December 20, 2013

Mr. Weiquan Dong, PE
Bureau of Corrective Actions, Special Projects Branch
Nevada Division of Environmental Protection
2030 E. Flamingo Rd., Suite 230
Las Vegas, Nevada 89119

Re: NERT Response to NDEP September 30, 2013 Comments on Post-Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H, Revision 2, Dated June 27, 2013 (NDEP Facility ID #H-000539) and,

NERT Response to NDEP September 30, 2013 Comments on DVSR, Post-Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H, Revision 2, Dated June 27, 2013 (NDEP Facility ID #H-000539)

Dear Mr. Dong:

On behalf of the Nevada Environmental Response Trust ("NERT" or the "Trust"), Northgate Environmental Management, Inc. (Northgate), with input from ENVIRON International Corporation (ENVIRON), has prepared two annotated responses to the Nevada Division of Environmental Protection's (NDEP's) comments on the Post-Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H, Revision 2 and its DVSRs for the NERT site. The comments were included as Attachment A in NDEP's letters to the Trust dated September 30, 2013. Our annotated response to comments are provided in Attachments A-1 and A-2 to this letter. Revised tables and risk calculation spreadsheets pertaining to our responses to comments are provided in Attachments B-1, B-2, and B-3.

ENVIRON requests feedback on this submittal from NDEP by January 10, 2014 to ensure a timely delivery of the revised report on or before January 31, 2014. Please contact John Pekala at (602) 734-7710 if you have any comments or questions concerning this report.

Sincerely,

John M. Pekala, PG
Senior Manager
Nevada CEM #2347, expires 9/20/2014

Allan J. DeLorme, PE
Principal

Attachment

cc: BMI Compliance Coordinator, NDEP, BCA, Las Vegas
Brian Giroux, McGinley and Associates, Reno
NDEP c/o McGinley and Associates, Reno

ec: James Dotchin, NDEP
Greg Lovato, NDEP
Stephen Tyahla, USEPA
Nevada Environmental Response Trust
Tanya O'Neill, Foley & Lardner LLP
Joe McGinley, McGinley and Associates
Rebecca Shircliff, Neptune and Company
Jeff Gibson, AMPAC
Mark Paris, BMI
Lee Farris, Landwell
Ranajit Sahu, BMI
Joe Kelly, Montrose
Paul Sundberg, Montrose
Curt Richards, Olin
Davis Share, Olin
Chuck Elmendorf, Stauffer
Nick Pogoncheff, Stauffer
George Crouse, Syngenta
David Hadzinski, TIMET
Richard Truax, GEI Consultants
Kirk Stowers, Broadbent & Associates
Victoria Tyson, Tyson Contracting
Enoe Marcum, WAPA

ATTACHMENT A-1

NERT Response to NDEP September 30, 2013 Comments on Post-Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H, Revision 2 Dated June 27, 2013

northgate
environmental management, inc.

From: Scott McLaughlin, P.E.
Deni Chambers, C.E.M.

Date: December 20, 2013

To: Weiquan Dong, P.E.
Bureau of Corrective Actions
Nevada Division of Environmental Protection

RE: Nevada Environmental Response Trust (Trust) Property,
NDEP Facility ID #H-000539, Henderson, Nevada

RESPONSE TO COMMENTS
POST-REMEDIATION SCREENING HEALTH RISK ASSESSMENT REPORT FOR PARCELS C, D, F, G, AND H, REVISION 2, DATED JUNE 27, 2013

On behalf of the Nevada Environmental Response Trust, this memorandum presents a Response to Comments (RTC) provided by the Nevada Division of Environmental Protection (NDEP) in their letter dated September 30, 2013 regarding the "Post-Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H, Revision 2" dated June 27, 2013.

NDEP's comments are transcribed below, in italics, followed by responses to these comments.

Comments

1. *Section 4.2 Data Usability, Criterion V, Data Review, page 21, 2nd full paragraph, 2nd and 4th bullets. The section notes that MS/MSD recoveries were outside of control limits in 570 instances and that holding-time exceedances in 75 instances. The Deliverable should discuss the potential effect on the risk assessment in the uncertainty analysis section.*

   Response: The discussion of the potential effect on the risk assessment of the qualified data will be expanded in the section *Uncertainty Associated with Data Usability/Data Evaluation* (Section 5.6). Although some data were qualified with a J-qualifier due to matrix spike/matrix spike duplicate (MS/MSD) recoveries outside of control limits, inclusion of these data is not expected to result in an underestimate of the potential risks associated with residual chemicals in soil at the Parcels because (1) the number of affected data points was small relative to the entire data set, (2) the maximum detected concentration was used as the exposure point concentration (EPC) in the risk assessment calculations, and (3) most of the chemicals identified with a J-qualifier were not selected as chemicals of potential concern (COPCs), because their concentrations were significantly below basic comparison levels (BCLs).

2. *Section 4.2 Data Usability, Criterion VI, Data Quality Indicators, page 22, 2nd paragraph, last two sentences. The Deliverable should be updated to identify the*

rejected data (e.g., table format) and how these occurrences potentially affect the risk assessment (e.g., spatial coverage, etc.) and are discussed in the uncertainty analysis section.

Response: The previous version of the deliverable included a summary of rejected data in Table C-2 (Appendix C). The revised deliverable will include more information about the rejected data in Section 4.2 and a discussion of how these occurrences potentially affect the risk assessment in the uncertainty analysis in Section 5.6. The percent completeness for the HRA dataset based on valid data is 99.8%. Given the small percentage of rejected data and that there is no apparent spatial grouping of rejected data, these rejected data have little impact on the spatial coverage of the health risk assessment (HRA) dataset. Additionally, no rejected data were identified as COPCs and therefore the rejected data do not significantly impact the overall evaluation. The data eliminated from the HRA dataset are presented in Table C-1, included in Attachment B-2 to these responses.

