ndep
NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
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STATE OF NEVADA
Department of Conservation & Natural Resources
DIVISION OF ENVIRONMENTAL PROTECTION

Jim Gibbons, Governor
Allen Biaggi, Director
Leo M. Drozdoff, P.E., Administrator

January 8, 2009

Mr. Mark Paris
Basic Remediation Company (BRC)
875 West Warm Springs
Henderson, NV 89011

Re.: Nevada Division of Environmental Protection Response to:
Data Review and Human Health Risk Assessment for the Utility Corridor Sub-Area
dated December 2008 (received December 22, 2008)

NDEP Facility ID# H-000688

Dear Mr. Paris:

The NDEP has received and reviewed BRC's above-identified report and affirms that No Further Action (NFA) is required at this time with the following conditions:

1. BRC retains the responsibility to address any environmental impacts to groundwater beneath the property referred to as the Utility Corridor Sub-Area. As such, additional investigation may be necessary on this property as it relates to BRC's responsibilities. BRC must be granted access to the site for activities such as well or soil boring installations or other investigative or remedial efforts.
2. The site soils beneath 10' below ground surface have not been evaluated to date. The property owner should note that these soils should not be disturbed without additional investigation or evaluation.
3. To limit liability, the property owner should ensure that activities at the property do not exacerbate existing, sub-surface, environmental conditions.
4. The site use is suitable for purposes of commercial or industrial use.
5. This NFA determination excludes the area of the Site that is currently inaccessible as described on page 4-2 of the report. It is expected that the inaccessible area of the Site will be addressed at a later date.
6. A revised report must be submitted to address the comments contained in Attachment A. These comments are intended to clarify the Administrative Record and should not materially affect the conclusions of the report.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2850 x247 or brakvica@ndep.nv.gov.

Sincerely,

Brian A. Rakvica, P.E.
Supervisor, Special Projects Branch
Bureau of Corrective Actions

BAR:s

cc: Jim Najima, NDEP, BCA, Carson City
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Attachment A

General Comments

1. The headings for each table in this document should be reworded. Currently the headings indicate this document is still a technical memorandum.
2. The structure of BRC's TRECO and Borrow Pit risk assessment reports has been followed to a large extent, but the content of some of the sections does not match. This is partly because those previous risk assessment reports were prepared before the *Closure Plan*, and this Utility Corridor risk assessment report refers to the *Closure Plan* for some content and material. Nevertheless, some improvements can be made along the lines of the TRECO and Borrow Pit reports. Examples follow:
    a. Since this is a risk assessment report, an Executive Summary is appropriate.
    b. The introduction could explain more about what is being done and why (goals, objectives, etc.).
    c. Section 2 could provide some information on historical land use to explain the contamination that exists at the site. This site is more highly contaminated than many of the sites, so some explanation of why would provide context for the actions taken at the site, and the residual contamination that remains. Some summary from the *Closure Plan* would be helpful.
    d. In Section 3, more is needed for the parameters concerning the site and the background data. Background comparisons are performed, and the site and background data need to be comparable.
    e. Section 5 should be reorganized so that the approach is described before the background comparisons are performed.
    f. Section 5.2 has logical inconsistencies, and the statistical language in Section 5.3 needs to be improved.
    g. The uncertainty analysis does not appear to cover as much ground as in the TRECO report, and hence seems to be missing some uncertainties.
    h. Specific subsections in Section 6 would also help with structure.
    i. The data adequacy section could stand more explanation of why a target of 10-5 is reasonable statistically (the issue in part is that the tests are 1-sided, so targeting a level less than the mean concentration does not make statistical sense).
    j. Section 8.0, Human Health Risk Assessment Results, would benefit from restructuring by receptor with a summary that describes the risk estimates for each receptor.
    k. Tables should be referenced that point specifically to the risk estimates.
    l. It is also suggested that data and results for asbestos (analytical sensitivity, PEFs, etc) be included in the print version of this report. This is a case of material being removed to electronic versions only – some of this material should be pulled into the main report (Appendices).
3. It is noted, however, that the calculations appear to have been performed correctly, the assumptions seem reasonable, and the risks appear to be sufficiently low that the proposed land use with current residual contamination should not pose an unacceptable risk.

Specific Comments

4. Table of Contents, Tables. Please interchange the table reference numbers for Tables 5 and 6. Table 5 is the Construction Dust Model and Table 6 is the Health Risk Assessment Exposure Factors.

