



Environmental Protection
Omaha, NE

December 12, 2006

BY HAND DELIVERY AND FAX

Mr. Bob Feild
Project Manager
U.S. Environmental Protection Agency
Region 7
901 N. 5th Street
Kansas City, KS 66101

Re: COMMENTS OF UNION PACIFIC RAILROAD COMPANY
ON EPA'S NOVEMBER 6, 2006 "FIELD SAMPLING PLAN
LARGE PARK SURFACE SOIL INVESTIGATION, OMAHA LEAD SITE"

Dear Mr. Feild:

On behalf of Union Pacific Railroad Company, I first want to thank you and EPA for the opportunity to review and comment on the "FIELD SAMPLING PLAN LARGE PARK SURFACE SOIL INVESTIGATION, OMAHA LEAD SITE" prepared by Black & Veatch for EPA (FSP Plan). Union Pacific supports EPA's efforts to identify elevated concentrations of lead in Omaha park soils that present a lead exposure risk to Omaha's children. Sampling in Omaha parks has the additional benefit of reflecting soil conditions from airborne industrial emissions, leaded gasoline along roadways, generally without impact from lead-based paint, which is always a concern with the residential soil sampling. What follows are Union Pacific's comments about the draft Field Sampling Plan.

Section 3.0 – Initial Phase Sampling Effort

Paragraph 2

The data provided in Appendix C do not support the conclusion that stratified sampling is unwarranted (see comments on Appendix C).

Section 4.0 – Large Park Sampling Locations

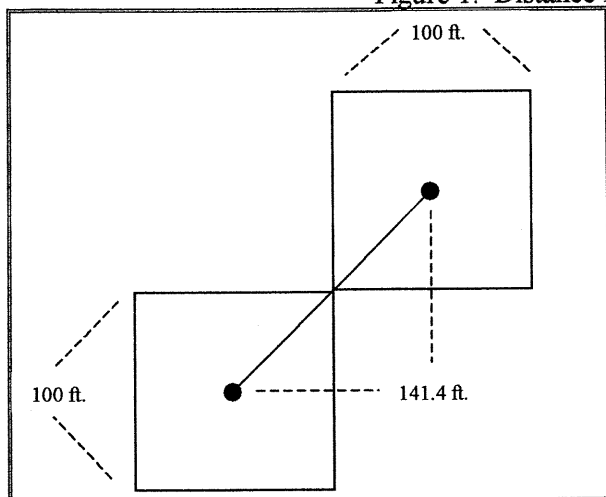
Paragraph 3

This paragraph states: "Sampling crew personnel will be instructed to collect additional samples at any such high child-impact areas." Please explain how these data will be used or combined with other study data. What size of area will be investigated to make a confident decision?

Paragraph 4

This paragraph states: “A software routine within the GIS program was used to identify random sampling locations, with the restriction that sample locations be at least 100 feet apart.” If one is identifying circular areas of 10,000 square feet, the distance between “sample points” must be 112.87 feet to ensure adjacent areas do not overlap. If one is identifying square areas of 10,000 square feet, and the corners of adjacent square areas are not to overlap, the centers of the squares must be 141.4 feet apart. See figure below.

Figure 1. Distance Between Sample Points.



It does not appear that the 100-foot spacing put into the GIS program ensures that investigative areas do not overlap. The only time this distance is adequate is when square investigative areas are side-by-side as on a checkerboard, an arrangement that may not consistently apply when using random selection processes. Please revise the selection criteria for spacing using the GIS program to 141.4 feet, or provide additional discussion about the actual process to demonstrate that the spacing is adequate to prevent overlap of investigative areas.

Section 5.0 – Large Park Sampling Procedures

Bullet 3

This bullet discusses random samples within the ball fields. Please explain how these random locations will be selected. Will each decision unit (10,000 square feet) be a square area as indicated in Figure 1, Appendix B?

Bullet 4

This bullet discusses field work sheets and sketches. Use of digital cameras is suggested to provide additional documentation of the field locations.

Bullet 6

Section 5 does not discuss other Quality Assurance/Quality Control (QA/QC) samples such as blind samples, duplicate samples etc. Please discuss complete QA/QC sample procedures including QA samples for judgmental samples.

Table 5-1

The area for each park is not provided. This lack of information prohibits one from estimating the sample density for each park to evaluate the comparability of the data for each park. Please include a column in Table 5-1 identifying the actual area that is included in the investigation.

Figures

Figures 5-1 through 5-14 do not identify all initial phase sample locations. Please revise these figures to include all initial phase sample locations.

Figure 5-2 identifies one initial phase sample location; two locations were sampled.

Figure 5-4 identifies four initial phase sample locations; data were collected for five locations.

Figure 5-6 is missing two near-road sample locations.

Figure 5-7 identifies ten initial phase sample locations; data were collected for 11 locations.

Figure 5-8 identifies three initial phase sample locations; data were collected for two locations.

Figure 5-9 identifies three initial phase sample locations; data were collected for four locations.

Figure 5-12 identifies two initial phase sample locations; data were collected for three locations.

Figure 5-14 identifies one initial phase sample location; data were collected for two locations.

Please modify the figures to agree with the number of samples collected in the initial phase.

Appendix A

There are a number of inconsistencies and errors in the DQO analysis presented in Appendix A.

The "Specification of Decision Rules" (p. 5) and the null and alternative hypotheses given in the "Performance and Acceptance Criteria" section (p. 6) are not consistent with the "Key study parameter" (p. 5) or the approach that is described in the Field Sampling Plan (FSP) as the basis for the sampling design (FSP page 4-1 and Appendix D).

