

US EPA ARCHIVE DOCUMENT

**APPENDIX C.6**

**95% UCL SUPPORTING DOCUMENTATION**

This appendix includes output from the U.S. EPA statistical package, ProUCL (v3.0), only for COPCs identified in Section 3.0 as requiring 95% UCL calculation. Data sets (e.g., stations or reaches) determined to have too few samples (<4) to calculate a 95% UCL via ProUCL have not been included.

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\SW stat - reach 1.xls		
Variable:	Heptachlor epoxide		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	4		
Minimum	0.0011		
Maximum	0.025		
Mean	0.014914		
Standard Deviation	0.012581		
Variance	0.000158		
Coefficient of Variation	0.843571		
Skewness	-0.375513		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.673244		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.024155		
Gamma Statistics			
k hat	0.832109		
k star (bias corrected)	0.570729		
Theta hat	0.017923		
Theta star	0.026132		
nu hat	11.64952		
nu star	7.990203		
5% Approximate Chi Square Value	2.728667		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	1.891394		
Anderson-Darling Test Statistic	1.163421		
Anderson-Darling 5% Critical Value	0.733302		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.379485		
Kolmogrov-Smirnov 5% Critical Value	0.321655		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.043673		
95% Adjusted Gamma UCL	0.063005		
Lognormal Statistics			
Minimum of log data	-6.812445		
Maximum of log data	-3.688879		
Mean of log data	-4.915021		
Standard Deviation of log data	1.537422		
Variance of log data	2.363665		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.71377		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.023916		
MLE Standard Deviation	0.074218		
MLE Coefficient of Variation	3.103199		
MLE Skewness	39.19291		
MLE Median	0.007336		
MLE 80% Quantile	0.026893		
MLE 90% Quantile	0.052896		
MLE 95% Quantile	0.092		
MLE 99% Quantile	0.262113		
MVU Estimate of Median	0.006173		
MVU Estimate of Mean	0.01824		
MVU Estimate of Standard Deviation	0.029038		
MVU Estimate of SE of Mean	0.010312		
95% H-UCL	0.665468		
95% Chebyshev (MVUE) UCL	0.063191		
97.5% Chebyshev (MVUE) UCL	0.082642		
99% Chebyshev (MVUE) UCL	0.120848		
Non-parametric Statistics			
95% CLT UCL	0.022736		
95% Adjusted-CLT UCL	0.022015		
95% Modified-t UCL	0.024042		
95% Jackknife UCL	0.024155		
95% Chebyshev (Mean, Sd) UCL	0.035642		
97.5% Chebyshev (Mean, Sd) UCL	0.044611		
99% Chebyshev (Mean, Sd) UCL	0.062229		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.062229		99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	YES		Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\SW stat - reach 1.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	11.6		
Maximum	77.1		
Mean	24.58571		
Standard Deviation	23.5859		
Variance	556.2948		
Coefficient of Variation	0.959334		
Skewness	2.454163		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.60761		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	41.90845		
Gamma Statistics			
k hat	2.187983		
k star (bias corrected)	1.345514		
Theta hat	11.2367		
Theta star	18.27235		
nu hat	30.63177		
nu star	18.8372		
5% Approximate Chi Square Value	9.997167		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	8.127341		
Anderson-Darling Test Statistic	1.003176		
Anderson-Darling 5% Critical Value	0.714392		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.312492		
Kolmogrov-Smirnov 5% Critical Value	0.314849		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	46.32573		
95% Adjusted Gamma UCL	56.98371		
Lognormal Statistics			
Minimum of log data	2.451005		
Maximum of log data	4.345103		
Mean of log data	2.956571		
Standard Deviation of log data	0.667546		
Variance of log data	0.445618		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.760579		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	24.03184		
MLE Standard Deviation	18.00713		
MLE Coefficient of Variation	0.749303		
MLE Skewness	2.668608		
MLE Median	19.23191		
MLE 80% Quantile	33.8063		
MLE 90% Quantile	45.34807		
MLE 95% Quantile	57.66695		
MLE 99% Quantile	90.85667		
MVU Estimate of Median	18.62702		
MVU Estimate of Mean	23.17813		
MVU Estimate of Standard Deviation	15.63346		
MVU Estimate of SE of Mean	5.886284		
95% H-UCL	51.91841		
95% Chebyshev (MVUE) UCL	48.83585		
97.5% Chebyshev (MVUE) UCL	59.93796		
99% Chebyshev (MVUE) UCL	81.74592		
Non-parametric Statistics			
95% CLT UCL	39.24898		
95% Adjusted-CLT UCL	48.08462		
95% Modified-t UCL	43.28663		
95% Jackknife UCL	41.90845		
95% Chebyshev (Mean, Sd) UCL	63.4437		
97.5% Chebyshev (Mean, Sd) UCL	80.25758		
99% Chebyshev (Mean, Sd) UCL	113.2852		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	38.30485		
95% Bootstrap-t UCL	89.96203		
95% Hall's Bootstrap UCL	97.67162		
95% Percentile Bootstrap UCL	41.3		
95% BCA Bootstrap UCL	51.85714		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	46.32573	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\SW stat - reach 1.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	4		
Minimum	0.05		
Maximum	2.5		
Mean	0.43		
Standard Deviation	0.913446		
Variance	0.834383		
Coefficient of Variation	2.124293		
Skewness	2.637824		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.481661		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	1.100883		
<b>Gamma Statistics</b>			
k hat	0.527192		
k star (bias corrected)	0.396491		
Theta hat	0.815641		
Theta star	1.084514		
nu hat	7.380695		
nu star	5.50873		
5% Approximate Chi Square Value	1.414365		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	0.879546		
Anderson-Darling Test Statistic	1.599769		
Anderson-Darling 5% Critical Value	0.749865		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.410171		
Kolmogrov-Smirnov 5% Critical Value	0.326742		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.687595		
95% Adjusted Gamma UCL	2.713758		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.995732		
Maximum of log data	0.916291		
Mean of log data	-2.039013		
Standard Deviation of log data	1.348287		
Variance of log data	1.817878		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.652622		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.323009		
MLE Standard Deviation	0.733649		
MLE Coefficient of Variation	2.271294		
MLE Skewness	18.53099		
MLE Median	0.130157		
MLE 80% Quantile	0.406687		
MLE 90% Quantile	0.736045		
MLE 95% Quantile	1.195924		
MLE 99% Quantile	2.995475		
MVU Estimate of Median	0.114058		
MVU Estimate of Mean	0.266285		
MVU Estimate of Standard Deviation	0.369918		
MVU Estimate of SE of Mean	0.134053		
95% H-UCL	4.341498		
95% Chebyshev (MVUE) UCL	0.850609		
97.5% Chebyshev (MVUE) UCL	1.103447		
99% Chebyshev (MVUE) UCL	1.600097		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.997886		
95% Adjusted-CLT UCL	1.365685		
95% Modified-t UCL	1.158252		
95% Jackknife UCL	1.100883		
95% Chebyshev (Mean, Sd) UCL	1.93491		
97.5% Chebyshev (Mean, Sd) UCL	2.586086		
99% Chebyshev (Mean, Sd) UCL	3.865195		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	3.865195		99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	YES		Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\SW stat - reach 1.xls		
Variable:	Chromium		
<b>Raw Statistics</b>			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	2.2		
Maximum	146		
Mean	25.78571		
Standard Deviation	53.13861		
Variance	2823.711		
Coefficient of Variation	2.060777		
Skewness	2.619039		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.513794		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	64.81351		
<b>Gamma Statistics</b>			
k hat	0.514182		
k star (bias corrected)	0.389056		
Theta hat	50.14903		
Theta star	66.27761		
nu hat	7.198544		
nu star	5.446787		
5% Approximate Chi Square Value	1.363561		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	0.842517		
Anderson-Darling Test Statistic	1.034189		
Anderson-Darling 5% Critical Value	0.750666		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.37827		
Kolmogrov-Smirnov 5% Critical Value	0.32698		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	103.0018		
95% Adjusted Gamma UCL	166.7021		
<b>Lognormal Statistics</b>			
Minimum of log data	0.788457		
Maximum of log data	4.983607		
Mean of log data	2.019826		
Standard Deviation of log data	1.470733		
Variance of log data	2.163057		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.820777		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	22.22803		
MLE Standard Deviation	61.67099		
MLE Coefficient of Variation	2.77447		
MLE Skewness	29.68039		
MLE Median	7.537012		
MLE 80% Quantile	26.11723		
MLE 90% Quantile	49.88489		
MLE 95% Quantile	84.70563		
MLE 99% Quantile	230.6154		
MVU Estimate of Median	6.437938		
MVU Estimate of Mean	17.45984		
MVU Estimate of Standard Deviation	26.54405		
MVU Estimate of SE of Mean	9.498762		
95% H-UCL	473.3066		
95% Chebyshev (MVUE) UCL	58.86398		
97.5% Chebyshev (MVUE) UCL	76.77959		
99% Chebyshev (MVUE) UCL	111.9713		
<b>Non-parametric Statistics</b>			
95% CLT UCL	58.82179		
95% Adjusted-CLT UCL	80.06569		
95% Modified-t UCL	68.12714		
95% Jackknife UCL	64.81351		
95% Chebyshev (Mean, Sd) UCL	113.332		
97.5% Chebyshev (Mean, Sd) UCL	151.2134		
99% Chebyshev (Mean, Sd) UCL	225.624		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	56.38888		
95% Bootstrap-t UCL	395.3938		
95% Hall's Bootstrap UCL	319.3894		
95% Percentile Bootstrap UCL	64.41429		
95% BCA Bootstrap UCL	84.98571		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	58.86398	95% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

US EPA ARCHIVE DOCUMENT

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\SW stat - reach 1.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	0.37		
Maximum	75.9		
Mean	13.07286		
Standard Deviation	27.90491		
Variance	778.6841		
Coefficient of Variation	2.134569		
Skewness	2.569623		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.54249		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	33.5677		
Gamma Statistics			
k hat	0.362299		
k star (bias corrected)	0.302266		
Theta hat	36.08308		
Theta star	43.24951		
nu hat	5.072183		
nu star	4.231724		
5% Approximate Chi Square Value	0.81501		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	0.460022		
Anderson-Darling Test Statistic	0.763744		
Anderson-Darling 5% Critical Value	0.773958		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.273797		
Kolmogrov-Smirnov 5% Critical Value	0.332645		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	67.87733		
95% Adjusted Gamma UCL	120.2566		
Lognormal Statistics			
Minimum of log data	-0.994252		
Maximum of log data	4.329417		
Mean of log data	0.72491		
Standard Deviation of log data	2.030684		
Variance of log data	4.123679		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.85969		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	16.22818		
MLE Standard Deviation	126.5238		
MLE Coefficient of Variation	7.796546		
MLE Skewness	497.3115		
MLE Median	2.064545		
MLE 80% Quantile	11.48266		
MLE 90% Quantile	28.05984		
MLE 95% Quantile	58.28738		
MLE 99% Quantile	232.3585		
MVU Estimate of Median	1.519791		
MVU Estimate of Mean	9.206831		
MVU Estimate of Standard Deviation	19.58021		
MVU Estimate of SE of Mean	6.479445		
95% H-UCL	4724.854		
95% Chebyshev (MVUE) UCL	37.45008		
97.5% Chebyshev (MVUE) UCL	49.67095		
99% Chebyshev (MVUE) UCL	73.6765		
Non-parametric Statistics			
95% CLT UCL	30.42123		
95% Adjusted-CLT UCL	41.36666		
95% Modified-t UCL	35.27496		
95% Jackknife UCL	33.5677		
95% Chebyshev (Mean, Sd) UCL	59.04645		
97.5% Chebyshev (Mean, Sd) UCL	78.93926		
99% Chebyshev (Mean, Sd) UCL	118.0148		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	28.58702		
95% Bootstrap-t UCL	263.3797		
95% Hall's Bootstrap UCL	256.2216		
95% Percentile Bootstrap UCL	33.34857		
95% BCA Bootstrap UCL	44.13071		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	120.2566	95% Adjusted Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\SW stat - reach 1.xls	
Variable:	Manganese	
Raw Statistics		
Number of Observations	7	
Number of Missing Data	0	
Number of Valid Observations	7	
Number of Distinct Observations	7	
Minimum	316	
Maximum	691	
Mean	469.7143	
Standard Deviation	149.0265	
Variance	22208.9	
Coefficient of Variation	0.317271	
Skewness	0.372003	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.889297	
Shapiro-Wilk 5% Critical Value	0.803	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	579.1672	
Gamma Statistics		
k hat	11.65869	
k star (bias corrected)	6.757349	
Theta hat	40.28876	
Theta star	69.51162	
nu hat	163.2217	
nu star	94.60288	
5% Approximate Chi Square Value	73.16614	
Adjusted Level of Significance	0.01584	
Adjusted Chi Square Value	67.49335	
Anderson-Darling Test Statistic	0.460143	
Anderson-Darling 5% Critical Value	0.708181	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.265792	
Kolmogrov-Smirnov 5% Critical Value	0.311852	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	607.3346	
95% Adjusted Gamma UCL	658.3808	
Lognormal Statistics		
Minimum of log data	5.755742	
Maximum of log data	6.53814	
Mean of log data	6.108626	
Standard Deviation of log data	0.319148	
Variance of log data	0.101855	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.882074	
Shapiro-Wilk 5% Critical Value	0.803	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	473.2166	
MLE Standard Deviation	154.9547	
MLE Coefficient of Variation	0.32745	
MLE Skewness	1.01746	
MLE Median	449.7202	
MLE 80% Quantile	588.929	
MLE 90% Quantile	677.7176	
MLE 95% Quantile	760.2323	
MLE 99% Quantile	944.791	
MVU Estimate of Median	446.4572	
MVU Estimate of Mean	469.6757	
MVU Estimate of Standard Deviation	150.2918	
MVU Estimate of SE of Mean	56.79198	
95% H-UCL	626.468	
95% Chebyshev (MVUE) UCL	717.2262	
97.5% Chebyshev (MVUE) UCL	824.3415	
99% Chebyshev (MVUE) UCL	1034.749	
Non-parametric Statistics		
95% CLT UCL	562.3635	
95% Adjusted-CLT UCL	570.8259	
95% Modified-t UCL	580.4872	
95% Jackknife UCL	579.1672	
95% Chebyshev (Mean, Sd) UCL	715.2368	
97.5% Chebyshev (Mean, Sd) UCL	821.4746	
99% Chebyshev (Mean, Sd) UCL	1030.158	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	556.5633	
95% Bootstrap-t UCL	588.5599	
95% Hall's Bootstrap UCL	575.0045	
95% Percentile Bootstrap UCL	557.4286	
95% BCA Bootstrap UCL	579.8571	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	579.1672	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\SW stat - reach 1.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	5		
Minimum	0.04		
Maximum	0.88		
Mean	0.203929		
Standard Deviation	0.308855		
Variance	0.095391		
Coefficient of Variation	1.514525		
Skewness	2.309055		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.632057		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.430768		
Gamma Statistics			
k hat	0.803299		
k star (bias corrected)	0.554266		
Theta hat	0.253864		
Theta star	0.367925		
nu hat	11.24619		
nu star	7.759729		
5% Approximate Chi Square Value	2.596022		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	1.785756		
Anderson-Darling Test Statistic	0.839904		
Anderson-Darling 5% Critical Value	0.734298		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.314269		
Kolmogrov-Smirnov 5% Critical Value	0.322008		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.60956		
95% Adjusted Gamma UCL	0.88614		
Lognormal Statistics			
Minimum of log data	-3.218876		
Maximum of log data	-0.127833		
Mean of log data	-2.328403		
Standard Deviation of log data	1.207206		
Variance of log data	1.457347		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.801846		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.201951		
MLE Standard Deviation	0.366559		
MLE Coefficient of Variation	1.815089		
MLE Skewness	11.42517		
MLE Median	0.097451		
MLE 80% Quantile	0.270275		
MLE 90% Quantile	0.459717		
MLE 95% Quantile	0.709958		
MLE 99% Quantile	1.61536		
MVU Estimate of Median	0.087695		
MVU Estimate of Mean	0.1745		
MVU Estimate of Standard Deviation	0.216194		
MVU Estimate of SE of Mean	0.079316		
95% H-UCL	1.679532		
95% Chebyshev (MVUE) UCL	0.520229		
97.5% Chebyshev (MVUE) UCL	0.669826		
99% Chebyshev (MVUE) UCL	0.96368		
Non-parametric Statistics			
95% CLT UCL	0.395943		
95% Adjusted-CLT UCL	0.504803		
95% Modified-t UCL	0.447748		
95% Jackknife UCL	0.430768		
95% Chebyshev (Mean, Sd) UCL	0.71277		
97.5% Chebyshev (Mean, Sd) UCL	0.932946		
99% Chebyshev (Mean, Sd) UCL	1.365439		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.385072		
95% Bootstrap-t UCL	1.761627		
95% Hall's Bootstrap UCL	1.600095		
95% Percentile Bootstrap UCL	0.411429		
95% BCA Bootstrap UCL	0.5525		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.60956	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nr-sd.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	106		
Maximum	221		
Mean	165.8		
Standard Deviation	50.86944		
Variance	2587.7		
Coefficient of Variation	0.306812		
Skewness	0.096098		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.903364		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	214.2984		
<b>Gamma Statistics</b>			
k hat	12.87945		
k star (bias corrected)	5.285112		
Theta hat	12.87322		
Theta star	31.37114		
nu hat	128.7945		
nu star	52.85112		
5% Approximate Chi Square Value	37.14806		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	31.49301		
Anderson-Darling Test Statistic	0.330226		
Anderson-Darling 5% Critical Value	0.678825		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.256726		
Kolmogrov-Smirnov 5% Critical Value	0.357466		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	235.8863		
95% Adjusted Gamma UCL	278.2432		
<b>Lognormal Statistics</b>			
Minimum of log data	4.663439		
Maximum of log data	5.398163		
Mean of log data	5.071459		
Standard Deviation of log data	0.316903		
Variance of log data	0.100427		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.919766		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	167.6154		
MLE Standard Deviation	54.47971		
MLE Coefficient of Variation	0.325028		
MLE Skewness	1.009421		
MLE Median	159.4067		
MLE 80% Quantile	208.3546		
MLE 90% Quantile	239.5299		
MLE 95% Quantile	268.4765		
MLE 99% Quantile	333.1437		
MVU Estimate of Median	157.8111		
MVU Estimate of Mean	165.8965		
MVU Estimate of Standard Deviation	52.39738		
MVU Estimate of SE of Mean	23.42979		
95% H-UCL	246.7659		
95% Chebyshev (MVUE) UCL	268.0246		
97.5% Chebyshev (MVUE) UCL	312.2155		
99% Chebyshev (MVUE) UCL	399.0199		
<b>Non-parametric Statistics</b>			
95% CLT UCL	203.2196		
95% Adjusted-CLT UCL	204.2643		
95% Modified-t UCL	214.4614		
95% Jackknife UCL	214.2984		
95% Chebyshev (Mean, Sd) UCL	264.9628		
97.5% Chebyshev (Mean, Sd) UCL	307.8706		
99% Chebyshev (Mean, Sd) UCL	392.1547		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	198.8031		
95% Bootstrap-t UCL	238.2743		
95% Hall's Bootstrap UCL	240.2048		
95% Percentile Bootstrap UCL	200.6		
95% BCA Bootstrap UCL	216.2		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	214.2984		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nr-sd.xls				
Variable:	Barium				
<b>Raw Statistics</b>					
Number of Observations	5				
Number of Missing Data	0				
Number of Valid Observations	5				
Number of Distinct Observations	5				
Minimum	25.4				
Maximum	65.5				
Mean	41.18				
Standard Deviation	15.6316				
Variance	244.347				
Coefficient of Variation	0.379592				
Skewness	1.065571				
Too Few Distinct Observations?	NO				
<b>Normal Statistics</b>					
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.93001				
Shapiro-Wilk 5% Critical Value	0.762				
5% Normality Test Result	NORMAL				
95% Student's-t UCL	56.08302				
<b>Gamma Statistics</b>					
k hat	9.390008				
k star (bias corrected)	3.889337				
Theta hat	4.385513				
Theta star	10.58792				
nu hat	93.90008				
nu star	38.89337				
5% Approximate Chi Square Value	25.60644				
Adjusted Level of Significance	0.0086				
Adjusted Chi Square Value	21.01864				
Anderson-Darling Test Statistic	0.22806				
Anderson-Darling 5% Critical Value	0.679103				
Anderson-Darling 5% Gamma Test Result	AD GAMMA				
Kolmogrov-Smirnov Test Statistic	0.212022				
Kolmogrov-Smirnov 5% Critical Value	0.357678				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA				
5% Gamma Test Result	GAMMA				
95% Approximate Gamma UCL	62.54789				
95% Adjusted Gamma UCL	76.20041				
<b>Lognormal Statistics</b>					
Minimum of log data	3.234749				
Maximum of log data	4.18205				
Mean of log data	3.663761				
Standard Deviation of log data	0.363268				
Variance of log data	0.131964				
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.980141				
Shapiro-Wilk 5% Critical Value	0.762				
5% Lognormality Test Result	LOGNORMAL				
MLE Mean	41.66838				
MLE Standard Deviation	15.65018				
MLE Coefficient of Variation	0.375589				
MLE Skewness	1.17975				
MLE Median	39.00776				
MLE 80% Quantile	53.02281				
MLE 90% Quantile	62.21277				
MLE 95% Quantile	70.9047				
MLE 99% Quantile	90.80573				
MVU Estimate of Median	38.49526				
MVU Estimate of Mean	41.10335				
MVU Estimate of Standard Deviation	14.86604				
MVU Estimate of SE of Mean	6.646824				
95% H-UCL	66.267				
95% Chebyshev (MVUE) UCL	70.07619				
97.5% Chebyshev (MVUE) UCL	82.61276				
99% Chebyshev (MVUE) UCL	107.2384				
<b>Non-parametric Statistics</b>					
95% CLT UCL	52.67862				
95% Adjusted-CLT UCL	56.23818				
95% Modified-t UCL	56.63824				
95% Jackknife UCL	56.08302				
95% Chebyshev (Mean, Sd) UCL	71.6516				
97.5% Chebyshev (Mean, Sd) UCL	84.83669				
99% Chebyshev (Mean, Sd) UCL	110.7362				
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	51.4984				
95% Bootstrap-t UCL	72.57141				
95% Hall's Bootstrap UCL	134.4045				
95% Percentile Bootstrap UCL	51.6				
95% BCA Bootstrap UCL	55.86				
<b>Recommendations</b>					
Human Inspection Recommended?	NO				
Appropriate Distribution	NORMAL				
1st Recommended UCL	56.08302				
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value	NO				
Recommendation Warning!	NONE				
Alternative UCL	NONE				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nr-sd.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	0.245		
Maximum	2.7		
Mean	1.339		
Standard Deviation	0.898321		
Variance	0.80698		
Coefficient of Variation	0.670889		
Skewness	0.664964		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.964331		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	2.19545		
<b>Gamma Statistics</b>			
k hat	2.141703		
k star (bias corrected)	0.990014		
Theta hat	0.625204		
Theta star	1.352506		
nu hat	21.41703		
nu star	9.900143		
5% Approximate Chi Square Value	3.878611		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	2.419709		
Anderson-Darling Test Statistic	0.265065		
Anderson-Darling 5% Critical Value	0.684192		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.205273		
Kolmogrov-Smirnov 5% Critical Value	0.360321		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	3.417793		
95% Adjusted Gamma UCL	5.478466		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.406497		
Maximum of log data	0.993252		
Mean of log data	0.040658		
Standard Deviation of log data	0.893362		
Variance of log data	0.798096		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.910707		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	1.552251		
MLE Standard Deviation	1.715437		
MLE Coefficient of Variation	1.105128		
MLE Skewness	4.665087		
MLE Median	1.041496		
MLE 80% Quantile	2.215658		
MLE 90% Quantile	3.282577		
MLE 95% Quantile	4.527814		
MLE 99% Quantile	8.319641		
MVU Estimate of Median	0.960557		
MVU Estimate of Mean	1.411306		
MVU Estimate of Standard Deviation	1.228164		
MVU Estimate of SE of Mean	0.545705		
95% H-UCL	11.32927		
95% Chebyshev (MVUE) UCL	3.789978		
97.5% Chebyshev (MVUE) UCL	4.819231		
99% Chebyshev (MVUE) UCL	6.840999		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.999805		
95% Adjusted-CLT UCL	2.127461		
95% Modified-t UCL	2.215362		
95% Jackknife UCL	2.19545		
95% Chebyshev (Mean, Sd) UCL	3.090149		
97.5% Chebyshev (Mean, Sd) UCL	3.847873		
99% Chebyshev (Mean, Sd) UCL	5.336275		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.936154		
95% Bootstrap-t UCL	2.279447		
95% Hall's Bootstrap UCL	2.859329		
95% Percentile Bootstrap UCL	1.94		
95% BCA Bootstrap UCL	2.11		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.19545		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nr-sd.xls	
Variable:	Chromium	
Raw Statistics		
Number of Observations	5	
Number of Missing Data	0	
Number of Valid Observations	5	
Number of Distinct Observations	5	
Minimum	104	
Maximum	258	
Mean	186.2	
Standard Deviation	67.73625	
Variance	4588.2	
Coefficient of Variation	0.363782	
Skewness	0.121231	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.868304	
Shapiro-Wilk 5% Critical Value	0.762	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	250.7791	
Gamma Statistics		
k hat	8.996057	
k star (bias corrected)	3.731756	
Theta hat	20.69796	
Theta star	49.89608	
nu hat	89.96057	
nu star	37.31756	
5% Approximate Chi Square Value	24.32933	
Adjusted Level of Significance	0.0086	
Adjusted Chi Square Value	19.87304	
Anderson-Darling Test Statistic	0.426444	
Anderson-Darling 5% Critical Value	0.679247	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.26512	
Kolmogrov-Smirnov 5% Critical Value	0.357735	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	285.603	
95% Adjusted Gamma UCL	349.6461	
Lognormal Statistics		
Minimum of log data	4.644391	
Maximum of log data	5.55296	
Mean of log data	5.170213	
Standard Deviation of log data	0.382991	
Variance of log data	0.146682	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.889469	
Shapiro-Wilk 5% Critical Value	0.762	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	189.3419	
MLE Standard Deviation	75.25861	
MLE Coefficient of Variation	0.397475	
MLE Skewness	1.25522	
MLE Median	175.9523	
MLE 80% Quantile	243.1895	
MLE 90% Quantile	287.8263	
MLE 95% Quantile	330.3768	
MLE 99% Quantile	428.8259	
MVU Estimate of Median	173.384	
MVU Estimate of Mean	186.4799	
MVU Estimate of Standard Deviation	71.07204	
MVU Estimate of SE of Mean	31.77575	
95% H-UCL	311.8403	
95% Chebyshev (MVUE) UCL	324.9871	
97.5% Chebyshev (MVUE) UCL	384.9194	
99% Chebyshev (MVUE) UCL	502.6446	
Non-parametric Statistics		
95% CLT UCL	236.0268	
95% Adjusted-CLT UCL	237.7817	
95% Modified-t UCL	251.0528	
95% Jackknife UCL	250.7791	
95% Chebyshev (Mean, Sd) UCL	318.2423	
97.5% Chebyshev (Mean, Sd) UCL	375.3771	
99% Chebyshev (Mean, Sd) UCL	487.6073	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	232.1317	
95% Bootstrap-t UCL	300.2502	
95% Hall's Bootstrap UCL	368.2148	
95% Percentile Bootstrap UCL	235.8	
95% BCA Bootstrap UCL	237.4	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	250.7791	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nr-sd.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	99.3		
Maximum	365		
Mean	202.06		
Standard Deviation	106.736		
Variance	11392.57		
Coefficient of Variation	0.528239		
Skewness	1.033047		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.907582		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	303.8211		
Gamma Statistics			
k hat	4.839836		
k star (bias corrected)	2.069268		
Theta hat	41.74935		
Theta star	97.64807		
nu hat	48.39836		
nu star	20.69268		
5% Approximate Chi Square Value	11.36183		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	8.502985		
Anderson-Darling Test Statistic	0.275516		
Anderson-Darling 5% Critical Value	0.680795		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.256649		
Kolmogrov-Smirnov 5% Critical Value	0.358332		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	368.0009		
95% Adjusted Gamma UCL	491.7288		
Lognormal Statistics			
Minimum of log data	4.598146		
Maximum of log data	5.899897		
Mean of log data	5.201713		
Standard Deviation of log data	0.512166		
Variance of log data	0.262314		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.964563		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	207.0312		
MLE Standard Deviation	113.3832		
MLE Coefficient of Variation	0.547662		
MLE Skewness	1.80725		
MLE Median	181.583		
MLE 80% Quantile	279.9169		
MLE 90% Quantile	350.6699		
MLE 95% Quantile	421.6709		
MLE 99% Quantile	597.6527		
MVU Estimate of Median	176.8613		
MVU Estimate of Mean	201.3138		
MVU Estimate of Standard Deviation	102.21		
MVU Estimate of SE of Mean	45.67162		
95% H-UCL	444.7604		
95% Chebyshev (MVUE) UCL	400.3918		
97.5% Chebyshev (MVUE) UCL	486.533		
99% Chebyshev (MVUE) UCL	655.7407		
Non-parametric Statistics			
95% CLT UCL	280.5751		
95% Adjusted-CLT UCL	304.1387		
95% Modified-t UCL	307.4965		
95% Jackknife UCL	303.8211		
95% Chebyshev (Mean, Sd) UCL	410.1267		
97.5% Chebyshev (Mean, Sd) UCL	500.1574		
99% Chebyshev (Mean, Sd) UCL	677.0051		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	272.2015		
95% Bootstrap-t UCL	502.3007		
95% Hall's Bootstrap UCL	944.2295		
95% Percentile Bootstrap UCL	277.4		
95% BCA Bootstrap UCL	300.2		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	303.8211		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nr-sd.xls				
Variable:	Lead				
<b>Raw Statistics</b>					
Number of Observations			5		
Number of Missing Data			0		
Number of Valid Observations			5		
Number of Distinct Observations			5		
Minimum			80.8		
Maximum			249		
Mean			161.36		
Standard Deviation			65.61134		
Variance			4304.848		
Coefficient of Variation			0.406615		
Skewness			0.271805		
Too Few Distinct Observations?			NO		
<b>Normal Statistics</b>					
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.976052		
Shapiro-Wilk 5% Critical Value			0.762		
5% Normality Test Result			NORMAL		Data are normal at 5% significance level
95% Student's-t UCL			223.9132		
<b>Gamma Statistics</b>					
k hat			7.12619		
k star (bias corrected)			2.98381		
Theta hat			22.64323		
Theta star			54.07852		
nu hat			71.2619		
nu star			29.8381		
5% Approximate Chi Square Value			18.36358		
Adjusted Level of Significance			0.0086		
Adjusted Chi Square Value			14.57179		
Anderson-Darling Test Statistic			0.201417		
Anderson-Darling 5% Critical Value			0.679932		
Anderson-Darling 5% Gamma Test Result			AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic			0.176375		
Kolmogrov-Smirnov 5% Critical Value			0.358004		
Kolmogrov-Smirnov 5% Gamma Test Result			KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result			GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL			262.1861		
95% Adjusted Gamma UCL			330.4107		
<b>Lognormal Statistics</b>					
Minimum of log data			4.391977		
Maximum of log data			5.517453		
Mean of log data			5.011836		
Standard Deviation of log data			0.434465		
Variance of log data			0.18876		
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.973625		
Shapiro-Wilk 5% Critical Value			0.762		
5% Lognormality Test Result			LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean			165.0447		
MLE Standard Deviation			75.22697		
MLE Coefficient of Variation			0.455797		
MLE Skewness			1.462085		
MLE Median			150.1803		
MLE 80% Quantile			216.7966		
MLE 90% Quantile			262.4668		
MLE 95% Quantile			306.9031		
MLE 99% Quantile			412.5688		
MVU Estimate of Median			147.3632		
MVU Estimate of Mean			161.8085		
MVU Estimate of Standard Deviation			69.85969		
MVU Estimate of SE of Mean			31.22836		
95% H-UCL			299.798		
95% Chebyshev (MVUE) UCL			297.9298		
97.5% Chebyshev (MVUE) UCL			356.8296		
99% Chebyshev (MVUE) UCL			472.5268		
<b>Non-parametric Statistics</b>					
95% CLT UCL			209.6238		
95% Adjusted-CLT UCL			213.4348		
95% Modified-t UCL			224.5077		
95% Jackknife UCL			223.9132		
95% Chebyshev (Mean, Sd) UCL			289.26		
97.5% Chebyshev (Mean, Sd) UCL			344.6025		
99% Chebyshev (Mean, Sd) UCL			453.312		
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs			2000		
95% Standard Bootstrap UCL			204.5695		
95% Bootstrap-t UCL			251.5872		
95% Hall's Bootstrap UCL			296.2568		
95% Percentile Bootstrap UCL			206.6		
95% BCA Bootstrap UCL			215.8		
<b>Recommendations</b>					
Human Inspection Recommended?			NO		
Appropriate Distribution			NORMAL		
1st Recommended UCL			223.9132		95% Student's-t UCL
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value			NO		
Recommendation Warning!			NONE		
Alternative UCL			NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nr-sd.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	95.4		
Maximum	317		
Mean	163.88		
Standard Deviation	88.0112		
Variance	7745.972		
Coefficient of Variation	0.537047		
Skewness	1.93398		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.770552		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	247.789		
<b>Gamma Statistics</b>			
k hat	5.590921		
k star (bias corrected)	2.369702		
Theta hat	29.31181		
Theta star	69.15638		
nu hat	55.90921		
nu star	23.69702		
5% Approximate Chi Square Value	13.61678		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	10.43319		
Anderson-Darling Test Statistic	0.518286		
Anderson-Darling 5% Critical Value	0.680494		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.313304		
Kolmogrov-Smirnov 5% Critical Value	0.358225		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	285.1972		
95% Adjusted Gamma UCL	372.2225		
<b>Lognormal Statistics</b>			
Minimum of log data	4.558079		
Maximum of log data	5.758902		
Mean of log data	5.007046		
Standard Deviation of log data	0.453315		
Variance of log data	0.205495		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.881292		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	165.6362		
MLE Standard Deviation	79.1132		
MLE Coefficient of Variation	0.477632		
MLE Skewness	1.541861		
MLE Median	149.4626		
MLE 80% Quantile	219.2248		
MLE 90% Quantile	267.6169		
MLE 95% Quantile	315.0559		
MLE 99% Quantile	429.0004		
MVU Estimate of Median	146.4122		
MVU Estimate of Mean	162.0894		
MVU Estimate of Standard Deviation	72.9766		
MVU Estimate of SE of Mean	32.6191		
95% H-UCL	312.6571		
95% Chebyshev (MVUE) UCL	304.2727		
97.5% Chebyshev (MVUE) UCL	365.7956		
99% Chebyshev (MVUE) UCL	486.6453		
<b>Non-parametric Statistics</b>			
95% CLT UCL	228.6211		
95% Adjusted-CLT UCL	264.9959		
95% Modified-t UCL	253.4628		
95% Jackknife UCL	247.789		
95% Chebyshev (Mean, Sd) UCL	335.4454		
97.5% Chebyshev (Mean, Sd) UCL	409.6819		
99% Chebyshev (Mean, Sd) UCL	555.5051		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	223.5985		
95% Bootstrap-t UCL	408.9107		
95% Hall's Bootstrap UCL	555.3561		
95% Percentile Bootstrap UCL	228.36		
95% BCA Bootstrap UCL	251		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	247.789		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nr-sd.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	0.77		
Maximum	5.9		
Mean	2.634		
Standard Deviation	1.954682		
Variance	3.82078		
Coefficient of Variation	0.742096		
Skewness	1.519759		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.860557		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	4.497575		
Gamma Statistics			
k hat	2.496691		
k star (bias corrected)	1.13201		
Theta hat	1.054996		
Theta star	2.326835		
nu hat	24.96691		
nu star	11.3201		
5% Approximate Chi Square Value	4.781733		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	3.109844		
Anderson-Darling Test Statistic	0.275011		
Anderson-Darling 5% Critical Value	0.683546		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.247627		
Kolmogrov-Smirnov 5% Critical Value	0.359948		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	6.235634		
95% Adjusted Gamma UCL	9.587986		
Lognormal Statistics			
Minimum of log data	-0.261365		
Maximum of log data	1.774952		
Mean of log data	0.75507		
Standard Deviation of log data	0.740785		
Variance of log data	0.548763		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.972458		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	2.79953		
MLE Standard Deviation	2.393736		
MLE Coefficient of Variation	0.855049		
MLE Skewness	3.190283		
MLE Median	2.127761		
MLE 80% Quantile	3.979012		
MLE 90% Quantile	5.512284		
MLE 95% Quantile	7.196981		
MLE 99% Quantile	11.91903		
MVU Estimate of Median	2.013114		
MVU Estimate of Mean	2.630267		
MVU Estimate of Standard Deviation	1.913397		
MVU Estimate of SE of Mean	0.852867		
95% H-UCL	11.53213		
95% Chebyshev (MVUE) UCL	6.347828		
97.5% Chebyshev (MVUE) UCL	7.95642		
99% Chebyshev (MVUE) UCL	11.11619		
Non-parametric Statistics			
95% CLT UCL	4.071866		
95% Adjusted-CLT UCL	4.706701		
95% Modified-t UCL	4.596596		
95% Jackknife UCL	4.497575		
95% Chebyshev (Mean, Sd) UCL	6.444376		
97.5% Chebyshev (Mean, Sd) UCL	8.093129		
99% Chebyshev (Mean, Sd) UCL	11.33178		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	3.884054		
95% Bootstrap-t UCL	6.081835		
95% Hall's Bootstrap UCL	10.98871		
95% Percentile Bootstrap UCL	4.014		
95% BCA Bootstrap UCL	4.54		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	4.497575	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nr-sd.xls		
Variable:	Nickel		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	7.8		
Maximum	16.1		
Mean	10.78		
Standard Deviation	3.42739		
Variance	11.747		
Coefficient of Variation	0.31794		
Skewness	1.169212		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.867593		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	14.04764		
<b>Gamma Statistics</b>			
k hat	13.65089		
k star (bias corrected)	5.593691		
Theta hat	0.789692		
Theta star	1.927171		
nu hat	136.5089		
nu star	55.93691		
5% Approximate Chi Square Value	39.74507		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	33.87353		
Anderson-Darling Test Statistic	0.409531		
Anderson-Darling 5% Critical Value	0.678811		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.310771		
Kolmogrov-Smirnov 5% Critical Value	0.357433		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	15.17169		
95% Adjusted Gamma UCL	17.80151		
<b>Lognormal Statistics</b>			
Minimum of log data	2.054124		
Maximum of log data	2.778819		
Mean of log data	2.340618		
Standard Deviation of log data	0.297762		
Variance of log data	0.088662		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.900718		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	10.85851		
MLE Standard Deviation	3.306262		
MLE Coefficient of Variation	0.304486		
MLE Skewness	0.941687		
MLE Median	10.38765		
MLE 80% Quantile	13.35949		
MLE 90% Quantile	15.22962		
MLE 95% Quantile	16.95286		
MLE 99% Quantile	20.76383		
MVU Estimate of Median	10.29583		
MVU Estimate of Mean	10.76043		
MVU Estimate of Standard Deviation	3.194596		
MVU Estimate of SE of Mean	1.428522		
95% H-UCL	15.51512		
95% Chebyshev (MVUE) UCL	16.98721		
97.5% Chebyshev (MVUE) UCL	19.68155		
99% Chebyshev (MVUE) UCL	24.97405		
<b>Non-parametric Statistics</b>			
95% CLT UCL	13.30119		
95% Adjusted-CLT UCL	14.15757		
95% Modified-t UCL	14.18122		
95% Jackknife UCL	14.04764		
95% Chebyshev (Mean, Sd) UCL	17.46121		
97.5% Chebyshev (Mean, Sd) UCL	20.35218		
99% Chebyshev (Mean, Sd) UCL	26.03092		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	13.05528		
95% Bootstrap-t UCL	25.314		
95% Hall's Bootstrap UCL	35.93647		
95% Percentile Bootstrap UCL	13.16		
95% BCA Bootstrap UCL	13.92		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	14.04764		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nr-sd.xls		
Variable:	Vanadium		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	16.4		
Maximum	32.6		
Mean	23.62		
Standard Deviation	7.365935		
Variance	54.257		
Coefficient of Variation	0.311852		
Skewness	0.328177		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.884519		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	30.64261		
<b>Gamma Statistics</b>			
k hat	12.8961		
k star (bias corrected)	5.291775		
Theta hat	1.831561		
Theta star	4.463531		
nu hat	128.961		
nu star	52.91775		
5% Approximate Chi Square Value	37.20398		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	31.54419		
Anderson-Darling Test Statistic	0.389053		
Anderson-Darling 5% Critical Value	0.678825		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.242659		
Kolmogrov-Smirnov 5% Critical Value	0.357465		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	33.59633		
95% Adjusted Gamma UCL	39.62432		
<b>Lognormal Statistics</b>			
Minimum of log data	2.797281		
Maximum of log data	3.484312		
Mean of log data	3.122822		
Standard Deviation of log data	0.313668		
Variance of log data	0.098387		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.88882		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	23.85551		
MLE Standard Deviation	7.670583		
MLE Coefficient of Variation	0.321543		
MLE Skewness	0.997875		
MLE Median	22.71037		
MLE 80% Quantile	29.60286		
MLE 90% Quantile	33.98382		
MLE 95% Quantile	38.04634		
MLE 99% Quantile	47.10658		
MVU Estimate of Median	22.48766		
MVU Estimate of Mean	23.61594		
MVU Estimate of Standard Deviation	7.383309		
MVU Estimate of SE of Mean	3.301506		
95% H-UCL	34.94066		
95% Chebyshev (MVUE) UCL	38.00687		
97.5% Chebyshev (MVUE) UCL	44.23383		
99% Chebyshev (MVUE) UCL	56.4655		
<b>Non-parametric Statistics</b>			
95% CLT UCL	29.03839		
95% Adjusted-CLT UCL	29.55498		
95% Modified-t UCL	30.72319		
95% Jackknife UCL	30.64261		
95% Chebyshev (Mean, Sd) UCL	37.97885		
97.5% Chebyshev (Mean, Sd) UCL	44.19194		
99% Chebyshev (Mean, Sd) UCL	56.39634		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	28.45508		
95% Bootstrap-t UCL	35.37484		
95% Hall's Bootstrap UCL	28.26427		
95% Percentile Bootstrap UCL	28.82		
95% BCA Bootstrap UCL	29.96		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	30.64261		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nr-sd.xls	
Variable:	Zinc	
Raw Statistics		
Number of Observations	5	
Number of Missing Data	0	
Number of Valid Observations	5	
Number of Distinct Observations	5	
Minimum	226	
Maximum	595	
Mean	342.6	
Standard Deviation	149.6573	
Variance	22397.3	
Coefficient of Variation	0.436828	
Skewness	1.644518	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.818635	
Shapiro-Wilk 5% Critical Value	0.762	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	485.2818	
Gamma Statistics		
k hat	7.819632	
k star (bias corrected)	3.261186	
Theta hat	43.81281	
Theta star	105.0538	
nu hat	78.19632	
nu star	32.61186	
5% Approximate Chi Square Value	20.55573	
Adjusted Level of Significance	0.0086	
Adjusted Chi Square Value	16.50905	
Anderson-Darling Test Statistic	0.428702	
Anderson-Darling 5% Critical Value	0.679678	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.257588	
Kolmogrov-Smirnov 5% Critical Value	0.357904	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	543.5381	
95% Adjusted Gamma UCL	676.7696	
Lognormal Statistics		
Minimum of log data	5.420535	
Maximum of log data	6.388561	
Mean of log data	5.771261	
Standard Deviation of log data	0.388949	
Variance of log data	0.151281	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.888346	
Shapiro-Wilk 5% Critical Value	0.762	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	346.1603	
MLE Standard Deviation	139.8951	
MLE Coefficient of Variation	0.404134	
MLE Skewness	1.278406	
MLE Median	320.9423	
MLE 80% Quantile	445.8236	
MLE 90% Quantile	529.0384	
MLE 95% Quantile	608.5522	
MLE 99% Quantile	793.1062	
MVU Estimate of Median	316.1114	
MVU Estimate of Mean	340.7591	
MVU Estimate of Standard Deviation	131.8717	
MVU Estimate of SE of Mean	58.95781	
95% H-UCL	576.3256	
95% Chebyshev (MVUE) UCL	597.7502	
97.5% Chebyshev (MVUE) UCL	708.9505	
99% Chebyshev (MVUE) UCL	927.3819	
Non-parametric Statistics		
95% CLT UCL	452.688	
95% Adjusted-CLT UCL	505.2833	
95% Modified-t UCL	493.4856	
95% Jackknife UCL	485.2818	
95% Chebyshev (Mean, Sd) UCL	634.3357	
97.5% Chebyshev (Mean, Sd) UCL	760.57	
99% Chebyshev (Mean, Sd) UCL	1008.533	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	440.6698	
95% Bootstrap-t UCL	614.3821	
95% Hall's Bootstrap UCL	901.9085	
95% Percentile Bootstrap UCL	449.2	
95% BCA Bootstrap UCL	488.4	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	485.2818	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Tetrachloroethene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.12		
Maximum	3.164		
Mean	1.131		
Standard Deviation	1.38632		
Variance	1.921884		
Coefficient of Variation	1.225747		
Skewness	1.743299		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.810908		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	2.762258		
<b>Gamma Statistics</b>			
k hat	0.91875		
k star (bias corrected)	0.396354		
Theta hat	1.231021		
Theta star	2.853509		
nu hat	7.349997		
nu star	3.170833		
5% Approximate Chi Square Value	0.424581		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.248882		
Anderson-Darling 5% Critical Value	0.667809		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.21929		
Kolmogrov-Smirnov 5% Critical Value	0.403276		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	8.446473		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.120264		
Maximum of log data	1.151837		
Mean of log data	-0.511589		
Standard Deviation of log data	1.366872		
Variance of log data	1.86834		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.999467		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	1.525896		
MLE Standard Deviation	3.571227		
MLE Coefficient of Variation	2.340414		
MLE Skewness	19.84094		
MLE Median	0.599542		
MLE 80% Quantile	1.902975		
MLE 90% Quantile	3.472388		
MLE 95% Quantile	5.679803		
MLE 99% Quantile	14.40761		
MVU Estimate of Median	0.469013		
MVU Estimate of Mean	1.117262		
MVU Estimate of Standard Deviation	1.357433		
MVU Estimate of SE of Mean	0.66734		
95% H-UCL	22993.43		
95% Chebyshev (MVUE) UCL	4.02613		
97.5% Chebyshev (MVUE) UCL	5.2848		
99% Chebyshev (MVUE) UCL	7.757212		
<b>Non-parametric Statistics</b>			
95% CLT UCL	2.271147		
95% Adjusted-CLT UCL	2.916736		
95% Modified-t UCL	2.862956		
95% Jackknife UCL	2.762258		
95% Chebyshev (Mean, Sd) UCL	4.152415		
97.5% Chebyshev (Mean, Sd) UCL	5.459784		
99% Chebyshev (Mean, Sd) UCL	8.027856		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.762258		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Trichloroethene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.013		
Maximum	0.803		
Mean	0.25925		
Standard Deviation	0.372638		
Variance	0.138859		
Coefficient of Variation	1.437368		
Skewness	1.702007		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.787902		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.697726		
<b>Gamma Statistics</b>			
k hat	0.541486		
k star (bias corrected)	0.302038		
Theta hat	0.478775		
Theta star	0.858335		
nu hat	4.33189		
nu star	2.416306		
5% Approximate Chi Square Value	0.222717		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.347713		
Anderson-Darling 5% Critical Value	0.679149		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.296058		
Kolmogrov-Smirnov 5% Critical Value	0.409385		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	2.812664		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-4.342806		
Maximum of log data	-0.219401		
Mean of log data	-2.508719		
Standard Deviation of log data	1.936343		
Variance of log data	3.749423		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.916955		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.530461		
MLE Standard Deviation	3.417116		
MLE Coefficient of Variation	6.441781		
MLE Skewness	286.637		
MLE Median	0.081372		
MLE 80% Quantile	0.417901		
MLE 90% Quantile	0.97969		
MLE 95% Quantile	1.967108		
MLE 99% Quantile	7.353773		
MVU Estimate of Median	0.048252		
MVU Estimate of Mean	0.254966		
MVU Estimate of Standard Deviation	0.402172		
MVU Estimate of SE of Mean	0.191827		
95% H-UCL	1.19E+08		
95% Chebyshev (MVUE) UCL	1.091122		
97.5% Chebyshev (MVUE) UCL	1.452927		
99% Chebyshev (MVUE) UCL	2.163623		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.565717		
95% Adjusted-CLT UCL	0.735139		
95% Modified-t UCL	0.724152		
95% Jackknife UCL	0.697726		
95% Chebyshev (Mean, Sd) UCL	1.071395		
97.5% Chebyshev (Mean, Sd) UCL	1.422811		
99% Chebyshev (Mean, Sd) UCL	2.1131		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.697726		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Benzo(a)anthracene		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.27		
Maximum	0.435		
Mean	0.335		
Standard Deviation	0.087892		
Variance	0.007725		
Coefficient of Variation	0.262364		
Skewness	1.507808		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-1.309333		
Maximum of log data	-0.832409		
Mean of log data	-1.115238		
Standard Deviation of log data	0.250538		
Variance of log data	0.062769		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.338289		
MLE Standard Deviation	0.086102		
MLE Coefficient of Variation	0.254522		
MLE Skewness	0.780054		
MLE Median	0.327837		
MLE 80% Quantile	0.405136		
MLE 90% Quantile	0.452351		
MLE 95% Quantile	0.495047		
MLE 99% Quantile	0.587143		
MVU Estimate of Median	0.324416		
MVU Estimate of Mean	0.334732		
MVU Estimate of Standard Deviation	0.083213		
MVU Estimate of SE of Mean	0.048043		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Benzo(a)pyrene		
<b>Raw Statistics</b>			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.2		
Maximum	0.435		
Mean	0.3175		
Standard Deviation	0.16617		
Variance	0.027613		
Coefficient of Variation	0.52337		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-1.609438		
Maximum of log data	-0.832409		
Mean of log data	-1.220924		
Standard Deviation of log data	0.549442		
Variance of log data	0.301887		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	4.2E-308		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	-2.4E-159		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.3175		
MVU Estimate of Standard Deviation	0.16617		
MVU Estimate of SE of Mean	0.1175		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Benzo(b)fluoranthene		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.27		
Maximum	0.44		
Mean	0.39375		
Standard Deviation	0.082601		
Variance	0.006823		
Coefficient of Variation	0.20978		
Skewness	-1.985357		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.676371		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.490945		
Gamma Statistics			
k hat	25.63132		
k star (bias corrected)	6.574497		
Theta hat	0.015362		
Theta star	0.059891		
nu hat	205.0506		
nu star	52.59598		
5% Approximate Chi Square Value	36.93396		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.86368		
Anderson-Darling 5% Critical Value	0.656874		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.447744		
Kolmogrov-Smirnov 5% Critical Value	0.394161		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.560721		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-1.309333		
Maximum of log data	-0.820981		
Mean of log data	-0.951673		
Standard Deviation of log data	0.238625		
Variance of log data	0.056942		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.666938		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.397245		
MLE Standard Deviation	0.096158		
MLE Coefficient of Variation	0.242062		
MLE Skewness	0.74037		
MLE Median	0.386094		
MLE 80% Quantile	0.47235		
MLE 90% Quantile	0.524641		
MLE 95% Quantile	0.571703		
MLE 99% Quantile	0.672581		
MVU Estimate of Median	0.383352		
MVU Estimate of Mean	0.394392		
MVU Estimate of Standard Deviation	0.093713		
MVU Estimate of SE of Mean	0.046855		
95% H-UCL	0.594364		
95% Chebyshev (MVUE) UCL	0.598629		
97.5% Chebyshev (MVUE) UCL	0.687003		
99% Chebyshev (MVUE) UCL	0.860596		
Non-parametric Statistics			
95% CLT UCL	0.461683		
95% Adjusted-CLT UCL	0.417876		
95% Modified-t UCL	0.484112		
95% Jackknife UCL	0.490945		
95% Chebyshev (Mean, Sd) UCL	0.573775		
97.5% Chebyshev (Mean, Sd) UCL	0.651671		
99% Chebyshev (Mean, Sd) UCL	0.804685		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.490945		95% Student's-t UCL
2nd Recommended UCL	0.484112		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Benzo(k)fluoranthene		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.29		
Maximum	0.54		
Mean	0.421667		
Standard Deviation	0.125532		
Variance	0.015758		
Coefficient of Variation	0.297705		
Skewness	-0.472573		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-1.237874		
Maximum of log data	-0.616186		
Mean of log data	-0.89549		
Standard Deviation of log data	0.315608		
Variance of log data	0.099608		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.429263		
MLE Standard Deviation	0.138924		
MLE Coefficient of Variation	0.323633		
MLE Skewness	1.004795		
MLE Median	0.408407		
MLE 80% Quantile	0.533231		
MLE 90% Quantile	0.612667		
MLE 95% Quantile	0.686386		
MLE 99% Quantile	0.850964		
MVU Estimate of Median	0.401655		
MVU Estimate of Mean	0.422081		
MVU Estimate of Standard Deviation	0.131585		
MVU Estimate of SE of Mean	0.075969		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Dibenz(a,h)anthracene		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.044		
Maximum	0.435		
Mean	0.249667		
Standard Deviation	0.196291		
Variance	0.03853		
Coefficient of Variation	0.786214		
Skewness	-0.461142		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-3.123566		
Maximum of log data	-0.832409		
Mean of log data	-1.755103		
Standard Deviation of log data	1.208876		
Variance of log data	1.461382		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.359008		
MLE Standard Deviation	0.653346		
MLE Coefficient of Variation	1.819867		
MLE Skewness	11.48685		
MLE Median	0.172889		
MLE 80% Quantile	0.480176		
MLE 90% Quantile	0.817343		
MLE 95% Quantile	1.263012		
MLE 99% Quantile	2.876988		
MVU Estimate of Median	0.133276		
MVU Estimate of Mean	0.267937		
MVU Estimate of Standard Deviation	0.277729		
MVU Estimate of SE of Mean	0.159584		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Indeno(1,2,3-cd)pyrene		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.22		
Maximum	0.435		
Mean	0.308333		
Standard Deviation	0.112509		
Variance	0.012658		
Coefficient of Variation	0.364895		
Skewness	1.355225		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-1.514128		
Maximum of log data	-0.832409		
Mean of log data	-1.218623		
Standard Deviation of log data	0.349795		
Variance of log data	0.122356		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.314288		
MLE Standard Deviation	0.113386		
MLE Coefficient of Variation	0.360772		
MLE Skewness	1.129274		
MLE Median	0.295637		
MLE 80% Quantile	0.397307		
MLE 90% Quantile	0.463413		
MLE 95% Quantile	0.525602		
MLE 99% Quantile	0.666976		
MVU Estimate of Median	0.289639		
MVU Estimate of Mean	0.307818		
MVU Estimate of Standard Deviation	0.106065		
MVU Estimate of SE of Mean	0.061234		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Phenanthrene		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.27		
Maximum	0.49		
Mean	0.398333		
Standard Deviation	0.114492		
Variance	0.013108		
Coefficient of Variation	0.287427		
Skewness	-1.293343		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-1.309333		
Maximum of log data	-0.71335		
Mean of log data	-0.951697		
Standard Deviation of log data	0.315391		
Variance of log data	0.099471		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.405773		
MLE Standard Deviation	0.131226		
MLE Coefficient of Variation	0.323399		
MLE Skewness	1.00402		
MLE Median	0.386085		
MLE 80% Quantile	0.503993		
MLE 90% Quantile	0.579019		
MLE 95% Quantile	0.648639		
MLE 99% Quantile	0.804046		
MVU Estimate of Median	0.379711		
MVU Estimate of Mean	0.398993		
MVU Estimate of Standard Deviation	0.124304		
MVU Estimate of SE of Mean	0.071765		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Aroclor 1260		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.0225		
Maximum	0.0435		
Mean	0.031667		
Standard Deviation	0.010751		
Variance	0.000116		
Coefficient of Variation	0.339504		
Skewness	1.047507		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-3.79424		
Maximum of log data	-3.134994		
Mean of log data	-3.489898		
Standard Deviation of log data	0.332518		
Variance of log data	0.110569		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.032238		
MLE Standard Deviation	0.011023		
MLE Coefficient of Variation	0.341925		
MLE Skewness	1.065751		
MLE Median	0.030504		
MLE 80% Quantile	0.0404		
MLE 90% Quantile	0.046765		
MLE 95% Quantile	0.052712		
MLE 99% Quantile	0.066108		
MVU Estimate of Median	0.029944		
MVU Estimate of Mean	0.031639		
MVU Estimate of Standard Deviation	0.010378		
MVU Estimate of SE of Mean	0.005992		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.94		
Maximum	329		
Mean	69.865		
Standard Deviation	128.2525		
Variance	16448.7		
Coefficient of Variation	1.835719		
Skewness	2.340413		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.616144		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	175.3706		
<b>Gamma Statistics</b>			
k hat	0.387658		
k star (bias corrected)	0.30494		
Theta hat	180.2234		
Theta star	229.1107		
nu hat	4.651893		
nu star	3.65928		
5% Approximate Chi Square Value	0.591654		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	0.278422		
Anderson-Darling Test Statistic	0.382378		
Anderson-Darling 5% Critical Value	0.753168		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.232067		
Kolmogrov-Smirnov 5% Critical Value	0.353199		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	432.1032		
95% Adjusted Gamma UCL	918.2306		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.061875		
Maximum of log data	5.796058		
Mean of log data	2.540487		
Standard Deviation of log data	2.29959		
Variance of log data	5.288113		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.922637		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	178.4919		
MLE Standard Deviation	2505.059		
MLE Coefficient of Variation	14.03458		
MLE Skewness	2806.489		
MLE Median	12.68584		
MLE 80% Quantile	88.55642		
MLE 90% Quantile	243.5834		
MLE 95% Quantile	557.4159		
MLE 99% Quantile	2668.662		
MVU Estimate of Median	7.907004		
MVU Estimate of Mean	74.28779		
MVU Estimate of Standard Deviation	164.5375		
MVU Estimate of SE of Mean	57.97104		
95% H-UCL	2355763		
95% Chebyshev (MVUE) UCL	326.9777		
97.5% Chebyshev (MVUE) UCL	436.3168		
99% Chebyshev (MVUE) UCL	651.0923		
<b>Non-parametric Statistics</b>			
95% CLT UCL	155.9877		
95% Adjusted-CLT UCL	209.4426		
95% Modified-t UCL	183.7085		
95% Jackknife UCL	175.3706		
95% Chebyshev (Mean, Sd) UCL	298.092		
97.5% Chebyshev (Mean, Sd) UCL	396.846		
99% Chebyshev (Mean, Sd) UCL	590.8291		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	149.3464		
95% Bootstrap-t UCL	557.2918		
95% Hall's Bootstrap UCL	588.1405		
95% Percentile Bootstrap UCL	171.1983		
95% BCA Bootstrap UCL	184.8667		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	918.2306	95% Adjusted Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	1.85		
Maximum	87.3		
Mean	21.24167		
Standard Deviation	32.68037		
Variance	1068.006		
Coefficient of Variation	1.538503		
Skewness	2.343583		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.628203		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	48.12584		
<b>Gamma Statistics</b>			
k hat	0.784647		
k star (bias corrected)	0.503434		
Theta hat	27.07163		
Theta star	42.19351		
nu hat	9.41576		
nu star	6.041213		
5% Approximate Chi Square Value	1.660462		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	0.964558		
Anderson-Darling Test Statistic	0.532605		
Anderson-Darling 5% Critical Value	0.720174		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.317468		
Kolmogrov-Smirnov 5% Critical Value	0.34309		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	77.28297		
95% Adjusted Gamma UCL	133.0407		
<b>Lognormal Statistics</b>			
Minimum of log data	0.615186		
Maximum of log data	4.46935		
Mean of log data	2.297642		
Standard Deviation of log data	1.288733		
Variance of log data	1.660834		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.951596		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	22.82961		
MLE Standard Deviation	47.14024		
MLE Coefficient of Variation	2.064872		
MLE Skewness	14.99861		
MLE Median	9.950688		
MLE 80% Quantile	29.56589		
MLE 90% Quantile	52.12601		
MLE 95% Quantile	82.89777		
MLE 99% Quantile	199.3846		
MVU Estimate of Median	8.639842		
MVU Estimate of Mean	18.77476		
MVU Estimate of Standard Deviation	23.98834		
MVU Estimate of SE of Mean	9.506878		
95% H-UCL	500.4989		
95% Chebyshev (MVUE) UCL	60.21428		
97.5% Chebyshev (MVUE) UCL	78.1452		
99% Chebyshev (MVUE) UCL	113.367		
<b>Non-parametric Statistics</b>			
95% CLT UCL	43.18682		
95% Adjusted-CLT UCL	56.82625		
95% Modified-t UCL	50.25332		
95% Jackknife UCL	48.12584		
95% Chebyshev (Mean, Sd) UCL	79.39681		
97.5% Chebyshev (Mean, Sd) UCL	104.5606		
99% Chebyshev (Mean, Sd) UCL	153.9899		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	41.42251		
95% Bootstrap-t UCL	147.8372		
95% Hall's Bootstrap UCL	155.4396		
95% Percentile Bootstrap UCL	46.925		
95% BCA Bootstrap UCL	61.16667		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	77.28297	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	8		
Minimum	20.3		
Maximum	51.4		
Mean	41.4125		
Standard Deviation	11.9466		
Variance	142.7213		
Coefficient of Variation	0.288478		
Skewness	-0.965352		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.795847		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	49.41475		
<b>Gamma Statistics</b>			
k hat	11.11539		
k star (bias corrected)	7.030453		
Theta hat	3.72569		
Theta star	5.890446		
nu hat	177.8463		
nu star	112.4872		
5% Approximate Chi Square Value	88.99945		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	83.72298		
Anderson-Darling Test Statistic	0.896305		
Anderson-Darling 5% Critical Value	0.715112		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.354328		
Kolmogrov-Smirnov 5% Critical Value	0.294233		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	52.34165		
95% Adjusted Gamma UCL	55.64037		
<b>Lognormal Statistics</b>			
Minimum of log data	3.010621		
Maximum of log data	3.939638		
Mean of log data	3.677926		
Standard Deviation of log data	0.342209		
Variance of log data	0.117107		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.778856		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	41.95006		
MLE Standard Deviation	14.78642		
MLE Coefficient of Variation	0.352477		
MLE Skewness	1.101222		
MLE Median	39.56426		
MLE 80% Quantile	52.83073		
MLE 90% Quantile	61.41568		
MLE 95% Quantile	69.4676		
MLE 99% Quantile	87.69852		
MVU Estimate of Median	39.2755		
MVU Estimate of Mean	41.63214		
MVU Estimate of Standard Deviation	14.32608		
MVU Estimate of SE of Mean	5.063242		
95% H-UCL	55.27764		
95% Chebyshev (MVUE) UCL	63.7023		
97.5% Chebyshev (MVUE) UCL	73.25208		
99% Chebyshev (MVUE) UCL	92.01077		
<b>Non-parametric Statistics</b>			
95% CLT UCL	48.35997		
95% Adjusted-CLT UCL	46.81961		
95% Modified-t UCL	49.17448		
95% Jackknife UCL	49.41475		
95% Chebyshev (Mean, Sd) UCL	59.82345		
97.5% Chebyshev (Mean, Sd) UCL	67.78988		
99% Chebyshev (Mean, Sd) UCL	83.43839		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	47.84091		
95% Bootstrap-t UCL	47.91738		
95% Hall's Bootstrap UCL	46.40947		
95% Percentile Bootstrap UCL	47.425		
95% BCA Bootstrap UCL	46.1625		
<b>Recommendations</b>			
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS	
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	49.41475	95% Student's-t UCL	
2nd Recommended UCL	49.17448	95% Modified-t UCL	
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	6		
Minimum	0.2		
Maximum	1.7		
Mean	1.018571		
Standard Deviation	0.566287		
Variance	0.320681		
Coefficient of Variation	0.555962		
Skewness	-0.180444		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.916579		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.434483		
Gamma Statistics			
k hat	2.711693		
k star (bias corrected)	1.644777		
Theta hat	0.375622		
Theta star	0.619276		
nu hat	37.9637		
nu star	23.02688		
5% Approximate Chi Square Value	13.1094		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	10.91972		
Anderson-Darling Test Statistic	0.406017		
Anderson-Darling 5% Critical Value	0.712978		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.238725		
Kolmogrov-Smirnov 5% Critical Value	0.314121		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.789137		
95% Adjusted Gamma UCL	2.147904		
Lognormal Statistics			
Minimum of log data	-1.609438		
Maximum of log data	0.530628		
Mean of log data	-0.177173		
Standard Deviation of log data	0.758702		
Variance of log data	0.575629		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.866959		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.116994		
MLE Standard Deviation	0.985395		
MLE Coefficient of Variation	0.882184		
MLE Skewness	3.33112		
MLE Median	0.837635		
MLE 80% Quantile	1.590312		
MLE 90% Quantile	2.22056		
MLE 95% Quantile	2.917982		
MLE 99% Quantile	4.89184		
MVU Estimate of Median	0.803721		
MVU Estimate of Mean	1.064368		
MVU Estimate of Standard Deviation	0.817997		
MVU Estimate of SE of Mean	0.307291		
95% H-UCL	2.872005		
95% Chebyshev (MVUE) UCL	2.403818		
97.5% Chebyshev (MVUE) UCL	2.983399		
99% Chebyshev (MVUE) UCL	4.121875		
Non-parametric Statistics			
95% CLT UCL	1.37063		
95% Adjusted-CLT UCL	1.355032		
95% Modified-t UCL	1.43205		
95% Jackknife UCL	1.434483		
95% Chebyshev (Mean, Sd) UCL	1.951534		
97.5% Chebyshev (Mean, Sd) UCL	2.355228		
99% Chebyshev (Mean, Sd) UCL	3.148206		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.344433		
95% Bootstrap-t UCL	1.442352		
95% Hall's Bootstrap UCL	1.301088		
95% Percentile Bootstrap UCL	1.331429		
95% BCA Bootstrap UCL	1.271429		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.434483	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	8		
Minimum	7.1		
Maximum	85.3		
Mean	24.975		
Standard Deviation	26.25353		
Variance	689.2479		
Coefficient of Variation	1.051192		
Skewness	2.152899		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.697651		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	42.56052		
Gamma Statistics			
k hat	1.575729		
k star (bias corrected)	1.068164		
Theta hat	15.8498		
Theta star	23.38124		
nu hat	25.21167		
nu star	17.09063		
5% Approximate Chi Square Value	8.735686		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	7.276379		
Anderson-Darling Test Statistic	0.731093		
Anderson-Darling 5% Critical Value	0.727746		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.330209		
Kolmogrov-Smirnov 5% Critical Value	0.298682		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	48.86146		
95% Adjusted Gamma UCL	58.66083		
Lognormal Statistics			
Minimum of log data	1.960095		
Maximum of log data	4.446174		
Mean of log data	2.86816		
Standard Deviation of log data	0.828417		
Variance of log data	0.686274		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.87362		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	24.81125		
MLE Standard Deviation	24.64072		
MLE Coefficient of Variation	0.993127		
MLE Skewness	3.958903		
MLE Median	17.60459		
MLE 80% Quantile	35.45173		
MLE 90% Quantile	51.04335		
MLE 95% Quantile	68.77947		
MLE 99% Quantile	120.9113		
MVU Estimate of Median	16.86198		
MVU Estimate of Mean	23.54839		
MVU Estimate of Standard Deviation	20.07936		
MVU Estimate of SE of Mean	7.029737		
95% H-UCL	64.95459		
95% Chebyshev (MVUE) UCL	54.1903		
97.5% Chebyshev (MVUE) UCL	67.44908		
99% Chebyshev (MVUE) UCL	93.49339		
Non-parametric Statistics			
95% CLT UCL	40.24257		
95% Adjusted-CLT UCL	47.79179		
95% Modified-t UCL	43.73805		
95% Jackknife UCL	42.56052		
95% Chebyshev (Mean, Sd) UCL	65.43441		
97.5% Chebyshev (Mean, Sd) UCL	82.94123		
99% Chebyshev (Mean, Sd) UCL	117.33		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	39.40439		
95% Bootstrap-t UCL	77.96951		
95% Hall's Bootstrap UCL	92.38243		
95% Percentile Bootstrap UCL	41.1375		
95% BCA Bootstrap UCL	50.625		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	64.95459	95% H-UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	8		
Minimum	9.6		
Maximum	37.5		
Mean	22.95		
Standard Deviation	9.538344		
Variance	90.98		
Coefficient of Variation	0.415614		
Skewness	-0.030432		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.963446		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	29.33911		
Gamma Statistics			
k hat	5.763079		
k star (bias corrected)	3.685258		
Theta hat	3.982246		
Theta star	6.227516		
nu hat	92.20926		
nu star	58.96412		
5% Approximate Chi Square Value	42.30581		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	38.76312		
Anderson-Darling Test Statistic	0.281517		
Anderson-Darling 5% Critical Value	0.718444		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.171422		
Kolmogrov-Smirnov 5% Critical Value	0.295093		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	31.98678		
95% Adjusted Gamma UCL	34.91016		
Lognormal Statistics			
Minimum of log data	2.261763		
Maximum of log data	3.624341		
Mean of log data	3.044057		
Standard Deviation of log data	0.473226		
Variance of log data	0.223943		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.932793		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	23.47718		
MLE Standard Deviation	11.76204		
MLE Coefficient of Variation	0.500999		
MLE Skewness	1.628748		
MLE Median	20.99023		
MLE 80% Quantile	31.30987		
MLE 90% Quantile	38.55759		
MLE 95% Quantile	45.71903		
MLE 99% Quantile	63.10385		
MVU Estimate of Median	20.69804		
MVU Estimate of Mean	23.12676		
MVU Estimate of Standard Deviation	11.05805		
MVU Estimate of SE of Mean	3.90477		
95% H-UCL	35.65787		
95% Chebyshev (MVUE) UCL	40.14726		
97.5% Chebyshev (MVUE) UCL	47.51204		
99% Chebyshev (MVUE) UCL	61.97873		
Non-parametric Statistics			
95% CLT UCL	28.49696		
95% Adjusted-CLT UCL	28.45819		
95% Modified-t UCL	29.33307		
95% Jackknife UCL	29.33911		
95% Chebyshev (Mean, Sd) UCL	37.64957		
97.5% Chebyshev (Mean, Sd) UCL	44.01009		
99% Chebyshev (Mean, Sd) UCL	56.5041		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	28.04858		
95% Bootstrap-t UCL	29.27402		
95% Hall's Bootstrap UCL	28.11899		
95% Percentile Bootstrap UCL	28.0375		
95% BCA Bootstrap UCL	27.1125		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	29.33911		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	8		