3. *Table 5 Parcel Chemicals of Potential Concern (COPC) Selection. While it is noted that the April 2010 BCL table was the latest version in effect during remediation, however, the Deliverable should still rely upon the latest BCL table and guidance (August, 2013) for screening purposes. Please update accordingly.*

   Response: The deliverable will be updated to rely upon the latest BCL table and guidance (NDEP, 2013). New or updated BCLs were incorporated into Table 5 (included in Attachment B-1) for the following chemicals: alpha-BHC, beta-BHC, gamma-BHC, di-n-octyl phthalate, 1,2,4-trichlorobenzene, 2-butanone, manganese, platinum, and thallium. As a result of the new or updated BCLs, alpha-BHC and beta-BHC are no longer identified as COPCs. No other changes were made to the selected COPCs.

4. *Table 9 Summary of Toxicity Criteria and Absorption Factors for Chemicals of Potential Concern. The Deliverable should rely upon the latest toxicity criteria for each of the COPCs. Please update accordingly.*

   Response: The toxicity criteria in Table 9 were checked against the criteria listed in the BCL table (NDEP, 2013), and the values were found to be consistent for the seven COPCs included in Table 9. This table is included in Attachment B-1.

5. *Editorial Changes. Page 25 footnote #5. Please change "contaminate" to "contaminant".*

   Response: Comment addressed.

Reference:

Nevada Division of Environmental Protection (NDEP), 2013. User's Guide and Background Technical Document for NDEP Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas. Revision 12, August.

ATTACHMENT A-2

NERT Response to NDEP September 30, 2013 Comments on DVSR, Post-Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H, Revision 2 Dated June 27, 2013

northgate
environmental management, inc.

From: Scott McLaughlin, P.E.
Deni Chambers, C.E.M.

Date: December 20, 2013

To: Weiquan Dong, P.E.
Bureau of Corrective Actions
Nevada Division of Environmental Protection

RE: Nevada Environmental Response Trust (Trust) Property,
NDEP Facility ID #H-000539, Henderson, Nevada

RESPONSE TO COMMENTS
DVSR, POST- REMEDIATION SCREENING HEALTH RISK ASSESSMENT
REPORT FOR PARCELS C, D, F, G, AND H, REVISION 2, DATED JUNE 27, 2013

On behalf of the Nevada Environmental Response Trust, this memorandum presents a Response to Comments (RTC) provided by the Nevada Division of Environmental Protection (NDEP) in their letter dated September 30, 2013 regarding the "DVSR, Post-Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H, Revision 2" dated June 27, 2013.

NDEP's comments are transcribed below, in italics, followed by responses to these comments.

Comments

1. *Section 5.2.1, Evaluation of Site Concentrations Relative to Background. The reasoning by which all radionuclides were dismissed as COPCs appears flawed. The results of secular equilibrium testing indicates that both the thorium and uranium series radionuclides were in approximate secular equilibrium in soils between 0 and 10 ft bgs. In Parcel H, all of the uranium series radionuclides were identified as being present at concentrations above background based on failure of multiple statistical comparison tests. The decision logic in the last paragraph of Section 5.2.1 states that even if only one radionuclide in a decay chain were above background, all members of the chain "generally would be carried forward in the risk assessment". In the case of Parcel H, not just one but all four radionuclides in the uranium series were clearly elevated with respect to background. The analysis of Parcel H radionuclide data would seem to provide a reason to suspect a release of natural uranium. And yet the conclusion presented in the last paragraph of Section 5.2.1 is that "there is no reason to believe that the Parcels have been affected by thorium or uranium isotopes". Note also that uranium as a metal also fails background comparisons in all Parcels.*

   Response: The report will be revised to delete the phrase in Section 5.2.1 that states *"there is no reason to believe that the Parcels have been affected by thorium or*

uranium isotopes". We concur with NDEP's comment that the analysis of the Parcel H radionuclide data suggests that isotopes of the U-238 decay series are greater than the background data set. It is interesting to note that for some parcels, the reverse is generally true; that is, isotopes of the U-238 decay series are less than the background data set. For Parcel H, isotopes of the U-238 decay series will be identified as chemicals of potential concern (COPCs) and evaluated quantitatively in the risk assessment.

2. *Figures. Spatial intensity plots showing the spatial distribution of analytes are needed to evaluate the implicit assumption that there is no spatial structure to the soil samples and therefore it is appropriate to pool values. These plots would also allow the identification of hot spots or point sources of contaminants.*

Response: Factors including the HRA results, detection frequency, coefficient of variation (CV), and chemical co-location were reviewed to identify analytes for spatial intensity plots. All radionuclides and most detected metals, polychlorinated biphenyls, semi-volatile organic compounds, and volatile organic compounds exhibited low variance (CV less than 1), with the exception of the following: hexavalent chromium, tungsten, platinum, boron, lead, Aroclor-1254, di-n-butyl phthalate, and acetone, which have CVs between 1.1 and 4.4. Additionally, perchlorate, dioxin/furans, total petroleum hydrocarbon as diesel, and all detected organochlorine pesticides, exhibited high variance (CV greater than 1). Considering the specific chemicals and radionuclides identified as COPCs, detection frequency, variance, and co-located detections, the following chemicals and radionuclides are tentatively identified for spatial plotting:

- Boron, lead, magnesium, and tungsten
- Aroclor-1254, Aroclor 1248, and dioxins/furans
- 4,4'-DDE; 4,4'-DDT; 4,4'-DDD, alpha and beta BHC; and hexachlorobenzene
- Perchlorate
- U-238 decay series
- Asbestos (long chrysotile fibers)

3. *Executive Summary, Page 2; 2nd paragraph, 3rd and 4th sentences. Amphibole asbestos upper-bound cancer risk results are qualified as "…based on constant lifetime exposures, not short-term exposure such as construction activities". Construction worker risk calculations assume exposure of 8 hr/day, 250 d/yr, for 1 year rather than constant lifetime exposure. Please revise this paragraph as necessary. (See also comment on Section 5.5.3)*

Response: The last two sentences of the first full bullet on page 2 will be revised to read as follows:

- With regard to asbestos, only long chrysotile fibers were identified as a COPC and best estimate and upper-bound estimates were calculated for each Parcel. The estimated risks for death from lung cancer and mesothelioma for exposures of future onsite outdoor commercial workers and construction workers to chrysotile fibers are less than 1×10^{-6} in all Parcels.

