

**SANTEE COOPER  
CLASS 2 LANDFILL  
SELECTION OF STATISTICAL PROCEDURES**

Pursuant to CFR Title 40 Chapter I Subchapter I Part 257 Subpart D §257.93 (f)(6), I certify that the selected statistical method described herein is appropriate for evaluating the groundwater monitoring data for the Class 2 Landfill. The underlying evaluation to select a statistical procedure was conducted under my direction or supervision according to a system designed to assure that qualified personnel selected the statistical procedure pursuant to 40 CFR §257.93. The certification submitted is, to the best of my knowledge, accurate and complete.

A groundwater monitoring system was designed and constructed to meet the requirements of 40 CFR §257.91. The groundwater sampling and analysis program includes selection of the statistical procedures to be used for evaluating groundwater monitoring data to meet the requirements of 40 CFR §257.93. A minimum of eight independent samples were collected for each background and downgradient well to meet the requirements of 40 CFR §257.94(b). Based on this certification, groundwater monitoring data from the eight independent samples for Appendix III constituents for the Class 2 Landfill were evaluated and were found to exhibit ranges of sampling frequency, data distribution and frequency of results less than the limits of detection that support the selection of upper tolerance limits (UTL) (§257.93(f)(3)) as an appropriate statistical method to evaluate the groundwater data for each Appendix III parameter at each downgradient monitoring location for the Class 2 Landfill.

A tolerance interval is a concentration range, with a specified confidence level, designed to contain a pre-specified proportion (e.g., 95 percent) of the underlying population from which the statistical sample is drawn (background). The upper endpoint of a tolerance interval is called the upper tolerance limit or UTL. Depending on the data distribution, parametric or non-parametric tolerance limit procedures are used to evaluate groundwater monitoring data using this method. Parametric tolerance limits utilize normally distributed data or normalized data via a transformation of the sample background data used to construct the limit. If the data are non-normal and a transformation is not indicated, non-parametric procedures (order statistics or bootstrap methods) are used to calculate the tolerance limit. If all the background data are non-detect, a reporting limit (RL) may serve as an approximate upper tolerance limit.

The data distribution (257.93(g)(1)) and frequency of data measured below detection limits (257.93(g)(5)) for the groundwater data from the Class 2 Landfill indicates that calculating a UTL for each Appendix III constituent in the background data for the upgradient monitoring locations is appropriate. The UTLs calculated from the background data are then estimated to represent the 95<sup>th</sup> UTL with 99% coverage. These UTLs are used for comparison to data from each compliance well. As required by §257.93(g)(4), the confidence level and the percentage of the population that the tolerance interval will contain make this statistical method at least as effective as any other statistical approach outlined in §§257.93(f) and (g).

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