Minimum	383		
Maximum	41000		
Mean	6765.25		
Standard Deviation	13915.08		
Variance	1.94E+08		
Coefficient of Variation	2.056847		
Skewness	2.762734		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.512726		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	16086.05		
Gamma Statistics			
k hat	0.505437		
k star (bias corrected)	0.399232		
Theta hat	13384.94		
Theta star	16945.67		
nu hat	8.086998		
nu star	6.387707		
5% Approximate Chi Square Value	1.840561		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	1.289886		
Anderson-Darling Test Statistic	0.84864		
Anderson-Darling 5% Critical Value	0.761995		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.320374		
Kolmogrov-Smirnov 5% Critical Value	0.308883		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	23478.94		
95% Adjusted Gamma UCL	33502.53		
Lognormal Statistics			
Minimum of log data	5.948035		
Maximum of log data	10.62133		
Mean of log data	7.564962		
Standard Deviation of log data	1.552931		
Variance of log data	2.411594		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.892521		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	6443.06		
MLE Standard Deviation	20528.73		
MLE Coefficient of Variation	3.186177		
MLE Skewness	41.90373		
MLE Median	1929.395		
MLE 80% Quantile	7166.612		
MLE 90% Quantile	14192.63		
MLE 95% Quantile	24823.18		
MLE 99% Quantile	71473.28		
MVU Estimate of Median	1655.099		
MVU Estimate of Mean	5016.58		
MVU Estimate of Standard Deviation	8422.498		
MVU Estimate of SE of Mean	2762.317		
95% H-UCL	121796.1		
95% Chebyshev (MVUE) UCL	17057.24		
97.5% Chebyshev (MVUE) UCL	22267.24		
99% Chebyshev (MVUE) UCL	32501.28		
Non-parametric Statistics			
95% CLT UCL	14857.48		
95% Adjusted-CLT UCL	19992.18		
95% Modified-t UCL	16886.96		
95% Jackknife UCL	16086.05		
95% Chebyshev (Mean, Sd) UCL	28209.83		
97.5% Chebyshev (Mean, Sd) UCL	37488.92		
99% Chebyshev (Mean, Sd) UCL	55715.89		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	14066.67		
95% Bootstrap-t UCL	64521.02		
95% Hall's Bootstrap UCL	55732.8		
95% Percentile Bootstrap UCL	16163		
95% BCA Bootstrap UCL	20770.5		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	32501.28	99% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	8		
Minimum	34.4		
Maximum	194		
Mean	70.7		
Standard Deviation	54.96422		
Variance	3021.066		
Coefficient of Variation	0.777429		
Skewness	1.984537		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.731915		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	107.5169		
<b>Gamma Statistics</b>			
k hat	2.707073		
k star (bias corrected)	1.775254		
Theta hat	26.11677		
Theta star	39.82529		
nu hat	43.31316		
nu star	28.40406		
5% Approximate Chi Square Value	17.241		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	15.08351		
Anderson-Darling Test Statistic	0.673389		
Anderson-Darling 5% Critical Value	0.722202		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.242373		
Kolmogrov-Smirnov 5% Critical Value	0.29664		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	116.4762		
95% Adjusted Gamma UCL	133.1366		
<b>Lognormal Statistics</b>			
Minimum of log data	3.538057		
Maximum of log data	5.267858		
Mean of log data	4.062519		
Standard Deviation of log data	0.622488		
Variance of log data	0.387491		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.84966		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	70.54596		
MLE Standard Deviation	48.5323		
MLE Coefficient of Variation	0.687953		
MLE Skewness	2.389453		
MLE Median	58.12053		
MLE 80% Quantile	98.34886		
MLE 90% Quantile	129.3362		
MLE 95% Quantile	161.8243		
MLE 99% Quantile	247.2562		
MVU Estimate of Median	56.72615		
MVU Estimate of Mean	68.64702		
MVU Estimate of Standard Deviation	43.47745		
MVU Estimate of SE of Mean	15.31815		
95% H-UCL	130.5635		
95% Chebyshev (MVUE) UCL	135.4173		
97.5% Chebyshev (MVUE) UCL	164.3089		
99% Chebyshev (MVUE) UCL	221.0607		
<b>Non-parametric Statistics</b>			
95% CLT UCL	102.6641		
95% Adjusted-CLT UCL	117.2331		
95% Modified-t UCL	109.7894		
95% Jackknife UCL	107.5169		
95% Chebyshev (Mean, Sd) UCL	155.4056		
97.5% Chebyshev (Mean, Sd) UCL	192.0577		
99% Chebyshev (Mean, Sd) UCL	264.0538		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	100.6953		
95% Bootstrap-t UCL	167.2459		
95% Hall's Bootstrap UCL	225.245		
95% Percentile Bootstrap UCL	102.8875		
95% BCA Bootstrap UCL	101.4375		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	116.4762		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	5		
Minimum	0.015		
Maximum	0.5		
Mean	0.150833		
Standard Deviation	0.179344		
Variance	0.032164		
Coefficient of Variation	1.189019		
Skewness	1.976872		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.752338		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.298369		
Gamma Statistics			
k hat	1.01717		
k star (bias corrected)	0.619696		
Theta hat	0.148287		
Theta star	0.243399		
nu hat	12.20605		
nu star	7.436356		
5% Approximate Chi Square Value	2.412491		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	1.510786		
Anderson-Darling Test Statistic	0.323328		
Anderson-Darling 5% Critical Value	0.714849		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.221536		
Kolmogrov-Smirnov 5% Critical Value	0.340733		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.464934		
95% Adjusted Gamma UCL	0.742428		
Lognormal Statistics			
Minimum of log data	-4.199705		
Maximum of log data	-0.693147		
Mean of log data	-2.457925		
Standard Deviation of log data	1.206905		
Variance of log data	1.456619		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.966717		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.177353		
MLE Standard Deviation	0.321758		
MLE Coefficient of Variation	1.814228		
MLE Skewness	11.41408		
MLE Median	0.085612		
MLE 80% Quantile	0.237381		
MLE 90% Quantile	0.403712		
MLE 95% Quantile	0.6234		
MLE 99% Quantile	1.418124		
MVU Estimate of Median	0.075661		
MVU Estimate of Mean	0.150193		
MVU Estimate of Standard Deviation	0.179998		
MVU Estimate of SE of Mean	0.071734		
95% H-UCL	2.712294		
95% Chebyshev (MVUE) UCL	0.462873		
97.5% Chebyshev (MVUE) UCL	0.598169		
99% Chebyshev (MVUE) UCL	0.863934		
Non-parametric Statistics			
95% CLT UCL	0.271264		
95% Adjusted-CLT UCL	0.334403		
95% Modified-t UCL	0.308217		
95% Jackknife UCL	0.298369		
95% Chebyshev (Mean, Sd) UCL	0.469978		
97.5% Chebyshev (Mean, Sd) UCL	0.608072		
99% Chebyshev (Mean, Sd) UCL	0.879331		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.26199		
95% Bootstrap-t UCL	0.520578		
95% Hall's Bootstrap UCL	0.716756		
95% Percentile Bootstrap UCL	0.275		
95% BCA Bootstrap UCL	0.35		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.464934	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Nickel		
<b>Raw Statistics</b>			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	8		
Minimum	3.9		
Maximum	18		
Mean	7.75		
Standard Deviation	4.538722		
Variance	20.6		
Coefficient of Variation	0.585642		
Skewness	1.948669		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.789744		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	10.79019		
<b>Gamma Statistics</b>			
k hat	4.418327		
k star (bias corrected)	2.844788		
Theta hat	1.754058		
Theta star	2.724281		
nu hat	70.69323		
nu star	45.5166		
5% Approximate Chi Square Value	31.03654		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	28.04464		
Anderson-Darling Test Statistic	0.396307		
Anderson-Darling 5% Critical Value	0.718779		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.173685		
Kolmogrov-Smirnov 5% Critical Value	0.295292		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	11.36576		
95% Adjusted Gamma UCL	12.57829		
<b>Lognormal Statistics</b>			
Minimum of log data	1.360977		
Maximum of log data	2.890372		
Mean of log data	1.93028		
Standard Deviation of log data	0.492347		
Variance of log data	0.242406		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.931218		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	7.779432		
MLE Standard Deviation	4.074455		
MLE Coefficient of Variation	0.523747		
MLE Skewness	1.714911		
MLE Median	6.891443		
MLE 80% Quantile	10.44699		
MLE 90% Quantile	12.97399		
MLE 95% Quantile	15.48995		
MLE 99% Quantile	21.66027		
MVU Estimate of Median	6.787648		
MVU Estimate of Mean	7.653128		
MVU Estimate of Standard Deviation	3.810273		
MVU Estimate of SE of Mean	1.345196		
95% H-UCL	12.09125		
95% Chebyshev (MVUE) UCL	13.5167		
97.5% Chebyshev (MVUE) UCL	16.05387		
99% Chebyshev (MVUE) UCL	21.03765		
<b>Non-parametric Statistics</b>			
95% CLT UCL	10.38946		
95% Adjusted-CLT UCL	11.57077		
95% Modified-t UCL	10.97445		
95% Jackknife UCL	10.79019		
95% Chebyshev (Mean, Sd) UCL	14.74464		
97.5% Chebyshev (Mean, Sd) UCL	17.77123		
99% Chebyshev (Mean, Sd) UCL	23.71637		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	10.22531		
95% Bootstrap-t UCL	13.59148		
95% Hall's Bootstrap UCL	21.73582		
95% Percentile Bootstrap UCL	10.475		
95% BCA Bootstrap UCL	10.075		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	11.36576	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	8		
Minimum	8.5		
Maximum	50.1		
Mean	31.0875		
Standard Deviation	14.17124		
Variance	200.8241		
Coefficient of Variation	0.45585		
Skewness	-0.620941		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.92977		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	40.57989		
Gamma Statistics			
k hat	3.804603		
k star (bias corrected)	2.46121		
Theta hat	8.171023		
Theta star	12.63098		
nu hat	60.87365		
nu star	39.37937		
5% Approximate Chi Square Value	26.00156		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	23.28766		
Anderson-Darling Test Statistic	0.606566		
Anderson-Darling 5% Critical Value	0.719137		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.275808		
Kolmogrov-Smirnov 5% Critical Value	0.29552		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	47.08202		
95% Adjusted Gamma UCL	52.56887		
Lognormal Statistics			
Minimum of log data	2.140066		
Maximum of log data	3.914021		
Mean of log data	3.299668		
Standard Deviation of log data	0.624426		
Variance of log data	0.389908		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.829512		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	32.93782		
MLE Standard Deviation	22.74488		
MLE Coefficient of Variation	0.69054		
MLE Skewness	2.4009		
MLE Median	27.10363		
MLE 80% Quantile	45.9387		
MLE 90% Quantile	60.46444		
MLE 95% Quantile	75.70535		
MLE 99% Quantile	115.8253		
MVU Estimate of Median	26.44936		
MVU Estimate of Mean	32.04517		
MVU Estimate of Standard Deviation	20.36097		
MVU Estimate of SE of Mean	7.173371		
95% H-UCL	61.13373		
95% Chebyshev (MVUE) UCL	63.31317		
97.5% Chebyshev (MVUE) UCL	76.84286		
99% Chebyshev (MVUE) UCL	103.4193		
Non-parametric Statistics			
95% CLT UCL	39.32869		
95% Adjusted-CLT UCL	38.15339		
95% Modified-t UCL	40.39657		
95% Jackknife UCL	40.57989		
95% Chebyshev (Mean, Sd) UCL	52.92685		
97.5% Chebyshev (Mean, Sd) UCL	62.37676		
99% Chebyshev (Mean, Sd) UCL	80.93926		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	38.90512		
95% Bootstrap-t UCL	39.04904		
95% Hall's Bootstrap UCL	37.86813		
95% Percentile Bootstrap UCL	38.4375		
95% BCA Bootstrap UCL	37.0125		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	40.57989	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 22-tt-22.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	8		
Minimum	23		
Maximum	122		
Mean	69.5875		
Standard Deviation	38.82011		
Variance	1507.001		
Coefficient of Variation	0.55786		
Skewness	0.239892		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.892591		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	95.59056		
Gamma Statistics			
k hat	3.303659		
k star (bias corrected)	2.14812		
Theta hat	21.06376		
Theta star	32.3946		
nu hat	52.85855		
nu star	34.36993		
5% Approximate Chi Square Value	21.95807		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	19.48726		
Anderson-Darling Test Statistic	0.400274		
Anderson-Darling 5% Critical Value	0.720589		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.216439		
Kolmogrov-Smirnov 5% Critical Value	0.296005		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	108.922		
95% Adjusted Gamma UCL	122.7324		
Lognormal Statistics			
Minimum of log data	3.135494		
Maximum of log data	4.804021		
Mean of log data	4.083669		
Standard Deviation of log data	0.627505		
Variance of log data	0.393763		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.909876		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	72.28024		
MLE Standard Deviation	50.21		
MLE Coefficient of Variation	0.694657		
MLE Skewness	2.419178		
MLE Median	59.3629		
MLE 80% Quantile	100.8779		
MLE 90% Quantile	132.9554		
MLE 95% Quantile	166.6533		
MLE 99% Quantile	255.5061		
MVU Estimate of Median	57.91588		
MVU Estimate of Mean	70.30016		
MVU Estimate of Standard Deviation	44.8949		
MVU Estimate of SE of Mean	15.81589		
95% H-UCL	134.7646		
95% Chebyshev (MVUE) UCL	139.24		
97.5% Chebyshev (MVUE) UCL	169.0704		
99% Chebyshev (MVUE) UCL	227.6663		
Non-parametric Statistics			
95% CLT UCL	92.16309		
95% Adjusted-CLT UCL	93.40692		
95% Modified-t UCL	95.78457		
95% Jackknife UCL	95.59056		
95% Chebyshev (Mean, Sd) UCL	129.4133		
97.5% Chebyshev (Mean, Sd) UCL	155.3		
99% Chebyshev (Mean, Sd) UCL	206.1494		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	90.61818		
95% Bootstrap-t UCL	96.33493		
95% Hall's Bootstrap UCL	88.28399		
95% Percentile Bootstrap UCL	90.15		
95% BCA Bootstrap UCL	86.75		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	95.59056	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Trichloroethene		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.011		
Maximum	0.037		
Mean	0.021833		
Standard Deviation	0.013531		
Variance	0.000183		
Coefficient of Variation	0.619733		
Skewness	1.293343		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-4.50986		
Maximum of log data	-3.296837		
Mean of log data	-3.950751		
Standard Deviation of log data	0.612043		
Variance of log data	0.374597		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.023203		
MLE Standard Deviation	0.015641		
MLE Coefficient of Variation	0.674096		
MLE Skewness	2.328599		
MLE Median	0.01924		
MLE 80% Quantile	0.032271		
MLE 90% Quantile	0.042245		
MLE 95% Quantile	0.052658		
MLE 99% Quantile	0.079887		
MVU Estimate of Median	0.018058		
MVU Estimate of Mean	0.021719		
MVU Estimate of Standard Deviation	0.012713		
MVU Estimate of SE of Mean	0.007337		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Benzo(a)anthracene		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.11		
Maximum	1.7		
Mean	0.825		
Standard Deviation	0.555581		
Variance	0.30867		
Coefficient of Variation	0.673431		
Skewness	0.564001		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.967985		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.282043		
<b>Gamma Statistics</b>			
k hat	1.928529		
k star (bias corrected)	1.075376		
Theta hat	0.427787		
Theta star	0.767174		
nu hat	23.14235		
nu star	12.90451		
5% Approximate Chi Square Value	5.827486		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	4.231659		
Anderson-Darling Test Statistic	0.25963		
Anderson-Darling 5% Critical Value	0.704722		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.189714		
Kolmogrov-Smirnov 5% Critical Value	0.336062		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.826897		
95% Adjusted Gamma UCL	2.51585		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.207275		
Maximum of log data	0.530628		
Mean of log data	-0.473502		
Standard Deviation of log data	0.951476		
Variance of log data	0.905306		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.892021		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.979367		
MLE Standard Deviation	1.188505		
MLE Coefficient of Variation	1.213544		
MLE Skewness	5.427807		
MLE Median	0.622817		
MLE 80% Quantile	1.391657		
MLE 90% Quantile	2.115189		
MLE 95% Quantile	2.979262		
MLE 99% Quantile	5.69524		
MVU Estimate of Median	0.577079		
MVU Estimate of Mean	0.891709		
MVU Estimate of Standard Deviation	0.845695		
MVU Estimate of SE of Mean	0.3415		
95% H-UCL	5.675022		
95% Chebyshev (MVUE) UCL	2.380273		
97.5% Chebyshev (MVUE) UCL	3.024376		
99% Chebyshev (MVUE) UCL	4.289592		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.198077		
95% Adjusted-CLT UCL	1.25388		
95% Modified-t UCL	1.290747		
95% Jackknife UCL	1.282043		
95% Chebyshev (Mean, Sd) UCL	1.813663		
97.5% Chebyshev (Mean, Sd) UCL	2.241459		
99% Chebyshev (Mean, Sd) UCL	3.08178		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.17148		
95% Bootstrap-t UCL	1.519838		
95% Hall's Bootstrap UCL	2.414954		
95% Percentile Bootstrap UCL	1.181667		
95% BCA Bootstrap UCL	1.3		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.282043	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Benzo(a)pyrene		
<b>Raw Statistics</b>			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.15		
Maximum	1.7		
Mean	0.908333		
Standard Deviation	0.536336		
Variance	0.287657		
Coefficient of Variation	0.590462		
Skewness	0.200876		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.9696		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1.349545		
<b>Gamma Statistics</b>			
k hat	2.387281		
k star (bias corrected)	1.304752		
Theta hat	0.380489		
Theta star	0.696173		
nu hat	28.64738		
nu star	15.65702		
5% Approximate Chi Square Value	7.719532		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	5.823345		
Anderson-Darling Test Statistic	0.349769		
Anderson-Darling 5% Critical Value	0.703095		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.268139		
Kolmogrov-Smirnov 5% Critical Value	0.335334		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.842313		
95% Adjusted Gamma UCL	2.442204		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.89712		
Maximum of log data	0.530628		
Mean of log data	-0.319971		
Standard Deviation of log data	0.847735		
Variance of log data	0.718655		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.856928		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	1.040141		
MLE Standard Deviation	1.066675		
MLE Coefficient of Variation	1.02551		
MLE Skewness	4.15503		
MLE Median	0.72617		
MLE 80% Quantile	1.486412		
MLE 90% Quantile	2.158403		
MLE 95% Quantile	2.928684		
MLE 99% Quantile	5.216677		
MVU Estimate of Median	0.683601		
MVU Estimate of Mean	0.968202		
MVU Estimate of Standard Deviation	0.818995		
MVU Estimate of SE of Mean	0.331918		
95% H-UCL	4.341924		
95% Chebyshev (MVUE) UCL	2.415		
97.5% Chebyshev (MVUE) UCL	3.041031		
99% Chebyshev (MVUE) UCL	4.270746		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.268488		
95% Adjusted-CLT UCL	1.287674		
95% Modified-t UCL	1.352538		
95% Jackknife UCL	1.349545		
95% Chebyshev (Mean, Sd) UCL	1.862751		
97.5% Chebyshev (Mean, Sd) UCL	2.275728		
99% Chebyshev (Mean, Sd) UCL	3.086942		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.237698		
95% Bootstrap-t UCL	1.470558		
95% Hall's Bootstrap UCL	1.621913		
95% Percentile Bootstrap UCL	1.235		
95% BCA Bootstrap UCL	1.335		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.349545		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Benzo(b)fluoranthene		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.27		
Maximum	3.6		
Mean	1.661667		
Standard Deviation	1.107798		
Variance	1.227217		
Coefficient of Variation	0.666679		
Skewness	0.972215		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.932659		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	2.572986		
Gamma Statistics			
k hat	2.191478		
k star (bias corrected)	1.20685		
Theta hat	0.75824		
Theta star	1.376862		
nu hat	26.29774		
nu star	14.4822		
5% Approximate Chi Square Value	6.901633		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	5.130487		
Anderson-Darling Test Statistic	0.294823		
Anderson-Darling 5% Critical Value	0.703659		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.201127		
Kolmogrov-Smirnov 5% Critical Value	0.335585		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	3.486797		
95% Adjusted Gamma UCL	4.690509		
Lognormal Statistics			
Minimum of log data	-1.309333		
Maximum of log data	1.280934		
Mean of log data	0.262644		
Standard Deviation of log data	0.866844		
Variance of log data	0.751419		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.897355		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	1.893361		
MLE Standard Deviation	2.00375		
MLE Coefficient of Variation	1.058303		
MLE Skewness	4.360215		
MLE Median	1.300364		
MLE 80% Quantile	2.705069		
MLE 90% Quantile	3.961168		
MLE 95% Quantile	5.411914		
MLE 99% Quantile	9.766163		
MVU Estimate of Median	1.220737		
MVU Estimate of Mean	1.755757		
MVU Estimate of Standard Deviation	1.518392		
MVU Estimate of SE of Mean	0.614999		
95% H-UCL	8.371479		
95% Chebyshev (MVUE) UCL	4.436475		
97.5% Chebyshev (MVUE) UCL	5.596424		
99% Chebyshev (MVUE) UCL	7.874918		
Non-parametric Statistics			
95% CLT UCL	2.405563		
95% Adjusted-CLT UCL	2.597364		
95% Modified-t UCL	2.602903		
95% Jackknife UCL	2.572986		
95% Chebyshev (Mean, Sd) UCL	3.633008		
97.5% Chebyshev (Mean, Sd) UCL	4.486009		
99% Chebyshev (Mean, Sd) UCL	6.161564		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.341682		
95% Bootstrap-t UCL	2.789453		
95% Hall's Bootstrap UCL	6.812013		
95% Percentile Bootstrap UCL	2.366667		
95% BCA Bootstrap UCL	2.816667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.572986		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Benzo(k)fluoranthene		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.14		
Maximum	3.4		
Mean	1.31		
Standard Deviation	1.147205		
Variance	1.31608		
Coefficient of Variation	0.875729		
Skewness	1.400744		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.893583		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	2.253737		
Gamma Statistics			
k hat	1.417578		
k star (bias corrected)	0.8199		
Theta hat	0.924111		
Theta star	1.597755		
nu hat	17.01094		
nu star	9.838803		
5% Approximate Chi Square Value	3.840434		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	2.614488		
Anderson-Darling Test Statistic	0.168056		
Anderson-Darling 5% Critical Value	0.708995		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.133142		
Kolmogrov-Smirnov 5% Critical Value	0.33801		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	3.356088		
95% Adjusted Gamma UCL	4.929773		
Lognormal Statistics			
Minimum of log data	-1.966113		
Maximum of log data	1.223775		
Mean of log data	-0.122435		
Standard Deviation of log data	1.086776		
Variance of log data	1.181083		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.957744		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	1.596968		
MLE Standard Deviation	2.399653		
MLE Coefficient of Variation	1.502631		
MLE Skewness	7.900682		
MLE Median	0.884764		
MLE 80% Quantile	2.216416		
MLE 90% Quantile	3.575385		
MLE 95% Quantile	5.287325		
MLE 99% Quantile	11.08294		
MVU Estimate of Median	0.800688		
MVU Estimate of Mean	1.404077		
MVU Estimate of Standard Deviation	1.518246		
MVU Estimate of SE of Mean	0.609297		
95% H-UCL	15.03171		
95% Chebyshev (MVUE) UCL	4.05994		
97.5% Chebyshev (MVUE) UCL	5.209134		
99% Chebyshev (MVUE) UCL	7.466503		
Non-parametric Statistics			
95% CLT UCL	2.080358		
95% Adjusted-CLT UCL	2.366532		
95% Modified-t UCL	2.298374		
95% Jackknife UCL	2.253737		
95% Chebyshev (Mean, Sd) UCL	3.351467		
97.5% Chebyshev (Mean, Sd) UCL	4.234811		
99% Chebyshev (Mean, Sd) UCL	5.96997		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.016135		
95% Bootstrap-t UCL	2.838836		
95% Hall's Bootstrap UCL	5.865511		
95% Percentile Bootstrap UCL	2.085		
95% BCA Bootstrap UCL	2.4		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2.253737		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Dibenz(a,h)anthracene		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.14		
Maximum	0.33		
Mean	0.2175		
Standard Deviation	0.081803		
Variance	0.006692		
Coefficient of Variation	0.376104		
Skewness	1.10295		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.938715		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.313756		
Gamma Statistics			
k hat	10.09055		
k star (bias corrected)	2.689303		
Theta hat	0.021555		
Theta star	0.080876		
nu hat	80.72436		
nu star	21.51442		
5% Approximate Chi Square Value	11.97339		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.23861		
Anderson-Darling 5% Critical Value	0.6571		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.193758		
Kolmogrov-Smirnov 5% Critical Value	0.394924		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.390816		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-1.966113		
Maximum of log data	-1.108663		
Mean of log data	-1.575925		
Standard Deviation of log data	0.362255		
Variance of log data	0.131228		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.985545		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.220841		
MLE Standard Deviation	0.082699		
MLE Coefficient of Variation	0.374471		
MLE Skewness	1.175923		
MLE Median	0.206816		
MLE 80% Quantile	0.280882		
MLE 90% Quantile	0.329418		
MLE 95% Quantile	0.375305		
MLE 99% Quantile	0.480311		
MVU Estimate of Median	0.20344		
MVU Estimate of Mean	0.217145		
MVU Estimate of Standard Deviation	0.077902		
MVU Estimate of SE of Mean	0.038946		
95% H-UCL	0.47469		
95% Chebyshev (MVUE) UCL	0.386905		
97.5% Chebyshev (MVUE) UCL	0.460361		
99% Chebyshev (MVUE) UCL	0.604649		
Non-parametric Statistics			
95% CLT UCL	0.284777		
95% Adjusted-CLT UCL	0.308878		
95% Modified-t UCL	0.317515		
95% Jackknife UCL	0.313756		
95% Chebyshev (Mean, Sd) UCL	0.395785		
97.5% Chebyshev (Mean, Sd) UCL	0.472929		
99% Chebyshev (Mean, Sd) UCL	0.624463		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.313756		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Indeno(1,2,3-cd)pyrene		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	5		
Minimum	0.14		
Maximum	1		
Mean	0.643333		
Standard Deviation	0.286961		
Variance	0.082347		
Coefficient of Variation	0.446054		
Skewness	-1.00495		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.915312		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.879399		
Gamma Statistics			
k hat	3.527385		
k star (bias corrected)	1.874804		
Theta hat	0.182383		
Theta star	0.343147		
nu hat	42.32862		
nu star	22.49764		
5% Approximate Chi Square Value	12.71042		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	10.15876		
Anderson-Darling Test Statistic	0.674898		
Anderson-Darling 5% Critical Value	0.700618		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.341117		
Kolmogrov-Smirnov 5% Critical Value	0.334017		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.13871		
95% Adjusted Gamma UCL	1.42473		
Lognormal Statistics			
Minimum of log data	-1.966113		
Maximum of log data	0		
Mean of log data	-0.589486		
Standard Deviation of log data	0.70057		
Variance of log data	0.490799		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.747838		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.708868		
MLE Standard Deviation	0.564261		
MLE Coefficient of Variation	0.796003		
MLE Skewness	2.892373		
MLE Median	0.554612		
MLE 80% Quantile	1.002499		
MLE 90% Quantile	1.364444		
MLE 95% Quantile	1.755849		
MLE 99% Quantile	2.829332		
MVU Estimate of Median	0.532258		
MVU Estimate of Mean	0.676635		
MVU Estimate of Standard Deviation	0.473509		
MVU Estimate of SE of Mean	0.192599		
95% H-UCL	1.983879		
95% Chebyshev (MVUE) UCL	1.516154		
97.5% Chebyshev (MVUE) UCL	1.879415		
99% Chebyshev (MVUE) UCL	2.59297		
Non-parametric Statistics			
95% CLT UCL	0.83603		
95% Adjusted-CLT UCL	0.784674		
95% Modified-t UCL	0.871388		
95% Jackknife UCL	0.879399		
95% Chebyshev (Mean, Sd) UCL	1.153984		
97.5% Chebyshev (Mean, Sd) UCL	1.374943		
99% Chebyshev (Mean, Sd) UCL	1.808975		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.817511		
95% Bootstrap-t UCL	0.82453		
95% Hall's Bootstrap UCL	0.800087		
95% Percentile Bootstrap UCL	0.815		
95% BCA Bootstrap UCL	0.851667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.879399	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Phenanthrene		
Raw Statistics			
Number of Observations	6		
Number of Missing Data	0		
Number of Valid Observations	6		
Number of Distinct Observations	6		
Minimum	0.14		
Maximum	2.7		
Mean	0.945		
Standard Deviation	0.904539		
Variance	0.81819		
Coefficient of Variation	0.957184		
Skewness	1.917944		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.791941		
Shapiro-Wilk 5% Critical Value	0.788		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1.68911		
Gamma Statistics			
k hat	1.531095		
k star (bias corrected)	0.876658		
Theta hat	0.617206		
Theta star	1.077957		
nu hat	18.37313		
nu star	10.5199		
5% Approximate Chi Square Value	4.268379		
Adjusted Level of Significance	0.01222		
Adjusted Chi Square Value	2.956464		
Anderson-Darling Test Statistic	0.284842		
Anderson-Darling 5% Critical Value	0.707567		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.218682		
Kolmogrov-Smirnov 5% Critical Value	0.337349		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	2.329059		
95% Adjusted Gamma UCL	3.362566		
Lognormal Statistics			
Minimum of log data	-1.966113		
Maximum of log data	0.993252		
Mean of log data	-0.41739		
Standard Deviation of log data	0.969539		
Variance of log data	0.940006		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.965834		
Shapiro-Wilk 5% Critical Value	0.788		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	1.054022		
MLE Standard Deviation	1.316472		
MLE Coefficient of Variation	1.248998		
MLE Skewness	5.695428		
MLE Median	0.658764		
MLE 80% Quantile	1.494618		
MLE 90% Quantile	2.289808		
MLE 95% Quantile	3.246255		
MLE 99% Quantile	6.282438		
MVU Estimate of Median	0.608584		
MVU Estimate of Mean	0.955612		
MVU Estimate of Standard Deviation	0.923309		
MVU Estimate of SE of Mean	0.37257		
95% H-UCL	6.492174		
95% Chebyshev (MVUE) UCL	2.579607		
97.5% Chebyshev (MVUE) UCL	3.282311		
99% Chebyshev (MVUE) UCL	4.662637		
Non-parametric Statistics			
95% CLT UCL	1.552405		
95% Adjusted-CLT UCL	1.861358		
95% Modified-t UCL	1.7373		
95% Jackknife UCL	1.68911		
95% Chebyshev (Mean, Sd) UCL	2.554638		
97.5% Chebyshev (Mean, Sd) UCL	3.25113		
99% Chebyshev (Mean, Sd) UCL	4.619253		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.484081		
95% Bootstrap-t UCL	2.673866		
95% Hall's Bootstrap UCL	4.461652		
95% Percentile Bootstrap UCL	1.61		
95% BCA Bootstrap UCL	2.016667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.68911		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Aroclor 1254		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.00155		
Maximum	0.045		
Mean	0.016067		
Standard Deviation	0.025057		
Variance	0.000628		
Coefficient of Variation	1.559568		
Skewness	1.73202		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-6.4695		
Maximum of log data	-3.101093		
Mean of log data	-5.325858		
Standard Deviation of log data	1.926957		
Variance of log data	3.713161		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.03114		
MLE Standard Deviation	0.196902		
MLE Coefficient of Variation	6.323224		
MLE Skewness	271.7922		
MLE Median	0.004864		
MLE 80% Quantile	0.024783		
MLE 90% Quantile	0.057861		
MLE 95% Quantile	0.115786		
MLE 99% Quantile	0.430092		
MVU Estimate of Median	0.002289		
MVU Estimate of Mean	0.013025		
MVU Estimate of Standard Deviation	0.018235		
MVU Estimate of SE of Mean	0.01031		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Aroclor 1260		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.011		
Maximum	0.31		
Mean	0.1625		
Standard Deviation	0.140638		
Variance	0.019779		
Coefficient of Variation	0.865464		
Skewness	-0.043255		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.923976		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.327986		
<b>Gamma Statistics</b>			
k hat	0.989094		
k star (bias corrected)	0.41394		
Theta hat	0.164292		
Theta star	0.392569		
nu hat	7.912751		
nu star	3.311521		
5% Approximate Chi Square Value	0.470182		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.334692		
Anderson-Darling 5% Critical Value	0.666771		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.285079		
Kolmogrov-Smirnov 5% Critical Value	0.402561		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.144498		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-4.50986		
Maximum of log data	-1.171183		
Mean of log data	-2.401411		
Standard Deviation of log data	1.528422		
Variance of log data	2.336074		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.882936		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.291308		
MLE Standard Deviation	0.890305		
MLE Coefficient of Variation	3.056232		
MLE Skewness	37.7156		
MLE Median	0.09059		
MLE 80% Quantile	0.329594		
MLE 90% Quantile	0.64572		
MLE 95% Quantile	1.119456		
MLE 99% Quantile	3.169894		
MVU Estimate of Median	0.06636		
MVU Estimate of Mean	0.193616		
MVU Estimate of Standard Deviation	0.256799		
MVU Estimate of SE of Mean	0.125369		
95% H-UCL	47878.33		
95% Chebyshev (MVUE) UCL	0.740087		
97.5% Chebyshev (MVUE) UCL	0.976545		
99% Chebyshev (MVUE) UCL	1.441022		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.278164		
95% Adjusted-CLT UCL	0.276539		
95% Modified-t UCL	0.327732		
95% Jackknife UCL	0.327986		
95% Chebyshev (Mean, Sd) UCL	0.469013		
97.5% Chebyshev (Mean, Sd) UCL	0.601641		
99% Chebyshev (Mean, Sd) UCL	0.862164		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.327986		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	8		
Minimum	0.21		
Maximum	61		
Mean	14.73438		
Standard Deviation	23.72701		
Variance	562.9709		
Coefficient of Variation	1.610317		
Skewness	1.566776		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.677958		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	30.62755		
<b>Gamma Statistics</b>			
k hat	0.389512		
k star (bias corrected)	0.326778		
Theta hat	37.82776		
Theta star	45.0898		
nu hat	6.232195		
nu star	5.228455		
5% Approximate Chi Square Value	1.258756		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	0.835427		
Anderson-Darling Test Statistic	0.511943		
Anderson-Darling 5% Critical Value	0.781645		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.206002		
Kolmogrov-Smirnov 5% Critical Value	0.313387		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	61.20171		
95% Adjusted Gamma UCL	92.21391		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.560648		
Maximum of log data	4.110874		
Mean of log data	0.993536		
Standard Deviation of log data	2.207303		
Variance of log data	4.872188		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.911281		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	30.86523		
MLE Standard Deviation	351.3845		
MLE Coefficient of Variation	11.38448		
MLE Skewness	1509.654		
MLE Median	2.700769		
MLE 80% Quantile	17.43898		
MLE 90% Quantile	46.05891		
MLE 95% Quantile	101.9569		
MLE 99% Quantile	458.3916		
MVU Estimate of Median	1.969704		
MVU Estimate of Mean	16.15019		
MVU Estimate of Standard Deviation	40.34599		
MVU Estimate of SE of Mean	11.77982		
95% H-UCL	9784.241		
95% Chebyshev (MVUE) UCL	67.49723		
97.5% Chebyshev (MVUE) UCL	89.71514		
99% Chebyshev (MVUE) UCL	133.3579		
<b>Non-parametric Statistics</b>			
95% CLT UCL	28.53266		
95% Adjusted-CLT UCL	33.49791		
95% Modified-t UCL	31.40202		
95% Jackknife UCL	30.62755		
95% Chebyshev (Mean, Sd) UCL	51.30015		
97.5% Chebyshev (Mean, Sd) UCL	67.12219		
99% Chebyshev (Mean, Sd) UCL	98.20152		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	27.45266		
95% Bootstrap-t UCL	135.642		
95% Hall's Bootstrap UCL	128.7768		
95% Percentile Bootstrap UCL	28.94688		
95% BCA Bootstrap UCL	35.6125		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	92.21391	95% Adjusted Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	15.9		
Maximum	4210		
Mean	878.4833		
Standard Deviation	1468.549		
Variance	2156636		
Coefficient of Variation	1.671687		
Skewness	1.94863		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.641816		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1788.762		
Gamma Statistics			
k hat	0.488173		
k star (bias corrected)	0.399523		
Theta hat	1799.532		
Theta star	2198.831		
nu hat	8.78712		
nu star	7.191413		
5% Approximate Chi Square Value	2.275592		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	1.737779		
Anderson-Darling Test Statistic	0.610617		
Anderson-Darling 5% Critical Value	0.772854		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.297336		
Kolmogrov-Smirnov 5% Critical Value	0.294516		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2776.216		
95% Adjusted Gamma UCL	3635.41		
Lognormal Statistics			
Minimum of log data	2.766319		
Maximum of log data	8.345218		
Mean of log data	5.472205		
Standard Deviation of log data	1.796692		
Variance of log data	3.228102		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.952242		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1195.424		
MLE Standard Deviation	5884.563		
MLE Coefficient of Variation	4.922574		
MLE Skewness	134.0502		
MLE Median	237.9844		
MLE 80% Quantile	1086.166		
MLE 90% Quantile	2394.559		
MLE 95% Quantile	4572.263		
MLE 99% Quantile	15542.15		
MVU Estimate of Median	198.2472		
MVU Estimate of Mean	852.6966		
MVU Estimate of Standard Deviation	1766.81		
MVU Estimate of SE of Mean	518.1289		
95% H-UCL	34783.93		
95% Chebyshev (MVUE) UCL	3111.168		
97.5% Chebyshev (MVUE) UCL	4088.411		
99% Chebyshev (MVUE) UCL	6008.014		
Non-parametric Statistics			
95% CLT UCL	1683.666		
95% Adjusted-CLT UCL	2023.413		
95% Modified-t UCL	1841.756		
95% Jackknife UCL	1788.762		
95% Chebyshev (Mean, Sd) UCL	3012.236		
97.5% Chebyshev (Mean, Sd) UCL	3935.512		
99% Chebyshev (Mean, Sd) UCL	5749.109		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1665.629		
95% Bootstrap-t UCL	8770.85		
95% Hall's Bootstrap UCL	6936.199		
95% Percentile Bootstrap UCL	1733.878		
95% BCA Bootstrap UCL	2217.767		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	3635.41	95% Adjusted Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	63.8		
Maximum	387.5		
Mean	155.3222		
Standard Deviation	111.4526		
Variance	12421.69		
Coefficient of Variation	0.717558		
Skewness	1.556163		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.776649		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	224.4061		
<b>Gamma Statistics</b>			
k hat	2.878536		
k star (bias corrected)	1.993098		
Theta hat	53.95876		
Theta star	77.93005		
nu hat	51.81364		
nu star	35.87576		
5% Approximate Chi Square Value	23.16646		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	21.03718		
Anderson-Darling Test Statistic	0.616259		
Anderson-Darling 5% Critical Value	0.727161		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.213341		
Kolmogrov-Smirnov 5% Critical Value	0.281478		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	240.5332		
95% Adjusted Gamma UCL	264.8789		
<b>Lognormal Statistics</b>			
Minimum of log data	4.155753		
Maximum of log data	5.959716		
Mean of log data	4.86186		
Standard Deviation of log data	0.608512		
Variance of log data	0.370287		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.903816		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	155.5557		
MLE Standard Deviation	104.1353		
MLE Coefficient of Variation	0.66944		
MLE Skewness	2.308331		
MLE Median	129.2645		
MLE 80% Quantile	216.1674		
MLE 90% Quantile	282.5339		
MLE 95% Quantile	351.7297		
MLE 99% Quantile	532.328		
MVU Estimate of Median	126.6271		
MVU Estimate of Mean	151.9906		
MVU Estimate of Standard Deviation	94.64946		
MVU Estimate of SE of Mean	31.43545		
95% H-UCL	265.4936		
95% Chebyshev (MVUE) UCL	289.0146		
97.5% Chebyshev (MVUE) UCL	348.3049		
99% Chebyshev (MVUE) UCL	464.7694		
<b>Non-parametric Statistics</b>			
95% CLT UCL	216.43		
95% Adjusted-CLT UCL	237.0213		
95% Modified-t UCL	227.6179		
95% Jackknife UCL	224.4061		
95% Chebyshev (Mean, Sd) UCL	317.2592		
97.5% Chebyshev (Mean, Sd) UCL	387.3294		
99% Chebyshev (Mean, Sd) UCL	524.9688		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	212.6059		
95% Bootstrap-t UCL	372.6234		
95% Hall's Bootstrap UCL	574.1785		
95% Percentile Bootstrap UCL	215.4556		
95% BCA Bootstrap UCL	206.6		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	240.5332	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	2		
Maximum	13.8		
Mean	6.75		
Standard Deviation	4.237334		
Variance	17.955		
Coefficient of Variation	0.627753		
Skewness	0.411297		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.915138		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	9.376509		
<b>Gamma Statistics</b>			
k hat	2.568621		
k star (bias corrected)	1.786488		
Theta hat	2.62787		
Theta star	3.778363		
nu hat	46.23517		
nu star	32.15678		
5% Approximate Chi Square Value	20.19431		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	18.22109		
Anderson-Darling Test Statistic	0.363463		
Anderson-Darling 5% Critical Value	0.728081		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.177671		
Kolmogrov-Smirnov 5% Critical Value	0.281832		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	10.74849		
95% Adjusted Gamma UCL	11.91248		
<b>Lognormal Statistics</b>			
Minimum of log data	0.693147		
Maximum of log data	2.624669		
Mean of log data	1.702434		
Standard Deviation of log data	0.713594		
Variance of log data	0.509216		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.919244		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	7.078362		
MLE Standard Deviation	5.767829		
MLE Coefficient of Variation	0.814854		
MLE Skewness	2.985612		
MLE Median	5.48729		
MLE 80% Quantile	10.0284		
MLE 90% Quantile	13.72752		
MLE 95% Quantile	17.74842		
MLE 99% Quantile	28.85415		
MVU Estimate of Median	5.333801		
MVU Estimate of Mean	6.847428		
MVU Estimate of Standard Deviation	5.040346		
MVU Estimate of SE of Mean	1.669187		
95% H-UCL	13.9271		
95% Chebyshev (MVUE) UCL	14.12324		
97.5% Chebyshev (MVUE) UCL	17.2715		
99% Chebyshev (MVUE) UCL	23.45563		
<b>Non-parametric Statistics</b>			
95% CLT UCL	9.073265		
95% Adjusted-CLT UCL	9.280177		
95% Modified-t UCL	9.408783		
95% Jackknife UCL	9.376509		
95% Chebyshev (Mean, Sd) UCL	12.9067		
97.5% Chebyshev (Mean, Sd) UCL	15.57071		
99% Chebyshev (Mean, Sd) UCL	20.80365		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	8.878124		
95% Bootstrap-t UCL	9.780792		
95% Hall's Bootstrap UCL	8.970374		
95% Percentile Bootstrap UCL	9.011111		
95% BCA Bootstrap UCL	9.966667		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	9.376509	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	61.2		
Maximum	725		
Mean	403.3778		
Standard Deviation	257.9		
Variance	66512.42		
Coefficient of Variation	0.639351		
Skewness	-0.18273		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.905389		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	563.2369		
Gamma Statistics			
k hat	1.792225		
k star (bias corrected)	1.268891		
Theta hat	225.0709		
Theta star	317.8979		
nu hat	32.26006		
nu star	22.84004		
5% Approximate Chi Square Value	12.96837		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	11.43007		
Anderson-Darling Test Statistic	0.546376		
Anderson-Darling 5% Critical Value	0.731677		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.256852		
Kolmogrov-Smirnov 5% Critical Value	0.283103		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	710.4334		
95% Adjusted Gamma UCL	806.0465		
Lognormal Statistics			
Minimum of log data	4.114147		
Maximum of log data	6.586172		
Mean of log data	5.695661		
Standard Deviation of log data	0.950092		
Variance of log data	0.902674		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.842963		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	467.3125		
MLE Standard Deviation	565.8514		
MLE Coefficient of Variation	1.210863		
MLE Skewness	5.407942		
MLE Median	297.5735		
MLE 80% Quantile	664.1371		
MLE 90% Quantile	1008.812		
MLE 95% Quantile	1420.213		
MLE 99% Quantile	2712.36		
MVU Estimate of Median	282.9467		
MVU Estimate of Mean	437.9245		
MVU Estimate of Standard Deviation	438.1878		
MVU Estimate of SE of Mean	143.4654		
95% H-UCL	1363.089		
95% Chebyshev (MVUE) UCL	1063.276		
97.5% Chebyshev (MVUE) UCL	1333.865		
99% Chebyshev (MVUE) UCL	1865.387		
Non-parametric Statistics			
95% CLT UCL	544.7804		
95% Adjusted-CLT UCL	539.1854		
95% Modified-t UCL	562.3642		
95% Jackknife UCL	563.2369		
95% Chebyshev (Mean, Sd) UCL	778.0978		
97.5% Chebyshev (Mean, Sd) UCL	940.2395		
99% Chebyshev (Mean, Sd) UCL	1258.735		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	539.6496		
95% Bootstrap-t UCL	557.439		
95% Hall's Bootstrap UCL	521.6441		
95% Percentile Bootstrap UCL	528.7111		
95% BCA Bootstrap UCL	579.3333		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	563.2369	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	97.9		
Maximum	2340		
Mean	740.5444		
Standard Deviation	845.9407		
Variance	715615.6		
Coefficient of Variation	1.142323		
Skewness	1.427218		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.745824		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1264.9		
Gamma Statistics			
k hat	0.968995		
k star (bias corrected)	0.720071		
Theta hat	764.2396		
Theta star	1028.433		
nu hat	17.44191		
nu star	12.96127		
5% Approximate Chi Square Value	5.865604		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	4.896559		
Anderson-Darling Test Statistic	0.517164		
Anderson-Darling 5% Critical Value	0.744461		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.189163		
Kolmogrov-Smirnov 5% Critical Value	0.287195		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1636.387		
95% Adjusted Gamma UCL	1960.234		
Lognormal Statistics			
Minimum of log data	4.583947		
Maximum of log data	7.757906		
Mean of log data	6.009476		
Standard Deviation of log data	1.19069		
Variance of log data	1.417742		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.90024		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	827.4485		
MLE Standard Deviation	1463.389		
MLE Coefficient of Variation	1.768556		
MLE Skewness	10.83734		
MLE Median	407.2698		
MLE 80% Quantile	1113.884		
MLE 90% Quantile	1880.912		
MLE 95% Quantile	2887.541		
MLE 99% Quantile	6496.508		
MVU Estimate of Median	376.185		
MVU Estimate of Mean	738.4997		
MVU Estimate of Standard Deviation	948.6014		
MVU Estimate of SE of Mean	304.4383		
95% H-UCL	4019.703		
95% Chebyshev (MVUE) UCL	2065.515		
97.5% Chebyshev (MVUE) UCL	2639.716		
99% Chebyshev (MVUE) UCL	3767.622		
Non-parametric Statistics			
95% CLT UCL	1204.361		
95% Adjusted-CLT UCL	1347.701		
95% Modified-t UCL	1287.258		
95% Jackknife UCL	1264.9		
95% Chebyshev (Mean, Sd) UCL	1969.668		
97.5% Chebyshev (Mean, Sd) UCL	2501.51		
99% Chebyshev (Mean, Sd) UCL	3546.212		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1176.114		
95% Bootstrap-t UCL	2405.557		
95% Hall's Bootstrap UCL	4528.303		
95% Percentile Bootstrap UCL	1199.333		
95% BCA Bootstrap UCL	1551.444		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1636.387	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	135		
Maximum	1270		
Mean	699.9444		
Standard Deviation	403.9624		
Variance	163185.7		
Coefficient of Variation	0.577135		
Skewness	-0.107718		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.929763		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	950.3403		
<b>Gamma Statistics</b>			
k hat	2.397614		
k star (bias corrected)	1.672484		
Theta hat	291.9337		
Theta star	418.506		
nu hat	43.15706		
nu star	30.10471		
5% Approximate Chi Square Value	18.57313		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	16.68981		
Anderson-Darling Test Statistic	0.500392		
Anderson-Darling 5% Critical Value	0.728589		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.280881		
Kolmogrov-Smirnov 5% Critical Value	0.282027		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1134.522		
95% Adjusted Gamma UCL	1262.544		
<b>Lognormal Statistics</b>			
Minimum of log data	4.905275		
Maximum of log data	7.146772		
Mean of log data	6.328198		
Standard Deviation of log data	0.793407		
Variance of log data	0.629495		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.868187		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	767.352		
MLE Standard Deviation	718.4737		
MLE Coefficient of Variation	0.936303		
MLE Skewness	3.629729		
MLE Median	560.1464		
MLE 80% Quantile	1095.129		
MLE 90% Quantile	1552.662		
MLE 95% Quantile	2065.966		
MLE 99% Quantile	3546.311		
MVU Estimate of Median	540.8289		
MVU Estimate of Mean	735.5349		
MVU Estimate of Standard Deviation	605.9664		
MVU Estimate of SE of Mean	200.0674		
95% H-UCL	1704.218		
95% Chebyshev (MVUE) UCL	1607.608		
97.5% Chebyshev (MVUE) UCL	1984.955		
99% Chebyshev (MVUE) UCL	2726.18		
<b>Non-parametric Statistics</b>			
95% CLT UCL	921.4308		
95% Adjusted-CLT UCL	916.2647		
95% Modified-t UCL	949.5345		
95% Jackknife UCL	950.3403		
95% Chebyshev (Mean, Sd) UCL	1286.888		
97.5% Chebyshev (Mean, Sd) UCL	1540.859		
99% Chebyshev (Mean, Sd) UCL	2039.736		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	904.2146		
95% Bootstrap-t UCL	956.1909		
95% Hall's Bootstrap UCL	911.0247		
95% Percentile Bootstrap UCL	908.6667		
95% BCA Bootstrap UCL	996.1667		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	950.3403	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	110.9		
Maximum	1050		
Mean	524.7667		
Standard Deviation	378.5796		
Variance	143322.5		
Coefficient of Variation	0.721425		
Skewness	0.248268		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.878694		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	759.429		
<b>Gamma Statistics</b>			
k hat	1.704336		
k star (bias corrected)	1.210298		
Theta hat	307.9009		
Theta star	433.5845		
nu hat	30.67806		
nu star	21.78537		
5% Approximate Chi Square Value	12.17593		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	10.6919		
Anderson-Darling Test Statistic	0.504272		
Anderson-Darling 5% Critical Value	0.732484		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.212542		
Kolmogrov-Smirnov 5% Critical Value	0.283367		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	938.921		
95% Adjusted Gamma UCL	1069.243		
<b>Lognormal Statistics</b>			
Minimum of log data	4.708629		
Maximum of log data	6.956545		
Mean of log data	5.94176		
Standard Deviation of log data	0.923932		
Variance of log data	0.853651		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.86103		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	583.2321		
MLE Standard Deviation	677.2036		
MLE Coefficient of Variation	1.161122		
MLE Skewness	5.048795		
MLE Median	380.6042		
MLE 80% Quantile	830.8777		
MLE 90% Quantile	1247.645		
MLE 95% Quantile	1739.979		
MLE 99% Quantile	3264.384		
MVU Estimate of Median	362.8928		
MVU Estimate of Mean	548.8716		
MVU Estimate of Standard Deviation	532.768		
MVU Estimate of SE of Mean	174.7177		
95% H-UCL	1620.3		
95% Chebyshev (MVUE) UCL	1310.449		
97.5% Chebyshev (MVUE) UCL	1639.983		
99% Chebyshev (MVUE) UCL	2287.291		
<b>Non-parametric Statistics</b>			
95% CLT UCL	732.336		
95% Adjusted-CLT UCL	743.4948		
95% Modified-t UCL	761.1695		
95% Jackknife UCL	759.429		
95% Chebyshev (Mean, Sd) UCL	1074.83		
97.5% Chebyshev (Mean, Sd) UCL	1312.843		
99% Chebyshev (Mean, Sd) UCL	1780.373		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	721.0793		
95% Bootstrap-t UCL	762.2164		
95% Hall's Bootstrap UCL	698.3942		
95% Percentile Bootstrap UCL	718.3111		
95% BCA Bootstrap UCL	788.6667		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	759.429		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	0.14		
Maximum	19.5		
Mean	5.156833		
Standard Deviation	7.135441		
Variance	50.91452		
Coefficient of Variation	1.383687		
Skewness	1.408856		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.759889		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	9.579732		
Gamma Statistics			
k hat	0.48753		
k star (bias corrected)	0.399094		
Theta hat	10.57747		
Theta star	12.92135		
nu hat	8.775536		
nu star	7.18369		
5% Approximate Chi Square Value	2.271307		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	1.734151		
Anderson-Darling Test Statistic	0.422161		
Anderson-Darling 5% Critical Value	0.772971		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.198192		
Kolmogrov-Smirnov 5% Critical Value	0.29454		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	16.31004		
95% Adjusted Gamma UCL	21.36209		
Lognormal Statistics			
Minimum of log data	-1.966113		
Maximum of log data	2.970414		
Mean of log data	0.332338		
Standard Deviation of log data	1.947341		
Variance of log data	3.792136		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.906805		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	9.285051		
MLE Standard Deviation	61.13418		
MLE Coefficient of Variation	6.584151		
MLE Skewness	305.1822		
MLE Median	1.394224		
MLE 80% Quantile	7.22712		
MLE 90% Quantile	17.02479		
MLE 95% Quantile	34.31948		
MLE 99% Quantile	129.2634		
MVU Estimate of Median	1.124124		
MVU Estimate of Mean	6.091746		
MVU Estimate of Standard Deviation	13.91719		
MVU Estimate of SE of Mean	3.958819		
95% H-UCL	471.862		
95% Chebyshev (MVUE) UCL	23.34784		
97.5% Chebyshev (MVUE) UCL	30.81456		
99% Chebyshev (MVUE) UCL	45.4815		
Non-parametric Statistics			
95% CLT UCL	9.069085		
95% Adjusted-CLT UCL	10.26259		
95% Modified-t UCL	9.765895		
95% Jackknife UCL	9.579732		
95% Chebyshev (Mean, Sd) UCL	15.52439		
97.5% Chebyshev (Mean, Sd) UCL	20.01044		
99% Chebyshev (Mean, Sd) UCL	28.82241		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	8.890355		
95% Bootstrap-t UCL	16.27091		
95% Hall's Bootstrap UCL	14.01354		
95% Percentile Bootstrap UCL	9.095556		
95% BCA Bootstrap UCL	10.48		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	21.36209	95% Adjusted Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	12.5		
Maximum	53.4		
Mean	23.6		
Standard Deviation	12.429		
Variance	154.48		
Coefficient of Variation	0.526652		
Skewness	1.985591		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.789852		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	31.30411		
Gamma Statistics			
k hat	5.375372		
k star (bias corrected)	3.657656		
Theta hat	4.390394		
Theta star	6.45222		
nu hat	96.7567		
nu star	65.8378		
5% Approximate Chi Square Value	48.16319		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	44.99101		
Anderson-Darling Test Statistic	0.41558		
Anderson-Darling 5% Critical Value	0.722684		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.182959		
Kolmogrov-Smirnov 5% Critical Value	0.279801		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	32.26057		
95% Adjusted Gamma UCL	34.53517		
Lognormal Statistics			
Minimum of log data	2.525729		
Maximum of log data	3.977811		
Mean of log data	3.065356		
Standard Deviation of log data	0.440818		
Variance of log data	0.19432		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.932812		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	23.62997		
MLE Standard Deviation	10.94363		
MLE Coefficient of Variation	0.463125		
MLE Skewness	1.488709		
MLE Median	21.44209		
MLE 80% Quantile	31.11987		
MLE 90% Quantile	37.781		
MLE 95% Quantile	44.27856		
MLE 99% Quantile	59.78156		
MVU Estimate of Median	21.2116		
MVU Estimate of Mean	23.35914		
MVU Estimate of Standard Deviation	10.42663		
MVU Estimate of SE of Mean	3.471824		
95% H-UCL	33.35317		
95% Chebyshev (MVUE) UCL	38.49247		
97.5% Chebyshev (MVUE) UCL	45.04067		
99% Chebyshev (MVUE) UCL	57.90335		
Non-parametric Statistics			
95% CLT UCL	30.41463		
95% Adjusted-CLT UCL	33.3446		
95% Modified-t UCL	31.76112		
95% Jackknife UCL	31.30411		
95% Chebyshev (Mean, Sd) UCL	41.65892		
97.5% Chebyshev (Mean, Sd) UCL	49.47302		
99% Chebyshev (Mean, Sd) UCL	64.82232		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	30.20583		
95% Bootstrap-t UCL	38.11954		
95% Hall's Bootstrap UCL	58.53035		
95% Percentile Bootstrap UCL	30.5		
95% BCA Bootstrap UCL	35.24444		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	32.26057	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - 13-tt-27.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	7		
Minimum	0.215		
Maximum	3.7		
Mean	1.10375		
Standard Deviation	1.458071		
Variance	2.12597		
Coefficient of Variation	1.321015		
Skewness	1.454462		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.646476		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	2.080416		
<b>Gamma Statistics</b>			
k hat	0.862637		
k star (bias corrected)	0.622481		
Theta hat	1.279507		
Theta star	1.773146		
nu hat	13.80219		
nu star	9.9597		
5% Approximate Chi Square Value	3.91575		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	3.017471		
Anderson-Darling Test Statistic	1.14978		
Anderson-Darling 5% Critical Value	0.740791		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.330056		
Kolmogrov-Smirnov 5% Critical Value	0.302889		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	2.807385		
95% Adjusted Gamma UCL	3.643124		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.537117		
Maximum of log data	1.308333		
Mean of log data	-0.582607		
Standard Deviation of log data	1.161547		
Variance of log data	1.349191		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.770138		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	1.096352		
MLE Standard Deviation	1.852253		
MLE Coefficient of Variation	1.689469		
MLE Skewness	9.890673		
MLE Median	0.55844		
MLE 80% Quantile	1.490184		
MLE 90% Quantile	2.484274		
MLE 95% Quantile	3.774007		
MLE 99% Quantile	8.324065		
MVU Estimate of Median	0.512867		
MVU Estimate of Mean	0.974009		
MVU Estimate of Standard Deviation	1.190095		
MVU Estimate of SE of Mean	0.407971		
95% H-UCL	6.137499		
95% Chebyshev (MVUE) UCL	2.752313		
97.5% Chebyshev (MVUE) UCL	3.521786		
99% Chebyshev (MVUE) UCL	5.033268		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.951682		
95% Adjusted-CLT UCL	2.234932		
95% Modified-t UCL	2.124598		
95% Jackknife UCL	2.080416		
95% Chebyshev (Mean, Sd) UCL	3.350788		
97.5% Chebyshev (Mean, Sd) UCL	4.323083		
99% Chebyshev (Mean, Sd) UCL	6.232968		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.892349		
95% Bootstrap-t UCL	11.56749		
95% Hall's Bootstrap UCL	11.15958		
95% Percentile Bootstrap UCL	1.936875		
95% BCA Bootstrap UCL	2.33125		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	6.232968	99% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	27.4		
Maximum	120		
Mean	68.24444		
Standard Deviation	29.95639		
Variance	897.3853		
Coefficient of Variation	0.438957		
Skewness	0.666444		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.943003		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	86.81289		
Gamma Statistics			
k hat	5.811321		
k star (bias corrected)	3.948288		
Theta hat	11.74336		
Theta star	17.28457		
nu hat	104.6038		
nu star	71.06918		
5% Approximate Chi Square Value	52.65646		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	49.32873		
Anderson-Darling Test Statistic	0.183226		
Anderson-Darling 5% Critical Value	0.722596		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.130675		
Kolmogrov-Smirnov 5% Critical Value	0.279756		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	92.10792		
95% Adjusted Gamma UCL	98.32154		
Lognormal Statistics			
Minimum of log data	3.310543		
Maximum of log data	4.787492		
Mean of log data	4.134597		
Standard Deviation of log data	0.455296		
Variance of log data	0.207295		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.975182		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	69.28608		
MLE Standard Deviation	33.25335		
MLE Coefficient of Variation	0.479943		
MLE Skewness	1.550381		
MLE Median	62.46439		
MLE 80% Quantile	91.77336		
MLE 90% Quantile	112.1293		
MLE 95% Quantile	132.1		
MLE 99% Quantile	180.1186		
MVU Estimate of Median	61.74834		
MVU Estimate of Mean	68.43578		
MVU Estimate of Standard Deviation	31.57582		
MVU Estimate of SE of Mean	10.51252		
95% H-UCL	99.25063		
95% Chebyshev (MVUE) UCL	114.2588		
97.5% Chebyshev (MVUE) UCL	134.0865		
99% Chebyshev (MVUE) UCL	173.034		
Non-parametric Statistics			
95% CLT UCL	84.66907		
95% Adjusted-CLT UCL	87.0393		
95% Modified-t UCL	87.1826		
95% Jackknife UCL	86.81289		
95% Chebyshev (Mean, Sd) UCL	111.7701		
97.5% Chebyshev (Mean, Sd) UCL	130.6036		
99% Chebyshev (Mean, Sd) UCL	167.5985		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	83.43207		
95% Bootstrap-t UCL	92.86654		
95% Hall's Bootstrap UCL	100.2148		
95% Percentile Bootstrap UCL	84.53333		
95% BCA Bootstrap UCL	90.38889		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	86.81289	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 13-tt-27.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	411.5		
Maximum	2670		
Mean	1309.611		
Standard Deviation	970.897		
Variance	942641		
Coefficient of Variation	0.741363		
Skewness	0.594673		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.816065		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1911.421		
Gamma Statistics			
k hat	1.999661		
k star (bias corrected)	1.407181		
Theta hat	654.9167		
Theta star	930.6627		
nu hat	35.99389		
nu star	25.32926		
5% Approximate Chi Square Value	14.86211		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	13.2003		
Anderson-Darling Test Statistic	0.61255		
Anderson-Darling 5% Critical Value	0.729773		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.190528		
Kolmogrov-Smirnov 5% Critical Value	0.282481		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2231.95		
95% Adjusted Gamma UCL	2512.934		
Lognormal Statistics			
Minimum of log data	6.019809		
Maximum of log data	7.889834		
Mean of log data	6.907073		
Standard Deviation of log data	0.794366		
Variance of log data	0.631017		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.857902		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1370.022		
MLE Standard Deviation	1284.846		
MLE Coefficient of Variation	0.937828		
MLE Skewness	3.638325		
MLE Median	999.3184		
MLE 80% Quantile	1955.327		
MLE 90% Quantile	2773.413		
MLE 95% Quantile	3691.565		
MLE 99% Quantile	6340.855		
MVU Estimate of Median	964.7732		
MVU Estimate of Mean	1313.06		
MVU Estimate of Standard Deviation	1083.153		
MVU Estimate of SE of Mean	357.6018		
95% H-UCL	3047.346		
95% Chebyshev (MVUE) UCL	2871.81		
97.5% Chebyshev (MVUE) UCL	3546.282		
99% Chebyshev (MVUE) UCL	4871.153		
Non-parametric Statistics			
95% CLT UCL	1841.939		
95% Adjusted-CLT UCL	1910.486		
95% Modified-t UCL	1922.113		
95% Jackknife UCL	1911.421		
95% Chebyshev (Mean, Sd) UCL	2720.292		
97.5% Chebyshev (Mean, Sd) UCL	3330.694		
99% Chebyshev (Mean, Sd) UCL	4529.712		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1811.941		
95% Bootstrap-t UCL	2084.285		
95% Hall's Bootstrap UCL	1765.745		
95% Percentile Bootstrap UCL	1831		
95% BCA Bootstrap UCL	2075.444		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	2231.95	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Trichloroethene		
Raw Statistics			
Number of Observations	1		
Number of Missing Data	0		
Number of Valid Observations	1		
Constant Data	1		
Minimum	0.053		
Maximum	0.053		
Mean	0.053		
Standard Deviation	N/A		Too few observations to calculate
Variance	N/A		Too few observations to calculate
Coefficient of Variation	0		
Skewness	N/A		Too few observations to calculate
Too Few Distinct Observations?	YES		Too Few Observations To Calculate UCLs
Normal Statistics			
Lilliefors Test Statistic	N/A		Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A		Too Few Observations To Calculate UCLs
Gamma Statistics			
k hat	N/A		
k star (bias corrected)	N/A		
Theta hat	N/A		
Theta star	N/A		
nu hat	N/A		
nu star	N/A		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	N/A		
Anderson-Darling 5% Critical Value	N/A		
Anderson-Darling 5% Gamma Test Result	N/A		
Kolmogrov-Smirnov Test Statistic	N/A		
Kolmogrov-Smirnov 5% Critical Value	N/A		
Kolmogrov-Smirnov 5% Gamma Test Result	N/A		
5% Gamma Test Result	N/A		
95% Approximate Gamma UCL	N/A		Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL	N/A		Too Few Observations To Calculate UCLs
Lognormal Statistics			
Minimum of log data	-2.937463		
Maximum of log data	-2.937463		
Mean of log data	-2.937463		
Standard Deviation of log data	1.7E+269		
Variance of log data	1.1E-305		
Lilliefors Test Statistic	N/A		Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	1.7E+269		
MLE Coefficient of Variation	1.7E+269		
MLE Skewness	0		
MLE Median	1.7E+269		
MLE 80% Quantile	1.1E-305		
MLE 90% Quantile	-5E+138		
MLE 95% Quantile	2.6E-308		
MLE 99% Quantile	2.6E-308		
MVU Estimate of Median	0		
MVU Estimate of Mean	0		
MVU Estimate of Standard Deviation	0		
MVU Estimate of SE of Mean	0		
95% H-UCL	N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL	N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL	N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL	N/A		Too Few Observations To Calculate UCLs
Non-parametric Statistics			
95% CLT UCL	N/A		Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL	N/A		Too Few Observations To Calculate UCLs
95% Modified-t UCL	N/A		Too Few Observations To Calculate UCLs
95% Jackknife UCL	N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL	N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL	N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL	N/A		Too Few Observations To Calculate UCLs
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL	N/A		Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A		Too Few Observations To Calculate UCLs
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Benzo(a)anthracene		
Raw Statistics			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.3		
Maximum	0.56		
Mean	0.43		
Standard Deviation	0.183848		
Variance	0.0338		
Coefficient of Variation	0.427553		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-1.203973		
Maximum of log data	-0.579818		
Mean of log data	-0.891896		
Standard Deviation of log data	0.441344		
Variance of log data	0.194784		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	3.1E-303		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	-2.4E-159		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.43		
MVU Estimate of Standard Deviation	0.183848		
MVU Estimate of SE of Mean	0.13		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls	
Variable:		Benzo(a)pyrene	
Raw Statistics			
Number of Observations		1	
Number of Missing Data		0	
Number of Valid Observations		1	
Constant Data		1	
Minimum		1	
Maximum		1	
Mean		1	
Standard Deviation		N/A	Too few observations to calculate
Variance		N/A	Too few observations to calculate
Coefficient of Variation		0	
Skewness		N/A	Too few observations to calculate
Too Few Distinct Observations?		YES	Too Few Observations To Calculate UCLs
Normal Statistics			
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL		N/A	Too Few Observations To Calculate UCLs
Gamma Statistics			
k hat		N/A	
k star (bias corrected)		N/A	
Theta hat		N/A	
Theta star		N/A	
nu hat		N/A	
nu star		N/A	
5% Approximate Chi Square Value		N/A	
Adjusted Level of Significance		0	
Adjusted Chi Square Value		0	
Anderson-Darling Test Statistic		N/A	
Anderson-Darling 5% Critical Value		N/A	
Anderson-Darling 5% Gamma Test Result		N/A	
Kolmogrov-Smirnov Test Statistic		N/A	
Kolmogrov-Smirnov 5% Critical Value		N/A	
Kolmogrov-Smirnov 5% Gamma Test Result		N/A	
5% Gamma Test Result		N/A	
95% Approximate Gamma UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A	Too Few Observations To Calculate UCLs
Lognormal Statistics			
Minimum of log data		0	
Maximum of log data		0	
Mean of log data		0	
Standard Deviation of log data		2.2E-307	
Variance of log data		0	
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean		0	
MLE Standard Deviation		0	
MLE Coefficient of Variation		1.6E-304	
MLE Skewness		1.7E+269	
MLE Median		2.2E-307	
MLE 80% Quantile		4E+129	
MLE 90% Quantile		8.6E-174	
MLE 95% Quantile		0	
MLE 99% Quantile		1.2E-306	
MVU Estimate of Median		0	
MVU Estimate of Mean		6.9E-306	
MVU Estimate of Standard Deviation		1.7E+269	
MVU Estimate of SE of Mean		0	
95% H-UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
Non-parametric Statistics			
95% CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
Recommendations			
Human Inspection Recommended?		YES	
Appropriate Distribution			
1st Recommended UCL		N/A	Too Few Observations To Calculate UCLs
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Benzo(b)fluoranthene		
Raw Statistics			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.3		
Maximum	1.5		
Mean	0.9		
Standard Deviation	0.848528		
Variance	0.72		
Coefficient of Variation	0.942809		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-1.203973		
Maximum of log data	0.405465		
Mean of log data	-0.399254		
Standard Deviation of log data	1.138044		
Variance of log data	1.295145		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	1.6E-305		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	8.6E-174		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.9		
MVU Estimate of Standard Deviation	0.848528		
MVU Estimate of SE of Mean	0.6		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Benzo(k)fluoranthene		
Raw Statistics			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.66		
Maximum	0.72		
Mean	0.69		
Standard Deviation	0.042426		
Variance	0.0018		
Coefficient of Variation	0.061488		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-0.415515		
Maximum of log data	-0.328504		
Mean of log data	-0.37201		
Standard Deviation of log data	0.061526		
Variance of log data	0.003785		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	2.2E-304		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	4E-270		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.69		
MVU Estimate of Standard Deviation	0.042426		
MVU Estimate of SE of Mean	0.03		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Dibenz(a,h)anthracene		
Raw Statistics			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.3		
Maximum	0.32		
