TRVs. It is recommended that Sections 4.1 and 4.2 be combined, as suggested in General Comment 1.

44. Page 39, Paragraph 1, Section 4.1.4. A short discussion on high and low molecular weight polycyclic aromatic hydrocarbons (PAHs) should be added to this section, in light of the PAH TRVs (see page 44).

45. Page 40, Paragraph 2, Section 4.1.5. Mammalian TRVs for hexachlorobenzene (HCB) are presented here, in contrast to the majority the section which does not present TRVs. The TRVs in this section are about two orders-of-magnitude lower than those presented in Table 4-1 (0.014 and 0.14 mg/kg-day versus 1.6 and 16 mg/kg-day) and should be used to be protective of wildlife.

46. Page 40, Paragraphs 5 and 6, Section 4.1.6. Mammalian TRVs for xylenes are presented here, in contrast to the majority of the section which does not present TRVs. It is recommended that Sections 4.1 and 4.2 be combined.

47. Page 42, Paragraph 3, Section 4.2.2. A short summary of the original study used to derived TRVs for each contaminant should be provided, regardless of whether if was taken from Sample et al. (1996).

48. Pages 42 to 45, Section 4.2.2 (TRVs for PCBs and Methylmercury). The text should be consistent with NYSDEC's comments on the PFD, as provided in its June 22, 2007 letter to Honeywell.

49. Page 43, Paragraphs 2 and 3; Pages 45 to 46, Section 4.2.2; and Table 4-1. As noted by Honeywell/O'Brien & Gere, the avian PCB and mammalian methylmercury TRVs are currently under discussion. Currently, NYSDEC is awaiting a response to their June 22, 2007 comments.

50. Page 47, Paragraphs 2 and 3, Section 5.1. Several lines of risk questions, assessment endpoints and measure endpoints, described in Section 2, were eliminated from the risk characterization section. Add "analysis of soil invertebrate community" to the terrestrial receptors section.

51. Page 47, Paragraph 4, Section 5.2. Several lines of risk questions, assessment endpoints, and measure endpoints, described in Section 2, were eliminated from this section. Add "analysis of the benthic invertebrate community" and "analysis of the fish community" to the aquatic receptors section.

Comments on Tables

52. Table 2-3. The 4,4-DDE row can be deleted as it was not selected as a COC in any media.

53. Table 3-6. Some of the body weights presented (e.g., short-tailed shrew, belted kingfisher) are mean, rather than minimum weights and the food ingestion rates are not maximum ingestion rates. It is suggested that "minimum" be removed from the body weight row and "maximum" be removed from the food ingestion rows (listed in two rows).

54. Table 3-6. Several parameters listed for the American robin do not correspond to USEPA (1993). The food ingestion rate for the American robin is greater than reported (1.77 versus the higher rate of 1.52 kg/kg body weight [BW]-day), as is the water ingestion rate (0.223 vs. 0.14 kg/kg BW-day). As noted in the text comments, use of the spring diet is recommended to provide a conservative estimate, as this period covers egg laying and nesting times. The percent of invertebrates in the robin diet in spring is 93% with 7% vegetable matter.

55. Table 3-6. The ingestion rate for the red fox provided (0.16 kg/kg BW-day) reflects juveniles from 5 to 8 weeks of age. The ingestion rate provided in USEPA (1993) for a female fox after whelping is recommended (0.14 kg/kg BW-day).

56. Table 3-6. Footnotes a and b in the "Fraction of Diet that is Soil/Sediment" row used for the short-tailed shrew and red-tailed hawk, respectively, should be defined.

57. Table 4-1. As noted by Honeywell/O'Brien & Gere, comments pertaining to this table are currently under discussion. Currently NYSDEC is awaiting a response to their June 22, 2007 comments.

58. Appendix A Tables. There are some cases where the reported EPC is greater than the maximum (e.g., antimony and mercury on Table A-3, xylenes on Table A-5). The tables should be checked/revised to ensure consistency with note c (that the EPC is the lesser of the 95% UCL and maximum).

Comments on Figures

59. Figure 1-3. Wetlands on-site, those off-site but to be assessed in the WB 1-8 BERA and those adjacent to the site should be shown. See also comment above to distinguish on-site and off-site wetlands.

Editorial Comments

60. Page 7, Paragraph 6, Sentence 1, Section 2.2.2. The past tense should be used to indicate that a decision was made that the BERA should continue through Steps 3 through 7 of the Ecological Risk Assessment Guidance for Superfund (ERAGS) process (i.e., change "is" to "was").

61. Page 14, Bullet 1, Section 2.6.10. Change "carnivorous mammal" to "piscivorous mammal."

62. Page 40, Paragraph 8, Last Sentence on Page, Section 4.2. Change "we" to "were."

Comments on BERA Database

63. Although coordinates were provided for most samples, there are still some locations where this information is missing. These include the following:

From WB18_Database Download.xls, coordinates are missing for WB-101-01 through WB18-101-04 and MW-19BR. A map depicting the NYSDEC sampling locations WB-101-01 through 04 will be provided to Honeywell.

From WB18_database Download2.xls, coordinates are missing for MW-23, SB-24BR, SB-47, SS19A through D, SS20A through D, and TW-02.

64. SB-45, a soil boring for source characterization, is shown on Figure18 of the RI/FS work plan (Honeywell/OBG, November 2006), suggesting there should be data for this location; however, there are no results for this station included in Honeywell/OBG's source file.

65. According to the FRI work plan (Honeywell/OBG, September 2005), two soil samples would be collected from the borings at each well cluster, with the well/depth determined in the field. However, there are results for only one depth interval (144 to 146 ft) from the MW-18 cluster. Was only one depth interval sampled?

66. It is assumed that all sample depths are in feet. This field was not included in the database download files.

67. A field indicating if the sample is a regular sample or a field duplicate should be included. This was the Sample Purpose field in the November 2006 database.

References

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O'Brien & Gere and Parsons. 2004. Wetland/Floodplain Assessment, Onondaga Lake, Geddes and Syracuse, New York. Draft. Prepared for Honeywell. October.

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Sample, B.E., D.M.. Opresko, and G.W. Suter. 1996. Toxicological Benchmarks for Wildlife: 1996 Revision. Oak Ridge National Laboratory, Oak Ridge, TN. ES/ER/TM-96/R1.

Southworth, G.R., J.J. Beauchamp, and P.K. Schmieder. 1978. "Bioaccumulation Potential of Polycyclic Aromatic Hydrocarbons in Daphnia Pulex." Water Research. 12: 973-977.

TAMS. 2003. Geddes Brook/Ninemile Creek Baseline Ecological Risk Assessment. Original document prepared for Honeywell, East Syracuse, NY by Exponent, Bellevue, WA. Revision prepared for New York State Department of Environmental Conservation, Albany, NY, by TAMS Consultants, Inc., New York, NY, and YEC, Valley Cottage, NY. July.

Terrestrial Environmental Specialists (TES). 2005. Wetland Delineation Report, Lower Reach of Ninemile Creek and Geddes Brook at the West Flume, Town of Geddes, Onondaga County, New York. Prepared for Parsons, Liverpool, NY. Original December 2003, Revised May 2005. Included as Appendix F of the Draft Final Geddes Brook/Ninemile Creek Feasibility Study Report, Onondaga County, NY, Volume 2, Appendices D through J. May 2005.

US Environmental Protection Agency (USEPA). 1993. Wildlife Exposure Factors Handbook, Volumes I and II. EPA/600/R-93/187 A&B. Office of Research and Development, Washington, DC.

USEPA 1999. Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities. Volume One. Region 6. United States Environmental Protection Agency. EPA 530-D-99-001A. Office of Solid Waste and Emergency Response. Washington, DC. August.

Please address these comments in a revised BERA Work Plan. If you have any questions, please call me at 518-402-9818 (note the changed telephone number).

Sincerely,

Susan Edwards
Project Manager

cc: A. Labuz, Honeywell
C. Calkins, OB & G

bc: D. Hesler/File (1.I.11.c)
S. Edwards

ec: R. Nunes, USEPA
M. Pensak, USEPA
R. Edwards, DER
R. Quail, DFWMR
G. Townsend, Region 7
C. Conyers, DEE
M. Spera, Earth Tech
H. Chernoff, Earth Tech
edocs: letter.hw734081.2007-09-05.BERAWPcommentletter.pdf

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June 28, 2007

Ms. Susan Edwards
Project Manager
Remedial Bureau B
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, New York 12233-7016

Re: Wastebeds 1 – 8, Town of Geddes, Onondaga County, New York
Index # D-7-0002-02-08

Dear Ms. Edwards:

In accordance with the November 2006 NYSDEC-approved Remedial Investigation/Feasibility Study Work Plan for the above-referenced Site, the required copies of the Baseline Ecological Risk Assessment Work Plan (BWP) are enclosed.

The BWP incorporates the applicable responses from our comment response letter to you of May 30, 2007. Additionally, responses to the June 22, 2007 Problem Formulation Document comment letter from NYSDEC to Honeywell have been incorporated with the exception of comments (78,79, A1 through A7) pertaining to the toxicity reference values proposed for the Baseline Ecological Risk Assessment (BERA). Responses to these comments will be submitted in the near future under a separate cover as an addendum to the BWP.

We hope this BWP meets with your approval and look forward to preparation of the next Ecological Risk Assessment deliverable, the BERA report. Please contact me if you have any questions or comments.

Sincerely,

John P. McAuliffe

John P. McAuliffe
Program Director, Syracuse

Enc. (5)

cc:	Mr. Alfred J. Labuz – Honeywell	w/ attachment
	Brian D. Israel, Esq. – Arnold & Porter	"
	Mr. William Hague – Honeywell	"
	Mr. Robert Nunes – USEPA, Region II	w/ attachment (4)
	Mr. Gregg Townsend – NYSDEC, Region 7	w/ attachment
	Ms. Henriette Hamel, NYSDOH	"
	Mr. Mark Van Valkenburg, NYSDOH	"

Mr. Christopher C. Calkins – O'Brien & Gere	"
Mr. David Coburn – Onondaga Co. Dept. of Env.	"
Carol Conyers, Esq. – NYSDEC	w/o attachment
George Shanahan, Esq. – USEPA	"

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Alexander B. Grannis
Commissioner

June 22, 2007

John McAuliffe
Honeywell International Inc
5000 Brittonfield Parkway
Suite 700
East Syracuse, NY 13057

Re: Waste Beds 1-8 Remedial Investigation
Problem Formulation Document, BERA, February 2007
NYSDEC Response to Honeywell's May 2007 Response to Comments

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation (NYSDEC) and the United States Environmental Protection Agency have reviewed your May 30, 2007 letter which responds to the NYSDEC comments on the Waste Beds 1-8 BERA Problem Formulation Document (PFD), sent to Honeywell on May 3, 2007.

The response contained in your letter of May 30, 2007 are acceptable except for the items detailed below.

NYSDEC Comment 11: Page 20, Section 3.1.2. The text in this section summarizes preliminary results for soils, groundwater, surface water, seeps, and sediment. Figure 3-2 shows the locations of the soil, surface water, seeps, and sediment samples. This figure should be revised (or a figure added) to show the locations of the groundwater samples.

Honeywell Response: Figure 3-2 will be revised to show the ground water well sample locations. Note: Per the previous discussions of the assessment of ground water impacts to Onondaga Lake: Only one location from SMU-3 had pore water data associated with it. These data were approx. 60 ft below the lake bottom. Honeywell does not believe this data to be relevant to potential impacts from the shallow ground water along the shore of Wastebeds 1-8. Honeywell believes that the proper action is to assess the ground water pathway qualitatively in the BERA.

NYSDEC Response: It is not clear how Honeywell intends to qualitatively assess the groundwater pathway. Honeywell should initially assess the groundwater pathway by comparing the shallow groundwater data and seep data to ecological-based surface water guidance values.

NYSDEC Comment 16: Page 24, Paragraph 3, Last Sentence, Section 3.2 (and Figure 3-2). The proposed sampling includes two surface water/sediment locations and 12 surface soil locations (4 each around SS-02, SS-19, and SS-20) to further define potential hot-spot areas. Following analysis of these data, the need for supplemental data should be assessed as part of ERAGS Steps 4 (Study Design and Data Quality Objectives) and 5 (Field Verification of Sampling Design) and the resulting BERA Work Plan and Sampling and Analysis Plan.

Honeywell Response: The data resulting from the collection of the proposed samples will be evaluated in the BERA. For the purposes of the BERA, we believe the collection of additional data is unnecessary.

NYSDEC Response: It is believed that the proposed sampling noted in the comment has recently been completed as part of the RI sampling. However, the need for additional data collection should not be excluded at this point since these data have not yet been presented to or discussed with NYSDEC.

NYSDEC Comment 46: Page 38, Paragraph 5, Section 4.4.3. The last sentence should be revised to refer to the RIs for Onondaga Lake and Ninemile Creek completed by NYSDEC (if that is what is meant).

Honeywell Response: The last sentence in this paragraph will be revised in the BERA text to state the following: "Potential ground water inputs from the Site to Ninemile Creek and Onondaga Lake are being evaluated as part of independent investigations (i.e., TAMS 2003 and TAMS 2002)."

NYSDEC Response: The risk assessments and RIs for Onondaga Lake and Ninemile Creek were completed prior to Honeywell's collection and presentation of data for the Wastebeds 1 through 8 site (i.e., PSA/FRI/RI data from the shallow groundwater and seeps were not used for those studies). Thus, it is recommended that this last sentence be deleted.

NYSDEC Comment 53: Page 40, Paragraph 5, Section 4.6.5. The use of field observations as a measurement endpoint for any of the assessment endpoints which have been selected is likely inappropriate unless there is a sufficient effort to make the observations. While keeping track of observations of wildlife is worth doing it likely misses most of the species which may visit the site unless done by a qualified biologist, on numerous occasions, day and night over a full year. For example the birds utilizing the site may vary from season to season and some may only be out at night. Also, the presence of some species of weasel may be missed, even during an extended observation period. If this measurement remains in the evaluation it should be based on an extensive observation program or not be used in any weight of evidence approach and the lack of observation should not be equated to lack of presence. If only limited data are available, this endpoint can only be used as a secondary line of evidence in the BERA. If observations are not available, then the endpoint should not be added.

Honeywell Response: Comment noted and due to the qualitative nature of the existing data, these field observations will only be used as a secondary line of evidence in the BERA.

NYSDEC Response: Honeywell's response agrees that there are limitations to field observations as measurement endpoints. However, limiting the use of the field observations reduces the number of meaningful measurement endpoints to one for some of the assessment endpoints. It is preferable to have more than one per assessment endpoint, when possible. Options to develop other potential measurement endpoints (e.g. using the health of the soil invertebrates as a measurement endpoint for the health of the avian species, toxicity tests, or uptake tests) may be appropriate. If the data are relatively conclusive (i.e., remediation is considered necessary; see Comment 56) a single measurement endpoint may be sufficient, but otherwise additional measurement endpoints may be needed for at least some of the assessment endpoints.

NYSDEC Comment 56: Page 41, Paragraphs 2 and 3, Sections 4.6.7 and 4.6.8. A field observation endpoint should be added for piscivorous birds and mammals. If only limited field observation data are available, the field observation endpoint can only be used as a secondary line of evidence in the BERA. If observations are not available, then the endpoint should not be added. Also, please clarify what is meant by "east swale" in Section 4.6.8 (e.g., Ditch A from the lake to the I-690 overpass?). Are there sufficient data in this reach to quantify risk?

Honeywell Response: As mentioned in response to Comment #53, observation endpoints will only be used as a secondary line of evidence in the BERA. The risk question for Piscivorous Mammals will be revised to incorporate comments #54 as well as #55. The question will be phrased as the following: "Does exposure to COCs in Site media (fish, surface water, and sediment) of Ditch A (from the lake to the I-690 overpass) impair the health of piscivorous mammal populations foraging on Site?"

Responding to the question concerning sufficient data to quantify risk: In the last reach of Ditch A, two sediment samples and one surface water sample were collected at location SW/SED-02. The sediment samples from this area contained constituents at concentrations significantly greater than screening values. Due to the exceedances and the fact that this reach is relatively small in area, we believe the one sampled location is sufficient for the purposes of evaluating ecological risk.

NYSDEC Response: The response states that the limited sampling (2 sediment samples, 1 surface water sample in Ditch A) shows data in exceedance of screening values. It should be noted that on the May 3, 2007 call, it was determined that additional sampling would not be required as long as we are operating under the assumption that the ditch would be remediated.

NYSDEC Comment 78: Table 3-7. The avian Aroclor 1254 LOAEL recommended for use is 0.18 mg/kg-day based on Dahlgren et al. (1972).

Honeywell Response: Honeywell has evaluated the Dahlgren et al. (1972) study and determined that the NOAEL for Aroclor 1254 is 1.8 mg/kg/day. The selection of this TRV is consistent with the Hudson River BERA (TAMS 2000) but not with Sample et al. 1996 or the Onondaga Lake BERA (TAMS 2002). Both of these latter evaluations (Sample et al. and Onondaga Lake BERA) state that the 12.5 mg/week dose caused a significant reduction in egg hatchability. Honeywell does not agree with this interpretation. Refer to Attachment 3 for further discussion of this issue.

NYSDEC Response: (Note, "LOAEL" in the original Comment 78 should have been "NOAEL.") NYSDEC does not concur with the reevaluation of the Dahlgren et al. (1972) results presented by Honeywell that result in increasing the PCB avian NOAEL by an order of magnitude and the LOAEL by a factor of four. Dahlgren et al. (1972) concluded that PCBs given to laying pheasant hens adversely affected egg production, hatchability, and viability of the embryo about the time of hatching. Honeywell only reevaluated the hatchability data, and even these data showed a clear decrease in hatchability between the control birds and birds receiving the 12.5 mg dose in 1970 (Table A.4). It is noted that another comparison of control birds in 1971 (Table A.2) did not show a statistically significant decrease, although the hatchability of control birds was higher. It should also be noted that some reproductive effects may not show up until the second generation (e.g., Peakall et al., 1972), which was not evaluated in the Dahlgren et al. (1972) study. Therefore, NYSDEC requests that the original NOAEL and LOAEL values of 0.18 and 1.8 mg/kg-day, respectively, be retained.

Please note that the proposed mink TRVs for PCBs (Attachment 3, Section 2.1.1) are currently under review by NYSDEC (see Attachment 3 comments).