5. Section 1.0, Page 1-1; last paragraph, 2nd to last sentence. Please change "...Section 7, number of samples..." to "...Section 7, the number of samples...".
6. Section 1.0, Page 1-2; first paragraph. The stated objective is to request an NFAD. This should probably be clarified considering the NFAD will apply only to the top 10 feet of soil, and to the land use scenario evaluated (industrial – although in this case the land use is a road through the middle of the site, with graded material on each side, presumably).
7. Section 2.3, Page 2-3, last paragraph. The word "potential" could be placed in front of "exposure" in both cases.
8. Section 3.3, Page 3-4; 2nd sentence and elsewhere in the document (e.g., pages 3-4 (again), 5-1, and 5-5). Please reference the "Summary of Existing Data" section correctly (i.e., Section 2.2).
9. Section 3.5, Page 3-5; last sentence. Please clarify. The only anomalous data noted in the data validation summary report (DVSR) is related to blank contamination. Also the sentence implies detects less than the sample quantitation limit (SQL) are used in the health risk assessment (HRA) and this should be clarified.
10. Section 3.6, Page 3-7; representativeness. Since background comparisons are performed, some attention needs to be paid to the representativeness of the background data.
11. Section 3.6, Page 3-7; completeness. Since background comparisons are performed, some attention needs to be paid to the completeness of the background data.
12. Section 3.6, Page 3-7; comparability. Since background comparisons are performed, some attention needs to be paid to the comparability with the background data. There are some detection limit differences that need to be addressed.
13. Section 4.0, Page 4-2; first bullet, and elsewhere. Please reference the Nevada Basic Comparison Levels (BCLs) dated December 18, 2008 in all future Deliverables.
14. Section 4.0, Page 4-2; last line. Change "constitent" to "constituent".
15. Section 4.0, Page 4-3; last 2 lines. The references to SAE-7 and SAE-22 need to be improved. Examples on the next page are reasonable.
16. Section 4.0, Page 4-4; 1st full paragraph, 2nd sentence. Change "that exceed" to "exceed".
17. Section 4.0, page 4-4, first full paragraph. Please delete references to pre-scrape data.
18. Section 4.0, Page 4-4; 2nd paragraph. A previous comment was not addressed. Please include a reference (i.e., Table 1) that points to the instances where Site exceeds USEPA SSLs and background concentrations. If the instances in the text refer to Table 1, then there are more metals that should be listed in the text that meet the identified criteria.
19. Section 4.0, Page 4-4; 2nd full paragraph, 4th sentence. Can a reference be provided for the statement regarding minimal likelihood of leakage of modern pipes?
20. Section 5.1, Page 5-2; 1st paragraph, 3rd sentence. Change "in included" to "is included".
21. Section 5.1, Page 5-2; Table and Tables at the end of the main text. Note that uranium as a metal passes background, but 3 of the 8 radionuclides fail background, including U-233/4. Is there any reason to expect radionuclide contamination at the site? Is secular equilibrium a reasonable assumption? Are there any analytical issues associated with the radionuclide analyses still? Some explanation is warranted for why uranium as a metal passes background, but some radionuclide isotopes do not.
22. Section 5.1, Page 5-3; 1st paragraph. It would be helpful if the background data were included in the probability plots.
23. Section 5.1, Page 5-3; 1st paragraph. It would be helpful if the probability plots and the box plots differentiated between detects and non-detects.