Note that the above revision also responds to NDEP Comment #17. That is, the paragraph was revised to delete the discussion of amphibole fibers which are no longer identified as a COPC. As an additional note, the asbestos risk assessment may be revised based on the results of the review being conducted by Neptune & Company, Inc. (Neptune) of the asbestos analytical records (see response to NDEP Comment #7).

4. *Section 2.1, page 8; last paragraph. "Asbestos remediation goals for the Parcels were established by NDEP as four or more long chrysotile fibers and one or more long amphibole fibers (>10 microns [µm] in length and <0.4 µm in width)." This is incorrectly worded, and we are not aware of any source or basis for such a decision rule by NDEP. At the very least some context about sample size and analytical sensitivity would be needed. The source of the NDEP standard should be cited and checked.*

   Response: The text of the report will be revised to indicate that the referenced asbestos remediation goals were established in the NDEP-approved removal action work plan (RAW) prepared by Basic Environmental Company (BEC, 2008). The asbestos fiber length and width cited in the health risk assessment (HRA) is based on guidance from U.S. Environmental Protection Agency's (U.S. EPA's) *Final Draft: Technical Support Document for a Protocol to Assess Asbestos-Related Risk* (U.S. EPA, 2003) as cited by NDEP (2011).

5. *Section 3.1, page 13, paragraph 2. In our files, Appendix C only contains J- and other qualified samples. Are files missing?*

   Response: Files should not be missing from the appendix. Appendix C contains two Excel workbooks (filenames: Table C-1 Summary of J- qualified Parcel Data.xlsx and Table C-2 Summary of Rejected Parcel Data.xlsx) as referenced in the response. Additionally, Appendix C contains a folder titled, "DVSRs," which contains the four Data Validation Summary Reports (DVSRs) discussed in this report. Within the folder, "4 DVSR Soil Confirm June 2010" and the subfolder, "DVSR Text," there is a document titled "FINAL Parcel Soil Confirmation DVSR_6-15-10.pdf." This document, the *Parcel "C", "D", "F", "G", and "H" Soil Confirmation DVSR*, dated June 15, 2010 and prepared by Northgate Environmental Management, Inc. (Northgate) includes Table 1-2, which lists the parcel soil confirmation samples and sample delivery groups (SDGs) referenced in Section 3.1 on page 13. The full Appendix C will also be included in the revised report.

6. *Section 3.7, page 15; second paragraph. In the sentence "At each remediation polygon, the trigger sample point was surveyed and marked by LVP before and after the parcel was scraped and graded," please define trigger sample.*

   Response: The trigger sample is defined as the sample triggering remediation because a COPC was detected above remediation goals. This will be clarified in the revised report.

7. *Section 4.2, pages 18-19. There needs to be a discussion about asbestos data. This should include any data validation results, issues found and how the data was reviewed (e.g., SOP for validation). Asbestos data should be validated per NDEP 2012 asbestos data validation guidance.*

Response: The laboratory data sheets for asbestos have been requested from the analytical testing laboratory, EMSL. As discussed with NDEP, Neptune will validate the asbestos data in accordance with current NDEP guidelines. The results of the asbestos validation will be included as an appendix to the revised HRA. Northgate will incorporate changes in the revised HRA report, as necessary, including updating the asbestos risk estimates.

8. *Section 4.2, page 19. Under Criterion III-Data Sources, there needs to be a discussion about the laboratories' accreditation or certification to provide indication that the labs meet minimum QC requirements.*

Response: The text in Section 4.2, Criterion III – Data Sources, page 19 will be amended to discuss laboratory certification. It should be noted that each laboratory used during the analyses of Parcel HRA field samples was part of the NDEP Laboratory Certification Program (LCP), was presented in the project related QAPP (referenced in each DVSR) and is presented in the Appendix C text and tables. In addition, a Certified Environmental Manager (C.E.M.) certification page is presented in each of the four NDEP approved Parcel DVSRs, which states the following: "I hereby certify that all laboratory analytical data were generated by a laboratory certified by the NDEP for each constituent and media presented herein."

9. *Section 4.2, page 20. Provide more details about the detection limits above BCLs for benzo(a)pyrene and dibenz(a,b)anthracene. For example, indicate how many samples were affected and if the analytes were detected in every sample.*

Response: Both benzo(a)pyrene and dibenz(a,b)anthracene were not detected and had detection limits (i.e., practical quantitation limits [PQLs]) above their respective basic comparison levels (BCLs) in 131 of 131 samples. However, the PQLs for benzo(a)pyrene and dibenz(a,h)anthracene, which range from 0.33 to 0.38 milligrams per kilogram (mg/kg), are only slightly above the BCL (for both chemicals) of 0.234 mg/kg, and the reported sample quantitation limits (SQLs) are significantly below the BCL. Since the laboratories identified detections between the SQL and PQL, the actual concentrations of benzo(a)pyrene and dibenz(a,h)anthracene can reasonably be expected to be below or only slightly greater than NDEP BCLs.

10. *Section 4.2, page 20. More information needs to be provided about the RPD exceedances (e.g., number and name of samples affected and how they were qualified). This information should be summarized in a table.*

Response: The text in Section 4.2, Criterion VI – Data Quality Indicators, page 20, will be amended to discuss the assessment of precision for matrix spike/matrix duplicate (MS/MSD) and field duplicates. In addition, Table C-3, Summary of Qualified Field Duplicate Data will be added to Appendix C. The single MS/MSD relative percent difference (RPD) qualified result is included in Appendix C, Table C-1. Tables C-1 and C-3 are included in Attachment B-2 to these responses.