NYSDEC Comment 79: Table 3-7. The value for the mammalian NOAEL for methylmercury of 1 mg/kg-

day should be revisited in light of a study by Wren et al. (1987), who observed increased mortality in mink fed 1 ppm of methylmercury for 81 days. The dosage was decreased after that time period due to excessive mortality. Wren et al. (1987) attributed the increased mortality to a combination of methylmercury exposure and cold stress, as the mink were maintained in outdoor cages. Based on these results, a NOAEL of 1.0 mg/kg-day from the Aulerich et al. (1974) study used by Sample et al. (1996) is not considered to be protective, as increased mortality occurs at lower dosages when combined with natural stresses present in field conditions. Therefore, it is recommended that an uncertainty factor of 0.1 be applied to the Wobeser et al. (1976) LOAEL of 0.025 mg/kg body weight-day to derive an NOAEL of 0.0025 mg/kg bw-day.

Honeywell Response: We are currently evaluating what form mercury may be present in at the Site and will provide a rationale in the BWP for estimating the concentration of methylmercury in the surface soil, surface water, and sediment at the Site based on the existing mercury analytical data. Our response to the proposed methylmercury TRVs is discussed below:

We assume this comment is in reference to mercury on Table 3-7, as methylmercury was not analyzed for at this site and not specifically listed on Table 3-7. Honeywell has considered the Wobeser et al. (1976) and Wren et al. (1987) studies as the source of the methylmercury TRV and rejected them in favor of the Dansereau et al. (1999) study. The primary reason for the selection of the Dansereau et al. (1999) study over the studies suggested by the NYSDEC (and others) is one of duration. The mink in the Dansereau et al. (1999) study were exposed to methylmercury for more than four times longer than the Wobeser et al. (1976) or Wren et al. (1987) studies. Refer to Attachment 3, Section 2.3.1 for Honeywell's review of these studies and the derivation of the TRVs from Dansereau et al. (1999).

NYSDEC Response: The methylmercury TRVs noted in the comment (0.0025 mg/kg bw-day NOAEL and 0.025 mg/kg bw-day LOAEL) are the values used in the Onondaga Lake BERA and for the development of fish tissue PRGs and the LOAEL-based BSQV for the Onondaga Lake ROD. These TRVs should also be used in the Wastebeds 1 through 8 BERA.

Based on a review of the information provided by Honeywell, the following is noted. It is acknowledged that the Dansereau et al. (1999) study was not utilized for the Onondaga Lake BERA and provides a comprehensive exposure duration for mink exposure to mercury. In this study, the proportion of females giving birth was low for all groups, except for the first generation females fed the 0.1 ppm diet. There was also an inverse relationship between whelping proportion and increased exposure dosage that was statistically significant in the first generation. Therefore, the NOAEL should be based on the 0.1 ppm mercury dose and the LOAEL on 0.5 ppm mercury dose to account for decreased reproduction in the first generation. Use of the severe mortality effects seen at the 1.0 ppm concentration (i.e., females in the 1.0 ppm group experienced more than 60% mortality [30/50 of parents and 6/7 of offspring]) as a LOAEL is not considered appropriate. The 0.1 and 0.5 ppm doses result in a NOAEL and LOAEL of 0.014 and 0.07 mg methylmercury/kg-day, respectively, using the assumptions presented in the response. The potential risks based on this set of TRVs can be presented in the uncertainty section of the BERA, for comparison to those risks based on the TRVs noted in the comment.

Comments on Attachments

Attachment 2

A.1. Revised Table 3-7. This table should clarify that only NOAEL values are presented. Revisions based on comments 78, 79, A.3, A.6, and A.7 should be reflected in the final version of this table.

Attachment 3

A.2. Table A.3-1, Naphthalene. The IRIS LOAEL value provided at http://www.epa.gov/iris/subst/0436.htm is 142 mg/kg-day (adjusted), rather than 121 mg/kg-day, as provided in the table.

A.3. Attachment 3, Section 2.1.1, Pages 2-3. Please provide the assumptions used to convert the mink NOAEL and LOAEL Aroclor 1254 dietary doses of 0.5 and 0.6 mg/kg to daily intake rates of 0.084 and 0.101 mg/kg-day, respectively.

A.4. Attachment 3, Section 2.1.3, Pages 3-5. See Comment 78 above.

A.5. Attachment 3, Section 2.3.1, Pages 7-8. See Comment 79 above.

A.6. Attachment 3, Table A3-1 (Mammalian Toxicity Reference Values Obtained from IRIS 2007). For IRIS references, additional uncertainty factors are requested to minimize the distortion that could occur when applying these values. The following compounds should be adjusted by an uncertainty factor of 3 to adjust for various deficiencies in the database: pyrene, acenaphthene, anthracene, fluorene, fluoranthene, naphthalene, 2,4-dimethylphenol, and phenol.

A.7. Attachment 3, Table A3-1 (Mammalian Toxicity Reference Values Obtained from IRIS 2007). The NOAEL and LOAEL of 0.35 and 3.5 mg/kg-day, respectively, for 2-methylnaphthalene should be adjusted by an uncertainty factor of 10 to account for uncertainty associated with deficiencies in the database, which lacks adequate studies of oral developmental toxicity, reproductive toxicity, and neurotoxicity. The database also lacks a two-generation reproductive toxicity study.

References

Aulerich, R. J., R. K. Ringer, and S. Iwamoto. 1974. Effects of dietary mercury on mink. Arch. Environ. Contam. Toxicol. 2(1):43-51.

Dahlgren, R.B., R.L. Linder, and C.W. Carlson. 1972. Polychlorinated biphenyls: their effects on penned pheasants. Environ, Health Pers: 89-101.

Dansereau M., N. Lariviere, D. Du Tremblay, and D. Belanger. 1999. Reproductive performance of two generations of female semidomesticated mink fed diets containing organic mercury contaminated freshwater fish. Arch Environ. Contam. Toxicol. 36:212-226.

Peakall, D.B., J.L. Lincer and M.S. Bloom. 1972. Embryonic mortality and chromosomal alterations caused by Aroclor 1254 in ring doves. Environ. Health Perspectives 1:103-104.

TAMS Consultants, Inc. (TAMS) and Menzie-Cura & Associates, Inc. 2000. Phase 2 Report: Further Site Characterization and Analysis: Revised Baseline Ecological Risk Assessment: Hudson River PCB Reassessment.

TAMS. 2002. Onondaga Lake Baseline Ecological Risk Assessment, Syracuse, New York, December.

Wobeser, G., N. O. Nielsen, and B. Schiefer. 1976. Mercury and mink. II. experimental methylmercury intoxication. Can. J. Comp. Med. 40:34-45.

Wren, C.D., P. M. Stokes, and K. L. Fischer. 1987. Mercury levels in Ontario mink and otter relative to food levels and environmental acidification. Can. J. Zool. 64:2854-2859.

Please prepare the Ecological Risk Assessment Work Plan, due to the NYSDEC on June 29, 2007, in accordance with the responses accepted by NYSDEC (i.e., those not mentioned above) as contained in your May 30, 2007 letter and with our comments as indicated above.

If you have any questions on content of this letter, please call me at 518-402-9767.

Sincerely,

Susan Edwards

Susan Edwards
NYSDEC Project Manager

cc: G. Calkins, OB &G
G.D. Quin - Honeywell
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May 30, 2007

Ms. Susan Edwards
Project Manager
Remedial Bureau B
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, New York 12233-7016

Re: Wastebeds 1 – 8, Town of Geddes, Onondaga County, New York
Index # D-7-0002-02-08

Dear Ms. Edwards:

At the request of New York State Department of Conservation (NYSDEC), this letter provides the responses to NYSDEC comments on the February 2007 Wastebeds 1 through 8 Ecological Risk Assessment Problem Formulation Document (2007 PFD) that were submitted to Honeywell in a letter dated April 24, 2007. The responses to the NYSDEC comments will be incorporated, as appropriate, into the BERA Work Plan (BWP) and/or the subsequent BERA document, which will be prepared in the coming months.

The comment responses, revised tables, and a description of the toxicological reference value (TRV) selection methodology are provided in Attachments 1, 2, and 3, respectively. In the Attachment 1, the comments are reprinted along with the responses that will be incorporated into the BWP and/or the BERA report.

We hope that these responses to NYSDEC comments address the agency concerns regarding potential ecological risk at the site and in the vicinity of the site.

Please contact me if you have any questions or comments.

Sincerely,

John P. McAuliffe

John P. McAuliffe, P.E.
Program Director, Syracuse

Enc. (5)

cc:	Mr. Alfred J. Labuz – Honeywell	w/ attachment
	Brian D. Israel, Esq. – Arnold & Porter	"
	Mr. William Hague – Honeywell	"
	Mr. Robert Nunes – USEPA, Region II	w/ attachment (4)
	Mr. Gregg Townsend – NYSDEC, Region 7	w/ attachment
	Ms. Henriette Hamel, NYSDOH	"
	Mr. Mark Van Valkenburg, NYSDOH	"
	Mr. Christopher C. Calkins – O'Brien & Gere	"
	Mr. David Coburn – Onondaga Co. Dept. of Env.	"
	Carol Conyers, Esq. – NYSDEC	w/o attachment
	George Shanahan, Esq. – USEPA	"

ATTACHMENT 1

Comment Responses

Attachment 1 – Responses to NYSDEC comments on the Wastebeds 1-8 Site Problem Formulation Document

General Comments

G.1. Insufficient Documentation for Constituent of Concern (COC) Selection. The Baseline Ecological Risk Assessment (BERA) Problem Formulation Document (PFD) retained 36 of the initial 120 constituents of potential ecological concern (COPECs) in surface soil, 16 of the 116 COPECs in surface water, and 29 of the 139 COPECs in sediment. Forty-one of the initial terrestrial COPECs and 19 of 76 aquatic COPECs were retained as wildlife COCs. However, the process used for the selection and the end results were not fully documented. Please see specific comments.

Response: Associated responses can be found under the specific comments below.

G.2. Unavailable/Difficult to Locate References. The toxicity reference value (TRV) table (Table 3-7) contains reference information that can not be verified due to unavailability of the reference (i.e., Parsons, 2000). References that are not directly obtainable should be provided to NYSDEC. The uptake factors table (Table 3-5) provides a list of nine references, but does not associate references with values presented in the table, which makes the verification of values difficult.

Response: Associated responses can be found under the specific comments below. Table 3-7 has been revised to include TRV-specific references and are presented in Attachment 2. A revised Table 3-5 will be presented in the Baseline Ecological Risk Assessment (BERA) Work Plan.

Specific Comments

1. Page 7, Paragraph 3, Sentence 2, Section 2.2.2. Please add the common name of *Phragmites* and the species name. Either the common or scientific name should be used consistently, rather than the mixed usage in this section (i.e., sometimes *Phragmites*, sometimes common reed).

Response: The usage of common name or scientific name will be revised for consistency in the associated sections of the BERA.

2. Page 8, Paragraph 4, Sentence 3, Section 2.2.3. The number of ditches present onsite (five) should be provided in the text as well as the discharge location (Onondaga Lake, Ninemile Creek) for each ditch.

Response: The following description will be inserted into the associated paragraph in the BERA text: The five Site ditches are located generally on the southeastern portion of the Site. Ditch A drains directly into Onondaga Lake; Ditches B and C drain into Ditch A; and Ditch E drains into Ninemile Creek. The drainage pattern of Ditch D is presently undetermined.

3. Page 9, Paragraph 1, last sentence, Section 2.2.3. Please update this sentence to state that the BERA for Geddes Brook/Ninemile Creek was completed by NYSDEC in 2003 (TAMS, 2003).

Response: The associated sentence has been revised and will be presented as such in the BERA to state that the BERA for Geddes Brook/Ninemile Creek was completed by NYSDEC in 2003 (TAMS 2003).

4. Page 12, Paragraph 6, Sentence 2, Section 2.2.5. Additional information on the dates of the field observations and the level of effort associated with them should be provided.

Response: The level of field effort and the associated dates, which includes a wetland and floodplain assessment (October 2004), a wetland delineation (November 8-10, 2005) and RI sampling events, will be further described in the BERA.

5. Page 12, Paragraph 6, Section 2.2.5. The NYS herpetological atlas should be used to identify potential species of amphibians and reptiles present in the project area.

Response: The NYS Herpetological Atlas will be used to identify potential amphibian species at the Site. The BERA text and revised tables will include the findings.

6. Page 13, Paragraph 3, Sentence 2, Section 2.2.5. Historical fish data are available from 1927 to 1994. It is unclear why this sentence refers to historical data from 1989 to 1991, as it uses data from Auer et al. (1996).

Response: The text and associated table will be revised to present historical fish data from 1927-1994 and presented in the BERA.

7. Page 14, Paragraph 3, Section 2.2.6. The second sentence of this paragraph ("The stressors are more so physical, as opposed to chemical") should be removed or revised to indicate that the degree of stress potentially caused by the Solvay waste and/or hazardous substances present has not been determined.

Response: This paragraph will be revised and presented in the BERA to indicate that the degree of stress potentially caused by the Solvay waste and/or hazardous substances present has not been determined at the Site.

8. Page 16 on, Section 2.4. Applicable fish and wildlife criteria should be divided into subsections with New York State laws and regulations, federal laws and regulations, state and federal guidance, and other applicable guidance as a step towards identifying state and federal applicable or relevant and appropriate requirements (ARARs). Regulations, as well as selected screening value sources, should be discussed in this section.

Response: The text of the Section 2.4 will be expanded to include discussion of the regulations, as presented on Table 2-6. The text will also be subdivided into the state and federal sections as recommended in the comment. The revised text and table will be presented in the BERA Work Plan (BWP).

9. Pages 16 to 18, Section 2.4. The document should not limit the choice of published information regarding the selection of guidance values or criteria for the protection of fish and wildlife. In addition to those documents listed in the section other references may also be useful. For example, Eisler (2000), MacDonald et al. (2000), and values provided in the NOAA Screening Quick Reference Tables are useful for selecting appropriate sediment guidelines. Also, it would be useful to separate criteria documents from guidance documents. Water quality standards (criteria) are ARARs and must be met (unless a waiver is issued) while guidance values for sediments are used for screening purposes and further evaluation may be used to select values other than those found in the literature. The most conservative criteria values need to be used throughout the risk assessment process and generally the most conservative guidance values should be used for initial screening.

Response: It is not intended to limit the use of technically valid published information concerning criteria and/or guidance values. The additional documents listed above will be assessed for incorporation into the BWP. Also, criteria documents and guidance documents will be separated into two groups in this section. The most conservative criteria and guidance values were utilized in preparing this document and will be referenced in the BERA in concert with professional judgement.

10. Page 18, Paragraph 2, Sentence 1, Section 2.4. The citation (USEPA, 2001) for the supplemental guidance to Risk Assessment Guidance for Superfund (RAGS) should be listed.

Response: The USEPA 2001 citation will be added to the associated text and referenced as appropriate in the BERA process and presented in the BWP.

11. Page 20, Section 3.1.2. The text in this section summarizes preliminary results for soils, groundwater, surface water, seeps, and sediment. Figure 3-2 shows the locations of the soil, surface water, seeps, and sediment samples. This figure should be revised (or a figure added) to show the locations of the groundwater samples.

Response: Figure 3-2 will be revised to show the ground water well sample locations.
Note: Per the previous discussions of the assessment of ground water impacts to Onondaga Lake: Only one location from SMU-3 had pore water data associated with it. These data were approx. 60 ft below the lake bottom. Honeywell does not believe this data to be relevant to potential impacts from the shallow ground water along the shore of Wastebeds 1-8. Honeywell believes that the proper action is to assess the ground water pathway qualitatively in the BERA.

12. Pages 20 and 21, Section 3.1.2. The text in this section is based on Section 3.4.3 of the November 2006 RI/FS work plan. However, in some places, "elevated" concentrations was replaced with "detected" concentrations (e.g., first sentence of each of the first three paragraphs under "Ground Water" on page 20; the first sentence under "Surface Water" on page 21 which now states that "detected concentrations of CPOIs were detected in surface water on Site"; and the first sentence under "Sediment" and "Seep Sediment" on page 22). The text of the PFD should be revised to be consistent with the work plan.

Response: The word "detected" will be changed to "elevated" in the preliminary Conceptual Site Model discussion and presented in the BERA.

13. Pages 22 and 23, Section 3.1.3. The text in this section is based on Section 3.4.4 of the November 2006 RI/FS work plan. However, the work plan also includes a paragraph on "erosion of wastebed material into adjacent water bodies" that was not included as a pathway in Section 3.1.3 of the PFD. This paragraph should be included in the PFD.

Response: The following paragraph from the RI/FS work plan will be added to the associated section in the BERA:

> ***Erosion of wastebed material into adjacent water bodies***
> **Site-related constituents are likely entering Onondaga Lake and Ninemile Creek directly through erosion. This pathway may be significant in areas of sparse vegetation adjacent to these water bodies.**

14. Page 23, Section 3.1.4. Even though the wetlands are to be assessed as part of a separate risk assessment it would be useful to expand on the potential impacts from this site on those wetlands. Understanding the impact of this site on those wetlands may allow a better evaluation of source control of the contamination entering the wetlands and the adequacy of any remediation undertaken when the wetlands are assessed.

Response: The existing discussion on the potential impacts to wetlands will be supplemented and presented in the Potential Receptor section of the BERA.

15. Page 24, Paragraph 1, Section 3.2. It should be clarified here that the surface water and sediment data used for the screening include data from the sampled seeps (in addition to on-site ditches and the ponded area).

Response: A discussion will be added to this section and presented in the BWP to explain that surface water and sediment data used for the screening includes data from the sampled seeps as well as on-site ditches and the ponded area.

16. Page 24, Paragraph 3, Last Sentence, Section 3.2 (and Figure 3-2). The proposed sampling includes two surface water/sediment locations and 12 surface soil locations (4 each around SS-02, SS-19, and SS-20) to further define potential hot-spot areas. Following analysis of these data, the need for supplemental data should be assessed as part of ERAGS Steps 4 (Study Design and Data Quality Objectives) and 5 (Field Verification of Sampling Design) and the resulting BERA Work Plan and Sampling and Analysis Plan.

Response: The data resulting from the collection of the proposed samples will be evaluated in the BERA. For the purposes of the BERA, we believe the collection of additional data is unnecessary.

17. Page 25, Paragraph 3, Bullets, Section 3.3.1; Paragraph 4, Bullets, Section 3.3.2; and Paragraph 6, Bullets, Section 3.3.3. The last bullet in each section identifies the number of constituents that have no available screening values. Of this number, the numbers of non-detected and detected constituents without screening values should be listed so that all constituents can be categorized.