24. Section 5.2, Page 5-3. It is not clear why this section comes after the background comparisons, since this section lays out the approach to chemicals of potential concern (COPC) selection, of which background comparisons are a part.
25. Section 5.2, Page 5-3; 1st sentence. Please reword. Something like "Broad suite analyses were performed to capture all the chemicals on the SRC list.
26. Section 5.2, Page 5-3; bullet at the bottom. Background comparisons have been addressed in the previous section. Sections should be reordered.
27. Page 5-4; 1st paragraph. This paragraph does not make sense. It is not from the list of COPCs identified in the background comparisons that the frequency of detection (FOD) approach is applied. It is applied to the remaining chemicals, and possibly to some metals.
28. Section 5.2, Page 5-4; two bullets and paragraph after the 1st paragraph. The first bullet indicates that any chemical that was detected at least once is carried through as a COPC. Consequently, it seems doubtful that the next bullet applies. The second bullet starts by "including chemicals detected", a case that is already covered in the first bullet. The paragraph following then addresses the issue of 5% FOD, per USEPA guidelines, however, the 1st bullet addresses chemicals that were detected at least once, in which case, it is not clear that this paragraph is relevant either. These bullets and paragraph need to be cleaned up for decisions that were actually made, and if the second bullet and last paragraph in this section were used to select some COPCs, it would be interesting to know which ones.
29. Pages 5-5 and 5-6, Sections 5.3 and 5.3.1. These sections needs to be re-written, examples follow:
    a. The definition of an upper confidence limit (UCL) is not accurate. It is requested that BRC consider the following text: "The 95 percent UCL is the value calculated from a method with the property that, if values were calculated repeatedly via the same method for randomly drawn samples of site data, 95 percent of the resulting values would exceed the true site mean."
    b. The 2nd to last sentence of the 1st paragraph is not accurate, the purpose of the UCL is to provide a conservative estimate of the mean concentration – it does not take into account the different concentrations a person may be exposed to at the site – that is the role of the mean, not the UCL.
    c. The second paragraph should be reworded to address the section references.
    d. The last sentence of the second paragraph provides USEPA references for the UCL methods, however, neither reference includes the BCa approach that is the UCL method used for most UCLs in this risk assessment. Some explanation of the UCL methods is warranted, since they are not described elsewhere. Then separate references can be provided for each method, if necessary.
    e. 3rd paragraph – these are not strictly bubble plots. Bubble plots imply a continuous formula for the size of the bubble as a function of concentration. Color implies an intensity plot. So, these are a combination of bubble and intensity, where in both cases discretization is used. Please clarify.
    f. Page 5-6, second equation – the long fiber count is across all samples, so it is a sum across samples, and probably should be conveyed as such.
    g. More generally, the asbestos calculations could be better explained, or reference could be provided to previous documentation on how asbestos risks are calculated.
    h. The asbestos data and analytical sensitivities do not appear to be in the printed document. This raw data should be provided in the printed version.

30. Section 5.3.2, Pages 5-6 and 5-7, second sentence and in the next paragraph. It is not clear what these equations are. An electronic presentation in an EXCEL spreadsheet seems inadequate; it is not obvious what the equation is from the formulas in the spreadsheet, the formula should be written out, or referenced to another document.
31. Section 5.4, page 5-7. The toxicity values are only provided in the risk calculation excel file. For all future HRA submittals, please include this information as a primary table in the HRA.
32. Section 5.4, Page 5-7, 1st paragraph, last sentence. Reword after the comma (poor sentence formation).
33. Section 5.4, Page 5-7; last paragraph, last sentence. A previous comment was not addressed. Please provide the toxicity values used in this HRA in the form of a table for non-carcinogens, carcinogens, and radionuclides.
34. Section 6.0, Page 6-1; 1st paragraph, last sentence. Not all the assumptions are conservative. Perhaps it would be better to refer to the majority of the risks are conservative and clarify accordingly.
35. Section 6.0, Page 6-2; 3rd paragraph, 2nd to last sentence. This sentence is confusing and should be reworded (e.g.: "study specifically study", there is an extra "study").
36. Section 6.0, Page 6-2, 3rd full paragraph. Please expand on the discussion that the soil type in Las Vegas is similar to that found in Midland, Michigan, which is the basis of the bioaccessibility study conducted by Dow Chemicals for dioxins. According to Ruby et al. 2002, the total organic carbon content ranged from 0.81-3.94% at the Midland site (not much clay, generally characterized as a loamy sand). The default Foc used in the HRA was 0.6%. It would provide better support if BRC-specific data were discussed to support the dioxin bioavailability value of 30%.
37. Section 6.0, Page 6-3; 1st paragraph. Page 6-3; 1st paragraph. BRC's interpretation of the current guidance is correct in stating that a default value for dermal absorption is not provided, however NDEP does not concur that this means the pathway should not be evaluated. USEPA's guidance recognizes a shortcoming, but also indicates that this pathway should be addressed in the uncertainty analysis. NDEP believes the paragraph should be reworded to some extent to recognize that USEPA has not dismissed this as a pathway of concern.
38. Section 6.0, Page 6-3; 1st paragraph, 2nd last sentence. Change "are are" to "are".
39. Section 6.0, Page 6-3; 2nd paragraph, last sentence. This conclusion does not seem to reflect the rest of the paragraph. There does appear to be some indication that lack of inclusion of tungsten in the risk assessment will underestimate risk. Please clarify.
40. Section 7.0, Page 7-1; 1st paragraph. The simulation studies can probably be referenced to the software package Visual Sampling Plan (VSP) by PNL. The simulation studies were performed first, but PNL ultimately included the 1.16 factor in its VSP software, which perhaps provides a reference for this formula.
41. Section 7.0, Page 7-1; formula. The Delta definition should be changed to "with of gray region (the difference between the threshold value stated in the null hypothesis and the point at which beta is specified)".
42. Page 7-1; last paragraph. Further explanation is needed for why 10-5 is the appropriate point of comparison for arsenic. It comes down to a statistical issue related to 1-sided hypothesis testing. It makes no sense to have a threshold less than the mean for this calculation, so an adjustment is necessary. Also, the sample size is acceptable because of the distance of the estimated mean from the 10-5 threshold, and hence it is assumed that the sample size is sufficient.