On page 5 of Appendix A, the key study parameter is described as the 95th percentile of surface soil concentrations at each park. There is mention of 5 percent error rates associated with this approach. However, the null and alternate hypotheses and the decision rules described thereafter do not rely on the 95th percentile value. Instead, those null and alternative hypotheses are based on the result for each individual sample.

Appendix A is fundamentally inconsistent with the sampling design rationale that is presented in Appendix D. Appendix D describes the calculations completed to determine the number of samples that will be needed to estimate the average lead concentration in soil at each park with a high degree of certainty.

Appendix A should clearly identify the parameter and methods that will be used as the basis for decision making. As it stands, two different parameters are presented in Appendix A and a third is presented in Appendix D, and it is not possible to confirm the approach that was ultimately selected to develop the FSP and serve as the basis for future decision making regarding the need for soil remediation in large parks.

Consistent hypotheses and decision rules for two different decision-making approaches are as follows:

1. If decisions are to be made for each 10,000 ft² area within a park, then the correct null hypothesis is:

- the average lead concentration in the 10,000 ft² area is greater than or equal to 800 mg/Kg, and clean up action is necessary.

The correct alternative hypothesis is:

- the average lead concentration in the area is less than 800, and no action is needed.

In this case, Appendix A indicates that the decision will be based on the result from one composite sample collected in a 10,000 ft² area; therefore, a numerical criteria must be used for rejecting or accepting the null hypothesis at known and acceptable error rates. The analysis presented on pages 6 through 9 is one approach for identifying those numerical criteria.

An appropriate decision rule associated with this approach would be: if the sample concentration is less than x , then clean up of the area is not necessary.

2. If decisions are to be made on a park-wide basis, as described in Appendix D, then the correct null hypothesis is:

- the average lead concentration in the park soil is greater than or equal to 800 mg/Kg, and clean up action is necessary.

The correct alternative hypothesis is:

- the average lead concentration in the park is less than 800, and no action is needed.

In this case, using a 95% upper confidence limit on the mean (not a 95th percentile value) as the criteria for rejecting or accepting the null hypothesis provides the targeted Type I decision error rate of 5% (there is a 5% chance that the null hypothesis will be rejected when the actual/true average concentration is greater than 800).

An appropriate decision rule for this approach would be: if the 95 percent upper confidence limit on the mean is less than 800, then no park cleanup is necessary.

The DQO section needs to be completely revised to specify the basic approach for decision making (area-specific or park-wide), correct the null and alternative hypotheses, and accurately describe the acceptable uncertainty (error rate) associated decisions, and present the corrected decision rules that are consistent with other elements of the DQO analysis. As it stands, the DQO analysis does not support the sampling design selected by EPA for this project, and it will confound attempts for data analysis and straightforward decision making.

Appendix B

Bullet 2, Sub Bullet 1

The random process used to locate aliquot sample locations for near-road samples is not discussed or described. The text states "The actual locations of the near road composite samples will be determined at

random in the field.” The phrase “random in the field” implies that the “random” locations were judgmentally identified in the field and are not truly random. Please describe the process used.

Bullet 2, Sub Bullet 2

A 15-foot wide sample area must be 666 feet long to include 10,000 square feet. Please confirm that this is the area used to collect the near-road park soil samples.

Appendix C

Page 2

Comment 1. It is stated that the Wilcoxon Rank Sum test statistically identifies the *near road* and *open park area* data as “probably drawn from different populations” and the average surface soil lead concentrations in the “near road and open park area samples may be statistically different.” The significance level of the comparison test is not described. Does the test indicate that the averages are different at the 90 percent confidence level, 95 percent confidence level, etc? The significance level of the test result is critical information for interpretation and consideration of the statistical analysis, and it is standard scientific practice to identify the significance or confidence level for statistical comparison tests. Appendix C should be revised to include this type of information.

The rationale provided for accepting that there is no difference between the two data sets is that the “mean values fall within one standard deviation of each other, causing the distributions to overlap.” Analysis of the data is shown in the following table.

Table 2. Standard Deviations.

Statistic	Park Statistics	Road Statistics
Average Lead Concentration	61.5	127.3
Standard Deviation	27.4	80.5
Range of +/- One Standard Deviation	34.1 to 88.9	46.8 to 209.8
Range of +/- Two Standard Deviations	18.4 to 104.3	0 to 287

The range of one standard deviation for the park data does not overlap the mean of the road data. Please revise the conclusions identified in bullet one or provide more detailed and documented statistical analysis.

Appendix D

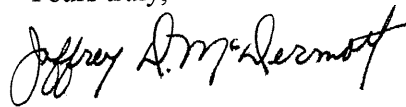
Paragraph 2

Bullet 2

This bullet identifies the specific equation and numbers that were used to calculate the required number of samples from each park. The result of the calculation performed using the equation and numerical values presented in this paragraph is 10.52, or 11 samples. However, the last paragraph on page 2 states that the result is 8. It appears there is an error in the report.

Union Pacific requests that this letter be placed in the Administrative Record for the Omaha Lead Site. Please contact me if you have any questions about these comments. Again, thank you for the opportunity to provide these comments.

Yours truly,

A handwritten signature in black ink, appearing to read "Jeffrey D. McDermott". The signature is written in a cursive style with a large initial "J".

Jeffrey D. McDermott, P.E.
Mgr. Environmental Site Remediation

C: OLS CAG
Suzanne Echevarria - UPRR