



RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

235 Promenade Street, Providence, RI 02908-5767

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August 16, 2000

James Shafer, Remedial Project Manager
U.S. Department of the Navy
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway
Code 1823-Mail Stop 82
Lester, PA 19113-2090

RE: Evaluation of Navy's Response to Comments on the Draft Background Soil Investigation Report for Old Fire Fighter Training Area, Naval Station Newport, Newport, Rhode Island

Dear Mr. Shafer,

The Department of Environmental Management Office of Waste Management has reviewed the Navy's response to comments on the Draft Background Soil Investigation Report for the Old Fire Fighting Training Area. Attached is an evaluation of these responses. If the Navy has any questions concerning the above, please contact this Office at (401) 222-2797, ext. 7111.

Sincerely,

A handwritten signature in cursive script that reads "Paul Kulpa".

Paul Kulpa, Project Manager
Office of Waste Management

cc: Warren S. Angell, DEM OWM
Kymberlee Keckler, EPA Region I
Melissa Griffen, NETC

Offtassbkgdinv

2007

**Evaluation of Navy Response to Comments
on
Draft Background Soil Investigation Report
Old Fire Fighter Training Area**

2. General Comment

The Office requested that the results from standard statistical test be included in this submission (the Navy provide some of the requested information). These test include, but are not limited to, the mean (geometric/arithmetic), median, mode, variance, range, minimum, maximum, standard deviation, interquartile range, percentiles, variation, sum, count, confidence level, skewness, and kurtosis. All of this information should be presented in table format. That is, all of the above information for the different contaminants will be grouped together; i.e. arsenic surface results will be in one group, arsenic subsurface in another group, etc.. This information is readily available from statistical software packages and is needed in order to evaluate the background data.

Evaluation of Navy's Response

In comments generated on the Work Plan for the Background Investigation the Office requested that the Navy provide the requested information in a single table format. In comments generated on the Draft Background Investigation Report the Office reiterated its comments. The Navy responded that a portion of the requested information may be found in tables B-1, B-2, B-14, B-15, B-17, B-18, B-3, B-4, B-6, B-7, B-5, B-12, B-13, B-8, B-9, B-10 and B-11. The Navy did not provide the remaining statistical information that the State requested. Summary statistical information is normally provided in a single table as opposed to the extensive list noted above. In addition, the Office considers the requested statistical information to be important. Therefore, please provide the information as requested.

**4. Section 4, Data Analysis and Statistical Testing;
Page 16, last Paragraph.**

This section of the reports notes that the results from the duplicate soil samples for arsenic was suspect. Accordingly an outlier test was performed and the suspect result was determined to be an outlier. However, the data point was retained when the data set failed to follow a normal distribution.

Depending upon the confidence level employed the data set will follow a normal distribution when the Shapiro-Wilk Test, Filliben's Statistic and Coefficient of Variation Test are performed. Further, the relative percent difference between these two duplicates sample is unacceptable. Therefore, this data should be

rejected from the sample set and the background concentrations should be recalculated without this data.

Evaluation of Navy's Response

The Navy indicated that removal of one of the questionable duplicate samples would result in a slightly smaller arsenic value. Further, using selected statistical test and confidence intervals the data would not follow a normal distribution when the questionable outliers were removed.

The relative percent difference is unacceptable for duplicate samples. Accordingly, both questionable data points should be removed from the process. In addition, the data set will follow a normal distribution when the Shapiro-Wilk Test, Filliben's Statistic and Coefficient of Variation Test are performed. Therefore both data points should be eliminated from the analysis.

**4. Section 4, Data Analysis and Statistical Testing;
Page 16, last Paragraph.**

Subsurface arsenic sample Off-SO-BK02-0406 may not be representative of background. The Office recommends evaluating this sample and performing outlier tests.

Evaluation of Navy's response

The Navy noted that the highest data point could not be removed and that multiple outlier data points could not be removed due to insufficient data size. As noted above the Office disagrees with the Navy's conclusion that the highest data point should not be removed. Accordingly, the outlier test should be performed as requested on the questionable data point.

**5. Section 4, Data Analysis and Statistical Testing;
Page 17, Second Paragraph.**

This section of the report states that beryllium did not match a lognormal or normal distribution after removal of the highest data point, hence the highest data point was set as the background valued. Depending upon the confidence interval employed the distribution did match a normal distribution using the Shapiro-Wilk Test. A normal distribution was also observed, using either confidence interval for the Filliben's Statistic and Coefficient of Variation Test. Further the point in question is nearly twice the concentration of the highest point in the group data, (seventeen of the data points fall between 0.22 and 0.52 PPM, point in question is 1.1 PPM). Therefore, this point should be removed from the data set and the values should be recalculated.

Evaluation of Navy's Response

The Navy noted that the data set did not match a normal distribution using the Shapiro Wilks test using a five- percent level of significance. Therefore, the data point should be retained. The Office noted that a normal distribution was observed using other test as well as the test in question using a higher interval. The Office reiterates its position that the value should be rejected.

**7. Section 4, Data Analysis and Statistical Testing;
Page 17, Paragraph 3,4 Page 18, Paragraph 1-3.**

The report contains a discussion of the use of the 95 percent UTL and values above this number. In addition, it has provided tables with UTLs for each compound. As stated in comments on the Work Plan whether the average, the average and standard deviations or the maximum observed concentration is used as a background number will depend upon the results for each analyte. Accordingly, for certain compounds values other the UTL may be appropriate. Therefore, these paragraphs should be removed from the text.

Evaluation of Navy's Response

The Navy has indicated that the UTL was the only statistical criteria agreed to for the background study. This is not the case. In comments on the Work Plan, dated 25 February 2000, the Office states that, "This section of the report states that the 95 % UCL will be used to determine the background concentration. It is premature to state whether the 95 % UCL will be employed as the background concentration. Accordingly, the report should also evaluate other values such as the mean, etc.". The Office therefore reiterates its position.