Response: The following will be revised and presented in the BWP text:
Section 3.3.1, the last bullet:

- **Sixty constituents had no available screening values; 39 non-detections and 21 detections**

Section 3.3.2, the last bullet:

- **Thirty-eight constituents had no available screening values; 30 non-detections and 8 detections**

Section 3.3.3, the last bullet:

- **Sixty-five constituents had no available screening values; 49 non-detections and 16 detections**

18. Page 25, Paragraph 5, Sentence 3, Section 3.3.2. A hardness value of 100 mg/L was used based upon USEPA (2006), which is a conservative value for screening purposes. However, the hardness value in Onondaga Lake in 2003 and 2004 was about 420 mg/L based on the results of Onondaga County's Ambient Monitoring Program (AMP) (http://www.lake.onondaga.ny.us/ol33.htm). Site-specific hardness measurements should be included in future sampling to calculate site-specific criteria in the BERA.

Response: Hardness has been measured in seep and surface water samples collected from the Site. This data will be evaluated and a site-specific hardness value will be derived and presented in the BWP for use in the BERA.

19. Page 26, Paragraph 3, Bullet 3, Section 3.4.1. Piscivorous fish found in Onondaga Lake near Wastebeds 1 through 8 are probably better characterized as trophic level 3 than trophic level 4, which is used for receptors such as the river otter and bald eagle.

Response: Trophic level 3 biota uptake factors will be utilized in the BERA, as available. Trophic level 4 uptake factors will be utilized when trophic level 3 values are unavailable.

20. Page 27, Paragraph 3, Bullet 1, Section 3.4.1. It should be noted that the 90th percentile values were used in the US Department of Energy (USDOE, 1998a) soil-to-plant uptake factors.

Response: The BERA text will be revised to note that the 90th percentile values were used in the USDOE (1998a) soil-to-plant uptake factors.

21. Page 27, Paragraph 3, Bullet 3, Section 3.4.1. A sentence should be added describing whether any adjustments were applied to the Travis and Arms (1988) values. If this reference was used as specified in USEPA (1999) (i.e., one regression equation for all organics), it does not need to be referenced separately.

Response: This reference was used as specified in USEPA (1999), and therefore will not be referenced separately. In the BERA, it will be noted in this associated bullet that Travis and Arms (1988) values are not "adjusted" but "calculated" using the *log Kow* for a given constituent. Values are calculated using the following expression: Plant UF = EXP(1.588 – [0.578*log Kow]).

22. Page 28, Paragraph 1, Bullet 2, and Paragraph 4, Bullet 1, Section 3.4.1. The US Army Corps of Engineers (USACE) database has been updated since 2000. The current online version should be used and referenced in this PFD (see http://el.erdc.usace.army.mil/bsaf/bsaf.html).

Response: The current online version of the USACE database has been truncated substantially since 2000, resulting in a reduction of published BSAF values. Due to the general lack of available uptake factors, especially for fish, it was agreed by the NYSDEC and Honeywell that the values from the 2000 USACE database may be

utilized where 2007 values do not exist. The revised BSAF value Table 3-5 will present which version of the USACE database each BSAF value was derived. The revised Table 3-5 will be presented in the BWP.

23. Page 28, Paragraph 4, Bullet 4, Section 3.4.1. The USGS (1999) reference does not appear to support the development of BSAFs. Although the paper compared concentrations in bed sediment and fish tissue for evidence of bioaccumulation to determine if concentrations in one medium were a good predictor of concentrations in the other medium, it did not calculate BSAFs. The author did examine correlations between fish and sediment concentrations, which were significant at α=0.05 for only cobalt, lead, and nickel using the original data, and aluminum, iron, and lead using organic carbon and lipid-normalized data (n = 8). Given the uncertainty associated with these data, they should not be used to derive inorganic BSAFs.

Response: BSAF values from the USGS (1999) reference will no longer be utilized in the BERA.

24. Page 28, Paragraph 5, Section 3.4.1 (continued on page 29). This paragraph should be separated into terrestrial invertebrates and small mammals, as there are separate references for each group.

Response: This paragraph will be separated into terrestrial invertebrates and small mammals and the respective references will be presented in the BWP.

25. Page 29, Paragraph 3, Sentence 4, Section 3.4.2. The source of the conversion factors used for dry and wet weight conversions should be provided.

Response: The source of the conversion factors used for dry and wet weight conversions is USEPA (1999). This will be noted in future documents.

26. Page 30, Section 3.4.3, Paragraph titled Mink. While it is believed that the mink is relatively sensitive to PCBs most mammals have not been tested. The statement "mink is believed to be one of the most sensitive mammals to chemical exposures, particularly PCBs" should be revised to something less definitive. For example "mink is a relatively sensitive mammal when compared to the small number of mammals that have been adequately tested."

Response: This sentence will be revised and presented in the BERA to state that "mink is a relatively sensitive mammal when compared to the small number of mammals that have been adequately tested."

27. Page 30, Paragraph 2, Sentence 1, Section 3.4.3. The full foraging range of the great blue heron, in addition to the maximum foraging range, should be presented. It should also be clarified that fish are the preferred prey of the great blue heron.

Response: The full foraging range of the great blue will be added to this paragraph and presented in the BERA. It will also be presented that fish is the preferred prey of the great blue heron.

28. Page 30, Paragraph 3, Sentence 1, Section 3.4.3. The mink should not be characterized as small based on the size of other potential receptors (e.g., mouse, shrew).

Response: The word "small" will be removed from this sentence to be presented in the BERA.

29. Page 30, Paragraph 3, Sentence 4, Section 3.4.3. Mink are opportunistic feeders and their preferred food depends on their habitat and prey availability. Muskrats may be the preferred prey in marsh habitats in summer, but other prey, such as fish, may be preferred under other conditions.

Response: An additional supporting statement will made in this paragraph stating that the preferred food of mink is dependent on their habitat, season, and prey availability. The revised text will be presented in the BERA.

30. Page 30, Paragraph 5, Sentence 1, Section 3.4.3. Although the red-tailed hawk is one of the most common raptors in North America, it would be more accurate to say that it is the most common North American hawk.

Response: The red-tailed hawk is used as a surrogate for birds of prey, including hawks, falcons, and owls. As such, the reference to the red-tailed hawk as one of the most common raptors in North America is not only correct, but more appropriate given that it represents the raptor guild.

31. Page 30, Paragraph 5, Sentence 5, Section 3.4.3. USEPA (1993) describes the clutch of a red-tailed hawk as containing one to three eggs, rather than two to four eggs cited here. It is acknowledged that clutches may contain from one to five eggs.

Response: This sentence will be revised to state that the red-tailed hawk clutch size is typically two to four eggs.

32. Page 31, Paragraph 1, Sentence 2, Section 3.4.3. Although the short-tailed shrew consume a large amount of food relative to their body weight, it is not almost equivalent to their body weight. Also, the small home range of the short-tailed shrew should be discussed.

Response: The discussion of the short-tailed-shrew home range and foraging rate will be revised as noted in the comment and presented in the BERA.

33. Page 31, Paragraph 3, Sentence 1, Section 3.4.4. References other than Sample et al. (1996) that were used to identify TRVs should be listed here, as was done for other reference sources.

Response: The text will be revised stating that additional TRV references included Dahlgren *et al.* (1996), Patton & Dieter (1980), Hough *et al.*, USEPA (1999), Cal/Ecotox (1999), Nation *et al*. (1983), IRIS (2007), Lake *et al*. (1997), ATSDR (1997) and are presented as such on the revised Table 3-7(Attachment 2), which will be included in the BWP.

34. Page 32, Paragraph 1, Bullet 2, Section 3.6 (also see Section 3.6.4). The assumption of minimum weight and maximum ingestion rate was not (but should be) used for all receptors. For the short-tailed shrew, the mean body weight was used and the ingestion rate selected was measured at 25°C, whereas shrews consume approximately 40 percent more food in winter than summer (Randolph, 1973).

Response: As part of the screening process, the minimum body mass and maximum ingestion rate will be used. and presented in a revised Table 3-6 which will be provided in the BWP.

35. Page 32, Paragraph 5, Last Sentence, Section 3.6.2. Please verify the source of this quote is USEPA's "Criteria and Related Information for Toxic Pollutants."

Response: The source of the quote will be clarified and presented in the associated BERA text.

36. Page 32, Last Paragraph, First Sentence, Section 3.6.3. Add "primarily" after "based."

Response: The word "primarily" will be added to this sentence.

37. Page 34 on, Section 4.1. A list of contaminants eliminated based on each rationale should be provided in the text or in a separate table.

Response: Contaminants that have been eliminated are presented in Tables 4-1 through 4-4 and the rationale for each is presented; however, a separate table, Table 4-5 (attached) has been prepared and is attached that lists constituents excluded from further evaluation in the BERA.

38. Page 34, Section 4.1. The text should clearly state that constituents for which there are no toxicity values were not retained as COCs. A discussion should be added to comply with ERAGS (USEPA, 1997, page 3-4) which states "*Note that a contaminant should not be eliminated from the list of contaminants to be investigated only*

because toxicity information is lacking; instead, limited or missing toxicity information must be addressed using best professional judgment and discussed as an uncertainty."

Response: A statement will be made in the associated section of the BWP explaining that constituents without TRV values were retained for qualitative evaluation as COCs and that they will be addressed in the uncertainty section of the BERA.

39. Page 34, Paragraph 6, Last Sentence, Section 4.1. The text should also explain that even if a HQ was greater than 1, it was eliminated if it was based on a non-detected contaminant (e.g., Aroclors 1016, 1221, 1232, and 1242).

Response: The following statement will be added at the end of this paragraph in response to the comment and presented in the BERA: "If a COPEC had an HQ greater than 1 but was a non-detect contaminant, then it was not selected as a COC."

40. Page 35, Paragraph 1, Section 4.1.1. This section states that 16 of the initial COPECs were retained for surface water, and 19 of the initial aquatic COPECs were retained as wildlife COCs. However, Table 4-4 includes 18 COCs for surface water and 18 for the aquatic pathway. Please reconcile these numbers. The number of initial terrestrial COPECs should also be provided.

Response: The above numbers will be revised in the BWP so 18 of the initial surface water COPECs and 18 of the initial aquatic COPECs were retained as COCs. The initial number of terrestrial COPECs will also be verified in the text.

41. Page 36, Top Paragraph, Last Sentence, Section 4.2.1. Please replace "proper" with "certain."

Response: The recommended revision will be made in the BERA.

42. Page 37, Paragraph 2, Section 4.2.3. The text on PCBs should be expanded to discuss Aroclors and their biomagnification potential.

Response: The discussion of PCBs will be expanded to include biomagnification potential and presented in the BERA.

43. Page 37, Paragraph 4, Sentence 2, Section 4.2.3. Rabbits and shrews should not be discussed together, as rabbits are herbivores and shrews are insectivores.

Response: This paragraph will be revised so rabbits (herbivores) and shrews (insectivores) are clearly identified as mammals who intake contaminants via different pathways (*i.e.* plants vs. soil invertebrates).

44. Page 38, Section 4.4.2. While it is accurate that the relatively small size of the aquatic habitat may not support upper trophic level receptors, it should also be noted that there are other sub-sites, including the Lake which are likely pathways for contamination and it is the cumulative exposure which may pose a risk.

Response: Although the cumulative exposure to other sub-sites may impact the true risk posed to ecological receptors, it is not possible to quantify that risk. For the evaluation of ecological risk posed by the Wastebeds 1-8 sub-site, however, an area use factor (AUF) of 1 will be used in the food chain model.

45. Page 38, Paragraph 4, Section 4.4.3. It is stated that the groundwater pathway is "incomplete for most of the site." The portion of the site (e.g., lakeshore area) for which it may be a complete pathway should be stated.

Response: It will be presented in this paragraph within the BERA text that the Lakeshore Area portion of the Site may be a complete ground water pathway.

46. Page 38, Paragraph 5, Section 4.4.3. The last sentence should be revised to refer to the RIs for Onondaga Lake and Ninemile Creek completed by NYSDEC (if that is what is meant).

Response: The last sentence in this paragraph will be revised in the BERA text to state the following: "Potential ground water inputs from the Site to Ninemile Creek and Onondaga Lake are being evaluated as part of independent investigations (*i.e.*, TAMS 2003 and TAMS 2002)."

47. Page 39, Paragraph 1, Bullet 2, Section 4.5. Please clarify to what soil organisms this assessment endpoint refers (e.g., soil invertebrates, etc.).

Response: The assessment endpoint refers to the soil invertebrate community, and it will be revised as such in the BERA.

48. Page 39, Paragraph 1, Bullets 6 and 7, Section 4.5. Invertebrate and fish communities should be addressed as separate endpoints. The sixth bullet should address "Adverse effects to the Site aquatic invertebrate community via direct contact with Site sediments and surface waters" and the seventh bullet should delete "surface water invertebrate and" to address only fish communities.

Response: Bullets 6 and 7 will be revised so that the aquatic invertebrate community and fish are discussed in separate bullets within the BERA text.

49. Page 40, Paragraph 1, Section 4.6.1. Please explain why plants and soil invertebrates were combined into one assessment endpoint.

Response: Terrestrial plants and soil invertebrates will be presented as separate assessment endpoints in the BERA text.

50. Page 40, Paragraph 1, Bullet 3, Section 4.6.1. This measurement endpoint should also include observations of stress.

Response: "Observations of stress" will be added to this endpoint in the BWP text.

51. Page 40, Paragraphs 2 to 5, Sections 4.6.2 to 4.6.5. Insectivorous birds, insectivorous mammals, carnivorous mammals, and predatory birds may also be exposed to COCs via ingestion of site surface water. The risk questions and measurement endpoints (number 2 in most cases) should be revised to reflect this.

Response: Assessment endpoints for insectivorous birds, insectivorous mammals, carnivorous mammals, and predatory birds will be revised to include ingestion of Site surface water.

52. Page 40, Paragraph 3, Sections 4.6.3. This section should be revised to focus on insectivorous mammals, rather than small terrestrial mammals.

Response: The associated section will be revised in the BWP text to represent insectivorous mammals instead of terrestrial small mammals.

53. Page 40, Paragraph 5, Section 4.6.5. The use of field observations as a measurement endpoint for any of the assessment endpoints which have been selected is likely inappropriate unless there is a sufficient effort to make the observations. While keeping track of observations of wildlife is worth doing it likely misses most of the species which may visit the site unless done by a qualified biologist, on numerous occasions, day and night over a full year. For example the birds utilizing the site may vary from season to season and some may only be out at night. Also, the presence of some species of weasel may be missed, even during an extended observation period. If this measurement remains in the evaluation it should be based on an extensive observation program

or not be used in any weight of evidence approach and the lack of observation should not be equated to lack of presence. If only limited data are available, this endpoint can only be used as a secondary line of evidence in the BERA. If observations are not available, then the endpoint should not be added.

Response: Comment noted and due to the qualitative nature of the existing data, these field observations will only be used as a secondary line of evidence in the BERA.

54. Page 41, Paragraph 1, Section 4.6.6. As noted in the assessment endpoint comments, the benthic invertebrate and fish communities should have separate endpoints. A field observation endpoint should be added for these receptors. If only limited field observation data are available, the field observation endpoint can only be used as a secondary line of evidence in the BERA. If observations are not available, then the endpoint should not be added. Additional surveys/sampling can be added to the BERA Work Plan.

Response: The comment is noted, and benthic invertebrates and fish will have separate assessment endpoints in the BERA. As discussed in response to Comment #53, observation endpoints will only be used as a secondary line of evidence in the BERA.

55. Page 41, Paragraphs 2 and 3, Sections 4.6.7 and 4.6.8. The risk questions for these sections should be revised to include various contaminated site media. For example, rather than "Does ingestion of accumulated COCs in fish of Site surface waters impair the health of piscivorous bird populations foraging from the Site?," the question should read "Does exposure to COCs in Site media (fish, surface water, and sediment) impair the health of piscivorous bird populations foraging on Site?" In addition, "birds" should replace "mammals" in the risk questions for piscivorous birds (Section 4.6.7).

Response: The risk questions for Piscivorous Birds and Mammals will be revised to incorporate language of the comments and the word "birds" will replace "mammal" in the risk question for Piscivorous Birds.

56. Page 41, Paragraphs 2 and 3, Sections 4.6.7 and 4.6.8. A field observation endpoint should be added for piscivorous birds and mammals. If only limited field observation data are available, the field observation endpoint can only be used as a secondary line of evidence in the BERA. If observations are not available, then the endpoint should not be added. Also, please clarify what is meant by "east swale" in Section 4.6.8 (e.g., Ditch A from the lake to the I690 overpass?). Are there sufficient data in this reach to quantify risk?

Response: As mentioned in response to Comment #53, observation endpoints will only be used as a secondary line of evidence in the BERA.

The risk question for Piscivorous Mammals will be revised to incorporate comments #54 as well as #55. The question will be phrased as the following: "Does exposure to COCs in Site media (fish, surface water, and sediment) of Ditch A (from the lake to the I-690 overpass) impair the health of piscivorous mammal populations foraging on Site?"

Responding to the question concerning sufficient data to quantify risk: In the last reach of Ditch A, two sediment samples and one surface water sample were collected at location SW/SED-02. The sediment samples from this area contained constituents at concentrations significantly greater than screening values. Due to the exceedances and the fact that this reach is relatively small in area, we believe the one sampled location is sufficient for the purposes of evaluating ecological risk.

57. Page 41, Paragraph 4, Section 4.7. See comment below on Figure 3-1.

Response: See the response is presented for Comment #90.

58. Page 42, Paragraph 1, Section 5. The text should state that the BERA will be based on all relevant sample data from the PSA, FRI, and ongoing RI.

Response: The last sentence in the associated paragraph will be revised to state: "Sample data collected as part of the PSA, FRI and ongoing RI efforts at the Site will be utilized in the BERA." The revision will be presented in the BWP text.

59. Page 42, Paragraph 4, Section 5. See comments above on Section 4.1.1.

Response: These numbers were evaluated and corrected in Sections 4.1.1 and 5. The corrected numbers will be presented in the BWP.

60. References. The reference "USEPA. 1992. Criteria and Related Information for Toxic Pollutants. Region 4. Water Management Division" appears to be out of print. Please provide a copy of the tables used for the bioaccumulation factors (BAFs) and biota-sediment accumulation factors (BSAFs).

Response: USEPA (1992) will not be utilized as a reference for uptake factors. If through the performance of the BERA this reference must be utilized, a copy of the reference document will be forwarded to the NYSDEC.

<u>Comments on Tables</u>

61. Table 2-3. Other fish species that have been collected in Onondaga Lake include Atlantic salmon (*Salmo salar*), trout perch (*Percopsus omiscomaycus*), grass pickerel (*Esox americanus*), chain pickerel (*Esox niger*), bluntnose minnow (*Pimphales notatus*), fallfish (*Semotilus corporalis*), and northern hog sucker (*Hypentelium nigricans*) (Tango and Ringler, 1996).

