

**Response to NDEP Comments Dated August 5, 2008 on the Sampling and Analysis Plan
for the Western Hook-Development Sub-Area dated July 2008**

1. General comment, it is noted that there are a number of grammatical errors in the document. NDEP will not list these herein. Examples are provided below. **No response is necessary for these comments, however, these comments should be considered in the development of future SAPs.**

Response: BRC will review this and all future deliverables associated with the project in accordance with SOP-0.

- a. Page 1-2, first full paragraph. The second sentence needs to be reworded.

Response: The subject sentence has been reworded for clarity in text, on page 1-2.

- b. Page 1-2, first sentence, second full paragraph states, "Sampling performed for this purpose as described in this SAP relies on the statistical methodologies presented in the Statistical Methodology Report (NewFields 2006)." It is not clear what is meant by the use of the word "purpose". It is clearly not in reference to the "purpose" discussed in the previous sentence, and therefore needs to be elucidated so that the intent of the sentence is clear.

Response: The reference to a specific purpose for the sampling was considered unnecessary in this specific section of the text, and has been deleted from the subject sentence, on page 1-2.

- c. Page 2-10, last sentence states, "Of the radionuclides that are the standard focus during this investigation (radium-226, radium-228, thorium-228, thorium-230, thorium-232, uranium-233/234, uranium-235/236, and uranium-238) sixty were in excess of the MSSL; of these, only uranium-234 and uranium-238 were detected at reported activity in excess of the maximum shallow soil background level (same sample)." The word "samples" should be added after the word "sixty" to make the sentence clear.

Response: The subject sentence has been reworded for clarity in the text, on page 2-13. As a point of clarification, it was not a number of sixty "samples", but rather sixty "detections."

2. General comment, the document is still incompletely referenced. For example, the citations for all of the data validation summary reports appear to be missing. These are listed in the reference section, however, the text does not contain the citation. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: Citations to the DVSRs have been added within the body of the report.

3. General comment, the document appears to suffer from a general lack of quality assurance/quality control. Numerous examples are provided below. BRC must check future Deliverables in a manner consistent with SOP-0. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *As noted above, BRC will review this and all future deliverables associated with the project in accordance with SOP-0.*

4. Section 1.0, page 1-2, BRC indicates that “Baseline remediation will occur prior to implementing the procedures described in this SAP.”, however, none is proposed in the SAP. As discussed with BRC on July 23, 2008 it is understood that clearing of gross contamination (e.g.: burn pits, abandoned vehicles, etc.) will occur, however, no remediation will occur. This statement is inconsistently repeated throughout the document and must be addressed in future Deliverables. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *The text has been rewritten in this section to reflect this distinction, and references to “baseline remediation” have been removed from or revised in this and other sections of the document.*

5. Section 1.1, page 1-3, BRC states that “if needed, the NFAD for the Site will contain a deed restriction precluding potable use of groundwater beneath the Site.” This statement is not consistent with the description on page 2-2 which states (emphasis added) “BRC will place institutional controls in the form of a deed restriction to prevent future users from utilizing groundwater beneath the Site, the use of private wells...will not occur in the post-development phase.” **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *The text has been rewritten in this section to reflect BRC’s plan to apply institutional controls to preclude use of groundwater (i.e., the clause “if needed” has been removed from the referenced text in Section 1.1).*

6. Section 2.1, page 2-1, third paragraph. Please provide more detail regarding the current receptors as well as future off-site receptors. Please include a reference to the specific section in the Closure Plan, or discuss in this SAP. Also, the issue of off-site ecological receptors should be addressed via reference to the Closure Plan. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *The text on page 2-1 has been rewritten to include a parenthetical listing of the current receptors (i.e., trespassers/visitors, occasional on-site workers, and off-site residents) and a reference to Sections 9 and 10 of the Closure Plan for a more complete discussion of current and future receptors.*

7. Section 2.1, page 2-2, 2nd paragraph, 2nd last sentence, the “other party” referred to should be identified and a reference should be provided. It is the NDEP’s understanding that the party being referred to herein is actually Tronox and Ampac. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *The text has been rewritten to identify the actual party in question (i.e., American Pacific Corporation [AMPAC]).*

8. Section 2.4, pages 2-4 and 2-5, the NDEP has the following comments:
- Regarding the bulleted items on these pages, it is necessary to indicate the status of each item (e.g.: was it approved by the NDEP?) as well as the date of the NDEP response.