Mean	0.31		
Standard Deviation	0.014142		
Variance	0.0002		
Coefficient of Variation	0.04562		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-1.203973		
Maximum of log data	-1.139434		
Mean of log data	-1.171704		
Standard Deviation of log data	0.045636		
Variance of log data	0.002083		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	1.1E-305		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	-2.4E-159		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.31		
MVU Estimate of Standard Deviation	0.014142		
MVU Estimate of SE of Mean	0.01		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls	
Variable:		Indeno(1,2,3-cd)pyrene	
Raw Statistics			
Number of Observations		2	
Number of Missing Data		0	
Number of Valid Observations		2	
Number of Distinct Observations		2	
Minimum		0.3	
Maximum		0.74	
Mean		0.52	
Standard Deviation		0.311127	
Variance		0.0968	
Coefficient of Variation		0.598321	
Skewness		N/A	Too few observations to calculate
Too Few Distinct Observations?		YES	Too Few Observations To Calculate UCLs
Normal Statistics			
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL		N/A	Too Few Observations To Calculate UCLs
Gamma Statistics			
k hat		0	
k star (bias corrected)		0	
Theta hat		0	
Theta star		0	
nu hat		0	
nu star		0	
5% Approximate Chi Square Value		N/A	
Adjusted Level of Significance		0	
Adjusted Chi Square Value		0	
Anderson-Darling Test Statistic		0	
Anderson-Darling 5% Critical Value		0	
Anderson-Darling 5% Gamma Test Result		NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic		0	
Kolmogrov-Smirnov 5% Critical Value		0	
Kolmogrov-Smirnov 5% Gamma Test Result		NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result		NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A	Too Few Observations To Calculate UCLs
Lognormal Statistics			
Minimum of log data		-1.203973	
Maximum of log data		-0.301105	
Mean of log data		-0.752539	
Standard Deviation of log data		0.638424	
Variance of log data		0.407585	
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean		0	
MLE Standard Deviation		0	
MLE Coefficient of Variation		2.9E-305	
MLE Skewness		1.7E+269	
MLE Median		2.2E-307	
MLE 80% Quantile		4E+129	
MLE 90% Quantile		4E-270	
MLE 95% Quantile		0	
MLE 99% Quantile		1.2E-306	
MVU Estimate of Median		0	
MVU Estimate of Mean		0.52	
MVU Estimate of Standard Deviation		0.311127	
MVU Estimate of SE of Mean		0.22	
95% H-UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
Non-parametric Statistics			
95% CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
Recommendations			
Human Inspection Recommended?		YES	
Appropriate Distribution			
1st Recommended UCL		N/A	Too Few Observations To Calculate UCLs
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Phenanthrene		
Raw Statistics			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.3		
Maximum	0.57		
Mean	0.435		
Standard Deviation	0.190919		
Variance	0.03645		
Coefficient of Variation	0.438894		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-1.203973		
Maximum of log data	-0.562119		
Mean of log data	-0.883046		
Standard Deviation of log data	0.453859		
Variance of log data	0.205988		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	1.3E-304		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	8.6E-174		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.435		
MVU Estimate of Standard Deviation	0.190919		
MVU Estimate of SE of Mean	0.135		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Aroclor 1260		
<b>Raw Statistics</b>			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.0245		
Maximum	0.058		
Mean	0.04125		
Standard Deviation	0.023688		
Variance	0.000561		
Coefficient of Variation	0.574256		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-3.709082		
Maximum of log data	-2.847312		
Mean of log data	-3.278197		
Standard Deviation of log data	0.609363		
Variance of log data	0.371324		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	3.3E-305		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	4E-270		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.04125		
MVU Estimate of Standard Deviation	0.023688		
MVU Estimate of SE of Mean	0.01675		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	11		
Minimum	9.9		
Maximum	68		
Mean	25.55417		
Standard Deviation	15.86118		
Variance	251.577		
Coefficient of Variation	0.620689		
Skewness	1.884028		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.816969		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	33.77703		
Gamma Statistics			
k hat	3.649608		
k star (bias corrected)	2.792761		
Theta hat	7.001894		
Theta star	9.150143		
nu hat	87.59059		
nu star	67.02627		
5% Approximate Chi Square Value	49.18146		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	46.85559		
Anderson-Darling Test Statistic	0.304023		
Anderson-Darling 5% Critical Value	0.736931		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.132927		
Kolmogrov-Smirnov 5% Critical Value	0.246754		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	34.82614		
95% Adjusted Gamma UCL	36.55488		
Lognormal Statistics			
Minimum of log data	2.292535		
Maximum of log data	4.219508		
Mean of log data	3.097588		
Standard Deviation of log data	0.541961		
Variance of log data	0.293722		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.969816		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	25.64758		
MLE Standard Deviation	14.98598		
MLE Coefficient of Variation	0.584304		
MLE Skewness	1.952399		
MLE Median	22.14448		
MLE 80% Quantile	35.00691		
MLE 90% Quantile	44.43416		
MLE 95% Quantile	54.00705		
MLE 99% Quantile	78.11563		
MVU Estimate of Median	21.87487		
MVU Estimate of Mean	25.30113		
MVU Estimate of Standard Deviation	14.12957		
MVU Estimate of SE of Mean	4.066517		
95% H-UCL	36.70526		
95% Chebyshev (MVUE) UCL	43.02667		
97.5% Chebyshev (MVUE) UCL	50.69652		
99% Chebyshev (MVUE) UCL	65.76246		
Non-parametric Statistics			
95% CLT UCL	33.0855		
95% Adjusted-CLT UCL	35.74636		
95% Modified-t UCL	34.19207		
95% Jackknife UCL	33.77703		
95% Chebyshev (Mean, Sd) UCL	45.51238		
97.5% Chebyshev (Mean, Sd) UCL	54.14832		
99% Chebyshev (Mean, Sd) UCL	71.11194		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	32.76348		
95% Bootstrap-t UCL	38.54493		
95% Hall's Bootstrap UCL	66.886		
95% Percentile Bootstrap UCL	33.4125		
95% BCA Bootstrap UCL	37.86667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	34.82614	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	4.7		
Maximum	3230		
Mean	373.7667		
Standard Deviation	911.3005		
Variance	830468.6		
Coefficient of Variation	2.438154		
Skewness	3.310537		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.449189		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	846.2097		
Gamma Statistics			
k hat	0.372575		
k star (bias corrected)	0.334987		
Theta hat	1003.198		
Theta star	1115.765		
nu hat	8.941805		
nu star	8.039687		
5% Approximate Chi Square Value	2.757339		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	2.307716		
Anderson-Darling Test Statistic	1.066261		
Anderson-Darling 5% Critical Value	0.809743		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.281592		
Kolmogrov-Smirnov 5% Critical Value	0.262923		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	1089.807		
95% Adjusted Gamma UCL	1302.139		
Lognormal Statistics			
Minimum of log data	1.547563		
Maximum of log data	8.080237		
Mean of log data	4.137043		
Standard Deviation of log data	1.895163		
Variance of log data	3.591644		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.924256		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	377.2338		
MLE Standard Deviation	2241.089		
MLE Coefficient of Variation	5.940849		
MLE Skewness	227.497		
MLE Median	62.61739		
MLE 80% Quantile	310.5845		
MLE 90% Quantile	715.0324		
MLE 95% Quantile	1414.578		
MLE 99% Quantile	5141.977		
MVU Estimate of Median	53.81871		
MVU Estimate of Mean	275.77		
MVU Estimate of Standard Deviation	690.1547		
MVU Estimate of SE of Mean	164.2519		
95% H-UCL	5641.18		
95% Chebyshev (MVUE) UCL	991.7276		
97.5% Chebyshev (MVUE) UCL	1301.523		
99% Chebyshev (MVUE) UCL	1910.056		
Non-parametric Statistics			
95% CLT UCL	806.478		
95% Adjusted-CLT UCL	1075.111		
95% Modified-t UCL	888.111		
95% Jackknife UCL	846.2097		
95% Chebyshev (Mean, Sd) UCL	1520.461		
97.5% Chebyshev (Mean, Sd) UCL	2016.637		
99% Chebyshev (Mean, Sd) UCL	2991.278		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	791.7553		
95% Bootstrap-t UCL	2878.78		
95% Hall's Bootstrap UCL	2378.105		
95% Percentile Bootstrap UCL	878.175		
95% BCA Bootstrap UCL	1135.85		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	1910.056	99% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Barium		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	53.9		
Maximum	132		
Mean	81.23333		
Standard Deviation	22.27767		
Variance	496.2947		
Coefficient of Variation	0.274243		
Skewness	1.019847		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.928283		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	92.78269		
Gamma Statistics			
k hat	15.70128		
k star (bias corrected)	11.83152		
Theta hat	5.173675		
Theta star	6.865843		
nu hat	376.8308		
nu star	283.9564		
5% Approximate Chi Square Value	245.9198		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	240.5166		
Anderson-Darling Test Statistic	0.212279		
Anderson-Darling 5% Critical Value	0.731189		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.102996		
Kolmogrov-Smirnov 5% Critical Value	0.245277		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	93.79776		
95% Adjusted Gamma UCL	95.90491		
Lognormal Statistics			
Minimum of log data	3.98713		
Maximum of log data	4.882802		
Mean of log data	4.365143		
Standard Deviation of log data	0.26179		
Variance of log data	0.068534		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.968953		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	81.40285		
MLE Standard Deviation	21.68085		
MLE Coefficient of Variation	0.26634		
MLE Skewness	0.817914		
MLE Median	78.66067		
MLE 80% Quantile	98.13616		
MLE 90% Quantile	110.117		
MLE 95% Quantile	120.9997		
MLE 99% Quantile	144.6139		
MVU Estimate of Median	78.43632		
MVU Estimate of Mean	81.1646		
MVU Estimate of Standard Deviation	21.40135		
MVU Estimate of SE of Mean	6.176925		
95% H-UCL	94.52185		
95% Chebyshev (MVUE) UCL	108.0892		
97.5% Chebyshev (MVUE) UCL	119.7395		
99% Chebyshev (MVUE) UCL	142.6242		
Non-parametric Statistics			
95% CLT UCL	91.8114		
95% Adjusted-CLT UCL	93.83444		
95% Modified-t UCL	93.09824		
95% Jackknife UCL	92.78269		
95% Chebyshev (Mean, Sd) UCL	109.2655		
97.5% Chebyshev (Mean, Sd) UCL	121.395		
99% Chebyshev (Mean, Sd) UCL	145.2211		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	91.57692		
95% Bootstrap-t UCL	96.23497		
95% Hall's Bootstrap UCL	100.8146		
95% Percentile Bootstrap UCL	91.95		
95% BCA Bootstrap UCL	98.875		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	92.78269	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	11		
Minimum	0.87		
Maximum	15.1		
Mean	6.364167		
Standard Deviation	5.377356		
Variance	28.91595		
Coefficient of Variation	0.844943		
Skewness	0.601592		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.846417		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	9.151934		
Gamma Statistics			
k hat	1.369393		
k star (bias corrected)	1.0826		
Theta hat	4.647436		
Theta star	5.878593		
nu hat	32.86543		
nu star	25.98241		
5% Approximate Chi Square Value	15.36399		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	14.13035		
Anderson-Darling Test Statistic	0.553505		
Anderson-Darling 5% Critical Value	0.748443		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.184725		
Kolmogrov-Smirnov 5% Critical Value	0.250259		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	10.76259		
95% Adjusted Gamma UCL	11.70221		
Lognormal Statistics			
Minimum of log data	-0.139262		
Maximum of log data	2.714695		
Mean of log data	1.443076		
Standard Deviation of log data	0.996556		
Variance of log data	0.993123		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.913513		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	6.956228		
MLE Standard Deviation	9.068883		
MLE Coefficient of Variation	1.303707		
MLE Skewness	6.12697		
MLE Median	4.233698		
MLE 80% Quantile	9.827311		
MLE 90% Quantile	15.23583		
MLE 95% Quantile	21.8109		
MLE 99% Quantile	42.99415		
MVU Estimate of Median	4.061544		
MVU Estimate of Mean	6.576413		
MVU Estimate of Standard Deviation	7.200294		
MVU Estimate of SE of Mean	2.022608		
95% H-UCL	16.67047		
95% Chebyshev (MVUE) UCL	15.39276		
97.5% Chebyshev (MVUE) UCL	19.2076		
99% Chebyshev (MVUE) UCL	26.70111		
Non-parametric Statistics			
95% CLT UCL	8.917488		
95% Adjusted-CLT UCL	9.205539		
95% Modified-t UCL	9.196865		
95% Jackknife UCL	9.151934		
95% Chebyshev (Mean, Sd) UCL	13.13052		
97.5% Chebyshev (Mean, Sd) UCL	16.05833		
99% Chebyshev (Mean, Sd) UCL	21.80944		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	8.752762		
95% Bootstrap-t UCL	9.562513		
95% Hall's Bootstrap UCL	8.604947		
95% Percentile Bootstrap UCL	8.886667		
95% BCA Bootstrap UCL	10.08083		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	10.76259	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	17.7		
Maximum	2120		
Mean	494.2583		
Standard Deviation	668.1464		
Variance	446419.6		
Coefficient of Variation	1.351816		
Skewness	1.543211		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.757484		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	840.6436		
Gamma Statistics			
k hat	0.544004		
k star (bias corrected)	0.463558		
Theta hat	908.5571		
Theta star	1066.227		
nu hat	13.05609		
nu star	11.1254		
5% Approximate Chi Square Value	4.655838		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	4.036322		
Anderson-Darling Test Statistic	0.654152		
Anderson-Darling 5% Critical Value	0.781536		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.255829		
Kolmogrov-Smirnov 5% Critical Value	0.257999		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1181.059		
95% Adjusted Gamma UCL	1362.335		
Lognormal Statistics			
Minimum of log data	2.873565		
Maximum of log data	7.659171		
Mean of log data	5.050476		
Standard Deviation of log data	1.737977		
Variance of log data	3.020565		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.898384		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	706.8079		
MLE Standard Deviation	3121.41		
MLE Coefficient of Variation	4.416207		
MLE Skewness	99.37737		
MLE Median	156.0968		
MLE 80% Quantile	677.9457		
MLE 90% Quantile	1456.479		
MLE 95% Quantile	2722.89		
MLE 99% Quantile	8892.928		
MVU Estimate of Median	137.4655		
MVU Estimate of Mean	552.9487		
MVU Estimate of Standard Deviation	1225.035		
MVU Estimate of SE of Mean	303.574		
95% H-UCL	7076.195		
95% Chebyshev (MVUE) UCL	1876.197		
97.5% Chebyshev (MVUE) UCL	2448.768		
99% Chebyshev (MVUE) UCL	3573.472		
Non-parametric Statistics			
95% CLT UCL	811.5132		
95% Adjusted-CLT UCL	903.3244		
95% Modified-t UCL	854.9643		
95% Jackknife UCL	840.6436		
95% Chebyshev (Mean, Sd) UCL	1334.991		
97.5% Chebyshev (Mean, Sd) UCL	1698.776		
99% Chebyshev (Mean, Sd) UCL	2413.363		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	796.0098		
95% Bootstrap-t UCL	1064.92		
95% Hall's Bootstrap UCL	869.3436		
95% Percentile Bootstrap UCL	813.2667		
95% BCA Bootstrap UCL	1027.483		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1181.059	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	23.8		
Maximum	2080		
Mean	400.55		
Standard Deviation	578.2659		
Variance	334391.5		
Coefficient of Variation	1.44368		
Skewness	2.530369		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.650545		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	700.3388		
Gamma Statistics			
k hat	0.692792		
k star (bias corrected)	0.57515		
Theta hat	578.1677		
Theta star	696.4275		
nu hat	16.62701		
nu star	13.80359		
5% Approximate Chi Square Value	6.435976		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	5.68547		
Anderson-Darling Test Statistic	0.770081		
Anderson-Darling 5% Critical Value	0.770026		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.26472		
Kolmogrov-Smirnov 5% Critical Value	0.255696		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	859.0816		
95% Adjusted Gamma UCL	972.4839		
Lognormal Statistics			
Minimum of log data	3.169686		
Maximum of log data	7.640123		
Mean of log data	5.119244		
Standard Deviation of log data	1.428544		
Variance of log data	2.040739		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.893425		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	463.8742		
MLE Standard Deviation	1200.376		
MLE Coefficient of Variation	2.58772		
MLE Skewness	25.09129		
MLE Median	167.2089		
MLE 80% Quantile	559.1199		
MLE 90% Quantile	1048.298		
MLE 95% Quantile	1753.202		
MLE 99% Quantile	4637.998		
MVU Estimate of Median	153.492		
MVU Estimate of Mean	402.0387		
MVU Estimate of Standard Deviation	685.0292		
MVU Estimate of SE of Mean	181.3461		
95% H-UCL	2330.504		
95% Chebyshev (MVUE) UCL	1192.508		
97.5% Chebyshev (MVUE) UCL	1534.545		
99% Chebyshev (MVUE) UCL	2206.41		
Non-parametric Statistics			
95% CLT UCL	675.127		
95% Adjusted-CLT UCL	805.4169		
95% Modified-t UCL	720.6614		
95% Jackknife UCL	700.3388		
95% Chebyshev (Mean, Sd) UCL	1128.185		
97.5% Chebyshev (Mean, Sd) UCL	1443.034		
99% Chebyshev (Mean, Sd) UCL	2061.492		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	672.1956		
95% Bootstrap-t UCL	1015.09		
95% Hall's Bootstrap UCL	1686.745		
95% Percentile Bootstrap UCL	682.1		
95% BCA Bootstrap UCL	869.9		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	1192.508	95% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	771		
Maximum	2540		
Mean	1492.75		
Standard Deviation	590.1444		
Variance	348270.4		
Coefficient of Variation	0.39534		
Skewness	0.643432		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.897886		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1798.697		
<b>Gamma Statistics</b>			
k hat	7.323057		
k star (bias corrected)	5.547848		
Theta hat	203.8425		
Theta star	269.0683		
nu hat	175.7534		
nu star	133.1484		
5% Approximate Chi Square Value	107.4857		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	103.9702		
Anderson-Darling Test Statistic	0.478544		
Anderson-Darling 5% Critical Value	0.731205		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.224505		
Kolmogrov-Smirnov 5% Critical Value	0.245674		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1849.15		
95% Adjusted Gamma UCL	1911.674		
<b>Lognormal Statistics</b>			
Minimum of log data	6.647688		
Maximum of log data	7.839919		
Mean of log data	7.238547		
Standard Deviation of log data	0.388479		
Variance of log data	0.150916		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.934379		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1501.177		
MLE Standard Deviation	605.8865		
MLE Coefficient of Variation	0.403608		
MLE Skewness	1.27657		
MLE Median	1392.07		
MLE 80% Quantile	1932.968		
MLE 90% Quantile	2293.29		
MLE 95% Quantile	2637.522		
MLE 99% Quantile	3436.296		
MVU Estimate of Median	1383.339		
MVU Estimate of Mean	1491.225		
MVU Estimate of Standard Deviation	588.4577		
MVU Estimate of SE of Mean	169.7295		
95% H-UCL	1900.527		
95% Chebyshev (MVUE) UCL	2231.059		
97.5% Chebyshev (MVUE) UCL	2551.185		
99% Chebyshev (MVUE) UCL	3180.012		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1772.967		
95% Adjusted-CLT UCL	1806.778		
95% Modified-t UCL	1803.971		
95% Jackknife UCL	1798.697		
95% Chebyshev (Mean, Sd) UCL	2235.332		
97.5% Chebyshev (Mean, Sd) UCL	2556.648		
99% Chebyshev (Mean, Sd) UCL	3187.811		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1761.772		
95% Bootstrap-t UCL	1851.517		
95% Hall's Bootstrap UCL	1775.744		
95% Percentile Bootstrap UCL	1760.917		
95% BCA Bootstrap UCL	1707.5		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1798.697	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	51.9		
Maximum	776		
Mean	294.1083		
Standard Deviation	280.7197		
Variance	78803.58		
Coefficient of Variation	0.954477		
Skewness	0.921073		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.785102		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	439.6411		
Gamma Statistics			
k hat	1.243671		
k star (bias corrected)	0.988309		
Theta hat	236.4841		
Theta star	297.5875		
nu hat	29.8481		
nu star	23.71941		
5% Approximate Chi Square Value	13.63377		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	12.47993		
Anderson-Darling Test Statistic	0.706696		
Anderson-Darling 5% Critical Value	0.751267		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.243647		
Kolmogrov-Smirnov 5% Critical Value	0.250971		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	511.6762		
95% Adjusted Gamma UCL	558.9833		
Lognormal Statistics			
Minimum of log data	3.949319		
Maximum of log data	6.654153		
Mean of log data	5.230822		
Standard Deviation of log data	1.010358		
Variance of log data	1.020823		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.896107		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	311.4485		
MLE Standard Deviation	414.9959		
MLE Coefficient of Variation	1.33247		
MLE Skewness	6.363183		
MLE Median	186.9465		
MLE 80% Quantile	439.0331		
MLE 90% Quantile	684.8037		
MLE 95% Quantile	985.2161		
MLE 99% Quantile	1960.421		
MVU Estimate of Median	179.1365		
MVU Estimate of Mean	293.8671		
MVU Estimate of Standard Deviation	326.973		
MVU Estimate of SE of Mean	91.72953		
95% H-UCL	761.2434		
95% Chebyshev (MVUE) UCL	693.7069		
97.5% Chebyshev (MVUE) UCL	866.7178		
99% Chebyshev (MVUE) UCL	1206.564		
Non-parametric Statistics			
95% CLT UCL	427.402		
95% Adjusted-CLT UCL	450.4253		
95% Modified-t UCL	443.2323		
95% Jackknife UCL	439.6411		
95% Chebyshev (Mean, Sd) UCL	647.3396		
97.5% Chebyshev (Mean, Sd) UCL	800.1831		
99% Chebyshev (Mean, Sd) UCL	1100.414		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	424.5138		
95% Bootstrap-t UCL	487.8549		
95% Hall's Bootstrap UCL	405.4762		
95% Percentile Bootstrap UCL	427.1083		
95% BCA Bootstrap UCL	497.75		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	511.6762	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - wh.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	11		
Number of Missing Data	0		
Number of Valid Observations	11		
Number of Distinct Observations	11		
Minimum	0.01		
Maximum	27.5		
Mean	2.989545		
Standard Deviation	8.133633		
Variance	66.15598		
Coefficient of Variation	2.720692		
Skewness	3.309985		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.376682		
Shapiro-Wilk 5% Critical Value	0.85		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	7.434393		
<b>Gamma Statistics</b>			
k hat	0.390239		
k star (bias corrected)	0.344416		
Theta hat	7.66081		
Theta star	8.68004		
nu hat	8.585254		
nu star	7.577154		
5% Approximate Chi Square Value	2.492021		
Adjusted Level of Significance	0.02783		
Adjusted Chi Square Value	2.043056		
Anderson-Darling Test Statistic	1.874022		
Anderson-Darling 5% Critical Value	0.802504		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.421713		
Kolmogrov-Smirnov 5% Critical Value	0.272797		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	9.089912		
95% Adjusted Gamma UCL	11.08743		
<b>Lognormal Statistics</b>			
Minimum of log data	-4.60517		
Maximum of log data	3.314186		
Mean of log data	-0.597856		
Standard Deviation of log data	1.809983		
Variance of log data	3.276038		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.807069		
Shapiro-Wilk 5% Critical Value	0.85		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	2.829677		
MLE Standard Deviation	14.28096		
MLE Coefficient of Variation	5.04685		
MLE Skewness	143.6873		
MLE Median	0.549989		
MLE 80% Quantile	2.538515		
MLE 90% Quantile	5.629224		
MLE 95% Quantile	10.80021		
MLE 99% Quantile	37.04613		
MVU Estimate of Median	0.472995		
MVU Estimate of Mean	2.10711		
MVU Estimate of Standard Deviation	4.77409		
MVU Estimate of SE of Mean	1.228732		
95% H-UCL	42.75803		
95% Chebyshev (MVUE) UCL	7.463027		
97.5% Chebyshev (MVUE) UCL	9.780537		
99% Chebyshev (MVUE) UCL	14.33284		
<b>Non-parametric Statistics</b>			
95% CLT UCL	7.023356		
95% Adjusted-CLT UCL	9.638516		
95% Modified-t UCL	7.842306		
95% Jackknife UCL	7.434393		
95% Chebyshev (Mean, Sd) UCL	13.67923		
97.5% Chebyshev (Mean, Sd) UCL	18.30467		
99% Chebyshev (Mean, Sd) UCL	27.39044		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	6.778895		
95% Bootstrap-t UCL	99.45698		
95% Hall's Bootstrap UCL	54.56786		
95% Percentile Bootstrap UCL	7.882727		
95% BCA Bootstrap UCL	10.38		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	27.39044	99% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	11.8		
Maximum	44		
Mean	24.19167		
Standard Deviation	13.06859		
Variance	170.7881		
Coefficient of Variation	0.540211		
Skewness	0.692528		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.802925		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	30.96678		
Gamma Statistics			
k hat	4.026538		
k star (bias corrected)	3.075459		
Theta hat	6.008057		
Theta star	7.866035		
nu hat	96.6369		
nu star	73.81101		
5% Approximate Chi Square Value	55.02234		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	52.55309		
Anderson-Darling Test Statistic	0.911836		
Anderson-Darling 5% Critical Value	0.735709		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.259357		
Kolmogrov-Smirnov 5% Critical Value	0.246388		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	32.45248		
95% Adjusted Gamma UCL	33.97728		
Lognormal Statistics			
Minimum of log data	2.4681		
Maximum of log data	3.78419		
Mean of log data	3.056723		
Standard Deviation of log data	0.52427		
Variance of log data	0.274859		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.841753		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	24.38949		
MLE Standard Deviation	13.71776		
MLE Coefficient of Variation	0.562445		
MLE Skewness	1.865263		
MLE Median	21.25778		
MLE 80% Quantile	33.10654		
MLE 90% Quantile	41.69618		
MLE 95% Quantile	50.35746		
MLE 99% Quantile	71.96461		
MVU Estimate of Median	21.0155		
MVU Estimate of Mean	24.08299		
MVU Estimate of Standard Deviation	12.98603		
MVU Estimate of SE of Mean	3.738742		
95% H-UCL	34.37593		
95% Chebyshev (MVUE) UCL	40.37979		
97.5% Chebyshev (MVUE) UCL	47.43142		
99% Chebyshev (MVUE) UCL	61.283		
Non-parametric Statistics			
95% CLT UCL	30.397		
95% Adjusted-CLT UCL	31.20288		
95% Modified-t UCL	31.09248		
95% Jackknife UCL	30.96678		
95% Chebyshev (Mean, Sd) UCL	40.63595		
97.5% Chebyshev (Mean, Sd) UCL	47.75141		
99% Chebyshev (Mean, Sd) UCL	61.72834		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	30.13889		
95% Bootstrap-t UCL	31.95516		
95% Hall's Bootstrap UCL	29.50024		
95% Percentile Bootstrap UCL	30.21667		
95% BCA Bootstrap UCL	32.90833		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	40.63595	95% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	11		
Minimum	0.135		
Maximum	1.5		
Mean	0.564792		
Standard Deviation	0.397132		
Variance	0.157714		
Coefficient of Variation	0.703149		
Skewness	1.418399		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.862915		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.770676		
<b>Gamma Statistics</b>			
k hat	2.552085		
k star (bias corrected)	1.96962		
Theta hat	0.221306		
Theta star	0.286752		
nu hat	61.25005		
nu star	47.27087		
5% Approximate Chi Square Value	32.48974		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	30.62845		
Anderson-Darling Test Statistic	0.256062		
Anderson-Darling 5% Critical Value	0.740134		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.174473		
Kolmogrov-Smirnov 5% Critical Value	0.247921		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.821742		
95% Adjusted Gamma UCL	0.871679		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.002481		
Maximum of log data	0.405465		
Mean of log data	-0.779827		
Standard Deviation of log data	0.677627		
Variance of log data	0.459178		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.98492		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.576812		
MLE Standard Deviation	0.440336		
MLE Coefficient of Variation	0.763395		
MLE Skewness	2.735072		
MLE Median	0.458485		
MLE 80% Quantile	0.812831		
MLE 90% Quantile	1.095185		
MLE 95% Quantile	1.397757		
MLE 99% Quantile	2.217394		
MVU Estimate of Median	0.449784		
MVU Estimate of Mean	0.564025		
MVU Estimate of Standard Deviation	0.400189		
MVU Estimate of SE of Mean	0.114723		
95% H-UCL	0.938196		
95% Chebyshev (MVUE) UCL	1.06409		
97.5% Chebyshev (MVUE) UCL	1.280469		
99% Chebyshev (MVUE) UCL	1.705502		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.753361		
95% Adjusted-CLT UCL	0.803519		
95% Modified-t UCL	0.778499		
95% Jackknife UCL	0.770676		
95% Chebyshev (Mean, Sd) UCL	1.064506		
97.5% Chebyshev (Mean, Sd) UCL	1.280732		
99% Chebyshev (Mean, Sd) UCL	1.705468		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.744068		
95% Bootstrap-t UCL	0.892049		
95% Hall's Bootstrap UCL	1.108749		
95% Percentile Bootstrap UCL	0.75125		
95% BCA Bootstrap UCL	0.851667		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.770676	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	32.3		
Maximum	163		
Mean	78.2125		
Standard Deviation	37.64676		
Variance	1417.278		
Coefficient of Variation	0.481339		
Skewness	1.150689		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.891643		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	97.7296		
Gamma Statistics			
k hat	5.295454		
k star (bias corrected)	4.027146		
Theta hat	14.76974		
Theta star	19.42132		
nu hat	127.0909		
nu star	96.65151		
5% Approximate Chi Square Value	74.97047		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	72.06134		
Anderson-Darling Test Statistic	0.370979		
Anderson-Darling 5% Critical Value	0.73189		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.236379		
Kolmogrov-Smirnov 5% Critical Value	0.245898		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	100.8311		
95% Adjusted Gamma UCL	104.9017		
Lognormal Statistics			
Minimum of log data	3.475067		
Maximum of log data	5.09375		
Mean of log data	4.262048		
Standard Deviation of log data	0.455845		
Variance of log data	0.207795		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.968345		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	78.72376		
MLE Standard Deviation	37.83335		
MLE Coefficient of Variation	0.480584		
MLE Skewness	1.552747		
MLE Median	70.95512		
MLE 80% Quantile	104.2964		
MLE 90% Quantile	127.4608		
MLE 95% Quantile	150.1918		
MLE 99% Quantile	204.8634		
MVU Estimate of Median	70.34303		
MVU Estimate of Mean	77.99156		
MVU Estimate of Standard Deviation	36.32203		
MVU Estimate of SE of Mean	10.46885		
95% H-UCL	104.8949		
95% Chebyshev (MVUE) UCL	123.6242		
97.5% Chebyshev (MVUE) UCL	143.3695		
99% Chebyshev (MVUE) UCL	182.1553		
Non-parametric Statistics			
95% CLT UCL	96.08825		
95% Adjusted-CLT UCL	99.94556		
95% Modified-t UCL	98.33127		
95% Jackknife UCL	97.7296		
95% Chebyshev (Mean, Sd) UCL	125.5836		
97.5% Chebyshev (Mean, Sd) UCL	146.0812		
99% Chebyshev (Mean, Sd) UCL	186.3446		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	95.81152		
95% Bootstrap-t UCL	105.972		
95% Hall's Bootstrap UCL	104.2933		
95% Percentile Bootstrap UCL	96.74583		
95% BCA Bootstrap UCL	104.825		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	97.7296	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	62.5		
Maximum	3230		
Mean	1116.208		
Standard Deviation	1198.512		
Variance	1436432		
Coefficient of Variation	1.073735		
Skewness	0.754764		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.808378		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1737.55		
Gamma Statistics			
k hat	0.757926		
k star (bias corrected)	0.624		
Theta hat	1472.714		
Theta star	1788.796		
nu hat	18.19022		
nu star	14.976		
5% Approximate Chi Square Value	7.243667		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	6.439545		
Anderson-Darling Test Statistic	0.701616		
Anderson-Darling 5% Critical Value	0.765319		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.206277		
Kolmogrov-Smirnov 5% Critical Value	0.254732		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2307.717		
95% Adjusted Gamma UCL	2595.888		
Lognormal Statistics			
Minimum of log data	4.135167		
Maximum of log data	8.080237		
Mean of log data	6.228983		
Standard Deviation of log data	1.4396		
Variance of log data	2.072449		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.889148		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1429.683		
MLE Standard Deviation	3767.493		
MLE Coefficient of Variation	2.635195		
MLE Skewness	26.20506		
MLE Median	507.2395		
MLE 80% Quantile	1712.048		
MLE 90% Quantile	3225.585		
MLE 95% Quantile	5416.07		
MLE 99% Quantile	14436.19		
MVU Estimate of Median	465.0052		
MVU Estimate of Mean	1235.371		
MVU Estimate of Standard Deviation	2126.085		
MVU Estimate of SE of Mean	561.692		
95% H-UCL	7345.251		
95% Chebyshev (MVUE) UCL	3683.73		
97.5% Chebyshev (MVUE) UCL	4743.137		
99% Chebyshev (MVUE) UCL	6824.136		
Non-parametric Statistics			
95% CLT UCL	1685.296		
95% Adjusted-CLT UCL	1765.844		
95% Modified-t UCL	1750.114		
95% Jackknife UCL	1737.55		
95% Chebyshev (Mean, Sd) UCL	2624.303		
97.5% Chebyshev (Mean, Sd) UCL	3276.857		
99% Chebyshev (Mean, Sd) UCL	4558.673		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1676.154		
95% Bootstrap-t UCL	1847.382		
95% Hall's Bootstrap UCL	1620.576		
95% Percentile Bootstrap UCL	1683.917		
95% BCA Bootstrap UCL	1976.375		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	2307.717	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wh.xls		
Variable:	Chromium VI		
<b>Raw Statistics</b>			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	0.02301		
Maximum	2.756		
Mean	0.642536		
Standard Deviation	0.86859		
Variance	0.754449		
Coefficient of Variation	1.351816		
Skewness	1.543211		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.757484		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	1.092837		
<b>Gamma Statistics</b>			
k hat	0.544004		
k star (bias corrected)	0.463558		
Theta hat	1.181124		
Theta star	1.386095		
nu hat	13.05609		
nu star	11.1254		
5% Approximate Chi Square Value	4.655838		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	4.036322		
Anderson-Darling Test Statistic	0.654152		
Anderson-Darling 5% Critical Value	0.781536		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.255829		
Kolmogrov-Smirnov 5% Critical Value	0.257999		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.535377		
95% Adjusted Gamma UCL	1.771035		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.771826		
Maximum of log data	1.01378		
Mean of log data	-1.594915		
Standard Deviation of log data	1.737977		
Variance of log data	3.020565		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.898384		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.91885		
MLE Standard Deviation	4.057833		
MLE Coefficient of Variation	4.416207		
MLE Skewness	99.37737		
MLE Median	0.202926		
MLE 80% Quantile	0.881329		
MLE 90% Quantile	1.893423		
MLE 95% Quantile	3.539757		
MLE 99% Quantile	11.56081		
MVU Estimate of Median	0.178705		
MVU Estimate of Mean	0.718833		
MVU Estimate of Standard Deviation	1.592546		
MVU Estimate of SE of Mean	0.394646		
95% H-UCL	9.199054		
95% Chebyshev (MVUE) UCL	2.439056		
97.5% Chebyshev (MVUE) UCL	3.183398		
99% Chebyshev (MVUE) UCL	4.645514		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.054967		
95% Adjusted-CLT UCL	1.174322		
95% Modified-t UCL	1.111454		
95% Jackknife UCL	1.092837		
95% Chebyshev (Mean, Sd) UCL	1.735488		
97.5% Chebyshev (Mean, Sd) UCL	2.208409		
99% Chebyshev (Mean, Sd) UCL	3.137371		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.042093		
95% Bootstrap-t UCL	1.303345		
95% Hall's Bootstrap UCL	1.128796		
95% Percentile Bootstrap UCL	1.058617		
95% BCA Bootstrap UCL	1.30319		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.535377		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls	
Variable:	Trichloroethene	
Raw Statistics		
Number of Observations	2	
Number of Missing Data	0	
Number of Valid Observations	2	
Number of Distinct Observations	2	
Minimum	0.042	
Maximum	0.053	
Mean	0.0475	
Standard Deviation	0.007778	
Variance	6.05E-05	
Coefficient of Variation	0.163751	
Skewness	N/A	Too few observations to calculate
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs
Normal Statistics		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		
Shapiro-Wilk 5% Critical Value		
5% Normality Test Result		
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs
Gamma Statistics		
k hat	0	
k star (bias corrected)	0	
Theta hat	0	
Theta star	0	
nu hat	0	
nu star	0	
5% Approximate Chi Square Value	N/A	
Adjusted Level of Significance	0	
Adjusted Chi Square Value	0	
Anderson-Darling Test Statistic	0	
Anderson-Darling 5% Critical Value	0	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0	
Kolmogrov-Smirnov 5% Critical Value	0	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs
Lognormal Statistics		
Minimum of log data	-3.170086	
Maximum of log data	-2.937463	
Mean of log data	-3.053775	
Standard Deviation of log data	0.164489	
Variance of log data	0.027057	
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		
Shapiro-Wilk 5% Critical Value		
5% Lognormality Test Result		
MLE Mean	0	
MLE Standard Deviation	1.7E+269	
MLE Coefficient of Variation	1.7E+269	
MLE Skewness	0	
MLE Median	1.7E+269	
MLE 80% Quantile	1.7E-306	
MLE 90% Quantile	-5E+138	
MLE 95% Quantile	2.6E-308	
MLE 99% Quantile	2.6E-308	
MVU Estimate of Median	0	
MVU Estimate of Mean	0.0475	
MVU Estimate of Standard Deviation	0.007778	
MVU Estimate of SE of Mean	0.0055	
95% H-UCL	N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
Non-parametric Statistics		
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution		
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!		
Alternative UCL		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Benzo(a)anthracene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.13		
Maximum	0.56		
Mean	0.28375		
Standard Deviation	0.190148		
Variance	0.036156		
Coefficient of Variation	0.670125		
Skewness	1.629241		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.846647		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.507494		
<b>Gamma Statistics</b>			
k hat	3.506159		
k star (bias corrected)	1.043206		
Theta hat	0.080929		
Theta star	0.271998		
nu hat	28.04927		
nu star	8.345652		
5% Approximate Chi Square Value	2.936069		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.337314		
Anderson-Darling 5% Critical Value	0.659142		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.284773		
Kolmogrov-Smirnov 5% Critical Value	0.396358		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.806547		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.040221		
Maximum of log data	-0.579818		
Mean of log data	-1.408994		
Standard Deviation of log data	0.612689		
Variance of log data	0.375388		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.956041		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.294847		
MLE Standard Deviation	0.199006		
MLE Coefficient of Variation	0.674949		
MLE Skewness	2.332323		
MLE Median	0.244389		
MLE 80% Quantile	0.410134		
MLE 90% Quantile	0.537037		
MLE 95% Quantile	0.66957		
MLE 99% Quantile	1.016252		
MVU Estimate of Median	0.233082		
MVU Estimate of Mean	0.280274		
MVU Estimate of Standard Deviation	0.167129		
MVU Estimate of SE of Mean	0.083481		
95% H-UCL	2.177996		
95% Chebyshev (MVUE) UCL	0.644158		
97.5% Chebyshev (MVUE) UCL	0.801611		
99% Chebyshev (MVUE) UCL	1.110896		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.440133		
95% Adjusted-CLT UCL	0.522888		
95% Modified-t UCL	0.520402		
95% Jackknife UCL	0.507494		
95% Chebyshev (Mean, Sd) UCL	0.698168		
97.5% Chebyshev (Mean, Sd) UCL	0.877487		
99% Chebyshev (Mean, Sd) UCL	1.229724		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.507494		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Benzo(a)pyrene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.16		
Maximum	1		
Mean	0.41625		
Standard Deviation	0.393136		
Variance	0.154556		
Coefficient of Variation	0.944472		
Skewness	1.882089		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.75458		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.878846		
<b>Gamma Statistics</b>			
k hat	1.955077		
k star (bias corrected)	0.655436		
Theta hat	0.212907		
Theta star	0.635074		
nu hat	15.64061		
nu star	5.243487		
5% Approximate Chi Square Value	1.265893		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.492481		
Anderson-Darling 5% Critical Value	0.660714		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.332712		
Kolmogrov-Smirnov 5% Critical Value	0.398043		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.72416		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.832581		
Maximum of log data	0		
Mean of log data	-1.153502		
Standard Deviation of log data	0.808705		
Variance of log data	0.654003		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.883159		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.437578		
MLE Standard Deviation	0.420445		
MLE Coefficient of Variation	0.960846		
MLE Skewness	3.769614		
MLE Median	0.31553		
MLE 80% Quantile	0.624911		
MLE 90% Quantile	0.891975		
MLE 95% Quantile	1.193413		
MLE 99% Quantile	2.069992		
MVU Estimate of Median	0.29036		
MVU Estimate of Mean	0.398811		
MVU Estimate of Standard Deviation	0.308033		
MVU Estimate of SE of Mean	0.153584		
95% H-UCL	13.35146		
95% Chebyshev (MVUE) UCL	1.068269		
97.5% Chebyshev (MVUE) UCL	1.357944		
99% Chebyshev (MVUE) UCL	1.926955		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.739576		
95% Adjusted-CLT UCL	0.937229		
95% Modified-t UCL	0.909676		
95% Jackknife UCL	0.878846		
95% Chebyshev (Mean, Sd) UCL	1.273071		
97.5% Chebyshev (Mean, Sd) UCL	1.643818		
99% Chebyshev (Mean, Sd) UCL	2.372079		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.878846		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Benzo(b)fluoranthene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.29		
Maximum	1.5		
Mean	0.78375		
Standard Deviation	0.553585		
Variance	0.306456		
Coefficient of Variation	0.706328		
Skewness	0.779359		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.91974		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1.435143		
<b>Gamma Statistics</b>			
k hat	2.603915		
k star (bias corrected)	0.817645		
Theta hat	0.300989		
Theta star	0.958545		
nu hat	20.83132		
nu star	6.541163		
5% Approximate Chi Square Value	1.921832		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.290703		
Anderson-Darling 5% Critical Value	0.659862		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.266255		
Kolmogrov-Smirnov 5% Critical Value	0.397091		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	2.667578		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.237874		
Maximum of log data	0.405465		
Mean of log data	-0.447804		
Standard Deviation of log data	0.751462		
Variance of log data	0.564695		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.948412		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.847507		
MLE Standard Deviation	0.73831		
MLE Coefficient of Variation	0.871155		
MLE Skewness	3.274595		
MLE Median	0.63903		
MLE 80% Quantile	1.205846		
MLE 90% Quantile	1.678373		
MLE 95% Quantile	2.199766		
MLE 99% Quantile	3.669651		
MVU Estimate of Median	0.594868		
MVU Estimate of Mean	0.783213		
MVU Estimate of Standard Deviation	0.565463		
MVU Estimate of SE of Mean	0.282124		
95% H-UCL	16.40561		
95% Chebyshev (MVUE) UCL	2.012964		
97.5% Chebyshev (MVUE) UCL	2.545078		
99% Chebyshev (MVUE) UCL	3.590313		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.239033		
95% Adjusted-CLT UCL	1.354283		
95% Modified-t UCL	1.45312		
95% Jackknife UCL	1.435143		
95% Chebyshev (Mean, Sd) UCL	1.99026		
97.5% Chebyshev (Mean, Sd) UCL	2.512318		
99% Chebyshev (Mean, Sd) UCL	3.5378		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.435143		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Benzo(k)fluoranthene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.2		
Maximum	0.91		
Mean	0.5575		
Standard Deviation	0.317949		
Variance	0.101092		
Coefficient of Variation	0.570312		
Skewness	-0.031244		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.967124		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.931625		
<b>Gamma Statistics</b>			
k hat	3.429029		
k star (bias corrected)	1.023924		
Theta hat	0.162582		
Theta star	0.544474		
nu hat	27.43223		
nu star	8.191392		
5% Approximate Chi Square Value	2.845649		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.260747		
Anderson-Darling 5% Critical Value	0.659183		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.24919		
Kolmogrov-Smirnov 5% Critical Value	0.396388		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.604801		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.609438		
Maximum of log data	-0.094311		
Mean of log data	-0.737136		
Standard Deviation of log data	0.676563		
Variance of log data	0.457737		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.946008		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.601537		
MLE Standard Deviation	0.458312		
MLE Coefficient of Variation	0.761901		
MLE Skewness	2.727983		
MLE Median	0.478482		
MLE 80% Quantile	0.84752		
MLE 90% Quantile	1.141391		
MLE 95% Quantile	1.45617		
MLE 99% Quantile	2.308387		
MVU Estimate of Median	0.451571		
MVU Estimate of Mean	0.564949		
MVU Estimate of Standard Deviation	0.369896		
MVU Estimate of SE of Mean	0.184679		
95% H-UCL	6.754754		
95% Chebyshev (MVUE) UCL	1.369945		
97.5% Chebyshev (MVUE) UCL	1.718267		
99% Chebyshev (MVUE) UCL	2.402479		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.81899		
95% Adjusted-CLT UCL	0.816336		
95% Modified-t UCL	0.931211		
95% Jackknife UCL	0.931625		
95% Chebyshev (Mean, Sd) UCL	1.250454		
97.5% Chebyshev (Mean, Sd) UCL	1.550296		
99% Chebyshev (Mean, Sd) UCL	2.139277		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.931625		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Dibenz(a,h)anthracene		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.046		
Maximum	0.32		
Mean	0.188667		
Standard Deviation	0.137351		
Variance	0.018865		
Coefficient of Variation	0.72801		
Skewness	-0.368783		
Too Few Distinct Observations?	YES		Too Few Observations To Calculate UCLs
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A		Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A		Too Few Observations To Calculate UCLs
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	N/A		Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL	N/A		Too Few Observations To Calculate UCLs
<b>Lognormal Statistics</b>			
Minimum of log data	-3.079114		
Maximum of log data	-1.139434		
Mean of log data	-1.942662		
Standard Deviation of log data	1.011864		
Variance of log data	1.023868		
Lilliefors Test Statistic	N/A		Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.239135		
MLE Standard Deviation	0.319399		
MLE Coefficient of Variation	1.335643		
MLE Skewness	6.389639		
MLE Median	0.143322		
MLE 80% Quantile	0.337012		
MLE 90% Quantile	0.526019		
MLE 95% Quantile	0.757186		
MLE 99% Quantile	1.508224		
MVU Estimate of Median	0.119889		
MVU Estimate of Mean	0.196571		
MVU Estimate of Standard Deviation	0.17766		
MVU Estimate of SE of Mean	0.10231		
95% H-UCL	N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL	N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL	N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL	N/A		Too Few Observations To Calculate UCLs
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A		Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL	N/A		Too Few Observations To Calculate UCLs
95% Modified-t UCL	N/A		Too Few Observations To Calculate UCLs
95% Jackknife UCL	N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL	N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL	N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL	N/A		Too Few Observations To Calculate UCLs
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL	N/A		Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A		Too Few Observations To Calculate UCLs
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Indeno(1,2,3-cd)pyrene		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.14		
Maximum	0.74		
Mean	0.315		
Standard Deviation	0.284429		
Variance	0.0809		
Coefficient of Variation	0.90295		
Skewness	1.953471		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.711928		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.649683		
Gamma Statistics			
k hat	2.212603		
k star (bias corrected)	0.719817		
Theta hat	0.142366		
Theta star	0.437611		
nu hat	17.70082		
nu star	5.758539		
5% Approximate Chi Square Value	1.517266		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.644232		
Anderson-Darling 5% Critical Value	0.660308		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.403579		
Kolmogrov-Smirnov 5% Critical Value	0.397615		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.195532		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-1.966113		
Maximum of log data	-0.301105		
Mean of log data	-1.397864		
Standard Deviation of log data	0.746324		
Variance of log data	0.556999		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.807855		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.326487		
MLE Standard Deviation	0.281883		
MLE Coefficient of Variation	0.863381		
MLE Skewness	3.233731		
MLE Median	0.247124		
MLE 80% Quantile	0.464302		
MLE 90% Quantile	0.644786		
MLE 95% Quantile	0.843529		
MLE 99% Quantile	1.402261		
MVU Estimate of Median	0.230274		
MVU Estimate of Mean	0.302075		
MVU Estimate of Standard Deviation	0.216712		
MVU Estimate of SE of Mean	0.108129		
95% H-UCL	6.077107		
95% Chebyshev (MVUE) UCL	0.7734		
97.5% Chebyshev (MVUE) UCL	0.977342		
99% Chebyshev (MVUE) UCL	1.377948		
Non-parametric Statistics			
95% CLT UCL	0.548922		
95% Adjusted-CLT UCL	0.697345		
95% Modified-t UCL	0.672834		
95% Jackknife UCL	0.649683		
95% Chebyshev (Mean, Sd) UCL	0.934899		
97.5% Chebyshev (Mean, Sd) UCL	1.20313		
99% Chebyshev (Mean, Sd) UCL	1.730018		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.195532		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Phenanthrene		
Raw Statistics			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.16		
Maximum	0.57		
Mean	0.31		
Standard Deviation	0.226053		
Variance	0.0511		
Coefficient of Variation	0.729204		
Skewness	1.671239		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-1.832581		
Maximum of log data	-0.562119		
Mean of log data	-1.334713		
Standard Deviation of log data	0.678325		
Variance of log data	0.460124		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.331327		
MLE Standard Deviation	0.253258		
MLE Coefficient of Variation	0.764376		
MLE Skewness	2.739731		
MLE Median	0.263234		
MLE 80% Quantile	0.466952		
MLE 90% Quantile	0.629351		
MLE 95% Quantile	0.803427		
MLE 99% Quantile	1.275158		
MVU Estimate of Median	0.243431		
MVU Estimate of Mean	0.305182		
MVU Estimate of Standard Deviation	0.196088		
MVU Estimate of SE of Mean	0.113145		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Aroclor 1260		
Raw Statistics			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.011		
Maximum	0.058		
Mean	0.028167		
Standard Deviation	0.025934		
Variance	0.000673		
Coefficient of Variation	0.920741		
Skewness	1.673568		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-4.50986		
Maximum of log data	-2.847312		
Mean of log data	-3.841363		
Standard Deviation of log data	0.877784		
Variance of log data	0.770505		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.031552		
MLE Standard Deviation	0.033995		
MLE Coefficient of Variation	1.077431		
MLE Skewness	4.483034		
MLE Median	0.021464		
MLE 80% Quantile	0.045066		
MLE 90% Quantile	0.06631		
MLE 95% Quantile	0.090953		
MLE 99% Quantile	0.165359		
MVU Estimate of Median	0.018795		
MVU Estimate of Mean	0.027341		
MVU Estimate of Standard Deviation	0.021989		
MVU Estimate of SE of Mean	0.012676		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	30		
Number of Missing Data	0		
Number of Valid Observations	30		
Number of Distinct Observations	30		
Minimum	0.5		
Maximum	68		
Mean	9.991667		
Standard Deviation	12.87038		
Variance	165.6467		
Coefficient of Variation	1.288112		
Skewness	3.367425		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.649397		
Shapiro-Wilk 5% Critical Value	0.927		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	13.98427		
Gamma Statistics			
k hat	0.887665		
k star (bias corrected)	0.821121		
Theta hat	11.25612		
Theta star	12.16833		
nu hat	53.25991		
nu star	49.26725		
5% Approximate Chi Square Value	34.15029		
Adjusted Level of Significance	0.041		
Adjusted Chi Square Value	33.4239		
Anderson-Darling Test Statistic	0.50413		
Anderson-Darling 5% Critical Value	0.781011		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.104051		
Kolmogrov-Smirnov 5% Critical Value	0.165464		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	14.41458		
95% Adjusted Gamma UCL	14.72784		
Lognormal Statistics			
Minimum of log data	-0.693147		
Maximum of log data	4.219508		
Mean of log data	1.642024		
Standard Deviation of log data	1.271383		
Variance of log data	1.616415		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.944662		
Shapiro-Wilk 5% Critical Value	0.927		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	11.59103		
MLE Standard Deviation	23.28328		
MLE Coefficient of Variation	2.008733		
MLE Skewness	14.13145		
MLE Median	5.165615		
MLE 80% Quantile	15.12491		
MLE 90% Quantile	26.4631		
MLE 95% Quantile	41.82312		
MLE 99% Quantile	99.41084		
MVU Estimate of Median	5.028192		
MVU Estimate of Mean	11.07565		
MVU Estimate of Standard Deviation	18.91263		
MVU Estimate of SE of Mean	3.116748		
95% H-UCL	22.36553		
95% Chebyshev (MVUE) UCL	24.66124		
97.5% Chebyshev (MVUE) UCL	30.53973		
99% Chebyshev (MVUE) UCL	42.0869		
Non-parametric Statistics			
95% CLT UCL	13.85674		
95% Adjusted-CLT UCL	15.40039		
95% Modified-t UCL	14.22505		
95% Jackknife UCL	13.98427		
95% Chebyshev (Mean, Sd) UCL	20.23421		
97.5% Chebyshev (Mean, Sd) UCL	24.66616		
99% Chebyshev (Mean, Sd) UCL	33.37188		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	13.80834		
95% Bootstrap-t UCL	17.01148		
95% Hall's Bootstrap UCL	31.12862		
95% Percentile Bootstrap UCL	14.11333		
95% BCA Bootstrap UCL	16.99167		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	14.41458	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	30		
Minimum	6.6		
Maximum	4250		
Mean	643.0016		
Standard Deviation	1102.33		
Variance	1215132		
Coefficient of Variation	1.714351		
Skewness	2.373377		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.618068		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	973.401		
Gamma Statistics			
k hat	0.427702		
k star (bias corrected)	0.408438		
Theta hat	1503.388		
Theta star	1574.294		
nu hat	27.37291		
nu star	26.14003		
5% Approximate Chi Square Value	15.4854		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	15.0457		
Anderson-Darling Test Statistic	1.175493		
Anderson-Darling 5% Critical Value	0.826463		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.181023		
Kolmogrov-Smirnov 5% Critical Value	0.165931		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	1085.415		
95% Adjusted Gamma UCL	1117.135		
Lognormal Statistics			
Minimum of log data	1.88707		
Maximum of log data	8.354674		
Mean of log data	4.944045		
Standard Deviation of log data	1.955027		
Variance of log data	3.82213		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.932737		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	948.7161		
MLE Standard Deviation	6343.033		
MLE Coefficient of Variation	6.685913		
MLE Skewness	318.9277		
MLE Median	140.3367		
MLE 80% Quantile	732.1917		
MLE 90% Quantile	1730.653		
MLE 95% Quantile	3498.41		
MLE 99% Quantile	13245.82		
MVU Estimate of Median	132.1867		
MVU Estimate of Mean	815.5704		
MVU Estimate of Standard Deviation	3183.843		
MVU Estimate of SE of Mean	381.4983		
95% H-UCL	3514.979		
95% Chebyshev (MVUE) UCL	2478.483		
97.5% Chebyshev (MVUE) UCL	3198.027		
99% Chebyshev (MVUE) UCL	4611.431		
Non-parametric Statistics			
95% CLT UCL	963.5282		
95% Adjusted-CLT UCL	1050.887		
95% Modified-t UCL	987.0273		
95% Jackknife UCL	973.401		
95% Chebyshev (Mean, Sd) UCL	1492.404		
97.5% Chebyshev (Mean, Sd) UCL	1859.941		
99% Chebyshev (Mean, Sd) UCL	2581.897		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	963.7996		
95% Bootstrap-t UCL	1137.682		
95% Hall's Bootstrap UCL	1030.174		
95% Percentile Bootstrap UCL	981.9516		
95% BCA Bootstrap UCL	1160.413		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	2478.483	95% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Barium		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	14.1		
Maximum	205		
Mean	92.72031		
Standard Deviation	47.83401		
Variance	2288.092		
Coefficient of Variation	0.515896		
Skewness	0.626861		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.950053		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	107.0575		
Gamma Statistics			
k hat	3.37364		
k star (bias corrected)	3.078195		
Theta hat	27.48376		
Theta star	30.12165		
nu hat	215.913		
nu star	197.0045		
5% Approximate Chi Square Value	165.5243		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	163.982		
Anderson-Darling Test Statistic	0.344308		
Anderson-Darling 5% Critical Value	0.752122		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.097756		
Kolmogrov-Smirnov 5% Critical Value	0.156407		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	110.3543		
95% Adjusted Gamma UCL	111.3922		
Lognormal Statistics			
Minimum of log data	2.646175		
Maximum of log data	5.32301		
Mean of log data	4.37412		
Standard Deviation of log data	0.61926		
Variance of log data	0.383483		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.926837		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	96.14535		
MLE Standard Deviation	65.73041		
MLE Coefficient of Variation	0.683657		
MLE Skewness	2.370502		
MLE Median	79.36994		
MLE 80% Quantile	133.9403		
MLE 90% Quantile	175.8917		
MLE 95% Quantile	219.8185		
MLE 99% Quantile	335.1299		
MVU Estimate of Median	78.8957		
MVU Estimate of Mean	95.4725		
MVU Estimate of Standard Deviation	63.59473		
MVU Estimate of SE of Mean	11.15073		
95% H-UCL	120.4137		
95% Chebyshev (MVUE) UCL	144.0774		
97.5% Chebyshev (MVUE) UCL	165.1088		
99% Chebyshev (MVUE) UCL	206.4208		
Non-parametric Statistics			
95% CLT UCL	106.6291		
95% Adjusted-CLT UCL	107.6303		
95% Modified-t UCL	107.2137		
95% Jackknife UCL	107.0575		
95% Chebyshev (Mean, Sd) UCL	129.5789		
97.5% Chebyshev (Mean, Sd) UCL	145.5276		
99% Chebyshev (Mean, Sd) UCL	176.8558		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	106.4577		
95% Bootstrap-t UCL	108.6022		
95% Hall's Bootstrap UCL	107.6139		
95% Percentile Bootstrap UCL	106.5234		
95% BCA Bootstrap UCL	103.3063		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	107.0575	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	0.46		
Maximum	15.2		
Mean	7.312188		
Standard Deviation	4.111383		
Variance	16.90347		
Coefficient of Variation	0.562264		
Skewness	0.07539		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.959126		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	8.544485		
<b>Gamma Statistics</b>			
k hat	2.06668		
k star (bias corrected)	1.893762		
Theta hat	3.538132		
Theta star	3.861196		
nu hat	132.2675		
nu star	121.2008		
5% Approximate Chi Square Value	96.77321		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	95.60551		
Anderson-Darling Test Statistic	0.812072		
Anderson-Darling 5% Critical Value	0.758568		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.108147		
Kolmogrov-Smirnov 5% Critical Value	0.157481		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	9.157935		
95% Adjusted Gamma UCL	9.269788		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.776529		
Maximum of log data	2.721295		
Mean of log data	1.728513		
Standard Deviation of log data	0.893006		
Variance of log data	0.79746		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.829144		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	8.391698		
MLE Standard Deviation	9.268537		
MLE Coefficient of Variation	1.104489		
MLE Skewness	4.660827		
MLE Median	5.632272		
MLE 80% Quantile	11.97838		
MLE 90% Quantile	17.74362		
MLE 95% Quantile	24.47147		
MLE 99% Quantile	44.95425		
MVU Estimate of Median	5.562501		
MVU Estimate of Mean	8.251453		
MVU Estimate of Standard Deviation	8.569704		
MVU Estimate of SE of Mean	1.468261		
95% H-UCL	12.12976		
95% Chebyshev (MVUE) UCL	14.65145		
97.5% Chebyshev (MVUE) UCL	17.42074		
99% Chebyshev (MVUE) UCL	22.86046		
<b>Non-parametric Statistics</b>			
95% CLT UCL	8.507662		
95% Adjusted-CLT UCL	8.518012		
95% Modified-t UCL	8.546099		
95% Jackknife UCL	8.544485		
95% Chebyshev (Mean, Sd) UCL	10.48022		
97.5% Chebyshev (Mean, Sd) UCL	11.85103		
99% Chebyshev (Mean, Sd) UCL	14.54372		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	8.490059		
95% Bootstrap-t UCL	8.674152		
95% Hall's Bootstrap UCL	8.565861		
95% Percentile Bootstrap UCL	8.534688		
95% BCA Bootstrap UCL	8.871563		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	8.544485	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	14.3		
Maximum	5500		
Mean	1045.963		
Standard Deviation	1163.041		
Variance	1352664		
Coefficient of Variation	1.111933		
Skewness	1.998719		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.794464		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1394.559		
Gamma Statistics			
k hat	0.763508		
k star (bias corrected)	0.712762		
Theta hat	1369.944		
Theta star	1467.478		
nu hat	48.86449		
nu star	45.61678		
5% Approximate Chi Square Value	31.11936		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	30.47756		
Anderson-Darling Test Statistic	0.281979		
Anderson-Darling 5% Critical Value	0.787088		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.093058		
Kolmogrov-Smirnov 5% Critical Value	0.161512		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1533.24		
95% Adjusted Gamma UCL	1565.527		
Lognormal Statistics			
Minimum of log data	2.66026		
Maximum of log data	8.612503		
Mean of log data	6.170523		
Standard Deviation of log data	1.530108		
Variance of log data	2.341232		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.933211		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1542.468		
MLE Standard Deviation	4727.614		
MLE Coefficient of Variation	3.064968		
MLE Skewness	37.9873		
MLE Median	478.4363		
MLE 80% Quantile	1743.177		
MLE 90% Quantile	3417.663		
MLE 95% Quantile	5928.647		
MLE 99% Quantile	16807.07		
MVU Estimate of Median	461.2318		
MVU Estimate of Mean	1434.552		
MVU Estimate of Standard Deviation	3389.175		
MVU Estimate of SE of Mean	495.8219		
95% H-UCL	3625.004		
95% Chebyshev (MVUE) UCL	3595.789		
97.5% Chebyshev (MVUE) UCL	4530.959		
99% Chebyshev (MVUE) UCL	6367.917		
Non-parametric Statistics			
95% CLT UCL	1384.142		
95% Adjusted-CLT UCL	1461.763		
95% Modified-t UCL	1406.666		
95% Jackknife UCL	1394.559		
95% Chebyshev (Mean, Sd) UCL	1942.146		
97.5% Chebyshev (Mean, Sd) UCL	2329.925		
99% Chebyshev (Mean, Sd) UCL	3091.642		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1376.864		
95% Bootstrap-t UCL	1497.6		
95% Hall's Bootstrap UCL	1608.6		
95% Percentile Bootstrap UCL	1402.813		
95% BCA Bootstrap UCL	1553.125		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1533.24	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	31		
Minimum	18.8		
Maximum	2080		
Mean	629.7125		
Standard Deviation	465.206		
Variance	216416.6		
Coefficient of Variation	0.738759		
Skewness	1.055874		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.92269		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	769.1478		
Gamma Statistics			
k hat	1.339539		
k star (bias corrected)	1.23479		
Theta hat	470.0965		
Theta star	509.9752		
nu hat	85.73049		
nu star	79.02659		
5% Approximate Chi Square Value	59.5417		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	58.63611		
Anderson-Darling Test Statistic	0.68406		
Anderson-Darling 5% Critical Value	0.768015		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.169185		
Kolmogrov-Smirnov 5% Critical Value	0.158877		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	835.7846		
95% Adjusted Gamma UCL	848.6926		
Lognormal Statistics			
Minimum of log data	2.933857		
Maximum of log data	7.640123		
Mean of log data	6.027681		
Standard Deviation of log data	1.15761		
Variance of log data	1.340062		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.854271		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	810.5494		
MLE Standard Deviation	1360.97		
MLE Coefficient of Variation	1.679071		
MLE Skewness	9.770982		
MLE Median	414.7523		
MLE 80% Quantile	1103.081		
MLE 90% Quantile	1835.754		
MLE 95% Quantile	2784.853		
MLE 99% Quantile	6125.913		
MVU Estimate of Median	406.1529		
MVU Estimate of Mean	784.1488		
MVU Estimate of Standard Deviation	1168.063		
MVU Estimate of SE of Mean	191.1947		
95% H-UCL	1394.217		
95% Chebyshev (MVUE) UCL	1617.547		
97.5% Chebyshev (MVUE) UCL	1978.16		
99% Chebyshev (MVUE) UCL	2686.512		
Non-parametric Statistics			
95% CLT UCL	764.9813		
95% Adjusted-CLT UCL	781.3829		
95% Modified-t UCL	771.7061		
95% Jackknife UCL	769.1478		
95% Chebyshev (Mean, Sd) UCL	988.1778		
97.5% Chebyshev (Mean, Sd) UCL	1143.286		
99% Chebyshev (Mean, Sd) UCL	1447.966		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	761.7799		
95% Bootstrap-t UCL	789.5811		
95% Hall's Bootstrap UCL	803.862		
95% Percentile Bootstrap UCL	772.3844		
95% BCA Bootstrap UCL	821.0031		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	835.7846		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	23.9		
Maximum	1240		
Mean	468.4344		
Standard Deviation	254.2232		
Variance	64629.44		
Coefficient of Variation	0.542708		
Skewness	0.578618		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.958143		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	544.6322		
<b>Gamma Statistics</b>			
k hat	2.438091		
k star (bias corrected)	2.230353		
Theta hat	192.1316		
Theta star	210.027		
nu hat	156.0378		
nu star	142.7426		
5% Approximate Chi Square Value	116.128		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	114.8441		
Anderson-Darling Test Statistic	1.014276		
Anderson-Darling 5% Critical Value	0.756326		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.185787		
Kolmogrov-Smirnov 5% Critical Value	0.157111		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	575.7919		
95% Adjusted Gamma UCL	582.2286		
<b>Lognormal Statistics</b>			
Minimum of log data	3.173878		
Maximum of log data	7.122867		
Mean of log data	5.930518		
Standard Deviation of log data	0.804933		
Variance of log data	0.647917		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.847397		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	520.337		
MLE Standard Deviation	496.794		
MLE Coefficient of Variation	0.954754		
MLE Skewness	3.734575		
MLE Median	376.3494		
MLE 80% Quantile	742.993		
MLE 90% Quantile	1058.764		
MLE 95% Quantile	1414.644		
MLE 99% Quantile	2447.427		
MVU Estimate of Median	372.5574		
MVU Estimate of Mean	513.5963		
MVU Estimate of Standard Deviation	467.4651		
MVU Estimate of SE of Mean	80.87662		
95% H-UCL	715.4475		
95% Chebyshev (MVUE) UCL	866.1293		
97.5% Chebyshev (MVUE) UCL	1018.671		
99% Chebyshev (MVUE) UCL	1318.309		
<b>Non-parametric Statistics</b>			
95% CLT UCL	542.3553		
95% Adjusted-CLT UCL	547.2671		
95% Modified-t UCL	545.3984		
95% Jackknife UCL	544.6322		
95% Chebyshev (Mean, Sd) UCL	664.3265		
97.5% Chebyshev (Mean, Sd) UCL	749.0892		
99% Chebyshev (Mean, Sd) UCL	915.5891		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	541.48		
95% Bootstrap-t UCL	550.0631		
95% Hall's Bootstrap UCL	563.6579		
95% Percentile Bootstrap UCL	541.7969		
95% BCA Bootstrap UCL	528.2938		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	544.6322	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	31		
Minimum	89.5		
Maximum	2020		
Mean	828.1531		
Standard Deviation	580.8321		
Variance	337366		
Coefficient of Variation	0.701358		
Skewness	0.486343		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.922525		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	1002.245		
<b>Gamma Statistics</b>			
k hat	1.651563		
k star (bias corrected)	1.517562		
Theta hat	501.4361		
Theta star	545.7129		
nu hat	105.7		
nu star	97.12397		
5% Approximate Chi Square Value	75.38696		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	74.362		
Anderson-Darling Test Statistic	0.60229		
Anderson-Darling 5% Critical Value	0.762786		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.13741		
Kolmogrov-Smirnov 5% Critical Value	0.158079		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1066.942		
95% Adjusted Gamma UCL	1081.648		
<b>Lognormal Statistics</b>			
Minimum of log data	4.494239		
Maximum of log data	7.610853		
Mean of log data	6.386876		
Standard Deviation of log data	0.924609		
Variance of log data	0.854902		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.91281		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	910.8035		
MLE Standard Deviation	1058.707		
MLE Coefficient of Variation	1.162388		
MLE Skewness	5.057717		
MLE Median	593.998		
MLE 80% Quantile	1297.469		
MLE 90% Quantile	1948.858		
MLE 95% Quantile	2718.562		
MLE 99% Quantile	5102.66		
MVU Estimate of Median	586.1131		
MVU Estimate of Mean	894.2009		
MVU Estimate of Standard Deviation	971.9725		
MVU Estimate of SE of Mean	165.8458		
95% H-UCL	1341.558		
95% Chebyshev (MVUE) UCL	1617.106		
97.5% Chebyshev (MVUE) UCL	1929.907		
99% Chebyshev (MVUE) UCL	2544.345		
<b>Non-parametric Statistics</b>			
95% CLT UCL	997.0427		
95% Adjusted-CLT UCL	1006.475		
95% Modified-t UCL	1003.716		