Response: Table 2-3 will be revised and presented in the BERA with the species mentioned in the comment and those presented in Tango and Ringler (1996).

62. Table 2-4. The red-spotted newt (*Notophthalmus viridescans*), northern dusky (*Desmognathus fuscus*), Alleghany dusky (*Desmognathus ochrophaeus*), northern slimy (*Plethodon glutinosus*), and two-lined skink (*Eurycea bislineata*) may also be found in terrestrial areas on site. The New York State Amphibian and Reptile Atlas Project (1990-1999) should be used to update this table (http://www.dec.state.ny.us/website/dfwmr/wildlife/herp/index.html). Based on this reference, the five-lined skink and the northern coal skink have not been recorded in Onondaga County. The gray squirrel (*Sciurus carolinensis*), Virginia opossum (*Didelphis virginiana*), masked shrew (*Sorex cinereus*), hairy-tailed mole (*Parascalops breweri*), Indiana brown bat (*Myotis sodalis*), Norway rat (*Rattus norvegicus*), and house mouse (*Mus musculus*) should also be added to this table.

Response: Table 2-4 will be revised with the above mentioned species and presented in the BERA. The New York State Herpetofauna Atlas Project (1990-1999) will be utilized for respective species.

63. Table 2-5. Block 3977A appears to be outside of the area of interest and does not need to be included in the breeding bird species list for the site.

Response: Table 2-5 will be revised to exclude Block 3977A and presented as such in the BERA.

64. Table 2-6. The federal endangered species act (ESA), 16 USC§ 1531 1531 et seq; 50 CFR Parts 17, Subpart I and 50 CFR Part 402 should also be listed in the miscellaneous section.

Response: Table 2-6 will be revised to include the Endangered Species Act and presented in the BERA.

65. Table 3-1. The depths stated in the footnotes (up to 2 ft for soil and 1 ft for sediments) do not agree with the depths stated on page 25 (up to 1 ft for soil and 0.5 ft for sediments). Please revise or clarify.

Response: The text in Sections 3.3.1 and 3.3.3 is correctly stated. Table 3-1 footnotes will be revised to state that samples down to 1 ft for soil and 0.5 ft for sediments will be evaluated.

66. Tables 3-2, 3-3, and 3-4. A row for total polychlorinated biphenyls (PCBs) should be added to each table so that screening values based on total concentrations can be included (e.g., NYSDEC Part 375 restricted-use soil cleanup objective for protection of ecological resources of 1 mg/kg for total PCBs). This would also clarify Tables 3-3 and 3-4, which already list some values for total PCBs under some/all Aroclors (as per Note 1).

Response: A row for total PCBs will be added to Tables 3-2, 3-3, and 3-4. Revised screening tables will be presented in the BERA.

67. Table 3-2. Mercury values of 30 mg/kg for earthworm toxicity and 0.1 mg/kg for microbial toxicity are provided in Efroymson et al. (1997) and should be added to the table.

Response: Table 3-2 will be revised for the BERA to present mercury values of 30 mg/kg for earthworm toxicity and 0.1 mg/kg for microbial toxicity as provided in the Efroymson et al. (1997).

68. Table 3-2. Please add the NYSDEC soil cleanup objective values of 41 mg/kg for trivalent chromium and 0.18 mg/kg for total mercury to this table.

Response: Table 3-2 will be revised for the BERA to present the NYSDEC soil cleanup objective values of 41 mg/kg for chromium III and 0.18 mg/kg for total mercury.

69. The source of each individual uptake factor should be provided to facilitate verification. In the current presentation, there are 14 potential references for each value. This table can be split into two or more tables, if needed (e.g., BCF, BAF, and BSAF).

Response: Table 3-5 will be revised per the comment and presented in the BWP.

70. Table 3-5. An explanation should be provided in the text describing the methodology for selection of values when more than one is available, including a discussion explaining how values were selected. For example, it is not stated if there are more conservative values in the literature. For example, it appears that 90th percentile of all data listed in Table 2 of USDOE 1998b was used for most metals, but was not used for arsenic, chromium, and PCBs.

Response: The methodology for the selection of uptake factors will be presented in the BWP.

71. Table 3-5. The most current BSAF database maintained by the USACE can be found at http://el.erdc.usace.army.mil/bsaf/bsaf.html. Values provided in Table 3-5 based upon this source should correspond to the values provided in the current database.

Response: Refer to previous response for Comment #22 referring to the Corps database. Table 3-5 will be revised in accordance with previous discussions on the use of the 2000 and 2007 databases.

72. Table 3-6. Mean ranges should be presented for territory sizes when available, using the most applicable habitat or geographic range. For example, based on USEPA (1993) this would be 0.03 to 0.22 ha (New York/old field) for the short-tailed shrew, 60 to 1,770 ha (all locations) for the red-tailed hawk, 0.6 to 8 km (all locations) for the great blue heron, and 1.85 to 2.63 km (Sweden/stream) for the mink.

Response: Table 3-6 will be revised and presented in the BWP using the following mean ranges from USEPA (1993): 0.03 - 0.22 ha for the short-tailed shrew; 60 - 1,770 ha for the red-tailed hawk, 0.6 to 8 ha for the great blue heron, and 1.85 to 2.63 km for the mink.

73. Table 3-6. Although the typical dietary composition of the short-tailed shrew is correct based on Hamilton (1941), it would be acceptable to use an invertebrate consumption rate of 100%, as it provides a conservative estimate of risk and simplifies the calculations needed to estimate short-tailed shrew contaminant exposure via prey.

Response: Table 3-6 will be revised and presented in the BWP using a terrestrial invertebrate dietary component of 100% for the shrew.

74. Table 3-7. The methodology for selection of values in this table should be provided to clarify why values in certain references were selected over values in other references, including a discussion explaining how values were selected. For example, it is not stated if there are more conservative values in the literature or for which species the literature values were derived. A copy of Parsons (2000) should be provided to NYSDEC.

    It is generally recommended to select TRVs based on species that are related as closely as possible to those used as receptors in the risk assessment. In particular, discussions must be provided for those contaminants which are bioaccumulative or are likely to be significant risk drivers.

Response: Attachment 3 provides a description of the general methodology as well as the specific methodology and studies used to derive the TRV for the constituents of concern listed on Table 4-4 of the PFD that were not Sample *et al.* (1996) references. The Sample *et al*. (1996) reference is a standard reference for wildlife TRVs that outlines the selected study as well as the uncertainty factors applied to derive the TRVs. Honeywell does not believe that it is cost effective to reproduce this information when it is available in this reference.

The Parsons (2000) reference has been removed from Table 3-7, and the table was revised to include the TRV-specific reference.

75. Table 3-7. The TRV for benzo(a)pyrene for avian receptors is provided as 40 mg/kg-day. However, the use of 0.143 for the NOAEL is recommended based on Hough et al. (1993).

Response: While Honeywell has reservations about the Hough *et al*. (1993) study (e.g., fertility data not presented, no follow up studies), this study is used as a basis for the avian TRVs for the high molecular weight PAHs in this assessment. A study by Patton and Dieter (1980) was used to develop TRVs for low molecular weight PAHs. The development of these TRVs is presented in Attachment 3, Section 2.2.2.

76. Table 3-7. The listed avian and mammalian TRVs for Aroclor 1221, Aroclor 1232, and the avian TRVs for Aroclors 1242 and 1268 were not found in Sample et al. (1996), as referenced. A note should be added if another Aroclor was used as a surrogate.

Response: Table 3-7 has been revised with the addition of Dahlgren *et al.* (1996) reference (for birds) and Linder et al. (1974) reference (for the shrew) to show the appropriate studies and surrogates. The revised Table 3-7 is provided in Attachment 2.

77. Table 3-7. The Aroclor 1242 lowest observed adverse effect level (LOAEL) for avian receptors listed in Sample et al. (1996) is 0.41 mg/kg-day based on McLane and Hughes (1980).

Response: Aroclor 1242 is not a COC as it was not detected in the sampled media.

78. Table 3-7. The avian Aroclor 1254 LOAEL recommended for use is 0.18 mg/kg-day based on Dahlgren et al. (1972).

Response: Honeywell has evaluated the Dahlgren *et al*. (1972) study and determined that the NOAEL for Aroclor 1254 is 1.8 mg/kg/day. The selection of this TRV is consistent with the Hudson River BERA (TAMS 2000) but

not with Sample *et al*. 1996 or the Onondaga Lake BERA (TAMS 2002). Both of these latter evaluations (Sample *et al*. and Onondaga Lake BERA) state that the 12.5 mg/week dose caused a significant reduction in egg hatchability. Honeywell does not agree with this interpretation. Refer to Attachment 3 for further discussion of this issue.

79. Table 3-7. The value for the mammalian NOAEL for methylmercury of 1 mg/kg-day should be revisited in light of a study by Wren et al. (1987), who observed increased mortality in mink fed 1 ppm of methylmercury for 81 days. The dosage was decreased after that time period due to excessive mortality. Wren et al. (1987) attributed the increased mortality to a combination of methylmercury exposure and cold stress, as the mink were maintained in outdoor cages. Based on these results, a NOAEL of 1.0 mg/kg-day from the Aulerich et al. (1974) study used by Sample et al. (1996) is not considered to be protective, as increased mortality occurs at lower dosages when combined with natural stresses present in field conditions. Therefore, it is recommended that an uncertainty factor of 0.1 be applied to the Wobeser et al. (1976) LOAEL of 0.025 mg/kg body weight-day to derive an NOAEL of 0.0025 mg/kg bw-day.

Response: We are currently evaluating what form mercury may be present in at the Site and will provide a rationale in the BWP for estimating the concentration of methylmercury in the surface soil, surface water, and sediment at the Site based on the existing mercury analytical data. Our response to the proposed methylmercury TRVs is discussed below:

We assume this comment is in reference to mercury on Table 3-7, as methylmercury was not analyzed for at this site and not specifically listed on Table 3-7. Honeywell has considered the Wobeser *et al*. (1976) and Wren *et al*. (1987) studies as the source of the methylmercury TRV and rejected them in favor of the Dansereau *et al*. (1999) study. The primary reason for the selection of the Dansereau *et al*. (1999) study over the studies suggested by the NYSDEC (and others) is one of duration. The Mink in the Dansereau *et al*. (1999) study were exposed to methylmercury for more than four times longer than the Wobeser *et al*. (1976) or Wren *et al*. (1987) studies. Refer to Attachment 3, Section 2.3.1 for Honeywell's review of these studies and the derivation of the TRVs from Dansereau *et al*. (1999).

80. Table 3-7. The value for 2-methylnaphthalene from Sample et al. (1996) could not be found. A footnote should be added if the benzo(a)pyrene value was used.

Response: Table 3-7 has been revised to show that the mammalian TRV for 2-Methylnaphthalene has been changed to 0.35 mg/kg/day (IRIS 2007). The revised Table 3-7 is included in Attachment 2.

81. Tables 4-1 and 4-3. Aluminum is retained as a COC in the soil and sediment tables, yet in the text and in Table 4-4 it was not retained.

Response: Tables 4-1 and 4-3 will be modified in the BERA such that aluminum is not identified as a COC. The following note will be added to the tables for aluminum: "in accordance with USEPA guidance, aluminum was not retained as a COC for the BERA since the surface soil pH was greater than 5.5 (USEPA 2000)." The discussion of this rationale, which is consistent with the process of the Onondaga Lake BERA, will be added to Section 4.1. A revised Table 4-4 excluding aluminum is presented in Attachment 2.

82. Table 4-4. Iron is retained as a COC for surface soils, surface water, and sediment, yet in Tables 4-1, 4-2, and 4-3 it was deleted because it is considered an essential nutrient.

Response: Iron will be deleted as a COC from Table 4-4. A revised Table 4-4 is included in Attachment 2.

83. Table 4-4. The following constituents were retained as surface soil COCs in Table 4-1, but are not listed in Table 4-4: cyanide, endosulfan I, endrin aldehyde, endrin ketone, gamma chlordane, acenaphthene, acenaphthylene, anthracene, butyl benzyl phthalate, fluorene, indeno (1,2,3-CD) pyrene, naphthalene,

phenanthrene, and carbon disulfide. Please add these COCs to Table 4-4 or provide the rationale for not retaining them as COCs in the BERA. Even if both wildlife HQs are less than 1, these parameters should be included in this table as "Direct Contact COCs" or as potentially toxic to microorganisms, terrestrial invertebrates, or plants.

Response: Endosulfan I, endrin aldehyde, endrin ketone, and butyl benzyl phthalate should be eliminated as COCs in Table 4-1 due to detection frequencies of less than 5%. The remaining constituents identified (cyanide, gamma chlordane, acenaphthene, acenaphthylene, anthracene, fluorene, indeno (1,2,3-CD) pyrene, naphthalene, phenanthrene, and carbon disulfide) will be added as COCs to Table 4-4. A revised Table 4-4 is provided in Attachment 2.

84. Table 4-4: The following constituents were retained as surface water COCs in Table 4-2, but are not listed in Table 4-4: aluminum, cyanide, 2-methylnaphthalene, 2-methylphenol, 4-methylphenol, acenaphthylene, anthracene, fluorene, naphthalene, phenanthrene, phenol, benzene, and toluene. Please add these COCs to Table 4-4 or provide the rationale for not retaining them as COCs in the BERA. Even if both wildlife HQs are less than 1, these parameters should be included in this table as "Direct Contact COCs" or as potentially toxic to aquatic organisms.

Response: Cyanide, 2-methylnaphthalene, 2-methylphenol, 4-methylphenol, acenaphthylene, anthracene, fluorene, naphthalene, phenanthrene, phenol, benzene, and toluene will be added as COCs to Table 4-4. The following note will be added to the tables for aluminum: "in accordance with USEPA guidance, aluminum was not retained as a COC for the BERA since the surface soil pH was greater than 5.5 (USEPA 2000)." A revised Table 4-4 is provided in Attachment 2.

85. Table 4-4. The following constituents were retained as sediment COCs in Table 4-3, but are not listed in Table 4-4: cyanide, anthracene, indeno (1,2,3-CD) pyrene, naphthalene, phenanthrene, 2-methylnaphthalene, 4-methyl- 2-pentanone, carbon disulfide, ethylbenzene, and toluene. Please add these COCs to Table 4-4 or provide the rationale for not retaining them as COCs in the BERA. Even if both wildlife HQs are less than 1, these parameters should be included in this table as "Direct Contact COCs" or as potentially toxic to aquatic organisms.

Response: Cyanide, anthracene, indeno (1,2,3-CD) pyrene, naphthalene, phenanthrene, 2-methylnaphthalene, 4-methyl- 2-pentanone, carbon disulfide, ethylbenzene, and toluene will be added as COCs to Table 4-4. A revised Table 4-4 is provided in Attachment 2.

86. Table 4-4. 4-4-DDE and butylbenzyl phthalate were selected as COPECs in Table 3-8 based on terrestrial hazard quotients above 1. 4-4-DDE was not selected as a COC in Table 4-1 based on a low detection frequency, however the text states that all constituents with HQs above 1 would be selected regardless of detection frequency. Butylbenzyl phthalate was selected as a COC in Table 4-1, although it did not have an associated toxicity value. These constituents should be added to Table 4-4, or an explanation should be provided as to why they were not selected.

Response: 4-4-DDE and butylbenzyl phthalate will be added as COCs to Table 4-4 as both have at least one HQ value greater than 1. A revised Table 4-4 is provided in Attachment 2.

87. Table 4-4. For the aquatic pathway hazard quotient (Table 3-9), carbazole, 2-hexanone, bromomethane, and styrene were retained as COCs, although they did not have any associated toxicity values. Other constituents that were selected as COPECs for which there were no associated toxicity values were not retained. Please clarify.

Response: 2-Hexanone was retained because it was detected in 10/21 sediment samples analyzed. Carbazole should have been eliminated as a COC since it was detected at low detection frequencies in the surface water and sediment samples analyzed. Styrene should have been eliminated as a COC since it was detected at a low frequency in the surface water samples analyzed and was not analyzed for in sediment samples. Bromomethane should have been eliminated as a COC since it was not detected in the sediment samples analyzed and was detected at a low frequency in surface water samples. A revised Table 4-4 is provided in Attachment 2.

The remaining constituents that were selected as COPECs for which there were no toxicity values were eliminated as COCs either because they were not detected or were detected at low frequency in the surface water and sediment samples (*e.g.*, nitrobenzene).

Comments on Figures

88. Figure 2-1. The site limits should be redrawn at the southeastern end to include Ditch A (where data have been collected) between I-690 and the lake.

Response: The site limits on this figure will be revised to include Ditch A and presented as such in the BERA.

89. Figure 2-5. An alternative color should be used for the federal (national wetlands inventory) wetlands, so they could be more clearly distinguished.

Response: The color of NWI wetland polygons on this figure will be modified to be more recognizable and presented as such in the BERA.

90. Figure 3-1. Assessment endpoints should be removed from the conceptual model, as they may create confusion due to combining assessment endpoints in the figure. The conceptual model figure should also clearly distinguish aquatic and terrestrial receptors, but note media that apply to both. Examples of conceptual model figures can be found on pages A-5, A-11, and A-17 of USEPA (1997).

Response: Assessment endpoints on this figure have been removed and receptors have been clearly labeled. A revised Figure 3-1 will be presented in the BWP.

Editorial Comments

91. Page 8, Paragraph 4, Sentence 3, Section 2.2.3. “Form” should be replaced with “from.”

Response: Spelling correction has been made in the text.

92. Page 9, Paragraph 3, Sentence 3, Section 2.2.3. The scientific name of American elm was previously provided in the description of successional northern hardwoods.

Response: Scientific name of American elm was removed from the associated section of the text.

93. Page 14, Paragraph 2, Sentence 2, Section 2.2.6. Add “to” after “opposed.”

Response: The word “to” was added to associated section of the text.

94. Page 48. The 1995 Region 3 BTAG table is currently being updated and revised benchmarks for freshwater and freshwater sediments have been posted on the website provided. Therefore, these references should cite the July 2006 tables.

Response: The updated BTAG tables have been obtained and will be utilized in the BERA text and tables.