11. *Section 4.2, pages 21 and 22. Provide the total number of results evaluated and the number of results rejected to calculate the percent completeness for combined DVSRs.*

Response: As shown in the table below, which will also be inserted into Section 4.2, Data Quality Indicators, the percent completeness of the HRA dataset for the combined DVSRs is 99.8%. There were a total of 28,168 results evaluated and only 48 rejected results, most of which were in the general chemistry analyte group.

Analyte Group	Total Results Evaluated	Rejected Results Count	Percent Completeness
Metals	4,749	2	99.9%
Radionuclides	1,228	0	100%
SVOCs	4,116	11	99.7%
VOCs	9,606	0	100%
Dioxins	2,592	0	100%
OCPs	3,410	0	100%
General Chemistry	1,224	31	97.5%
Aroclors	567	0	100%
TPH	308	4	98.7%
Asbestos	368	0	100%
Total	**28,168**	**48**	**99.8%**

12. *Section 4.2, pages 21 and Table C-1. Section 4.2 and Table C-1 do not provide enough information about the result qualifications made. Table C-1 only discusses J- qualifiers, when all data qualifications (J, J+, U) should be discussed for data usability and validity. Additionally, Table C-1 needs to provide: limits and recoveries for the QC issues found, definition of reason codes, holding time vs. exceeded time, LCS/LCSD issues, and an explanation for the yellow highlighting. Presently, the table cannot stand alone and the text in the report does not provide enough support. The text on page 21, with respect to "instances" for MS/MSD issues and holding time exceedances, does not agree with Table C-1. Table C-1 shows ~650 results qualified due to MS/MSD issues, whereas the report indicates 570. For holding time issues, Table C-1 shows ~200 and the report lists 75.*

    Response: Table C-1 was amended to include a summary of all qualified results with validation qualifiers and reason codes. The revised table is included in Attachment B-2 to these responses. This summary was compiled as a reference and the detailed quality assurance (QA) exceedances and deficiencies are presented in separate tables in the DVSRs with the details of each item reviewed during the validation process. Section 4.2 will be revised and references to these tables will be added. Inconsistencies between the report and Table C-1 will be addressed.

13. *Section 4.2, page 22. There needs to be more information about how blank contamination was handled for DVSRs. The additional information should include: the type of contamination found (i.e., metals, organics), number and names of samples affected, and levels of blank contamination found. This information should either be*

included in the text or a table.

Response: For data associated with blank contamination, recent NDEP guidance recommends using the actual reported value instead of either the SQL or PQL (NDEP, 2012). The results for which blank contamination was identified are shown in Table C-1 (provided in Attachment B-2 to these responses) and identified by an amended J qualifier. Blank contamination was found primarily for metals, but also for organics and radionuclides. There were a total of 968 results with blank contamination in the four DVSRs. The levels of blank contamination are shown in the amended tables of the four DVSRs in Appendix C. These concentrations were J qualified and are considered estimated with high bias. In general, levels of blank contamination were low and have little impact on the overall evaluation since the reported soil concentrations for these samples are significantly below BCLs for the Parcel COPCs. Blank contamination is discussed in the uncertainty analysis (Section 5.6).

14. *Section 5.2.1, pages 30 and 31; last and third paragraphs. For metals "NDEP has requested that the Site soil concentrations from Remediation Zone A (RZ-A)" while "For radionuclides, Parcel soil concentrations were compared to background levels using the existing soils background data presented in the Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity...". Please clarify why data from two different locations are used as background.*

    Response: Use of the RZ-A soil samples as the background dataset for metals was approved by NDEP in a letter dated August 17, 2010 titled *NDEP Response to Background Issues and Determination of Background Dataset for TRX*. As noted in NDEP's letter, the decision not to use the background data presented in the *Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity* (Basic Remediation Company and Titanium Metals Corporation [BRC-TIMET], 2007) was made due to differences in the laboratory digestion methods and potential other differences (e.g. geologic, etc.) between that metals dataset and the HRA metals dataset. NDEP determined that the RZ-A soil concentrations should instead be used as the metals background dataset for comparison to the Parcel soil concentrations.

    The potential comparability issues described above were not observed in the radionuclide dataset, and therefore the BRC-TIMET dataset was used as the background dataset in accordance with NDEP guidance (NDEP, 2007).

15. *Section 5.2.1, page 33, first paragraph. "Non-detect results were set equal to one-half of the limit of detection for purpose of the parametric test and set to the detection limit for purpose of the non-parametric tests." The reason for using different values for substitution should be discussed. The non-parametric tests use the Gehan ranking scheme to rank the non-detects with the rest of the data. Parametric tests cannot do that, so ½ DL is preferred as a reasonable alternative.*

    Response: The replacement of results reported as not detected with one-half the limit of detection for parametric tests and the detection limit for non-parametric tests is based on NDEP guidance (NDEP, 2008). Section 5.2.1 will be revised to include the rationale for this approach and will cite the NDEP guidance as the source of this approach.

16. *Section 5.2.1, page 33, first paragraph. The PQL was used for the detection limits for*

the Parcels data. This causes many problems with the statistical analysis, even more so considering SQLs are used for the background data. NDEP has provided guidance indicating the need to use SQLs for all data analyses. This issue is addressed in the RTCs, but also needs to be addressed in the main text of the report.

Response: An explanation of the use of the PQL for the limit of detection for non-detects in the Parcels data set (as discussed in previous RTCs) will be added to Section 5.2.1. Because the SQL was unavailable from the laboratory for some results in the Parcels data set, the PQL was used instead as the limit of detection for non-detects as agreed to by NDEP at a meeting on December 5, 2012. A discussion of the uncertainty associated with this approach will be included in the uncertainty analysis (Section 5.6).