95% Jackknife UCL	1002.245		
95% Chebyshev (Mean, Sd) UCL	1275.714		
97.5% Chebyshev (Mean, Sd) UCL	1469.374		
99% Chebyshev (Mean, Sd) UCL	1849.782		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	993.739		
95% Bootstrap-t UCL	1016.905		
95% Hall's Bootstrap UCL	1005.706		
95% Percentile Bootstrap UCL	997.4188		
95% BCA Bootstrap UCL	1059.263		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1066.942		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	30		
Minimum	0.045		
Maximum	27.5		
Mean	3.163281		
Standard Deviation	5.501886		
Variance	30.27075		
Coefficient of Variation	1.739297		
Skewness	3.268623		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.583947		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	4.812351		
Gamma Statistics			
k hat	0.583534		
k star (bias corrected)	0.549661		
Theta hat	5.420901		
Theta star	5.754965		
nu hat	37.34619		
nu star	35.17832		
5% Approximate Chi Square Value	22.60598		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	22.06561		
Anderson-Darling Test Statistic	0.784407		
Anderson-Darling 5% Critical Value	0.802821		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.160891		
Kolmogrov-Smirnov 5% Critical Value	0.163438		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	4.922544		
95% Adjusted Gamma UCL	5.043092		
Lognormal Statistics			
Minimum of log data	-3.101093		
Maximum of log data	3.314186		
Mean of log data	0.088383		
Standard Deviation of log data	1.558251		
Variance of log data	2.428145		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.987065		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	3.678317		
MLE Standard Deviation	11.82671		
MLE Coefficient of Variation	3.21525		
MLE Skewness	42.88446		
MLE Median	1.092406		
MLE 80% Quantile	4.075954		
MLE 90% Quantile	8.09086		
MLE 95% Quantile	14.17819		
MLE 99% Quantile	40.97138		
MVU Estimate of Median	1.051691		
MVU Estimate of Mean	3.407421		
MVU Estimate of Standard Deviation	8.326438		
MVU Estimate of SE of Mean	1.204922		
95% H-UCL	8.879252		
95% Chebyshev (MVUE) UCL	8.659556		
97.5% Chebyshev (MVUE) UCL	10.93216		
99% Chebyshev (MVUE) UCL	15.39625		
Non-parametric Statistics			
95% CLT UCL	4.763075		
95% Adjusted-CLT UCL	5.363566		
95% Modified-t UCL	4.906016		
95% Jackknife UCL	4.812351		
95% Chebyshev (Mean, Sd) UCL	7.402769		
97.5% Chebyshev (Mean, Sd) UCL	9.237199		
99% Chebyshev (Mean, Sd) UCL	12.84058		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	4.745439		
95% Bootstrap-t UCL	6.246242		
95% Hall's Bootstrap UCL	10.3954		
95% Percentile Bootstrap UCL	4.929688		
95% BCA Bootstrap UCL	5.9925		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	4.922544	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	30		
Minimum	0.4		
Maximum	79.2		
Mean	29.2625		
Standard Deviation	15.2405		
Variance	232.2729		
Coefficient of Variation	0.52082		
Skewness	0.632915		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.927749		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	33.83051		
Gamma Statistics			
k hat	2.154651		
k star (bias corrected)	1.973486		
Theta hat	13.58109		
Theta star	14.82782		
nu hat	137.8977		
nu star	126.3031		
5% Approximate Chi Square Value	101.3409		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	100.1449		
Anderson-Darling Test Statistic	1.943842		
Anderson-Darling 5% Critical Value	0.758037		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.221366		
Kolmogrov-Smirnov 5% Critical Value	0.157394		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	36.4704		
95% Adjusted Gamma UCL	36.90598		
Lognormal Statistics			
Minimum of log data	-0.916291		
Maximum of log data	4.371976		
Mean of log data	3.126654		
Standard Deviation of log data	0.965616		
Variance of log data	0.932414		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.714447		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	36.33789		
MLE Standard Deviation	45.10342		
MLE Coefficient of Variation	1.241223		
MLE Skewness	5.635937		
MLE Median	22.79758		
MLE 80% Quantile	51.55244		
MLE 90% Quantile	78.84394		
MLE 95% Quantile	111.6191		
MLE 99% Quantile	215.4387		
MVU Estimate of Median	22.4677		
MVU Estimate of Mean	35.59889		
MVU Estimate of Standard Deviation	41.00204		
MVU Estimate of SE of Mean	6.95528		
95% H-UCL	54.88654		
95% Chebyshev (MVUE) UCL	65.91625		
97.5% Chebyshev (MVUE) UCL	79.0346		
99% Chebyshev (MVUE) UCL	104.803		
Non-parametric Statistics			
95% CLT UCL	33.69401		
95% Adjusted-CLT UCL	34.0161		
95% Modified-t UCL	33.88075		
95% Jackknife UCL	33.83051		
95% Chebyshev (Mean, Sd) UCL	41.0061		
97.5% Chebyshev (Mean, Sd) UCL	46.08756		
99% Chebyshev (Mean, Sd) UCL	56.06911		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	33.6512		
95% Bootstrap-t UCL	34.14197		
95% Hall's Bootstrap UCL	34.52513		
95% Percentile Bootstrap UCL	33.58281		
95% BCA Bootstrap UCL	32.61406		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	41.0061	95% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - nt-1.xls		
Variable:	Thallium		
Raw Statistics			
Number of Observations	31		
Number of Missing Data	0		
Number of Valid Observations	31		
Number of Distinct Observations	29		
Minimum	0.115		
Maximum	18.1		
Mean	2.717742		
Standard Deviation	4.682787		
Variance	21.9285		
Coefficient of Variation	1.723043		
Skewness	2.093169		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.614623		
Shapiro-Wilk 5% Critical Value	0.929		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	4.145229		
Gamma Statistics			
k hat	0.486856		
k star (bias corrected)	0.461247		
Theta hat	5.582226		
Theta star	5.892167		
nu hat	30.18509		
nu star	28.59729		
5% Approximate Chi Square Value	17.39181		
Adjusted Level of Significance	0.0413		
Adjusted Chi Square Value	16.90532		
Anderson-Darling Test Statistic	2.95045		
Anderson-Darling 5% Critical Value	0.812697		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.33507		
Kolmogrov-Smirnov 5% Critical Value	0.16706		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	4.468774		
95% Adjusted Gamma UCL	4.597373		
Lognormal Statistics			
Minimum of log data	-2.162823		
Maximum of log data	2.895912		
Mean of log data	-0.310275		
Standard Deviation of log data	1.587814		
Variance of log data	2.521153		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.858797		
Shapiro-Wilk 5% Critical Value	0.929		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	2.586489		
MLE Standard Deviation	8.74942		
MLE Coefficient of Variation	3.382741		
MLE Skewness	48.8567		
MLE Median	0.733245		
MLE 80% Quantile	2.805067		
MLE 90% Quantile	5.641024		
MLE 95% Quantile	9.990939		
MLE 99% Quantile	29.45842		
MVU Estimate of Median	0.70399		
MVU Estimate of Mean	2.379956		
MVU Estimate of Standard Deviation	5.984315		
MVU Estimate of SE of Mean	0.871946		
95% H-UCL	6.542384		
95% Chebyshev (MVUE) UCL	6.180682		
97.5% Chebyshev (MVUE) UCL	7.825259		
99% Chebyshev (MVUE) UCL	11.05571		
Non-parametric Statistics			
95% CLT UCL	4.101152		
95% Adjusted-CLT UCL	4.439005		
95% Modified-t UCL	4.197927		
95% Jackknife UCL	4.145229		
95% Chebyshev (Mean, Sd) UCL	6.383809		
97.5% Chebyshev (Mean, Sd) UCL	7.970119		
99% Chebyshev (Mean, Sd) UCL	11.08612		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	4.094792		
95% Bootstrap-t UCL	4.899978		
95% Hall's Bootstrap UCL	4.475257		
95% Percentile Bootstrap UCL	4.143226		
95% BCA Bootstrap UCL	4.744355		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	11.08612	99% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	10.3		
Maximum	107		
Mean	60.65781		
Standard Deviation	28.54584		
Variance	814.8649		
Coefficient of Variation	0.470604		
Skewness	-0.163366		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.942233		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	69.2138		
Gamma Statistics			
k hat	3.489732		
k star (bias corrected)	3.183403		
Theta hat	17.38179		
Theta star	19.05439		
nu hat	223.3429		
nu star	203.7378		
5% Approximate Chi Square Value	171.7036		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	170.1319		
Anderson-Darling Test Statistic	0.934963		
Anderson-Darling 5% Critical Value	0.751869		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.181672		
Kolmogrov-Smirnov 5% Critical Value	0.156363		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	71.97456		
95% Adjusted Gamma UCL	72.63948		
Lognormal Statistics			
Minimum of log data	2.332144		
Maximum of log data	4.672829		
Mean of log data	3.955182		
Standard Deviation of log data	0.615763		
Variance of log data	0.379164		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.889013		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	63.10275		
MLE Standard Deviation	42.84777		
MLE Coefficient of Variation	0.679016		
MLE Skewness	2.350116		
MLE Median	52.20521		
MLE 80% Quantile	87.83868		
MLE 90% Quantile	115.1733		
MLE 95% Quantile	143.7553		
MLE 99% Quantile	218.6444		
MVU Estimate of Median	51.89678		
MVU Estimate of Mean	62.6668		
MVU Estimate of Standard Deviation	41.47301		
MVU Estimate of SE of Mean	7.273146		
95% H-UCL	78.9034		
95% Chebyshev (MVUE) UCL	94.36971		
97.5% Chebyshev (MVUE) UCL	108.0876		
99% Chebyshev (MVUE) UCL	135.0337		
Non-parametric Statistics			
95% CLT UCL	68.95814		
95% Adjusted-CLT UCL	68.80242		
95% Modified-t UCL	69.18951		
95% Jackknife UCL	69.2138		
95% Chebyshev (Mean, Sd) UCL	82.65386		
97.5% Chebyshev (Mean, Sd) UCL	92.17156		
99% Chebyshev (Mean, Sd) UCL	110.8673		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	68.78722		
95% Bootstrap-t UCL	69.38127		
95% Hall's Bootstrap UCL	69.08591		
95% Percentile Bootstrap UCL	68.68438		
95% BCA Bootstrap UCL	66.91406		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	69.2138	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	80.1		
Maximum	3770		
Mean	1372.128		
Standard Deviation	942.4868		
Variance	888281.5		
Coefficient of Variation	0.68688		
Skewness	0.681586		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.940725		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1654.618		
Gamma Statistics			
k hat	1.67643		
k star (bias corrected)	1.540098		
Theta hat	818.482		
Theta star	890.9354		
nu hat	107.2915		
nu star	98.56629		
5% Approximate Chi Square Value	76.65926		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	75.62528		
Anderson-Darling Test Statistic	0.382076		
Anderson-Darling 5% Critical Value	0.762514		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.13102		
Kolmogrov-Smirnov 5% Critical Value	0.158041		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1764.243		
95% Adjusted Gamma UCL	1788.365		
Lognormal Statistics			
Minimum of log data	4.383276		
Maximum of log data	8.23483		
Mean of log data	6.897133		
Standard Deviation of log data	0.961138		
Variance of log data	0.923786		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.900055		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	1570.307		
MLE Standard Deviation	1935.246		
MLE Coefficient of Variation	1.2324		
MLE Skewness	5.56898		
MLE Median	989.4343		
MLE 80% Quantile	2228.97		
MLE 90% Quantile	3402.262		
MLE 95% Quantile	4808.812		
MLE 99% Quantile	9253.346		
MVU Estimate of Median	975.249		
MVU Estimate of Mean	1538.746		
MVU Estimate of Standard Deviation	1761.231		
MVU Estimate of SE of Mean	298.9616		
95% H-UCL	2365.27		
95% Chebyshev (MVUE) UCL	2841.889		
97.5% Chebyshev (MVUE) UCL	3405.761		
99% Chebyshev (MVUE) UCL	4513.377		
Non-parametric Statistics			
95% CLT UCL	1646.177		
95% Adjusted-CLT UCL	1667.627		
95% Modified-t UCL	1657.964		
95% Jackknife UCL	1654.618		
95% Chebyshev (Mean, Sd) UCL	2098.363		
97.5% Chebyshev (Mean, Sd) UCL	2412.605		
99% Chebyshev (Mean, Sd) UCL	3029.874		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1636.875		
95% Bootstrap-t UCL	1708.744		
95% Hall's Bootstrap UCL	1674.577		
95% Percentile Bootstrap UCL	1630.469		
95% BCA Bootstrap UCL	1731.566		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1654.618	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-1.xls		
Variable:	Chromium VI		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	0.01859		
Maximum	7.15		
Mean	1.359751		
Standard Deviation	1.511953		
Variance	2.286002		
Coefficient of Variation	1.111933		
Skewness	1.998719		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.794464		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1.812926		
Gamma Statistics			
k hat	0.763508		
k star (bias corrected)	0.712762		
Theta hat	1.780927		
Theta star	1.907721		
nu hat	48.86449		
nu star	45.61678		
5% Approximate Chi Square Value	31.11936		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	30.47756		
Anderson-Darling Test Statistic	0.281979		
Anderson-Darling 5% Critical Value	0.787088		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.093058		
Kolmogrov-Smirnov 5% Critical Value	0.161512		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.993212		
95% Adjusted Gamma UCL	2.035185		
Lognormal Statistics			
Minimum of log data	-3.985131		
Maximum of log data	1.967112		
Mean of log data	-0.474868		
Standard Deviation of log data	1.530108		
Variance of log data	2.341232		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.933211		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	2.005208		
MLE Standard Deviation	6.145899		
MLE Coefficient of Variation	3.064968		
MLE Skewness	37.9873		
MLE Median	0.621967		
MLE 80% Quantile	2.26613		
MLE 90% Quantile	4.442962		
MLE 95% Quantile	7.707241		
MLE 99% Quantile	21.8492		
MVU Estimate of Median	0.599601		
MVU Estimate of Mean	1.864918		
MVU Estimate of Standard Deviation	4.405927		
MVU Estimate of SE of Mean	0.644568		
95% H-UCL	4.712505		
95% Chebyshev (MVUE) UCL	4.674526		
97.5% Chebyshev (MVUE) UCL	5.890246		
99% Chebyshev (MVUE) UCL	8.278293		
Non-parametric Statistics			
95% CLT UCL	1.799384		
95% Adjusted-CLT UCL	1.900291		
95% Modified-t UCL	1.828666		
95% Jackknife UCL	1.812926		
95% Chebyshev (Mean, Sd) UCL	2.524789		
97.5% Chebyshev (Mean, Sd) UCL	3.028902		
99% Chebyshev (Mean, Sd) UCL	4.019134		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.788559		
95% Bootstrap-t UCL	1.996915		
95% Hall's Bootstrap UCL	2.111455		
95% Percentile Bootstrap UCL	1.832114		
95% BCA Bootstrap UCL	2.047971		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.993212	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Trichloroethene		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.011		
Maximum	0.053		
Mean	0.035333		
Standard Deviation	0.021779		
Variance	0.000474		
Coefficient of Variation	0.616392		
Skewness	-1.248395		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-4.50986		
Maximum of log data	-2.937463		
Mean of log data	-3.539136		
Standard Deviation of log data	0.848679		
Variance of log data	0.720257		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.041627		
MLE Standard Deviation	0.042756		
MLE Coefficient of Variation	1.027113		
MLE Skewness	4.164901		
MLE Median	0.029038		
MLE 80% Quantile	0.059487		
MLE 90% Quantile	0.086416		
MLE 95% Quantile	0.117296		
MLE 99% Quantile	0.209065		
MVU Estimate of Median	0.025656		
MVU Estimate of Mean	0.03644		
MVU Estimate of Standard Deviation	0.028484		
MVU Estimate of SE of Mean	0.016423		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Benzo(a)anthracene		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	0.13		
Maximum	0.56		
Mean	0.252		
Standard Deviation	0.181025		
Variance	0.03277		
Coefficient of Variation	0.718353		
Skewness	1.771725		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.767335		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.424587		
<b>Gamma Statistics</b>			
k hat	3.145699		
k star (bias corrected)	1.391613		
Theta hat	0.080109		
Theta star	0.181085		
nu hat	31.45699		
nu star	13.91613		
5% Approximate Chi Square Value	6.512834		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	4.478624		
Anderson-Darling Test Statistic	0.530653		
Anderson-Darling 5% Critical Value	0.682427		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.310103		
Kolmogrov-Smirnov 5% Critical Value	0.359279		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.538455		
95% Adjusted Gamma UCL	0.783023		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.040221		
Maximum of log data	-0.579818		
Mean of log data	-1.545613		
Standard Deviation of log data	0.610818		
Variance of log data	0.373099		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.854188		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.256901		
MLE Standard Deviation	0.172761		
MLE Coefficient of Variation	0.672479		
MLE Skewness	2.32155		
MLE Median	0.213181		
MLE 80% Quantile	0.357195		
MLE 90% Quantile	0.467334		
MLE 95% Quantile	0.582272		
MLE 99% Quantile	0.882629		
MVU Estimate of Median	0.205326		
MVU Estimate of Mean	0.246619		
MVU Estimate of Standard Deviation	0.148784		
MVU Estimate of SE of Mean	0.06643		
95% H-UCL	0.709418		
95% Chebyshev (MVUE) UCL	0.536182		
97.5% Chebyshev (MVUE) UCL	0.661476		
99% Chebyshev (MVUE) UCL	0.907592		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.385162		
95% Adjusted-CLT UCL	0.453702		
95% Modified-t UCL	0.435278		
95% Jackknife UCL	0.424587		
95% Chebyshev (Mean, Sd) UCL	0.604882		
97.5% Chebyshev (Mean, Sd) UCL	0.757575		
99% Chebyshev (Mean, Sd) UCL	1.05751		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.371491		
95% Bootstrap-t UCL	1.904523		
95% Hall's Bootstrap UCL	1.168349		
95% Percentile Bootstrap UCL	0.392		
95% BCA Bootstrap UCL	0.474		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.424587		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Benzo(a)pyrene		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	3		
Minimum	0.16		
Maximum	1		
Mean	0.356		
Standard Deviation	0.365075		
Variance	0.13328		
Coefficient of Variation	1.025493		
Skewness	2.092235		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.657485		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.704059		
Gamma Statistics			
k hat	1.774359		
k star (bias corrected)	0.843077		
Theta hat	0.200636		
Theta star	0.422263		
nu hat	17.74359		
nu star	8.430768		
5% Approximate Chi Square Value	2.986222		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	1.760902		
Anderson-Darling Test Statistic	0.827539		
Anderson-Darling 5% Critical Value	0.685325		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.350155		
Kolmogrov-Smirnov 5% Critical Value	0.361012		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.005067		
95% Adjusted Gamma UCL	1.704441		
Lognormal Statistics			
Minimum of log data	-1.832581		
Maximum of log data	0		
Mean of log data	-1.340343		
Standard Deviation of log data	0.797184		
Variance of log data	0.635503		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.737939		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.359662		
MLE Standard Deviation	0.338917		
MLE Coefficient of Variation	0.942323		
MLE Skewness	3.663723		
MLE Median	0.261756		
MLE 80% Quantile	0.513388		
MLE 90% Quantile	0.729088		
MLE 95% Quantile	0.971441		
MLE 99% Quantile	1.671811		
MVU Estimate of Median	0.24547		
MVU Estimate of Mean	0.334178		
MVU Estimate of Standard Deviation	0.260869		
MVU Estimate of SE of Mean	0.116161		
95% H-UCL	1.807355		
95% Chebyshev (MVUE) UCL	0.840512		
97.5% Chebyshev (MVUE) UCL	1.059603		
99% Chebyshev (MVUE) UCL	1.489966		
Non-parametric Statistics			
95% CLT UCL	0.62455		
95% Adjusted-CLT UCL	0.787781		
95% Modified-t UCL	0.72952		
95% Jackknife UCL	0.704059		
95% Chebyshev (Mean, Sd) UCL	1.067663		
97.5% Chebyshev (Mean, Sd) UCL	1.3756		
99% Chebyshev (Mean, Sd) UCL	1.980483		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.005067		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Benzo(b)fluoranthene		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	0.29		
Maximum	1.5		
Mean	0.668		
Standard Deviation	0.504401		
Variance	0.25442		
Coefficient of Variation	0.755091		
Skewness	1.540321		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.814318		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1.148891		
Gamma Statistics			
k hat	2.674557		
k star (bias corrected)	1.203156		
Theta hat	0.249761		
Theta star	0.555206		
nu hat	26.74557		
nu star	12.03156		
5% Approximate Chi Square Value	5.246815		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	3.472384		
Anderson-Darling Test Statistic	0.424172		
Anderson-Darling 5% Critical Value	0.683222		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.300522		
Kolmogrov-Smirnov 5% Critical Value	0.359762		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.531802		
95% Adjusted Gamma UCL	2.314572		
Lognormal Statistics			
Minimum of log data	-1.237874		
Maximum of log data	0.405465		
Mean of log data	-0.60191		
Standard Deviation of log data	0.677845		
Variance of log data	0.459473		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.903483		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.689234		
MLE Standard Deviation	0.526369		
MLE Coefficient of Variation	0.763701		
MLE Skewness	2.736525		
MLE Median	0.547764		
MLE 80% Quantile	0.971289		
MLE 90% Quantile	1.308812		
MLE 95% Quantile	1.670535		
MLE 99% Quantile	2.650521		
MVU Estimate of Median	0.522978		
MVU Estimate of Mean	0.654797		
MVU Estimate of Standard Deviation	0.43714		
MVU Estimate of SE of Mean	0.195028		
95% H-UCL	2.315853		
95% Chebyshev (MVUE) UCL	1.504904		
97.5% Chebyshev (MVUE) UCL	1.872746		
99% Chebyshev (MVUE) UCL	2.5953		
Non-parametric Statistics			
95% CLT UCL	1.039038		
95% Adjusted-CLT UCL	1.205072		
95% Modified-t UCL	1.174789		
95% Jackknife UCL	1.148891		
95% Chebyshev (Mean, Sd) UCL	1.651258		
97.5% Chebyshev (Mean, Sd) UCL	2.076714		
99% Chebyshev (Mean, Sd) UCL	2.912441		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.003319		
95% Bootstrap-t UCL	3.431292		
95% Hall's Bootstrap UCL	3.551126		
95% Percentile Bootstrap UCL	1.016		
95% BCA Bootstrap UCL	1.258		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.148891		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Benzo(k)fluoranthene		
<b>Raw Statistics</b>			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	0.2		
Maximum	0.8		
Mean	0.492		
Standard Deviation	0.256262		
Variance	0.06567		
Coefficient of Variation	0.520857		
Skewness	0.303274		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.906746		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.736317		
<b>Gamma Statistics</b>			
k hat	4.284109		
k star (bias corrected)	1.846977		
Theta hat	0.114843		
Theta star	0.266381		
nu hat	42.84109		
nu star	18.46977		
5% Approximate Chi Square Value	9.729815		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	7.125654		
Anderson-Darling Test Statistic	0.320271		
Anderson-Darling 5% Critical Value	0.681089		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.240857		
Kolmogrov-Smirnov 5% Critical Value	0.35841		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.933947		
95% Adjusted Gamma UCL	1.275269		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.609438		
Maximum of log data	-0.223144		
Mean of log data	-0.830503		
Standard Deviation of log data	0.567467		
Variance of log data	0.322018		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.931522		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.511968		
MLE Standard Deviation	0.315561		
MLE Coefficient of Variation	0.616368		
MLE Skewness	2.08327		
MLE Median	0.43583		
MLE 80% Quantile	0.703988		
MLE 90% Quantile	0.903654		
MLE 95% Quantile	1.108468		
MLE 99% Quantile	1.631376		
MVU Estimate of Median	0.421945		
MVU Estimate of Mean	0.494431		
MVU Estimate of Standard Deviation	0.277585		
MVU Estimate of SE of Mean	0.123987		
95% H-UCL	1.259081		
95% Chebyshev (MVUE) UCL	1.034879		
97.5% Chebyshev (MVUE) UCL	1.268731		
99% Chebyshev (MVUE) UCL	1.728089		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.680506		
95% Adjusted-CLT UCL	0.697115		
95% Modified-t UCL	0.738908		
95% Jackknife UCL	0.736317		
95% Chebyshev (Mean, Sd) UCL	0.991546		
97.5% Chebyshev (Mean, Sd) UCL	1.2077		
99% Chebyshev (Mean, Sd) UCL	1.632292		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.659369		
95% Bootstrap-t UCL	1.000527		
95% Hall's Bootstrap UCL	1.494753		
95% Percentile Bootstrap UCL	0.678		
95% BCA Bootstrap UCL	0.718		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.736317		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Dibenz(a,h)anthracene		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.046		
Maximum	0.365		
Mean	0.243667		
Standard Deviation	0.172657		
Variance	0.02981		
Coefficient of Variation	0.708577		
Skewness	-1.600627		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-3.079114		
Maximum of log data	-1.007858		
Mean of log data	-1.742135		
Standard Deviation of log data	1.159725		
Variance of log data	1.344962		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.343127		
MLE Standard Deviation	0.578048		
MLE Coefficient of Variation	1.684648		
MLE Skewness	9.835043		
MLE Median	0.175146		
MLE 80% Quantile	0.466654		
MLE 90% Quantile	0.777331		
MLE 95% Quantile	1.180115		
MLE 99% Quantile	2.59967		
MVU Estimate of Median	0.138031		
MVU Estimate of Mean	0.262919		
MVU Estimate of Standard Deviation	0.26421		
MVU Estimate of SE of Mean	0.151912		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Indeno(1,2,3-cd)pyrene		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.079		
Maximum	0.74		
Mean	0.27975		
Standard Deviation	0.308761		
Variance	0.095334		
Coefficient of Variation	1.103705		
Skewness	1.924171		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.732136		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.643064		
Gamma Statistics			
k hat	1.440403		
k star (bias corrected)	0.526767		
Theta hat	0.194216		
Theta star	0.531069		
nu hat	11.52323		
nu star	4.21414		
5% Approximate Chi Square Value	0.807765		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.524211		
Anderson-Darling 5% Critical Value	0.662875		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.376472		
Kolmogrov-Smirnov 5% Critical Value	0.399843		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.459465		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-2.538307		
Maximum of log data	-0.301105		
Mean of log data	-1.659527		
Standard Deviation of log data	0.955948		
Variance of log data	0.913836		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.887458		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.30041		
MLE Standard Deviation	0.367173		
MLE Coefficient of Variation	1.22224		
MLE Skewness	5.492588		
MLE Median	0.190229		
MLE 80% Quantile	0.426667		
MLE 90% Quantile	0.649772		
MLE 95% Quantile	0.916684		
MLE 99% Quantile	1.757703		
MVU Estimate of Median	0.169232		
MVU Estimate of Mean	0.262458		
MVU Estimate of Standard Deviation	0.235656		
MVU Estimate of SE of Mean	0.117228		
95% H-UCL	34.49066		
95% Chebyshev (MVUE) UCL	0.773441		
97.5% Chebyshev (MVUE) UCL	0.994544		
99% Chebyshev (MVUE) UCL	1.428858		
Non-parametric Statistics			
95% CLT UCL	0.533684		
95% Adjusted-CLT UCL	0.692387		
95% Modified-t UCL	0.667818		
95% Jackknife UCL	0.643064		
95% Chebyshev (Mean, Sd) UCL	0.95268		
97.5% Chebyshev (Mean, Sd) UCL	1.243857		
99% Chebyshev (Mean, Sd) UCL	1.815818		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.459465	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Phenanthrene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.16		
Maximum	0.57		
Mean	0.33375		
Standard Deviation	0.17867		
Variance	0.031923		
Coefficient of Variation	0.53534		
Skewness	0.835401		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.956847		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.543988		
<b>Gamma Statistics</b>			
k hat	4.703433		
k star (bias corrected)	1.342525		
Theta hat	0.070959		
Theta star	0.248599		
nu hat	37.62746		
nu star	10.7402		
5% Approximate Chi Square Value	4.408618		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.209772		
Anderson-Darling 5% Critical Value	0.658986		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.198353		
Kolmogrov-Smirnov 5% Critical Value	0.39597		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.813076		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.832581		
Maximum of log data	-0.562119		
Mean of log data	-1.207419		
Standard Deviation of log data	0.5463		
Variance of log data	0.298444		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.993989		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.347081		
MLE Standard Deviation	0.204678		
MLE Coefficient of Variation	0.589712		
MLE Skewness	1.974214		
MLE Median	0.298968		
MLE 80% Quantile	0.474357		
MLE 90% Quantile	0.60325		
MLE 95% Quantile	0.734361		
MLE 99% Quantile	1.06532		
MVU Estimate of Median	0.287939		
MVU Estimate of Mean	0.333569		
MVU Estimate of Standard Deviation	0.178315		
MVU Estimate of SE of Mean	0.089099		
95% H-UCL	1.733034		
95% Chebyshev (MVUE) UCL	0.721944		
97.5% Chebyshev (MVUE) UCL	0.889994		
99% Chebyshev (MVUE) UCL	1.220096		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.480693		
95% Adjusted-CLT UCL	0.520565		
95% Modified-t UCL	0.550207		
95% Jackknife UCL	0.543988		
95% Chebyshev (Mean, Sd) UCL	0.723152		
97.5% Chebyshev (Mean, Sd) UCL	0.891646		
99% Chebyshev (Mean, Sd) UCL	1.222621		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.543988		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls	
Variable:	Aroclor 1260	
Raw Statistics		
Number of Observations	3	
Number of Missing Data	0	
Number of Valid Observations	3	
Number of Distinct Observations	3	
Minimum	0.011	
Maximum	0.058	
Mean	0.035167	
Standard Deviation	0.023528	
Variance	0.000554	
Coefficient of Variation	0.669053	
Skewness	-0.254193	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs
Normal Statistics		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		
Shapiro-Wilk 5% Critical Value		
5% Normality Test Result		
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs
Gamma Statistics		
k hat	0	
k star (bias corrected)	0	
Theta hat	0	
Theta star	0	
nu hat	0	
nu star	0	
5% Approximate Chi Square Value	N/A	
Adjusted Level of Significance	0	
Adjusted Chi Square Value	0	
Anderson-Darling Test Statistic	0	
Anderson-Darling 5% Critical Value	0	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0	
Kolmogrov-Smirnov 5% Critical Value	0	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs
Lognormal Statistics		
Minimum of log data	-4.50986	
Maximum of log data	-2.847312	
Mean of log data	-3.555872	
Standard Deviation of log data	0.858017	
Variance of log data	0.736193	
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		
Shapiro-Wilk 5% Critical Value		
5% Lognormality Test Result		
MLE Mean	0.041264	
MLE Standard Deviation	0.04304	
MLE Coefficient of Variation	1.043058	
MLE Skewness	4.263992	
MLE Median	0.028556	
MLE 80% Quantile	0.058963	
MLE 90% Quantile	0.086008	
MLE 95% Quantile	0.117134	
MLE 99% Quantile	0.21011	
MVU Estimate of Median	0.025159	
MVU Estimate of Mean	0.036006	
MVU Estimate of Standard Deviation	0.028407	
MVU Estimate of SE of Mean	0.016378	
95% H-UCL	N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
Non-parametric Statistics		
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution		
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!		
Alternative UCL		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	22		
Minimum	0.475		
Maximum	68		
Mean	9.303409		
Standard Deviation	14.71499		
Variance	216.531		
Coefficient of Variation	1.581677		
Skewness	3.334089		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.585975		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	14.7018		
Gamma Statistics			
k hat	0.733173		
k star (bias corrected)	0.663497		
Theta hat	12.68925		
Theta star	14.02177		
nu hat	32.25959		
nu star	29.19389		
5% Approximate Chi Square Value	17.85833		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	17.19672		
Anderson-Darling Test Statistic	0.496439		
Anderson-Darling 5% Critical Value	0.784402		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.134329		
Kolmogrov-Smirnov 5% Critical Value	0.192895		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	15.20874		
95% Adjusted Gamma UCL	15.79387		
Lognormal Statistics			
Minimum of log data	-0.74444		
Maximum of log data	4.219508		
Mean of log data	1.411354		
Standard Deviation of log data	1.338475		
Variance of log data	1.791517		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.973929		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	10.04538		
MLE Standard Deviation	22.45887		
MLE Coefficient of Variation	2.235742		
MLE Skewness	17.88268		
MLE Median	4.101505		
MLE 80% Quantile	12.7097		
MLE 90% Quantile	22.90362		
MLE 95% Quantile	37.08254		
MLE 99% Quantile	92.26344		
MVU Estimate of Median	3.937576		
MVU Estimate of Mean	9.367068		
MVU Estimate of Standard Deviation	16.53954		
MVU Estimate of SE of Mean	3.174436		
95% H-UCL	24.38771		
95% Chebyshev (MVUE) UCL	23.20412		
97.5% Chebyshev (MVUE) UCL	29.19142		
99% Chebyshev (MVUE) UCL	40.95231		
Non-parametric Statistics			
95% CLT UCL	14.46372		
95% Adjusted-CLT UCL	16.84656		
95% Modified-t UCL	15.07348		
95% Jackknife UCL	14.7018		
95% Chebyshev (Mean, Sd) UCL	22.97835		
97.5% Chebyshev (Mean, Sd) UCL	28.89551		
99% Chebyshev (Mean, Sd) UCL	40.51862		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	14.4178		
95% Bootstrap-t UCL	22.34881		
95% Hall's Bootstrap UCL	33.76487		
95% Percentile Bootstrap UCL	14.87045		
95% BCA Bootstrap UCL	18.90341		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	15.20874	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - nt-2.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	25		
Number of Missing Data	0		
Number of Valid Observations	25		
Number of Distinct Observations	23		
Minimum	6.6		
Maximum	3230		
Mean	310.938		
Standard Deviation	728.8697		
Variance	531251		
Coefficient of Variation	2.3441		
Skewness	3.253579		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.46562		
Shapiro-Wilk 5% Critical Value	0.918		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	560.34		
<b>Gamma Statistics</b>			
k hat	0.414386		
k star (bias corrected)	0.391326		
Theta hat	750.3586		
Theta star	794.5749		
nu hat	20.71929		
nu star	19.56631		
5% Approximate Chi Square Value	10.53059		
Adjusted Level of Significance	0.0395		
Adjusted Chi Square Value	10.07911		
Anderson-Darling Test Statistic	2.455074		
Anderson-Darling 5% Critical Value	0.82611		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.258787		
Kolmogrov-Smirnov 5% Critical Value	0.186623		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	577.7366		
95% Adjusted Gamma UCL	603.6159		
<b>Lognormal Statistics</b>			
Minimum of log data	1.88707		
Maximum of log data	8.080237		
Mean of log data	4.160606		
Standard Deviation of log data	1.636549		
Variance of log data	2.678291		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.916902		
Shapiro-Wilk 5% Critical Value	0.918		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	244.6312		
MLE Standard Deviation	900.8343		
MLE Coefficient of Variation	3.682417		
MLE Skewness	60.98155		
MLE Median	64.11038		
MLE 80% Quantile	255.5683		
MLE 90% Quantile	525.0908		
MLE 95% Quantile	946.46		
MLE 99% Quantile	2884.822		
MVU Estimate of Median	60.75987		
MVU Estimate of Mean	219.0568		
MVU Estimate of Standard Deviation	553.6832		
MVU Estimate of SE of Mean	89.98788		
95% H-UCL	768.6737		
95% Chebyshev (MVUE) UCL	611.3048		
97.5% Chebyshev (MVUE) UCL	781.0309		
99% Chebyshev (MVUE) UCL	1114.425		
<b>Non-parametric Statistics</b>			
95% CLT UCL	550.7148		
95% Adjusted-CLT UCL	652.0713		
95% Modified-t UCL	576.1496		
95% Jackknife UCL	560.34		
95% Chebyshev (Mean, Sd) UCL	946.3519		
97.5% Chebyshev (Mean, Sd) UCL	1221.296		
99% Chebyshev (Mean, Sd) UCL	1761.37		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	541.3806		
95% Bootstrap-t UCL	828.0047		
95% Hall's Bootstrap UCL	580.3265		
95% Percentile Bootstrap UCL	566.26		
95% BCA Bootstrap UCL	725.272		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	1761.37	99% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	25		
Number of Missing Data	0		
Number of Valid Observations	25		
Number of Distinct Observations	25		
Minimum	14.1		
Maximum	177		
Mean	72.716		
Standard Deviation	41.04746		
Variance	1684.894		
Coefficient of Variation	0.56449		
Skewness	0.696729		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.953499		
Shapiro-Wilk 5% Critical Value	0.918		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	86.76147		
<b>Gamma Statistics</b>			
k hat	2.890397		
k star (bias corrected)	2.570216		
Theta hat	25.15779		
Theta star	28.29178		
nu hat	144.5199		
nu star	128.5108		
5% Approximate Chi Square Value	103.3207		
Adjusted Level of Significance	0.0395		
Adjusted Chi Square Value	101.7816		
Anderson-Darling Test Statistic	0.289748		
Anderson-Darling 5% Critical Value	0.751832		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.124733		
Kolmogrov-Smirnov 5% Critical Value	0.175964		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	90.44452		
95% Adjusted Gamma UCL	91.81217		
<b>Lognormal Statistics</b>			
Minimum of log data	2.646175		
Maximum of log data	5.17615		
Mean of log data	4.103713		
Standard Deviation of log data	0.664823		
Variance of log data	0.44199		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.945754		
Shapiro-Wilk 5% Critical Value	0.918		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	75.54347		
MLE Standard Deviation	56.31915		
MLE Coefficient of Variation	0.74552		
MLE Skewness	2.650919		
MLE Median	60.56477		
MLE 80% Quantile	106.2175		
MLE 90% Quantile	142.3105		
MLE 95% Quantile	180.792		
MLE 99% Quantile	284.3176		
MVU Estimate of Median	60.03157		
MVU Estimate of Mean	74.75165		
MVU Estimate of Standard Deviation	53.64751		
MVU Estimate of SE of Mean	10.62521		
95% H-UCL	100.7117		
95% Chebyshev (MVUE) UCL	121.0659		
97.5% Chebyshev (MVUE) UCL	141.1061		
99% Chebyshev (MVUE) UCL	180.4711		
<b>Non-parametric Statistics</b>			
95% CLT UCL	86.21941		
95% Adjusted-CLT UCL	87.44175		
95% Modified-t UCL	86.95213		
95% Jackknife UCL	86.76147		
95% Chebyshev (Mean, Sd) UCL	108.5003		
97.5% Chebyshev (Mean, Sd) UCL	123.9843		
99% Chebyshev (Mean, Sd) UCL	154.3994		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	85.65602		
95% Bootstrap-t UCL	88.29066		
95% Hall's Bootstrap UCL	89.19434		
95% Percentile Bootstrap UCL	86.816		
95% BCA Bootstrap UCL	83.124		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	86.76147		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	25		
Number of Missing Data	0		
Number of Valid Observations	25		
Number of Distinct Observations	24		
Minimum	0.46		
Maximum	12.3		
Mean	5.1376		
Standard Deviation	3.307349		
Variance	10.93856		
Coefficient of Variation	0.643754		
Skewness	0.553937		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.951935		
Shapiro-Wilk 5% Critical Value	0.918		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	6.269297		
<b>Gamma Statistics</b>			
k hat	1.870538		
k star (bias corrected)	1.67274		
Theta hat	2.746589		
Theta star	3.071367		
nu hat	93.52691		
nu star	83.63701		
5% Approximate Chi Square Value	63.55568		
Adjusted Level of Significance	0.0395		
Adjusted Chi Square Value	62.36217		
Anderson-Darling Test Statistic	0.386112		
Anderson-Darling 5% Critical Value	0.757785		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.133226		
Kolmogrov-Smirnov 5% Critical Value	0.176979		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	6.760899		
95% Adjusted Gamma UCL	6.890292		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.776529		
Maximum of log data	2.509599		
Mean of log data	1.346074		
Standard Deviation of log data	0.902016		
Variance of log data	0.813632		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.895902		
Shapiro-Wilk 5% Critical Value	0.918		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	5.771256		
MLE Standard Deviation	6.468154		
MLE Coefficient of Variation	1.120753		
MLE Skewness	4.770024		
MLE Median	3.84231		
MLE 80% Quantile	8.234041		
MLE 90% Quantile	12.24556		
MLE 95% Quantile	16.94359		
MLE 99% Quantile	31.31703		
MVU Estimate of Median	3.780252		
MVU Estimate of Mean	5.646064		
MVU Estimate of Standard Deviation	5.854016		
MVU Estimate of SE of Mean	1.136673		
95% H-UCL	8.954377		
95% Chebyshev (MVUE) UCL	10.60071		
97.5% Chebyshev (MVUE) UCL	12.74459		
99% Chebyshev (MVUE) UCL	16.95582		
<b>Non-parametric Statistics</b>			
95% CLT UCL	6.225621		
95% Adjusted-CLT UCL	6.303925		
95% Modified-t UCL	6.281511		
95% Jackknife UCL	6.269297		
95% Chebyshev (Mean, Sd) UCL	8.02088		
97.5% Chebyshev (Mean, Sd) UCL	9.268478		
99% Chebyshev (Mean, Sd) UCL	11.71914		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	6.209401		
95% Bootstrap-t UCL	6.365924		
95% Hall's Bootstrap UCL	6.295363		
95% Percentile Bootstrap UCL	6.2324		
95% BCA Bootstrap UCL	6.6816		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	6.269297	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	25		
Number of Missing Data	0		
Number of Valid Observations	25		
Number of Distinct Observations	25		
Minimum	14.3		
Maximum	2570		
Mean	584.636		
Standard Deviation	734.512		
Variance	539507.9		
Coefficient of Variation	1.256358		
Skewness	1.66196		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.736611		
Shapiro-Wilk 5% Critical Value	0.918		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	835.9687		
Gamma Statistics			
k hat	0.722552		
k star (bias corrected)	0.662512		
Theta hat	809.1268		
Theta star	882.4531		
nu hat	36.12759		
nu star	33.12561		
5% Approximate Chi Square Value	20.96455		
Adjusted Level of Significance	0.0395		
Adjusted Chi Square Value	20.30459		
Anderson-Darling Test Statistic	0.409974		
Anderson-Darling 5% Critical Value	0.786036		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.116568		
Kolmogrov-Smirnov 5% Critical Value	0.181648		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	923.7703		
95% Adjusted Gamma UCL	953.7956		
Lognormal Statistics			
Minimum of log data	2.66026		
Maximum of log data	7.851661		
Mean of log data	5.538257		
Standard Deviation of log data	1.463231		
Variance of log data	2.141044		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.963645		
Shapiro-Wilk 5% Critical Value	0.918		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	741.5766		
MLE Standard Deviation	2032.016		
MLE Coefficient of Variation	2.74013		
MLE Skewness	28.79415		
MLE Median	254.2344		
MLE 80% Quantile	875.4048		
MLE 90% Quantile	1666.545		
MLE 95% Quantile	2822.197		
MLE 99% Quantile	7644.417		
MVU Estimate of Median	243.5604		
MVU Estimate of Mean	684.6171		
MVU Estimate of Standard Deviation	1425.574		
MVU Estimate of SE of Mean	245.916		
95% H-UCL	1906.514		
95% Chebyshev (MVUE) UCL	1756.54		
97.5% Chebyshev (MVUE) UCL	2220.362		
99% Chebyshev (MVUE) UCL	3131.45		
Non-parametric Statistics			
95% CLT UCL	826.2689		
95% Adjusted-CLT UCL	878.4436		
95% Modified-t UCL	844.1068		
95% Jackknife UCL	835.9687		
95% Chebyshev (Mean, Sd) UCL	1224.969		
97.5% Chebyshev (Mean, Sd) UCL	1502.041		
99% Chebyshev (Mean, Sd) UCL	2046.296		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	825.6398		
95% Bootstrap-t UCL	950.2677		
95% Hall's Bootstrap UCL	850.2535		
95% Percentile Bootstrap UCL	833.484		
95% BCA Bootstrap UCL	959.184		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	923.7703	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	25		
Number of Missing Data	0		
Number of Valid Observations	25		
Number of Distinct Observations	25		
Minimum	18.8		
Maximum	2080		
Mean	509.316		
Standard Deviation	493.1409		
Variance	243188		
Coefficient of Variation	0.968242		
Skewness	1.565956		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.855311		
Shapiro-Wilk 5% Critical Value	0.918		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	678.0572		
Gamma Statistics			
k hat	0.969793		
k star (bias corrected)	0.880084		
Theta hat	525.1802		
Theta star	578.7127		
nu hat	48.48964		
nu star	44.00422		
5% Approximate Chi Square Value	29.78843		
Adjusted Level of Significance	0.0395		
Adjusted Chi Square Value	28.99051		
Anderson-Darling Test Statistic	0.238073		
Anderson-Darling 5% Critical Value	0.774325		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.102493		
Kolmogrov-Smirnov 5% Critical Value	0.179779		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	752.3743		
95% Adjusted Gamma UCL	773.0823		
Lognormal Statistics			
Minimum of log data	2.933857		
Maximum of log data	7.640123		
Mean of log data	5.635709		
Standard Deviation of log data	1.309683		
Variance of log data	1.71527		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.929738		
Shapiro-Wilk 5% Critical Value	0.918		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	660.7295		
MLE Standard Deviation	1410.65		
MLE Coefficient of Variation	2.134989		
MLE Skewness	16.13662		
MLE Median	280.2577		
MLE 80% Quantile	847.5855		
MLE 90% Quantile	1508.17		
MLE 95% Quantile	2416.652		
MLE 99% Quantile	5896.019		
MVU Estimate of Median	270.7941		
MVU Estimate of Mean	623.1707		
MVU Estimate of Standard Deviation	1086.505		
MVU Estimate of SE of Mean	195.7716		
95% H-UCL	1447.721		
95% Chebyshev (MVUE) UCL	1476.519		
97.5% Chebyshev (MVUE) UCL	1845.764		
99% Chebyshev (MVUE) UCL	2571.074		
Non-parametric Statistics			
95% CLT UCL	671.5449		
95% Adjusted-CLT UCL	704.5508		
95% Modified-t UCL	683.2054		
95% Jackknife UCL	678.0572		
95% Chebyshev (Mean, Sd) UCL	939.2263		
97.5% Chebyshev (Mean, Sd) UCL	1125.249		
99% Chebyshev (Mean, Sd) UCL	1490.654		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	665.573		
95% Bootstrap-t UCL	732.6123		
95% Hall's Bootstrap UCL	756.8363		
95% Percentile Bootstrap UCL	669.44		
95% BCA Bootstrap UCL	776.344		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	752.3743		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	25		
Number of Missing Data	0		
Number of Valid Observations	25		
Number of Distinct Observations	25		
Minimum	16.8		
Maximum	1240		
Mean	419.804		
Standard Deviation	304.7388		
Variance	92865.75		
Coefficient of Variation	0.725907		
Skewness	0.679586		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.939441		
Shapiro-Wilk 5% Critical Value	0.918		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	524.0784		
Gamma Statistics			
k hat	1.335143		
k star (bias corrected)	1.201593		
Theta hat	314.4262		
Theta star	349.3729		
nu hat	66.75717		
nu star	60.07964		
5% Approximate Chi Square Value	43.25249		
Adjusted Level of Significance	0.0395		
Adjusted Chi Square Value	42.27868		
Anderson-Darling Test Statistic	0.606149		
Anderson-Darling 5% Critical Value	0.765328		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.175996		
Kolmogrov-Smirnov 5% Critical Value	0.17831		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	583.1265		
95% Adjusted Gamma UCL	596.5578		
Lognormal Statistics			
Minimum of log data	2.821379		
Maximum of log data	7.122867		
Mean of log data	5.620697		
Standard Deviation of log data	1.134294		
Variance of log data	1.286622		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.882078		
Shapiro-Wilk 5% Critical Value	0.918		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	525.3201		
MLE Standard Deviation	850.3919		
MLE Coefficient of Variation	1.618807		
MLE Skewness	9.098564		
MLE Median	276.0817		
MLE 80% Quantile	719.945		
MLE 90% Quantile	1185.908		
MLE 95% Quantile	1783.994		
MLE 99% Quantile	3862.477		
MVU Estimate of Median	269.0612		
MVU Estimate of Mean	504.9234		
MVU Estimate of Standard Deviation	711.7224		
MVU Estimate of SE of Mean	133.3693		
95% H-UCL	978.2721		
95% Chebyshev (MVUE) UCL	1086.267		
97.5% Chebyshev (MVUE) UCL	1337.814		
99% Chebyshev (MVUE) UCL	1831.931		
Non-parametric Statistics			
95% CLT UCL	520.0542		
95% Adjusted-CLT UCL	528.9056		
95% Modified-t UCL	525.4591		
95% Jackknife UCL	524.0784		
95% Chebyshev (Mean, Sd) UCL	685.4692		
97.5% Chebyshev (Mean, Sd) UCL	800.4227		
99% Chebyshev (Mean, Sd) UCL	1026.227		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	515.8911		
95% Bootstrap-t UCL	529.8336		
95% Hall's Bootstrap UCL	537.0872		
95% Percentile Bootstrap UCL	519.944		
95% BCA Bootstrap UCL	498.5		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	524.0784	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	25		
Number of Missing Data	0		
Number of Valid Observations	25		
Number of Distinct Observations	25		
Minimum	89.5		
Maximum	1910		
Mean	654.116		
Standard Deviation	564.0053		
Variance	318102		
Coefficient of Variation	0.862241		
Skewness	0.996741		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.851532		
Shapiro-Wilk 5% Critical Value	0.918		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	847.1053		
<b>Gamma Statistics</b>			
k hat	1.401058		
k star (bias corrected)	1.259598		
Theta hat	466.8728		
Theta star	519.3054		
nu hat	70.05291		
nu star	62.9799		
5% Approximate Chi Square Value	45.72102		
Adjusted Level of Significance	0.0395		
Adjusted Chi Square Value	44.71809		
Anderson-Darling Test Statistic	0.713736		
Anderson-Darling 5% Critical Value	0.763806		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.193203		
Kolmogrov-Smirnov 5% Critical Value	0.178062		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	901.0332		
95% Adjusted Gamma UCL	921.2414		
<b>Lognormal Statistics</b>			
Minimum of log data	4.494239		
Maximum of log data	7.554859		
Mean of log data	6.085757		
Standard Deviation of log data	0.949343		
Variance of log data	0.901252		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.933844		
Shapiro-Wilk 5% Critical Value	0.918		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	689.7869		
MLE Standard Deviation	834.2385		
MLE Coefficient of Variation	1.209415		
MLE Skewness	5.397236		
MLE Median	439.5524		
MLE 80% Quantile	980.3911		
MLE 90% Quantile	1488.706		
MLE 95% Quantile	2095.245		
MLE 99% Quantile	3999.515		
MVU Estimate of Median	431.695		
MVU Estimate of Mean	672.7953		
MVU Estimate of Standard Deviation	744.9787		
MVU Estimate of SE of Mean	143.8121		
95% H-UCL	1107.603		
95% Chebyshev (MVUE) UCL	1299.658		
97.5% Chebyshev (MVUE) UCL	1570.902		
99% Chebyshev (MVUE) UCL	2103.708		
<b>Non-parametric Statistics</b>			
95% CLT UCL	839.6572		
95% Adjusted-CLT UCL	863.6846		
95% Modified-t UCL	850.8531		
95% Jackknife UCL	847.1053		
95% Chebyshev (Mean, Sd) UCL	1145.804		
97.5% Chebyshev (Mean, Sd) UCL	1358.558		
99% Chebyshev (Mean, Sd) UCL	1776.472		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	836.7008		
95% Bootstrap-t UCL	877.1611		
95% Hall's Bootstrap UCL	855.1759		
95% Percentile Bootstrap UCL	834.8		
95% BCA Bootstrap UCL	803.756		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	901.0332	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	25		
Number of Missing Data	0		
Number of Valid Observations	25		
Number of Distinct Observations	25		
Minimum	0.045		
Maximum	27.5		
Mean	2.4664		
Standard Deviation	5.735581		
Variance	32.89689		
Coefficient of Variation	2.325487		
Skewness	3.915106		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.433402		
Shapiro-Wilk 5% Critical Value	0.918		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	4.42898		
Gamma Statistics			
k hat	0.527571		
k star (bias corrected)	0.490929		
Theta hat	4.675008		
Theta star	5.023941		
nu hat	26.37856		
nu star	24.54647		
5% Approximate Chi Square Value	14.26324		
Adjusted Level of Significance	0.0395		
Adjusted Chi Square Value	13.72881		
Anderson-Darling Test Statistic	1.831871		
Anderson-Darling 5% Critical Value	0.804333		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.26		
Kolmogrov-Smirnov 5% Critical Value	0.18412		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	4.244576		
95% Adjusted Gamma UCL	4.409806		
Lognormal Statistics			
Minimum of log data	-3.101093		
Maximum of log data	3.314186		
Mean of log data	-0.291294		
Standard Deviation of log data	1.440051		
Variance of log data	2.073746		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.968416		
Shapiro-Wilk 5% Critical Value	0.918		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	2.107661		
MLE Standard Deviation	5.558221		
MLE Coefficient of Variation	2.637151		
MLE Skewness	26.25169		
MLE Median	0.747296		
MLE 80% Quantile	2.523252		
MLE 90% Quantile	4.754878		
MLE 95% Quantile	7.985196		
MLE 99% Quantile	21.29056		
MVU Estimate of Median	0.716888		
MVU Estimate of Mean	1.952692		
MVU Estimate of Standard Deviation	3.960129		
MVU Estimate of SE of Mean	0.688026		
95% H-UCL	5.283506		
95% Chebyshev (MVUE) UCL	4.951728		
97.5% Chebyshev (MVUE) UCL	6.249413		
99% Chebyshev (MVUE) UCL	8.798464		
Non-parametric Statistics			
95% CLT UCL	4.353238		
95% Adjusted-CLT UCL	5.312995		
95% Modified-t UCL	4.578683		
95% Jackknife UCL	4.42898		
95% Chebyshev (Mean, Sd) UCL	7.466564		
97.5% Chebyshev (Mean, Sd) UCL	9.630138		
99% Chebyshev (Mean, Sd) UCL	13.88006		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	4.311589		
95% Bootstrap-t UCL	11.19828		
95% Hall's Bootstrap UCL	11.62046		
95% Percentile Bootstrap UCL	4.5754		
95% BCA Bootstrap UCL	5.8532		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	5.283506	95% H-UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	25		
Number of Missing Data	0		
Number of Valid Observations	25		
Number of Distinct Observations	24		
Minimum	4.8		
Maximum	79.2		
Mean	26.096		
Standard Deviation	16.74105		
Variance	280.2629		
Coefficient of Variation	0.641518		
Skewness	1.188611		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.904545		
Shapiro-Wilk 5% Critical Value	0.918		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	31.82439		
Gamma Statistics			
k hat	2.331356		
k star (bias corrected)	2.07826		
Theta hat	11.19349		
Theta star	12.55666		
nu hat	116.5678		
nu star	103.913		
5% Approximate Chi Square Value	81.38634		
Adjusted Level of Significance	0.0395		
Adjusted Chi Square Value	80.02749		
Anderson-Darling Test Statistic	0.467542		
Anderson-Darling 5% Critical Value	0.75475		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.127804		
Kolmogrov-Smirnov 5% Critical Value	0.176445		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	33.31903		
95% Adjusted Gamma UCL	33.88477		
Lognormal Statistics			
Minimum of log data	1.568616		
Maximum of log data	4.371976		
Mean of log data	3.032244		
Standard Deviation of log data	0.749271		
Variance of log data	0.561408		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.926983		
Shapiro-Wilk 5% Critical Value	0.918		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	27.46596		
MLE Standard Deviation	23.83594		
MLE Coefficient of Variation	0.867836		
MLE Skewness	3.257108		
MLE Median	20.74372		
MLE 80% Quantile	39.0709		
MLE 90% Quantile	54.32896		
MLE 95% Quantile	71.15034		
MLE 99% Quantile	118.5161		
MVU Estimate of Median	20.51201		
MVU Estimate of Mean	27.08542		
MVU Estimate of Standard Deviation	22.3576		
MVU Estimate of SE of Mean	4.404156		
95% H-UCL	38.50111		
95% Chebyshev (MVUE) UCL	46.28269		
97.5% Chebyshev (MVUE) UCL	54.58937		
99% Chebyshev (MVUE) UCL	70.90622		
Non-parametric Statistics			
95% CLT UCL	31.60332		
95% Adjusted-CLT UCL	32.45379		
95% Modified-t UCL	31.95705		
95% Jackknife UCL	31.82439		
95% Chebyshev (Mean, Sd) UCL	40.69051		
97.5% Chebyshev (Mean, Sd) UCL	47.00557		
99% Chebyshev (Mean, Sd) UCL	59.41028		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	31.5067		
95% Bootstrap-t UCL	32.97148		
95% Hall's Bootstrap UCL	34.1237		
95% Percentile Bootstrap UCL	31.656		
95% BCA Bootstrap UCL	30.516		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	33.31903	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	24		
Number of Missing Data	0		
Number of Valid Observations	24		
Number of Distinct Observations	21		
Minimum	0.115		
Maximum	1.4		
Mean	0.427083		
Standard Deviation	0.296508		
Variance	0.087917		
Coefficient of Variation	0.694263		
Skewness	1.493498		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.855788		
Shapiro-Wilk 5% Critical Value	0.916		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.530815		
<b>Gamma Statistics</b>			
k hat	2.283995		
k star (bias corrected)	2.026273		
Theta hat	0.18699		
Theta star	0.210773		
nu hat	109.6318		
nu star	97.26112		
5% Approximate Chi Square Value	75.50789		
Adjusted Level of Significance	0.0392		
Adjusted Chi Square Value	74.16033		
Anderson-Darling Test Statistic	0.663368		
Anderson-Darling 5% Critical Value	0.753938		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.173772		
Kolmogrov-Smirnov 5% Critical Value	0.179916		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.550123		
95% Adjusted Gamma UCL	0.560119		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.162823		
Maximum of log data	0.336472		
Mean of log data	-1.085383		
Standard Deviation of log data	0.726144		
Variance of log data	0.527285		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.911533		
Shapiro-Wilk 5% Critical Value	0.916		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.439666		
MLE Standard Deviation	0.366357		
MLE Coefficient of Variation	0.833262		
MLE Skewness	3.078341		
MLE Median	0.337772		
MLE 80% Quantile	0.623884		
MLE 90% Quantile	0.858741		
MLE 95% Quantile	1.1153		
MLE 99% Quantile	1.828741		
MVU Estimate of Median	0.334081		
MVU Estimate of Mean	0.43378		
MVU Estimate of Standard Deviation	0.344428		
MVU Estimate of SE of Mean	0.069376		
95% H-UCL	0.612764		
95% Chebyshev (MVUE) UCL	0.736185		
97.5% Chebyshev (MVUE) UCL	0.867036		
99% Chebyshev (MVUE) UCL	1.124067		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.526637		
95% Adjusted-CLT UCL	0.546353		
95% Modified-t UCL	0.53389		
95% Jackknife UCL	0.530815		
95% Chebyshev (Mean, Sd) UCL	0.690904		
97.5% Chebyshev (Mean, Sd) UCL	0.805059		
99% Chebyshev (Mean, Sd) UCL	1.029295		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.523431		
95% Bootstrap-t UCL	0.554872		
95% Hall's Bootstrap UCL	0.593405		
95% Percentile Bootstrap UCL	0.524375		
95% BCA Bootstrap UCL	0.57375		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.550123	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls		
Variable:	Vanadium		
<b>Raw Statistics</b>			
Number of Observations	25		
Number of Missing Data	0		
Number of Valid Observations	25		
Number of Distinct Observations	25		
Minimum	10.3		
Maximum	107		
Mean	52.232		
Standard Deviation	31.32433		
Variance	981.2137		
Coefficient of Variation	0.599715		
Skewness	0.330729		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.915696		
Shapiro-Wilk 5% Critical Value	0.918		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	62.95045		
<b>Gamma Statistics</b>			
k hat	2.485867		
k star (bias corrected)	2.21423		
Theta hat	21.01158		
Theta star	23.58924		
nu hat	124.2934		
nu star	110.7115		
5% Approximate Chi Square Value	87.41965		
Adjusted Level of Significance	0.0395		
Adjusted Chi Square Value	86.00903		
Anderson-Darling Test Statistic	0.554903		
Anderson-Darling 5% Critical Value	0.753944		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.152908		
Kolmogrov-Smirnov 5% Critical Value	0.176312		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	66.14855		
95% Adjusted Gamma UCL	67.23343		
<b>Lognormal Statistics</b>			
Minimum of log data	2.332144		
Maximum of log data	4.672829		
Mean of log data	3.741277		
Standard Deviation of log data	0.71539		
Variance of log data	0.511782		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.926133		
Shapiro-Wilk 5% Critical Value	0.918		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	54.44373		
MLE Standard Deviation	44.50628		
MLE Coefficient of Variation	0.817473		
MLE Skewness	2.998705		
MLE Median	42.15177		
MLE 80% Quantile	77.15226		
MLE 90% Quantile	105.6944		
MLE 95% Quantile	136.7415		
MLE 99% Quantile	222.577		
MVU Estimate of Median	41.72235		
MVU Estimate of Mean	53.76721		
MVU Estimate of Standard Deviation	42.01938		
MVU Estimate of SE of Mean	8.296905		
95% H-UCL	74.76073		
95% Chebyshev (MVUE) UCL	89.93258		
97.5% Chebyshev (MVUE) UCL	105.5814		
99% Chebyshev (MVUE) UCL	136.3204		
<b>Non-parametric Statistics</b>			
95% CLT UCL	62.53679		
95% Adjusted-CLT UCL	62.97957		
95% Modified-t UCL	63.01951		
95% Jackknife UCL	62.95045		
95% Chebyshev (Mean, Sd) UCL	79.53992		
97.5% Chebyshev (Mean, Sd) UCL	91.35608		
99% Chebyshev (Mean, Sd) UCL	114.5666		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	62.15123		
95% Bootstrap-t UCL	63.58881		
95% Hall's Bootstrap UCL	62.54478		
95% Percentile Bootstrap UCL	62.02		
95% BCA Bootstrap UCL	60.332		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	66.14855	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-2.xls	
Variable:	Zinc	
Raw Statistics		
Number of Observations	25	
Number of Missing Data	0	
Number of Valid Observations	25	
Number of Distinct Observations	25	
Minimum	80.1	
Maximum	2640	
Mean	1033.324	
Standard Deviation	696.6819	
Variance	485365.7	
Coefficient of Variation	0.674214	
Skewness	0.684253	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.940294	
Shapiro-Wilk 5% Critical Value	0.918	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	1271.712	
Gamma Statistics		
k hat	1.786355	
k star (bias corrected)	1.598659	
Theta hat	578.4539	
Theta star	646.3692	
nu hat	89.31775	
nu star	79.93295	
5% Approximate Chi Square Value	60.32945	
Adjusted Level of Significance	0.0395	
Adjusted Chi Square Value	59.16822	
Anderson-Darling Test Statistic	0.309379	
Anderson-Darling 5% Critical Value	0.758634	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.09943	
Kolmogrov-Smirnov 5% Critical Value	0.17714	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1369.093	
95% Adjusted Gamma UCL	1395.963	
Lognormal Statistics		
Minimum of log data	4.383276	
Maximum of log data	7.878534	
Mean of log data	6.635245	
Standard Deviation of log data	0.92463	
Variance of log data	0.854941	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.898686	
Shapiro-Wilk 5% Critical Value	0.918	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1167.612	
MLE Standard Deviation	1357.262	
MLE Coefficient of Variation	1.162426	
MLE Skewness	5.05799	
MLE Median	761.4657	
MLE 80% Quantile	1663.298	
MLE 90% Quantile	2498.372	
MLE 95% Quantile	3485.133	
MLE 99% Quantile	6541.584	
MVU Estimate of Median	748.5478	
MVU Estimate of Mean	1140.681	
MVU Estimate of Standard Deviation	1220.733	
MVU Estimate of SE of Mean	236.3909	
95% H-UCL	1841.238	
95% Chebyshev (MVUE) UCL	2171.085	
97.5% Chebyshev (MVUE) UCL	2616.941	
99% Chebyshev (MVUE) UCL	3492.74	
Non-parametric Statistics		
95% CLT UCL	1262.512	
95% Adjusted-CLT UCL	1282.887	
95% Modified-t UCL	1274.89	
95% Jackknife UCL	1271.712	
95% Chebyshev (Mean, Sd) UCL	1640.677	
97.5% Chebyshev (Mean, Sd) UCL	1903.479	
99% Chebyshev (Mean, Sd) UCL	2419.704	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1251.964	
95% Bootstrap-t UCL	1301.639	
95% Hall's Bootstrap UCL	1307.222	
95% Percentile Bootstrap UCL	1268.32	
95% BCA Bootstrap UCL	1394.76	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	1271.712	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Trichloroethene		
Raw Statistics			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.042		
Maximum	0.053		
Mean	0.0475		
Standard Deviation	0.007778		
Variance	6.05E-05		
Coefficient of Variation	0.163751		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-3.170086		
Maximum of log data	-2.937463		
Mean of log data	-3.053775		
Standard Deviation of log data	0.164489		
Variance of log data	0.027057		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	1.7E+269		
MLE Coefficient of Variation	1.7E+269		
MLE Skewness	0		
MLE Median	1.7E+269		
MLE 80% Quantile	1.7E-305		
MLE 90% Quantile	-5E+138		
MLE 95% Quantile	2.6E-308		
MLE 99% Quantile	2.6E-308		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.0475		
MVU Estimate of Standard Deviation	0.007778		
MVU Estimate of SE of Mean	0.0055		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls	
Variable:		Benzo(a)anthracene	
Raw Statistics			
Number of Observations		2	
Number of Missing Data		0	
Number of Valid Observations		2	
Number of Distinct Observations		2	
Minimum		0.13	
Maximum		0.56	
Mean		0.345	
Standard Deviation		0.304056	
Variance		0.09245	
Coefficient of Variation		0.881321	
Skewness		N/A	Too few observations to calculate
Too Few Distinct Observations?		YES	Too Few Observations To Calculate UCLs
Normal Statistics			
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL		N/A	Too Few Observations To Calculate UCLs
Gamma Statistics			
k hat		0	
k star (bias corrected)		0	
Theta hat		0	
Theta star		0	
nu hat		0	
nu star		0	
5% Approximate Chi Square Value		N/A	
Adjusted Level of Significance		0	
Adjusted Chi Square Value		0	
Anderson-Darling Test Statistic		0	
Anderson-Darling 5% Critical Value		0	
Anderson-Darling 5% Gamma Test Result		NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic		0	
Kolmogrov-Smirnov 5% Critical Value		0	
Kolmogrov-Smirnov 5% Gamma Test Result		NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result		NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A	Too Few Observations To Calculate UCLs
Lognormal Statistics			
Minimum of log data		-2.040221	
Maximum of log data		-0.579818	
Mean of log data		-1.31002	
Standard Deviation of log data		1.03266	
Variance of log data		1.066387	
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean		0	
MLE Standard Deviation		0	
MLE Coefficient of Variation		2.5E-304	
MLE Skewness		1.7E+269	
MLE Median		2.2E-307	
MLE 80% Quantile		4E+129	
MLE 90% Quantile		8.6E-174	
MLE 95% Quantile		0	
MLE 99% Quantile		1.2E-306	
MVU Estimate of Median		0	
MVU Estimate of Mean		0.345	
MVU Estimate of Standard Deviation		0.304056	
MVU Estimate of SE of Mean		0.215	
95% H-UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
Non-parametric Statistics			
95% CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
Recommendations			
Human Inspection Recommended?		YES	
Appropriate Distribution			
1st Recommended UCL		N/A	Too Few Observations To Calculate UCLs
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Benzo(a)pyrene		
Raw Statistics			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.16		
Maximum	1		
Mean	0.58		
Standard Deviation	0.59397		
Variance	0.3528		
Coefficient of Variation	1.024086		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-1.832581		
Maximum of log data	0		
Mean of log data	-0.916291		
Standard Deviation of log data	1.295831		
Variance of log data	1.679177		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	3.6E-305		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	-3.2E-241		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.58		
MVU Estimate of Standard Deviation	0.59397		
MVU Estimate of SE of Mean	0.42		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Benzo(b)fluoranthene		
Raw Statistics			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.29		
Maximum	1.5		
Mean	0.895		
Standard Deviation	0.855599		
Variance	0.73205		
Coefficient of Variation	0.955977		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-1.237874		
Maximum of log data	0.405465		
Mean of log data	-0.416205		
Standard Deviation of log data	1.162016		
Variance of log data	1.350282		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	1.8E-306		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	4E-270		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.895		
MVU Estimate of Standard Deviation	0.855599		
MVU Estimate of SE of Mean	0.605		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Benzo(k)fluoranthene		
Raw Statistics			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.2		
Maximum	0.72		
Mean	0.46		
Standard Deviation	0.367696		
Variance	0.1352		
Coefficient of Variation	0.799338		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-1.609438		
Maximum of log data	-0.328504		
Mean of log data	-0.968971		
Standard Deviation of log data	0.905757		
Variance of log data	0.820396		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	2.8E-306		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	7.7E-304		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.46		
MVU Estimate of Standard Deviation	0.367696		
MVU Estimate of SE of Mean	0.26		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Dibenz(a,h)anthracene		
<b>Raw Statistics</b>			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.046		
Maximum	0.32		
Mean	0.183		
Standard Deviation	0.193747		
Variance	0.037538		
Coefficient of Variation	1.058728		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-3.079114		
Maximum of log data	-1.139434		
Mean of log data	-2.109274		
Standard Deviation of log data	1.371561		
Variance of log data	1.881178		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	2.1E-305		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	-2.4E-159		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.183		
MVU Estimate of Standard Deviation	0.193747		
MVU Estimate of SE of Mean	0.137		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls	
Variable:		Indeno(1,2,3-cd)pyrene	
<b>Raw Statistics</b>			
Number of Observations		2	
Number of Missing Data		0	
Number of Valid Observations		2	
Number of Distinct Observations		2	
Minimum		0.14	
Maximum		0.74	
Mean		0.44	
Standard Deviation		0.424264	
Variance		0.18	
Coefficient of Variation		0.964237	
Skewness		N/A	Too few observations to calculate
Too Few Distinct Observations?		YES	Too Few Observations To Calculate UCLs
<b>Normal Statistics</b>			
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL		N/A	Too Few Observations To Calculate UCLs
<b>Gamma Statistics</b>			
k hat		0	
k star (bias corrected)		0	
Theta hat		0	
Theta star		0	
nu hat		0	
nu star		0	
5% Approximate Chi Square Value		N/A	
Adjusted Level of Significance		0	
Adjusted Chi Square Value		0	
Anderson-Darling Test Statistic		0	
Anderson-Darling 5% Critical Value		0	
Anderson-Darling 5% Gamma Test Result		NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic		0	
Kolmogrov-Smirnov 5% Critical Value		0	
Kolmogrov-Smirnov 5% Gamma Test Result		NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result		NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A	Too Few Observations To Calculate UCLs
