



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

Jim Gibbons, Governor

Allen Biaggi, Director

Leo M. Drozdoff, P.E., Administrator

October 12, 2010

Matt Paque
Tronox LLC
PO BOX 268859
Oklahoma City, OK 73134

Re: **Tronox LLC (TRX)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection (NDEP) Response to:
*Revised Technical Memorandum: Evaluation of Soil Leaching to Groundwater Using
NDEP Guidance, Tronox LLC, Henderson, Nevada*
Dated: September 9, 2010

Dear Mr. Paque,

The NDEP has received and reviewed TRX's above-identified Deliverable and finds that the document is acceptable based on the conditions and comments provided in Attachment A. TRX should provide any requested information and an annotated response-to-comments (RTC) letter to NDEP by **October 26, 2010**. Please note that the request for the submittal of this additional information and RTC letter does not imply that any delay to the remediation schedule is acceptable.

Please contact the undersigned with any questions at sharbour@ndep.nv.gov or 775-687-9332.

Sincerely,

Shannon Harbour, P.E.
Staff Engineer III
Bureau of Corrective Actions
Special Projects Branch
NDEP-Carson City Office
Fax: 775-687-8335

SH:sh

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Lee Erickson, Stauffer Management Company

Attachment A

Technical Memorandum (Main Text)

1. General comment, the statistical analysis of the data, including background comparisons is complete. The presentation effectively shows the data, presents results clearly and interprets the results in the context of the CSM and the decision making process. This is very much on target for an analysis of the data that NDEP expects to see.
2. Page 3, bulleted lists. This section is about Inorganic Chemicals Selected as COPCs. It seems that the main goal is to identify those chemicals for which LSSLs need to be calculated. It is not clear why it is necessary in that case to identify COPCs by RZ and depth. It seems more important to identify the COPCs, since that is what is most important. NDEP agrees that it is useful as part of the data analysis to identify depth intervals and RZ's in which the inorganic COPCs are identified, but the final analysis only seems to need the names of the COPCs. For example, perhaps this presentation can identify:

Arsenic – RZ-B (0-2 fbgs, 2-10 fbgs), RZ-C (0-2 fbgs), RZ-E (0-2 fbgs)

This seems to support conclusions in order of importance. That is, the chemical is what matters most at this stage.

3. Pages 3 – 6, discussion of depth interval begins on page 3 with several more references to the same term throughout this Section. NDEP finds it difficult to follow the logic for the separation into 0-2 feet below ground surface (fbgs) and 2-10 fbgs intervals when the background data are reported as 0.5 fbgs and 10 fbgs. Further explanation is needed that explains why these depth distinctions are appropriate (i.e. Are some of the RZ data representative of the 0-2 fbgs interval? If so, then this should be explained. Also, if so, is there reason to believe that comparison of 0-2 fbgs data with 0.5 fbgs data reasonable?) Explanations of these distinctions should be provided; otherwise, the process potentially suffers from a lack of comparability of data. NDEP recognizes that the data are what they are at this point and that the comparisons of these data are being performed in the most reasonable way possible. However, NDEP would like to see greater explanation of the potential issues of comparing data from the top 6 inches with data from the top 2 feet. (Please note that this comment also applies to Attachment 2.)

Attachment 2: Background Comparison, etc.

1. Page 2-3, Depth Interval Determination, Additional rationale is needed that explains why it is reasonable in this case to compare 0-0.5 feet below ground surface (fbgs) data with 0-2 fbgs data. Please see above comments on Main Text for further guidance. Also, as NDEP previously requested that the rationale for determination of depth intervals be presented, TRX responded that chemical-specific statistical comparison between 0.5 feet below ground surface (fbgs) and 10 fbgs samples indicates that the shallow interval was divided into two intervals (0-2 ft and 2-10 ft). Please provide the results of the statistical comparisons, or a reference to those results, to support the depth interval classifications.

2. Page 2-4, Site Data, please remove the reference to Paul Black as it is unnecessary and the reference is not well enough supported in terms of documentation to keep in the text (i.e. there is no formal reference).
3. Page 2-4, Site Data, 2nd last sentence. NDEP notes that the text indicates that non-detects were replaced with $\frac{1}{2}$ detection limit for this evaluation. This is probably not entirely true, and requires clarification. The non-parametric background comparison tests do not use $\frac{1}{2}$ DL, or, should not use $\frac{1}{2}$ DL, since the Gehan ranking procedure handles the non-detects instead. Also, the summary statistics tables separate NDs from detects, in which case, $\frac{1}{2}$ DL has not been used there either. Please clarify.
4. Tables, NDEP provides the following comments:
 - a. Tables 2A-D, one of the notes to these tables indicates that background comparisons used $\frac{1}{2}$ DL. Again, please clarify as this should not be the case for the non-parametric tests.
 - b. Tables 3A-D, please provide the p-values in these spreadsheets for completeness. (They are easy to obtain in EXCEL given the chisquare statistics. Just use the CHIDIST function.)
 - c. NDEP also notes that when any cell frequency for a chisquare tests is very small, then the normal approximations underlying the test do not work well. Fisher's exact test should be considered in these situations instead. NDEP can provide code for Fisher's exact test if needed by Tronox.
 - d. Tables 3A-D and Evaluation of Chemicals with Low Detection Frequencies starting on Page 2-6. In general, if the DLs are about the same for both datasets, then for chemicals that agree on detection frequency might not be COPCs a comparison between detected values is needed for the final COPC decision. It seems that Tronox did not perform formal comparisons of detected data in these situations but relied on the plots of the data (presumably because the number of detects is too small for statistical analysis). NDEP has the following Remediation Zone (RZ) specific comments:
 - i. RZ-B: NDEP agrees with COPC conclusions except:
 1. Selenium (Se) – the 10_UMCF data have several NDs that are considerably greater than the remaining data. Unless some other arguments can be made concerning detection limits, then it seems that Se should be identified as a COPC here.
 2. Silver (Ag) – from 0-10 ft bgs, the reason for not concluding that Ag is a COPC appears to be because the detected values are less than the NDs. However, there are a few higher concentrations. Please clarify in the text or revise the conclusion.
 - ii. RZ-C: Please look at Ag again for the same issues as for RZ-B in the above comments. Again the high concentrations are in the RZ but perhaps there are not enough of them to fail any statistical tests.
 - iii. RZ-D: NDEP provides the following comments:
 1. Se should be retained as a COPC in 10_UMCF. There is insufficient information to remove Se as a COPC when the data are all ND and the DLs are greater for the site data or provide greater justification for why Se should not be identified as a COPC here.
 2. Ag, please review Ag for the same issues as RZ-B in the above-comments.
 - iv. RZ-E: Antimony (Sb) – similar issues as the in the above-comments regarding silver for the other RZs (i.e. that there are 1 or 2 higher values). If these are not going to be identified as COPCs in these situations, then some explanation should

be given that there are a few higher concentrations but that the detections are not very high and not enough of the detections are high enough to be of concern.

- e. Page 2-8, Table, NDEP noted that for Sb an explanation related to the CSM has not been included. Please add “No explicit relation to CSM for RZ-X” in cases like this, per other similar entries.
- f. Page 2-16, Footnote 1, it is not clear how the 2nd sentence follows from the first. Please clarify. Perhaps “Therefore” should be replaced with “However”.