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ATTACHMENT 2

Revised Tables

Revised Table 3-7
Honeywell - Wastebeds 1 - 8 Site
Ecological Risk Assessment - Problem Formulation Document
Toxicity Reference Values

CAS	Compound	Toxicity Reference Values			
		Avian	Source	Mammalian	Source
	Metals				
7440-36-0	ANTIMONY	No TRV	NA	0.125	Sample et al. (1996)
7440-38-2	ARSENIC	5.14	Sample et al. (1996)	0.126	Sample et al. (1996)
7440-39-3	BARIUM	20.8	Sample et al. (1996)	5.1	Sample et al. (1996)
7440-41-7	BERYLLIUM	No TRV	NA	0.66	Sample et al. (1996)
7440-43-9	CADMIUM	1.45	Sample et al. (1996)	1	Sample et al. (1996)
7440-47-3	CHROMIUM	1	Sample et al. (1996)	3.28	Sample et al. (1996)
7440-48-4	COBALT	No TRV	NA	5	Nation et al. (1983)
7440-50-8	COPPER	47	Sample et al. (1996)	11.7	Sample et al. (1996)
57-12-5	CYANIDE	No TRV	NA	68.7	Sample et al. (1996)
7439-92-1	LEAD	3.85	Sample et al. (1996)	8	Sample et al. (1996)
7439-96-5	MANGANESE	997	Sample et al. (1996)	88	Sample et al. (1996)
7439-97-6	MERCURY	0.45	Sample et al. (1996)	1	Sample et al. (1996)
7440-02-0	NICKEL	77.4	Sample et al. (1996)	40	Sample et al. (1996)
7782-49-2	SELENIUM	0.5	Sample et al. (1996)	0.2	Sample et al. (1996)
7440-28-0	THALLIUM	No TRV	NA	0.0074	Sample et al. (1996)
7440-62-2	VANADIUM	11.4	Sample et al. (1996)	0.21	Sample et al. (1996)
7440-66-6	ZINC	14.5	Sample et al. (1996)	160	Sample et al. (1996)
	PCBs				
12672-29-6	AROCLOR 1248	1.8	Aroclor 1254 as surrogate	0.084[c] / 0.4[d]	See footnotes
11097-69-1	AROCLOR 1254	1.8	Dahlgren et al. (1972)	0.084[a] / 0.4[b]	See footnotes
11096-82-5	AROCLOR 1260	1.8	Aroclor 1254 as surrogate	0.084[c] / 0.4[d]	See footnotes
11100-14-4	AROCLOR 1268	1.8	Aroclor 1254 as surrogate	0.084[c] / 0.4[d]	See footnotes
	Pesticides				
72-55-9	4-4-DDE	0.0028	Sample et al. (1996)	0.8	Sample et al. (1996)
50-29-3	4-4-DDT	0.0028	Sample et al. (1996)	0.8	Sample et al. (1996)
319-86-8	D-BHC	0.56	Sample et al. (1996)	0.014	Sample et al. (1996)
60-57-1	DIELDRIN	0.077	Sample et al. (1996)	0.02	Sample et al. (1996)
1031-07-8	ENDOSULFAN SULFATE	10	Sample et al. (1996)	0.15	Sample et al. (1996)
5566-34-7	GAMMA-CHLORDANE	2.14	Sample et al. (1996)	4.58	Sample et al. (1996)
	SVOCs				
91-57-6	2-METHYLNAPHTHALENE	No TRV	NA	0.35	IRIS (2007)
95-48-7	2-METHYLPHENOL	No TRV	NA	5	IRIS (2007)
106-44-5	4-METHYLPHENOL	No TRV	NA	5	2-methylphenol as surrogate
100-02-7	4-NITROPHENOL	No TRV	NA	No TRV	NA
83-32-9	ACENAPHTHENE	No TRV	NA	17.5	IRIS (2007)
208-96-8	ACENAPHTHYLENE	40	Patton & Dieter (1980)	17.5	acenaphthene as surrogate
120-12-7	ANTHRACENE	40	Patton & Dieter (1980)	100	IRIS (2007)
56-55-3	BENZO(A)ANTHRACENE	0.143	Hough et al. (1993)	1	benzo(a)pyrene as surrogate
50-32-8	BENZO(A)PYRENE	0.143	Hough et al. (1993)	1	Sample et al. (1996)
205-99-2	BENZO(B)FLUORANTHENE	0.143	Hough et al. (1993)	1	benzo(a)pyrene as surrogate
191-24-2	BENZO(G,H,I)PERYLENE	0.143	Hough et al. (1993)	1	benzo(a)pyrene as surrogate
207-08-9	BENZO(K)FLUORANTHENE	0.143	Hough et al. (1993)	1	benzo(a)pyrene as surrogate
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	Sample et al. (1996)	18.3	Sample et al. (1996)
85-68-7	BUTYL BENZYL PHTHALATE	No TRV	NA	15.9	IRIS (2007)
86-74-8	CARBAZOLE	No TRV	NA	No TRV	NA
218-01-9	CHRYSENE	0.143	Hough et al. (1993)	1	benzo(a)pyrene as surrogate
132-64-9	DIBENZOFURAN	No TRV	NA	No TRV	NA
206-44-0	FLUORANTHENE	0.143	Hough et al. (1993)	12.5	IRIS (2007)
86-73-7	FLUORENE	40	Patton & Dieter (1980)	12.5	IRIS (2007)
118-74-1	HEXACHLOROBENZENE	225	USEPA 1999a	1600	USEPA 1999a
193-39-5	INDENO(1,2,3-CD)PYRENE	0.143	Hough et al. (1993)	1	benzo(a)pyrene as surrogate
91-20-3	NAPHTHALENE	40	Patton & Dieter (1980)	7.1	IRIS (2007)
85-01-8	PHENANTHRENE	40	Patton & Dieter (1980)	1	benzo(a)pyrene as surrogate
108-95-2	PHENOL	No TRV	NA	9.3	IRIS (2007)
129-00-0	PYRENE	0.143	Hough et al. (1993)	7.5	IRIS (2007)
	VOCs				
591-78-6	2-HEXANONE	No TRV	NA	No TRV	NA
108-10-1	4-METHYL-2-PENTANONE	No TRV	NA	25	Sample et al. (1996)
71-43-2	BENZENE	No TRV	NA	26.36	Sample et al. (1996)
74-83-9	BROMOMETHANE	No TRV	NA	No TRV	NA
75-15-0	CARBON DISULFIDE	No TRV	NA	1.1	IRIS (2007)

Revised Table 3-7
Honeywell - Wastebeds 1 - 8 Site
Ecological Risk Assessment - Problem Formulation Document
Toxicity Reference Values

CAS	Compound	Toxicity Reference Values			
		Avian	Source	Mammalian	Source
67-66-3	CHLOROFORM	No TRV	NA	15	Sample et al. (1996)
100-41-4	ETHYLBENZENE	No TRV	NA	26.36	benzene as surrogate
22967-92-6	METHYL MERCURY	0.0064	Sample et al. (1996)	0.07	Dansereau et al. (1999)
95-47-6	O-XYLENE	No TRV	NA	No TRV	NA
100-42-5	STYRENE	No TRV	NA	No TRV	NA
108-88-3	TOLUENE	No TRV	NA	26	Sample et al. (1996)
1330-20-7	XYLENE (TOTAL)	No TRV	NA	2.1	Sample et al. (1996)

Notes:
All values are mg/kg-day
NA = Not applicable
No TRV = No Toxicity reference value (TRV) value selected

a = Mink NOAEL TRV - MDEQ (2003)
b = Shrew NOAEL TRV - Linder *et al.* (1974).
c = Mink NOAEL TRV - Aroclor 1254 used as a surrogate
d = Shrew NOAEL TRV - Aroclor 1254 used as a surrogate

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Revised Table 4-4
Honeywell - Wastebeds 1-8 Site
Ecological Risk Assessment - Problem Formulation Document
Summary of COCs for BERA

CAS Number	Constituent	Direct Contact COCs			Wildlife/Bioaccumulation COCs	
		Surface Soil Screening	Surface Water Screening	Sediment Screening	Terrestrial Pathway Hazard Quotient Screening	Aquatic Pathway Hazard Quotient Screening
	Metals					
7440-36-0	ANTIMONY	Yes	No	No	Yes	No
7440-38-2	ARSENIC	Yes	No	Yes	Yes	Yes
7440-39-3	BARIUM	Yes	Yes	No	Yes	Yes
7440-41-7	BERYLLIUM	Yes	No	Yes	Yes	No
7440-43-9	CADMIUM	Yes	Yes	No	Yes	No
7440-47-3	CHROMIUM	Yes	Yes	Yes	Yes	Yes
7440-48-4	COBALT	Yes	No	Yes	Yes	No
7440-50-8	COPPER	Yes	Yes	Yes	Yes	No
57-12-5	CYANIDE	Yes	Yes	Yes	No	No
7439-92-1	LEAD	Yes	Yes	Yes	Yes	No
7439-96-5	MANGANESE	Yes	Yes	Yes	Yes	No
7439-97-6	MERCURY	Yes	Yes	Yes	Yes	Yes
7440-02-0	NICKEL	Yes	Yes	Yes	Yes	No
7782-49-2	SELENIUM	Yes	Yes	Yes	Yes	Yes
7440-28-0	THALLIUM	Yes	No	Yes	Yes	Yes
7440-62-2	VANADIUM	Yes	No	Yes	Yes	Yes
7440-66-6	ZINC	Yes	Yes	Yes	Yes	Yes
	PCBs					
12672-29-6	AROCLOR 1248	Yes	No	No	Yes	Yes
11097-69-1	AROCLOR 1254	Yes	No	Yes	Yes	No
11096-82-5	AROCLOR 1260	Yes	No	No	Yes	No
11100-14-4	AROCLOR 1268	Yes	No	Yes	Yes	Yes
	Pesticides					
72-55-9	4-4-DDE	No	No	No	No	No
50-29-3	4-4-DDT	Yes	No	Yes	Yes	Yes
319-86-8	D-BHC	No	Yes	No	Yes	No
60-57-1	DIELDRIN	Yes	No	No	Yes	No
1031-07-8	ENDOSULFAN SULFATE	Yes	No	No	Yes	No
5566-34-7	GAMMA-CHLORDANE	Yes	No	No	No	No
	SVOCs					
91-57-6	2-METHYLNAPHTHALENE	Yes	Yes	Yes	No	No
95-48-7	2-METHYLPHENOL	No	Yes	No	No	No
106-44-5	4-METHYLPHENOL	No	Yes	No	No	No
100-02-7	4-NITROPHENOL	No	No	No	Yes	No
83-32-9	ACENAPHTHENE	Yes	No	No	No	No
208-96-8	ACENAPHTHYLENE	Yes	Yes	No	No	No

Revised Table 4-4
Honeywell - Wastebeds 1-8 Site
Ecological Risk Assessment - Problem Formulation Document
Summary of COCs for BERA

CAS Number	Constituent	Direct Contact COCs			Wildlife/Bioaccumulation COCs	
		Surface Soil Screening	Surface Water Screening	Sediment Screening	Terrestrial Pathway Hazard Quotient Screening	Aquatic Pathway Hazard Quotient Screening
120-12-7	ANTHRACENE	Yes	Yes	Yes	No	No
56-55-3	BENZO(A)ANTHRACENE	Yes	No	Yes	Yes	No
50-32-8	BENZO(A)PYRENE	Yes	No	Yes	Yes	No
205-99-2	BENZO(B)FLUORANTHENE	Yes	No	No	Yes	No
191-24-2	BENZO(G,H,I)PERYLENE	Yes	No	Yes	No	Yes
207-08-9	BENZO(K)FLUORANTHENE	Yes	No	Yes	Yes	No
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	Yes	Yes	Yes	Yes	No
85-68-7	BUTYL BENZYL PHTHALATE	Yes	No	No	No	No
86-74-8	CARBAZOLE	Yes	No	Yes	Yes	No
218-01-9	CHRYSENE	Yes	No	Yes	Yes	No
132-64-9	DIBENZOFURAN	Yes	Yes	Yes	Yes	Yes
206-44-0	FLUORANTHENE	Yes	No	Yes	No	Yes
86-73-7	FLUORENE	Yes	Yes	No	No	No
118-74-1	HEXACHLOROBENZENE	No	No	No	Yes	No
193-39-5	INDENO(1,2,3-CD)PYRENE	Yes	No	Yes	No	No
91-20-3	NAPHTHALENE	Yes	Yes	Yes	No	No
85-01-8	PHENANTHRENE	Yes	Yes	Yes	No	No
108-95-2	PHENOL	No	Yes	No	No	No
129-00-0	PYRENE	Yes	No	Yes	Yes	No
	VOCs					
591-78-6	2-HEXANONE	No	No	Yes	Yes	Yes
108-10-1	4-METHYL-2-PENTANONE	No	No	Yes	No	No
71-43-2	BENZENE	No	Yes	No	No	No
74-83-9	BROMOMETHANE	No	Yes	No	Yes	No
75-15-0	CARBON DISULFIDE	Yes	No	Yes	No	No
67-66-3	CHLOROFORM	No	No	No	Yes	No
100-41-4	ETHYLBENZENE	No	No	Yes	No	No
22967-92-6	METHYL MERCURY	Yes	Yes	Yes	Yes	Yes
95-47-6	O-XYLENE	No	Yes	No	NA	NA
100-42-5	STYRENE	No	Yes	No	Yes	No
108-88-3	TOLUENE	No	Yes	Yes	No	No
1330-20-7	XYLENE (TOTAL)	Yes	Yes	Yes	Yes	No

Notes:
COC: Constituent of Concern - to be further evaluated in the BERA
NA: Not assessed in food chain model.

Table 4-5
Honeywell - Wastebeds 1 - 8 Site
Ecological Risk Assessment - Problem Formulation Document
List of Culled COPECs

Below is a list of constituents that were excluded from further consideration as COCs in the BERA and their reason for exclusion, which include: constituent was not detected (CND), constituent was an essential nutrient (EN), constituent had a low detection frequency (LDF), and constituent was a potential laboratory contaminant (PLC).

Surface Soil

CND
AROCLOR 1016, AROCLOR 1221, AROCLOR 1232, AROCLOR 1242, ALDRIN, B-BHC, ENDOSULFAN II, ENDRIN, HEPTACHLOR, HEPTACHLOR EPOXIDE, LINDANE, TOXAPHENE, 2,4,5-TRICHLOROPHENOL, 2,4,6-TRICHLOROPHENOL, 2,4-DICHLOROPHENOL, 2,4-DIMETHYLPHENOL, 2,4-DINITROPHENOL, 2,4-DINITROTOLUENE, 2,6-DINITROTOLUENE, 2-CHLORONAPHTHALENE, 2-CHLOROPHENOL, 2-METHYLPHENOL, 2-NITROANILINE, 2-NITROPHENOL, 3,3-DICHLOROBENZIDINE, 3-NITROANILINE, 4,6-DINITRO-2-METHYLPHENOL, 4-BROMOPHENYL, HENYL ETHER, 4-CHLORO-3-METHYLPHENOL, 4-CHLOROPHENYL PHENYL, ETHER, 4-NITROANILINE, BIS(2-CHLOROETHOXY)METHANE, BIS(2-CHLOROETHYL)ETHER, BIS(2-CHLOROISOPROPYL)ETHER, DIETHYL PHTHALATE, DIMETHYL PHTHALATE, DI-N-OCTYL PHTHALATE, HEXACHLOROBUTADIENE, HEXACHLOROETHANE, ISOPHORONE, N-NITROSO-DI-N-PROPYLAMINE, PENTACHLOROPHENOL, 1,1-DICHLOROETHENE, 1,3-DICHLOROBENZENE, 2-HEXANONE, BROMOFORM, BROMOMETHANE, CHLOROETHANE, CHLOROMETHANE, CIS-1,2-DICHLOROETHENE, CIS-1,3-DICHLOROPROPENE, DIBROMOCHLOROMETHANE, TRANS-1,2-DICHLOROETHENE, TRANS-1,3-DICHLOROPROPENE, VINYL CHLORIDE

EN
CALCIUM, IRON, MAGNESIUM, POTASSIUM, SODIUM

LDF
4-4-DDD, 4-4-DDE, 4-NITROPHENOL, HEXACHLOROBENZENE, PHENOL, 1,4-DICHLOROBENZENE, CHLOROFORM

Surface Water

CND
COBALT, SILVER, THALLIUM, AROCLOR 1016, AROCLOR 1221, AROCLOR 1232, AROCLOR 1242, AROCLOR 1248, AROCLOR 1254, AROCLOR 1260, AROCLOR 1268, 4-4-DDD, 4-4-DDE, 4-4-DDT, A-CHLORDANE, ENDOSULFAN I, ENDOSULFAN II, ENDOSULFAN SULFATE, ENDRIN, ENDRIN ALDEHYDE, ENDRIN KETONE, GAMMA-CHLORDANE, HEPTACHLOR, LINDANE, METHOXYCHLOR, TOXAPHENE, 2,4,6-TRICHLOROPHENOL, 2,4-DINITROPHENOL, 2,6-DINITROTOLUENE, 2-NITROANILINE, 3,3-DICHLOROBENZIDINE, 3-NITROANILINE, 4,6-DINITRO-2-METHYLPHENOL, 4-BROMOPHENYL PHENYL ETHER, 4-CHLORO-3-METHYLPHENOL, 4-CHLOROANILINE, 4-CHLOROPHENYL PHENYL ETHER, 4-NITROANILINE, ACENAPHTHENE, BENZO(A)ANTHRACENE, BENZO(A)PYRENE, BENZO(B)FLUORANTHENE, BENZO(G,H,I)PERYLENE, BENZO(K)FLUORANTHENE, BIS(2-CHLOROISOPROPYL)ETHER, BUTYL BENZYL PHTHALATE, CARBAZOLE, CHRYSENE, DIBENZ(A,H)ANTHRACENE, DIETHYL PHTHALATE, DIMETHYL PHTHALATE, DI-N-OCTYL PHTHALATE, FLUORANTHENE, HEXACHLOROBENZENE, HEXACHLOROBUTADIENE, HEXACHLOROCYCLOPENTADIENE, HEXACHLOROETHANE, INDENO(1,2,3-CD)PYRENE,

ISOPHORONE, N-NITROSODIPHENYLAMINE, PENTACHLOROPHENOL, 1,1,1-TRICHLOROETHANE, 1,2,4-TRICHLOROBENZENE, 1,2-DIBROMO-3-CHLOROPROPANE 1,2-DICHLOROBENZENE, 1,3-DICHLOROBENZENE, 1,4-DICHLOROBENZENE, CARBON DISULFIDE, CHLOROBENZENE, CHLOROETHANE, CIS-1,2-DICHLOROETHENE, CIS-1,3-DICHLOROPROPENE, ISOPROPYLBENZENE, METHYL TERT-BUTYL ETHER, TRANS-1,3-DICHLOROPROPENE, TRICHLOROETHENE