43. Section 8.0, Page 8-1; last paragraph. Per pervious comment, it is not entirely clear why a radionuclide risk assessment has been performed. The issue is the differences in the background comparisons.
44. Section 8.0, Page 8-2; 1st full paragraph, 2nd sentence. The word "range" should not be used like this. Just say "are" instead of "range from" (with other needed changes).
45. Section 8.0, Page 8-2; 1st full paragraph, last sentence. It is not clear where the 1 x 10-5 number comes from. Please clarify.
46. Section 9.0, a reference to the recently approved DVSR 50a should be included here and in the text. There are likely several areas of the text that will need to be revised to accommodate this change.
47. Section 9.0, Page 9-1, ERM, 1996b reference - Please remove the "b" since there is only one ERM 1996 citation.
48. Table 3. For future HRA submittals, xylenes should be evaluated as total xylenes.
49. Table 4. Tungsten should be deleted from this table as it was not evaluated as a COPC based on lack of toxicity criteria.
50. Table 5, footnote 4. Please replace 8 acres with 8.4 acres to support the value of 33,994.8 square meters used in the PEF calculation.
51. Table 7, Uncertainty Analysis Table. Please include that it is conservative when using chronic RfDs for sub-chronic receptors such as construction workers.
52. Table 9. It is not clear why background risk has been calculated and presented in this table for radionuclides. For consistency, either remove this risk calculation, or perform background risk calculations for the other chemicals.
53. Attachment A, the NDEP has the following comments:
    a. Page A-2, General Comment No. 8, lack of toxicity criteria for tungsten, please note that NDEP issued a memorandum on December 22, 2008 which contains recommended toxicity criteria for tungsten and titanium. We note that the HRA employs the recommended toxicity criteria for titanium. We verified that the risk characterization does not change if tungsten is quantitatively evaluated using the recently recommended toxicity criteria (no response required).
    b. Page A-3, Comment No. 20a Data Summary, the BRC response notes that post-scrape data for the metals have been incorporated into the data review and HRA. As discussed on the teleconference on December 16, 2008, the HRA should confirm that these new data have been validated and carried through the data usability evaluation.
    c. Page A-4, Comment No. 18 Data Usability Evaluation, please note that the information requested by NDEP is contained in Appendix C (not Appendix B).
    d. Page A-6, Comment No. 20h Data Summary, based on information provided in Table 1, total chromium and beta-BHC appear to fall into the same category as arsenic, barium and nickel (concentrations greater than background and greater than SSL based on DAF of 20).
54. Tables B-1 through B-4. The legends for these tables do not include a full description for certain items (i.e., the text appears to be cut off). Please correct this.
55. Electronic Files, Utility Corridor Risk Calculation Spreadsheet (BRC Utility Corridor Sub-Area Data Review-HRA_Tables-Calcs_Rev1.xls file). The headings for each data grouping in tabs "CW_Rad Exp Calcs –BG" and "MW_Rad Exp Calcs – BG" suggest that these data are for Site when in fact they are background.

Select References

Ruby, M.V., Fehling, K.A., Paustenbach, D.J., Landenberger, B.D., and Holsapple, M.P., 2002. Oral bioaccessibility of dioxins/furans at low concentrations (50 – 350 ppt toxicity equivalent) in soil. Environ. Sci. Technol. 36(22): 4905-4911.

USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. Office of Emergency and Remedial Response. EPA/540/R/99/005, July. http://www.epa.gov/oswer/riskassessment/ragse/index.htm