17. *Section 5.2.2, Evaluation of Site concentrations Relative to Toxicity Screen. Long chrysotile fibers were identified as a COPC, but not amphibole asbestos. However, the asbestos risk characterization in Section 5.5.3 includes assessment of amphibole asbestos.*

    Response: Amphibole asbestos fibers were not detected in any of the soil samples analyzed for asbestos. Therefore, amphibole asbestos will be removed from the risk characterization (Section 5.2.2) and from the asbestos risk summary (Table 12). The revised Table 12 is included in Attachment B-1 to these responses. Estimates of risk associated with the possible presence of amphibole asbestos will be included in Section 5.6, the Uncertainty Analysis.

18. *Section 5.5.3, Asbestos, page 52; 3rd paragraph, 5th and 6th sentences. These sentences incorrectly infer that the asbestos unit risk factor used in the assessment has a high level of conservative bias when applied to short-term exposures. In NDEP's asbestos guidance, a lifetime-exposure asbestos unit risk factor is multiplied by an adjustment factor that addresses fractional exposure within the 70-year effects averaging time, which is a standard approach for carcinogenic chemical risk assessment. Alternatively, unit risk factors based on life table analysis may be developed for different combinations of exposure duration and time of first exposure (as in EPA's Framework for Investigating Asbestos-Contaminated Superfund Sites, OSWER Directive 9200.0-68, September 2008), but in this case exposure duration and effects averaging time are integrated within each unit risk factor. Please revise this paragraph as necessary.*

    Response: The last paragraph of Section 5.5.3 (page 52) will be replaced with the following text:

    > As shown in Table 12, the best estimates and upper-bound risk estimates for outdoor commercial workers and construction workers from potential inhalation exposure to chrysotile are less than 1×10^{-6} in all Parcels. These estimates represent the combined risk for death from lung cancer and mesothelioma. Uncertainties in the risk estimates for asbestos fibers, including the impact of sample size, are discussed in Section 5.6, the Uncertainty Analysis.

    See also responses to Comments #7, 17, 19, and 22.

19. *Section 5.6, Uncertainty Analysis - Uncertainty Associated with Exposure Point Concentrations, page 55. The discussion of uncertainty in upper-bound air asbestos concentrations is incomplete and potentially misleading because it ignores the matter of sample size, except to mention that fiber counts are multiplied by the pooled analytical sensitivity (AS). Please add a discussion of the relationship between sample size and pooled AS such that it is clear that upper-bound air asbestos concentrations when no fibers are detected are a function of sample size (pooled analytical sensitivity).*

Response: The Uncertainty Analysis will be revised to include a subsection specific to asbestos, as follows:

> Consistent with NDEP guidance (NDEP, 2011), asbestos exposure concentrations (ECs) are estimated using a methodology that differs from that used to estimate the exposure point concentrations for other COPCs. For asbestos, the approach is highly dependent on sample size. As described in Section 5.3.1.2, the source term (C_{soil}, the soil concentration used to estimate asbestos concentrations in air) is equal to the number of long asbestos fibers (f) detected times the pooled analytical sensitivity (AS). For the best estimate, C_{soil} is equal to $f \times AS$, and for the upper-bound estimate, C_{soil} is equal to $95\%UCL \times AS$, where the 95%UCL is the 95% upper confidence limit on the number of fibers, estimated assuming a Poisson distribution. AS, which is used in both calculations, is a function of sample size. Specifically, AS decreases with increasing sample size (the equation for calculating AS is presented in Section 5.3.1.2), resulting in a lower estimate of C_{soil} and hence, a lower asbestos EC as sample size increases.
>
> For the special case in which no fibers are detected, as was the case for amphibole fibers, the best estimate risk is zero (i.e., amphibole fibers were not detected in any sample, so that $C_{soil} = 0$), while the estimated air concentration (and associated risk) for the upper-bound estimate is a function of sample size. The 95%UCL of the Poisson distribution for the case in which no fibers are detected is 3 fibers. Assuming a fiber count of 3, $C_{soil} = 3 \times AS$, and, as noted above, AS is a function of sample size. Although amphibole fibers were not identified as a COPC (no fibers were detected), as part of this uncertainty analysis, risks are estimated to ensure that sufficient samples were collected to meet the required sensitivity. As shown in Appendix G (included in Attachment B-3 to these responses), the upper-bound estimates associated with exposure to amphibole fibers (and associated sample size) for the Parcels are:

Parcel	Upper Bound Cancer Risk Construction Worker	Upper Bound Cancer Risk Outdoor Worker	Pooled Sample Size
C	3×10^{-6}	2×10^{-7}	18
D	4×10^{-6}	4×10^{-7}	11
F	2×10^{-6}	2×10^{-7}	18
G	6×10^{-6}	5×10^{-7}	6
H	2×10^{-6}	2×10^{-7}	23

See also related responses to Comments #7, 17, 18, and 22.

20. *RTC 4, page 3. The discussion of the rationale and distinction between parcel level comparisons and site wide comparisons is discussed in the RTC Item 4 where it references section 5.2.1. This is an important topic and should more fully be incorporated into the main report.*

    Response: The background evaluation was performed for each Parcel individually and is presented for both the combined Parcels and individual Parcels. The Parcels were evaluated individually because potential sources of chemicals could exist only in certain Parcels. The rationale and distinction between parcel level comparisons and site wide comparisons will be more fully incorporated in Section 5.2.1.

21. *Tables F5A and F5B. Please explain what is meant in the column "Number Missing". If this refers to negative values that are now included in the analysis, please remove this column. Otherwise, please explain.*

    Response: The "Number Missing" column is a count of the sampling locations for which one or more results are unavailable. These sampling locations are not counted in the sample size and are not included in the secular equilibrium calculation. This explanation will be added to the tables.

22. *Section 5.5.3, Asbestos, page 52; 3rd paragraph, 3rd and 4th sentences. The variation in the upper-bound risk estimates among the five Parcels is a function of differences in sample size and should be explained in that context.*

    Response: See responses to Comments #17 and 19.