Response: *The text has been rewritten to indicate the status of each item in accordance with this comment.*

- Regarding the Table on page 2-5 (and similar tables throughout the document), it would be helpful to also include the USEPA Soil Screening Level (SSL) (DAF 1) on this table as well. Alternately, a section could be added to the Sampling and Analysis Plan (SAP) to discuss the soil-to-groundwater leaching pathway.

Response: *The discussions on current chemical distributions in soil in Section 2.8 have been expanded to discuss exceedances of soil screening levels (DAF 1).*

- Page 2-5, table. A figure detailing the location of these ponds would be helpful in understanding the implications of the historical samples in the context of the CSM.

Response: *Figure 2 and figures in Appendix C have been revised to include labels identifying each of the ponds.*

- No response is necessary for these comments, however, these comments should be considered in the development of future SAPs.**
9. Section 2.5, page 2-6, second bullet. If the soils in PLE-09 and PLD-10 contain asbestos fibers, why weren’t they listed as such in the summary table on pages 2-5/2-6? Also, the paragraph under the second bullet needs to identify what “additional ponds” refers to with respect to the soil excavation. Identification and reference to a figure are needed. Also, some context is needed for “asbestos at levels greater than 1%” – certainly the soil is not 1% asbestos. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *The summary table referenced above has been expanded to include asbestos for the two ponds in question, the specific “additional ponds” have been identified in Section 2.5, and a reference to Figure 2 depicting the specific pond locations has been added.*

Many samples collected in the early phases of the site characterization were subjected to Phase Contrast Microscopy (PCM) analysis for which asbestos results were reported as a percentage of the total sample. The current analytical program for the Site has replaced this analysis with an elutriator/Transmission Electron Microscopy (TEM) method, the results of which are reported as protocol structures and structures per gram PM10, which are more accurately incorporated into risk assessment for the site. Therefore, concentrations for asbestos are not presented in the summary tables.

10. Section 2.6, page 2-7, Footnote under table. It is the understanding of the NDEP that confirmation samples were not collected after the stated “overexcavation”. **Please advise if this is incorrect, otherwise no response is necessary for this comment.**

Response: *NDEP’s understanding as stated in this comment is generally correct. This footnote has been rewritten for clarity.*

11. Section 2.8, pages 2-9 through 2-12, the NDEP has the following comments:

- a. General comment, there are several areas where analytes exceeded their MSSLS and these locations are identified in Figures C1-C12 in Appendix C. It would be useful to summarize where these locations are in the text (e.g., northeastern portion of the site, southwestern portion of the site, etc). In addition, the figures in Appendix C would be more useful if the MSSL and SSL were placed on the figure. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *The text in section 2.8 has been expanded to include brief descriptions of the general areas of the site from which the samples with these exceedances were collected.*

- b. Discussion of the soil-to-groundwater leaching pathway is inconsistent throughout this section. Discussion should be included for each compound which is presented regarding the soil-to-groundwater leaching pathway or as discussed above a separate Section could be added to the SAP. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *As noted above in response to comment #8b, the text in section 2.8 has been expanded to include listing of detections greater than the SSLs for protection of groundwater, in a manner consistent with the MSSL exceedance listings.*

- c. Page 2-9, third sentence states, “Individual chemicals analyzed for and the analytical method used in each of the investigations are included in Appendix B.” Analytical methods are not included in Appendix B. Please revise this sentence. **No response is**

necessary for this comment, however, this comment should be considered in the development of future SAPs.

***Response:** Although the analytical methods are not included in the hardcopy tables in Appendix B, they are included in the electronic database included on the CD in Appendix B.*

- d. Page 2-9 and Appendix C, it is the understanding of the NDEP that the figures in Appendix C are from post-IRM soil samples. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

***Response:** As stated in the first paragraph of Section 2.8 “Figures showing the distribution of several chemicals for post-IRM soil samples collected at the Site are presented in Appendix C.” These figures also include samples collected prior to IRM implementation in areas outside the IRM excavation areas; a more accurate way to present the figures would be to state that they present sample results associated with assumed current Site conditions (i.e., excluding samples collected from IRM areas prior to IRM completion). The text on page 2-9 has been revised accordingly. In addition, a note has been added to the figures in Appendix C indicating the the results shown are post-IRM.*

- e. Page 2-9, fourth paragraph. In the first sentence, it should be specified how many samples were surface samples and how many were subsurface samples. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

***Response:** The text in Section 2.8 has been revised to include tallies of surface and subsurface samples, in accordance with this comment.*

- f. Page 2-9, Dioxins/Furans section, first sentence states, “Ten soil samples reflecting current conditions were analyzed for dioxins and furans, with 158 individual congener analyses reported.” There are only nine soil samples represented on Figure C-1. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