EN
CALCIUM, IRON, MAGNESIUM, POTASSIUM, SODIUM

LDF
DIELDRIN, HEPTACHLOR EPOXIDE, PYRENE

Sediment

CND
AROCLOR 1016, AROCLOR 1221, AROCLOR 1232, AROCLOR 1242, AROCLOR 1248, 4,4-DDD, 4,4-DDE, ALDRIN, ALPHA-BHC, ALPHA-CHLORDANE, BETA-BHC, DELTA-BHC, DIELDRIN, ENDOSULFAN I, ENDOSULFAN II, ENDOSULFAN SULFATE, ENDRIN, ENDRIN ALDEHYDE, ENDRIN KETONE, GAMMA-BHC (LINDANE), GAMMA-CHLORDANE, HEPTACHLOR, HEPTACHLOR EPOXIDE, METHOXYCHLOR, TOXAPHENE, 2,4,5-TRICHLOROPHENOL, 2,4,6-TRICHLOROPHENOL, 2,4-DICHLOROPHENOL, 2,4-DIMETHYLPHENOL, 2,4-DINITROPHENOL, 2,4-DINITROTOLUENE, 2,6-DINITROTOLUENE, 2-CHLORONAPHTHALENE, 2-CHLOROPHENOL, 2-METHYLPHENOL, 2-NITROANILINE, 2-NITROPHENOL, 3,3-DICHLOROBENZIDINE, 3-NITROANILINE, 4,6-DINITRO-2-METHYLPHENOL, 4-BROMOPHENYL PHENYL ETHER, 4-CHLORO-3-METHYLPHENOL, 4-CHLOROANILINE, 4-CHLOROPHENYL PHENYL ETHER, 4-NITROANILINE, 4-NITROPHENOL, BIS(2-CHLOROETHOXY)METHANE, BIS(2-CHLOROETHYL)ETHER, BIS(2-CHLOROISOPROPYL)ETHER, BUTYL BENZYL PHTHALATE, DIETHYL PHTHALATE, DI-N-BUTYL PHTHALATE, HEXACHLOROBENZENE, HEXACHLOROBUTADIENE, HEXACHLOROCYCLOPENTADIENE, HEXACHLOROETHANE, ISOPHORONE, NITROBENZENE, N-NITROSO-DI-N-PROPYLAMINE, N-NITROSODIPHENYLAMINE, PENTACHLOROPHENOL, 1,1-DICHLOROETHANE, 1,1-DICHLOROETHENE, 1,2-DIBROMO-3-CHLOROPROPANE, 1,2-DIBROMOETHANE, 1,2-DICHLOROBENZENE, 1,2-DICHLOROPROPANE, 1,4-DICHLOROBENZENE, BROMODICHLOROMETHANE, BROMOMETHANE, CARBON TETRACHLORIDE, CHLOROETHANE, CHLOROFORM, CHLOROMETHANE, CIS-1,2-DICHLOROETHENE, CIS-1,3-DICHLOROPROPENE, DIBROMOCHLOROMETHANE, DICHLORODIFLUOROMETHANE, M,P-XYLENE METHYL TERT-BUTYL ETHER, O-XYLENE, TETRACHLOROETHENE, TRANS-1,2-DICHLOROETHENE, TRANS-1,3-DICHLOROPROPENE, TRICHLOROETHENE, TRICHLOROFLUOROMETHANE, VINYL CHLORIDE

EN
CALCIUM, IRON, MAGNESIUM, POTASSIUM, SODIUM

LDF
AROCLOR 1260, DIELDRIN, ACENAPHTHENE, ACENAPHTHYLENE, FLUORENE, PHENOL

PLC
2-BUTANONE, ACETONE

ATTACHMENT 3

TRV Selection Methodology

Attachment 3 – Methodology Used to Derive Toxicity Reference Values

This discussion of the methodology used to derive the proposed toxicity reference values (TRVs) is divided into two parts: 1) general procedures used for the selection of TRVs, and 2) the specific studies and procedures used to derive the TRVs for the constituents included on Table 4-4 of the Wastebeds 1 through 8 Site (the Site) Problem Formulation Document (PFD) that were not taken from Sample *et al.* (1996). The TRVs for the majority of constituents listed in Table 4-4 of the PFD were taken from Sample *et al.* (1996). The Sample *et al*. (1996) reference is a standard reference for wildlife TRVs that outlines the selected study as well as the uncertainty factors applied to derive the TRVs. Honeywell does not believe that it is cost effective to reproduce this information when it is available in this reference.

1.0 General Procedure

Measures of toxicological effects, or TRVs, provide a basis for estimating whether exposure to constituents at a Site may result in adverse ecological effects. TRVs were selected based on lowest observed adverse effect levels (LOAELs) and/or no observed adverse effects levels (NOAELs) from laboratory and/or field-based studies reported in the scientific literature. The general methodology used to develop the NOAELs and LOAELs used in this assessment is described below.

NOTE: Only NOAELs were utilized for the risk evaluation performed in the PFD. Therefore, the Comment Responses and revisions to Table 3-7 reflect responses to the NYSDEC comments concerning the selection of NOAELs. For the BERA, LOAELs will also be utilized in the evaluation of potential risk. LOAELs proposed for use in the BERA will be presented in the BERA Work Plan. However, a discussion of the proposed LOAELs and their selection process is included in this attachment for preliminary review by the NYSDEC. Honeywell is currently reviewing methodology for the development of LOAELs and, as such, those LOAELs presented in this Attachment may be modified in the BERA.

1.1 Test Species – For each constituent, an effort was made to find studies that were conducted on the receptors used in this BERA (Short-tailed shrew, Red-tailed hawk, Mink and Great blue heron) or a taxonomically related species. If studies on the same or a similar species were unavailable, professional judgement was used to select the most appropriate study. Interspecies uncertainty factors or allometric adjustments were not used to account for the potential differences in sensitivity between test species and receptors species. This is consistent with the procedure used in the Onondaga Lake BERA (TAMS, 2002).

1.2 Study Duration – Chronic NOAELs and LOAELs were selected over subchronic TRVs, when available. A chronic study for avian receptors was defined as a study of 10 weeks or longer in duration or a study that occurs during a critical life history stage (e.g. gestation, reproduction, early development). A chronic study for mammalian species was defined as a study conducted over 1 year or a study that occurs during a critical life history stage. These definitions are consistent with Sample *et al.* (1996) as well as the Onondaga Lake BERA (TAMS, 2002). The conversion of a subchronic TRV to a chronic TRV was accomplished by multiplying the subchronic TRV by 0.1. This subchronic-to-chronic conversion is consistent with Sample *et al.* (1996) and the Onondaga Lake BERA (TAMS, 2002).

1.3 Study Endpoint – The desired endpoints for the TRVs selected in this assessment were growth, survival, or reproduction. This is consistent with the assessment and measurement endpoints outlined in the PFD.

1.4 LOAEL-to-NOAEL Conversion – For the purposes of this TRV selection process, in the absence of an appropriate NOAEL, the chronic LOAEL was converted to a chronic NOAEL by dividing by a conversion factor of 10. This methodology is consistent with Sample *et al*. (1996) and the Onondaga Lake BERA (TAMS, 2002). However, Honeywell is currently evaluating methodology for this conversion and may propose alternative conversion factors in the future if reliable research indicates that a factor of 10 is inappropriate.

1.5 NOAEL-to-LOAEL Conversion - For the purposes of this TRV selection process, in the absence of an appropriate LOAEL, the chronic NOAEL was converted to a chronic LOAEL by multiplying by a conversion factor of 10. According to the Eco-SSL guidance (USEPA 2003), approximately 95% of the mammal LOAELs and 96% of the avian LOAELs are within a factor of 10 of their paired NOAELs. This methodology is consistent with the Onondaga Lake BERA (TAMS, 2002) which used this conversion to derive chronic LOAELs from chronic NOAELs for vanadium (avian), bis(2-ethylhexyl)phthalate (avian), and inorganic mercury (mammalian). However, Honeywell is currently evaluating methodology for this conversion and may propose alternative conversion factors in the future if reliable research indicates that a factor of 10 is inappropriate.

The primary reference utilized in the identification of the TRVs was Sample *et al.* (1996). This document was published as a result of research conducted by the Oak Ridge National Laboratory related to toxicity of chemicals to wildlife. The studies used by Sample *et al*. (1996) to derive TRV values were obtained from the USEPA TERRE-TOX database, USFWS reports, USEPA criteria documents, Public Health Service toxicity profiles, and scientific journals, such as Environmental Toxicology and Chemistry, Archives of Environmental Contamination and Toxicology, and Journal of Wildlife Management. The TRVs taken from this reference were for the test species, not those that were adjusted for wildlife receptors using allometric equations.

The TRVs proposed for Wastebeds 1 though 8 are presented in the revised Table 3-7, included herein for mammals and birds.

2.0 TRVs for Constituents of Concern

What follows is a discussion of the methodology used to select the TRVs for the constituents included on Table 4-4 of the PFD that were not taken from Sample *et al.* (1996).

2.1 PCBs

2.1.1 Mink TRV – The NOAEL and LOAEL TRVs for mink are based on recommendations made in Appendix D of the Michigan Department of Environmental Quality ([MDEQ] 2003). This document provides a detailed analysis of the literature on the effects of PCBs on mink. The calculated dietary PCB low effect TRV for mink is 0.6 mg/kg wet weight (diet). The estimated no effect TRV is 0.5 mg/kg wet weight (diet) for mink. In addition to the discussion of these mink TRVs, Appendix D of MDEQ (2003) provides a complete and detailed discussion of the methodology used to derive these TRVs.

The Mink TRV for PCBs is based on exposure to Aroclor 1254, which has been shown to be more toxic to mammalian species than the other Aroclors. A NOAEL TRV of 0.084 mg/kg BW/day is derived from a dietary NOAEL TRV of 0.5 mg/kg and a LOAEL TRV of 0.101 mg/kg BW/day is derived from a dietary LOAEL of 0.6 mg/kg BW/day (MDEQ 2003). No interspecies uncertainty factors or allometric adjustments were applied to this value.

The NOAEL TRV for the Mink is 0.084 mg PCBs/kg BW/day.

The LOAEL TRV for the Mink is 0.101 mg PCBs/kg BW/day

2.1.2 Short-tailed Shrew TRV - The study by Linder *et al*. (1997) is used as the source for the short-tailed shrew Aroclor TRVs in this assessment. This study was also used in the Onondaga Lake BERA (TAMS, 2002). Linder *et al*. (1998) conducted a multigenerational study (chronic) with rats that were fed 5 ppm and 20 ppm or Aroclor 1254. The young of the rats that were fed 20 ppm PCBs (LOAEL) demonstrated decreased litter size when compared to controls. No such reproductive effect was observed at the 5 ppm dose (NOAEL). These doses were converted to the appropriate units (mg/kg/day) by using a body weight of 0.35 kg and a food intake rate of 28 g food/day (after Sample *et al.* 1996). No interspecies uncertainty factors or allometric adjustments were applied to these values.

The NOAEL TRV for the Short-tailed Shrew is 0.4 mg PCBs/kg/day.

The LOAEL TRV for the Short-tailed Shrew is 1.6 mg PCBs/kg/day.

2.1.3 Great Blue Heron TRV – Studies that examined the toxicity of PCBs on the Great Blue Heron or a taxonomically related species were not found. The avian TRVs for Aroclors are based on a study conducted with Ring-necked Pheasants by Dahlgren *et al*. (1972, as cited in Sample *et al*. 1996). The 17-week study (chronic) was focused on reproductive parameters. The lowest administered dose of Aroclor 1254 (12.5 mg/week or 1.8 mg/kg/day) did not have a significant effect on chick growth, egg production, or survivability and was chosen as the chronic NOAEL for this assessment. The highest administered dose (50 mg/week or 7.1 mg/kg/day) caused significant reductions in egg production, hatching success and survivorship and was selected as the chronic LOAEL for this assessment. No interspecies uncertainty factors or allometric adjustments were applied to these values.

The selection of these TRVs is consistent with the Hudson River BERA (TAMS, 2000) but not with Sample *et al*. 1996 or the Onondaga Lake BERA (TAMS, 2002). Both of these latter evaluations (Sample *et al*. and Onondaga Lake BERA) state that the 12.5 mg/week dose caused a significant reduction in egg hatchability. The statistics in the Dahlgren *et al.* (1972) paper (Table 1 in the Dahlgren *et al.* 1972 paper) are unclear on this issue. The text on pages 90 and 91 of the Dahlgren article states the following:

"Hatchability in both 1970 and 1971 was highest in control groups and lowest in groups in which hens had received 50 mg PCBs. In 1970, these differences tested by chi-squared were not significant ($P>0.05$), while in 1971 hatchability was reduced ($P<0.01$) among the hens given PCBs."

Since it is unclear from this statement and the tables presented in Dahlgren *et al*. (1972) that there was a significant difference between the control and the 12.5 mg dose with respect to hatchability, the Dahlgren *et al*. (1972) data is presented in Table A1 and reanalyzed in Tables A2 – A5, below.

Table A1. Reproductive statistics from control pheasants and pheasants given PCBs 1970-1971. Table reproduced from a portion of Table 1 in the Dahlgren *et al*. 1972 paper.

		Fertile Eggs		Fertile Eggs Hatched	
Year	Treatment[a]	Number	Percent	Number	Percent
1970	0-0[b]	101	36	74	73
	0-12.5	128	58	87	68
	0-50	50	37	32	64
	25-0	91	54	73	80
	25-12.5	71	40	50	70
	25-50	63	64	41	65
1971	0-0[b]	82	49	65	79
	0-12.5	128	64	64	50
	0-50	96	65	51	53
	25-0	170	73	116	68
	25-12.5	153	53	109	71
	25-50	42	44	10	24

[a] Each treatment group had five hens, except the 25-12.5 mg group had nine hens in 1971
[b] The first number is the weekly PCB level in mg given to cocks; the second, that for hens

Data were extracted from Table A1 to construct a series of 2 X 2 contingency tables (Tables A2 - A5) to test for the independence of hatching success and PCB dose when the dose of the male pheasant was held constant.

Table A2. A 2 X 2 contingency table for testing the independence of hatching success and hen PCB during the 1970 experiment, cock PCB dose held constant at 0 mg per week (data recreated from Dahlgren *et al.* 1972)

1970	Dose (male/female)	
	0 mg – 0 mg	0 mg - 12.5 mg
Hatched	74	87
Unhatched	27	41
Total	101	128
Pearson Chi-Squared Value = 0.76		
Pearson Probability = 0.38		

Table A3. A 2 X 2 contingency table for testing the independence of hatching success and hen PCB during the 1970 experiment, cock PCB dose held constant at 25 mg per week (data recreated from Dahlgren *et al.* 1972)

1970	Dose (male/female)	
	25 mg – 0 mg	25 mg-12.5 mg
Hatched	73	50
Unhatched	18	21
Total	91	71
Pearson Chi-Squared Value = 2.09		
Pearson Probability = 0.15		

Table A4. A 2 X 2 contingency table for testing the independence of hatching success and hen PCB during the 1971 experiment, cock PCB dose held constant at 0 mg per week (data recreated from Dahlgren *et al.* 1972)

1971	Dose (male/female)	
	0 mg-0 mg	0 mg-12.5 mg
Hatched	65	64
Unhatched	17	64
Total	82	128
Pearson Chi-Squared Value = 18.07		
Pearson Probability = <0.001		

Table A5. A 2 X 2 contingency table for testing the independence of hatching success and hen PCB during the 1971 experiment, cock PCB dose held constant at 25 mg per week (data recreated from Dahlgren *et al.* 1972)

1971	Dose (male/female)	
	25 mg-0 mg	25 mg-12.5 mg
Hatched	116	109
Unhatched	54	44
Total	170	153
Pearson Chi-Squared Value = 0.34		
Pearson Probability = 0.56		

The majority of comparisons (Tables A2, A3 and A5) demonstrate that the number of unhatched eggs is independent of the 12.5 mg PCB dose that was administered to hens. In contrast, the analysis comparing the 1971 data where the PCB dose administered to the male pheasant was held constant at 0 mg (Table A4) demonstrated that the number of unhatched eggs was dependent (and higher) on the 12.5 mg/week treatment. However, in this case, the 12.5 mg hens were considerably more productive (128 eggs vs. 82 eggs, same number of hens/treatment, same time period/treatment), which resulted in no difference in fecundity [65 hatched (0 mg) vs. 64 hatched (12.5 mg)]. For these reasons, the 12.5 mg dose (1.8 mg/kg/day) is considered to be the appropriate chronic NOAEL for this evaluation.

The NOAEL TRV for the Great Blue Heron is 1.8 mg PCBs/kg/day.

The LOAEL TRV for the Great Blue Heron is 7.1 mg PCBs/kg/day.

2.1.4 Red-tailed Hawk TRV - Studies that examined the toxicity of PCB to the Red-tailed Hawk or a taxonomically related species were not found. Thus, the TRVs for this species are the same as those derived above for the Great Blue Heron.

The NOAEL TRV for the Red-tailed Hawk is 1.8 mg PCBs/kg/day.

The LOAEL TRV for the Red-tailed Hawk is 7.1 mg PCBs/kg/day.

2.2 PAHs

2.2.1 Short-tailed Shrew and Mink TRV – The Short-tailed Shrew and Mink PAH TRVs proposed for this assessment were taken from two sources: 1) The Integrated Risk Assessment System (IRIS, accessed April 2007), and 2) Sample *et al*. (1996). If a PAH had a reference dose in IRIS, then that reference dose was adjusted as shown on Table A3-1 (attached). If a PAH did not have a reference dose in IRIS, the TRV in Sample *et al.* (1996) is proposed. The study referenced in Sample *et al*. 1996 is discussed below.

Studies that examined the toxicity of PAHs to the mink or the shrew were not found. A study conducted by Mackenzie and Angevine (1981) on mice, however, was deemed appropriate for both of the mammalian receptors evaluated in this assessment. Mice were exposed to 10, 40, and 160 mg/kg/day of benzo(a)pyrene during a critical life stage (gestation). The measured response variables were related to reproduction. The 10 mg/kg/day dose caused impaired fertility among offspring and was considered to be the chronic LOAEL. A chronic NOAEL was derived by multiplying this LOAEL by an uncertainty factor of 0.1. No interspecies uncertainty factors or allometric adjustments were applied to these values.

The NOAEL TRV for the Mink and the Short-tailed Shrew is 1 mg PAH/kg/day.

The LOAEL TRV for the Mink and the Short-tailed Shrew is 10 mg PAH/kg/day.

2.2.2 Great Blue Heron TRV – Studies that examined the toxicity of PAHs to the Great Blue Heron or a taxonomically related species were not found. Two studies were used to derive avian PAH TRVs – one for low molecular weight PAHs (LMW PAHs) and one for high molecular weight PAHs (HMW PAHs). Low molecular weight PAHs are defined as PAHs with three or fewer benzene rings while HMW PAHs contain four or more benzene rings.