23. *Table 5. Add a footnote explaining why some results are shaded blue.*

    Response: The results shaded blue are for those chemicals identified as a chemical of potential concern. The revised table, showing this and other revisions, is included in Attachment B-1 to these responses.

24. *Appendix F, Box Plots figures. The points outside of the 1.5x Inter-Quartile Range (IQR) are not necessarily outliers. It would be better to have a description of what a box plot is, and then just acknowledge that these points are beyond 1.5 x IQR - sometimes as detects and sometimes as non-detects. The term "outlier" often carries a different connotation that is not meant here (that the value does not belong with the rest of the dataset).*

    Response: Appendix F will be revised to include a description of a box plot (similar to that provided on page 32 of the main report) and the term "outlier" will be deleted from all figures.

References:

Basic Environmental Company (BEC), 2008. Removal Action Workplan for Soil, Tronox Parcels "C", "D", "F", "G" and "H" Sites, Henderson Nevada. July 1. NDEP approved July 2, 2008.

Basic Remediation Company and Titanium Metals Corporation (BRC-TIMET), 2007. Background Shallow Soil Summary Report, BMI Complex and Common Areas Vicinity. March 16.

Nevada Division of Environmental Protection (NDEP), 2007. Advisement Regarding Radionuclide Analyses for Uranium, BMI Plant Sites and Common Areas Projects, Henderson, Nevada. December 7.

NDEP, 2008. Guidance on the Development of Summary Statistics Tables, BMI Plant Sites and Common Areas Projects, Henderson, Nevada. December 10.

NDEP, 2010. NDEP Response to Background Issues and Determination of Background Dataset for TRX. August 17.

NDEP, 2011. Technical Guidance for the Calculation of Asbestos Related Risks in Soils for the Basic Management Incorporated (BMI) Complex and Common Areas. February.

NDEP, 2012. Revised Guidance on Qualifying Data due to Blank Contamination for the BMI Complex and Common Areas, BMI Plant Sites and Common Areas Projects, Henderson, Nevada. January 5.

U.S. Environmental Protection Agency (U.S. EPA), 2003. Final Draft: Technical Support Document for a Protocol to Assess Asbestos-Related Risk. EPA #9345.4-06. October.

ATTACHMENT B-1

Revised Tables for the Post- Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H

TABLE 5
Parcel Chemicals of Potential Concern (COPC) Selection

Chemical	Result Unit	Total Count	Detect Count	Detect Frequency	Min. Detect	Max. Detect	PBT or Class A Carcinogen	NDEP BCL [a]	Ratio: BCL/max detect	Constituents of Potential Concern	Basis
4,4'-DDD	mg/kg	143	4	3%	0.0019	0.013	yes	11.1	854	no	1,5
4,4'-DDE	mg/kg	143	37	26%	0.0018	0.20	yes	7.81	39	yes	2
4,4'-DDT	mg/kg	143	31	22%	0.0018	0.26	yes	7.81	30	yes	2
Alpha-BHC	mg/kg	143	11	8%	0.002	0.059	no	270	4576	no	3
Beta-BHC	mg/kg	143	48	34%	0.0018	0.18	no	53.9	299	no	3
Endrin aldehyde[b]	mg/kg	143	3	2%	0.0029	0.02	no	205	10250	no	3,5
Gamma-BHC (Lindane)	mg/kg	143	1	1%	0.013	0.013	no	8.98	691	no	3,5
Gamma-chlordane[b]	mg/kg	143	1	1%	0.004	0.004	yes	7.19	1798	no	1,5
Methoxychlor	mg/kg	143	5	3%	0.002	0.0078	no	3420	438462	no	3,5
Benz(a)anthracene	mg/kg	133	1	1%	0.096	0.096	no	2.34	24	no	3,5
Benzo(b)fluoranthene	mg/kg	132	2	2%	0.043	0.11	no	2.34	21	no	3,5
Benzo(g,h,i)perylene	mg/kg	131	2	2%	0.042	0.075	no	34100	454667	no	3,5
bis(2-Ethylhexyl) phthalate	mg/kg	143	6	4%	0.04	1.4	no	137	98	no	3,5
Butyl benzyl phthalate	mg/kg	143	1	1%	0.11	0.11	no	240	2182	no	3,5
Chrysene	mg/kg	134	5	4%	0.029	0.51	no	234	459	no	3,5
Di-N-Butyl phthalate	mg/kg	143	4	3%	0.047	5.2	no	68400	13154	no	3,5
Di-N-Octyl phthalate	mg/kg	143	2	1%	0.21	0.28	no	8200	29286	no	3,5
Fluoranthene	mg/kg	144	5	3%	0.041	0.097	no	24400	251546	no	3,5
Hexachlorobenzene[c]	mg/kg	143	4	3%	0.035	0.37	yes	1.2	3	yes	2
Octachlorostyrene	mg/kg	143	2	1%	0.039	0.065	yes	na	na	no	see text
Phenanthrene	mg/kg	133	4	3%	0.018	0.96	no	24.5	26	no	3,5
Pyrene	mg/kg	133	5	4%	0.015	0.3	no	19300	64333	no	3,5
1,2,3-Trichlorobenzene[b]	mg/kg	143	2	1%	0.00098	0.0017	no	110	64706	no	3,5
1,2,4-Trichlorobenzene	mg/kg	143	4	3%	0.0012	0.014	no	110	7857	no	3,5
1,2,4-Trimethylbenzene	mg/kg	143	57	40%	0.00029	0.0086	no	604	70233	no	3
1,2-Dichlorobenzene	mg/kg	143	1	1%	0.00036	0.00036	no	373	1036111	no	3,5
1,3,5-Trimethylbenzene	mg/kg	143	8	6%	0.00029	0.0038	no	246	64737	no	3
1,3-Dichlorobenzene	mg/kg	143	3	2%	0.00034	0.0008	no	373	466250	no	3,5
1,4-Dichlorobenzene	mg/kg	143	3	2%	0.00027	0.00051	no	13.6	26667	no	3,5
2-Butanone	mg/kg	142	5	4%	0.0038	0.013	no	34100	2623077	no	3,5