<b>Lognormal Statistics</b>			
Minimum of log data		-1.966113	
Maximum of log data		-0.301105	
Mean of log data		-1.133609	
Standard Deviation of log data		1.177338	
Variance of log data		1.386125	
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean		0	
MLE Standard Deviation		0	
MLE Coefficient of Variation		4.1E-306	
MLE Skewness		1.7E+269	
MLE Median		2.2E-307	
MLE 80% Quantile		4E+129	
MLE 90% Quantile		4E-270	
MLE 95% Quantile		0	
MLE 99% Quantile		1.2E-306	
MVU Estimate of Median		0	
MVU Estimate of Mean		0.44	
MVU Estimate of Standard Deviation		0.424264	
MVU Estimate of SE of Mean		0.3	
95% H-UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
<b>Non-parametric Statistics</b>			
95% CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
<b>Recommendations</b>			
Human Inspection Recommended?		YES	
Appropriate Distribution			
1st Recommended UCL		N/A	Too Few Observations To Calculate UCLs
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Phenanthrene		
Raw Statistics			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.16		
Maximum	0.57		
Mean	0.365		
Standard Deviation	0.289914		
Variance	0.08405		
Coefficient of Variation	0.794284		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
Normal Statistics			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
Gamma Statistics			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
Lognormal Statistics			
Minimum of log data	-1.832581		
Maximum of log data	-0.562119		
Mean of log data	-1.19735		
Standard Deviation of log data	0.898353		
Variance of log data	0.807038		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	2.6E-305		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	-2.4E-159		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.365		
MVU Estimate of Standard Deviation	0.289914		
MVU Estimate of SE of Mean	0.205		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
Non-parametric Statistics			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Aroclor 1260		
<b>Raw Statistics</b>			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.011		
Maximum	0.058		
Mean	0.0345		
Standard Deviation	0.033234		
Variance	0.001105		
Coefficient of Variation	0.963305		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-4.50986		
Maximum of log data	-2.847312		
Mean of log data	-3.678586		
Standard Deviation of log data	1.175599		
Variance of log data	1.382032		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	3.4E-306		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	4E-270		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.0345		
MVU Estimate of Standard Deviation	0.033234		
MVU Estimate of SE of Mean	0.0235		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	20		
Number of Missing Data	0		
Number of Valid Observations	20		
Number of Distinct Observations	20		
Minimum	0.5		
Maximum	68		
Mean	9.09		
Standard Deviation	15.03816		
Variance	226.1462		
Coefficient of Variation	1.654363		
Skewness	3.507928		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.545597		
Shapiro-Wilk 5% Critical Value	0.905		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	14.90444		
Gamma Statistics			
k hat	0.771561		
k star (bias corrected)	0.68916		
Theta hat	11.78131		
Theta star	13.18997		
nu hat	30.86243		
nu star	27.5664		
5% Approximate Chi Square Value	16.58897		
Adjusted Level of Significance	0.038		
Adjusted Chi Square Value	15.91665		
Anderson-Darling Test Statistic	0.599746		
Anderson-Darling 5% Critical Value	0.778512		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.139957		
Kolmogrov-Smirnov 5% Critical Value	0.201187		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	15.10513		
95% Adjusted Gamma UCL	15.74318		
Lognormal Statistics			
Minimum of log data	-0.693147		
Maximum of log data	4.219508		
Mean of log data	1.434258		
Standard Deviation of log data	1.258272		
Variance of log data	1.583247		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.977066		
Shapiro-Wilk 5% Critical Value	0.905		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	9.261648		
MLE Standard Deviation	18.22156		
MLE Coefficient of Variation	1.967421		
MLE Skewness	13.51765		
MLE Median	4.196532		
MLE 80% Quantile	12.15205		
MLE 90% Quantile	21.13937		
MLE 95% Quantile	33.25201		
MLE 99% Quantile	78.33527		
MVU Estimate of Median	4.03337		
MVU Estimate of Mean	8.683966		
MVU Estimate of Standard Deviation	13.7823		
MVU Estimate of SE of Mean	2.838917		
95% H-UCL	21.86465		
95% Chebyshev (MVUE) UCL	21.05852		
97.5% Chebyshev (MVUE) UCL	26.41299		
99% Chebyshev (MVUE) UCL	36.93083		
Non-parametric Statistics			
95% CLT UCL	14.62104		
95% Adjusted-CLT UCL	17.4394		
95% Modified-t UCL	15.34405		
95% Jackknife UCL	14.90444		
95% Chebyshev (Mean, Sd) UCL	23.74738		
97.5% Chebyshev (Mean, Sd) UCL	30.08965		
99% Chebyshev (Mean, Sd) UCL	42.54779		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	14.51955		
95% Bootstrap-t UCL	25.72979		
95% Hall's Bootstrap UCL	38.06299		
95% Percentile Bootstrap UCL	15.4225		
95% BCA Bootstrap UCL	19.9375		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	15.10513	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	20		
Minimum	6.6		
Maximum	3230		
Mean	277.0023		
Standard Deviation	726.8898		
Variance	528368.8		
Coefficient of Variation	2.624129		
Skewness	3.698819		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.407514		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	543.6716		
Gamma Statistics			
k hat	0.408531		
k star (bias corrected)	0.383126		
Theta hat	678.044		
Theta star	723.0064		
nu hat	17.97538		
nu star	16.85753		
5% Approximate Chi Square Value	8.569209		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	8.129519		
Anderson-Darling Test Statistic	2.321221		
Anderson-Darling 5% Critical Value	0.824076		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.264859		
Kolmogrov-Smirnov 5% Critical Value	0.19828		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	544.9247		
95% Adjusted Gamma UCL	574.3972		
Lognormal Statistics			
Minimum of log data	1.88707		
Maximum of log data	8.080237		
Mean of log data	4.018747		
Standard Deviation of log data	1.592563		
Variance of log data	2.536256		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.91565		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	197.7246		
MLE Standard Deviation	674.3622		
MLE Coefficient of Variation	3.410614		
MLE Skewness	49.90507		
MLE Median	55.63137		
MLE 80% Quantile	213.6764		
MLE 90% Quantile	430.6046		
MLE 95% Quantile	763.958		
MLE 99% Quantile	2259.837		
MVU Estimate of Median	52.50769		
MVU Estimate of Mean	176.3678		
MVU Estimate of Standard Deviation	411.4614		
MVU Estimate of SE of Mean	73.33706		
95% H-UCL	652.2779		
95% Chebyshev (MVUE) UCL	496.0366		
97.5% Chebyshev (MVUE) UCL	634.3576		
99% Chebyshev (MVUE) UCL	906.0624		
Non-parametric Statistics			
95% CLT UCL	531.9109		
95% Adjusted-CLT UCL	662.4947		
95% Modified-t UCL	564.0401		
95% Jackknife UCL	543.6716		
95% Chebyshev (Mean, Sd) UCL	952.5158		
97.5% Chebyshev (Mean, Sd) UCL	1244.811		
99% Chebyshev (Mean, Sd) UCL	1818.968		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	536.659		
95% Bootstrap-t UCL	2147.585		
95% Hall's Bootstrap UCL	1662.042		
95% Percentile Bootstrap UCL	564.375		
95% BCA Bootstrap UCL	770.3045		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	496.0366	95% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	22		
Minimum	14.1		
Maximum	177		
Mean	78.6		
Standard Deviation	40.13678		
Variance	1610.961		
Coefficient of Variation	0.510646		
Skewness	0.596288		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.965604		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	93.32472		
<b>Gamma Statistics</b>			
k hat	3.358824		
k star (bias corrected)	2.931105		
Theta hat	23.40105		
Theta star	26.81582		
nu hat	147.7882		
nu star	128.9686		
5% Approximate Chi Square Value	103.7315		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	102.043		
Anderson-Darling Test Statistic	0.358273		
Anderson-Darling 5% Critical Value	0.748408		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.136943		
Kolmogrov-Smirnov 5% Critical Value	0.18651		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	97.72281		
95% Adjusted Gamma UCL	99.33986		
<b>Lognormal Statistics</b>			
Minimum of log data	2.646175		
Maximum of log data	5.17615		
Mean of log data	4.208186		
Standard Deviation of log data	0.629215		
Variance of log data	0.395911		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.920169		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	81.95269		
MLE Standard Deviation	57.11684		
MLE Coefficient of Variation	0.696949		
MLE Skewness	2.429381		
MLE Median	67.23449		
MLE 80% Quantile	114.4197		
MLE 90% Quantile	150.9166		
MLE 95% Quantile	189.2833		
MLE 99% Quantile	290.5397		
MVU Estimate of Median	66.632		
MVU Estimate of Mean	81.09507		
MVU Estimate of Standard Deviation	54.43297		
MVU Estimate of SE of Mean	11.51788		
95% H-UCL	109.448		
95% Chebyshev (MVUE) UCL	131.3004		
97.5% Chebyshev (MVUE) UCL	153.0242		
99% Chebyshev (MVUE) UCL	195.6965		
<b>Non-parametric Statistics</b>			
95% CLT UCL	92.67532		
95% Adjusted-CLT UCL	93.83773		
95% Modified-t UCL	93.50603		
95% Jackknife UCL	93.32472		
95% Chebyshev (Mean, Sd) UCL	115.8999		
97.5% Chebyshev (Mean, Sd) UCL	132.0396		
99% Chebyshev (Mean, Sd) UCL	163.743		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	92.38024		
95% Bootstrap-t UCL	94.60415		
95% Hall's Bootstrap UCL	94.75241		
95% Percentile Bootstrap UCL	92.86818		
95% BCA Bootstrap UCL	89.72273		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	93.32472	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	22		
Minimum	0.46		
Maximum	12.3		
Mean	5.506364		
Standard Deviation	3.329435		
Variance	11.08514		
Coefficient of Variation	0.604652		
Skewness	0.395083		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.963215		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	6.727812		
<b>Gamma Statistics</b>			
k hat	1.934814		
k star (bias corrected)	1.701279		
Theta hat	2.84594		
Theta star	3.236603		
nu hat	85.1318		
nu star	74.85626		
5% Approximate Chi Square Value	55.92612		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	54.70477		
Anderson-Darling Test Statistic	0.577031		
Anderson-Darling 5% Critical Value	0.756471		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.136497		
Kolmogrov-Smirnov 5% Critical Value	0.187957		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	7.370183		
95% Adjusted Gamma UCL	7.534732		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.776529		
Maximum of log data	2.509599		
Mean of log data	1.425755		
Standard Deviation of log data	0.916259		
Variance of log data	0.839531		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.849157		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	6.331392		
MLE Standard Deviation	7.261199		
MLE Coefficient of Variation	1.146857		
MLE Skewness	4.949008		
MLE Median	4.160997		
MLE 80% Quantile	9.024957		
MLE 90% Quantile	13.50618		
MLE 95% Quantile	18.78392		
MLE 99% Quantile	35.05693		
MVU Estimate of Median	4.082292		
MVU Estimate of Mean	6.170266		
MVU Estimate of Standard Deviation	6.468193		
MVU Estimate of SE of Mean	1.338852		
95% H-UCL	10.31379		
95% Chebyshev (MVUE) UCL	12.00619		
97.5% Chebyshev (MVUE) UCL	14.5314		
99% Chebyshev (MVUE) UCL	19.49168		
<b>Non-parametric Statistics</b>			
95% CLT UCL	6.673943		
95% Adjusted-CLT UCL	6.737831		
95% Modified-t UCL	6.737777		
95% Jackknife UCL	6.727812		
95% Chebyshev (Mean, Sd) UCL	8.600476		
97.5% Chebyshev (Mean, Sd) UCL	9.9393		
99% Chebyshev (Mean, Sd) UCL	12.56916		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	6.646701		
95% Bootstrap-t UCL	6.746376		
95% Hall's Bootstrap UCL	6.813857		
95% Percentile Bootstrap UCL	6.661364		
95% BCA Bootstrap UCL	7.092727		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	6.727812	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	22		
Minimum	14.3		
Maximum	2570		
Mean	631.8545		
Standard Deviation	768.8219		
Variance	591087.1		
Coefficient of Variation	1.21677		
Skewness	1.501041		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.756563		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	913.9073		
Gamma Statistics			
k hat	0.718796		
k star (bias corrected)	0.651082		
Theta hat	879.0455		
Theta star	970.4692		
nu hat	31.62703		
nu star	28.64759		
5% Approximate Chi Square Value	17.43108		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	16.77819		
Anderson-Darling Test Statistic	0.371851		
Anderson-Darling 5% Critical Value	0.785626		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.120324		
Kolmogrov-Smirnov 5% Critical Value	0.193078		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1038.438		
95% Adjusted Gamma UCL	1078.847		
Lognormal Statistics			
Minimum of log data	2.66026		
Maximum of log data	7.851661		
Mean of log data	5.610974		
Standard Deviation of log data	1.49994		
Variance of log data	2.249819		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.955761		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	842.0867		
MLE Standard Deviation	2453.063		
MLE Coefficient of Variation	2.913077		
MLE Skewness	33.45965		
MLE Median	273.4103		
MLE 80% Quantile	971.0933		
MLE 90% Quantile	1878.814		
MLE 95% Quantile	3223.987		
MLE 99% Quantile	8953.798		
MVU Estimate of Median	259.7519		
MVU Estimate of Mean	764.803		
MVU Estimate of Standard Deviation	1615.163		
MVU Estimate of SE of Mean	296.4976		
95% H-UCL	2469.888		
95% Chebyshev (MVUE) UCL	2057.206		
97.5% Chebyshev (MVUE) UCL	2616.43		
99% Chebyshev (MVUE) UCL	3714.917		
Non-parametric Statistics			
95% CLT UCL	901.4681		
95% Adjusted-CLT UCL	957.5181		
95% Modified-t UCL	922.65		
95% Jackknife UCL	913.9073		
95% Chebyshev (Mean, Sd) UCL	1346.336		
97.5% Chebyshev (Mean, Sd) UCL	1655.493		
99% Chebyshev (Mean, Sd) UCL	2262.772		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	903.6521		
95% Bootstrap-t UCL	1019.834		
95% Hall's Bootstrap UCL	928.6304		
95% Percentile Bootstrap UCL	911.3045		
95% BCA Bootstrap UCL	1015.677		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1038.438	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	22		
Minimum	18.8		
Maximum	2080		
Mean	555.3545		
Standard Deviation	505.7036		
Variance	255736.1		
Coefficient of Variation	0.910596		
Skewness	1.453302		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.873043		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	740.8788		
Gamma Statistics			
k hat	1.039228		
k star (bias corrected)	0.927818		
Theta hat	534.3912		
Theta star	598.5595		
nu hat	45.72605		
nu star	40.82401		
5% Approximate Chi Square Value	27.17935		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	26.34816		
Anderson-Darling Test Statistic	0.290633		
Anderson-Darling 5% Critical Value	0.769849		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.126723		
Kolmogrov-Smirnov 5% Critical Value	0.190577		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	834.1553		
95% Adjusted Gamma UCL	860.47		
Lognormal Statistics			
Minimum of log data	2.933857		
Maximum of log data	7.640123		
Mean of log data	5.766654		
Standard Deviation of log data	1.295446		
Variance of log data	1.678181		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.905515		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	739.3301		
MLE Standard Deviation	1543.024		
MLE Coefficient of Variation	2.087057		
MLE Skewness	15.35199		
MLE Median	319.467		
MLE 80% Quantile	954.613		
MLE 90% Quantile	1688.005		
MLE 95% Quantile	2690.987		
MLE 99% Quantile	6501.981		
MVU Estimate of Median	307.4922		
MVU Estimate of Mean	693.5725		
MVU Estimate of Standard Deviation	1165.957		
MVU Estimate of SE of Mean	226.1164		
95% H-UCL	1712.787		
95% Chebyshev (MVUE) UCL	1679.191		
97.5% Chebyshev (MVUE) UCL	2105.669		
99% Chebyshev (MVUE) UCL	2943.402		
Non-parametric Statistics			
95% CLT UCL	732.6967		
95% Adjusted-CLT UCL	768.3919		
95% Modified-t UCL	746.4465		
95% Jackknife UCL	740.8788		
95% Chebyshev (Mean, Sd) UCL	1025.315		
97.5% Chebyshev (Mean, Sd) UCL	1228.668		
99% Chebyshev (Mean, Sd) UCL	1628.114		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	730.4487		
95% Bootstrap-t UCL	793.5888		
95% Hall's Bootstrap UCL	812.9711		
95% Percentile Bootstrap UCL	729.2727		
95% BCA Bootstrap UCL	828.7182		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	834.1553	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	22		
Minimum	23.9		
Maximum	1240		
Mean	465.5182		
Standard Deviation	295.0337		
Variance	87044.9		
Coefficient of Variation	0.633775		
Skewness	0.615618		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.952464		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	573.7553		
Gamma Statistics			
k hat	1.837464		
k star (bias corrected)	1.617204		
Theta hat	253.3482		
Theta star	287.8538		
nu hat	80.84842		
nu star	71.15697		
5% Approximate Chi Square Value	52.73209		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	51.54811		
Anderson-Darling Test Statistic	0.587405		
Anderson-Darling 5% Critical Value	0.756966		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.182581		
Kolmogrov-Smirnov 5% Critical Value	0.188088		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	628.1727		
95% Adjusted Gamma UCL	642.6009		
Lognormal Statistics			
Minimum of log data	3.173878		
Maximum of log data	7.122867		
Mean of log data	5.847005		
Standard Deviation of log data	0.938218		
Variance of log data	0.880253		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.877502		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	537.6087		
MLE Standard Deviation	638.7164		
MLE Coefficient of Variation	1.188069		
MLE Skewness	5.241178		
MLE Median	346.1959		
MLE 80% Quantile	764.9411		
MLE 90% Quantile	1155.877		
MLE 95% Quantile	1620.31		
MLE 99% Quantile	3069.59		
MVU Estimate of Median	339.3329		
MVU Estimate of Mean	523.1018		
MVU Estimate of Standard Deviation	565.0512		
MVU Estimate of SE of Mean	116.6615		
95% H-UCL	891.1977		
95% Chebyshev (MVUE) UCL	1031.617		
97.5% Chebyshev (MVUE) UCL	1251.653		
99% Chebyshev (MVUE) UCL	1683.869		
Non-parametric Statistics			
95% CLT UCL	568.9818		
95% Adjusted-CLT UCL	577.8033		
95% Modified-t UCL	575.1313		
95% Jackknife UCL	573.7553		
95% Chebyshev (Mean, Sd) UCL	739.699		
97.5% Chebyshev (Mean, Sd) UCL	858.3373		
99% Chebyshev (Mean, Sd) UCL	1091.379		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	566.3706		
95% Bootstrap-t UCL	581.6353		
95% Hall's Bootstrap UCL	592.4393		
95% Percentile Bootstrap UCL	567.45		
95% BCA Bootstrap UCL	549.0864		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	573.7553	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	22		
Minimum	89.5		
Maximum	1910		
Mean	705.6318		
Standard Deviation	582.635		
Variance	339463.5		
Coefficient of Variation	0.825693		
Skewness	0.801541		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.879198		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	919.3794		
Gamma Statistics			
k hat	1.378871		
k star (bias corrected)	1.221147		
Theta hat	511.7459		
Theta star	577.8437		
nu hat	60.67034		
nu star	53.73045		
5% Approximate Chi Square Value	37.88667		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	36.89338		
Anderson-Darling Test Statistic	0.610451		
Anderson-Darling 5% Critical Value	0.761616		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.194621		
Kolmogrov-Smirnov 5% Critical Value	0.189075		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	1000.719		
95% Adjusted Gamma UCL	1027.662		
Lognormal Statistics			
Minimum of log data	4.494239		
Maximum of log data	7.554859		
Mean of log data	6.154556		
Standard Deviation of log data	0.988621		
Variance of log data	0.977372		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.924952		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	767.5791		
MLE Standard Deviation	988.2004		
MLE Coefficient of Variation	1.287425		
MLE Skewness	5.996133		
MLE Median	470.8576		
MLE 80% Quantile	1085.657		
MLE 90% Quantile	1677.289		
MLE 95% Quantile	2394.279		
MLE 99% Quantile	4694.226		
MVU Estimate of Median	460.5038		
MVU Estimate of Mean	743.9767		
MVU Estimate of Standard Deviation	859.5688		
MVU Estimate of SE of Mean	176.3363		
95% H-UCL	1326.204		
95% Chebyshev (MVUE) UCL	1512.609		
97.5% Chebyshev (MVUE) UCL	1845.197		
99% Chebyshev (MVUE) UCL	2498.501		
Non-parametric Statistics			
95% CLT UCL	909.9526		
95% Adjusted-CLT UCL	932.6345		
95% Modified-t UCL	922.9173		
95% Jackknife UCL	919.3794		
95% Chebyshev (Mean, Sd) UCL	1247.086		
97.5% Chebyshev (Mean, Sd) UCL	1481.374		
99% Chebyshev (Mean, Sd) UCL	1941.587		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	904.6418		
95% Bootstrap-t UCL	951.7335		
95% Hall's Bootstrap UCL	924.6744		
95% Percentile Bootstrap UCL	910.5682		
95% BCA Bootstrap UCL	865.5227		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1000.719		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	22		
Minimum	0.045		
Maximum	27.5		
Mean	2.553182		
Standard Deviation	6.080653		
Variance	36.97434		
Coefficient of Variation	2.381598		
Skewness	3.754853		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.422714		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	4.783952		
Gamma Statistics			
k hat	0.51137		
k star (bias corrected)	0.471941		
Theta hat	4.992825		
Theta star	5.40996		
nu hat	22.50029		
nu star	20.7654		
5% Approximate Chi Square Value	11.41578		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	10.89915		
Anderson-Darling Test Statistic	1.904955		
Anderson-Darling 5% Critical Value	0.803282		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.280961		
Kolmogrov-Smirnov 5% Critical Value	0.195725		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	4.64426		
95% Adjusted Gamma UCL	4.864402		
Lognormal Statistics			
Minimum of log data	-3.101093		
Maximum of log data	3.314186		
Mean of log data	-0.300463		
Standard Deviation of log data	1.445626		
Variance of log data	2.089834		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.956459		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	2.105292		
MLE Standard Deviation	5.603232		
MLE Coefficient of Variation	2.661499		
MLE Skewness	26.83743		
MLE Median	0.740475		
MLE 80% Quantile	2.512029		
MLE 90% Quantile	4.745356		
MLE 95% Quantile	7.985215		
MLE 99% Quantile	21.3716		
MVU Estimate of Median	0.706058		
MVU Estimate of Mean	1.930436		
MVU Estimate of Standard Deviation	3.841804		
MVU Estimate of SE of Mean	0.716593		
95% H-UCL	5.780573		
95% Chebyshev (MVUE) UCL	5.053991		
97.5% Chebyshev (MVUE) UCL	6.405556		
99% Chebyshev (MVUE) UCL	9.060444		
Non-parametric Statistics			
95% CLT UCL	4.685569		
95% Adjusted-CLT UCL	5.794491		
95% Modified-t UCL	4.956921		
95% Jackknife UCL	4.783952		
95% Chebyshev (Mean, Sd) UCL	8.204057		
97.5% Chebyshev (Mean, Sd) UCL	10.64919		
99% Chebyshev (Mean, Sd) UCL	15.4522		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	4.634457		
95% Bootstrap-t UCL	15.46947		
95% Hall's Bootstrap UCL	13.32163		
95% Percentile Bootstrap UCL	4.897273		
95% BCA Bootstrap UCL	7.059545		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	5.053991	95% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	21		
Minimum	4.8		
Maximum	79.2		
Mean	28.30455		
Standard Deviation	16.62083		
Variance	276.2519		
Coefficient of Variation	0.587214		
Skewness	1.126769		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.909605		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	34.40212		
Gamma Statistics			
k hat	2.643433		
k star (bias corrected)	2.313268		
Theta hat	10.70749		
Theta star	12.23574		
nu hat	116.3111		
nu star	101.7838		
5% Approximate Chi Square Value	79.50193		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	78.03243		
Anderson-Darling Test Statistic	0.581394		
Anderson-Darling 5% Critical Value	0.751816		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.154764		
Kolmogrov-Smirnov 5% Critical Value	0.187117		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	36.23741		
95% Adjusted Gamma UCL	36.91983		
Lognormal Statistics			
Minimum of log data	1.568616		
Maximum of log data	4.371976		
Mean of log data	3.142109		
Standard Deviation of log data	0.717816		
Variance of log data	0.51526		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.900704		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	29.95628		
MLE Standard Deviation	24.5947		
MLE Coefficient of Variation	0.82102		
MLE Skewness	3.016487		
MLE Median	23.15265		
MLE 80% Quantile	42.4643		
MLE 90% Quantile	58.23595		
MLE 95% Quantile	75.40824		
MLE 99% Quantile	122.9465		
MVU Estimate of Median	22.88297		
MVU Estimate of Mean	29.53175		
MVU Estimate of Standard Deviation	23.04906		
MVU Estimate of SE of Mean	4.854023		
95% H-UCL	42.29311		
95% Chebyshev (MVUE) UCL	50.68995		
97.5% Chebyshev (MVUE) UCL	59.84511		
99% Chebyshev (MVUE) UCL	77.82867		
Non-parametric Statistics			
95% CLT UCL	34.1332		
95% Adjusted-CLT UCL	35.04279		
95% Modified-t UCL	34.544		
95% Jackknife UCL	34.40212		
95% Chebyshev (Mean, Sd) UCL	43.75062		
97.5% Chebyshev (Mean, Sd) UCL	50.43415		
99% Chebyshev (Mean, Sd) UCL	63.56264		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	33.93297		
95% Bootstrap-t UCL	35.22321		
95% Hall's Bootstrap UCL	37.29757		
95% Percentile Bootstrap UCL	34.25909		
95% BCA Bootstrap UCL	33.10455		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	36.23741	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	20		
Minimum	0.115		
Maximum	0.75		
Mean	0.370455		
Standard Deviation	0.210498		
Variance	0.044309		
Coefficient of Variation	0.568215		
Skewness	0.233897		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.908933		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.447679		
<b>Gamma Statistics</b>			
k hat	2.785489		
k star (bias corrected)	2.435953		
Theta hat	0.132994		
Theta star	0.152078		
nu hat	122.5615		
nu star	107.1819		
5% Approximate Chi Square Value	84.28429		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	82.76917		
Anderson-Darling Test Statistic	0.904348		
Anderson-Darling 5% Critical Value	0.750862		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.200149		
Kolmogrov-Smirnov 5% Critical Value	0.186951		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	0.471096		
95% Adjusted Gamma UCL	0.47972		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.162823		
Maximum of log data	-0.287682		
Mean of log data	-1.183136		
Standard Deviation of log data	0.667784		
Variance of log data	0.445935		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.874242		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.382829		
MLE Standard Deviation	0.286981		
MLE Coefficient of Variation	0.749633		
MLE Skewness	2.670157		
MLE Median	0.306317		
MLE 80% Quantile	0.538559		
MLE 90% Quantile	0.722503		
MLE 95% Quantile	0.918851		
MLE 99% Quantile	1.447922		
MVU Estimate of Median	0.303227		
MVU Estimate of Mean	0.378239		
MVU Estimate of Standard Deviation	0.271614		
MVU Estimate of SE of Mean	0.057365		
95% H-UCL	0.52348		
95% Chebyshev (MVUE) UCL	0.628289		
97.5% Chebyshev (MVUE) UCL	0.736486		
99% Chebyshev (MVUE) UCL	0.949017		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.444273		
95% Adjusted-CLT UCL	0.446664		
95% Modified-t UCL	0.448051		
95% Jackknife UCL	0.447679		
95% Chebyshev (Mean, Sd) UCL	0.566074		
97.5% Chebyshev (Mean, Sd) UCL	0.650719		
99% Chebyshev (Mean, Sd) UCL	0.816988		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.442136		
95% Bootstrap-t UCL	0.449768		
95% Hall's Bootstrap UCL	0.448542		
95% Percentile Bootstrap UCL	0.443636		
95% BCA Bootstrap UCL	0.467045		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.566074	95% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	22		
Number of Missing Data	0		
Number of Valid Observations	22		
Number of Distinct Observations	22		
Minimum	10.3		
Maximum	107		
Mean	56.35		
Standard Deviation	31.04029		
Variance	963.4995		
Coefficient of Variation	0.550848		
Skewness	0.131468		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.934384		
Shapiro-Wilk 5% Critical Value	0.911		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	67.73755		
Gamma Statistics			
k hat	2.793217		
k star (bias corrected)	2.442627		
Theta hat	20.17387		
Theta star	23.06943		
nu hat	122.9015		
nu star	107.4756		
5% Approximate Chi Square Value	84.5449		
Adjusted Level of Significance	0.0386		
Adjusted Chi Square Value	83.02733		
Anderson-Darling Test Statistic	0.534559		
Anderson-Darling 5% Critical Value	0.75081		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.169185		
Kolmogrov-Smirnov 5% Critical Value	0.186942		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	71.63351		
95% Adjusted Gamma UCL	72.94283		
Lognormal Statistics			
Minimum of log data	2.332144		
Maximum of log data	4.672829		
Mean of log data	3.842026		
Standard Deviation of log data	0.683719		
Variance of log data	0.467472		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.921017		
Shapiro-Wilk 5% Critical Value	0.911		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	58.89533		
MLE Standard Deviation	45.46609		
MLE Coefficient of Variation	0.771981		
MLE Skewness	2.77601		
MLE Median	46.61982		
MLE 80% Quantile	83.07706		
MLE 90% Quantile	112.2362		
MLE 95% Quantile	143.5587		
MLE 99% Quantile	228.6877		
MVU Estimate of Median	46.1269		
MVU Estimate of Mean	58.14984		
MVU Estimate of Standard Deviation	42.90132		
MVU Estimate of SE of Mean	9.053063		
95% H-UCL	81.3441		
95% Chebyshev (MVUE) UCL	97.61122		
97.5% Chebyshev (MVUE) UCL	114.6862		
99% Chebyshev (MVUE) UCL	148.2267		
Non-parametric Statistics			
95% CLT UCL	67.23533		
95% Adjusted-CLT UCL	67.43353		
95% Modified-t UCL	67.76847		
95% Jackknife UCL	67.73755		
95% Chebyshev (Mean, Sd) UCL	85.19637		
97.5% Chebyshev (Mean, Sd) UCL	97.67822		
99% Chebyshev (Mean, Sd) UCL	122.1964		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	66.96271		
95% Bootstrap-t UCL	67.69612		
95% Hall's Bootstrap UCL	66.80603		
95% Percentile Bootstrap UCL	66.875		
95% BCA Bootstrap UCL	64.72955		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	67.73755	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - nt-3.xls	
Variable:	Zinc	
Raw Statistics		
Number of Observations	22	
Number of Missing Data	0	
Number of Valid Observations	22	
Number of Distinct Observations	22	
Minimum	80.1	
Maximum	2640	
Mean	946.9591	
Standard Deviation	682.7133	
Variance	466097.4	
Coefficient of Variation	0.720953	
Skewness	0.957783	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.91583	
Shapiro-Wilk 5% Critical Value	0.911	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	1197.422	
Gamma Statistics		
k hat	1.704762	
k star (bias corrected)	1.502597	
Theta hat	555.4788	
Theta star	630.2147	
nu hat	75.00953	
nu star	66.11429	
5% Approximate Chi Square Value	48.39995	
Adjusted Level of Significance	0.0386	
Adjusted Chi Square Value	47.2685	
Anderson-Darling Test Statistic	0.304317	
Anderson-Darling 5% Critical Value	0.75764	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.100088	
Kolmogrov-Smirnov 5% Critical Value	0.188266	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1293.545	
95% Adjusted Gamma UCL	1324.509	
Lognormal Statistics		
Minimum of log data	4.383276	
Maximum of log data	7.878534	
Mean of log data	6.532149	
Standard Deviation of log data	0.936391	
Variance of log data	0.876829	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.910892	
Shapiro-Wilk 5% Critical Value	0.911	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1064.822	
MLE Standard Deviation	1261.384	
MLE Coefficient of Variation	1.184595	
MLE Skewness	5.216089	
MLE Median	686.8726	
MLE 80% Quantile	1515.347	
MLE 90% Quantile	2287.95	
MLE 95% Quantile	3205.145	
MLE 99% Quantile	6064.426	
MVU Estimate of Median	673.3085	
MVU Estimate of Mean	1036.227	
MVU Estimate of Standard Deviation	1116.556	
MVU Estimate of SE of Mean	230.5765	
95% H-UCL	1762.577	
95% Chebyshev (MVUE) UCL	2041.287	
97.5% Chebyshev (MVUE) UCL	2476.177	
99% Chebyshev (MVUE) UCL	3330.434	
Non-parametric Statistics		
95% CLT UCL	1186.376	
95% Adjusted-CLT UCL	1218.134	
95% Modified-t UCL	1202.375	
95% Jackknife UCL	1197.422	
95% Chebyshev (Mean, Sd) UCL	1581.418	
97.5% Chebyshev (Mean, Sd) UCL	1855.95	
99% Chebyshev (Mean, Sd) UCL	2395.213	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1186.003	
95% Bootstrap-t UCL	1257.059	
95% Hall's Bootstrap UCL	1225.318	
95% Percentile Bootstrap UCL	1184.364	
95% BCA Bootstrap UCL	1290.818	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	1197.422	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Tetrachloroethene		
<b>Raw Statistics</b>			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.1185		
Maximum	0.1545		
Mean	0.1365		
Standard Deviation	0.025456		
Variance	0.000648		
Coefficient of Variation	0.18649		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-2.132842		
Maximum of log data	-1.867561		
Mean of log data	-2.000202		
Standard Deviation of log data	0.187582		
Variance of log data	0.035187		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	1.7E+269		
MLE Coefficient of Variation	1.7E+269		
MLE Skewness	0		
MLE Median	1.7E+269		
MLE 80% Quantile	2.6E-307		
MLE 90% Quantile	-5E+138		
MLE 95% Quantile	2.6E-308		
MLE 99% Quantile	2.6E-308		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.1365		
MVU Estimate of Standard Deviation	0.025456		
MVU Estimate of SE of Mean	0.018		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Trichloroethene		
<b>Raw Statistics</b>			
Number of Observations	2		
Number of Missing Data	0		
Number of Valid Observations	2		
Number of Distinct Observations	2		
Minimum	0.042		
Maximum	0.053		
Mean	0.0475		
Standard Deviation	0.007778		
Variance	6.05E-05		
Coefficient of Variation	0.163751		
Skewness	N/A	Too few observations to calculate	
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-3.170086		
Maximum of log data	-2.937463		
Mean of log data	-3.053775		
Standard Deviation of log data	0.164489		
Variance of log data	0.027057		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	5.3E-308		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	7.7E-304		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	0.0475		
MVU Estimate of Standard Deviation	0.007778		
MVU Estimate of SE of Mean	0.0055		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Benzo(a)anthracene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.13		
Maximum	0.56		
Mean	0.28375		
Standard Deviation	0.190148		
Variance	0.036156		
Coefficient of Variation	0.670125		
Skewness	1.629241		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.846647		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.507494		
<b>Gamma Statistics</b>			
k hat	3.506159		
k star (bias corrected)	1.043206		
Theta hat	0.080929		
Theta star	0.271998		
nu hat	28.04927		
nu star	8.345652		
5% Approximate Chi Square Value	2.936069		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.337314		
Anderson-Darling 5% Critical Value	0.659142		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.284773		
Kolmogrov-Smirnov 5% Critical Value	0.396358		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.806547		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.040221		
Maximum of log data	-0.579818		
Mean of log data	-1.408994		
Standard Deviation of log data	0.612689		
Variance of log data	0.375388		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.956041		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.294847		
MLE Standard Deviation	0.199006		
MLE Coefficient of Variation	0.674949		
MLE Skewness	2.332323		
MLE Median	0.244389		
MLE 80% Quantile	0.410134		
MLE 90% Quantile	0.537037		
MLE 95% Quantile	0.66957		
MLE 99% Quantile	1.016252		
MVU Estimate of Median	0.233082		
MVU Estimate of Mean	0.280274		
MVU Estimate of Standard Deviation	0.167129		
MVU Estimate of SE of Mean	0.083481		
95% H-UCL	2.177996		
95% Chebyshev (MVUE) UCL	0.644158		
97.5% Chebyshev (MVUE) UCL	0.801611		
99% Chebyshev (MVUE) UCL	1.110896		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.440133		
95% Adjusted-CLT UCL	0.522888		
95% Modified-t UCL	0.520402		
95% Jackknife UCL	0.507494		
95% Chebyshev (Mean, Sd) UCL	0.698168		
97.5% Chebyshev (Mean, Sd) UCL	0.877487		
99% Chebyshev (Mean, Sd) UCL	1.229724		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.507494		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Benzo(a)pyrene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.16		
Maximum	1		
Mean	0.41625		
Standard Deviation	0.393136		
Variance	0.154556		
Coefficient of Variation	0.944472		
Skewness	1.882089		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.75458		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.878846		
<b>Gamma Statistics</b>			
k hat	1.955077		
k star (bias corrected)	0.655436		
Theta hat	0.212907		
Theta star	0.635074		
nu hat	15.64061		
nu star	5.243487		
5% Approximate Chi Square Value	1.265893		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.492481		
Anderson-Darling 5% Critical Value	0.660714		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.332712		
Kolmogrov-Smirnov 5% Critical Value	0.398043		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.72416		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.832581		
Maximum of log data	0		
Mean of log data	-1.153502		
Standard Deviation of log data	0.808705		
Variance of log data	0.654003		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.883159		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.437578		
MLE Standard Deviation	0.420445		
MLE Coefficient of Variation	0.960846		
MLE Skewness	3.769614		
MLE Median	0.31553		
MLE 80% Quantile	0.624911		
MLE 90% Quantile	0.891975		
MLE 95% Quantile	1.193413		
MLE 99% Quantile	2.069992		
MVU Estimate of Median	0.29036		
MVU Estimate of Mean	0.398811		
MVU Estimate of Standard Deviation	0.308033		
MVU Estimate of SE of Mean	0.153584		
95% H-UCL	13.35146		
95% Chebyshev (MVUE) UCL	1.068269		
97.5% Chebyshev (MVUE) UCL	1.357944		
99% Chebyshev (MVUE) UCL	1.926955		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.739576		
95% Adjusted-CLT UCL	0.937229		
95% Modified-t UCL	0.909676		
95% Jackknife UCL	0.878846		
95% Chebyshev (Mean, Sd) UCL	1.273071		
97.5% Chebyshev (Mean, Sd) UCL	1.643818		
99% Chebyshev (Mean, Sd) UCL	2.372079		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.878846		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Benzo(b)fluoranthene		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.29		
Maximum	1.5		
Mean	0.78375		
Standard Deviation	0.553585		
Variance	0.306456		
Coefficient of Variation	0.706328		
Skewness	0.779359		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.91974		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1.435143		
Gamma Statistics			
k hat	2.603915		
k star (bias corrected)	0.817645		
Theta hat	0.300989		
Theta star	0.958545		
nu hat	20.83132		
nu star	6.541163		
5% Approximate Chi Square Value	1.921832		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.290703		
Anderson-Darling 5% Critical Value	0.659862		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.266255		
Kolmogrov-Smirnov 5% Critical Value	0.397091		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	2.667578		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-1.237874		
Maximum of log data	0.405465		
Mean of log data	-0.447804		
Standard Deviation of log data	0.751462		
Variance of log data	0.564695		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.948412		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.847507		
MLE Standard Deviation	0.73831		
MLE Coefficient of Variation	0.871155		
MLE Skewness	3.274595		
MLE Median	0.63903		
MLE 80% Quantile	1.205846		
MLE 90% Quantile	1.678373		
MLE 95% Quantile	2.199766		
MLE 99% Quantile	3.669651		
MVU Estimate of Median	0.594868		
MVU Estimate of Mean	0.783213		
MVU Estimate of Standard Deviation	0.565463		
MVU Estimate of SE of Mean	0.282124		
95% H-UCL	16.40561		
95% Chebyshev (MVUE) UCL	2.012964		
97.5% Chebyshev (MVUE) UCL	2.545078		
99% Chebyshev (MVUE) UCL	3.590313		
Non-parametric Statistics			
95% CLT UCL	1.239033		
95% Adjusted-CLT UCL	1.354283		
95% Modified-t UCL	1.45312		
95% Jackknife UCL	1.435143		
95% Chebyshev (Mean, Sd) UCL	1.99026		
97.5% Chebyshev (Mean, Sd) UCL	2.512318		
99% Chebyshev (Mean, Sd) UCL	3.5378		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.435143		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Benzo(k)fluoranthene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.2		
Maximum	0.91		
Mean	0.5575		
Standard Deviation	0.317949		
Variance	0.101092		
Coefficient of Variation	0.570312		
Skewness	-0.031244		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.967124		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.931625		
<b>Gamma Statistics</b>			
k hat	3.429029		
k star (bias corrected)	1.023924		
Theta hat	0.162582		
Theta star	0.544474		
nu hat	27.43223		
nu star	8.191392		
5% Approximate Chi Square Value	2.845649		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.260747		
Anderson-Darling 5% Critical Value	0.659183		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.24919		
Kolmogrov-Smirnov 5% Critical Value	0.396388		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.604801		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.609438		
Maximum of log data	-0.094311		
Mean of log data	-0.737136		
Standard Deviation of log data	0.676563		
Variance of log data	0.457737		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.946008		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.601537		
MLE Standard Deviation	0.458312		
MLE Coefficient of Variation	0.761901		
MLE Skewness	2.727983		
MLE Median	0.478482		
MLE 80% Quantile	0.84752		
MLE 90% Quantile	1.141391		
MLE 95% Quantile	1.45617		
MLE 99% Quantile	2.308387		
MVU Estimate of Median	0.451571		
MVU Estimate of Mean	0.564949		
MVU Estimate of Standard Deviation	0.369896		
MVU Estimate of SE of Mean	0.184679		
95% H-UCL	6.754754		
95% Chebyshev (MVUE) UCL	1.369945		
97.5% Chebyshev (MVUE) UCL	1.718267		
99% Chebyshev (MVUE) UCL	2.402479		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.81899		
95% Adjusted-CLT UCL	0.816336		
95% Modified-t UCL	0.931211		
95% Jackknife UCL	0.931625		
95% Chebyshev (Mean, Sd) UCL	1.250454		
97.5% Chebyshev (Mean, Sd) UCL	1.550296		
99% Chebyshev (Mean, Sd) UCL	2.139277		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.931625		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Dibenz(a,h)anthracene		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.046		
Maximum	0.32		
Mean	0.188667		
Standard Deviation	0.137351		
Variance	0.018865		
Coefficient of Variation	0.72801		
Skewness	-0.368783		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-3.079114		
Maximum of log data	-1.139434		
Mean of log data	-1.942662		
Standard Deviation of log data	1.011864		
Variance of log data	1.023868		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.239135		
MLE Standard Deviation	0.319399		
MLE Coefficient of Variation	1.335643		
MLE Skewness	6.389639		
MLE Median	0.143322		
MLE 80% Quantile	0.337012		
MLE 90% Quantile	0.526019		
MLE 95% Quantile	0.757186		
MLE 99% Quantile	1.508224		
MVU Estimate of Median	0.119889		
MVU Estimate of Mean	0.196571		
MVU Estimate of Standard Deviation	0.17766		
MVU Estimate of SE of Mean	0.10231		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Indeno(1,2,3-cd)pyrene		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.14		
Maximum	0.74		
Mean	0.315		
Standard Deviation	0.284429		
Variance	0.0809		
Coefficient of Variation	0.90295		
Skewness	1.953471		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.711928		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.649683		
Gamma Statistics			
k hat	2.212603		
k star (bias corrected)	0.719817		
Theta hat	0.142366		
Theta star	0.437611		
nu hat	17.70082		
nu star	5.758539		
5% Approximate Chi Square Value	1.517266		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.644232		
Anderson-Darling 5% Critical Value	0.660308		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.403579		
Kolmogrov-Smirnov 5% Critical Value	0.397615		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.195532		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-1.966113		
Maximum of log data	-0.301105		
Mean of log data	-1.397864		
Standard Deviation of log data	0.746324		
Variance of log data	0.556999		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.807855		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.326487		
MLE Standard Deviation	0.281883		
MLE Coefficient of Variation	0.863381		
MLE Skewness	3.233731		
MLE Median	0.247124		
MLE 80% Quantile	0.464302		
MLE 90% Quantile	0.644786		
MLE 95% Quantile	0.843529		
MLE 99% Quantile	1.402261		
MVU Estimate of Median	0.230274		
MVU Estimate of Mean	0.302075		
MVU Estimate of Standard Deviation	0.216712		
MVU Estimate of SE of Mean	0.108129		
95% H-UCL	6.077107		
95% Chebyshev (MVUE) UCL	0.7734		
97.5% Chebyshev (MVUE) UCL	0.977342		
99% Chebyshev (MVUE) UCL	1.377948		
Non-parametric Statistics			
95% CLT UCL	0.548922		
95% Adjusted-CLT UCL	0.697345		
95% Modified-t UCL	0.672834		
95% Jackknife UCL	0.649683		
95% Chebyshev (Mean, Sd) UCL	0.934899		
97.5% Chebyshev (Mean, Sd) UCL	1.20313		
99% Chebyshev (Mean, Sd) UCL	1.730018		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.195532		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Phenanthrene		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.16		
Maximum	0.57		
Mean	0.31		
Standard Deviation	0.226053		
Variance	0.0511		
Coefficient of Variation	0.729204		
Skewness	1.671239		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-1.832581		
Maximum of log data	-0.562119		
Mean of log data	-1.334713		
Standard Deviation of log data	0.678325		
Variance of log data	0.460124		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.331327		
MLE Standard Deviation	0.253258		
MLE Coefficient of Variation	0.764376		
MLE Skewness	2.739731		
MLE Median	0.263234		
MLE 80% Quantile	0.466952		
MLE 90% Quantile	0.629351		
MLE 95% Quantile	0.803427		
MLE 99% Quantile	1.275158		
MVU Estimate of Median	0.243431		
MVU Estimate of Mean	0.305182		
MVU Estimate of Standard Deviation	0.196088		
MVU Estimate of SE of Mean	0.113145		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Aroclor 1254		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	2		
Minimum	0.00165		
Maximum	0.0155		
Mean	0.006267		
Standard Deviation	0.007996		
Variance	6.39E-05		
Coefficient of Variation	1.276006		
Skewness	1.732051		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-6.40698		
Maximum of log data	-4.166915		
Mean of log data	-5.660292		
Standard Deviation of log data	1.293302		
Variance of log data	1.67263		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.008035		
MLE Standard Deviation	0.016712		
MLE Coefficient of Variation	2.079942		
MLE Skewness	15.23798		
MLE Median	0.003482		
MLE 80% Quantile	0.010384		
MLE 90% Quantile	0.018345		
MLE 95% Quantile	0.029223		
MLE 99% Quantile	0.070505		
MVU Estimate of Median	0.002577		
MVU Estimate of Mean	0.005711		
MVU Estimate of Standard Deviation	0.006217		
MVU Estimate of SE of Mean	0.003568		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Aroclor 1260		
<b>Raw Statistics</b>			
Number of Observations	3		
Number of Missing Data	0		
Number of Valid Observations	3		
Number of Distinct Observations	3		
Minimum	0.011		
Maximum	0.058		
Mean	0.028167		
Standard Deviation	0.025934		
Variance	0.000673		
Coefficient of Variation	0.920741		
Skewness	1.673568		
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs	
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Gamma Statistics</b>			
k hat	0		
k star (bias corrected)	0		
Theta hat	0		
Theta star	0		
nu hat	0		
nu star	0		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	0		
Anderson-Darling 5% Critical Value	0		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0		
Kolmogrov-Smirnov 5% Critical Value	0		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Lognormal Statistics</b>			
Minimum of log data	-4.50986		
Maximum of log data	-2.847312		
Mean of log data	-3.841363		
Standard Deviation of log data	0.877784		
Variance of log data	0.770505		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0.031552		
MLE Standard Deviation	0.033995		
MLE Coefficient of Variation	1.077431		
MLE Skewness	4.483034		
MLE Median	0.021464		
MLE 80% Quantile	0.045066		
MLE 90% Quantile	0.06631		
MLE 95% Quantile	0.090953		
MLE 99% Quantile	0.165359		
MVU Estimate of Median	0.018795		
MVU Estimate of Mean	0.027341		
MVU Estimate of Standard Deviation	0.021989		
MVU Estimate of SE of Mean	0.012676		
95% H-UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs	
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs	
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs	
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs	
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	30		
Number of Missing Data	0		
Number of Valid Observations	30		
Number of Distinct Observations	30		
Minimum	0.5		
Maximum	68		
Mean	9.991667		
Standard Deviation	12.87038		
Variance	165.6467		
Coefficient of Variation	1.288112		
Skewness	3.367425		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.649397		
Shapiro-Wilk 5% Critical Value	0.927		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	13.98427		
Gamma Statistics			
k hat	0.887665		
k star (bias corrected)	0.821121		
Theta hat	11.25612		
Theta star	12.16833		
nu hat	53.25991		
nu star	49.26725		
5% Approximate Chi Square Value	34.15029		
Adjusted Level of Significance	0.041		
Adjusted Chi Square Value	33.4239		
Anderson-Darling Test Statistic	0.50413		
Anderson-Darling 5% Critical Value	0.781011		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.104051		
Kolmogrov-Smirnov 5% Critical Value	0.165464		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	14.41458		
95% Adjusted Gamma UCL	14.72784		
Lognormal Statistics			
Minimum of log data	-0.693147		
Maximum of log data	4.219508		
Mean of log data	1.642024		
Standard Deviation of log data	1.271383		
Variance of log data	1.616415		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.944662		
Shapiro-Wilk 5% Critical Value	0.927		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	11.59103		
MLE Standard Deviation	23.28328		
MLE Coefficient of Variation	2.008733		
MLE Skewness	14.13145		
MLE Median	5.165615		
MLE 80% Quantile	15.12491		
MLE 90% Quantile	26.4631		
MLE 95% Quantile	41.82312		
MLE 99% Quantile	99.41084		
MVU Estimate of Median	5.028192		
MVU Estimate of Mean	11.07565		
MVU Estimate of Standard Deviation	18.91263		
MVU Estimate of SE of Mean	3.116748		
95% H-UCL	22.36553		
95% Chebyshev (MVUE) UCL	24.66124		
97.5% Chebyshev (MVUE) UCL	30.53973		
99% Chebyshev (MVUE) UCL	42.0869		
Non-parametric Statistics			
95% CLT UCL	13.85674		
95% Adjusted-CLT UCL	15.40039		
95% Modified-t UCL	14.22505		
95% Jackknife UCL	13.98427		
95% Chebyshev (Mean, Sd) UCL	20.23421		
97.5% Chebyshev (Mean, Sd) UCL	24.66616		
99% Chebyshev (Mean, Sd) UCL	33.37188		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	13.82622		
95% Bootstrap-t UCL	17.28198		
95% Hall's Bootstrap UCL	31.07056		
95% Percentile Bootstrap UCL	13.93667		
95% BCA Bootstrap UCL	16.86		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	14.41458	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	30		
Minimum	6.6		
Maximum	4250		
Mean	643.0016		
Standard Deviation	1102.33		
Variance	1215132		
Coefficient of Variation	1.714351		
Skewness	2.373377		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.618068		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	973.401		
Gamma Statistics			
k hat	0.427702		
k star (bias corrected)	0.408438		
Theta hat	1503.388		
Theta star	1574.294		
nu hat	27.37291		
nu star	26.14003		
5% Approximate Chi Square Value	15.4854		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	15.0457		
Anderson-Darling Test Statistic	1.175493		
Anderson-Darling 5% Critical Value	0.826463		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.181023		
Kolmogrov-Smirnov 5% Critical Value	0.165931		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	1085.415		
95% Adjusted Gamma UCL	1117.135		
Lognormal Statistics			
Minimum of log data	1.88707		
Maximum of log data	8.354674		
Mean of log data	4.944045		
Standard Deviation of log data	1.955027		
Variance of log data	3.82213		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.932737		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	948.7161		
MLE Standard Deviation	6343.033		
MLE Coefficient of Variation	6.685913		
MLE Skewness	318.9277		
MLE Median	140.3367		
MLE 80% Quantile	732.1917		
MLE 90% Quantile	1730.653		
MLE 95% Quantile	3498.41		
MLE 99% Quantile	13245.82		
MVU Estimate of Median	132.1867		
MVU Estimate of Mean	815.5704		
MVU Estimate of Standard Deviation	3183.843		
MVU Estimate of SE of Mean	381.4983		
95% H-UCL	3514.979		
95% Chebyshev (MVUE) UCL	2478.483		
97.5% Chebyshev (MVUE) UCL	3198.027		
99% Chebyshev (MVUE) UCL	4611.431		
Non-parametric Statistics			
95% CLT UCL	963.5282		
95% Adjusted-CLT UCL	1050.887		
95% Modified-t UCL	987.0273		
95% Jackknife UCL	973.401		
95% Chebyshev (Mean, Sd) UCL	1492.404		
97.5% Chebyshev (Mean, Sd) UCL	1859.941		
99% Chebyshev (Mean, Sd) UCL	2581.897		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	954.4617		
95% Bootstrap-t UCL	1170.947		
95% Hall's Bootstrap UCL	1022.946		
95% Percentile Bootstrap UCL	963.2625		
95% BCA Bootstrap UCL	1159.645		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	2478.483	95% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls				
Variable:	Barium				
<b>Raw Statistics</b>					
Number of Observations			32		
Number of Missing Data			0		
Number of Valid Observations			32		
Number of Distinct Observations			32		
Minimum			14.1		
Maximum			205		
Mean			92.72031		
Standard Deviation			47.83401		
Variance			2288.092		
Coefficient of Variation			0.515896		
Skewness			0.626861		
Too Few Distinct Observations?			NO		
<b>Normal Statistics</b>					
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.950053		
Shapiro-Wilk 5% Critical Value			0.93		
5% Normality Test Result			NORMAL		Data are normal at 5% significance level
95% Student's-t UCL			107.0575		
<b>Gamma Statistics</b>					
k hat			3.37364		
k star (bias corrected)			3.078195		
Theta hat			27.48376		
Theta star			30.12165		
nu hat			215.913		
nu star			197.0045		
5% Approximate Chi Square Value			165.5243		
Adjusted Level of Significance			0.0416		
Adjusted Chi Square Value			163.982		
Anderson-Darling Test Statistic			0.344308		
Anderson-Darling 5% Critical Value			0.752122		
Anderson-Darling 5% Gamma Test Result			AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic			0.097756		
Kolmogrov-Smirnov 5% Critical Value			0.156407		
Kolmogrov-Smirnov 5% Gamma Test Result			KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result			GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL			110.3543		
95% Adjusted Gamma UCL			111.3922		
<b>Lognormal Statistics</b>					
Minimum of log data			2.646175		
Maximum of log data			5.32301		
Mean of log data			4.37412		
Standard Deviation of log data			0.61926		
Variance of log data			0.383483		
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.926837		
Shapiro-Wilk 5% Critical Value			0.93		
5% Lognormality Test Result			NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean			96.14535		
MLE Standard Deviation			65.73041		
MLE Coefficient of Variation			0.683657		
MLE Skewness			2.370502		
MLE Median			79.36994		
MLE 80% Quantile			133.9403		
MLE 90% Quantile			175.8917		
MLE 95% Quantile			219.8185		
MLE 99% Quantile			335.1299		
MVU Estimate of Median			78.8957		
MVU Estimate of Mean			95.4725		
MVU Estimate of Standard Deviation			63.59473		
MVU Estimate of SE of Mean			11.15073		
95% H-UCL			120.4137		
95% Chebyshev (MVUE) UCL			144.0774		
97.5% Chebyshev (MVUE) UCL			165.1088		
99% Chebyshev (MVUE) UCL			206.4208		
<b>Non-parametric Statistics</b>					
95% CLT UCL			106.6291		
95% Adjusted-CLT UCL			107.6303		
95% Modified-t UCL			107.2137		
95% Jackknife UCL			107.0575		
95% Chebyshev (Mean, Sd) UCL			129.5789		
97.5% Chebyshev (Mean, Sd) UCL			145.5276		
99% Chebyshev (Mean, Sd) UCL			176.8558		
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs			2000		
95% Standard Bootstrap UCL			106.5428		
95% Bootstrap-t UCL			107.7565		
95% Hall's Bootstrap UCL			108.2466		
95% Percentile Bootstrap UCL			107.6031		
95% BCA Bootstrap UCL			103.0594		
<b>Recommendations</b>					
Human Inspection Recommended?			NO		
Appropriate Distribution			NORMAL		
1st Recommended UCL			107.0575		95% Student's-t UCL
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value			NO		
Recommendation Warning!			NONE		
Alternative UCL			NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	0.46		
Maximum	15.2		
Mean	7.312188		
Standard Deviation	4.111383		
Variance	16.90347		
Coefficient of Variation	0.562264		
Skewness	0.07539		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.959126		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	8.544485		
Gamma Statistics			
k hat	2.06668		
k star (bias corrected)	1.893762		
Theta hat	3.538132		
Theta star	3.861196		
nu hat	132.2675		
nu star	121.2008		
5% Approximate Chi Square Value	96.77321		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	95.60551		
Anderson-Darling Test Statistic	0.812072		
Anderson-Darling 5% Critical Value	0.758568		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.108147		
Kolmogrov-Smirnov 5% Critical Value	0.157481		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	9.157935		
95% Adjusted Gamma UCL	9.269788		
Lognormal Statistics			
Minimum of log data	-0.776529		
Maximum of log data	2.721295		
Mean of log data	1.728513		
Standard Deviation of log data	0.893006		
Variance of log data	0.79746		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.829144		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	8.391698		
MLE Standard Deviation	9.268537		
MLE Coefficient of Variation	1.104489		
MLE Skewness	4.660827		
MLE Median	5.632272		
MLE 80% Quantile	11.97838		
MLE 90% Quantile	17.74362		
MLE 95% Quantile	24.47147		
MLE 99% Quantile	44.95425		
MVU Estimate of Median	5.562501		
MVU Estimate of Mean	8.251453		
MVU Estimate of Standard Deviation	8.569704		
MVU Estimate of SE of Mean	1.468261		
95% H-UCL	12.12976		
95% Chebyshev (MVUE) UCL	14.65145		
97.5% Chebyshev (MVUE) UCL	17.42074		
99% Chebyshev (MVUE) UCL	22.86046		
Non-parametric Statistics			
95% CLT UCL	8.507662		
95% Adjusted-CLT UCL	8.518012		
95% Modified-t UCL	8.546099		
95% Jackknife UCL	8.544485		
95% Chebyshev (Mean, Sd) UCL	10.48022		
97.5% Chebyshev (Mean, Sd) UCL	11.85103		
99% Chebyshev (Mean, Sd) UCL	14.54372		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	8.474327		
95% Bootstrap-t UCL	8.633541		
95% Hall's Bootstrap UCL	8.562587		
95% Percentile Bootstrap UCL	8.5075		
95% BCA Bootstrap UCL	8.883125		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	8.544485	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	14.3		
Maximum	5500		
Mean	1045.963		
Standard Deviation	1163.041		
Variance	1352664		
Coefficient of Variation	1.111933		
Skewness	1.998719		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.794464		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1394.559		
Gamma Statistics			
k hat	0.763508		
k star (bias corrected)	0.712762		
Theta hat	1369.944		
Theta star	1467.478		
nu hat	48.86449		
nu star	45.61678		
5% Approximate Chi Square Value	31.11936		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	30.47756		
Anderson-Darling Test Statistic	0.281979		
Anderson-Darling 5% Critical Value	0.787088		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.093058		
Kolmogrov-Smirnov 5% Critical Value	0.161512		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1533.24		
95% Adjusted Gamma UCL	1565.527		
Lognormal Statistics			
Minimum of log data	2.66026		
Maximum of log data	8.612503		
Mean of log data	6.170523		
Standard Deviation of log data	1.530108		
Variance of log data	2.341232		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.933211		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1542.468		
MLE Standard Deviation	4727.614		
MLE Coefficient of Variation	3.064968		
MLE Skewness	37.9873		
MLE Median	478.4363		
MLE 80% Quantile	1743.177		
MLE 90% Quantile	3417.663		
MLE 95% Quantile	5928.647		
MLE 99% Quantile	16807.07		
MVU Estimate of Median	461.2318		
MVU Estimate of Mean	1434.552		
MVU Estimate of Standard Deviation	3389.175		
MVU Estimate of SE of Mean	495.8219		
95% H-UCL	3625.004		
95% Chebyshev (MVUE) UCL	3595.789		
97.5% Chebyshev (MVUE) UCL	4530.959		
99% Chebyshev (MVUE) UCL	6367.917		
Non-parametric Statistics			
95% CLT UCL	1384.142		
95% Adjusted-CLT UCL	1461.763		
95% Modified-t UCL	1406.666		
95% Jackknife UCL	1394.559		
95% Chebyshev (Mean, Sd) UCL	1942.146		
97.5% Chebyshev (Mean, Sd) UCL	2329.925		
99% Chebyshev (Mean, Sd) UCL	3091.642		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1383.572		
95% Bootstrap-t UCL	1503.303		
95% Hall's Bootstrap UCL	1606.135		
95% Percentile Bootstrap UCL	1413.156		
95% BCA Bootstrap UCL	1571.572		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1533.24	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	31		
Minimum	18.8		
Maximum	2080		
Mean	629.7125		
Standard Deviation	465.206		
Variance	216416.6		
Coefficient of Variation	0.738759		
Skewness	1.055874		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.92269		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	769.1478		
Gamma Statistics			
k hat	1.339539		
k star (bias corrected)	1.23479		
Theta hat	470.0965		
Theta star	509.9752		
nu hat	85.73049		
nu star	79.02659		
5% Approximate Chi Square Value	59.5417		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	58.63611		
Anderson-Darling Test Statistic	0.68406		
Anderson-Darling 5% Critical Value	0.768015		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.169185		
Kolmogrov-Smirnov 5% Critical Value	0.158877		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	835.7846		
95% Adjusted Gamma UCL	848.6926		
Lognormal Statistics			
Minimum of log data	2.933857		
Maximum of log data	7.640123		
Mean of log data	6.027681		
Standard Deviation of log data	1.15761		
Variance of log data	1.340062		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.854271		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	810.5494		
MLE Standard Deviation	1360.97		
MLE Coefficient of Variation	1.679071		
MLE Skewness	9.770982		
MLE Median	414.7523		
MLE 80% Quantile	1103.081		
MLE 90% Quantile	1835.754		
MLE 95% Quantile	2784.853		
MLE 99% Quantile	6125.913		
MVU Estimate of Median	406.1529		
MVU Estimate of Mean	784.1488		
MVU Estimate of Standard Deviation	1168.063		
MVU Estimate of SE of Mean	191.1947		
95% H-UCL	1394.217		
95% Chebyshev (MVUE) UCL	1617.547		
97.5% Chebyshev (MVUE) UCL	1978.16		
99% Chebyshev (MVUE) UCL	2686.512		
Non-parametric Statistics			
95% CLT UCL	764.9813		
95% Adjusted-CLT UCL	781.3829		
95% Modified-t UCL	771.7061		
95% Jackknife UCL	769.1478		
95% Chebyshev (Mean, Sd) UCL	988.1778		
97.5% Chebyshev (Mean, Sd) UCL	1143.286		
99% Chebyshev (Mean, Sd) UCL	1447.966		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	765.9336		
95% Bootstrap-t UCL	792.743		
95% Hall's Bootstrap UCL	798.1702		
95% Percentile Bootstrap UCL	771.4438		
95% BCA Bootstrap UCL	830.3375		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	835.7846		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	23.9		
Maximum	1240		
Mean	468.4344		
Standard Deviation	254.2232		
Variance	64629.44		
Coefficient of Variation	0.542708		
Skewness	0.578618		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.958143		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	544.6322		
Gamma Statistics			
k hat	2.438091		
k star (bias corrected)	2.230353		
Theta hat	192.1316		
Theta star	210.027		
nu hat	156.0378		
nu star	142.7426		
5% Approximate Chi Square Value	116.128		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	114.8441		
Anderson-Darling Test Statistic	1.014276		
Anderson-Darling 5% Critical Value	0.756326		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.185787		
Kolmogrov-Smirnov 5% Critical Value	0.157111		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	575.7919		
95% Adjusted Gamma UCL	582.2286		
Lognormal Statistics			
Minimum of log data	3.173878		
Maximum of log data	7.122867		
Mean of log data	5.930518		
Standard Deviation of log data	0.804933		
Variance of log data	0.647917		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.847397		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	520.337		
MLE Standard Deviation	496.794		
MLE Coefficient of Variation	0.954754		
MLE Skewness	3.734575		
MLE Median	376.3494		
MLE 80% Quantile	742.993		
MLE 90% Quantile	1058.764		
MLE 95% Quantile	1414.644		
MLE 99% Quantile	2447.427		
MVU Estimate of Median	372.5574		
MVU Estimate of Mean	513.5963		
MVU Estimate of Standard Deviation	467.4651		
MVU Estimate of SE of Mean	80.87662		
95% H-UCL	715.4475		
95% Chebyshev (MVUE) UCL	866.1293		
97.5% Chebyshev (MVUE) UCL	1018.671		
99% Chebyshev (MVUE) UCL	1318.309		
Non-parametric Statistics			
95% CLT UCL	542.3553		
95% Adjusted-CLT UCL	547.2671		
95% Modified-t UCL	545.3984		
95% Jackknife UCL	544.6322		
95% Chebyshev (Mean, Sd) UCL	664.3265		
97.5% Chebyshev (Mean, Sd) UCL	749.0892		
99% Chebyshev (Mean, Sd) UCL	915.5891		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	540.8426		
95% Bootstrap-t UCL	549.8178		
95% Hall's Bootstrap UCL	549.3974		
95% Percentile Bootstrap UCL	541.3781		
95% BCA Bootstrap UCL	528.2969		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	544.6322	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	31		
Minimum	89.5		
Maximum	2020		
Mean	828.1531		
Standard Deviation	580.8321		
Variance	337366		
Coefficient of Variation	0.701358		
Skewness	0.486343		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.922525		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	1002.245		
<b>Gamma Statistics</b>			
k hat	1.651563		
k star (bias corrected)	1.517562		
Theta hat	501.4361		
Theta star	545.7129		
nu hat	105.7		
nu star	97.12397		
5% Approximate Chi Square Value	75.38696		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	74.362		
Anderson-Darling Test Statistic	0.60229		
Anderson-Darling 5% Critical Value	0.762786		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.13741		
Kolmogrov-Smirnov 5% Critical Value	0.158079		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1066.942		
95% Adjusted Gamma UCL	1081.648		
<b>Lognormal Statistics</b>			
Minimum of log data	4.494239		
Maximum of log data	7.610853		
Mean of log data	6.386876		
Standard Deviation of log data	0.924609		
Variance of log data	0.854902		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.91281		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	910.8035		
MLE Standard Deviation	1058.707		
MLE Coefficient of Variation	1.162388		
MLE Skewness	5.057717		
MLE Median	593.998		
MLE 80% Quantile	1297.469		
MLE 90% Quantile	1948.858		
MLE 95% Quantile	2718.562		
MLE 99% Quantile	5102.66		
MVU Estimate of Median	586.1131		
MVU Estimate of Mean	894.2009		
MVU Estimate of Standard Deviation	971.9725		
MVU Estimate of SE of Mean	165.8458		
95% H-UCL	1341.558		
95% Chebyshev (MVUE) UCL	1617.106		
97.5% Chebyshev (MVUE) UCL	1929.907		
99% Chebyshev (MVUE) UCL	2544.345		
<b>Non-parametric Statistics</b>			
95% CLT UCL	997.0427		
95% Adjusted-CLT UCL	1006.475		
95% Modified-t UCL	1003.716		
95% Jackknife UCL	1002.245		
95% Chebyshev (Mean, Sd) UCL	1275.714		
97.5% Chebyshev (Mean, Sd) UCL	1469.374		
99% Chebyshev (Mean, Sd) UCL	1849.782		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	994.7058		
95% Bootstrap-t UCL	1014.03		
95% Hall's Bootstrap UCL	1009.445		
95% Percentile Bootstrap UCL	992.9344		
95% BCA Bootstrap UCL	1051.141		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1066.942		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	30		
Minimum	0.045		
Maximum	27.5		
Mean	3.163281		
Standard Deviation	5.501886		
Variance	30.27075		
Coefficient of Variation	1.739297		
Skewness	3.268623		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.583947		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	4.812351		
<b>Gamma Statistics</b>			
k hat	0.583534		
k star (bias corrected)	0.549661		
Theta hat	5.420901		
Theta star	5.754965		
nu hat	37.34619		
nu star	35.17832		
5% Approximate Chi Square Value	22.60598		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	22.06561		
Anderson-Darling Test Statistic	0.784407		
Anderson-Darling 5% Critical Value	0.802821		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.160891		
Kolmogrov-Smirnov 5% Critical Value	0.163438		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	4.922544		
95% Adjusted Gamma UCL	5.043092		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.101093		
Maximum of log data	3.314186		
Mean of log data	0.088383		
Standard Deviation of log data	1.558251		
Variance of log data	2.428145		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.987065		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	3.678317		
MLE Standard Deviation	11.82671		
MLE Coefficient of Variation	3.21525		
MLE Skewness	42.88446		
MLE Median	1.092406		
MLE 80% Quantile	4.075954		
MLE 90% Quantile	8.09086		
MLE 95% Quantile	14.17819		
MLE 99% Quantile	40.97138		
MVU Estimate of Median	1.051691		
MVU Estimate of Mean	3.407421		
MVU Estimate of Standard Deviation	8.326438		
MVU Estimate of SE of Mean	1.204922		
95% H-UCL	8.879252		
95% Chebyshev (MVUE) UCL	8.659556		
97.5% Chebyshev (MVUE) UCL	10.93216		
99% Chebyshev (MVUE) UCL	15.39625		
<b>Non-parametric Statistics</b>			
95% CLT UCL	4.763075		
95% Adjusted-CLT UCL	5.363566		
95% Modified-t UCL	4.906016		
95% Jackknife UCL	4.812351		