The critical study for the LMW PAHs was Patton and Dieter (1980). Mature mallard ducks were fed an *ad libitum* diet of commercial breeder mash containing 400 ppm and 4000 ppm aromatic hydrocarbons for 7 months (chronic). The aromatic hydrocarbon mix contained several compounds including ethylbenzene, acenaphthylene, acenaphthene, and phenanthrene. No mortality or visible symptoms of toxicity occurred in any of the treatments. Ingestion of 4000 ppm of PAHs produced significant liver effects (25% increase liver weight, 33% increase in the livers' ability to remove exogenous materials, 30% increase in hepatic blood flow). This increased physiological demand at 4000 ppm was the basis for the chronic LOAEL selected in this assessment. The 400 ppm dose was selected as the chronic NOAEL. These doses were converted to the appropriate units (mg/kg/day) by using a body weight of 1250 g (Patton and Dieter 1980), and a food intake rate of 125 g food/day (after Heinz et. al. 1989; 100g food/day for a 1 kg mallard duck). No interspecies uncertainty factors or allometric adjustments were applied to these values.

The NOAEL TRV for the Great Blue Heron is 40 mg LMW PAHs/kg/day.

The LOAEL TRV for the Great Blue Heron is 400 mg LMW PAHs/kg/day.

The critical study used to derive TRVs for the HMW PAHs was Hough *et al*. (1993). This study exposed 3 to 6 month old pigeons to a 10 mg/kg weekly dose of benzo(a)pyrene for a period of 5 months. This dose caused a significant change in ovarian structure, increases in arterial lesions, and most importantly, complete infertility in female birds (though this data is not presented in this paper or any follow up article that can be located). This dose was converted to a daily dose of 1.43 mg/kg/day and is considered to be a chronic LOAEL. A chronic NOAEL was derived by

multiplying this LOAEL by an uncertainty factor of 0.1. No interspecies uncertainty factors or allometric adjustments were applied to these values.

The NOAEL TRV for the Great Blue Heron is 0.143 mg HMW PAHs/kg/day.

The LOAEL TRV for the Great Blue Heron is 1.43 mg HMW PAHs/kg/day.

2.2.3 Red-tailed Hawk TRV - Studies that examined the toxicity of PAHs to the Red-tailed Hawk or a taxonomically related species were not found. Thus, the TRVs for this species are the same as those derived above for the Great Blue Heron.

The NOAEL TRV for the Red-tailed Hawk is 40 mg LMW PAHs/kg/day.

The LOAEL TRV for the Red-tailed Hawk is 400 mg LMW PAHs/kg/day.

The NOAEL TRV for the Red-tailed Hawk is 0.143 mg HMW PAHs/kg/day.

The LOAEL TRV for the Red-tailed Hawk is 1.43 mg HMW PAHs/kg/day.

2.3 Methylmercury

2.3.1 Mink TRV - There are several available studies that examine methylmercury toxicity in Mink. Wobeser *et al.* (1976) exposed mink to methylmercury concentrations ranging from 1.1 to 15 ppm for 93 days and found that exposure to 1.8 ppm resulted in increased mortality. This dose is equal to a LOAEL of 0.025 mg/kg/day once the subchronic-to-chronic uncertainty factor is applied. TAMS (2002) further modify the Wobeser *et al.* (1976) study using evidence from Wren *et al.* (1987). Wren *et al.* (1987) observed increased mortality in Mink exposed to 1.0 ppm of methylmercury for 81 days. The discrepancy between the LOAEL derived from the Wobeser *et al.* (1976) study (1.8 ppm) and the LOAEL derived from the Wren *et al.* (1987) study LOAEL (1.0 ppm) is attributed to cold stress as the animals were maintained in outdoor cages. NYCDEC/TAMS (2002) considered this cold stress to be natural and used the Wren *et al.* (1987) study to justify the application of an additional uncertainty factor to the Wobeser *et al.* (1976) LOAEL, resulting in a final LOAEL of 0.0025 mg/kg-day.

Halbrook *et al.* (1997) exposed Mink to varying percentages of fish collected from methylmercury affected (ORR) and unaffected bodies of water for seven months. Female mink fed a diet containing 75% ORR fish had reduced body weight and a decreased number of young compared to Mink fed diets comprised of 75% fish from unaffected sites. However, Halbrook *et al.* (1997) concluded that these results were not related to exposure to mercury. This conclusion was based on three observations:

1. The mean methylmercury in fish collected from the affected ORR stream was 0.35 ppm. In addition, given that the high mercury diet included only 75% ORR fish, the actual dietary dose was even lower than 0.35 ppm.

2. The 0.35 ppm concentration is considerably lower than previously published LOAELs [1.8 ppm (Wobeser *et al.* 1976), 1.0 ppm (Wren *et al.* 1987), 0.58 ppm (Jernelov *et al.* 1976), and 0.5 ppm (Kirk 1971)]. and

3. Fish collected from the ORR were potentially affected with a variety of other constituents (Halbrook *et al.* 1997).

The critical study used to derive mammalian TRVs was Dansereau *et al.* (1999). The primary reason for the selection of this investigation over the above-reviewed studies was one of duration. The Mink in the Dansereau *et al.* (1999) study were exposed to methylmercury twice as long as the Halbrook *et al.* (1997) study and more than four times longer than the Wobeser *et al.* (1976) or Wren *et al.* (1987). In addition, mink were raised in a mink farm in Quebec, Canada and subjected to natural variations in temperature and photoperiod, similar to the Wren *et al.* (1987) investigation.

Dansereau *et al.* (1999) examined the reproductive effects of methylmercury in two generations of female minks (G1 and G2) exposed for 400 days and 300 days respectively. Mink were exposed to fish naturally contaminated with mercury at concentrations of 0.1, 0.5, and 1.0 ppm. The 1.0 ppm dose of mercury caused adult Mink moralities while the 0.1 and 0.5 ppm doses did not. None of the treatment levels effected the gestation periods or the number of young born per litter for the two generations of females. Thus, for the vast majority of response variables measured, the 0.5 ppm dose of mercury cause no detrimental effect. This dose was converted into a chronic NOAEL of 0.07 mg/kg/day by using the mink body weight of 1 kg and the food ingestion rate of 0.137 kg food/day (after Sample *et al.* 1996). Likewise, the 1.0 ppm mercury dose was converted to a chronic LOAEL of 0.14 mg/kg/day.

The NOAEL TRV for the Mink is 0.07 mg methylmercury/kg/day.

The LOAEL TRV for the Mink is 0.14 mg methylmercury/kg/day.

3.0 References

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Table A3-1
Honeywell - Wastebeds 1-8 Site
Ecological Risk Assessment - Problem Formulation Document
Mammal Toxicity Reference Values Attained from IRIS 2007

Constituent	Source	Test Species	Test NOAEL mg/kg/day	Test LOAEL mg/kg/day	Endpoint	Duration	Subchronic to Chronic UF	Final NOAEL mg/kg/day	Final LOAEL mg/kg/day
2,4 - dimethylphenol	IRIS accessed April 2007	mouse	50	250	mortality, body wt., organ wt., hemotology	90 days	0.1	5	25
2-methylphenol	IRIS accessed April 2007	rat	50	150	body & organ wt., food intake, mortality	90 days	0.1	5	15
Butyl benzyl phthalate	IRIS accessed April 2007	rat	159	470	mortality, body wt., organ wt.	26 weeks	0.1	15.9	47
Chlorobenzene	IRIS accessed April 2007	dog	19	38.6	mortality, body wt., organ changes, hemotology	13 weeks	0.1	1.9	3.9
Phenol	IRIS accessed April 2007	rat	93	157	reproduction, maternal body wt.	20 days	0.1	9.3	15.7
4-chloroaniline	IRIS accessed April 2007	rat	---	12.5	Nonneoplastic leasions of splenic capsule	78 weeks	1	1.25[a]	12.5
Acenaphthene	IRIS accessed April 2007	mouse	175	350	body wt., food intake, organ wt., mortality	90 days	0.1	17.5	35
Anthracene	IRIS accessed April 2007	mouse	1000	---	mortality, clinical signs, body wt.	90 days	0.1	100	---
Carbon disulfide	IRIS accessed April 2007	rabbit	11	---	fetotoxicity	34+ weeks	0.1	1.1	---
Fluoranthene	IRIS accessed April 2007	mouse	125	250	body wt., food intake, hemotology	13 weeks	0.1	12.5	25
Fluorene	IRIS accessed April 2007	mouse	125	250	body wt., food intake, hemotology	13 weeks	0.1	12.5	25
Naphthalene	IRIS accessed April 2007	rat	71	121	body wt., food intake, hemotology	13 weeks	0.1	7.1	12.1
Pyrene	IRIS accessed April 2007	mouse	75	125	mortality, body wt., food intake, hemotology	13 weeks	0.1	7.5	12.5
2-Methylnaphthalene	IRIS accessed April 2007	mouse	---	3.5	hemotology, organ wt. Histopathology	81 weeks	1	0.35[a]	3.5

Notes
a = LOAEL to NOAEL extrapolation, LOAEL X 0.1

File 1163/3964/2(2)

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Alexander B. Grannis
Commissioner

May 3, 2007

John McAuliffe
Honeywell International
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East Syracuse, NY 13057

Re: Waste Beds 1-8 Remedial Investigation
Problem Formulation Document, BERA, February 2007

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation and United States Environmental Protection Agency have reviewed the Problem Formulation Document, February 2007, submitted by Honeywell for the Waste Beds 1-8 site. The following comments need to be adequately addressed prior to development of a Baseline Ecological Risk Assessment Work Plan.

General Comments

G.1. **Insufficient Documentation for Constituent of Concern (COC) Selection.** The Baseline Ecological Risk Assessment (BERA) Problem Formulation Document (PFD) retained 36 of the initial 120 constituents of potential ecological concern (COPECs) in surface soil, 16 of the 116 COPECs in surface water, and 29 of the 139 COPECs in sediment. Forty-one of the initial terrestrial COPECs and 19 of 76 aquatic COPECs were retained as wildlife COCs. However, the process used for the selection and the end results were not fully documented. Please see specific comments.

G.2. **Unavailable/Difficult to Locate References.** The toxicity reference value (TRV) table (Table 3-7) contains reference information that can not be verified due to unavailability of the reference (i.e., Parsons, 2000). References that are not directly obtainable should be provided to NYSDEC. The uptake factors table (Table 3-5) provides a list of nine references, but does not associate references with values presented in the table, which makes the verification of values difficult.

Specific Comments

Typically, paragraph numbering corresponds to complete paragraphs on a page, and begins with the first full paragraph on a page. Typically, numbering includes the last paragraph on a page, even if that paragraph continues onto the next page. Bullets are considered part of the paragraph that introduced them.

1. Page 7, Paragraph 3, Sentence 2, Section 2.2.2. Please add the common name of *Phragmites* and the species name. Either the common or scientific name should be used consistently, rather than the mixed usage in this section (i.e., sometimes *Phragmites*, sometimes common reed).

2. Page 8, Paragraph 4, Sentence 3, Section 2.2.3. The number of ditches present onsite (five) should be provided in the text as well as the discharge location (Onondaga Lake, Ninemile Creek) for each ditch.

3. Page 9, Paragraph 1, last sentence, Section 2.2.3. Please update this sentence to state that the BERA for Geddes Brook/Ninemile Creek was completed by NYSDEC in 2003 (TAMS, 2003.)

4. Page 12, Paragraph 6, Sentence 2, Section 2.2.5. Additional information on the dates of the field observations and the level of effort associated with them should be provided.

5. Page 12, Paragraph 6, Section 2.2.5. The NYS herpetological atlas should be used to identify potential species of amphibians and reptiles present in the project area.

6. Page 13, Paragraph 3, Sentence 2, Section 2.2.5. Historical fish data are available from 1927 to 1994. It is unclear why this sentence refers to historical data from 1989 to 1991, as it uses data from Auer et al. (1996).

7. Page 14, Paragraph 3, Section 2.2.6. The second sentence of this paragraph ("The stressors are more so physical, as opposed to chemical") should be removed or revised to indicate that the degree of stress potentially caused by the Solvay waste and/or hazardous substances present has not been determined.

8. Page 16 on, Section 2.4. Applicable fish and wildlife criteria should be divided into subsections with New York State laws and regulations, federal laws and regulations, state and federal guidance, and other applicable guidance as a step towards identifying state and federal applicable or relevant and appropriate requirements (ARARs). Regulations, as well as selected screening value sources, should be discussed in this section.

9. Pages 16 to 18, Section 2.4. The document should not limit the choice of published information regarding the selection of guidance values or criteria for the protection of fish and wildlife. In addition to those documents listed in the section other references may also be useful. For example, Eisler (2000), MacDonald et al. (2000), and values provided in the

NOAA Screening Quick Reference Tables are useful for selecting appropriate sediment guidelines. Also, it would be useful to separate criteria documents from guidance documents. Water quality standards (criteria) are ARARs and must be met (unless a waiver is issued) while guidance values for sediments are used for screening purposes and further evaluation may be used to select values other than those found in the literature. In general, conservative criteria values need to be used throughout the risk assessment process and generally the most conservative guidance values should be used for initial screening.

10. Page 18, Paragraph 2, Sentence 1, Section 2.4. The citation (USEPA, 2001) for the supplemental guidance to Risk Assessment Guidance for Superfund (RAGS) should be listed.

11. Page 20, Section 3.1.2. The text in this section summarizes preliminary results for soils, groundwater, surface water, seeps, and sediment. Figure 3-2 shows the locations of the soil, surface water, seeps, and sediment samples. This figure should be revised (or a figure added) to show the locations of the groundwater samples.

12. Pages 20 and 21, Section 3.1.2. The text in this section is based on Section 3.4.3 of the November 2006 RI/FS work plan. However, in some places, "elevated" concentrations was replaced with "detected" concentrations (e.g., first sentence of each of the first three paragraphs under "Ground Water" on page 20; the first sentence under "Surface Water" on page 21 which now states that "detected concentrations of CPOIs were detected in surface water on Site"; and the first sentence under "Sediment" and "Seep Sediment" on page 22). The text of the PFD should be revised to be consistent with the work plan.

13. Pages 22 and 23, Section 3.1.3. The text in this section is based on Section 3.4.4 of the November 2006 RI/FS work plan. However, the work plan also includes a paragraph on "erosion of wastebed material into adjacent water bodies" that was not included as a pathway in Section 3.1.3 of the PFD. This paragraph should be included in the PFD.

14. Page 23, Section 3.1.4. Even though the wetlands are to be assessed as part of a separate risk assessment it would be useful to expand on the potential impacts from this site on those wetlands. Understanding the impact of this site on those wetlands may allow a better evaluation of source control of the contamination entering the wetlands and the adequacy of any remediation undertaken when the wetlands are assessed.

15. Page 24, Paragraph 1, Section 3.2. It should be clarified here that the surface water and sediment data used for the screening include data from the sampled seeps (in addition to on-site ditches and the ponded area).

16. Page 24, Paragraph 3, Last Sentence, Section 3.2 (and Figure 3-2). The proposed sampling includes two surface water/sediment locations and 12 surface soil locations (4 each around SS-02, SS-19, and SS-20) to further define potential hot-spot areas. Following analysis of these data, the need for supplemental data should be assessed as part of ERAGS Steps 4 (Study Design and Data Quality Objectives) and 5 (Field Verification of Sampling Design) and the resulting BERA Work Plan and Sampling and Analysis Plan.

17. Page 25, Paragraph 3, Bullets, Section 3.3.1; Paragraph 4, Bullets, Section 3.3.2; and Paragraph 6, Bullets, Section 3.3.3. The last bullet in each section identifies the number of constituents that have no available screening values. Of this number, the numbers of non-detected and detected constituents without screening values should be listed so that all constituents can be categorized.

18. Page 25, Paragraph 5, Sentence 3, Section 3.3.2. A hardness value of 100 mg/L was used based upon USEPA (2006), which is a conservative value for screening purposes. However, the hardness value in Onondaga Lake in 2003 and 2004 was about 420 mg/L based on the results of Onondaga County's Ambient Monitoring Program (AMP) (http://www.lake.onondaga.ny.us/ol33.htm). Site-specific hardness measurements should be included in future sampling to calculate site-specific criteria in the BERA.

19. Page 26, Paragraph 3, Bullet 3, Section 3.4.1. Piscivorous fish found in Onondaga Lake near Wastebeds 1 through 8 are probably better characterized as trophic level 3 than trophic level 4, which is used for receptors such as the river otter and bald eagle.

20. Page 27, Paragraph 3, Bullet 1, Section 3.4.1. It should be noted that the 90th percentile values were used in the US Department of Energy (USDOE, 1998a) soil-to-plant uptake factors.

21. Page 27, Paragraph 3, Bullet 3, Section 3.4.1. A sentence should be added describing whether any adjustments were applied to the Travis and Arms (1988) values. If this reference was used as specified in USEPA (1999) (i.e., one regression equation for all organics), it does not need to be referenced separately.

22. Page 28, Paragraph 1, Bullet 2, and Paragraph 4, Bullet 1, Section 3.4.1. The US Army Corps of Engineers (USACE) database has been updated since 2000. The current online version should be used and referenced in this PFD (see http://el.erdc.usace.army.mil/bsaf/bsaf.html).

23. Page 28, Paragraph 4, Bullet 4, Section 3.4.1. The USGS (1999) reference does not appear to support the development of BSAFs. Although the paper compared concentrations in bed sediment and fish tissue for evidence of bioaccumulation to determine if concentrations in one medium were a good predictor of concentrations in the other medium, it did not calculate BSAFs. The author did examine correlations between fish and sediment concentrations, which were significant at α=0.05 for only cobalt, lead, and nickel using the original data, and aluminum, iron, and lead using organic carbon and lipid-normalized data (n = 8). Given the uncertainty associated with these data, they should not be used to derive inorganic BSAFs.

24. Page 28, Paragraph 5, Section 3.4.1 (continued on page 29). This paragraph should be separated into terrestrial invertebrates and small mammals, as there are separate references for each group.

25. Page 29, Paragraph 3, Sentence 4, Section 3.4.2. The source of the conversion factors used for dry and wet weight conversions should be provided.

26. Page 30, Section 3.4.3, Paragraph titled Mink. While it is believed that the mink is relatively sensitive to PCBs most mammals have not been tested. The statement "mink is believed to be one of the most sensitive mammals to chemical exposures, particularly PCBs" should be revised to something less definitive. For example "mink is a relatively sensitive mammal when compared to the small number of mammals that have been adequately tested."

27. Page 30, Paragraph 2, Sentence 1, Section 3.4.3. The full foraging range of the great blue heron, in addition to the maximum foraging range, should be presented. It should also be clarified that fish are the preferred prey of the great blue heron.

