Attachment VII-7

Statistical Methods for Groundwater Monitoring at

Clean Harbors Grassy Mountain, LLC
The Grassy Mountain Facility

The June 1996 Report "Statistical Methods for Ground-Water Monitoring at the USPCI/Laidlaw Grassy Mountain Facility" prepared by Robert D. Gibbons, Ph.D. will be used as the basis for statistical analyses of ground water parameters with the following exceptions:

1. The Shewhart and Cusum limits will not remain fixed at 4.5 but will vary with each Waste Management Area based on the number of background samples available. Gibbons (1998).

2. The background data will continue to be updated every two years but will be the data will be subjected to a trend analysis prior to updating. Gibbons (1998).

Use of Combined Shewhart-CUSUM Control Charts for Ground Water Monitoring Applications, Gibbons (1998)

The following will also be allowed:

1. Historic data from pre-1988 may be excluded when determining statistical limits.

2. The number of parameters undergoing statistical comparisons may be reduced to help reduce false positive rates.

3. Each Waste Management Unit may be treated as a separate unit for determining false positive rates instead of considering the entire facility site-wide.

Other References considered, but not limited to:

Statistical Methods of Groundwater Monitoring, Gibbons (1994)

Evaluation of Control Chart Methodology for RCRA Waste sites, A technical report, Starks (1988)
ASTM PS64-96, 1996