95% Chebyshev (Mean, Sd) UCL	7.402769		
97.5% Chebyshev (Mean, Sd) UCL	9.237199		
99% Chebyshev (Mean, Sd) UCL	12.84058		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	4.716161		
95% Bootstrap-t UCL	6.538577		
95% Hall's Bootstrap UCL	10.27466		
95% Percentile Bootstrap UCL	4.989688		
95% BCA Bootstrap UCL	5.882813		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	4.922544	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Nickel		
<b>Raw Statistics</b>			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	30		
Minimum	0.4		
Maximum	79.2		
Mean	29.2625		
Standard Deviation	15.2405		
Variance	232.2729		
Coefficient of Variation	0.52082		
Skewness	0.632915		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.927749		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	33.83051		
<b>Gamma Statistics</b>			
k hat	2.154651		
k star (bias corrected)	1.973486		
Theta hat	13.58109		
Theta star	14.82782		
nu hat	137.8977		
nu star	126.3031		
5% Approximate Chi Square Value	101.3409		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	100.1449		
Anderson-Darling Test Statistic	1.943842		
Anderson-Darling 5% Critical Value	0.758037		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.221366		
Kolmogrov-Smirnov 5% Critical Value	0.157394		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	36.4704		
95% Adjusted Gamma UCL	36.90598		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.916291		
Maximum of log data	4.371976		
Mean of log data	3.126654		
Standard Deviation of log data	0.965616		
Variance of log data	0.932414		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.714447		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	36.33789		
MLE Standard Deviation	45.10342		
MLE Coefficient of Variation	1.241223		
MLE Skewness	5.635937		
MLE Median	22.79758		
MLE 80% Quantile	51.55244		
MLE 90% Quantile	78.84394		
MLE 95% Quantile	111.6191		
MLE 99% Quantile	215.4387		
MVU Estimate of Median	22.4677		
MVU Estimate of Mean	35.59889		
MVU Estimate of Standard Deviation	41.00204		
MVU Estimate of SE of Mean	6.95528		
95% H-UCL	54.88654		
95% Chebyshev (MVUE) UCL	65.91625		
97.5% Chebyshev (MVUE) UCL	79.0346		
99% Chebyshev (MVUE) UCL	104.803		
<b>Non-parametric Statistics</b>			
95% CLT UCL	33.69401		
95% Adjusted-CLT UCL	34.0161		
95% Modified-t UCL	33.88075		
95% Jackknife UCL	33.83051		
95% Chebyshev (Mean, Sd) UCL	41.0061		
97.5% Chebyshev (Mean, Sd) UCL	46.08756		
99% Chebyshev (Mean, Sd) UCL	56.06911		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	33.71687		
95% Bootstrap-t UCL	34.18088		
95% Hall's Bootstrap UCL	34.68567		
95% Percentile Bootstrap UCL	33.59219		
95% BCA Bootstrap UCL	32.63125		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	41.0061	95% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - bw.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	31		
Number of Missing Data	0		
Number of Valid Observations	31		
Number of Distinct Observations	29		
Minimum	0.115		
Maximum	18.1		
Mean	2.717742		
Standard Deviation	4.682787		
Variance	21.9285		
Coefficient of Variation	1.723043		
Skewness	2.093169		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.614623		
Shapiro-Wilk 5% Critical Value	0.929		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	4.145229		
<b>Gamma Statistics</b>			
k hat	0.486856		
k star (bias corrected)	0.461247		
Theta hat	5.582226		
Theta star	5.892167		
nu hat	30.18509		
nu star	28.59729		
5% Approximate Chi Square Value	17.39181		
Adjusted Level of Significance	0.0413		
Adjusted Chi Square Value	16.90532		
Anderson-Darling Test Statistic	2.95045		
Anderson-Darling 5% Critical Value	0.812697		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.33507		
Kolmogrov-Smirnov 5% Critical Value	0.16706		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	4.468774		
95% Adjusted Gamma UCL	4.597373		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.162823		
Maximum of log data	2.895912		
Mean of log data	-0.310275		
Standard Deviation of log data	1.587814		
Variance of log data	2.521153		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.858797		
Shapiro-Wilk 5% Critical Value	0.929		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	2.586489		
MLE Standard Deviation	8.74942		
MLE Coefficient of Variation	3.382741		
MLE Skewness	48.8567		
MLE Median	0.733245		
MLE 80% Quantile	2.805067		
MLE 90% Quantile	5.641024		
MLE 95% Quantile	9.990939		
MLE 99% Quantile	29.45842		
MVU Estimate of Median	0.70399		
MVU Estimate of Mean	2.379956		
MVU Estimate of Standard Deviation	5.984315		
MVU Estimate of SE of Mean	0.871946		
95% H-UCL	6.542384		
95% Chebyshev (MVUE) UCL	6.180682		
97.5% Chebyshev (MVUE) UCL	7.825259		
99% Chebyshev (MVUE) UCL	11.05571		
<b>Non-parametric Statistics</b>			
95% CLT UCL	4.101152		
95% Adjusted-CLT UCL	4.439005		
95% Modified-t UCL	4.197927		
95% Jackknife UCL	4.145229		
95% Chebyshev (Mean, Sd) UCL	6.383809		
97.5% Chebyshev (Mean, Sd) UCL	7.970119		
99% Chebyshev (Mean, Sd) UCL	11.08612		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	4.081626		
95% Bootstrap-t UCL	4.715081		
95% Hall's Bootstrap UCL	4.393401		
95% Percentile Bootstrap UCL	4.170484		
95% BCA Bootstrap UCL	4.996935		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	11.08612	99% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	10.3		
Maximum	107		
Mean	60.65781		
Standard Deviation	28.54584		
Variance	814.8649		
Coefficient of Variation	0.470604		
Skewness	-0.163366		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.942233		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	69.2138		
Gamma Statistics			
k hat	3.489732		
k star (bias corrected)	3.183403		
Theta hat	17.38179		
Theta star	19.05439		
nu hat	223.3429		
nu star	203.7378		
5% Approximate Chi Square Value	171.7036		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	170.1319		
Anderson-Darling Test Statistic	0.934963		
Anderson-Darling 5% Critical Value	0.751869		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.181672		
Kolmogrov-Smirnov 5% Critical Value	0.156363		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	71.97456		
95% Adjusted Gamma UCL	72.63948		
Lognormal Statistics			
Minimum of log data	2.332144		
Maximum of log data	4.672829		
Mean of log data	3.955182		
Standard Deviation of log data	0.615763		
Variance of log data	0.379164		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.889013		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	63.10275		
MLE Standard Deviation	42.84777		
MLE Coefficient of Variation	0.679016		
MLE Skewness	2.350116		
MLE Median	52.20521		
MLE 80% Quantile	87.83868		
MLE 90% Quantile	115.1733		
MLE 95% Quantile	143.7553		
MLE 99% Quantile	218.6444		
MVU Estimate of Median	51.89678		
MVU Estimate of Mean	62.6668		
MVU Estimate of Standard Deviation	41.47301		
MVU Estimate of SE of Mean	7.273146		
95% H-UCL	78.9034		
95% Chebyshev (MVUE) UCL	94.36971		
97.5% Chebyshev (MVUE) UCL	108.0876		
99% Chebyshev (MVUE) UCL	135.0337		
Non-parametric Statistics			
95% CLT UCL	68.95814		
95% Adjusted-CLT UCL	68.80242		
95% Modified-t UCL	69.18951		
95% Jackknife UCL	69.2138		
95% Chebyshev (Mean, Sd) UCL	82.65386		
97.5% Chebyshev (Mean, Sd) UCL	92.17156		
99% Chebyshev (Mean, Sd) UCL	110.8673		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	68.94146		
95% Bootstrap-t UCL	68.8418		
95% Hall's Bootstrap UCL	69.39082		
95% Percentile Bootstrap UCL	68.79688		
95% BCA Bootstrap UCL	66.75469		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	69.2138	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Zinc		
<b>Raw Statistics</b>			
Number of Observations	32		
Number of Missing Data	0		
Number of Valid Observations	32		
Number of Distinct Observations	32		
Minimum	80.1		
Maximum	3770		
Mean	1372.128		
Standard Deviation	942.4868		
Variance	888281.5		
Coefficient of Variation	0.68688		
Skewness	0.681586		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.940725		
Shapiro-Wilk 5% Critical Value	0.93		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1654.618		
<b>Gamma Statistics</b>			
k hat	1.67643		
k star (bias corrected)	1.540098		
Theta hat	818.482		
Theta star	890.9354		
nu hat	107.2915		
nu star	98.56629		
5% Approximate Chi Square Value	76.65926		
Adjusted Level of Significance	0.0416		
Adjusted Chi Square Value	75.62528		
Anderson-Darling Test Statistic	0.382076		
Anderson-Darling 5% Critical Value	0.762514		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.13102		
Kolmogrov-Smirnov 5% Critical Value	0.158041		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1764.243		
95% Adjusted Gamma UCL	1788.365		
<b>Lognormal Statistics</b>			
Minimum of log data	4.383276		
Maximum of log data	8.23483		
Mean of log data	6.897133		
Standard Deviation of log data	0.961138		
Variance of log data	0.923786		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.900055		
Shapiro-Wilk 5% Critical Value	0.93		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	1570.307		
MLE Standard Deviation	1935.246		
MLE Coefficient of Variation	1.2324		
MLE Skewness	5.56898		
MLE Median	989.4343		
MLE 80% Quantile	2228.97		
MLE 90% Quantile	3402.262		
MLE 95% Quantile	4808.812		
MLE 99% Quantile	9253.346		
MVU Estimate of Median	975.249		
MVU Estimate of Mean	1538.746		
MVU Estimate of Standard Deviation	1761.231		
MVU Estimate of SE of Mean	298.9616		
95% H-UCL	2365.27		
95% Chebyshev (MVUE) UCL	2841.889		
97.5% Chebyshev (MVUE) UCL	3405.761		
99% Chebyshev (MVUE) UCL	4513.377		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1646.177		
95% Adjusted-CLT UCL	1667.627		
95% Modified-t UCL	1657.964		
95% Jackknife UCL	1654.618		
95% Chebyshev (Mean, Sd) UCL	2098.363		
97.5% Chebyshev (Mean, Sd) UCL	2412.605		
99% Chebyshev (Mean, Sd) UCL	3029.874		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1638.17		
95% Bootstrap-t UCL	1678.284		
95% Hall's Bootstrap UCL	1673.179		
95% Percentile Bootstrap UCL	1638.409		
95% BCA Bootstrap UCL	1764.316		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1654.618	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

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Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - bw.xls		
Variable:	Chromium VI		
Raw Statistics			
Number of Observations	5		
Number of Missing Data	0		
Number of Valid Observations	5		
Number of Distinct Observations	5		
Minimum	2.325		
Maximum	13.5		
Mean	5.7748		
Standard Deviation	4.678883		
Variance	21.89195		
Coefficient of Variation	0.810224		
Skewness	1.541776		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.815656		
Shapiro-Wilk 5% Critical Value	0.762		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	10.2356		
Gamma Statistics			
k hat	2.307384		
k star (bias corrected)	1.056287		
Theta hat	2.502748		
Theta star	5.467076		
nu hat	23.07384		
nu star	10.56287		
5% Approximate Chi Square Value	4.295664		
Adjusted Level of Significance	0.0086		
Adjusted Chi Square Value	2.735907		
Anderson-Darling Test Statistic	0.400839		
Anderson-Darling 5% Critical Value	0.683891		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.271191		
Kolmogrov-Smirnov 5% Critical Value	0.360147		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	14.2		
95% Adjusted Gamma UCL	22.29552		
Lognormal Statistics			
Minimum of log data	0.84372		
Maximum of log data	2.60269		
Mean of log data	1.521427		
Standard Deviation of log data	0.736089		
Variance of log data	0.541827		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.906942		
Shapiro-Wilk 5% Critical Value	0.762		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	6.003488		
MLE Standard Deviation	5.091101		
MLE Coefficient of Variation	0.848024		
MLE Skewness	3.153923		
MLE Median	4.578756		
MLE 80% Quantile	8.528575		
MLE 90% Quantile	11.79059		
MLE 95% Quantile	15.36809		
MLE 99% Quantile	25.37006		
MVU Estimate of Median	4.335107		
MVU Estimate of Mean	5.645451		
MVU Estimate of Standard Deviation	4.081691		
MVU Estimate of SE of Mean	1.819489		
95% H-UCL	24.34161		
95% Chebyshev (MVUE) UCL	13.57642		
97.5% Chebyshev (MVUE) UCL	17.00816		
99% Chebyshev (MVUE) UCL	23.74914		
Non-parametric Statistics			
95% CLT UCL	9.216591		
95% Adjusted-CLT UCL	10.7582		
95% Modified-t UCL	10.47606		
95% Jackknife UCL	10.2356		
95% Chebyshev (Mean, Sd) UCL	14.89562		
97.5% Chebyshev (Mean, Sd) UCL	18.84221		
99% Chebyshev (Mean, Sd) UCL	26.59452		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	8.897762		
95% Bootstrap-t UCL	28.01135		
95% Hall's Bootstrap UCL	37.31197		
95% Percentile Bootstrap UCL	9.0871		
95% BCA Bootstrap UCL	11.5165		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	10.2356		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:		Trichloroethene		
Raw Statistics				
Number of Observations		1		
Number of Missing Data		0		
Number of Valid Observations		1		
Constant Data		1		
Minimum		0.042		
Maximum		0.042		
Mean		0.042		
Standard Deviation		N/A		Too few observations to calculate
Variance		N/A		Too few observations to calculate
Coefficient of Variation		0		
Skewness		N/A		Too few observations to calculate
Too Few Distinct Observations?		YES		Too Few Observations To Calculate UCLs
Normal Statistics				
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Normality Test Result				
95% Student's-t UCL		N/A		Too Few Observations To Calculate UCLs
Gamma Statistics				
k hat		N/A		
k star (bias corrected)		N/A		
Theta hat		N/A		
Theta star		N/A		
nu hat		N/A		
nu star		N/A		
5% Approximate Chi Square Value		N/A		
Adjusted Level of Significance		0		
Adjusted Chi Square Value		0		
Anderson-Darling Test Statistic		N/A		
Anderson-Darling 5% Critical Value		N/A		
Anderson-Darling 5% Gamma Test Result		N/A		
Kolmogrov-Smirnov Test Statistic		N/A		
Kolmogrov-Smirnov 5% Critical Value		N/A		
Kolmogrov-Smirnov 5% Gamma Test Result		N/A		
5% Gamma Test Result		N/A		
95% Approximate Gamma UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A		Too Few Observations To Calculate UCLs
Lognormal Statistics				
Minimum of log data		-3.170086		
Maximum of log data		-3.170086		
Mean of log data		-3.170086		
Standard Deviation of log data		1.7E+269		
Variance of log data		1.9E-305		
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Lognormality Test Result				
MLE Mean		0		
MLE Standard Deviation		1.7E+269		
MLE Coefficient of Variation		1.7E+269		
MLE Skewness		0		
MLE Median		1.7E+269		
MLE 80% Quantile		1.9E-305		
MLE 90% Quantile		-5E+138		
MLE 95% Quantile		2.6E-308		
MLE 99% Quantile		2.6E-308		
MVU Estimate of Median		0		
MVU Estimate of Mean		0		
MVU Estimate of Standard Deviation		0		
MVU Estimate of SE of Mean		0		
95% H-UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
Non-parametric Statistics				
95% CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
Bootstrap Statistics				
Number of Bootstrap Runs		2000		
95% Standard Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
Recommendations				
Human Inspection Recommended?		YES		
Appropriate Distribution				
1st Recommended UCL		N/A		Too Few Observations To Calculate UCLs
2nd Recommended UCL				
3rd Recommended UCL				
Recommended UCL > Max Data Value				
Recommendation Warning!				
Alternative UCL				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Benzo(a)anthracene		
<b>Raw Statistics</b>			
Number of Observations	1		
Number of Missing Data	0		
Number of Valid Observations	1		
Constant Data	1		
Minimum	0.13		
Maximum	0.13		
Mean	0.13		
Standard Deviation	N/A		Too few observations to calculate
Variance	N/A		Too few observations to calculate
Coefficient of Variation	0		
Skewness	N/A		Too few observations to calculate
Too Few Distinct Observations?	YES		Too Few Observations To Calculate UCLs
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/A		Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL	N/A		Too Few Observations To Calculate UCLs
<b>Gamma Statistics</b>			
k hat	N/A		
k star (bias corrected)	N/A		
Theta hat	N/A		
Theta star	N/A		
nu hat	N/A		
nu star	N/A		
5% Approximate Chi Square Value	N/A		
Adjusted Level of Significance	0		
Adjusted Chi Square Value	0		
Anderson-Darling Test Statistic	N/A		
Anderson-Darling 5% Critical Value	N/A		
Anderson-Darling 5% Gamma Test Result	N/A		
Kolmogrov-Smirnov Test Statistic	N/A		
Kolmogrov-Smirnov 5% Critical Value	N/A		
Kolmogrov-Smirnov 5% Gamma Test Result	N/A		
5% Gamma Test Result	N/A		
95% Approximate Gamma UCL	N/A		Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL	N/A		Too Few Observations To Calculate UCLs
<b>Lognormal Statistics</b>			
Minimum of log data	-2.040221		
Maximum of log data	-2.040221		
Mean of log data	-2.040221		
Standard Deviation of log data	2.2E-307		
Variance of log data	0		
Lilliefors Test Statistic	N/A		Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean	0		
MLE Standard Deviation	0		
MLE Coefficient of Variation	2.1E-305		
MLE Skewness	1.7E+269		
MLE Median	2.2E-307		
MLE 80% Quantile	4E+129		
MLE 90% Quantile	-2.4E-159		
MLE 95% Quantile	0		
MLE 99% Quantile	1.2E-306		
MVU Estimate of Median	0		
MVU Estimate of Mean	6.9E-306		
MVU Estimate of Standard Deviation	1.7E+269		
MVU Estimate of SE of Mean	0		
95% H-UCL	N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL	N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL	N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL	N/A		Too Few Observations To Calculate UCLs
<b>Non-parametric Statistics</b>			
95% CLT UCL	N/A		Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL	N/A		Too Few Observations To Calculate UCLs
95% Modified-t UCL	N/A		Too Few Observations To Calculate UCLs
95% Jackknife UCL	N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL	N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL	N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL	N/A		Too Few Observations To Calculate UCLs
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL	N/A		Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL	N/A		Too Few Observations To Calculate UCLs
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution			
1st Recommended UCL	N/A		Too Few Observations To Calculate UCLs
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls	
Variable:		Benzo(a)pyrene	
Raw Statistics			
Number of Observations		1	
Number of Missing Data		0	
Number of Valid Observations		1	
Constant Data		1	
Minimum		0.16	
Maximum		0.16	
Mean		0.16	
Standard Deviation		N/A	Too few observations to calculate
Variance		N/A	Too few observations to calculate
Coefficient of Variation		0	
Skewness		N/A	Too few observations to calculate
Too Few Distinct Observations?		YES	Too Few Observations To Calculate UCLs
Normal Statistics			
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL		N/A	Too Few Observations To Calculate UCLs
Gamma Statistics			
k hat		N/A	
k star (bias corrected)		N/A	
Theta hat		N/A	
Theta star		N/A	
nu hat		N/A	
nu star		N/A	
5% Approximate Chi Square Value		N/A	
Adjusted Level of Significance		0	
Adjusted Chi Square Value		0	
Anderson-Darling Test Statistic		N/A	
Anderson-Darling 5% Critical Value		N/A	
Anderson-Darling 5% Gamma Test Result		N/A	
Kolmogrov-Smirnov Test Statistic		N/A	
Kolmogrov-Smirnov 5% Critical Value		N/A	
Kolmogrov-Smirnov 5% Gamma Test Result		N/A	
5% Gamma Test Result		N/A	
95% Approximate Gamma UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A	Too Few Observations To Calculate UCLs
Lognormal Statistics			
Minimum of log data		-1.832581	
Maximum of log data		-1.832581	
Mean of log data		-1.832581	
Standard Deviation of log data		2.2E-307	
Variance of log data		0	
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean		0	
MLE Standard Deviation		0	
MLE Coefficient of Variation		8E-305	
MLE Skewness		1.7E+269	
MLE Median		2.2E-307	
MLE 80% Quantile		4E+129	
MLE 90% Quantile		9.4E-280	
MLE 95% Quantile		0	
MLE 99% Quantile		1.2E-306	
MVU Estimate of Median		0	
MVU Estimate of Mean		6.9E-306	
MVU Estimate of Standard Deviation		1.7E+269	
MVU Estimate of SE of Mean		0	
95% H-UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
Non-parametric Statistics			
95% CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
Recommendations			
Human Inspection Recommended?		YES	
Appropriate Distribution			
1st Recommended UCL		N/A	Too Few Observations To Calculate UCLs
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:		Benzo(b)fluoranthene		
Raw Statistics				
Number of Observations		1		
Number of Missing Data		0		
Number of Valid Observations		1		
Constant Data		1		
Minimum		0.29		
Maximum		0.29		
Mean		0.29		
Standard Deviation		N/A		Too few observations to calculate
Variance		N/A		Too few observations to calculate
Coefficient of Variation		0		
Skewness		N/A		Too few observations to calculate
Too Few Distinct Observations?		YES		Too Few Observations To Calculate UCLs
Normal Statistics				
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Normality Test Result				
95% Student's-t UCL		N/A		Too Few Observations To Calculate UCLs
Gamma Statistics				
k hat		N/A		
k star (bias corrected)		N/A		
Theta hat		N/A		
Theta star		N/A		
nu hat		N/A		
nu star		N/A		
5% Approximate Chi Square Value		N/A		
Adjusted Level of Significance		0		
Adjusted Chi Square Value		0		
Anderson-Darling Test Statistic		N/A		
Anderson-Darling 5% Critical Value		N/A		
Anderson-Darling 5% Gamma Test Result		N/A		
Kolmogrov-Smirnov Test Statistic		N/A		
Kolmogrov-Smirnov 5% Critical Value		N/A		
Kolmogrov-Smirnov 5% Gamma Test Result		N/A		
5% Gamma Test Result		N/A		
95% Approximate Gamma UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A		Too Few Observations To Calculate UCLs
Lognormal Statistics				
Minimum of log data		-1.237874		
Maximum of log data		-1.237874		
Mean of log data		-1.237874		
Standard Deviation of log data		2.2E-307		
Variance of log data		0		
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Lognormality Test Result				
MLE Mean		0		
MLE Standard Deviation		0		
MLE Coefficient of Variation		4E-305		
MLE Skewness		1.7E+269		
MLE Median		2.2E-307		
MLE 80% Quantile		4E+129		
MLE 90% Quantile		-2.4E-159		
MLE 95% Quantile		0		
MLE 99% Quantile		1.2E-306		
MVU Estimate of Median		0		
MVU Estimate of Mean		6.9E-306		
MVU Estimate of Standard Deviation		1.7E+269		
MVU Estimate of SE of Mean		0		
95% H-UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
Non-parametric Statistics				
95% CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
Bootstrap Statistics				
Number of Bootstrap Runs		2000		
95% Standard Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
Recommendations				
Human Inspection Recommended?		YES		
Appropriate Distribution				
1st Recommended UCL		N/A		Too Few Observations To Calculate UCLs
2nd Recommended UCL				
3rd Recommended UCL				
Recommended UCL > Max Data Value				
Recommendation Warning!				
Alternative UCL				

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls	
Variable:		Benzo(k)fluoranthene	
Raw Statistics			
Number of Observations		1	
Number of Missing Data		0	
Number of Valid Observations		1	
Constant Data		1	
Minimum		0.2	
Maximum		0.2	
Mean		0.2	
Standard Deviation		N/A	Too few observations to calculate
Variance		N/A	Too few observations to calculate
Coefficient of Variation		0	
Skewness		N/A	Too few observations to calculate
Too Few Distinct Observations?		YES	Too Few Observations To Calculate UCLs
Normal Statistics			
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL		N/A	Too Few Observations To Calculate UCLs
Gamma Statistics			
k hat		N/A	
k star (bias corrected)		N/A	
Theta hat		N/A	
Theta star		N/A	
nu hat		N/A	
nu star		N/A	
5% Approximate Chi Square Value		N/A	
Adjusted Level of Significance		0	
Adjusted Chi Square Value		0	
Anderson-Darling Test Statistic		N/A	
Anderson-Darling 5% Critical Value		N/A	
Anderson-Darling 5% Gamma Test Result		N/A	
Kolmogrov-Smirnov Test Statistic		N/A	
Kolmogrov-Smirnov 5% Critical Value		N/A	
Kolmogrov-Smirnov 5% Gamma Test Result		N/A	
5% Gamma Test Result		N/A	
95% Approximate Gamma UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A	Too Few Observations To Calculate UCLs
Lognormal Statistics			
Minimum of log data		-1.609438	
Maximum of log data		-1.609438	
Mean of log data		-1.609438	
Standard Deviation of log data		2.2E-307	
Variance of log data		0	
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean		0	
MLE Standard Deviation		0	
MLE Coefficient of Variation		5.2E-306	
MLE Skewness		1.7E+269	
MLE Median		2.2E-307	
MLE 80% Quantile		4E+129	
MLE 90% Quantile		7.7E-304	
MLE 95% Quantile		0	
MLE 99% Quantile		1.2E-306	
MVU Estimate of Median		0	
MVU Estimate of Mean		6.9E-306	
MVU Estimate of Standard Deviation		1.7E+269	
MVU Estimate of SE of Mean		0	
95% H-UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
Non-parametric Statistics			
95% CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
Recommendations			
Human Inspection Recommended?		YES	
Appropriate Distribution			
1st Recommended UCL		N/A	Too Few Observations To Calculate UCLs
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls	
Variable:	Dibenz(a,h)anthracene	
Raw Statistics		
Number of Observations	1	
Number of Missing Data	0	
Number of Valid Observations	1	
Constant Data	1	
Minimum	0.046	
Maximum	0.046	
Mean	0.046	
Standard Deviation	N/A	Too few observations to calculate
Variance	N/A	Too few observations to calculate
Coefficient of Variation	0	
Skewness	N/A	Too few observations to calculate
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs
Normal Statistics		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		
Shapiro-Wilk 5% Critical Value		
5% Normality Test Result		
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs
Gamma Statistics		
k hat	N/A	
k star (bias corrected)	N/A	
Theta hat	N/A	
Theta star	N/A	
nu hat	N/A	
nu star	N/A	
5% Approximate Chi Square Value	N/A	
Adjusted Level of Significance	0	
Adjusted Chi Square Value	0	
Anderson-Darling Test Statistic	N/A	
Anderson-Darling 5% Critical Value	N/A	
Anderson-Darling 5% Gamma Test Result	N/A	
Kolmogrov-Smirnov Test Statistic	N/A	
Kolmogrov-Smirnov 5% Critical Value	N/A	
Kolmogrov-Smirnov 5% Gamma Test Result	N/A	
5% Gamma Test Result	N/A	
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs
Lognormal Statistics		
Minimum of log data	-3.079114	
Maximum of log data	-3.079114	
Mean of log data	-3.079114	
Standard Deviation of log data	2.2E-307	
Variance of log data	0	
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		
Shapiro-Wilk 5% Critical Value		
5% Lognormality Test Result		
MLE Mean	0	
MLE Standard Deviation	0	
MLE Coefficient of Variation	1.4E-304	
MLE Skewness	1.7E+269	
MLE Median	2.2E-307	
MLE 80% Quantile	4E+129	
MLE 90% Quantile	7.7E-304	
MLE 95% Quantile	0	
MLE 99% Quantile	1.2E-306	
MVU Estimate of Median	0	
MVU Estimate of Mean	6.9E-306	
MVU Estimate of Standard Deviation	1.7E+269	
MVU Estimate of SE of Mean	0	
95% H-UCL	N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
Non-parametric Statistics		
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution		
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!		
Alternative UCL		

Data File			J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls
Variable:			Indeno(1,2,3-cd)pyrene
Raw Statistics			
Number of Observations		1	
Number of Missing Data		0	
Number of Valid Observations		1	
Constant Data		1	
Minimum		0.14	
Maximum		0.14	
Mean		0.14	
Standard Deviation		N/A	Too few observations to calculate
Variance		N/A	Too few observations to calculate
Coefficient of Variation		0	
Skewness		N/A	Too few observations to calculate
Too Few Distinct Observations?		YES	Too Few Observations To Calculate UCLs
Normal Statistics			
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Normality Test Result			
95% Student's-t UCL		N/A	Too Few Observations To Calculate UCLs
Gamma Statistics			
k hat		N/A	
k star (bias corrected)		N/A	
Theta hat		N/A	
Theta star		N/A	
nu hat		N/A	
nu star		N/A	
5% Approximate Chi Square Value		N/A	
Adjusted Level of Significance		0	
Adjusted Chi Square Value		0	
Anderson-Darling Test Statistic		N/A	
Anderson-Darling 5% Critical Value		N/A	
Anderson-Darling 5% Gamma Test Result		N/A	
Kolmogrov-Smirnov Test Statistic		N/A	
Kolmogrov-Smirnov 5% Critical Value		N/A	
Kolmogrov-Smirnov 5% Gamma Test Result		N/A	
5% Gamma Test Result		N/A	
95% Approximate Gamma UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A	Too Few Observations To Calculate UCLs
Lognormal Statistics			
Minimum of log data		-1.966113	
Maximum of log data		-1.966113	
Mean of log data		-1.966113	
Standard Deviation of log data		2.2E-307	
Variance of log data		0	
Lilliefors Test Statistic		N/A	Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			
Shapiro-Wilk 5% Critical Value			
5% Lognormality Test Result			
MLE Mean		0	
MLE Standard Deviation		0	
MLE Coefficient of Variation		1E-305	
MLE Skewness		1.7E+269	
MLE Median		2.2E-307	
MLE 80% Quantile		4E+129	
MLE 90% Quantile		8.6E-174	
MLE 95% Quantile		0	
MLE 99% Quantile		1.2E-306	
MVU Estimate of Median		0	
MVU Estimate of Mean		6.9E-306	
MVU Estimate of Standard Deviation		1.7E+269	
MVU Estimate of SE of Mean		0	
95% H-UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A	Too Few Observations To Calculate UCLs
Non-parametric Statistics			
95% CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A	Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A	Too Few Observations To Calculate UCLs
Bootstrap Statistics			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A	Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A	Too Few Observations To Calculate UCLs
Recommendations			
Human Inspection Recommended?		YES	
Appropriate Distribution			
1st Recommended UCL		N/A	Too Few Observations To Calculate UCLs
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!			
Alternative UCL			

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:		Phenanthrene		
Raw Statistics				
Number of Observations		1		
Number of Missing Data		0		
Number of Valid Observations		1		
Constant Data		1		
Minimum		0.16		
Maximum		0.16		
Mean		0.16		
Standard Deviation		N/A		Too few observations to calculate
Variance		N/A		Too few observations to calculate
Coefficient of Variation		0		
Skewness		N/A		Too few observations to calculate
Too Few Distinct Observations?		YES		Too Few Observations To Calculate UCLs
Normal Statistics				
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Normality Test Result				
95% Student's-t UCL		N/A		Too Few Observations To Calculate UCLs
Gamma Statistics				
k hat		N/A		
k star (bias corrected)		N/A		
Theta hat		N/A		
Theta star		N/A		
nu hat		N/A		
nu star		N/A		
5% Approximate Chi Square Value		N/A		
Adjusted Level of Significance		0		
Adjusted Chi Square Value		0		
Anderson-Darling Test Statistic		N/A		
Anderson-Darling 5% Critical Value		N/A		
Anderson-Darling 5% Gamma Test Result		N/A		
Kolmogrov-Smirnov Test Statistic		N/A		
Kolmogrov-Smirnov 5% Critical Value		N/A		
Kolmogrov-Smirnov 5% Gamma Test Result		N/A		
5% Gamma Test Result		N/A		
95% Approximate Gamma UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A		Too Few Observations To Calculate UCLs
Lognormal Statistics				
Minimum of log data		-1.832581		
Maximum of log data		-1.832581		
Mean of log data		-1.832581		
Standard Deviation of log data		2.2E-307		
Variance of log data		0		
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Lognormality Test Result				
MLE Mean		0		
MLE Standard Deviation		0		
MLE Coefficient of Variation		2.1E-304		
MLE Skewness		1.7E+269		
MLE Median		2.2E-307		
MLE 80% Quantile		4E+129		
MLE 90% Quantile		9.4E-280		
MLE 95% Quantile		0		
MLE 99% Quantile		1.2E-306		
MVU Estimate of Median		0		
MVU Estimate of Mean		6.9E-306		
MVU Estimate of Standard Deviation		1.7E+269		
MVU Estimate of SE of Mean		0		
95% H-UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
Non-parametric Statistics				
95% CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
Bootstrap Statistics				
Number of Bootstrap Runs		2000		
95% Standard Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
Recommendations				
Human Inspection Recommended?		YES		
Appropriate Distribution				
1st Recommended UCL		N/A		Too Few Observations To Calculate UCLs
2nd Recommended UCL				
3rd Recommended UCL				
Recommended UCL > Max Data Value				
Recommendation Warning!				
Alternative UCL				

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:		Aroclor 1260		
Raw Statistics				
Number of Observations		1		
Number of Missing Data		0		
Number of Valid Observations		1		
Constant Data		1		
Minimum		0.011		
Maximum		0.011		
Mean		0.011		
Standard Deviation		N/A		Too few observations to calculate
Variance		N/A		Too few observations to calculate
Coefficient of Variation		0		
Skewness		N/A		Too few observations to calculate
Too Few Distinct Observations?		YES		Too Few Observations To Calculate UCLs
Normal Statistics				
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Normality Test Result				
95% Student's-t UCL		N/A		Too Few Observations To Calculate UCLs
Gamma Statistics				
k hat		N/A		
k star (bias corrected)		N/A		
Theta hat		N/A		
Theta star		N/A		
nu hat		N/A		
nu star		N/A		
5% Approximate Chi Square Value		N/A		
Adjusted Level of Significance		0		
Adjusted Chi Square Value		0		
Anderson-Darling Test Statistic		N/A		
Anderson-Darling 5% Critical Value		N/A		
Anderson-Darling 5% Gamma Test Result		N/A		
Kolmogrov-Smirnov Test Statistic		N/A		
Kolmogrov-Smirnov 5% Critical Value		N/A		
Kolmogrov-Smirnov 5% Gamma Test Result		N/A		
5% Gamma Test Result		N/A		
95% Approximate Gamma UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A		Too Few Observations To Calculate UCLs
Lognormal Statistics				
Minimum of log data		-4.50986		
Maximum of log data		-4.50986		
Mean of log data		-4.50986		
Standard Deviation of log data		2.2E-307		
Variance of log data		0		
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Lognormality Test Result				
MLE Mean		0		
MLE Standard Deviation		0		
MLE Coefficient of Variation		4.6E-305		
MLE Skewness		1.7E+269		
MLE Median		2.2E-307		
MLE 80% Quantile		4E+129		
MLE 90% Quantile		-3.2E-241		
MLE 95% Quantile		0		
MLE 99% Quantile		1.2E-306		
MVU Estimate of Median		0		
MVU Estimate of Mean		6.9E-306		
MVU Estimate of Standard Deviation		1.7E+269		
MVU Estimate of SE of Mean		0		
95% H-UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
Non-parametric Statistics				
95% CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
Bootstrap Statistics				
Number of Bootstrap Runs		2000		
95% Standard Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
Recommendations				
Human Inspection Recommended?		YES		
Appropriate Distribution				
1st Recommended UCL		N/A		Too Few Observations To Calculate UCLs
2nd Recommended UCL				
3rd Recommended UCL				
Recommended UCL > Max Data Value				
Recommendation Warning!				
Alternative UCL				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	19		
Number of Missing Data	0		
Number of Valid Observations	19		
Number of Distinct Observations	19		
Minimum	0.5		
Maximum	24.5		
Mean	5.989474		
Standard Deviation	5.980235		
Variance	35.76322		
Coefficient of Variation	0.998458		
Skewness	1.774968		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.817913		
Shapiro-Wilk 5% Critical Value	0.901		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	8.36854		
Gamma Statistics			
k hat	1.132949		
k star (bias corrected)	0.98915		
Theta hat	5.28662		
Theta star	6.05517		
nu hat	43.05208		
nu star	37.58772		
5% Approximate Chi Square Value	24.54783		
Adjusted Level of Significance	0.03687		
Adjusted Chi Square Value	23.6275		
Anderson-Darling Test Statistic	0.28954		
Anderson-Darling 5% Critical Value	0.765962		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.124472		
Kolmogrov-Smirnov 5% Critical Value	0.203719		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	9.171101		
95% Adjusted Gamma UCL	9.528331		
Lognormal Statistics			
Minimum of log data	-0.693147		
Maximum of log data	3.198673		
Mean of log data	1.287666		
Standard Deviation of log data	1.103424		
Variance of log data	1.217544		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.963955		
Shapiro-Wilk 5% Critical Value	0.901		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	6.662123		
MLE Standard Deviation	10.2754		
MLE Coefficient of Variation	1.542361		
MLE Skewness	8.296173		
MLE Median	3.624319		
MLE 80% Quantile	9.207877		
MLE 90% Quantile	14.96278		
MLE 95% Quantile	22.26015		
MLE 99% Quantile	47.19226		
MVU Estimate of Median	3.509853		
MVU Estimate of Mean	6.352399		
MVU Estimate of Standard Deviation	8.353233		
MVU Estimate of SE of Mean	1.819396		
95% H-UCL	13.71267		
95% Chebyshev (MVUE) UCL	14.28296		
97.5% Chebyshev (MVUE) UCL	17.71452		
99% Chebyshev (MVUE) UCL	24.45516		
Non-parametric Statistics			
95% CLT UCL	8.246147		
95% Adjusted-CLT UCL	8.843094		
95% Modified-t UCL	8.461651		
95% Jackknife UCL	8.36854		
95% Chebyshev (Mean, Sd) UCL	11.96971		
97.5% Chebyshev (Mean, Sd) UCL	14.55736		
99% Chebyshev (Mean, Sd) UCL	19.6403		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	8.20562		
95% Bootstrap-t UCL	9.33198		
95% Hall's Bootstrap UCL	10.22155		
95% Percentile Bootstrap UCL	8.307895		
95% BCA Bootstrap UCL	9.463158		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	9.171101	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	21		
Number of Missing Data	0		
Number of Valid Observations	21		
Number of Distinct Observations	19		
Minimum	6.6		
Maximum	1450		
Mean	136.3833		
Standard Deviation	313.0736		
Variance	98015.06		
Coefficient of Variation	2.295541		
Skewness	4.061086		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.421129		
Shapiro-Wilk 5% Critical Value	0.908		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	254.2131		
Gamma Statistics			
k hat	0.570986		
k star (bias corrected)	0.521162		
Theta hat	238.856		
Theta star	261.6907		
nu hat	23.98139		
nu star	21.88881		
5% Approximate Chi Square Value	12.25337		
Adjusted Level of Significance	0.0383		
Adjusted Chi Square Value	11.70041		
Anderson-Darling Test Statistic	1.522292		
Anderson-Darling 5% Critical Value	0.79891		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.234692		
Kolmogrov-Smirnov 5% Critical Value	0.199383		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	243.6284		
95% Adjusted Gamma UCL	255.1424		
Lognormal Statistics			
Minimum of log data	1.88707		
Maximum of log data	7.279319		
Mean of log data	3.825343		
Standard Deviation of log data	1.341271		
Variance of log data	1.799008		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.946423		
Shapiro-Wilk 5% Critical Value	0.908		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	112.7133		
MLE Standard Deviation	253.1322		
MLE Coefficient of Variation	2.245807		
MLE Skewness	18.06449		
MLE Median	45.84852		
MLE 80% Quantile	142.411		
MLE 90% Quantile	256.9487		
MLE 95% Quantile	416.4364		
MLE 99% Quantile	1038.092		
MVU Estimate of Median	43.92245		
MVU Estimate of Mean	104.7399		
MVU Estimate of Standard Deviation	184.033		
MVU Estimate of SE of Mean	36.2189		
95% H-UCL	282.3031		
95% Chebyshev (MVUE) UCL	262.6145		
97.5% Chebyshev (MVUE) UCL	330.9269		
99% Chebyshev (MVUE) UCL	465.1135		
Non-parametric Statistics			
95% CLT UCL	248.7569		
95% Adjusted-CLT UCL	313.4487		
95% Modified-t UCL	264.3037		
95% Jackknife UCL	254.2131		
95% Chebyshev (Mean, Sd) UCL	434.1757		
97.5% Chebyshev (Mean, Sd) UCL	563.0307		
99% Chebyshev (Mean, Sd) UCL	816.1414		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	248.6699		
95% Bootstrap-t UCL	551.781		
95% Hall's Bootstrap UCL	607.587		
95% Percentile Bootstrap UCL	259.9714		
95% BCA Bootstrap UCL	362.1048		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	262.6145	95% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls				
Variable:	Barium				
<b>Raw Statistics</b>					
Number of Observations	21				
Number of Missing Data	0				
Number of Valid Observations	21				
Number of Distinct Observations	21				
Minimum	14.1				
Maximum	177				
Mean	78.59048				
Standard Deviation	41.12793				
Variance	1691.507				
Coefficient of Variation	0.52332				
Skewness	0.58547				
Too Few Distinct Observations?	NO				
<b>Normal Statistics</b>					
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result			
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result			
Shapiro-Wilk Test Statistic	0.968674				
Shapiro-Wilk 5% Critical Value	0.908				
5% Normality Test Result	NORMAL	Data are normal at 5% significance level			
95% Student's-t UCL	94.06956				
<b>Gamma Statistics</b>					
k hat	3.212862				
k star (bias corrected)	2.785628				
Theta hat	24.4612				
Theta star	28.21284				
nu hat	134.9402				
nu star	116.9964				
5% Approximate Chi Square Value	93.01788				
Adjusted Level of Significance	0.0383				
Adjusted Chi Square Value	91.37605				
Anderson-Darling Test Statistic	0.285797				
Anderson-Darling 5% Critical Value	0.748969				
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.			
Kolmogrov-Smirnov Test Statistic	0.126136				
Kolmogrov-Smirnov 5% Critical Value	0.1908				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level			
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level			
95% Approximate Gamma UCL	98.84983				
95% Adjusted Gamma UCL	100.6259				
<b>Lognormal Statistics</b>					
Minimum of log data	2.646175				
Maximum of log data	5.17615				
Mean of log data	4.200628				
Standard Deviation of log data	0.643729				
Variance of log data	0.414387				
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result			
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result			
Shapiro-Wilk Test Statistic	0.927557				
Shapiro-Wilk 5% Critical Value	0.908				
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level			
MLE Mean	82.09045				
MLE Standard Deviation	58.82187				
MLE Coefficient of Variation	0.71655				
MLE Skewness	2.517556				
MLE Median	66.72822				
MLE 80% Quantile	114.9594				
MLE 90% Quantile	152.6				
MLE 95% Quantile	192.3973				
MLE 99% Quantile	298.253				
MVU Estimate of Median	66.0728				
MVU Estimate of Mean	81.14382				
MVU Estimate of Standard Deviation	55.79674				
MVU Estimate of SE of Mean	12.07823				
95% H-UCL	111.5459				
95% Chebyshev (MVUE) UCL	133.7916				
97.5% Chebyshev (MVUE) UCL	156.5723				
99% Chebyshev (MVUE) UCL	201.3207				
<b>Non-parametric Statistics</b>					
95% CLT UCL	93.35279				
95% Adjusted-CLT UCL	94.57798				
95% Modified-t UCL	94.26067				
95% Jackknife UCL	94.06956				
95% Chebyshev (Mean, Sd) UCL	117.7109				
97.5% Chebyshev (Mean, Sd) UCL	134.6384				
99% Chebyshev (Mean, Sd) UCL	167.8891				
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	92.6563				
95% Bootstrap-t UCL	95.33293				
95% Hall's Bootstrap UCL	95.86612				
95% Percentile Bootstrap UCL	93.3381				
95% BCA Bootstrap UCL	90.30952				
<b>Recommendations</b>					
Human Inspection Recommended?	NO				
Appropriate Distribution	NORMAL				
1st Recommended UCL	94.06956	95% Student's-t UCL			
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value	NO				
Recommendation Warning!	NONE				
Alternative UCL	NONE				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	21		
Number of Missing Data	0		
Number of Valid Observations	21		
Number of Distinct Observations	21		
Minimum	0.46		
Maximum	12.3		
Mean	5.211429		
Standard Deviation	3.103225		
Variance	9.630003		
Coefficient of Variation	0.595465		
Skewness	0.391543		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.970563		
Shapiro-Wilk 5% Critical Value	0.908		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	6.379372		
<b>Gamma Statistics</b>			
k hat	1.973024		
k star (bias corrected)	1.72291		
Theta hat	2.64134		
Theta star	3.024783		
nu hat	82.86703		
nu star	72.36221		
5% Approximate Chi Square Value	53.7713		
Adjusted Level of Significance	0.0383		
Adjusted Chi Square Value	52.54015		
Anderson-Darling Test Statistic	0.635912		
Anderson-Darling 5% Critical Value	0.754047		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.147009		
Kolmogrov-Smirnov 5% Critical Value	0.191804		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	7.01323		
95% Adjusted Gamma UCL	7.177567		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.776529		
Maximum of log data	2.509599		
Mean of log data	1.376525		
Standard Deviation of log data	0.908582		
Variance of log data	0.825522		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.844355		
Shapiro-Wilk 5% Critical Value	0.908		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	5.985175		
MLE Standard Deviation	6.779572		
MLE Coefficient of Variation	1.132728		
MLE Skewness	4.851554		
MLE Median	3.961111		
MLE 80% Quantile	8.535865		
MLE 90% Quantile	12.73116		
MLE 95% Quantile	17.65718		
MLE 99% Quantile	32.78225		
MVU Estimate of Median	3.883946		
MVU Estimate of Mean	5.829296		
MVU Estimate of Standard Deviation	6.025831		
MVU Estimate of SE of Mean	1.278535		
95% H-UCL	9.831869		
95% Chebyshev (MVUE) UCL	11.4023		
97.5% Chebyshev (MVUE) UCL	13.81374		
99% Chebyshev (MVUE) UCL	18.55056		
<b>Non-parametric Statistics</b>			
95% CLT UCL	6.325289		
95% Adjusted-CLT UCL	6.387113		
95% Modified-t UCL	6.389015		
95% Jackknife UCL	6.379372		
95% Chebyshev (Mean, Sd) UCL	8.163184		
97.5% Chebyshev (Mean, Sd) UCL	9.440411		
99% Chebyshev (Mean, Sd) UCL	11.94928		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	6.288496		
95% Bootstrap-t UCL	6.428648		
95% Hall's Bootstrap UCL	6.438671		
95% Percentile Bootstrap UCL	6.295238		
95% BCA Bootstrap UCL	6.7		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	6.379372	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	21		
Number of Missing Data	0		
Number of Valid Observations	21		
Number of Distinct Observations	21		
Minimum	14.3		
Maximum	2570		
Mean	560.9905		
Standard Deviation	710.38		
Variance	504639.8		
Coefficient of Variation	1.266296		
Skewness	1.831396		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.735238		
Shapiro-Wilk 5% Critical Value	0.908		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	828.3522		
Gamma Statistics			
k hat	0.735355		
k star (bias corrected)	0.662051		
Theta hat	762.8836		
Theta star	847.3529		
nu hat	30.88492		
nu star	27.80612		
5% Approximate Chi Square Value	16.77528		
Adjusted Level of Significance	0.0383		
Adjusted Chi Square Value	16.11745		
Anderson-Darling Test Statistic	0.321237		
Anderson-Darling 5% Critical Value	0.784136		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.119964		
Kolmogrov-Smirnov 5% Critical Value	0.197122		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	929.8783		
95% Adjusted Gamma UCL	967.8311		
Lognormal Statistics			
Minimum of log data	2.66026		
Maximum of log data	7.851661		
Mean of log data	5.51344		
Standard Deviation of log data	1.463751		
Variance of log data	2.142566		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.962649		
Shapiro-Wilk 5% Critical Value	0.908		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	723.9506		
MLE Standard Deviation	1985.43		
MLE Coefficient of Variation	2.742494		
MLE Skewness	28.85453		
MLE Median	248.0029		
MLE 80% Quantile	854.3232		
MLE 90% Quantile	1626.783		
MLE 95% Quantile	2755.378		
MLE 99% Quantile	7466.071		
MVU Estimate of Median	235.6406		
MVU Estimate of Mean	659.2284		
MVU Estimate of Standard Deviation	1325.216		
MVU Estimate of SE of Mean	252.5449		
95% H-UCL	2099.441		
95% Chebyshev (MVUE) UCL	1760.046		
97.5% Chebyshev (MVUE) UCL	2236.371		
99% Chebyshev (MVUE) UCL	3172.018		
Non-parametric Statistics			
95% CLT UCL	815.9718		
95% Adjusted-CLT UCL	882.1682		
95% Modified-t UCL	838.6775		
95% Jackknife UCL	828.3522		
95% Chebyshev (Mean, Sd) UCL	1236.697		
97.5% Chebyshev (Mean, Sd) UCL	1529.075		
99% Chebyshev (Mean, Sd) UCL	2103.396		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	810.1077		
95% Bootstrap-t UCL	943.9504		
95% Hall's Bootstrap UCL	856.5065		
95% Percentile Bootstrap UCL	837.7667		
95% BCA Bootstrap UCL	946.1571		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	929.8783	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	21		
Number of Missing Data	0		
Number of Valid Observations	21		
Number of Distinct Observations	21		
Minimum	18.8		
Maximum	1330		
Mean	482.7524		
Standard Deviation	383.0941		
Variance	146761.1		
Coefficient of Variation	0.793562		
Skewness	0.679584		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.928577		
Shapiro-Wilk 5% Critical Value	0.908		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	626.9354		
Gamma Statistics			
k hat	1.133508		
k star (bias corrected)	1.003324		
Theta hat	425.8925		
Theta star	481.153		
nu hat	47.60732		
nu star	42.13961		
5% Approximate Chi Square Value	28.25606		
Adjusted Level of Significance	0.0383		
Adjusted Chi Square Value	27.3826		
Anderson-Darling Test Statistic	0.433154		
Anderson-Darling 5% Critical Value	0.766571		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.152607		
Kolmogrov-Smirnov 5% Critical Value	0.194321		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	719.9518		
95% Adjusted Gamma UCL	742.917		
Lognormal Statistics			
Minimum of log data	2.933857		
Maximum of log data	7.192934		
Mean of log data	5.677441		
Standard Deviation of log data	1.25628		
Variance of log data	1.578239		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.879796		
Shapiro-Wilk 5% Critical Value	0.908		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	643.2675		
MLE Standard Deviation	1261.594		
MLE Coefficient of Variation	1.961228		
MLE Skewness	13.42738		
MLE Median	292.2007		
MLE 80% Quantile	844.7135		
MLE 90% Quantile	1468.153		
MLE 95% Quantile	2307.734		
MLE 99% Quantile	5429.206		
MVU Estimate of Median	281.4063		
MVU Estimate of Mean	605.0091		
MVU Estimate of Standard Deviation	965.2566		
MVU Estimate of SE of Mean	193.7015		
95% H-UCL	1466.02		
95% Chebyshev (MVUE) UCL	1449.334		
97.5% Chebyshev (MVUE) UCL	1814.674		
99% Chebyshev (MVUE) UCL	2532.314		
Non-parametric Statistics			
95% CLT UCL	620.2588		
95% Adjusted-CLT UCL	633.5056		
95% Modified-t UCL	629.0016		
95% Jackknife UCL	626.9354		
95% Chebyshev (Mean, Sd) UCL	847.1476		
97.5% Chebyshev (Mean, Sd) UCL	1004.822		
99% Chebyshev (Mean, Sd) UCL	1314.542		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	618.8798		
95% Bootstrap-t UCL	632.8355		
95% Hall's Bootstrap UCL	639.086		
95% Percentile Bootstrap UCL	616.9048		
95% BCA Bootstrap UCL	680.7286		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	626.9354	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	21		
Number of Missing Data	0		
Number of Valid Observations	21		
Number of Distinct Observations	21		
Minimum	23.9		
Maximum	810		
Mean	428.6381		
Standard Deviation	244.9038		
Variance	59977.89		
Coefficient of Variation	0.571353		
Skewness	-0.108936		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.949066		
Shapiro-Wilk 5% Critical Value	0.908		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	520.8112		
Gamma Statistics			
k hat	1.972796		
k star (bias corrected)	1.722714		
Theta hat	217.2744		
Theta star	248.8156		
nu hat	82.85743		
nu star	72.35399		
5% Approximate Chi Square Value	53.76421		
Adjusted Level of Significance	0.0383		
Adjusted Chi Square Value	52.53315		
Anderson-Darling Test Statistic	0.801095		
Anderson-Darling 5% Critical Value	0.754049		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.204022		
Kolmogrov-Smirnov 5% Critical Value	0.191805		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	576.8462		
95% Adjusted Gamma UCL	590.364		
Lognormal Statistics			
Minimum of log data	3.173878		
Maximum of log data	6.697034		
Mean of log data	5.786249		
Standard Deviation of log data	0.915968		
Variance of log data	0.838998		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.841889		
Shapiro-Wilk 5% Critical Value	0.908		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	495.5898		
MLE Standard Deviation	568.1041		
MLE Coefficient of Variation	1.146319		
MLE Skewness	4.945275		
MLE Median	325.7889		
MLE 80% Quantile	706.4432		
MLE 90% Quantile	1057.083		
MLE 95% Quantile	1470		
MLE 99% Quantile	2742.958		
MVU Estimate of Median	319.3396		
MVU Estimate of Mean	482.423		
MVU Estimate of Standard Deviation	503.7632		
MVU Estimate of SE of Mean	106.7998		
95% H-UCL	818.9999		
95% Chebyshev (MVUE) UCL	947.9528		
97.5% Chebyshev (MVUE) UCL	1149.388		
99% Chebyshev (MVUE) UCL	1545.068		
Non-parametric Statistics			
95% CLT UCL	516.543		
95% Adjusted-CLT UCL	515.1856		
95% Modified-t UCL	520.5994		
95% Jackknife UCL	520.8112		
95% Chebyshev (Mean, Sd) UCL	661.5881		
97.5% Chebyshev (Mean, Sd) UCL	762.3858		
99% Chebyshev (Mean, Sd) UCL	960.3833		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	515.3754		
95% Bootstrap-t UCL	516.0363		
95% Hall's Bootstrap UCL	509.601		
95% Percentile Bootstrap UCL	512.7333		
95% BCA Bootstrap UCL	495.2381		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	520.8112	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	21		
Number of Missing Data	0		
Number of Valid Observations	21		
Number of Distinct Observations	21		
Minimum	89.5		
Maximum	1910		
Mean	702.281		
Standard Deviation	596.8059		
Variance	356177.3		
Coefficient of Variation	0.849811		
Skewness	0.805352		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.870303		
Shapiro-Wilk 5% Critical Value	0.908		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	926.8974		
Gamma Statistics			
k hat	1.322286		
k star (bias corrected)	1.165134		
Theta hat	531.1112		
Theta star	602.7468		
nu hat	55.53602		
nu star	48.93564		
5% Approximate Chi Square Value	33.87398		
Adjusted Level of Significance	0.0383		
Adjusted Chi Square Value	32.91116		
Anderson-Darling Test Statistic	0.639561		
Anderson-Darling 5% Critical Value	0.762259		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.204357		
Kolmogrov-Smirnov 5% Critical Value	0.193517		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	1014.542		
95% Adjusted Gamma UCL	1044.222		
Lognormal Statistics			
Minimum of log data	4.494239		
Maximum of log data	7.554859		
Mean of log data	6.130765		
Standard Deviation of log data	1.006562		
Variance of log data	1.013166		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.924027		
Shapiro-Wilk 5% Critical Value	0.908		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	763.069		
MLE Standard Deviation	1010.687		
MLE Coefficient of Variation	1.324503		
MLE Skewness	6.297095		
MLE Median	459.7879		
MLE 80% Quantile	1076.327		
MLE 90% Quantile	1676.053		
MLE 95% Quantile	2408.018		
MLE 99% Quantile	4779.196		
MVU Estimate of Median	448.8173		
MVU Estimate of Mean	737.4329		
MVU Estimate of Standard Deviation	868.5235		
MVU Estimate of SE of Mean	182.0833		
95% H-UCL	1361.633		
95% Chebyshev (MVUE) UCL	1531.116		
97.5% Chebyshev (MVUE) UCL	1874.543		
99% Chebyshev (MVUE) UCL	2549.139		
Non-parametric Statistics			
95% CLT UCL	916.4964		
95% Adjusted-CLT UCL	940.9521		
95% Modified-t UCL	930.712		
95% Jackknife UCL	926.8974		
95% Chebyshev (Mean, Sd) UCL	1269.957		
97.5% Chebyshev (Mean, Sd) UCL	1515.59		
99% Chebyshev (Mean, Sd) UCL	1998.09		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	909.1348		
95% Bootstrap-t UCL	957.7414		
95% Hall's Bootstrap UCL	936.1212		
95% Percentile Bootstrap UCL	919.881		
95% BCA Bootstrap UCL	884.4		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1014.542		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	21		
Number of Missing Data	0		
Number of Valid Observations	21		
Number of Distinct Observations	21		
Minimum	0.045		
Maximum	11.6		
Mean	1.365238		
Standard Deviation	2.494815		
Variance	6.224104		
Coefficient of Variation	1.827385		
Skewness	3.80744		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.483093		
Shapiro-Wilk 5% Critical Value	0.908		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	2.304198		
Gamma Statistics			
k hat	0.762007		
k star (bias corrected)	0.684895		
Theta hat	1.791635		
Theta star	1.993355		
nu hat	32.00428		
nu star	28.76558		
5% Approximate Chi Square Value	17.52326		
Adjusted Level of Significance	0.0383		
Adjusted Chi Square Value	16.8495		
Anderson-Darling Test Statistic	0.958861		
Anderson-Darling 5% Critical Value	0.782186		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.214099		
Kolmogrov-Smirnov 5% Critical Value	0.196823		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	2.241127		
95% Adjusted Gamma UCL	2.330744		
Lognormal Statistics			
Minimum of log data	-3.101093		
Maximum of log data	2.451005		
Mean of log data	-0.472589		
Standard Deviation of log data	1.228793		
Variance of log data	1.509933		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.979278		
Shapiro-Wilk 5% Critical Value	0.908		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.326279		
MLE Standard Deviation	2.490591		
MLE Coefficient of Variation	1.877878		
MLE Skewness	12.25584		
MLE Median	0.623386		
MLE 80% Quantile	1.760752		
MLE 90% Quantile	3.023485		
MLE 95% Quantile	4.705706		
MLE 99% Quantile	10.86541		
MVU Estimate of Median	0.601338		
MVU Estimate of Mean	1.251856		
MVU Estimate of Standard Deviation	1.934694		
MVU Estimate of SE of Mean	0.390495		
95% H-UCL	2.935009		
95% Chebyshev (MVUE) UCL	2.953986		
97.5% Chebyshev (MVUE) UCL	3.690499		
99% Chebyshev (MVUE) UCL	5.137236		
Non-parametric Statistics			
95% CLT UCL	2.260718		
95% Adjusted-CLT UCL	2.744036		
95% Modified-t UCL	2.379585		
95% Jackknife UCL	2.304198		
95% Chebyshev (Mean, Sd) UCL	3.738281		
97.5% Chebyshev (Mean, Sd) UCL	4.765098		
99% Chebyshev (Mean, Sd) UCL	6.782082		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.249539		
95% Bootstrap-t UCL	4.206354		
95% Hall's Bootstrap UCL	5.198587		
95% Percentile Bootstrap UCL	2.381429		
95% BCA Bootstrap UCL	3.003571		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	2.953986	95% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	21		
Number of Missing Data	0		
Number of Valid Observations	21		
Number of Distinct Observations	20		
Minimum	4.8		
Maximum	79.2		
Mean	28.30476		
Standard Deviation	17.03128		
Variance	290.0645		
Coefficient of Variation	0.601711		
Skewness	1.104833		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.911969		
Shapiro-Wilk 5% Critical Value	0.908		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	34.71473		
Gamma Statistics			
k hat	2.529736		
k star (bias corrected)	2.200092		
Theta hat	11.18882		
Theta star	12.86527		
nu hat	106.2489		
nu star	92.40384		
5% Approximate Chi Square Value	71.23231		
Adjusted Level of Significance	0.0383		
Adjusted Chi Square Value	69.80456		
Anderson-Darling Test Statistic	0.510104		
Anderson-Darling 5% Critical Value	0.751484		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.146984		
Kolmogrov-Smirnov 5% Critical Value	0.191321		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	36.71745		
95% Adjusted Gamma UCL	37.46845		
Lognormal Statistics			
Minimum of log data	1.568616		
Maximum of log data	4.371976		
Mean of log data	3.13255		
Standard Deviation of log data	0.734106		
Variance of log data	0.538912		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.907407		
Shapiro-Wilk 5% Critical Value	0.908		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	30.02425		
MLE Standard Deviation	25.37254		
MLE Coefficient of Variation	0.845068		
MLE Skewness	3.138702		
MLE Median	22.93237		
MLE 80% Quantile	42.64326		
MLE 90% Quantile	58.90205		
MLE 95% Quantile	76.71936		
MLE 99% Quantile	126.4795		
MVU Estimate of Median	22.63983		
MVU Estimate of Mean	29.5553		
MVU Estimate of Standard Deviation	23.6289		
MVU Estimate of SE of Mean	5.089292		
95% H-UCL	43.29211		
95% Chebyshev (MVUE) UCL	51.73901		
97.5% Chebyshev (MVUE) UCL	61.33792		
99% Chebyshev (MVUE) UCL	80.19311		
Non-parametric Statistics			
95% CLT UCL	34.41791		
95% Adjusted-CLT UCL	35.37534		
95% Modified-t UCL	34.86407		
95% Jackknife UCL	34.71473		
95% Chebyshev (Mean, Sd) UCL	44.50474		
97.5% Chebyshev (Mean, Sd) UCL	51.51448		
99% Chebyshev (Mean, Sd) UCL	65.28377		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	34.34885		
95% Bootstrap-t UCL	36.10932		
95% Hall's Bootstrap UCL	38.46282		
95% Percentile Bootstrap UCL	34.3		
95% BCA Bootstrap UCL	33.07143		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	34.71473	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Thallium		
Raw Statistics			
Number of Observations	21		
Number of Missing Data	0		
Number of Valid Observations	21		
Number of Distinct Observations	19		
Minimum	0.115		
Maximum	0.75		
Mean	0.359524		
Standard Deviation	0.2092		
Variance	0.043765		
Coefficient of Variation	0.581882		
Skewness	0.351797		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.908759		
Shapiro-Wilk 5% Critical Value	0.908		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.438259		
Gamma Statistics			
k hat	2.757111		
k star (bias corrected)	2.394984		
Theta hat	0.130399		
Theta star	0.150115		
nu hat	115.7987		
nu star	100.5893		
5% Approximate Chi Square Value	78.44593		
Adjusted Level of Significance	0.0383		
Adjusted Chi Square Value	76.94408		
Anderson-Darling Test Statistic	0.823269		
Anderson-Darling 5% Critical Value	0.750486		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.20616		
Kolmogrov-Smirnov 5% Critical Value	0.191137		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	0.461009		
95% Adjusted Gamma UCL	0.470007		
Lognormal Statistics			
Minimum of log data	-2.162823		
Maximum of log data	-0.287682		
Mean of log data	-1.21515		
Standard Deviation of log data	0.66675		
Variance of log data	0.444556		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.882128		
Shapiro-Wilk 5% Critical Value	0.908		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.370511		
MLE Standard Deviation	0.277215		
MLE Coefficient of Variation	0.748196		
MLE Skewness	2.663426		
MLE Median	0.296665		
MLE 80% Quantile	0.521135		
MLE 90% Quantile	0.69881		
MLE 95% Quantile	0.888388		
MLE 99% Quantile	1.398934		
MVU Estimate of Median	0.29354		
MVU Estimate of Mean	0.365881		
MVU Estimate of Standard Deviation	0.261816		
MVU Estimate of SE of Mean	0.056611		
95% H-UCL	0.510872		
95% Chebyshev (MVUE) UCL	0.612644		
97.5% Chebyshev (MVUE) UCL	0.719418		
99% Chebyshev (MVUE) UCL	0.929156		
Non-parametric Statistics			
95% CLT UCL	0.434613		
95% Adjusted-CLT UCL	0.438358		
95% Modified-t UCL	0.438843		
95% Jackknife UCL	0.438259		
95% Chebyshev (Mean, Sd) UCL	0.558513		
97.5% Chebyshev (Mean, Sd) UCL	0.644616		
99% Chebyshev (Mean, Sd) UCL	0.813748		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.43334		
95% Bootstrap-t UCL	0.44398		
95% Hall's Bootstrap UCL	0.433697		
95% Percentile Bootstrap UCL	0.432857		
95% BCA Bootstrap UCL	0.462381		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.438259	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	21		
Number of Missing Data	0		
Number of Valid Observations	21		
Number of Distinct Observations	21		
Minimum	10.3		
Maximum	104.35		
Mean	53.9381		
Standard Deviation	29.61917		
Variance	877.2952		
Coefficient of Variation	0.549133		
Skewness	0.153925		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.936778		
Shapiro-Wilk 5% Critical Value	0.908		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	65.08569		
Gamma Statistics			
k hat	2.852993		
k star (bias corrected)	2.477169		
Theta hat	18.90579		
Theta star	21.77409		
nu hat	119.8257		
nu star	104.0411		
5% Approximate Chi Square Value	81.49979		
Adjusted Level of Significance	0.0383		
Adjusted Chi Square Value	79.96759		
Anderson-Darling Test Statistic	0.510866		
Anderson-Darling 5% Critical Value	0.750065		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.173052		
Kolmogrov-Smirnov 5% Critical Value	0.191059		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	68.85635		
95% Adjusted Gamma UCL	70.17565		
Lognormal Statistics			
Minimum of log data	2.332144		
Maximum of log data	4.647751		
Mean of log data	3.802464		
Standard Deviation of log data	0.674308		
Variance of log data	0.454691		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.925247		
Shapiro-Wilk 5% Critical Value	0.908		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	56.25017		
MLE Standard Deviation	42.67925		
MLE Coefficient of Variation	0.75874		
MLE Skewness	2.713016		
MLE Median	44.81145		
MLE 80% Quantile	79.22197		
MLE 90% Quantile	106.5857		
MLE 95% Quantile	135.8702		
MLE 99% Quantile	215.057		
MVU Estimate of Median	44.3287		
MVU Estimate of Mean	55.5288		
MVU Estimate of Standard Deviation	40.24901		
MVU Estimate of SE of Mean	8.699463		
95% H-UCL	77.93829		
95% Chebyshev (MVUE) UCL	93.44888		
97.5% Chebyshev (MVUE) UCL	109.8569		
99% Chebyshev (MVUE) UCL	142.0874		
Non-parametric Statistics			
95% CLT UCL	64.5695		
95% Adjusted-CLT UCL	64.80147		
95% Modified-t UCL	65.12188		
95% Jackknife UCL	65.08569		
95% Chebyshev (Mean, Sd) UCL	82.11155		
97.5% Chebyshev (Mean, Sd) UCL	94.30222		
99% Chebyshev (Mean, Sd) UCL	118.2484		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	64.30506		
95% Bootstrap-t UCL	65.59338		
95% Hall's Bootstrap UCL	64.5646		
95% Percentile Bootstrap UCL	64.40476		
95% BCA Bootstrap UCL	62.00714		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	65.08569	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - wg.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	21		
Number of Missing Data	0		
Number of Valid Observations	21		
Number of Distinct Observations	21		
Minimum	80.1		
Maximum	2080		
Mean	866.3381		
Standard Deviation	582.4587		
Variance	339258.2		
Coefficient of Variation	0.672323		
Skewness	0.732066		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.926517		
Shapiro-Wilk 5% Critical Value	0.908		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1085.555		
Gamma Statistics			
k hat	1.836925		
k star (bias corrected)	1.606253		
Theta hat	471.6242		
Theta star	539.3535		
nu hat	77.15083		
nu star	67.46262		
5% Approximate Chi Square Value	49.5557		
Adjusted Level of Significance	0.0383		
Adjusted Chi Square Value	48.37661		
Anderson-Darling Test Statistic	0.370553		
Anderson-Darling 5% Critical Value	0.755242		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.109743		
Kolmogrov-Smirnov 5% Critical Value	0.192079		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1179.389		
95% Adjusted Gamma UCL	1208.134		
Lognormal Statistics			
Minimum of log data	4.383276		
Maximum of log data	7.640123		
Mean of log data	6.468035		
Standard Deviation of log data	0.908689		
Variance of log data	0.825716		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.892822		
Shapiro-Wilk 5% Critical Value	0.908		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	973.4957		
MLE Standard Deviation	1102.896		
MLE Coefficient of Variation	1.132924		
MLE Skewness	4.852897		
MLE Median	644.2167		
MLE 80% Quantile	1388.359		
MLE 90% Quantile	2070.822		
MLE 95% Quantile	2872.188		
MLE 99% Quantile	5332.88		
MVU Estimate of Median	631.664		
MVU Estimate of Mean	948.1345		
MVU Estimate of Standard Deviation	980.2452		
MVU Estimate of SE of Mean	207.9818		
95% H-UCL	1599.304		
95% Chebyshev (MVUE) UCL	1854.706		
97.5% Chebyshev (MVUE) UCL	2246.98		
99% Chebyshev (MVUE) UCL	3017.527		
Non-parametric Statistics			
95% CLT UCL	1075.404		
95% Adjusted-CLT UCL	1097.1		
95% Modified-t UCL	1088.939		
95% Jackknife UCL	1085.555		
95% Chebyshev (Mean, Sd) UCL	1420.367		
97.5% Chebyshev (Mean, Sd) UCL	1660.096		
99% Chebyshev (Mean, Sd) UCL	2130.996		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1066.74		
95% Bootstrap-t UCL	1111.134		
95% Hall's Bootstrap UCL	1094.643		
95% Percentile Bootstrap UCL	1078		
95% BCA Bootstrap UCL	1184.957		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1085.555	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:		Benzo(b)fluoranthene		
Raw Statistics				
Number of Observations		1		
Number of Missing Data		0		
Number of Valid Observations		1		
Constant Data		1		
Minimum		0.33		
Maximum		0.33		
Mean		0.33		
Standard Deviation		N/A		Too few observations to calculate
Variance		N/A		Too few observations to calculate
Coefficient of Variation		0		
Skewness		N/A		Too few observations to calculate
Too Few Distinct Observations?		YES		Too Few Observations To Calculate UCLs
Normal Statistics				
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Normality Test Result				
95% Student's-t UCL		N/A		Too Few Observations To Calculate UCLs
Gamma Statistics				
k hat		N/A		
k star (bias corrected)		N/A		
Theta hat		N/A		
Theta star		N/A		
nu hat		N/A		
nu star		N/A		
5% Approximate Chi Square Value		N/A		
Adjusted Level of Significance		0		
Adjusted Chi Square Value		0		
Anderson-Darling Test Statistic		N/A		
Anderson-Darling 5% Critical Value		N/A		
Anderson-Darling 5% Gamma Test Result		N/A		
Kolmogrov-Smirnov Test Statistic		N/A		
Kolmogrov-Smirnov 5% Critical Value		N/A		
Kolmogrov-Smirnov 5% Gamma Test Result		N/A		
5% Gamma Test Result		N/A		
95% Approximate Gamma UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A		Too Few Observations To Calculate UCLs
Lognormal Statistics				
Minimum of log data		-1.108663		
Maximum of log data		-1.108663		
Mean of log data		-1.108663		
Standard Deviation of log data		1.7E+269		
Variance of log data		3.6E-304		
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Lognormality Test Result				
MLE Mean		0		
MLE Standard Deviation		1.7E+269		
MLE Coefficient of Variation		1.7E+269		
MLE Skewness		0		
MLE Median		1.7E+269		
MLE 80% Quantile		3.6E-304		
MLE 90% Quantile		-5E+138		
MLE 95% Quantile		2.6E-308		
MLE 99% Quantile		2.6E-308		
MVU Estimate of Median		0		
MVU Estimate of Mean		0		
MVU Estimate of Standard Deviation		0		
MVU Estimate of SE of Mean		0		
95% H-UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
Non-parametric Statistics				
95% CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
Bootstrap Statistics				
Number of Bootstrap Runs		2000		
95% Standard Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
Recommendations				
Human Inspection Recommended?		YES		
Appropriate Distribution				
1st Recommended UCL		N/A		Too Few Observations To Calculate UCLs
2nd Recommended UCL				
3rd Recommended UCL				
Recommended UCL > Max Data Value				
Recommendation Warning!				