28. Page 30, Paragraph 3, Sentence 1, Section 3.4.3. The mink should not be characterized as small based on the size of other potential receptors (e.g., mouse, shrew).

29. Page 30, Paragraph 3, Sentence 4, Section 3.4.3. Mink are opportunistic feeders and their preferred food depends on their habitat and prey availability. Muskrats may be the preferred prey in marsh habitats in summer, but other prey, such as fish, may be preferred under other conditions.

30. Page 30, Paragraph 5, Sentence 1, Section 3.4.3. Although the red-tailed hawk is one of the most common raptors in North America, it would be more accurate to say that it is the most common North American hawk.

31. Page 30, Paragraph 5, Sentence 5, Section 3.4.3. USEPA (1993) describes the clutch of a red-tailed hawk as containing one to three eggs, rather than two to four eggs cited here. It is acknowledged that clutches may contain from one to five eggs.

32. Page 31, Paragraph 1, Sentence 2, Section 3.4.3. Although the short-tailed shrew consume a large amount of food relative to their body weight, it is not almost equivalent to their body weight. Also, the small home range of the short-tailed shrew should be discussed.

33. Page 31, Paragraph 3, Sentence 1, Section 3.4.4. References other than Sample et al. (1996) that were used to identify TRVs should be listed here, as was done for other reference sources.

34. Page 32, Paragraph 1, Bullet 2, Section 3.6 (also see Section 3.6.4). The assumption of minimum weight and maximum ingestion rate was not (but should be) used for all receptors. For the short-tailed shrew, the mean body weight was used and the ingestion rate selected was measured at 25°C, whereas shrews consume approximately 40 percent more food in winter than summer (Randolph, 1973).

35. Page 32, Paragraph 5, Last Sentence, Section 3.6.2. Please verify the source of this quote is USEPA's "Criteria and Related Information for Toxic Pollutants."

36. Page 32, Last Paragraph, First Sentence, Section 3.6.3. Add "primarily" after "based."

37. Page 34 on, Section 4.1. A list of contaminants eliminated based on each rationale should be provided in the text or in a separate table.

38. Page 34, Section 4.1. The text should clearly state that constituents for which there are no toxicity values were not retained as COCs. A discussion should be added to comply with ERAGS (USEPA, 1997, page 3-4) which states "*Note that a contaminant should not be eliminated from the list of contaminants to be investigated only because toxicity information is lacking; instead, limited or missing toxicity information must be addressed using best professional judgment and discussed as an uncertainty.*"

39. Page 34, Paragraph 6, Last Sentence, Section 4.1. The text should also explain that even if a HQ was greater than 1, it was eliminated if it was based on a non-detected contaminant (e.g., Aroclors 1016, 1221, 1232, and 1242).

40. Page 35, Paragraph 1, Section 4.1.1. This section states that 16 of the initial COPECs were retained for surface water, and 19 of the initial aquatic COPECs were retained as wildlife COCs. However, Table 4-4 includes 18 COCs for surface water and 18 for the aquatic pathway. Please reconcile these numbers. The number of initial terrestrial COPECs should also be provided.

41. Page 36, Top Paragraph, Last Sentence, Section 4.2.1. Please replace "proper" with "certain."

42. Page 37, Paragraph 2, Section 4.2.3. The text on PCBs should be expanded to discuss Aroclors and their biomagnification potential.

43. Page 37, Paragraph 4, Sentence 2, Section 4.2.3. Rabbits and shrews should not be discussed together, as rabbits are herbivores and shrews are insectivores.

44. Page 38, Section 4.4.2. While it is accurate that the relatively small size of the aquatic habitat may not support upper trophic level receptors, it should also be noted that there are other sub-sites, including the Lake which are likely pathways for contamination and it is the cumulative exposure which may pose a risk.

45. Page 38, Paragraph 4, Section 4.4.3. It is stated that the groundwater pathway is "incomplete for most of the site." The portion of the site (e.g., lakeshore area) for which it may be a complete pathway should be stated.

46. Page 38, Paragraph 5, Section 4.4.3. The last sentence should be revised to refer to the RIs for Onondaga Lake and Ninemile Creek completed by NYSDEC (if that is what is meant).

47. Page 39, Paragraph 1, Bullet 2, Section 4.5. Please clarify to what soil organisms this assessment endpoint refers (e.g., soil invertebrates, etc.).

48. Page 39, Paragraph 1, Bullets 6 and 7, Section 4.5. Invertebrate and fish communities should be addressed as separate endpoints. The sixth bullet should address "Adverse effects to the

Site aquatic invertebrate community via direct contact with Site sediments and surface waters" and the seventh bullet should delete "surface water invertebrate and" to address only fish communities.

49. Page 40, Paragraph 1, Section 4.6.1. Please explain why plants and soil invertebrates were combined into one assessment endpoint.

50. Page 40, Paragraph 1, Bullet 3, Section 4.6.1. This measurement endpoint should also include observations of stress.

51. Page 40, Paragraphs 2 to 5, Sections 4.6.2 to 4.6.5. Insectivorous birds, insectivorous mammals, carnivorous mammals, and predatory birds may also be exposed to COCs via ingestion of site surface water. The risk questions and measurement endpoints (number 2 in most cases) should be revised to reflect this.

52. Page 40, Paragraph 3, Sections 4.6.3. This section should be revised to focus on insectivorous mammals, rather than small terrestrial mammals.

53. Page 40, Paragraph 5, Section 4.6.5. The use of field observations as a measurement endpoint for any of the assessment endpoints which have been selected is likely inappropriate unless there is a sufficient effort to make the observations. While keeping track of observations of wildlife is worth doing it likely misses most of the species which may visit the site unless done by a qualified biologist, on numerous occasions, day and night over a full year. For example the birds utilizing the site may vary from season to season and some may only be out at night. Also, the presence of some species of weasel may be missed, even during an extended observation period. If this measurement remains in the evaluation it should be based on an extensive observation program or not be used in any weight of evidence approach and the lack of observation should not be equated to lack of presence. If only limited data are available, this endpoint can only be used as a secondary line of evidence in the BERA. If observations are not available, then the endpoint should not be added.

54. Page 41, Paragraph 1, Section 4.6.6. As noted in the assessment endpoint comments, the benthic invertebrate and fish communities should have separate endpoints. A field observation endpoint should be added for these receptors. If only limited field observation data are available, the field observation endpoint can only be used as a secondary line of evidence in the BERA. If observations are not available, then the endpoint should not be added. Additional surveys/sampling can be added to the BERA Work Plan. Also, bank swallows have been observed at the site. Please include this fauna in Section 2.5.

55. Page 41, Paragraphs 2 and 3, Sections 4.6.7 and 4.6.8. The risk questions for these sections should be revised to include various contaminated site media. For example, rather than "Does ingestion of accumulated COCs in fish of Site surface waters impair the health of piscivorous bird populations foraging from the Site?," the question should read "Does exposure to COCs in Site media (fish, surface water, and sediment) impair the health of piscivorous bird populations foraging on Site?" In addition, "birds" should replace "mammals" in the risk questions for piscivorous birds (Section 4.6.7).

56. Page 41, Paragraphs 2 and 3, Sections 4.6.7 and 4.6.8. A field observation endpoint should be added for piscivorous birds and mammals. If only limited field observation data are available, the field observation endpoint can only be used as a secondary line of evidence in the BERA. If observations are not available, then the endpoint should not be added. Also, please clarify what is meant by "east swale" in Section 4.6.8 (e.g., Ditch A from the lake to the I690 overpass?). Are there sufficient data in this reach to quantify risk?

57. Page 41, Paragraph 4, Section 4.7. See comment below on Figure 3-1.

58. Page 42, Paragraph 1, Section 5. The text should state that the BERA will be based on all relevant sample data from the PSA, FRI, and ongoing RI.

59. Page 42, Paragraph 4, Section 5. See comments above on Section 4.1.1.

60. References. The reference "USEPA. 1992. Criteria and Related Information for Toxic Pollutants. Region 4. Water Management Division" appears to be out of print. Please provide a copy of the tables used for the bioaccumulation factors (BAFs) and biota-sediment accumulation factors (BSAFs).

Comments on Tables

61. Table 2-3. Other fish species that have been collected in Onondaga Lake include Atlantic salmon (*Salmo salar*), trout perch (*Percopsus omiscomaycus*), grass pickerel (*Esox americanus*), chain pickerel (*Esox niger*), bluntnose minnow (*Pimphales notatus*), fallfish (*Semotilus corporalis*), and northern hog sucker (*Hypentelium nigricans*) (Tango and Ringler, 1996).

62. Table 2-4. The red-spotted newt (*Notophthalmus viridescans*), northern dusky (*Desmognathus fuscus*), Alleghany dusky (*Desmognathus ochrophaeus*), northern slimy (*Plethodon glutinosus*), and two-lined skink (*Eurycea bislineata*) may also be found in terrestrial areas on site. The New York State Amphibian and Reptile Atlas Project (1990-1999) should be used to update this table (http://www.dec.state.ny.us/website/dfwmr/wildlife/herp/index.html). Based on this reference, the five-lined skink and the northern coal skink have not been recorded in Onondaga County. The gray squirrel (*Sciurus carolinensis*), Virginia opposum (*Didelphis virginiana*), masked shrew (*Sorex cinereus*), hairy-tailed mole (*Parascalops breweri*), Indiana brown bat (*Myotis sodalis*), Norway rat (*Rattus norvegicus*), and house mouse (*Mus musculus*) should also be added to this table.

63. Table 2-5. Block 3977A appears to be outside of the area of interest and does not need to be included in the breeding bird species list for the site.

64. Table 2-6. The federal endangered species act (ESA), 16 USC§ 1531 1531 et seq; 50 CFR Parts 17, Subpart I and 50 CFR Part 402 should also be listed in the miscellaneous section.

65. Table 3-1. The depths stated in the footnotes (up to 2 ft for soil and 1 ft for sediments) do not agree with the depths stated on page 25 (up to 1 ft for soil and 0.5 ft for sediments). Please revise or clarify.

66. Tables 3-2, 3-3, and 3-4. A row for total polychlorinated biphenyls (PCBs) should be added to each table so that screening values based on total concentrations can be included (e.g., NYSDEC Part 375 restricted-use soil cleanup objective for protection of ecological resources of 1 mg/kg for total PCBs). This would also clarify Tables 3-3 and 3-4, which already list some values for total PCBs under some/all Aroclors (as per Note 1).

67. Table 3-2. Mercury values of 30 mg/kg for earthworm toxicity and 0.1 mg/kg for microbial toxicity are provided in Efroymson et al. (1997) and should be added to the table.

68. Table 3-2. Please add the NYSDEC soil cleanup objective values of 41 mg/kg for trivalent chromium and 0.18 mg/kg for total mercury to this table.

69. Table 3-5. The source of each individual uptake factor should be provided to facilitate verification. In the current presentation, there are 14 potential references for each value. This table can be split into two or more tables, if needed (e.g., BCF, BAF, and BSAF).

70. Table 3-5. An explanation should be provided in the text describing the methodology for selection of values when more than one is available, including a discussion explaining how values were selected. For example, it is not stated if there are more conservative values in the literature. For example, it appears that 90th percentile of all data listed in Table 2 of USDOE 1998b was used for most metals, but was not used for arsenic, chromium, and PCBs.

71. Table 3-5. The most current BSAF database maintained by the USACE can be found at http://el.erdc.usace.army.mil/bsaf/bsaf.html. Values provided in Table 3-5 based upon this source should correspond to the values provided in the current database.

72. Table 3-6. Mean ranges should be presented for territory sizes when available, using the most applicable habitat or geographic range. For example, based on USEPA (1993) this would be 0.03 to 0.22 ha (New York/old field) for the short-tailed shrew, 60 to 1,770 ha (all locations) for the red-tailed hawk, 0.6 to 8 km (all locations) for the great blue heron, and 1.85 to 2.63 km (Sweden/stream) for the mink.

73. Table 3-6. Although the typical dietary composition of the short-tailed shrew is correct based on Hamilton (1941), it would be acceptable to use an invertebrate consumption rate of 100%, as it provides a conservative estimate of risk and simplifies the calculations needed to estimate short-tailed shrew contaminant exposure via prey.

74. Table 3-7. The methodology for selection of values in this table should be provided to clarify why values in certain references were selected over values in other references, including a discussion explaining how values were selected. For example, it is not stated if there are

more conservative values in the literature or for which species the literature values were derived. A copy of Parsons (2000) should be provided to NYSDEC.

It is generally recommended to select TRVs based on species that are related as closely as possible to those used as receptors in the risk assessment. In particular, discussions must be provided for those contaminants which are bioaccumulative or are likely to be significant risk drivers.

75. Table 3-7. The TRV for benzo(a)pyrene for avian receptors is provided as 40 mg/kg-day. However, the use of 0.143 for the NOAEL is recommended based on Hough et al. (1993).

76. Table 3-7. The listed avian and mammalian TRVs for Aroclor 1221, Aroclor 1232, and the avian TRVs for Aroclors 1242 and 1268 were not found in Sample et al. (1996), as referenced. A note should be added if another Aroclor was used as a surrogate.

77. Table 3-7. The Aroclor 1242 lowest observed adverse effect level (LOAEL) for avian receptors listed in Sample et al. (1996) is 0.41 mg/kg-day based on McLane and Hughes (1980).

78. Table 3-7. The avian Aroclor 1254 LOAEL recommended for use is 0.18 mg/kg-day based on Dahlgren et al. (1972).

79. Table 3-7. The value for the mammalian NOAEL for methylmercury of 1 mg/kg-day should be revisited in light of a study by Wren et al. (1987), who observed increased mortality in mink fed 1 ppm of methylmercury for 81 days. The dosage was decreased after that time period due to excessive mortality. Wren et al. (1987) attributed the increased mortality to a combination of methylmercury exposure and cold stress, as the mink were maintained in outdoor cages. Based on these results, a NOAEL of 1.0 mg/kg-day from the Aulerich et al. (1974) study used by Sample et al. (1996) is not considered to be protective, as increased mortality occurs at lower dosages when combined with natural stresses present in field conditions. Therefore, it is recommended that an uncertainty factor of 0.1 be applied to the Wobeser et al. (1976) LOAEL of 0.025 mg/kg body weight-day to derive an NOAEL of 0.0025 mg/kg bw-day.

80. Table 3-7. The value for 2-methylnaphthalene from Sample et al. (1996) could not be found. A footnote should be added if the benzo(a)pyrene value was used.

81. Tables 4-1 and 4-3. Aluminum is retained as a COC in the soil and sediment tables, yet in the text and in Table 4-4 it was not retained.

82. Table 4-4. Iron is retained as a COC for surface soils, surface water, and sediment, yet in Tables 4-1, 4-2, and 4-3 it was deleted because it is considered an essential nutrient.

83. Table 4-4. The following constituents were retained as surface soil COCs in Table 4-1, but are not listed in Table 4-4: cyanide, endosulfan I, endrin aldehyde, endrin ketone, gamma chlordane, acenaphthene, acenaphthylene, anthracene, butyl benzyl phthalate, fluorene,

indeno (1,2,3-CD) pyrene, naphthalene, phenanthrene, and carbon disulfide. Please add these COCs to Table 4-4 or provide the rationale for not retaining them as COCs in the BERA. Even if both wildlife HQs are less than 1, these parameters should be included in this table as "Direct Contact COCs" or as potentially toxic to microorganisms, terrestrial invertebrates, or plants.

84. Table 4-4: The following constituents were retained as surface water COCs in Table 4-2, but are not listed in Table 4-4: aluminum, cyanide, 2-methylnaphthalene, 2-methylphenol, 4-methylphenol, acenaphthylene, anthracene, fluorene, naphthalene, phenanthrene, phenol, benzene, and toluene. Please add these COCs to Table 4-4 or provide the rationale for not retaining them as COCs in the BERA. Even if both wildlife HQs are less than 1, these parameters should be included in this table as "Direct Contact COCs" or as potentially toxic to aquatic organisms.

85. Table 4-4. The following constituents were retained as sediment COCs in Table 4-3, but are not listed in Table 4-4: cyanide, anthracene, indeno (1,2,3-CD) pyrene, naphthalene, phenanthrene, 2-methylnaphthalene, 4-methyl- 2-pentanone, carbon disulfide, ethylbenzene, and toluene. Please add these COCs to Table 4-4 or provide the rationale for not retaining them as COCs in the BERA. Even if both wildlife HQs are less than 1, these parameters should be included in this table as "Direct Contact COCs" or as potentially toxic to aquatic organisms.

86. Table 4-4. 4-4-DDE and butylbenzyl phthalate were selected as COPECs in Table 3-8 based on terrestrial hazard quotients above 1. 4-4-DDE was not selected as a COC in Table 4-1 based on a low detection frequency, however the text states that all constituents with HQs above 1 would be selected regardless of detection frequency. Butylbenzyl phthalate was selected as a COC in Table 4-1, although it did not have an associated toxicity value. These constituents should be added to Table 4-4, or an explanation should be provided as to why they were not selected.

87. Table 4-4. For the aquatic pathway hazard quotient (Table 3-9), carbazole, 2-hexanone, bromomethane, and styrene were retained as COCs, although they did not have any associated toxicity values. Other constituents that were selected as COPECs for which there were no associated toxicity values were not retained. Please clarify.

Comments on Figures

88. Figure 2-1. The site limits should be redrawn at the southeastern end to include Ditch A (where data have been collected) between I-690 and the lake.

89. Figure 2-5. An alternative color should be used for the federal (national wetlands inventory) wetlands, so they could be more clearly distinguished.

90. Figure 3-1. Assessment endpoints should be removed from the conceptual model, as they may create confusion due to combining assessment endpoints in the figure. The conceptual model figure should also clearly distinguish aquatic and terrestrial receptors, but note media

that apply to both. Examples of conceptual model figures can be found on pages A-5, A-11, and A-17 of USEPA (1997).

Editorial Comments

91. Page 8, Paragraph 4, Sentence 3, Section 2.2.3. "Form" should be replaced with "from."

92. Page 9, Paragraph 3, Sentence 3, Section 2.2.3. The scientific name of American elm was previously provided in the description of successional northern hardwoods.

93. Page 14, Paragraph 2, Sentence 2, Section 2.2.6. Add "to" after "opposed."

94. Page 48. The 1995 Region 3 BTAG table is currently being updated and revised benchmarks for freshwater and freshwater sediments have been posted on the website provided. Therefore, these references should cite the July 2006 tables.

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Please submit a response to comments which includes detailed text and updated tables where applicable, by May 25, 2007. If you have any question while developing your response, please call me at 518-402-9767.

Sincerely,

Susan Edwards

Susan Edwards
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