***Response:** As reported in the text and seen in Tables 1 and B-5, ten samples were collected in the 0 to 10 foot bgs interval. Only nine are shown in Figure C-1 because that figure presents only the results associated with the 0 to 1 foot bgs interval, as noted in the text in Section 2.8 and in the figure title block. The tenth sample was collected from seven feet bgs.*

- g. Page 2-9 and 2-10, consistent with the write-up for arsenic, the number of surface and subsurface samples for each analyte (or analyte class) should be specified. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *As noted above in response to comment #11e, the text in Section 2.8 has been revised to include tallies of surface and subsurface samples for each analyte/analyte class, in accordance with this comment.*

- h. Page 2-10, third and fourth paragraph. The number of individual analyses reported is not of particular interest – we have requested removal of this type of summary before. The number of samples is all that is important in this regard. Also, it is not clear what the number of individual analyses refers to – is this results or just analyses? Also, some further detail is needed with respect to the organochloride pesticide detections and comparison to DAF1 in Table 1. Also, please change “organochloride” to “organochlorine” in the first sentence of the paragraph. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *In response to NDEP’s comment, the following changes have been made to the text: (1) to alleviate confusion regarding the meaning of the numbers listed (a tally of all analytes run for the specific compound class in question), these tallies have been removed; (2) the discussion of organochlorine pesticides was also expanded to include a listing of analytes reported at concentrations in excess of the SSLs; and (3) the word “organochloride” has been changed to “organochlorine.”*

12. Section 2.9, page 2-12, last paragraph. For inorganic compounds, very little information is given with respect to the particular wells/samples. It would help to elaborate a bit more on this section (e.g., what wells had the highest concentrations of arsenic? Did all wells have analyte concentrations that were above their respective MCLs?). **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *Section 2.9 has been expanded to include more description of the inorganic compound detections, in accordance with this comment.*

13. Section 3.1.1, page 3-2, the second sentence is redundant. Third sentence is confusing (“...previous former...”), and it’s not clear what this means in terms of “Current land use”. A reference back to the definition of “current” and “future” would be helpful. There is a stormwater ditch on the site that should be described as part of the Problem Statement. The ditch through which the wastes were discharged should also be described here. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *The text on page 3-2 that is the subject of this comment has been revised for clarification and in accordance with this comment, including a reference to the effluent conveyance ditches and stormwater channel.*

14. Section 3.3, page 3-5, general comment, it is not clear where data gaps are identified. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: The content of Section 3 in the SAP is the result of numerous rounds of revisions including substantial interaction with NDEP and NDEP consultants. The version of Section 3 in this SAP was provided by NDEP on June 10, 2008 to BRC for inclusion in the Mohawk and subsequent SAPs. Based on this, BRC is reluctant to incorporate revisions that might not meet with the NDEP project team approval. However, reference to Section 1, which identifies general data gaps for the site, has been provided on page 3-6.

15. Section 3.4.3, page 3-8, sectioning. The Temporal Boundaries section is followed by sections that have underline headings that have nothing to do with Temporal Boundaries. The organization should be improved to better separate these different sections. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: As noted in response to comment #14 above, the version of Section 3 in this SAP was provided by NDEP on June 10, 2008 to BRC for inclusion in the Mohawk and subsequent SAPs. Based on this, BRC is reluctant to incorporate revisions that might not meet with the NDEP project team approval. Therefore, no revisions have been made to the text in response to this comment. That said, BRC does not necessarily agree that the headings in this section are unrelated to Temporal Boundaries, as they include discussions related to the project timeline and/or various periods of site usage.

16. Section 3.4.3, page 3-8, Subsurface soil and groundwater section. Page 1-3 specifically states that this SAP will not address groundwater issues other than assessing indirect effects via soil vapor flux measurements. However, on page 3-8 (subsurface soil and groundwater section) it states that groundwater data will be collected and used to support migration to groundwater calculations and other modeling tools. Please clarify on page 1-3 or 3-8 (or both). **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: A careful rereading of the Section 3.4.3 text reveals no proposed groundwater sampling, only the collection of subsurface soil data “to support the evaluation of potential impacts to groundwater.” and “Any indirect impacts from underlying groundwater will be addressed via the proposed surface flux measurements.” Therefore, no changes to this section were made in response to this comment.