Alternative UCL				

Data File		J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:		Benzo(k)fluoranthene		
Raw Statistics				
Number of Observations		1		
Number of Missing Data		0		
Number of Valid Observations		1		
Constant Data		1		
Minimum		0.61		
Maximum		0.61		
Mean		0.61		
Standard Deviation		N/A		Too few observations to calculate
Variance		N/A		Too few observations to calculate
Coefficient of Variation		0		
Skewness		N/A		Too few observations to calculate
Too Few Distinct Observations?		YES		Too Few Observations To Calculate UCLs
Normal Statistics				
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Normality Test Result				
95% Student's-t UCL		N/A		Too Few Observations To Calculate UCLs
Gamma Statistics				
k hat		N/A		
k star (bias corrected)		N/A		
Theta hat		N/A		
Theta star		N/A		
nu hat		N/A		
nu star		N/A		
5% Approximate Chi Square Value		N/A		
Adjusted Level of Significance		0		
Adjusted Chi Square Value		0		
Anderson-Darling Test Statistic		N/A		
Anderson-Darling 5% Critical Value		N/A		
Anderson-Darling 5% Gamma Test Result		N/A		
Kolmogrov-Smirnov Test Statistic		N/A		
Kolmogrov-Smirnov 5% Critical Value		N/A		
Kolmogrov-Smirnov 5% Gamma Test Result		N/A		
5% Gamma Test Result		N/A		
95% Approximate Gamma UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL		N/A		Too Few Observations To Calculate UCLs
Lognormal Statistics				
Minimum of log data		-0.494296		
Maximum of log data		-0.494296		
Mean of log data		-0.494296		
Standard Deviation of log data		2.2E-307		
Variance of log data		0		
Lilliefors Test Statistic		N/A		Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic				
Shapiro-Wilk 5% Critical Value				
5% Lognormality Test Result				
MLE Mean		0		
MLE Standard Deviation		0		
MLE Coefficient of Variation		5.7E-306		
MLE Skewness		1.7E+269		
MLE Median		2.2E-307		
MLE 80% Quantile		4E+129		
MLE 90% Quantile		8.6E-174		
MLE 95% Quantile		0		
MLE 99% Quantile		1.2E-306		
MVU Estimate of Median		0		
MVU Estimate of Mean		6.9E-306		
MVU Estimate of Standard Deviation		1.7E+269		
MVU Estimate of SE of Mean		0		
95% H-UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL		N/A		Too Few Observations To Calculate UCLs
Non-parametric Statistics				
95% CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL		N/A		Too Few Observations To Calculate UCLs
95% Modified-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Jackknife UCL		N/A		Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL		N/A		Too Few Observations To Calculate UCLs
Bootstrap Statistics				
Number of Bootstrap Runs		2000		
95% Standard Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL		N/A		Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL		N/A		Too Few Observations To Calculate UCLs
Recommendations				
Human Inspection Recommended?		YES		
Appropriate Distribution				
1st Recommended UCL		N/A		Too Few Observations To Calculate UCLs
2nd Recommended UCL				
3rd Recommended UCL				
Recommended UCL > Max Data Value				
Recommendation Warning!				
Alternative UCL				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls	
Variable:	Antimony	
Raw Statistics		
Number of Observations	2	
Number of Missing Data	0	
Number of Valid Observations	2	
Number of Distinct Observations	2	
Minimum	0.5	
Maximum	57.3	
Mean	28.9	
Standard Deviation	40.16367	
Variance	1613.12	
Coefficient of Variation	1.389746	
Skewness	N/A	Too few observations to calculate
Too Few Distinct Observations?	YES	Too Few Observations To Calculate UCLs
Normal Statistics		
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		
Shapiro-Wilk 5% Critical Value		
5% Normality Test Result		
95% Student's-t UCL	N/A	Too Few Observations To Calculate UCLs
Gamma Statistics		
k hat	0	
k star (bias corrected)	0	
Theta hat	0	
Theta star	0	
nu hat	0	
nu star	0	
5% Approximate Chi Square Value	N/A	
Adjusted Level of Significance	0	
Adjusted Chi Square Value	0	
Anderson-Darling Test Statistic	0	
Anderson-Darling 5% Critical Value	0	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0	
Kolmogrov-Smirnov 5% Critical Value	0	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	N/A	Too Few Observations To Calculate UCLs
95% Adjusted Gamma UCL	N/A	Too Few Observations To Calculate UCLs
Lognormal Statistics		
Minimum of log data	-0.693147	
Maximum of log data	4.048301	
Mean of log data	1.677577	
Standard Deviation of log data	3.35271	
Variance of log data	11.24066	
Lilliefors Test Statistic	N/A	Too Few Distinct Observations To Calculate UCLs
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		
Shapiro-Wilk 5% Critical Value		
5% Lognormality Test Result		
MLE Mean	0	
MLE Standard Deviation	0	
MLE Coefficient of Variation	3.3E-304	
MLE Skewness	1.7E+269	
MLE Median	2.2E-307	
MLE 80% Quantile	4E+129	
MLE 90% Quantile	-3.2E-241	
MLE 95% Quantile	0	
MLE 99% Quantile	1.2E-306	
MVU Estimate of Median	0	
MVU Estimate of Mean	28.9	
MVU Estimate of Standard Deviation	40.16367	
MVU Estimate of SE of Mean	28.4	
95% H-UCL	N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (MVUE) UCL	N/A	Too Few Observations To Calculate UCLs
Non-parametric Statistics		
95% CLT UCL	N/A	Too Few Observations To Calculate UCLs
95% Adjusted-CLT UCL	N/A	Too Few Observations To Calculate UCLs
95% Modified-t UCL	N/A	Too Few Observations To Calculate UCLs
95% Jackknife UCL	N/A	Too Few Observations To Calculate UCLs
95% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
97.5% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
99% Chebyshev (Mean, Sd) UCL	N/A	Too Few Observations To Calculate UCLs
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% Bootstrap-t UCL	N/A	Too Few Observations To Calculate UCLs
95% Hall's Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% Percentile Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
95% BCA Bootstrap UCL	N/A	Too Few Observations To Calculate UCLs
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution		
1st Recommended UCL	N/A	Too Few Observations To Calculate UCLs
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!		
Alternative UCL		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	14		
Number of Missing Data	0		
Number of Valid Observations	14		
Number of Distinct Observations	14		
Minimum	4.4		
Maximum	54.6		
Mean	40.81071		
Standard Deviation	12.58339		
Variance	158.3416		
Coefficient of Variation	0.308335		
Skewness	-2.011604		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.81163		
Shapiro-Wilk 5% Critical Value	0.874		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	46.76645		
Gamma Statistics			
k hat	4.688559		
k star (bias corrected)	3.731487		
Theta hat	8.704319		
Theta star	10.93685		
nu hat	131.2796		
nu star	104.4816		
5% Approximate Chi Square Value	81.89003		
Adjusted Level of Significance	0.03122		
Adjusted Chi Square Value	79.2395		
Anderson-Darling Test Statistic	1.96697		
Anderson-Darling 5% Critical Value	0.738656		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.34496		
Kolmogrov-Smirnov 5% Critical Value	0.22945		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	52.06946		
95% Adjusted Gamma UCL	53.81117		
Lognormal Statistics			
Minimum of log data	1.481605		
Maximum of log data	4.000034		
Mean of log data	3.598528		
Standard Deviation of log data	0.632948		
Variance of log data	0.400623		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.541519		
Shapiro-Wilk 5% Critical Value	0.874		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	44.64933		
MLE Standard Deviation	31.34223		
MLE Coefficient of Variation	0.701964		
MLE Skewness	2.451788		
MLE Median	36.5444		
MLE 80% Quantile	62.38774		
MLE 90% Quantile	82.42309		
MLE 95% Quantile	103.5161		
MLE 99% Quantile	159.296		
MVU Estimate of Median	36.02476		
MVU Estimate of Mean	43.91649		
MVU Estimate of Standard Deviation	29.15564		
MVU Estimate of SE of Mean	7.745219		
95% H-UCL	66.30822		
95% Chebyshev (MVUE) UCL	77.67711		
97.5% Chebyshev (MVUE) UCL	92.28536		
99% Chebyshev (MVUE) UCL	120.9804		
Non-parametric Statistics			
95% CLT UCL	46.34244		
95% Adjusted-CLT UCL	44.41051		
95% Modified-t UCL	46.46511		
95% Jackknife UCL	46.76645		
95% Chebyshev (Mean, Sd) UCL	55.46992		
97.5% Chebyshev (Mean, Sd) UCL	61.81296		
99% Chebyshev (Mean, Sd) UCL	74.27265		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	46.15206		
95% Bootstrap-t UCL	45.40778		
95% Hall's Bootstrap UCL	44.98239		
95% Percentile Bootstrap UCL	45.78929		
95% BCA Bootstrap UCL	44.42143		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	55.46992	95% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls				
Variable:	Barium				
<b>Raw Statistics</b>					
Number of Observations	14				
Number of Missing Data	0				
Number of Valid Observations	14				
Number of Distinct Observations	14				
Minimum	124				
Maximum	3420				
Mean	444.1071				
Standard Deviation	864.4128				
Variance	747209.5				
Coefficient of Variation	1.946406				
Skewness	3.62952				
Too Few Distinct Observations?	NO				
<b>Normal Statistics</b>					
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result			
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result			
Shapiro-Wilk Test Statistic	0.393366				
Shapiro-Wilk 5% Critical Value	0.874				
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level			
95% Student's-t UCL	853.2353				
<b>Gamma Statistics</b>					
k hat	0.937613				
k star (bias corrected)	0.784315				
Theta hat	473.6573				
Theta star	566.2358				
nu hat	26.25316				
nu star	21.96082				
5% Approximate Chi Square Value	12.30731				
Adjusted Level of Significance	0.03122				
Adjusted Chi Square Value	11.35759				
Anderson-Darling Test Statistic	2.501899				
Anderson-Darling 5% Critical Value	0.76262				
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level			
Kolmogrov-Smirnov Test Statistic	0.378433				
Kolmogrov-Smirnov 5% Critical Value	0.235744				
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level			
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level			
95% Approximate Gamma UCL	792.4521				
95% Adjusted Gamma UCL	858.717				
<b>Lognormal Statistics</b>					
Minimum of log data	4.820282				
Maximum of log data	8.137396				
Mean of log data	5.475687				
Standard Deviation of log data	0.870572				
Variance of log data	0.757896				
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result			
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result			
Shapiro-Wilk Test Statistic	0.698011				
Shapiro-Wilk 5% Critical Value	0.874				
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level			
MLE Mean	348.8478				
MLE Standard Deviation	371.4504				
MLE Coefficient of Variation	1.064792				
MLE Skewness	4.40162				
MLE Median	238.8146				
MLE 80% Quantile	498.3592				
MLE 90% Quantile	730.9704				
MLE 95% Quantile	1000.024				
MLE 99% Quantile	1809.198				
MVU Estimate of Median	232.4257				
MVU Estimate of Mean	336.884				
MVU Estimate of Standard Deviation	320.0978				
MVU Estimate of SE of Mean	83.92679				
95% H-UCL	652.3654				
95% Chebyshev (MVUE) UCL	702.7124				
97.5% Chebyshev (MVUE) UCL	861.0067				
99% Chebyshev (MVUE) UCL	1171.945				
<b>Non-parametric Statistics</b>					
95% CLT UCL	824.1079				
95% Adjusted-CLT UCL	1063.562				
95% Modified-t UCL	890.5853				
95% Jackknife UCL	853.2353				
95% Chebyshev (Mean, Sd) UCL	1451.118				
97.5% Chebyshev (Mean, Sd) UCL	1886.852				
99% Chebyshev (Mean, Sd) UCL	2742.767				
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	817.7106				
95% Bootstrap-t UCL	4611.371				
95% Hall's Bootstrap UCL	2636.943				
95% Percentile Bootstrap UCL	897.6071				
95% BCA Bootstrap UCL	845.6071				
<b>Recommendations</b>					
Human Inspection Recommended?	NO				
Appropriate Distribution	NON-PARAMETRIC				
1st Recommended UCL	1451.118	95% Chebyshev (Mean, Sd) UCL			
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value	NO				
Recommendation Warning!	NONE				
Alternative UCL	NONE				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - ww.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	14		
Number of Missing Data	0		
Number of Valid Observations	14		
Number of Distinct Observations	13		
Minimum	0.024		
Maximum	9.6		
Mean	4.023143		
Standard Deviation	2.080885		
Variance	4.330083		
Coefficient of Variation	0.517229		
Skewness	1.09964		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.864781		
Shapiro-Wilk 5% Critical Value	0.874		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	5.00803		
<b>Gamma Statistics</b>			
k hat	1.563811		
k star (bias corrected)	1.276328		
Theta hat	2.572653		
Theta star	3.152123		
nu hat	43.78671		
nu star	35.73718		
5% Approximate Chi Square Value	23.05498		
Adjusted Level of Significance	0.03122		
Adjusted Chi Square Value	21.71018		
Anderson-Darling Test Statistic	1.883476		
Anderson-Darling 5% Critical Value	0.750048		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.368426		
Kolmogrov-Smirnov 5% Critical Value	0.232591		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	6.236212		
95% Adjusted Gamma UCL	6.622504		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.729701		
Maximum of log data	2.261763		
Mean of log data	1.03945		
Standard Deviation of log data	1.410128		
Variance of log data	1.988462		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.512901		
Shapiro-Wilk 5% Critical Value	0.874		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	7.642164		
MLE Standard Deviation	19.18821		
MLE Coefficient of Variation	2.510835		
MLE Skewness	23.36155		
MLE Median	2.82766		
MLE 80% Quantile	9.309247		
MLE 90% Quantile	17.31312		
MLE 95% Quantile	28.76361		
MLE 99% Quantile	75.14416		
MVU Estimate of Median	2.632919		
MVU Estimate of Mean	6.772001		
MVU Estimate of Standard Deviation	11.77122		
MVU Estimate of SE of Mean	2.864524		
95% H-UCL	30.45086		
95% Chebyshev (MVUE) UCL	19.25817		
97.5% Chebyshev (MVUE) UCL	24.66095		
99% Chebyshev (MVUE) UCL	35.27365		
<b>Non-parametric Statistics</b>			
95% CLT UCL	4.937912		
95% Adjusted-CLT UCL	5.112555		
95% Modified-t UCL	5.03527		
95% Jackknife UCL	5.00803		
95% Chebyshev (Mean, Sd) UCL	6.447301		
97.5% Chebyshev (Mean, Sd) UCL	7.496236		
99% Chebyshev (Mean, Sd) UCL	9.556665		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	4.878761		
95% Bootstrap-t UCL	5.270996		
95% Hall's Bootstrap UCL	6.151029		
95% Percentile Bootstrap UCL	4.944571		
95% BCA Bootstrap UCL	5.392857		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	9.556665	99% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value			
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	14		
Number of Missing Data	0		
Number of Valid Observations	14		
Number of Distinct Observations	14		
Minimum	3670		
Maximum	24600		
Mean	12364.64		
Standard Deviation	6566.121		
Variance	43113940		
Coefficient of Variation	0.53104		
Skewness	0.705782		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.911089		
Shapiro-Wilk 5% Critical Value	0.874		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	15472.4		
Gamma Statistics			
k hat	3.859605		
k star (bias corrected)	3.080166		
Theta hat	3203.603		
Theta star	4014.278		
nu hat	108.0689		
nu star	86.24465		
5% Approximate Chi Square Value	65.83328		
Adjusted Level of Significance	0.03122		
Adjusted Chi Square Value	63.47084		
Anderson-Darling Test Statistic	0.332793		
Anderson-Darling 5% Critical Value	0.740466		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.14814		
Kolmogrov-Smirnov 5% Critical Value	0.229864		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	16198.26		
95% Adjusted Gamma UCL	16801.17		
Lognormal Statistics			
Minimum of log data	8.207947		
Maximum of log data	10.1105		
Mean of log data	9.287492		
Standard Deviation of log data	0.55018		
Variance of log data	0.302698		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.959459		
Shapiro-Wilk 5% Critical Value	0.874		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	12567.14		
MLE Standard Deviation	7471.97		
MLE Coefficient of Variation	0.594564		
MLE Skewness	1.993874		
MLE Median	10802.05		
MLE 80% Quantile	17195.35		
MLE 90% Quantile	21905.07		
MLE 95% Quantile	26703.19		
MLE 99% Quantile	38840.21		
MVU Estimate of Median	10685.82		
MVU Estimate of Mean	12416.01		
MVU Estimate of Standard Deviation	7084.198		
MVU Estimate of SE of Mean	1886.573		
95% H-UCL	17447.32		
95% Chebyshev (MVUE) UCL	20639.39		
97.5% Chebyshev (MVUE) UCL	24197.65		
99% Chebyshev (MVUE) UCL	31187.17		
Non-parametric Statistics			
95% CLT UCL	15251.15		
95% Adjusted-CLT UCL	15604.84		
95% Modified-t UCL	15527.57		
95% Jackknife UCL	15472.4		
95% Chebyshev (Mean, Sd) UCL	20013.94		
97.5% Chebyshev (Mean, Sd) UCL	23323.8		
99% Chebyshev (Mean, Sd) UCL	29825.37		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	15123.36		
95% Bootstrap-t UCL	16048.06		
95% Hall's Bootstrap UCL	15563.43		
95% Percentile Bootstrap UCL	15276.07		
95% BCA Bootstrap UCL	14648.21		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	15472.4	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	14		
Number of Missing Data	0		
Number of Valid Observations	14		
Number of Distinct Observations	14		
Minimum	178		
Maximum	598		
Mean	349.2143		
Standard Deviation	138.1845		
Variance	19094.95		
Coefficient of Variation	0.395701		
Skewness	0.88467		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.878768		
Shapiro-Wilk 5% Critical Value	0.874		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	414.6172		
Gamma Statistics			
k hat	7.525369		
k star (bias corrected)	5.960409		
Theta hat	46.40494		
Theta star	58.58898		
nu hat	210.7103		
nu star	166.8914		
5% Approximate Chi Square Value	138.0139		
Adjusted Level of Significance	0.03122		
Adjusted Chi Square Value	134.5317		
Anderson-Darling Test Statistic	0.443689		
Anderson-Darling 5% Critical Value	0.736242		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.154073		
Kolmogrov-Smirnov 5% Critical Value	0.228982		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	422.2827		
95% Adjusted Gamma UCL	433.2131		
Lognormal Statistics			
Minimum of log data	5.181784		
Maximum of log data	6.393591		
Mean of log data	5.787775		
Standard Deviation of log data	0.37761		
Variance of log data	0.14259		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.945229		
Shapiro-Wilk 5% Critical Value	0.874		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	350.398		
MLE Standard Deviation	137.1737		
MLE Coefficient of Variation	0.39148		
MLE Skewness	1.234436		
MLE Median	326.2862		
MLE 80% Quantile	448.9249		
MLE 90% Quantile	530.0674		
MLE 95% Quantile	607.252		
MLE 99% Quantile	785.324		
MVU Estimate of Median	324.6282		
MVU Estimate of Mean	348.5173		
MVU Estimate of Standard Deviation	133.9145		
MVU Estimate of SE of Mean	35.75996		
95% H-UCL	430.5059		
95% Chebyshev (MVUE) UCL	504.3914		
97.5% Chebyshev (MVUE) UCL	571.8382		
99% Chebyshev (MVUE) UCL	704.3245		
Non-parametric Statistics			
95% CLT UCL	409.961		
95% Adjusted-CLT UCL	419.2912		
95% Modified-t UCL	416.0726		
95% Jackknife UCL	414.6172		
95% Chebyshev (Mean, Sd) UCL	510.1943		
97.5% Chebyshev (Mean, Sd) UCL	579.8505		
99% Chebyshev (Mean, Sd) UCL	716.6766		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	408.7465		
95% Bootstrap-t UCL	430.5832		
95% Hall's Bootstrap UCL	412.0247		
95% Percentile Bootstrap UCL	406.3571		
95% BCA Bootstrap UCL	438.1429		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	414.6172	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	14		
Number of Missing Data	0		
Number of Valid Observations	14		
Number of Distinct Observations	14		
Minimum	147		
Maximum	495		
Mean	301.0714		
Standard Deviation	97.64099		
Variance	9533.764		
Coefficient of Variation	0.324312		
Skewness	0.217154		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.974021		
Shapiro-Wilk 5% Critical Value	0.874		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	347.2851		
Gamma Statistics			
k hat	9.678199		
k star (bias corrected)	7.651918		
Theta hat	31.10821		
Theta star	39.34588		
nu hat	270.9896		
nu star	214.2537		
5% Approximate Chi Square Value	181.3723		
Adjusted Level of Significance	0.03122		
Adjusted Chi Square Value	177.3598		
Anderson-Darling Test Statistic	0.242749		
Anderson-Darling 5% Critical Value	0.734753		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.169656		
Kolmogrov-Smirnov 5% Critical Value	0.228702		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	355.6534		
95% Adjusted Gamma UCL	363.6996		
Lognormal Statistics			
Minimum of log data	4.990433		
Maximum of log data	6.204558		
Mean of log data	5.654796		
Standard Deviation of log data	0.344791		
Variance of log data	0.118881		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.965129		
Shapiro-Wilk 5% Critical Value	0.874		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	303.1527		
MLE Standard Deviation	107.709		
MLE Coefficient of Variation	0.355296		
MLE Skewness	1.11074		
MLE Median	285.6583		
MLE 80% Quantile	382.2766		
MLE 90% Quantile	444.9012		
MLE 95% Quantile	503.698		
MLE 99% Quantile	637.0061		
MVU Estimate of Median	284.4477		
MVU Estimate of Mean	301.8075		
MVU Estimate of Standard Deviation	105.5851		
MVU Estimate of SE of Mean	28.2021		
95% H-UCL	364.8003		
95% Chebyshev (MVUE) UCL	424.7376		
97.5% Chebyshev (MVUE) UCL	477.9296		
99% Chebyshev (MVUE) UCL	582.4149		
Non-parametric Statistics			
95% CLT UCL	343.995		
95% Adjusted-CLT UCL	345.6132		
95% Modified-t UCL	347.5375		
95% Jackknife UCL	347.2851		
95% Chebyshev (Mean, Sd) UCL	414.8197		
97.5% Chebyshev (Mean, Sd) UCL	464.0387		
99% Chebyshev (Mean, Sd) UCL	560.7199		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	342.45		
95% Bootstrap-t UCL	348.6895		
95% Hall's Bootstrap UCL	347.8433		
95% Percentile Bootstrap UCL	344		
95% BCA Bootstrap UCL	334.2143		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	347.2851	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	14		
Number of Missing Data	0		
Number of Valid Observations	14		
Number of Distinct Observations	14		
Minimum	95.4		
Maximum	803		
Mean	329.2071		
Standard Deviation	201.7807		
Variance	40715.43		
Coefficient of Variation	0.612929		
Skewness	1.002546		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.90555		
Shapiro-Wilk 5% Critical Value	0.874		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	424.7103		
<b>Gamma Statistics</b>			
k hat	3.018608		
k star (bias corrected)	2.419383		
Theta hat	109.0592		
Theta star	136.0707		
nu hat	84.52103		
nu star	67.74271		
5% Approximate Chi Square Value	49.79603		
Adjusted Level of Significance	0.03122		
Adjusted Chi Square Value	47.75887		
Anderson-Darling Test Statistic	0.29822		
Anderson-Darling 5% Critical Value	0.742476		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.163952		
Kolmogrov-Smirnov 5% Critical Value	0.230486		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	447.8547		
95% Adjusted Gamma UCL	466.9579		
<b>Lognormal Statistics</b>			
Minimum of log data	4.558079		
Maximum of log data	6.688355		
Mean of log data	5.621998		
Standard Deviation of log data	0.621884		
Variance of log data	0.38674		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.968417		
Shapiro-Wilk 5% Critical Value	0.874		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	335.4149		
MLE Standard Deviation	230.4801		
MLE Coefficient of Variation	0.687149		
MLE Skewness	2.385902		
MLE Median	276.4412		
MLE 80% Quantile	467.5426		
MLE 90% Quantile	614.6909		
MLE 95% Quantile	768.9285		
MLE 99% Quantile	1174.387		
MVU Estimate of Median	272.6457		
MVU Estimate of Mean	330.1229		
MVU Estimate of Standard Deviation	214.9908		
MVU Estimate of SE of Mean	57.13438		
95% H-UCL	493.4807		
95% Chebyshev (MVUE) UCL	579.1659		
97.5% Chebyshev (MVUE) UCL	686.927		
99% Chebyshev (MVUE) UCL	898.6028		
<b>Non-parametric Statistics</b>			
95% CLT UCL	417.9111		
95% Adjusted-CLT UCL	433.3507		
95% Modified-t UCL	427.1186		
95% Jackknife UCL	424.7103		
95% Chebyshev (Mean, Sd) UCL	564.2745		
97.5% Chebyshev (Mean, Sd) UCL	665.9883		
99% Chebyshev (Mean, Sd) UCL	865.7854		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	413.5893		
95% Bootstrap-t UCL	453.1821		
95% Hall's Bootstrap UCL	448.2509		
95% Percentile Bootstrap UCL	419.1786		
95% BCA Bootstrap UCL	456.2429		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	424.7103	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	14		
Number of Missing Data	0		
Number of Valid Observations	14		
Number of Distinct Observations	11		
Minimum	0.045		
Maximum	1.8		
Mean	0.9825		
Standard Deviation	0.44558		
Variance	0.198541		
Coefficient of Variation	0.453516		
Skewness	-0.295084		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.982372		
Shapiro-Wilk 5% Critical Value	0.874		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.193394		
<b>Gamma Statistics</b>			
k hat	2.525299		
k star (bias corrected)	2.031783		
Theta hat	0.389063		
Theta star	0.483565		
nu hat	70.70839		
nu star	56.88992		
5% Approximate Chi Square Value	40.54988		
Adjusted Level of Significance	0.03122		
Adjusted Chi Square Value	38.72447		
Anderson-Darling Test Statistic	0.916286		
Anderson-Darling 5% Critical Value	0.744139		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.241766		
Kolmogrov-Smirnov 5% Critical Value	0.231041		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	1.37841		
95% Adjusted Gamma UCL	1.443386		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.101093		
Maximum of log data	0.587787		
Mean of log data	-0.228527		
Standard Deviation of log data	0.901024		
Variance of log data	0.811844		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.675646		
Shapiro-Wilk 5% Critical Value	0.874		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	1.194102		
MLE Standard Deviation	1.336145		
MLE Coefficient of Variation	1.118953		
MLE Skewness	4.757853		
MLE Median	0.795705		
MLE 80% Quantile	1.703761		
MLE 90% Quantile	2.532706		
MLE 95% Quantile	3.50313		
MLE 99% Quantile	6.470505		
MVU Estimate of Median	0.772921		
MVU Estimate of Mean	1.149641		
MVU Estimate of Standard Deviation	1.137145		
MVU Estimate of SE of Mean	0.29742		
95% H-UCL	2.309888		
95% Chebyshev (MVUE) UCL	2.446066		
97.5% Chebyshev (MVUE) UCL	3.007031		
99% Chebyshev (MVUE) UCL	4.108937		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.178379		
95% Adjusted-CLT UCL	1.168344		
95% Modified-t UCL	1.191828		
95% Jackknife UCL	1.193394		
95% Chebyshev (Mean, Sd) UCL	1.501585		
97.5% Chebyshev (Mean, Sd) UCL	1.726193		
99% Chebyshev (Mean, Sd) UCL	2.167393		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.173946		
95% Bootstrap-t UCL	1.186271		
95% Hall's Bootstrap UCL	1.175653		
95% Percentile Bootstrap UCL	1.170714		
95% BCA Bootstrap UCL	1.227143		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.193394	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:	Nickel		
<b>Raw Statistics</b>			
Number of Observations	14		
Number of Missing Data	0		
Number of Valid Observations	14		
Number of Distinct Observations	13		
Minimum	18.9		
Maximum	28.9		
Mean	23.44643		
Standard Deviation	3.457126		
Variance	11.95172		
Coefficient of Variation	0.147448		
Skewness	0.493317		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.897191		
Shapiro-Wilk 5% Critical Value	0.874		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	25.08269		
<b>Gamma Statistics</b>			
k hat	50.98915		
k star (bias corrected)	40.11053		
Theta hat	0.459832		
Theta star	0.584546		
nu hat	1427.696		
nu star	1123.095		
5% Approximate Chi Square Value	1046.276		
Adjusted Level of Significance	0.03122		
Adjusted Chi Square Value	1036.436		
Anderson-Darling Test Statistic	0.568624		
Anderson-Darling 5% Critical Value	0.732978		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.168138		
Kolmogrov-Smirnov 5% Critical Value	0.228038		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	25.16789		
95% Adjusted Gamma UCL	25.40683		
<b>Lognormal Statistics</b>			
Minimum of log data	2.939162		
Maximum of log data	3.363842		
Mean of log data	3.14488		
Standard Deviation of log data	0.144647		
Variance of log data	0.020923		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.912159		
Shapiro-Wilk 5% Critical Value	0.874		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	23.46105		
MLE Standard Deviation	3.411404		
MLE Coefficient of Variation	0.145407		
MLE Skewness	0.439296		
MLE Median	23.21689		
MLE 80% Quantile	26.23533		
MLE 90% Quantile	27.95935		
MLE 95% Quantile	29.45386		
MLE 99% Quantile	32.50291		
MVU Estimate of Median	23.19955		
MVU Estimate of Mean	23.44338		
MVU Estimate of Standard Deviation	3.399797		
MVU Estimate of SE of Mean	0.908617		
95% H-UCL	25.20163		
95% Chebyshev (MVUE) UCL	27.40394		
97.5% Chebyshev (MVUE) UCL	29.11769		
99% Chebyshev (MVUE) UCL	32.484		
<b>Non-parametric Statistics</b>			
95% CLT UCL	24.9662		
95% Adjusted-CLT UCL	25.09637		
95% Modified-t UCL	25.103		
95% Jackknife UCL	25.08269		
95% Chebyshev (Mean, Sd) UCL	27.47386		
97.5% Chebyshev (Mean, Sd) UCL	29.21653		
99% Chebyshev (Mean, Sd) UCL	32.63967		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	24.89696		
95% Bootstrap-t UCL	25.28398		
95% Hall's Bootstrap UCL	24.87452		
95% Percentile Bootstrap UCL	24.94286		
95% BCA Bootstrap UCL	25.47143		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	25.08269	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	14		
Number of Missing Data	0		
Number of Valid Observations	14		
Number of Distinct Observations	13		
Minimum	0.325		
Maximum	2.7		
Mean	1.202143		
Standard Deviation	0.69098		
Variance	0.477453		
Coefficient of Variation	0.57479		
Skewness	0.800213		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.939463		
Shapiro-Wilk 5% Critical Value	0.874		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.529185		
<b>Gamma Statistics</b>			
k hat	3.093364		
k star (bias corrected)	2.478119		
Theta hat	0.38862		
Theta star	0.485103		
nu hat	86.61418		
nu star	69.38733		
5% Approximate Chi Square Value	51.20883		
Adjusted Level of Significance	0.03122		
Adjusted Chi Square Value	49.1411		
Anderson-Darling Test Statistic	0.178562		
Anderson-Darling 5% Critical Value	0.742297		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.107273		
Kolmogrov-Smirnov 5% Critical Value	0.230431		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.628889		
95% Adjusted Gamma UCL	1.697428		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.12393		
Maximum of log data	0.993252		
Mean of log data	0.013847		
Standard Deviation of log data	0.637013		
Variance of log data	0.405786		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.954413		
Shapiro-Wilk 5% Critical Value	0.874		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.242022		
MLE Standard Deviation	0.878664		
MLE Coefficient of Variation	0.707447		
MLE Skewness	2.476404		
MLE Median	1.013944		
MLE 80% Quantile	1.736938		
MLE 90% Quantile	2.298851		
MLE 95% Quantile	2.89138		
MLE 99% Quantile	4.461745		
MVU Estimate of Median	0.999341		
MVU Estimate of Mean	1.221341		
MVU Estimate of Standard Deviation	0.816525		
MVU Estimate of SE of Mean	0.216879		
95% H-UCL	1.85092		
95% Chebyshev (MVUE) UCL	2.166694		
97.5% Chebyshev (MVUE) UCL	2.57575		
99% Chebyshev (MVUE) UCL	3.37926		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.505901		
95% Adjusted-CLT UCL	1.548102		
95% Modified-t UCL	1.535767		
95% Jackknife UCL	1.529185		
95% Chebyshev (Mean, Sd) UCL	2.00711		
97.5% Chebyshev (Mean, Sd) UCL	2.355419		
99% Chebyshev (Mean, Sd) UCL	3.039607		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.492251		
95% Bootstrap-t UCL	1.60718		
95% Hall's Bootstrap UCL	1.634459		
95% Percentile Bootstrap UCL	1.501786		
95% BCA Bootstrap UCL	1.441429		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.529185	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:	Vanadium		
<b>Raw Statistics</b>			
Number of Observations	14		
Number of Missing Data	0		
Number of Valid Observations	14		
Number of Distinct Observations	14		
Minimum	39.8		
Maximum	103		
Mean	68.29643		
Standard Deviation	16.50462		
Variance	272.4025		
Coefficient of Variation	0.241662		
Skewness	0.409602		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.971135		
Shapiro-Wilk 5% Critical Value	0.874		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	76.1081		
<b>Gamma Statistics</b>			
k hat	18.35488		
k star (bias corrected)	14.46931		
Theta hat	3.720887		
Theta star	4.720089		
nu hat	513.9366		
nu star	405.1406		
5% Approximate Chi Square Value	359.474		
Adjusted Level of Significance	0.03122		
Adjusted Chi Square Value	353.7669		
Anderson-Darling Test Statistic	0.220403		
Anderson-Darling 5% Critical Value	0.734079		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.1074		
Kolmogrov-Smirnov 5% Critical Value	0.228334		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	76.97262		
95% Adjusted Gamma UCL	78.21438		
<b>Lognormal Statistics</b>			
Minimum of log data	3.683867		
Maximum of log data	4.634729		
Mean of log data	4.196369		
Standard Deviation of log data	0.245434		
Variance of log data	0.060238		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.976091		
Shapiro-Wilk 5% Critical Value	0.874		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	68.47635		
MLE Standard Deviation	17.06272		
MLE Coefficient of Variation	0.249177		
MLE Skewness	0.763002		
MLE Median	66.44466		
MLE 80% Quantile	81.75779		
MLE 90% Quantile	91.08125		
MLE 95% Quantile	99.49508		
MLE 99% Quantile	117.5953		
MVU Estimate of Median	66.30185		
MVU Estimate of Mean	68.32564		
MVU Estimate of Standard Deviation	16.8942		
MVU Estimate of SE of Mean	4.514463		
95% H-UCL	77.68432		
95% Chebyshev (MVUE) UCL	88.00373		
97.5% Chebyshev (MVUE) UCL	96.51845		
99% Chebyshev (MVUE) UCL	113.244		
<b>Non-parametric Statistics</b>			
95% CLT UCL	75.55195		
95% Adjusted-CLT UCL	76.06792		
95% Modified-t UCL	76.18858		
95% Jackknife UCL	76.1081		
95% Chebyshev (Mean, Sd) UCL	87.52373		
97.5% Chebyshev (Mean, Sd) UCL	95.8434		
99% Chebyshev (Mean, Sd) UCL	112.1858		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	75.57653		
95% Bootstrap-t UCL	76.60664		
95% Hall's Bootstrap UCL	76.88956		
95% Percentile Bootstrap UCL	75.32143		
95% BCA Bootstrap UCL	78.06071		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	76.1081	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls	
Variable:	Zinc	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	888	
Maximum	1890	
Mean	1209.536	
Standard Deviation	275.2553	
Variance	75765.48	
Coefficient of Variation	0.227571	
Skewness	1.078465	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.904215	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	1339.815	
Gamma Statistics		
k hat	22.65868	
k star (bias corrected)	17.85086	
Theta hat	53.38069	
Theta star	67.75783	
nu hat	634.4429	
nu star	499.8242	
5% Approximate Chi Square Value	448.9696	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	442.5744	
Anderson-Darling Test Statistic	0.368263	
Anderson-Darling 5% Critical Value	0.7339	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.178383	
Kolmogrov-Smirnov 5% Critical Value	0.22825	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1346.539	
95% Adjusted Gamma UCL	1365.997	
Lognormal Statistics		
Minimum of log data	6.788972	
Maximum of log data	7.544332	
Mean of log data	7.075763	
Standard Deviation of log data	0.21522	
Variance of log data	0.04632	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.943022	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1210.662	
MLE Standard Deviation	263.6053	
MLE Coefficient of Variation	0.217736	
MLE Skewness	0.663532	
MLE Median	1182.946	
MLE 80% Quantile	1418.881	
MLE 90% Quantile	1559.812	
MLE 95% Quantile	1685.47	
MLE 99% Quantile	1951.522	
MVU Estimate of Median	1180.99	
MVU Estimate of Mean	1208.624	
MVU Estimate of Standard Deviation	261.6091	
MVU Estimate of SE of Mean	69.9115	
95% H-UCL	1350.491	
95% Chebyshev (MVUE) UCL	1513.361	
97.5% Chebyshev (MVUE) UCL	1645.221	
99% Chebyshev (MVUE) UCL	1904.235	
Non-parametric Statistics		
95% CLT UCL	1330.539	
95% Adjusted-CLT UCL	1353.196	
95% Modified-t UCL	1343.349	
95% Jackknife UCL	1339.815	
95% Chebyshev (Mean, Sd) UCL	1530.198	
97.5% Chebyshev (Mean, Sd) UCL	1668.949	
99% Chebyshev (Mean, Sd) UCL	1941.499	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1327.967	
95% Bootstrap-t UCL	1371.346	
95% Hall's Bootstrap UCL	1384.103	
95% Percentile Bootstrap UCL	1331.107	
95% BCA Bootstrap UCL	1307	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	1339.815	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ww.xls		
Variable:	Chromium VI		
Raw Statistics			
Number of Observations	14		
Number of Missing Data	0		
Number of Valid Observations	14		
Number of Distinct Observations	14		
Minimum	4.771		
Maximum	31.98		
Mean	16.07404		
Standard Deviation	8.535957		
Variance	72.86256		
Coefficient of Variation	0.53104		
Skewness	0.705782		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.911089		
Shapiro-Wilk 5% Critical Value	0.874		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	20.11412		
Gamma Statistics			
k hat	3.859605		
k star (bias corrected)	3.080166		
Theta hat	4.164684		
Theta star	5.218562		
nu hat	108.0689		
nu star	86.24465		
5% Approximate Chi Square Value	65.83328		
Adjusted Level of Significance	0.03122		
Adjusted Chi Square Value	63.47084		
Anderson-Darling Test Statistic	0.332793		
Anderson-Darling 5% Critical Value	0.740466		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.14814		
Kolmogrov-Smirnov 5% Critical Value	0.229864		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	21.05773		
95% Adjusted Gamma UCL	21.84152		
Lognormal Statistics			
Minimum of log data	1.562556		
Maximum of log data	3.465111		
Mean of log data	2.642101		
Standard Deviation of log data	0.55018		
Variance of log data	0.302698		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.959459		
Shapiro-Wilk 5% Critical Value	0.874		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	16.33728		
MLE Standard Deviation	9.713561		
MLE Coefficient of Variation	0.594564		
MLE Skewness	1.993874		
MLE Median	14.04267		
MLE 80% Quantile	22.35395		
MLE 90% Quantile	28.47659		
MLE 95% Quantile	34.71415		
MLE 99% Quantile	50.49227		
MVU Estimate of Median	13.89157		
MVU Estimate of Mean	16.14081		
MVU Estimate of Standard Deviation	9.209458		
MVU Estimate of SE of Mean	2.452545		
95% H-UCL	22.68152		
95% Chebyshev (MVUE) UCL	26.8312		
97.5% Chebyshev (MVUE) UCL	31.45694		
99% Chebyshev (MVUE) UCL	40.54332		
Non-parametric Statistics			
95% CLT UCL	19.82649		
95% Adjusted-CLT UCL	20.2863		
95% Modified-t UCL	20.18584		
95% Jackknife UCL	20.11412		
95% Chebyshev (Mean, Sd) UCL	26.01812		
97.5% Chebyshev (Mean, Sd) UCL	30.32094		
99% Chebyshev (Mean, Sd) UCL	38.77299		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	19.62582		
95% Bootstrap-t UCL	20.62097		
95% Hall's Bootstrap UCL	20.00192		
95% Percentile Bootstrap UCL	19.74654		
95% BCA Bootstrap UCL	18.73114		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	20.11412	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls		
Variable:	Aroclor 1254		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.095		
Maximum	2.6		
Mean	0.906		
Standard Deviation	0.79355		
Variance	0.629721		
Coefficient of Variation	0.875883		
Skewness	1.121319		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.882883		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1.366006		
<b>Gamma Statistics</b>			
k hat	1.344194		
k star (bias corrected)	1.007602		
Theta hat	0.67401		
Theta star	0.899164		
nu hat	26.88388		
nu star	20.15205		
5% Approximate Chi Square Value	10.9618		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	9.803755		
Anderson-Darling Test Statistic	0.267577		
Anderson-Darling 5% Critical Value	0.742047		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.176202		
Kolmogrov-Smirnov 5% Critical Value	0.27194		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.665579		
95% Adjusted Gamma UCL	1.862323		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.353878		
Maximum of log data	0.955511		
Mean of log data	-0.514711		
Standard Deviation of log data	1.040438		
Variance of log data	1.082511		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.957651		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	1.0269		
MLE Standard Deviation	1.434753		
MLE Coefficient of Variation	1.39717		
MLE Skewness	6.918901		
MLE Median	0.597673		
MLE 80% Quantile	1.439735		
MLE 90% Quantile	2.275618		
MLE 95% Quantile	3.30954		
MLE 99% Quantile	6.721743		
MVU Estimate of Median	0.566031		
MVU Estimate of Mean	0.953862		
MVU Estimate of Standard Deviation	1.07096		
MVU Estimate of SE of Mean	0.329645		
95% H-UCL	3.10076		
95% Chebyshev (MVUE) UCL	2.390752		
97.5% Chebyshev (MVUE) UCL	3.012496		
99% Chebyshev (MVUE) UCL	4.233792		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.318764		
95% Adjusted-CLT UCL	1.413842		
95% Modified-t UCL	1.380836		
95% Jackknife UCL	1.366006		
95% Chebyshev (Mean, Sd) UCL	1.999833		
97.5% Chebyshev (Mean, Sd) UCL	2.473135		
99% Chebyshev (Mean, Sd) UCL	3.402846		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.307209		
95% Bootstrap-t UCL	1.546107		
95% Hall's Bootstrap UCL	1.602095		
95% Percentile Bootstrap UCL	1.337		
95% BCA Bootstrap UCL	1.2545		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.366006		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls		
Variable:	Aroclor 1260		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.095		
Maximum	2.4		
Mean	0.99		
Standard Deviation	0.830873		
Variance	0.69035		
Coefficient of Variation	0.839266		
Skewness	0.59561		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.875935		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1.471641		
<b>Gamma Statistics</b>			
k hat	1.311212		
k star (bias corrected)	0.984515		
Theta hat	0.755027		
Theta star	1.005571		
nu hat	26.22424		
nu star	19.6903		
5% Approximate Chi Square Value	10.62168		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	9.484266		
Anderson-Darling Test Statistic	0.404415		
Anderson-Darling 5% Critical Value	0.742643		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.201828		
Kolmogrov-Smirnov 5% Critical Value	0.272113		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.835246		
95% Adjusted Gamma UCL	2.05534		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.353878		
Maximum of log data	0.875469		
Mean of log data	-0.437551		
Standard Deviation of log data	1.068382		
Variance of log data	1.14144		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.927184		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	1.142443		
MLE Standard Deviation	1.667839		
MLE Coefficient of Variation	1.459888		
MLE Skewness	7.491085		
MLE Median	0.645616		
MLE 80% Quantile	1.592383		
MLE 90% Quantile	2.548029		
MLE 95% Quantile	3.743187		
MLE 99% Quantile	7.748548		
MVU Estimate of Median	0.609618		
MVU Estimate of Mean	1.05585		
MVU Estimate of Standard Deviation	1.221675		
MVU Estimate of SE of Mean	0.375101		
95% H-UCL	3.628251		
95% Chebyshev (MVUE) UCL	2.690879		
97.5% Chebyshev (MVUE) UCL	3.398358		
99% Chebyshev (MVUE) UCL	4.788062		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.422177		
95% Adjusted-CLT UCL	1.475056		
95% Modified-t UCL	1.479889		
95% Jackknife UCL	1.471641		
95% Chebyshev (Mean, Sd) UCL	2.135279		
97.5% Chebyshev (Mean, Sd) UCL	2.630843		
99% Chebyshev (Mean, Sd) UCL	3.604281		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.402362		
95% Bootstrap-t UCL	1.56625		
95% Hall's Bootstrap UCL	1.387372		
95% Percentile Bootstrap UCL	1.3975		
95% BCA Bootstrap UCL	1.347		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.471641		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - jy.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	8		
Minimum	0.9		
Maximum	19.5		
Mean	5.405		
Standard Deviation	6.306938		
Variance	39.77747		
Coefficient of Variation	1.166871		
Skewness	1.485567		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.774885		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	9.061013		
Gamma Statistics			
k hat	0.884153		
k star (bias corrected)	0.685574		
Theta hat	6.113195		
Theta star	7.883907		
nu hat	17.68306		
nu star	13.71148		
5% Approximate Chi Square Value	6.373178		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	5.527307		
Anderson-Darling Test Statistic	0.803652		
Anderson-Darling 5% Critical Value	0.752301		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.296556		
Kolmogrov-Smirnov 5% Critical Value	0.274783		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	11.6285		
95% Adjusted Gamma UCL	13.40807		
Lognormal Statistics			
Minimum of log data	-0.105361		
Maximum of log data	2.970414		
Mean of log data	1.024648		
Standard Deviation of log data	1.236454		
Variance of log data	1.528818		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.823679		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	5.983805		
MLE Standard Deviation	11.37351		
MLE Coefficient of Variation	1.900716		
MLE Skewness	12.56891		
MLE Median	2.786113		
MLE 80% Quantile	7.920474		
MLE 90% Quantile	13.6466		
MLE 95% Quantile	21.29802		
MLE 99% Quantile	49.43403		
MVU Estimate of Median	2.579684		
MVU Estimate of Mean	5.337489		
MVU Estimate of Standard Deviation	7.309681		
MVU Estimate of SE of Mean	2.20465		
95% H-UCL	26.48026		
95% Chebyshev (MVUE) UCL	14.94734		
97.5% Chebyshev (MVUE) UCL	19.10552		
99% Chebyshev (MVUE) UCL	27.27348		
Non-parametric Statistics			
95% CLT UCL	8.685544		
95% Adjusted-CLT UCL	9.686675		
95% Modified-t UCL	9.21717		
95% Jackknife UCL	9.061013		
95% Chebyshev (Mean, Sd) UCL	14.09851		
97.5% Chebyshev (Mean, Sd) UCL	17.86021		
99% Chebyshev (Mean, Sd) UCL	25.24932		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	8.528449		
95% Bootstrap-t UCL	12.16395		
95% Hall's Bootstrap UCL	12.00854		
95% Percentile Bootstrap UCL	8.885		
95% BCA Bootstrap UCL	10.525		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	25.24932	99% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	13.7		
Maximum	482		
Mean	144.785		
Standard Deviation	160.2799		
Variance	25689.65		
Coefficient of Variation	1.10702		
Skewness	1.663956		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.711189		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	237.6962		
Gamma Statistics			
k hat	1.1357		
k star (bias corrected)	0.861657		
Theta hat	127.4852		
Theta star	168.0309		
nu hat	22.71401		
nu star	17.23314		
5% Approximate Chi Square Value	8.837696		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	7.814213		
Anderson-Darling Test Statistic	0.642507		
Anderson-Darling 5% Critical Value	0.745817		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.300666		
Kolmogrov-Smirnov 5% Critical Value	0.273036		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	282.3247		
95% Adjusted Gamma UCL	319.3028		
Lognormal Statistics			
Minimum of log data	2.617396		
Maximum of log data	6.177944		
Mean of log data	4.474262		
Standard Deviation of log data	1.076291		
Variance of log data	1.158401		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.930741		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	156.5636		
MLE Standard Deviation	231.4198		
MLE Coefficient of Variation	1.47812		
MLE Skewness	7.663812		
MLE Median	87.72981		
MLE 80% Quantile	217.8327		
MLE 90% Quantile	349.7768		
MLE 95% Quantile	515.3054		
MLE 99% Quantile	1072.464		
MVU Estimate of Median	82.7673		
MVU Estimate of Mean	144.4842		
MVU Estimate of Standard Deviation	168.5858		
MVU Estimate of SE of Mean	51.72464		
95% H-UCL	504.4997		
95% Chebyshev (MVUE) UCL	369.9467		
97.5% Chebyshev (MVUE) UCL	467.5045		
99% Chebyshev (MVUE) UCL	659.1379		
Non-parametric Statistics			
95% CLT UCL	228.1543		
95% Adjusted-CLT UCL	256.6515		
95% Modified-t UCL	242.1412		
95% Jackknife UCL	237.6962		
95% Chebyshev (Mean, Sd) UCL	365.7156		
97.5% Chebyshev (Mean, Sd) UCL	461.3125		
99% Chebyshev (Mean, Sd) UCL	649.094		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	224.9243		
95% Bootstrap-t UCL	502.3301		
95% Hall's Bootstrap UCL	915.6769		
95% Percentile Bootstrap UCL	230.67		
95% BCA Bootstrap UCL	279.83		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	282.3247	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls				
Variable:	Barium				
<b>Raw Statistics</b>					
Number of Observations			10		
Number of Missing Data			0		
Number of Valid Observations			10		
Number of Distinct Observations			10		
Minimum			20		
Maximum			353		
Mean			126.68		
Standard Deviation			95.33767		
Variance			9089.271		
Coefficient of Variation			0.752587		
Skewness			1.563796		
Too Few Distinct Observations?			NO		
<b>Normal Statistics</b>					
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.867507		
Shapiro-Wilk 5% Critical Value			0.842		
5% Normality Test Result			NORMAL		Data are normal at 5% significance level
95% Student's-t UCL			181.9454		
<b>Gamma Statistics</b>					
k hat			2.084191		
k star (bias corrected)			1.525601		
Theta hat			60.78137		
Theta star			83.03615		
nu hat			41.68383		
nu star			30.51201		
5% Approximate Chi Square Value			18.89375		
Adjusted Level of Significance			0.0267		
Adjusted Chi Square Value			17.32116		
Anderson-Darling Test Statistic			0.198741		
Anderson-Darling 5% Critical Value			0.735294		
Anderson-Darling 5% Gamma Test Result			AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic			0.115526		
Kolmogrov-Smirnov 5% Critical Value			0.269695		
Kolmogrov-Smirnov 5% Gamma Test Result			KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result			GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL			204.5788		
95% Adjusted Gamma UCL			223.1526		
<b>Lognormal Statistics</b>					
Minimum of log data			2.995732		
Maximum of log data			5.866468		
Mean of log data			4.582981		
Standard Deviation of log data			0.800893		
Variance of log data			0.641429		
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.96888		
Shapiro-Wilk 5% Critical Value			0.842		
5% Lognormality Test Result			LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean			134.7869		
MLE Standard Deviation			127.8128		
MLE Coefficient of Variation			0.948258		
MLE Skewness			3.697441		
MLE Median			97.80548		
MLE 80% Quantile			192.4305		
MLE 90% Quantile			273.726		
MLE 95% Quantile			365.2014		
MLE 99% Quantile			630.0864		
MVU Estimate of Median			94.70957		
MVU Estimate of Mean			129.6019		
MVU Estimate of Standard Deviation			108.8715		
MVU Estimate of SE of Mean			34.05374		
95% H-UCL			277.9967		
95% Chebyshev (MVUE) UCL			278.0387		
97.5% Chebyshev (MVUE) UCL			342.2674		
99% Chebyshev (MVUE) UCL			468.4323		
<b>Non-parametric Statistics</b>					
95% CLT UCL			176.2697		
95% Adjusted-CLT UCL			192.2001		
95% Modified-t UCL			184.4303		
95% Jackknife UCL			181.9454		
95% Chebyshev (Mean, Sd) UCL			258.0939		
97.5% Chebyshev (Mean, Sd) UCL			314.9568		
99% Chebyshev (Mean, Sd) UCL			426.653		
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs			2000		
95% Standard Bootstrap UCL			173.1161		
95% Bootstrap-t UCL			212.2146		
95% Hall's Bootstrap UCL			423.6649		
95% Percentile Bootstrap UCL			177.47		
95% BCA Bootstrap UCL			208.14		
<b>Recommendations</b>					
Human Inspection Recommended?			NO		
Appropriate Distribution			NORMAL		
1st Recommended UCL			181.9454		95% Student's-t UCL
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value			NO		
Recommendation Warning!			NONE		
Alternative UCL			NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	1.4		
Maximum	21		
Mean	11.11		
Standard Deviation	5.912031		
Variance	34.95211		
Coefficient of Variation	0.532136		
Skewness	-0.234362		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.957429		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	14.53709		
<b>Gamma Statistics</b>			
k hat	2.420262		
k star (bias corrected)	1.76085		
Theta hat	4.590412		
Theta star	6.309452		
nu hat	48.40524		
nu star	35.217		
5% Approximate Chi Square Value	22.63703		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	20.89929		
Anderson-Darling Test Statistic	0.59667		
Anderson-Darling 5% Critical Value	0.734151		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.21669		
Kolmogrov-Smirnov 5% Critical Value	0.269238		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	17.28411		
95% Adjusted Gamma UCL	18.72126		
<b>Lognormal Statistics</b>			
Minimum of log data	0.336472		
Maximum of log data	3.044522		
Mean of log data	2.187256		
Standard Deviation of log data	0.828364		
Variance of log data	0.686187		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.82865		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	12.55789		
MLE Standard Deviation	12.47048		
MLE Coefficient of Variation	0.99304		
MLE Skewness	3.958382		
MLE Median	8.910728		
MLE 80% Quantile	17.94342		
MLE 90% Quantile	25.83431		
MLE 95% Quantile	34.81035		
MLE 99% Quantile	61.19286		
MVU Estimate of Median	8.609264		
MVU Estimate of Mean	12.03574		
MVU Estimate of Standard Deviation	10.48906		
MVU Estimate of SE of Mean	3.276301		
95% H-UCL	26.93112		
95% Chebyshev (MVUE) UCL	26.31681		
97.5% Chebyshev (MVUE) UCL	32.49624		
99% Chebyshev (MVUE) UCL	44.63453		
<b>Non-parametric Statistics</b>			
95% CLT UCL	14.18513		
95% Adjusted-CLT UCL	14.03708		
95% Modified-t UCL	14.514		
95% Jackknife UCL	14.53709		
95% Chebyshev (Mean, Sd) UCL	19.25917		
97.5% Chebyshev (Mean, Sd) UCL	22.78533		
99% Chebyshev (Mean, Sd) UCL	29.71177		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	13.99102		
95% Bootstrap-t UCL	14.36584		
95% Hall's Bootstrap UCL	14.15817		
95% Percentile Bootstrap UCL	14.12		
95% BCA Bootstrap UCL	15.13		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	14.53709	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	69.6		
Maximum	1710		
Mean	838.56		
Standard Deviation	572.1575		
Variance	327364.2		
Coefficient of Variation	0.68231		
Skewness	-0.065039		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.924628		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1170.229		
Gamma Statistics			
k hat	1.444035		
k star (bias corrected)	1.077491		
Theta hat	580.706		
Theta star	778.2522		
nu hat	28.88071		
nu star	21.54983		
5% Approximate Chi Square Value	11.99983		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	10.78065		
Anderson-Darling Test Statistic	0.532998		
Anderson-Darling 5% Critical Value	0.740242		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.242458		
Kolmogrov-Smirnov 5% Critical Value	0.271414		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1505.924		
95% Adjusted Gamma UCL	1676.228		
Lognormal Statistics			
Minimum of log data	4.242765		
Maximum of log data	7.444249		
Mean of log data	6.347078		
Standard Deviation of log data	1.101694		
Variance of log data	1.21373		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.857857		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1047.271		
MLE Standard Deviation	1610.899		
MLE Coefficient of Variation	1.538186		
MLE Skewness	8.253936		
MLE Median	570.8224		
MLE 80% Quantile	1448.103		
MLE 90% Quantile	2351.374		
MLE 95% Quantile	3495.967		
MLE 99% Quantile	7402.841		
MVU Estimate of Median	537.0293		
MVU Estimate of Mean	961.7975		
MVU Estimate of Standard Deviation	1152.531		
MVU Estimate of SE of Mean	352.7611		
95% H-UCL	3538.331		
95% Chebyshev (MVUE) UCL	2499.448		
97.5% Chebyshev (MVUE) UCL	3164.79		
99% Chebyshev (MVUE) UCL	4471.726		
Non-parametric Statistics			
95% CLT UCL	1136.167		
95% Adjusted-CLT UCL	1132.191		
95% Modified-t UCL	1169.609		
95% Jackknife UCL	1170.229		
95% Chebyshev (Mean, Sd) UCL	1627.225		
97.5% Chebyshev (Mean, Sd) UCL	1968.48		
99% Chebyshev (Mean, Sd) UCL	2638.811		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1121.882		
95% Bootstrap-t UCL	1157.871		
95% Hall's Bootstrap UCL	1115.148		
95% Percentile Bootstrap UCL	1127.86		
95% BCA Bootstrap UCL	1248		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1170.229	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	122		
Maximum	741		
Mean	377.55		
Standard Deviation	214.48		
Variance	46001.69		
Coefficient of Variation	0.568084		
Skewness	0.718515		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.888167		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	501.88		
Gamma Statistics			
k hat	3.463738		
k star (bias corrected)	2.491283		
Theta hat	109.0008		
Theta star	151.5484		
nu hat	69.27475		
nu star	49.82566		
5% Approximate Chi Square Value	34.61599		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	32.42498		
Anderson-Darling Test Statistic	0.372336		
Anderson-Darling 5% Critical Value	0.730886		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.195639		
Kolmogrov-Smirnov 5% Critical Value	0.268158		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	543.4389		
95% Adjusted Gamma UCL	580.1601		
Lognormal Statistics			
Minimum of log data	4.804021		
Maximum of log data	6.608001		
Mean of log data	5.78246		
Standard Deviation of log data	0.591558		
Variance of log data	0.349941		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.942953		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	386.6155		
MLE Standard Deviation	250.2522		
MLE Coefficient of Variation	0.64729		
MLE Skewness	2.213073		
MLE Median	324.5567		
MLE 80% Quantile	535.0321		
MLE 90% Quantile	694.0975		
MLE 95% Quantile	858.832		
MLE 99% Quantile	1284.885		
MVU Estimate of Median	318.9184		
MVU Estimate of Mean	379.0808		
MVU Estimate of Standard Deviation	230.4149		
MVU Estimate of SE of Mean	72.60061		
95% H-UCL	615.0934		
95% Chebyshev (MVUE) UCL	695.5395		
97.5% Chebyshev (MVUE) UCL	832.4714		
99% Chebyshev (MVUE) UCL	1101.448		
Non-parametric Statistics			
95% CLT UCL	489.1115		
95% Adjusted-CLT UCL	505.578		
95% Modified-t UCL	504.4485		
95% Jackknife UCL	501.88		
95% Chebyshev (Mean, Sd) UCL	673.1903		
97.5% Chebyshev (Mean, Sd) UCL	801.1142		
99% Chebyshev (Mean, Sd) UCL	1052.396		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	484.7575		
95% Bootstrap-t UCL	539.2063		
95% Hall's Bootstrap UCL	498.4195		
95% Percentile Bootstrap UCL	480.3		
95% BCA Bootstrap UCL	533.15		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	501.88		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls				
Variable:	Lead				
Raw Statistics					
Number of Observations	10				
Number of Missing Data	0				
Number of Valid Observations	10				
Number of Distinct Observations	10				
Minimum	47.6				
Maximum	1210				
Mean	523.31				
Standard Deviation	355.0963				
Variance	126093.4				
Coefficient of Variation	0.678558				
Skewness	0.931141				
Too Few Distinct Observations?	NO				
Normal Statistics					
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.902601				
Shapiro-Wilk 5% Critical Value	0.842				
5% Normality Test Result	NORMAL				
95% Student's-t UCL	729.1526				
Gamma Statistics					
k hat	1.994409				
k star (bias corrected)	1.462753				
Theta hat	262.3885				
Theta star	357.7569				
nu hat	39.88818				
nu star	29.25506				
5% Approximate Chi Square Value	17.90624				
Adjusted Level of Significance	0.0267				
Adjusted Chi Square Value	16.37984				
Anderson-Darling Test Statistic	0.379666				
Anderson-Darling 5% Critical Value	0.735621				
Anderson-Darling 5% Gamma Test Result	AD GAMMA				