TABLE 5
Parcel Chemicals of Potential Concern (COPC) Selection

Chemical	Result Unit	Total Count	Detect Count	Detect Frequency	Min. Detect	Max. Detect	PBT or Class A Carcinogen	NDEP BCL [a]	Ratio: BCL/max detect	Constituents of Potential Concern	Basis
2-Hexanone	mg/kg	143	2	1%	0.0022	0.0071	no	1930	271831	no	3,5
Acetone	mg/kg	143	60	42%	0.0058	1.9	no	100000	52632	no	3
Chloroform	mg/kg	143	6	4%	0.00053	0.0023	no	1.55	674	no	3,5
Ethylbenzene	mg/kg	143	5	3%	0.00037	0.0022	no	19.6	8909	no	3,5
Isopropylbenzene	mg/kg	143	1	1%	0.00029	0.00029	no	647	2231034	no	3,5
m,p-Xylene	mg/kg	143	10	7%	0.00087	0.011	no	214	19455	no	3
Methylene chloride	mg/kg	142	14	10%	0.0035	0.021	no	58.5	2786	no	3
N-Propylbenzene	mg/kg	143	3	2%	0.001	0.0014	no	237	169286	no	3,5
o-Xylene	mg/kg	143	5	3%	0.00047	0.0041	no	282	68780	no	3,5
Tetrachloroethene	mg/kg	143	2	1%	0.001	0.0027	no	3.28	1215	no	3,5
Toluene	mg/kg	143	16	11%	0.00047	0.0017	no	521	306471	no	3
Xylenes, total	mg/kg	143	7	5%	0.0014	0.015	no	214	14267	no	3,5
Aroclor 1248	mg/kg	67	1	1%	0.074	0.074	yes	0.826	11	yes	2
Aroclor 1254	mg/kg	67	1	1%	0.29	0.29	yes	0.826	3	yes	2
Perchlorate	mg/kg	143	134	94%	0.0024	168	no	795	5	yes	4
Antimony	mg/kg	143	113	79%	0.088	0.32	no	454	1419	no	3
Arsenic	mg/kg	144	144	100%	1.3	8	no	1.77	0.2	no	see text
Barium	mg/kg	143	143	100%	67	1420	no	100000	70	no	3
Beryllium	mg/kg	143	143	100%	0.23	0.84	no	2230	2655	no	3
Boron	mg/kg	143	118	83%	3.2	22.6	no	100000	4425	no	3
Chromium (Total)	mg/kg	143	143	100%	4.1	19	no	100000	5263	no	3
Chromium (VI)	mg/kg	101	3	3%	0.49	1.3	no	1230	946	no	3,5
Cobalt	mg/kg	143	143	100%	3.2	11.2	no	337	30	no	3
Lead	mg/kg	143	143	100%	3.8	136	no	800	6	no	8
Magnesium	mg/kg	143	143	100%	4100	25000	no	100000	4	yes	4
Manganese	mg/kg	143	143	100%	111	917	no	24900	27	no	3
Molybdenum	mg/kg	143	142	99%	0.16	1.5	no	5680	3787	no	3
Platinum	mg/kg	143	7	5%	0.021	2.4	no	568	237	no	3
Potassium	mg/kg	143	143	100%	704	4480	no	--	na	no	see text
Silver	mg/kg	143	127	89%	0.038	0.21	no	5680	27048	no	3
Sodium	mg/kg	143	143	100%	138	2910	no	--	na	no	see text
Strontium	mg/kg	143	143	100%	50.7	500	no	100000	200	no	3

TABLE 5
Parcel Chemicals of Potential Concern (COPC) Selection

Chemical	Result Unit	Total Count	Detect Count	Detect Frequency	Min. Detect	Max. Detect	PBT or Class A Carcinogen	NDEP BCL [a]	Ratio: BCL/max detect	Constituents of Potential Concern	Basis
Thallium	mg/kg	143	61	43%	0.1	0.45	no	74.9	166	no	3,5
Tin	mg/kg	143	130	91%	0.064	1.2	no	100000	83333	no	3
Tungsten	mg/kg	143	117	82%	0.21	9	no	8510	946	no	3
Uranium	mg/kg	143	143	1	0.39	3.9	no	3400	872	no	3
TCDD TEQ	pg/g	139	79	57%	0.00035	765	yes	1000	1	no	7
Asbestos - Long Chrysotile	fibers	79	21	27%	1	4	yes	na	na	yes	6

Notes:

The shaded rows indicate that the chemical is identified as a COPC.

(1) chemical is a PBT or Class A carcinogen but BCL/maximum detect ratio is greater than 100

(2) chemical is a PBT or Class A carcinogen and BCL/maximum detect ratio is less than 100

(3) chemical is not a PBT or Class A carcinogen and BCL/maximum detect ratio is greater than 10

(4) chemical is not a PBT or Class A carcinogen but BCL/maximum detect ratio is less than 10

(5) chemical is detected in less than 5% of samples

(6) asbestos does not have a BCL; therefore, it is identified as a COPC if detected in one or more samples

(7) below NDEP target goal of TCDD TEQ 1000 pg/g as stipulated in the approved HRA Workplan (Northgate 2010)

(8) lead BCL/maximum detect ratio is greater than 1 (see text)

a - From User's Guide and Background Technical Document for Nevada Division of Environmental Protection (NDEP) Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas, Revision 12, August 2013. Values for the worker are the lower of the indoor and outdoor worker soil BCLs.

b - Surrogate Used. Per comments from NDEP on May 19, 2011, Endrin is used as a surrogate for Endrin aldehyde; Chlordane is used for gamma-Chlordane; and 1,2,4-Trichlorobenzene is used for 1,2,3,-Trichlorobenzene.

c - Hexachlorobenzene analyzed using both EPA Methods 8081 and 8270. Data reported based on EPA 8270 as it was deemed to be the superior method.