17. Section 3.4.5, page 3-9, the scale of decision making for surface and soil vapor flux appears to be missing and should be discussed in future Deliverables. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: As noted in response to comment #14 above, the version of Section 3 in this SAP was provided by NDEP on June 10, 2008 to BRC for inclusion in the Mohawk and subsequent SAPs. Based on this, BRC is reluctant to incorporate revisions that might not meet with the NDEP project team approval. Therefore, no revisions have been made to the text in response to this comment.

18. Section 4.1, pages 4-1 through 4-4, the NDEP has the following comments:

- a. Page 4-2, please note that physical parameter samples should not be collected in the capillary fringe, per previous NDEP comments. If BRC concurs, **no response is necessary, however, this issue should be addressed in the implementation of the SAP.**

Response: BRC agrees. The text has been revised on page 4-3 to specify that the physical parameter samples will be collected from within unsaturated soils in intervals above the capillary fringe.

- b. Section 4.1, page 4-4, second paragraph. The total number of soil samples does not add up to 260. If there are duplicate samples, this should be specified. Otherwise, the total number of samples should be 297 samples. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: Clarification has been added in a footnote on page 4-4 that explains that in some cases a soil sample may be considered both a fill sample and a surface sample (as indicated in Table 4). Therefore, the sum of the number of samples indicated for each does not necessarily equal the total number of samples collected.

19. Section 4.4, page 4-6, last paragraph, this sentence needs to be reworded. Reference is to future SAPs with fewer than 6 sampling locations, but it is not clear why this cut-off is used. The next part of the sentence is missing the proposed number of biased samples. The next sentence also needs to be reworded. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: Based on recent discussions with NDEP there will be at least one flux chamber sample collected from each 3-acre grid within a sub-area. None of the sub-areas have less than 20 3-acre grids; therefore, this paragraph has been removed from the text. Reference to the collection of flux chamber samples from each 3-acre grid cell has been added to page 4-7.

20. Section 6.0, page 6, data validation is mentioned, but is not described in a separate section of this SAP. BRC should add language to describe the data validation process or reference the appropriate document. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *In the first paragraph of Section 6, the text of the SAP states that “BRC will subject the data to validation per procedures agreed to previously with the NDEP and consistent with the BRC QAPP (BRC and ERM 2008) and SOP-40.” It is BRC’s opinion that this sentence clearly identifies the appropriate documents for the procedures to be followed for data review. The text has been revised to include a citation for SOP-40.*

21. Figure 9, the NDEP has the following comments:

- a. Flux samples should be completed within each 3 acre grid, per NDEP’s comments provided previously (on the Mohawk Sub-Area SAP). In addition, BRC should consider including flux at some of the judgmental sampling locations (in lieu of the random samples). **If BRC concurs, no response is necessary, however, a revised Figure 9 should be provided to the NDEP as an errata.**

Response: *The text on page 4-7 and associated tables and figures have been modified to include flux sampling within each grid cell.*

- b. A stormwater channel on the eastern portion of the Site originating in cell BJ1 continuing east to cell BJ3; north to cell BN3; discharges to the ground surface in the vicinity of cell BN3. Historically, and to a lesser extent currently, this stormwater channel has discharged contaminated groundwater to the ground surface. **No response is necessary for this comment.**

Response: *See comment responses below for identification of revisions made to the SAP to more fully address this feature.*

- c. The SAP does not address this source area sufficiently. All source areas must be thoroughly discussed in future SAPs. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: *The text in Sections 2.1 and 3.1.1 have been revised to include a more complete discussion of this potential source area, consistent in level of detail with other relevant site features.*

- d. Biased samples should be located in the cells in which the stormwater channel discharges to the ground surface. **If BRC concurs, no response is necessary, however, a revised Figure 9 should be provided to the NDEP as an errata.**

Response: *The text (Section 4.1), tables and figures have been revised to include the addition of biased samples in the immediate vicinity of the stormwater channel discharge. Specifically, biased samples WHC1-P14 and WHC1-P15 have been added to the western unlined portion of this stormwater channel, and ditch samples WHC1-D27, WHC1-D28, and WHC1-D29 address the eastern unlined portion (see Figure 9).*

- e. In future SAPs, BRC should clearly identify (perhaps in a Table) the number of samples which are taken from each land use (e.g.: berms, former ponds, and unused land). **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: The text on page 4-2 has been revised to include a table summarizing the land use-specific sample breakdown.

22. Table 1, it is requested that BRC include the mean, median and standard deviation on future versions of this table. **No response is necessary for this comment, however, this comment should be considered in the development of future SAPs.**

Response: Table 1 has been revised to include these additional statistical parameters, in accordance with this comment.