PBT: persistent bioaccumulative and toxic

TABLE 9
Summary of Toxicity Criteria and Absorption Factors for Chemicals of Potential Concern

Chemical	Noncarcinogenic				Carcinogenic					Dermal ABS	
	Inhalation	Oral			Inhalation		Oral		Cancer Weight of Evidence		
	RfC (mg/m^3)	RfD (mg/kg-day)			IUR $(\mu g/m^3)^{-1}$		SF $(mg/kg\text{-}day)^{-1}$				
Aroclor 1248	NA	NA			5.70E-04	CA	2.00E+00	CA	B2	1.4E-01	RAGS
Aroclor 1254	NA	2.00E-05	I		5.70E-04	CA	2.00E+00	CA	B2	1.4E-01	RAGS
4,4'-DDE	NA	NA			9.70E-05	CA	3.40E-01	I	B2	3.0E-02	***
4,4'-DDT	NA	5.00E-04	I		9.70E-05	I	3.40E-01	I	B2	3.0E-02	RAGS
Hexachlorobenzene	NA	8.00E-04	I		4.60E-04	I	1.60E+00	I	B2	1.0E-01	RAGS
Perchlorate	NA	7.00E-04	I		NA		NA		****	NA	RAGS
Magnesium	NA	5.67E+00	NDEP		NA		NA		NA	1.0E-01	NDEP

Notes:

ABS - Absorption factor
A - Agency for Toxic Substances Disease Registry (ATSDR) (as cited in NDEP, 2010)
B2 - Probable human carcinogen
C - Possible human carcinogen
D - Not classifiable as to human carcinogenicity
CA - CalEPA - OEHHA Toxicity Criteria database (accessed December 2010; http://www.oehha.org/risk/ChemicalDB/index.asp)
EPA - U.S. Environmental Protection Agency
I - EPA Integrated Risk Information System (IRIS) database (accessed November 2010; http://www.epa.gov/iris/)
NDEP - Nevada Department of Environmental Protection Basic Comparison Levels (January 2013)
IUR - Inhalation unit risk
N - National Center for Environmental Assessment (NCEA) (as cited in NDEP, 2010)
NA - Not available
OEHHA - Office of Environmental Health Hazard Assessment
RAGS - US EPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual, Part E
RfC - Reference concentration
RfD - Reference dose
SF - Slope factor
*** - Based on value for DDT (NDEP, 2010)
**** - Not likely to pose a thyroid cancer risk in humans (IRIS, 2010)

TABLE 12
Parcel Asbestos Risk Summary

Scenario	Estimated Airborne Chrysotile Concentrations[(1)] (f/cm^3)	Chrysotile URF [(1)] $(f/cm^3)^{-1}$	URF Adjustment Factor [(1)] (unitless)	Estimated Chrysotile Risk [(2)]
Parcel C				
Future Construction Workers - Best Estimate	3.65E-04	0.0569336	0.003261579	7E-08
Future Construction Workers - Upper Bound	6.37E-04	0.0569336	0.003261579	1E-07
Future Outdoor Commercial Worker - Best Estimate	1.50E-06	0.0569336	0.073385519	6E-09
Future Outdoor Commercial Worker - Upper Bound	2.62E-06	0.0569336	0.073385519	1E-08
Parcel D				
Future Construction Workers - Best Estimate	4.72E-04	0.0569336	0.003261579	9E-08
Future Construction Workers - Upper Bound	8.86E-04	0.0569336	0.003261579	2E-07
Future Outdoor Commercial Worker - Best Estimate	1.97E-06	0.0569336	0.073385519	8E-09
Future Outdoor Commercial Worker - Upper Bound	3.70E-06	0.0569336	0.073385519	2E-08
Parcel F				
Future Construction Workers - Best Estimate	5.52E-04	0.0569336	0.003261579	1E-07
Future Construction Workers - Upper Bound	8.51E-04	0.0569336	0.003261579	2E-07
Future Outdoor Commercial Worker - Best Estimate	2.14E-06	0.0569336	0.073385519	9E-09
Future Outdoor Commercial Worker - Upper Bound	3.29E-06	0.0569336	0.073385519	1E-08
Parcel G				
Future Construction Workers - Best Estimate	0.00E+00	0.0569336	0.003261579	0E+00
Future Construction Workers - Upper Bound	2.91E-04	0.0569336	0.003261579	5E-08
Future Outdoor Commercial Worker - Best Estimate	0.00E+00	0.0569336	0.073385519	0E+00
Future Outdoor Commercial Worker - Upper Bound	1.09E-06	0.0569336	0.073385519	5E-09
Parcel H				
Future Construction Workers - Best Estimate	1.28E-04	0.0569336	0.003261579	2E-08
Future Construction Workers - Upper Bound	2.92E-04	0.0569336	0.003261579	5E-08
Future Outdoor Commercial Worker - Best Estimate	5.35E-07	0.0569336	0.073385519	2E-09
Future Outdoor Commercial Worker - Upper Bound	1.23E-06	0.0569336	0.073385519	5E-09

Notes:

[1] = From calculation spreadsheets in Appendix F for the Construction Worker and Outdoor Commercial Worker Scenarios

[2] = Estimated airborne concentration x URF x URF adjustment factor

Best estimate – based on the pooled analytical sensitivity multiplied by the number of asbestos fibers found
Upper bound – based on the 95 % UCL of the Poisson distribution

ATTACHMENT B-2

Revised Appendix C Summary Tables for the Post- Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H (Provided electronically or on CD separately)

ATTACHMENT B-3

Revised Appendix G Risk Assessment Calculation Spreadsheets for the Post- Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H (Provided electronically or on CD separately)