Kolmogrov-Smirnov Test Statistic	0.181499				
Kolmogrov-Smirnov 5% Critical Value	0.269825				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA				
5% Gamma Test Result	GAMMA				
95% Approximate Gamma UCL	854.9794				
95% Adjusted Gamma UCL	934.6529				
Lognormal Statistics					
Minimum of log data	3.862833				
Maximum of log data	7.098376				
Mean of log data	5.988998				
Standard Deviation of log data	0.897646				
Variance of log data	0.805768				
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.867941				
Shapiro-Wilk 5% Critical Value	0.842				
5% Lognormality Test Result	LOGNORMAL				
MLE Mean	596.9793				
MLE Standard Deviation	664.3431				
MLE Coefficient of Variation	1.112841				
MLE Skewness	4.716683				
MLE Median	399.0148				
MLE 80% Quantile	851.9341				
MLE 90% Quantile	1264.552				
MLE 95% Quantile	1746.949				
MLE 99% Quantile	3219.311				
MVU Estimate of Median	383.2016				
MVU Estimate of Mean	567.0543				
MVU Estimate of Standard Deviation	539.7726				
MVU Estimate of SE of Mean	167.9264				
95% H-UCL	1420.558				
95% Chebyshev (MVUE) UCL	1299.029				
97.5% Chebyshev (MVUE) UCL	1615.754				
99% Chebyshev (MVUE) UCL	2237.901				
Non-parametric Statistics					
95% CLT UCL	708.0128				
95% Adjusted-CLT UCL	743.3426				
95% Modified-t UCL	734.6634				
95% Jackknife UCL	729.1526				
95% Chebyshev (Mean, Sd) UCL	1012.776				
97.5% Chebyshev (Mean, Sd) UCL	1224.569				
99% Chebyshev (Mean, Sd) UCL	1640.594				
Bootstrap Statistics					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	700.7953				
95% Bootstrap-t UCL	839.44				
95% Hall's Bootstrap UCL	921.8771				
95% Percentile Bootstrap UCL	708.1				
95% BCA Bootstrap UCL	797.3				
Recommendations					
Human Inspection Recommended?	NO				
Appropriate Distribution	NORMAL				
1st Recommended UCL	729.1526				
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value	NO				
Recommendation Warning!	NONE				
Alternative UCL	NONE				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	103		
Maximum	555		
Mean	292.85		
Standard Deviation	124.8737		
Variance	15593.45		
Coefficient of Variation	0.426408		
Skewness	0.708373		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.958499		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	365.2369		
<b>Gamma Statistics</b>			
k hat	5.76041		
k star (bias corrected)	4.098953		
Theta hat	50.8384		
Theta star	71.44507		
nu hat	115.2082		
nu star	81.97907		
5% Approximate Chi Square Value	62.11027		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	59.11269		
Anderson-Darling Test Statistic	0.224566		
Anderson-Darling 5% Critical Value	0.728782		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.172367		
Kolmogrov-Smirnov 5% Critical Value	0.267308		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	386.5314		
95% Adjusted Gamma UCL	406.1323		
<b>Lognormal Statistics</b>			
Minimum of log data	4.634729		
Maximum of log data	6.318968		
Mean of log data	5.590357		
Standard Deviation of log data	0.465328		
Variance of log data	0.216531		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.957391		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	298.456		
MLE Standard Deviation	146.7484		
MLE Coefficient of Variation	0.491692		
MLE Skewness	1.593948		
MLE Median	267.8313		
MLE 80% Quantile	396.8506		
MLE 90% Quantile	487.0196		
MLE 95% Quantile	575.8358		
MLE 99% Quantile	790.536		
MVU Estimate of Median	264.9444		
MVU Estimate of Mean	294.9924		
MVU Estimate of Standard Deviation	139.6391		
MVU Estimate of SE of Mean	44.09343		
95% H-UCL	418.044		
95% Chebyshev (MVUE) UCL	487.1912		
97.5% Chebyshev (MVUE) UCL	570.3558		
99% Chebyshev (MVUE) UCL	733.7165		
<b>Non-parametric Statistics</b>			
95% CLT UCL	357.8029		
95% Adjusted-CLT UCL	367.2546		
95% Modified-t UCL	366.7112		
95% Jackknife UCL	365.2369		
95% Chebyshev (Mean, Sd) UCL	464.9766		
97.5% Chebyshev (Mean, Sd) UCL	539.4558		
99% Chebyshev (Mean, Sd) UCL	685.756		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	352.9722		
95% Bootstrap-t UCL	380.8594		
95% Hall's Bootstrap UCL	413.135		
95% Percentile Bootstrap UCL	355.4		
95% BCA Bootstrap UCL	383.25		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	365.2369		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.025		
Maximum	2.3		
Mean	0.765		
Standard Deviation	0.837596		
Variance	0.701567		
Coefficient of Variation	1.094896		
Skewness	0.911014		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.832785		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1.250538		
<b>Gamma Statistics</b>			
k hat	0.710099		
k star (bias corrected)	0.563736		
Theta hat	1.077315		
Theta star	1.357018		
nu hat	14.20198		
nu star	11.27472		
5% Approximate Chi Square Value	4.752335		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	4.042045		
Anderson-Darling Test Statistic	0.337866		
Anderson-Darling 5% Critical Value	0.760165		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.196921		
Kolmogrov-Smirnov 5% Critical Value	0.276757		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.814931		
95% Adjusted Gamma UCL	2.133861		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.688879		
Maximum of log data	0.832909		
Mean of log data	-1.117255		
Standard Deviation of log data	1.583418		
Variance of log data	2.507211		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.935146		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.146084		
MLE Standard Deviation	3.847611		
MLE Coefficient of Variation	3.357181		
MLE Skewness	47.9092		
MLE Median	0.327177		
MLE 80% Quantile	1.24699		
MLE 90% Quantile	2.502867		
MLE 95% Quantile	4.425871		
MLE 99% Quantile	13.01073		
MVU Estimate of Median	0.288205		
MVU Estimate of Mean	0.919538		
MVU Estimate of Standard Deviation	1.695445		
MVU Estimate of SE of Mean	0.485175		
95% H-UCL	11.69558		
95% Chebyshev (MVUE) UCL	3.034367		
97.5% Chebyshev (MVUE) UCL	3.949455		
99% Chebyshev (MVUE) UCL	5.746968		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.200674		
95% Adjusted-CLT UCL	1.282208		
95% Modified-t UCL	1.263256		
95% Jackknife UCL	1.250538		
95% Chebyshev (Mean, Sd) UCL	1.919546		
97.5% Chebyshev (Mean, Sd) UCL	2.419119		
99% Chebyshev (Mean, Sd) UCL	3.400434		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.186451		
95% Bootstrap-t UCL	1.407833		
95% Hall's Bootstrap UCL	1.183993		
95% Percentile Bootstrap UCL	1.205		
95% BCA Bootstrap UCL	1.3945		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.814931	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls		
Variable:	Nickel		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	8.7		
Maximum	150		
Mean	51.75		
Standard Deviation	40.67632		
Variance	1654.563		
Coefficient of Variation	0.786016		
Skewness	1.734877		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.844439		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	75.3293		
<b>Gamma Statistics</b>			
k hat	2.066587		
k star (bias corrected)	1.513277		
Theta hat	25.04129		
Theta star	34.1973		
nu hat	41.33173		
nu star	30.26555		
5% Approximate Chi Square Value	18.69967		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	17.13606		
Anderson-Darling Test Statistic	0.183259		
Anderson-Darling 5% Critical Value	0.735354		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.119541		
Kolmogrov-Smirnov 5% Critical Value	0.269719		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	83.75774		
95% Adjusted Gamma UCL	91.40035		
<b>Lognormal Statistics</b>			
Minimum of log data	2.163323		
Maximum of log data	5.010635		
Mean of log data	3.685382		
Standard Deviation of log data	0.788317		
Variance of log data	0.621443		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.985167		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	54.38585		
MLE Standard Deviation	50.48264		
MLE Coefficient of Variation	0.928231		
MLE Skewness	3.58447		
MLE Median	39.86035		
MLE 80% Quantile	77.59554		
MLE 90% Quantile	109.768		
MLE 95% Quantile	145.7894		
MLE 99% Quantile	249.3873		
MVU Estimate of Median	38.63744		
MVU Estimate of Mean	52.36837		
MVU Estimate of Standard Deviation	43.24214		
MVU Estimate of SE of Mean	13.53375		
95% H-UCL	110.2293		
95% Chebyshev (MVUE) UCL	111.3606		
97.5% Chebyshev (MVUE) UCL	136.8866		
99% Chebyshev (MVUE) UCL	187.0275		
<b>Non-parametric Statistics</b>			
95% CLT UCL	72.90772		
95% Adjusted-CLT UCL	80.44806		
95% Modified-t UCL	76.50544		
95% Jackknife UCL	75.3293		
95% Chebyshev (Mean, Sd) UCL	107.8184		
97.5% Chebyshev (Mean, Sd) UCL	132.0793		
99% Chebyshev (Mean, Sd) UCL	179.735		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	71.42093		
95% Bootstrap-t UCL	94.39206		
95% Hall's Bootstrap UCL	181.2037		
95% Percentile Bootstrap UCL	73.61		
95% BCA Bootstrap UCL	85.09		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	75.3293	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls		
Variable:	Thallium		
Raw Statistics			
Number of Observations	9		
Number of Missing Data	0		
Number of Valid Observations	9		
Number of Distinct Observations	9		
Minimum	0.75		
Maximum	6.9		
Mean	2.527778		
Standard Deviation	1.856595		
Variance	3.446944		
Coefficient of Variation	0.734477		
Skewness	1.839357		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.809754		
Shapiro-Wilk 5% Critical Value	0.829		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	3.678587		
Gamma Statistics			
k hat	2.539052		
k star (bias corrected)	1.766776		
Theta hat	0.99556		
Theta star	1.430729		
nu hat	45.70294		
nu star	31.80196		
5% Approximate Chi Square Value	19.91298		
Adjusted Level of Significance	0.02308		
Adjusted Chi Square Value	17.95509		
Anderson-Darling Test Statistic	0.358298		
Anderson-Darling 5% Critical Value	0.728169		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.201103		
Kolmogrov-Smirnov 5% Critical Value	0.281865		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	4.03698		
95% Adjusted Gamma UCL	4.477186		
Lognormal Statistics			
Minimum of log data	-0.287682		
Maximum of log data	1.931521		
Mean of log data	0.717678		
Standard Deviation of log data	0.688031		
Variance of log data	0.473386		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.941298		
Shapiro-Wilk 5% Critical Value	0.829		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	2.597037		
MLE Standard Deviation	2.020724		
MLE Coefficient of Variation	0.778088		
MLE Skewness	2.805336		
MLE Median	2.049668		
MLE 80% Quantile	3.665864		
MLE 90% Quantile	4.961943		
MLE 95% Quantile	6.356567		
MLE 99% Quantile	10.15572		
MVU Estimate of Median	1.996327		
MVU Estimate of Mean	2.518947		
MVU Estimate of Standard Deviation	1.784159		
MVU Estimate of SE of Mean	0.591331		
95% H-UCL	4.927332		
95% Chebyshev (MVUE) UCL	5.096501		
97.5% Chebyshev (MVUE) UCL	6.21181		
99% Chebyshev (MVUE) UCL	8.40262		
Non-parametric Statistics			
95% CLT UCL	3.54572		
95% Adjusted-CLT UCL	3.951155		
95% Modified-t UCL	3.741827		
95% Jackknife UCL	3.678587		
95% Chebyshev (Mean, Sd) UCL	5.225348		
97.5% Chebyshev (Mean, Sd) UCL	6.392588		
99% Chebyshev (Mean, Sd) UCL	8.685406		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	3.478452		
95% Bootstrap-t UCL	4.784655		
95% Hall's Bootstrap UCL	9.090484		
95% Percentile Bootstrap UCL	3.555556		
95% BCA Bootstrap UCL	4.133333		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	4.03698	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls	
Variable:	Vanadium	
<b>Raw Statistics</b>		
Number of Observations	10	
Number of Missing Data	0	
Number of Valid Observations	10	
Number of Distinct Observations	10	
Minimum	10.2	
Maximum	90.6	
Mean	48.87	
Standard Deviation	26.5227	
Variance	703.4534	
Coefficient of Variation	0.542719	
Skewness	0.096781	
Too Few Distinct Observations?	NO	
<b>Normal Statistics</b>		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.971644	
Shapiro-Wilk 5% Critical Value	0.842	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	64.24471	
<b>Gamma Statistics</b>		
k hat	2.959788	
k star (bias corrected)	2.138518	
Theta hat	16.51132	
Theta star	22.85227	
nu hat	59.19576	
nu star	42.77036	
5% Approximate Chi Square Value	28.77361	
Adjusted Level of Significance	0.0267	
Adjusted Chi Square Value	26.79191	
Anderson-Darling Test Statistic	0.227994	
Anderson-Darling 5% Critical Value	0.732317	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.140283	
Kolmogrov-Smirnov 5% Critical Value	0.268505	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	72.64253	
95% Adjusted Gamma UCL	78.01563	
<b>Lognormal Statistics</b>		
Minimum of log data	2.322388	
Maximum of log data	4.506454	
Mean of log data	3.710823	
Standard Deviation of log data	0.690778	
Variance of log data	0.477175	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.928281	
Shapiro-Wilk 5% Critical Value	0.842	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	51.90478	
MLE Standard Deviation	40.58924	
MLE Coefficient of Variation	0.781994	
MLE Skewness	2.824184	
MLE Median	40.88746	
MLE 80% Quantile	73.29784	
MLE 90% Quantile	99.33258	
MLE 95% Quantile	127.3773	
MLE 99% Quantile	203.8886	
MVU Estimate of Median	39.92141	
MVU Estimate of Mean	50.47789	
MVU Estimate of Standard Deviation	36.1588	
MVU Estimate of SE of Mean	11.36131	
95% H-UCL	92.64651	
95% Chebyshev (MVUE) UCL	100.0007	
97.5% Chebyshev (MVUE) UCL	121.4292	
99% Chebyshev (MVUE) UCL	163.5215	
<b>Non-parametric Statistics</b>		
95% CLT UCL	62.66574	
95% Adjusted-CLT UCL	62.94002	
95% Modified-t UCL	64.28749	
95% Jackknife UCL	64.24471	
95% Chebyshev (Mean, Sd) UCL	85.42901	
97.5% Chebyshev (Mean, Sd) UCL	101.2481	
99% Chebyshev (Mean, Sd) UCL	132.3217	
<b>Bootstrap Statistics</b>		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	61.9064	
95% Bootstrap-t UCL	64.5317	
95% Hall's Bootstrap UCL	62.48352	
95% Percentile Bootstrap UCL	62.09	
95% BCA Bootstrap UCL	66.3	
<b>Recommendations</b>		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	64.24471	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	308		
Maximum	2850		
Mean	1819.5		
Standard Deviation	917.5723		
Variance	841938.9		
Coefficient of Variation	0.504299		
Skewness	-0.639927		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.904911		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2351.399		
Gamma Statistics			
k hat	2.597199		
k star (bias corrected)	1.884706		
Theta hat	700.5623		
Theta star	965.4024		
nu hat	51.94399		
nu star	37.69413		
5% Approximate Chi Square Value	24.63395		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	22.81359		
Anderson-Darling Test Statistic	0.766079		
Anderson-Darling 5% Critical Value	0.73355		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.203136		
Kolmogrov-Smirnov 5% Critical Value	0.268998		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2784.144		
95% Adjusted Gamma UCL	3006.298		
Lognormal Statistics			
Minimum of log data	5.7301		
Maximum of log data	7.955074		
Mean of log data	7.30162		
Standard Deviation of log data	0.790498		
Variance of log data	0.624887		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.783288		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	2026.495		
MLE Standard Deviation	1888.052		
MLE Coefficient of Variation	0.931683		
MLE Skewness	3.603783		
MLE Median	1482.7		
MLE 80% Quantile	2891.672		
MLE 90% Quantile	4094.538		
MLE 95% Quantile	5442.471		
MLE 99% Quantile	9323.723		
MVU Estimate of Median	1436.962		
MVU Estimate of Mean	1950.843		
MVU Estimate of Standard Deviation	1615.706		
MVU Estimate of SE of Mean	505.6253		
95% H-UCL	4119.679		
95% Chebyshev (MVUE) UCL	4154.813		
97.5% Chebyshev (MVUE) UCL	5108.472		
99% Chebyshev (MVUE) UCL	6981.752		
Non-parametric Statistics			
95% CLT UCL	2296.774		
95% Adjusted-CLT UCL	2234.033		
95% Modified-t UCL	2341.613		
95% Jackknife UCL	2351.399		
95% Chebyshev (Mean, Sd) UCL	3084.286		
97.5% Chebyshev (Mean, Sd) UCL	3631.56		
99% Chebyshev (Mean, Sd) UCL	4706.574		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2279.359		
95% Bootstrap-t UCL	2288.067		
95% Hall's Bootstrap UCL	2215.979		
95% Percentile Bootstrap UCL	2254		
95% BCA Bootstrap UCL	2397		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2351.399	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - jy.xls				
Variable:	Chromium VI				
Raw Statistics					
Number of Observations	10				
Number of Missing Data	0				
Number of Valid Observations	10				
Number of Distinct Observations	10				
Minimum	0.09048				
Maximum	2.223				
Mean	1.090128				
Standard Deviation	0.743805				
Variance	0.553245				
Coefficient of Variation	0.68231				
Skewness	-0.065039				
Too Few Distinct Observations?	NO				
Normal Statistics					
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.924628				
Shapiro-Wilk 5% Critical Value	0.842				
5% Normality Test Result	NORMAL				
95% Student's-t UCL	1.521298				
Gamma Statistics					
k hat	1.444035				
k star (bias corrected)	1.077491				
Theta hat	0.754918				
Theta star	1.011728				
nu hat	28.88071				
nu star	21.54983				
5% Approximate Chi Square Value	11.99983				
Adjusted Level of Significance	0.0267				
Adjusted Chi Square Value	10.78065				
Anderson-Darling Test Statistic	0.532998				
Anderson-Darling 5% Critical Value	0.740242				
Anderson-Darling 5% Gamma Test Result	AD GAMMA				
Kolmogrov-Smirnov Test Statistic	0.242458				
Kolmogrov-Smirnov 5% Critical Value	0.271414				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA				
5% Gamma Test Result	GAMMA				
95% Approximate Gamma UCL	1.957701				
95% Adjusted Gamma UCL	2.179097				
Lognormal Statistics					
Minimum of log data	-2.402626				
Maximum of log data	0.798858				
Mean of log data	-0.298313				
Standard Deviation of log data	1.101694				
Variance of log data	1.21373				
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.857857				
Shapiro-Wilk 5% Critical Value	0.842				
5% Lognormality Test Result	LOGNORMAL				
MLE Mean	1.361453				
MLE Standard Deviation	2.094168				
MLE Coefficient of Variation	1.538186				
MLE Skewness	8.253936				
MLE Median	0.742069				
MLE 80% Quantile	1.882534				
MLE 90% Quantile	3.056787				
MLE 95% Quantile	4.544757				
MLE 99% Quantile	9.623693				
MVU Estimate of Median	0.698138				
MVU Estimate of Mean	1.250337				
MVU Estimate of Standard Deviation	1.498291				
MVU Estimate of SE of Mean	0.458589				
95% H-UCL	4.59983				
95% Chebyshev (MVUE) UCL	3.249282				
97.5% Chebyshev (MVUE) UCL	4.114227				
99% Chebyshev (MVUE) UCL	5.813244				
Non-parametric Statistics					
95% CLT UCL	1.477017				
95% Adjusted-CLT UCL	1.471848				
95% Modified-t UCL	1.520491				
95% Jackknife UCL	1.521298				
95% Chebyshev (Mean, Sd) UCL	2.115392				
97.5% Chebyshev (Mean, Sd) UCL	2.559025				
99% Chebyshev (Mean, Sd) UCL	3.430455				
Bootstrap Statistics					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	1.456658				
95% Bootstrap-t UCL	1.501237				
95% Hall's Bootstrap UCL	1.448761				
95% Percentile Bootstrap UCL	1.432158				
95% BCA Bootstrap UCL	1.578928				
Recommendations					
Human Inspection Recommended?	NO				
Appropriate Distribution	NORMAL				
1st Recommended UCL	1.521298				
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value	NO				
Recommendation Warning!	NONE				
Alternative UCL	NONE				

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	1.2		
Maximum	7.2		
Mean	3.95		
Standard Deviation	1.714157		
Variance	2.938333		
Coefficient of Variation	0.433964		
Skewness	0.259178		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.971235		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	4.943664		
<b>Gamma Statistics</b>			
k hat	5.036721		
k star (bias corrected)	3.592372		
Theta hat	0.78424		
Theta star	1.099552		
nu hat	100.7344		
nu star	71.84743		
5% Approximate Chi Square Value	53.32727		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	50.56346		
Anderson-Darling Test Statistic	0.285732		
Anderson-Darling 5% Critical Value	0.729418		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.192074		
Kolmogrov-Smirnov 5% Critical Value	0.267424		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	5.321806		
95% Adjusted Gamma UCL	5.612696		
<b>Lognormal Statistics</b>			
Minimum of log data	0.182322		
Maximum of log data	1.974081		
Mean of log data	1.271172		
Standard Deviation of log data	0.510674		
Variance of log data	0.260788		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.928852		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	4.061556		
MLE Standard Deviation	2.216999		
MLE Coefficient of Variation	0.54585		
MLE Skewness	1.800186		
MLE Median	3.56503		
MLE 80% Quantile	5.488701		
MLE 90% Quantile	6.871539		
MLE 95% Quantile	8.258398		
MLE 99% Quantile	11.6931		
MVU Estimate of Median	3.518791		
MVU Estimate of Mean	4.004041		
MVU Estimate of Standard Deviation	2.087078		
MVU Estimate of SE of Mean	0.658622		
95% H-UCL	5.941822		
95% Chebyshev (MVUE) UCL	6.874907		
97.5% Chebyshev (MVUE) UCL	8.117133		
99% Chebyshev (MVUE) UCL	10.55725		
<b>Non-parametric Statistics</b>			
95% CLT UCL	4.841616		
95% Adjusted-CLT UCL	4.889087		
95% Modified-t UCL	4.951069		
95% Jackknife UCL	4.943664		
95% Chebyshev (Mean, Sd) UCL	6.312802		
97.5% Chebyshev (Mean, Sd) UCL	7.335188		
99% Chebyshev (Mean, Sd) UCL	9.343468		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	4.802029		
95% Bootstrap-t UCL	5.010997		
95% Hall's Bootstrap UCL	4.976006		
95% Percentile Bootstrap UCL	4.8		
95% BCA Bootstrap UCL	4.64		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	4.943664	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	17.7		
Maximum	339		
Mean	167.91		
Standard Deviation	100.9646		
Variance	10193.85		
Coefficient of Variation	0.601302		
Skewness	-0.067252		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.949851		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	226.4373		
Gamma Statistics			
k hat	1.91829		
k star (bias corrected)	1.40947		
Theta hat	87.53109		
Theta star	119.1299		
nu hat	38.3658		
nu star	28.18939		
5% Approximate Chi Square Value	17.07364		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	15.58716		
Anderson-Darling Test Statistic	0.549027		
Anderson-Darling 5% Critical Value	0.736176		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.271874		
Kolmogrov-Smirnov 5% Critical Value	0.270024		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	277.2274		
95% Adjusted Gamma UCL	303.6653		
Lognormal Statistics			
Minimum of log data	2.873565		
Maximum of log data	5.826		
Mean of log data	4.840685		
Standard Deviation of log data	0.937799		
Variance of log data	0.879467		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.851188		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	196.4521		
MLE Standard Deviation	233.2421		
MLE Coefficient of Variation	1.187272		
MLE Skewness	5.235413		
MLE Median	126.556		
MLE 80% Quantile	279.5344		
MLE 90% Quantile	422.3172		
MLE 95% Quantile	591.9158		
MLE 99% Quantile	1121.033		
MVU Estimate of Median	121.09		
MVU Estimate of Mean	185.5373		
MVU Estimate of Standard Deviation	185.3924		
MVU Estimate of SE of Mean	57.52326		
95% H-UCL	498.2003		
95% Chebyshev (MVUE) UCL	436.2754		
97.5% Chebyshev (MVUE) UCL	544.77		
99% Chebyshev (MVUE) UCL	757.8865		
Non-parametric Statistics			
95% CLT UCL	220.4266		
95% Adjusted-CLT UCL	219.701		
95% Modified-t UCL	226.3241		
95% Jackknife UCL	226.4373		
95% Chebyshev (Mean, Sd) UCL	307.0801		
97.5% Chebyshev (Mean, Sd) UCL	367.2991		
99% Chebyshev (Mean, Sd) UCL	485.5876		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	217.619		
95% Bootstrap-t UCL	223.008		
95% Hall's Bootstrap UCL	219.0222		
95% Percentile Bootstrap UCL	216.4		
95% BCA Bootstrap UCL	207.76		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	226.4373	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Barium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	60.8		
Maximum	200		
Mean	119.285		
Standard Deviation	35.95029		
Variance	1292.423		
Coefficient of Variation	0.301381		
Skewness	0.901043		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.910761		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	140.1247		
Gamma Statistics			
k hat	12.38035		
k star (bias corrected)	8.732913		
Theta hat	9.635025		
Theta star	13.65924		
nu hat	247.607		
nu star	174.6583		
5% Approximate Chi Square Value	145.0883		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	140.4053		
Anderson-Darling Test Statistic	0.402172		
Anderson-Darling 5% Critical Value	0.724939		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.1951		
Kolmogrov-Smirnov 5% Critical Value	0.266521		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	143.5961		
95% Adjusted Gamma UCL	148.3855		
Lognormal Statistics			
Minimum of log data	4.10759		
Maximum of log data	5.298317		
Mean of log data	4.740586		
Standard Deviation of log data	0.306129		
Variance of log data	0.093715		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.933017		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	119.9942		
MLE Standard Deviation	37.61134		
MLE Coefficient of Variation	0.313443		
MLE Skewness	0.971124		
MLE Median	114.5012		
MLE 80% Quantile	148.3041		
MLE 90% Quantile	169.688		
MLE 95% Quantile	189.4581		
MLE 99% Quantile	233.3738		
MVU Estimate of Median	113.9657		
MVU Estimate of Mean	119.4141		
MVU Estimate of Standard Deviation	36.83326		
MVU Estimate of SE of Mean	11.64436		
95% H-UCL	146.9123		
95% Chebyshev (MVUE) UCL	170.1707		
97.5% Chebyshev (MVUE) UCL	192.1331		
99% Chebyshev (MVUE) UCL	235.274		
Non-parametric Statistics			
95% CLT UCL	137.9845		
95% Adjusted-CLT UCL	141.4457		
95% Modified-t UCL	140.6646		
95% Jackknife UCL	140.1247		
95% Chebyshev (Mean, Sd) UCL	168.8391		
97.5% Chebyshev (Mean, Sd) UCL	190.2811		
99% Chebyshev (Mean, Sd) UCL	232.3999		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	137.1358		
95% Bootstrap-t UCL	143.8635		
95% Hall's Bootstrap UCL	162.8245		
95% Percentile Bootstrap UCL	138.43		
95% BCA Bootstrap UCL	146.44		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	140.1247	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	1.3		
Maximum	16.7		
Mean	8.095		
Standard Deviation	4.51531		
Variance	20.38803		
Coefficient of Variation	0.55779		
Skewness	0.488652		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.981407		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	10.71244		
<b>Gamma Statistics</b>			
k hat	2.809378		
k star (bias corrected)	2.033231		
Theta hat	2.881421		
Theta star	3.981348		
nu hat	56.18756		
nu star	40.66462		
5% Approximate Chi Square Value	27.04917		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	25.13319		
Anderson-Darling Test Statistic	0.201576		
Anderson-Darling 5% Critical Value	0.732828		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.155282		
Kolmogrov-Smirnov 5% Critical Value	0.268709		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	12.16969		
95% Adjusted Gamma UCL	13.09743		
<b>Lognormal Statistics</b>			
Minimum of log data	0.262364		
Maximum of log data	2.815409		
Mean of log data	1.902839		
Standard Deviation of log data	0.727282		
Variance of log data	0.528939		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.915419		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	8.734747		
MLE Standard Deviation	7.293023		
MLE Coefficient of Variation	0.834944		
MLE Skewness	3.086897		
MLE Median	6.704905		
MLE 80% Quantile	12.39623		
MLE 90% Quantile	17.07127		
MLE 95% Quantile	22.18061		
MLE 99% Quantile	36.39741		
MVU Estimate of Median	6.529488		
MVU Estimate of Mean	8.465073		
MVU Estimate of Standard Deviation	6.407557		
MVU Estimate of SE of Mean	2.010633		
95% H-UCL	16.32294		
95% Chebyshev (MVUE) UCL	17.22922		
97.5% Chebyshev (MVUE) UCL	21.02147		
99% Chebyshev (MVUE) UCL	28.47062		
<b>Non-parametric Statistics</b>			
95% CLT UCL	10.44363		
95% Adjusted-CLT UCL	10.67939		
95% Modified-t UCL	10.74921		
95% Jackknife UCL	10.71244		
95% Chebyshev (Mean, Sd) UCL	14.31893		
97.5% Chebyshev (Mean, Sd) UCL	17.01202		
99% Chebyshev (Mean, Sd) UCL	22.30209		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	10.33145		
95% Bootstrap-t UCL	11.0962		
95% Hall's Bootstrap UCL	11.44376		
95% Percentile Bootstrap UCL	10.295		
95% BCA Bootstrap UCL	11.365		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	10.71244	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	67.7		
Maximum	1320		
Mean	504		
Standard Deviation	386.2363		
Variance	149178.5		
Coefficient of Variation	0.766342		
Skewness	0.967822		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.921474		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	727.8939		
Gamma Statistics			
k hat	1.553171		
k star (bias corrected)	1.153886		
Theta hat	324.4974		
Theta star	436.7848		
nu hat	31.06342		
nu star	23.07773		
5% Approximate Chi Square Value	13.14782		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	11.86395		
Anderson-Darling Test Statistic	0.29132		
Anderson-Darling 5% Critical Value	0.738842		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.162526		
Kolmogrov-Smirnov 5% Critical Value	0.270981		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	884.6468		
95% Adjusted Gamma UCL	980.3795		
Lognormal Statistics			
Minimum of log data	4.215086		
Maximum of log data	7.185387		
Mean of log data	5.867335		
Standard Deviation of log data	1.002153		
Variance of log data	1.004311		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.900366		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	583.7601		
MLE Standard Deviation	767.8222		
MLE Coefficient of Variation	1.315304		
MLE Skewness	6.221424		
MLE Median	353.306		
MLE 80% Quantile	823.9864		
MLE 90% Quantile	1280.622		
MLE 95% Quantile	1836.977		
MLE 99% Quantile	3634.922		
MVU Estimate of Median	335.9248		
MVU Estimate of Mean	545.7982		
MVU Estimate of Standard Deviation	587.4107		
MVU Estimate of SE of Mean	181.3855		
95% H-UCL	1648.341		
95% Chebyshev (MVUE) UCL	1336.439		
97.5% Chebyshev (MVUE) UCL	1678.55		
99% Chebyshev (MVUE) UCL	2350.561		
Non-parametric Statistics			
95% CLT UCL	704.9002		
95% Adjusted-CLT UCL	744.8421		
95% Modified-t UCL	734.124		
95% Jackknife UCL	727.8939		
95% Chebyshev (Mean, Sd) UCL	1036.39		
97.5% Chebyshev (Mean, Sd) UCL	1266.756		
99% Chebyshev (Mean, Sd) UCL	1719.264		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	694.7476		
95% Bootstrap-t UCL	778.9845		
95% Hall's Bootstrap UCL	895.6787		
95% Percentile Bootstrap UCL	694.7		
95% BCA Bootstrap UCL	663.47		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	727.8939	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	68		
Maximum	686		
Mean	306.26		
Standard Deviation	185.9998		
Variance	34595.92		
Coefficient of Variation	0.607326		
Skewness	0.654966		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.94088		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	414.0806		
Gamma Statistics			
k hat	2.581361		
k star (bias corrected)	1.873619		
Theta hat	118.6428		
Theta star	163.459		
nu hat	51.62722		
nu star	37.47239		
5% Approximate Chi Square Value	24.45453		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	22.64146		
Anderson-Darling Test Statistic	0.309589		
Anderson-Darling 5% Critical Value	0.733603		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.206123		
Kolmogrov-Smirnov 5% Critical Value	0.269019		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	469.2911		
95% Adjusted Gamma UCL	506.8707		
Lognormal Statistics			
Minimum of log data	4.219508		
Maximum of log data	6.530878		
Mean of log data	5.518408		
Standard Deviation of log data	0.732062		
Variance of log data	0.535914		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.92778		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	325.8266		
MLE Standard Deviation	274.3549		
MLE Coefficient of Variation	0.842028		
MLE Skewness	3.123089		
MLE Median	249.2379		
MLE 80% Quantile	462.6636		
MLE 90% Quantile	638.4909		
MLE 95% Quantile	831.0165		
MLE 99% Quantile	1368.108		
MVU Estimate of Median	242.6322		
MVU Estimate of Mean	315.6167		
MVU Estimate of Standard Deviation	240.5905		
MVU Estimate of SE of Mean	75.4811		
95% H-UCL	612.6413		
95% Chebyshev (MVUE) UCL	644.6312		
97.5% Chebyshev (MVUE) UCL	786.9961		
99% Chebyshev (MVUE) UCL	1066.644		
Non-parametric Statistics			
95% CLT UCL	403.0075		
95% Adjusted-CLT UCL	416.0245		
95% Modified-t UCL	416.111		
95% Jackknife UCL	414.0806		
95% Chebyshev (Mean, Sd) UCL	562.643		
97.5% Chebyshev (Mean, Sd) UCL	673.5801		
99% Chebyshev (Mean, Sd) UCL	891.4947		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	397.0917		
95% Bootstrap-t UCL	426.9488		
95% Hall's Bootstrap UCL	439.0393		
95% Percentile Bootstrap UCL	399.7		
95% BCA Bootstrap UCL	379.5		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	414.0806		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	165		
Maximum	490		
Mean	294.8		
Standard Deviation	124.2084		
Variance	15427.73		
Coefficient of Variation	0.421331		
Skewness	0.54261		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.880543		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	366.8013		
<b>Gamma Statistics</b>			
k hat	6.399118		
k star (bias corrected)	4.546049		
Theta hat	46.06885		
Theta star	64.84752		
nu hat	127.9824		
nu star	90.92099		
5% Approximate Chi Square Value	69.93008		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	66.73784		
Anderson-Darling Test Statistic	0.458446		
Anderson-Darling 5% Critical Value	0.728222		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.203224		
Kolmogrov-Smirnov 5% Critical Value	0.267206		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	383.2901		
95% Adjusted Gamma UCL	401.6238		
<b>Lognormal Statistics</b>			
Minimum of log data	5.105945		
Maximum of log data	6.194405		
Mean of log data	5.606131		
Standard Deviation of log data	0.422683		
Variance of log data	0.178661		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.895617		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	297.5141		
MLE Standard Deviation	131.5856		
MLE Coefficient of Variation	0.442284		
MLE Skewness	1.413368		
MLE Median	272.0895		
MLE 80% Quantile	388.8906		
MLE 90% Quantile	468.3793		
MLE 95% Quantile	545.3589		
MLE 99% Quantile	727.2651		
MVU Estimate of Median	269.6678		
MVU Estimate of Mean	294.6978		
MVU Estimate of Standard Deviation	126.3464		
MVU Estimate of SE of Mean	39.914		
95% H-UCL	400.9118		
95% Chebyshev (MVUE) UCL	468.6789		
97.5% Chebyshev (MVUE) UCL	543.9606		
99% Chebyshev (MVUE) UCL	691.8371		
<b>Non-parametric Statistics</b>			
95% CLT UCL	359.4068		
95% Adjusted-CLT UCL	366.6083		
95% Modified-t UCL	367.9246		
95% Jackknife UCL	366.8013		
95% Chebyshev (Mean, Sd) UCL	466.0095		
97.5% Chebyshev (Mean, Sd) UCL	540.092		
99% Chebyshev (Mean, Sd) UCL	685.6127		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	355.2896		
95% Bootstrap-t UCL	383.3798		
95% Hall's Bootstrap UCL	369.5817		
95% Percentile Bootstrap UCL	356.3		
95% BCA Bootstrap UCL	343.9		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	366.8013	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	413		
Maximum	1420		
Mean	1036		
Standard Deviation	308.2704		
Variance	95030.67		
Coefficient of Variation	0.297558		
Skewness	-0.943372		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.930804		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1214.699		
<b>Gamma Statistics</b>			
k hat	9.503428		
k star (bias corrected)	6.719066		
Theta hat	109.0133		
Theta star	154.1881		
nu hat	190.0686		
nu star	134.3813		
5% Approximate Chi Square Value	108.5945		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	104.5693		
Anderson-Darling Test Statistic	0.580667		
Anderson-Darling 5% Critical Value	0.725496		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.224188		
Kolmogrov-Smirnov 5% Critical Value	0.266709		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1282.009		
95% Adjusted Gamma UCL	1331.357		
<b>Lognormal Statistics</b>			
Minimum of log data	6.023448		
Maximum of log data	7.258412		
Mean of log data	6.889588		
Standard Deviation of log data	0.374071		
Variance of log data	0.139929		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.835966		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	1053.162		
MLE Standard Deviation	408.1491		
MLE Coefficient of Variation	0.387546		
MLE Skewness	1.220845		
MLE Median	981.9969		
MLE 80% Quantile	1347.058		
MLE 90% Quantile	1588.061		
MLE 95% Quantile	1816.986		
MLE 99% Quantile	2344.147		
MVU Estimate of Median	975.146		
MVU Estimate of Mean	1045.448		
MVU Estimate of Standard Deviation	395.4747		
MVU Estimate of SE of Mean	124.9816		
95% H-UCL	1361.331		
95% Chebyshev (MVUE) UCL	1590.23		
97.5% Chebyshev (MVUE) UCL	1825.957		
99% Chebyshev (MVUE) UCL	2288.999		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1196.346		
95% Adjusted-CLT UCL	1165.273		
95% Modified-t UCL	1209.852		
95% Jackknife UCL	1214.699		
95% Chebyshev (Mean, Sd) UCL	1460.921		
97.5% Chebyshev (Mean, Sd) UCL	1644.785		
99% Chebyshev (Mean, Sd) UCL	2005.95		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1185.503		
95% Bootstrap-t UCL	1181.881		
95% Hall's Bootstrap UCL	1169.554		
95% Percentile Bootstrap UCL	1180.4		
95% BCA Bootstrap UCL	1150.6		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1214.699		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	8		
Number of Missing Data	0		
Number of Valid Observations	8		
Number of Distinct Observations	8		
Minimum	0.22		
Maximum	1.8		
Mean	0.98		
Standard Deviation	0.576962		
Variance	0.332886		
Coefficient of Variation	0.588737		
Skewness	-0.001636		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.949859		
Shapiro-Wilk 5% Critical Value	0.818		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.366469		
Gamma Statistics			
k hat	2.526316		
k star (bias corrected)	1.662281		
Theta hat	0.387917		
Theta star	0.589551		
nu hat	40.42106		
nu star	26.59649		
5% Approximate Chi Square Value	15.83761		
Adjusted Level of Significance	0.01946		
Adjusted Chi Square Value	13.78124		
Anderson-Darling Test Statistic	0.313991		
Anderson-Darling 5% Critical Value	0.722654		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.205733		
Kolmogrov-Smirnov 5% Critical Value	0.296849		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.645738		
95% Adjusted Gamma UCL	1.891308		
Lognormal Statistics			
Minimum of log data	-1.514128		
Maximum of log data	0.587787		
Mean of log data	-0.230985		
Standard Deviation of log data	0.759978		
Variance of log data	0.577567		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.911246		
Shapiro-Wilk 5% Critical Value	0.818		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.059501		
MLE Standard Deviation	0.936744		
MLE Coefficient of Variation	0.884137		
MLE Skewness	3.343538		
MLE Median	0.793751		
MLE 80% Quantile	1.508622		
MLE 90% Quantile	2.107678		
MLE 95% Quantile	2.770919		
MLE 99% Quantile	4.649335		
MVU Estimate of Median	0.765498		
MVU Estimate of Mean	1.015123		
MVU Estimate of Standard Deviation	0.790854		
MVU Estimate of SE of Mean	0.277597		
95% H-UCL	2.446771		
95% Chebyshev (MVUE) UCL	2.225139		
97.5% Chebyshev (MVUE) UCL	2.748713		
99% Chebyshev (MVUE) UCL	3.777175		
Non-parametric Statistics			
95% CLT UCL	1.315529		
95% Adjusted-CLT UCL	1.315403		
95% Modified-t UCL	1.36645		
95% Jackknife UCL	1.366469		
95% Chebyshev (Mean, Sd) UCL	1.869159		
97.5% Chebyshev (Mean, Sd) UCL	2.253899		
99% Chebyshev (Mean, Sd) UCL	3.009645		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.293189		
95% Bootstrap-t UCL	1.346412		
95% Hall's Bootstrap UCL	1.301849		
95% Percentile Bootstrap UCL	1.29625		
95% BCA Bootstrap UCL	1.2275		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.366469	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	17.4		
Maximum	46.3		
Mean	30.135		
Standard Deviation	10.49529		
Variance	110.1511		
Coefficient of Variation	0.348276		
Skewness	0.146577		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.916915		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	36.21892		
Gamma Statistics			
k hat	8.798255		
k star (bias corrected)	6.225445		
Theta hat	3.425111		
Theta star	4.840618		
nu hat	175.9651		
nu star	124.5089		
5% Approximate Chi Square Value	99.73348		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	95.88406		
Anderson-Darling Test Statistic	0.421256		
Anderson-Darling 5% Critical Value	0.726115		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.183355		
Kolmogrov-Smirnov 5% Critical Value	0.266822		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	37.62103		
95% Adjusted Gamma UCL	39.13138		
Lognormal Statistics			
Minimum of log data	2.85647		
Maximum of log data	3.835142		
Mean of log data	3.347783		
Standard Deviation of log data	0.364088		
Variance of log data	0.13256		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.909336		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	30.38845		
MLE Standard Deviation	11.44105		
MLE Coefficient of Variation	0.376493		
MLE Skewness	1.182847		
MLE Median	28.4396		
MLE 80% Quantile	38.68441		
MLE 90% Quantile	45.40559		
MLE 95% Quantile	51.76462		
MLE 99% Quantile	66.33054		
MVU Estimate of Median	28.25162		
MVU Estimate of Mean	30.17806		
MVU Estimate of Standard Deviation	11.10476		
MVU Estimate of SE of Mean	3.509649		
95% H-UCL	38.958		
95% Chebyshev (MVUE) UCL	45.47626		
97.5% Chebyshev (MVUE) UCL	52.0958		
99% Chebyshev (MVUE) UCL	65.09862		
Non-parametric Statistics			
95% CLT UCL	35.59411		
95% Adjusted-CLT UCL	35.75849		
95% Modified-t UCL	36.24456		
95% Jackknife UCL	36.21892		
95% Chebyshev (Mean, Sd) UCL	44.60176		
97.5% Chebyshev (Mean, Sd) UCL	50.86154		
99% Chebyshev (Mean, Sd) UCL	63.15766		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	35.28287		
95% Bootstrap-t UCL	36.43986		
95% Hall's Bootstrap UCL	35.11138		
95% Percentile Bootstrap UCL	35.345		
95% BCA Bootstrap UCL	34.02		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	36.21892	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.115		
Maximum	2.2		
Mean	0.7575		
Standard Deviation	0.59829		
Variance	0.357951		
Coefficient of Variation	0.789822		
Skewness	1.614057		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.850209		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1.104318		
<b>Gamma Statistics</b>			
k hat	1.750298		
k star (bias corrected)	1.291875		
Theta hat	0.432784		
Theta star	0.586357		
nu hat	35.00595		
nu star	25.8375		
5% Approximate Chi Square Value	15.25247		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	13.8568		
Anderson-Darling Test Statistic	0.357622		
Anderson-Darling 5% Critical Value	0.737403		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.20041		
Kolmogrov-Smirnov 5% Critical Value	0.270464		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.283195		
95% Adjusted Gamma UCL	1.412441		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.162823		
Maximum of log data	0.788457		
Mean of log data	-0.589818		
Standard Deviation of log data	0.911724		
Variance of log data	0.831241		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.905577		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.840131		
MLE Standard Deviation	0.956483		
MLE Coefficient of Variation	1.138493		
MLE Skewness	4.891154		
MLE Median	0.554428		
MLE 80% Quantile	1.197923		
MLE 90% Quantile	1.789162		
MLE 95% Quantile	2.484244		
MLE 99% Quantile	4.622114		
MVU Estimate of Median	0.531773		
MVU Estimate of Mean	0.796452		
MVU Estimate of Standard Deviation	0.7713		
MVU Estimate of SE of Mean	0.239739		
95% H-UCL	2.043704		
95% Chebyshev (MVUE) UCL	1.84145		
97.5% Chebyshev (MVUE) UCL	2.293622		
99% Chebyshev (MVUE) UCL	3.181825		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.0687		
95% Adjusted-CLT UCL	1.171884		
95% Modified-t UCL	1.120412		
95% Jackknife UCL	1.104318		
95% Chebyshev (Mean, Sd) UCL	1.582186		
97.5% Chebyshev (Mean, Sd) UCL	1.939029		
99% Chebyshev (Mean, Sd) UCL	2.639977		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.056714		
95% Bootstrap-t UCL	1.291043		
95% Hall's Bootstrap UCL	2.672161		
95% Percentile Bootstrap UCL	1.076		
95% BCA Bootstrap UCL	1.19		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.104318		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	22.2		
Maximum	56.1		
Mean	37.365		
Standard Deviation	12.97746		
Variance	168.4145		
Coefficient of Variation	0.347316		
Skewness	0.145869		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.904092		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	44.88779		
Gamma Statistics			
k hat	8.882547		
k star (bias corrected)	6.284449		
Theta hat	4.206564		
Theta star	5.945628		
nu hat	177.6509		
nu star	125.689		
5% Approximate Chi Square Value	100.7906		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	96.91981		
Anderson-Darling Test Statistic	0.451646		
Anderson-Darling 5% Critical Value	0.726041		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.194897		
Kolmogrov-Smirnov 5% Critical Value	0.266809		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	46.59531		
95% Adjusted Gamma UCL	48.45623		
Lognormal Statistics			
Minimum of log data	3.100092		
Maximum of log data	4.027136		
Mean of log data	3.563389		
Standard Deviation of log data	0.361736		
Variance of log data	0.130853		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.895935		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	37.66818		
MLE Standard Deviation	14.08407		
MLE Coefficient of Variation	0.373898		
MLE Skewness	1.173966		
MLE Median	35.28258		
MLE 80% Quantile	47.89716		
MLE 90% Quantile	56.16085		
MLE 95% Quantile	63.97196		
MLE 99% Quantile	81.84171		
MVU Estimate of Median	35.05236		
MVU Estimate of Mean	37.41089		
MVU Estimate of Standard Deviation	13.6755		
MVU Estimate of SE of Mean	4.322191		
95% H-UCL	48.1976		
95% Chebyshev (MVUE) UCL	56.25088		
97.5% Chebyshev (MVUE) UCL	64.40296		
99% Chebyshev (MVUE) UCL	80.41614		
Non-parametric Statistics			
95% CLT UCL	44.1152		
95% Adjusted-CLT UCL	44.31748		
95% Modified-t UCL	44.91934		
95% Jackknife UCL	44.88779		
95% Chebyshev (Mean, Sd) UCL	55.25319		
97.5% Chebyshev (Mean, Sd) UCL	62.99343		
99% Chebyshev (Mean, Sd) UCL	78.19763		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	43.74393		
95% Bootstrap-t UCL	45.21419		
95% Hall's Bootstrap UCL	43.11374		
95% Percentile Bootstrap UCL	43.57		
95% BCA Bootstrap UCL	42.46		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	44.88779	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Zinc		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	299		
Maximum	3440		
Mean	1541.5		
Standard Deviation	867.382		
Variance	752351.6		
Coefficient of Variation	0.562687		
Skewness	0.944909		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.940557		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2044.305		
<b>Gamma Statistics</b>			
k hat	3.110595		
k star (bias corrected)	2.244084		
Theta hat	495.5643		
Theta star	686.9174		
nu hat	62.21191		
nu star	44.88167		
5% Approximate Chi Square Value	30.51201		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	28.46599		
Anderson-Darling Test Statistic	0.238708		
Anderson-Darling 5% Critical Value	0.731871		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.150019		
Kolmogrov-Smirnov 5% Critical Value	0.26838		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2267.471		
95% Adjusted Gamma UCL	2430.447		
<b>Lognormal Statistics</b>			
Minimum of log data	5.700444		
Maximum of log data	8.143227		
Mean of log data	7.171243		
Standard Deviation of log data	0.669729		
Variance of log data	0.448538		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.931059		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1628.658		
MLE Standard Deviation	1225.31		
MLE Coefficient of Variation	0.752343		
MLE Skewness	2.682871		
MLE Median	1301.461		
MLE 80% Quantile	2291.964		
MLE 90% Quantile	3077.415		
MLE 95% Quantile	3916.477		
MLE 99% Quantile	6179.753		
MVU Estimate of Median	1272.54		
MVU Estimate of Mean	1586.883		
MVU Estimate of Standard Deviation	1099.846		
MVU Estimate of SE of Mean	345.8158		
95% H-UCL	2833.601		
95% Chebyshev (MVUE) UCL	3094.259		
97.5% Chebyshev (MVUE) UCL	3746.501		
99% Chebyshev (MVUE) UCL	5027.706		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1992.667		
95% Adjusted-CLT UCL	2080.242		
95% Modified-t UCL	2057.965		
95% Jackknife UCL	2044.305		
95% Chebyshev (Mean, Sd) UCL	2737.104		
97.5% Chebyshev (Mean, Sd) UCL	3254.442		
99% Chebyshev (Mean, Sd) UCL	4270.654		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1957.401		
95% Bootstrap-t UCL	2159.36		
95% Hall's Bootstrap UCL	2390.437		
95% Percentile Bootstrap UCL	2014.6		
95% BCA Bootstrap UCL	1921.5		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2044.305	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - ws.xls		
Variable:	Chromium VI		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.08801		
Maximum	1.716		
Mean	0.6552		
Standard Deviation	0.502107		
Variance	0.252112		
Coefficient of Variation	0.766342		
Skewness	0.967822		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.921474		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.946262		
Gamma Statistics			
k hat	1.553171		
k star (bias corrected)	1.153886		
Theta hat	0.421847		
Theta star	0.56782		
nu hat	31.06342		
nu star	23.07773		
5% Approximate Chi Square Value	13.14782		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	11.86395		
Anderson-Darling Test Statistic	0.29132		
Anderson-Darling 5% Critical Value	0.738842		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.162526		
Kolmogrov-Smirnov 5% Critical Value	0.270981		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.150041		
95% Adjusted Gamma UCL	1.274493		
Lognormal Statistics			
Minimum of log data	-2.430305		
Maximum of log data	0.539996		
Mean of log data	-0.778056		
Standard Deviation of log data	1.002153		
Variance of log data	1.004311		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.900366		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.758888		
MLE Standard Deviation	0.998169		
MLE Coefficient of Variation	1.315304		
MLE Skewness	6.221424		
MLE Median	0.459298		
MLE 80% Quantile	1.071182		
MLE 90% Quantile	1.664809		
MLE 95% Quantile	2.38807		
MLE 99% Quantile	4.725399		
MVU Estimate of Median	0.436702		
MVU Estimate of Mean	0.709538		
MVU Estimate of Standard Deviation	0.763634		
MVU Estimate of SE of Mean	0.235801		
95% H-UCL	2.142843		
95% Chebyshev (MVUE) UCL	1.737371		
97.5% Chebyshev (MVUE) UCL	2.182115		
99% Chebyshev (MVUE) UCL	3.055729		
Non-parametric Statistics			
95% CLT UCL	0.91637		
95% Adjusted-CLT UCL	0.968295		
95% Modified-t UCL	0.954361		
95% Jackknife UCL	0.946262		
95% Chebyshev (Mean, Sd) UCL	1.347307		
97.5% Chebyshev (Mean, Sd) UCL	1.646782		
99% Chebyshev (Mean, Sd) UCL	2.235043		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.905381		
95% Bootstrap-t UCL	1.058587		
95% Hall's Bootstrap UCL	1.131768		
95% Percentile Bootstrap UCL	0.90714		
95% BCA Bootstrap UCL	0.866359		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.946262		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	8		
Minimum	0.285		
Maximum	4		
Mean	1.244		
Standard Deviation	1.103806		
Variance	1.218388		
Coefficient of Variation	0.887304		
Skewness	2.020657		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.757394		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1.883856		
<b>Gamma Statistics</b>			
k hat	1.945264		
k star (bias corrected)	1.428352		
Theta hat	0.639502		
Theta star	0.870934		
nu hat	38.90528		
nu star	28.56703		
5% Approximate Chi Square Value	17.36818		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	15.86748		
Anderson-Darling Test Statistic	0.521904		
Anderson-Darling 5% Critical Value	0.73598		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.244459		
Kolmogrov-Smirnov 5% Critical Value	0.269953		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2.04612		
95% Adjusted Gamma UCL	2.239637		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.255266		
Maximum of log data	1.386294		
Mean of log data	-0.060202		
Standard Deviation of log data	0.762509		
Variance of log data	0.58142		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.949922		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.25924		
MLE Standard Deviation	1.118228		
MLE Coefficient of Variation	0.888018		
MLE Skewness	3.364326		
MLE Median	0.941575		
MLE 80% Quantile	1.79341		
MLE 90% Quantile	2.508344		
MLE 95% Quantile	3.300671		
MLE 99% Quantile	5.547762		
MVU Estimate of Median	0.914525		
MVU Estimate of Mean	1.215952		
MVU Estimate of Standard Deviation	0.968512		
MVU Estimate of SE of Mean	0.303473		
95% H-UCL	2.464354		
95% Chebyshev (MVUE) UCL	2.53876		
97.5% Chebyshev (MVUE) UCL	3.111141		
99% Chebyshev (MVUE) UCL	4.235471		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.818143		
95% Adjusted-CLT UCL	2.056466		
95% Modified-t UCL	1.921029		
95% Jackknife UCL	1.883856		
95% Chebyshev (Mean, Sd) UCL	2.765492		
97.5% Chebyshev (Mean, Sd) UCL	3.423842		
99% Chebyshev (Mean, Sd) UCL	4.717045		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.779706		
95% Bootstrap-t UCL	2.51143		
95% Hall's Bootstrap UCL	4.092064		
95% Percentile Bootstrap UCL	1.839		
95% BCA Bootstrap UCL	1.71		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	2.04612	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	8.2		
Maximum	98.7		
Mean	41.265		
Standard Deviation	28.79904		
Variance	829.3845		
Coefficient of Variation	0.697905		
Skewness	1.038992		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.895232		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	57.95926		
<b>Gamma Statistics</b>			
k hat	2.218456		
k star (bias corrected)	1.619586		
Theta hat	18.60077		
Theta star	25.47873		
nu hat	44.36912		
nu star	32.39172		
5% Approximate Chi Square Value	20.38081		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	18.74084		
Anderson-Darling Test Statistic	0.243736		
Anderson-Darling 5% Critical Value	0.734837		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.15875		
Kolmogrov-Smirnov 5% Critical Value	0.269513		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	65.58346		
95% Adjusted Gamma UCL	71.32252		
<b>Lognormal Statistics</b>			
Minimum of log data	2.104134		
Maximum of log data	4.592085		
Mean of log data	3.478016		
Standard Deviation of log data	0.775579		
Variance of log data	0.601522		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.956207		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	43.76251		
MLE Standard Deviation	39.74673		
MLE Coefficient of Variation	0.908237		
MLE Skewness	3.473911		
MLE Median	32.3954		
MLE 80% Quantile	62.38846		
MLE 90% Quantile	87.76256		
MLE 95% Quantile	116.0294		
MLE 99% Quantile	196.7654		
MVU Estimate of Median	31.43298		
MVU Estimate of Mean	42.19857		
MVU Estimate of Standard Deviation	34.23483		
MVU Estimate of SE of Mean	10.72094		
95% H-UCL	87.16574		
95% Chebyshev (MVUE) UCL	88.93008		
97.5% Chebyshev (MVUE) UCL	109.1508		
99% Chebyshev (MVUE) UCL	148.8706		
<b>Non-parametric Statistics</b>			
95% CLT UCL	56.24477		
95% Adjusted-CLT UCL	59.44198		
95% Modified-t UCL	58.45796		
95% Jackknife UCL	57.95926		
95% Chebyshev (Mean, Sd) UCL	80.96173		
97.5% Chebyshev (Mean, Sd) UCL	98.13854		
99% Chebyshev (Mean, Sd) UCL	131.8791		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	55.59036		
95% Bootstrap-t UCL	67.04191		
95% Hall's Bootstrap UCL	156.2984		
95% Percentile Bootstrap UCL	56.17		
95% BCA Bootstrap UCL	64.99		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	57.95926		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls				
Variable:	Barium				
<b>Raw Statistics</b>					
Number of Observations			10		
Number of Missing Data			0		
Number of Valid Observations			10		
Number of Distinct Observations			10		
Minimum			6.95		
Maximum			105		
Mean			40.225		
Standard Deviation			32.63516		
Variance			1065.053		
Coefficient of Variation			0.811315		
Skewness			1.1424		
Too Few Distinct Observations?			NO		
<b>Normal Statistics</b>					
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.870325		
Shapiro-Wilk 5% Critical Value			0.842		
5% Normality Test Result			NORMAL		Data are normal at 5% significance level
95% Student's-t UCL			59.14299		
<b>Gamma Statistics</b>					
k hat			1.688017		
k star (bias corrected)			1.248279		
Theta hat			23.82973		
Theta star			32.22437		
nu hat			33.76035		
nu star			24.96558		
5% Approximate Chi Square Value			14.58351		
Adjusted Level of Significance			0.0267		
Adjusted Chi Square Value			13.22251		
Anderson-Darling Test Statistic			0.227727		
Anderson-Darling 5% Critical Value			0.737857		
Anderson-Darling 5% Gamma Test Result			AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic			0.126644		
Kolmogrov-Smirnov 5% Critical Value			0.270627		
Kolmogrov-Smirnov 5% Gamma Test Result			KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result			GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL			68.86135		
95% Adjusted Gamma UCL			75.94932		
<b>Lognormal Statistics</b>					
Minimum of log data			1.938742		
Maximum of log data			4.65396		
Mean of log data			3.369933		
Standard Deviation of log data			0.897082		
Variance of log data			0.804756		
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.953306		
Shapiro-Wilk 5% Critical Value			0.842		
5% Lognormality Test Result			LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean			43.48044		
MLE Standard Deviation			48.34256		
MLE Coefficient of Variation			1.111823		
MLE Skewness			4.70985		
MLE Median			29.07659		
MLE 80% Quantile			62.05167		
MLE 90% Quantile			92.08237		
MLE 95% Quantile			127.1838		
MLE 99% Quantile			234.2867		
MVU Estimate of Median			27.92569		
MVU Estimate of Mean			41.30409		
MVU Estimate of Standard Deviation			39.2896		
MVU Estimate of SE of Mean			12.22366		
95% H-UCL			103.374		
95% Chebyshev (MVUE) UCL			94.58578		
97.5% Chebyshev (MVUE) UCL			117.6408		
99% Chebyshev (MVUE) UCL			162.928		
<b>Non-parametric Statistics</b>					
95% CLT UCL			57.20012		
95% Adjusted-CLT UCL			61.1838		
95% Modified-t UCL			59.76436		
95% Jackknife UCL			59.14299		
95% Chebyshev (Mean, Sd) UCL			85.20946		
97.5% Chebyshev (Mean, Sd) UCL			104.6743		
99% Chebyshev (Mean, Sd) UCL			142.9091		
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs			2000		
95% Standard Bootstrap UCL			56.61612		
95% Bootstrap-t UCL			71.12524		
95% Hall's Bootstrap UCL			111.1784		
95% Percentile Bootstrap UCL			57.43		
95% BCA Bootstrap UCL			53.77		
<b>Recommendations</b>					
Human Inspection Recommended?			NO		
Appropriate Distribution			NORMAL		
1st Recommended UCL			59.14299		95% Student's-t UCL
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value			NO		
Recommendation Warning!			NONE		
Alternative UCL			NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	1.1		
Maximum	16.1		
Mean	5.17		
Standard Deviation	4.880813		
Variance	23.82233		
Coefficient of Variation	0.944064		
Skewness	1.476523		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.805777		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	7.999315		
<b>Gamma Statistics</b>			
k hat	1.451812		
k star (bias corrected)	1.082935		
Theta hat	3.561068		
Theta star	4.774064		
nu hat	29.03623		
nu star	21.6587		
5% Approximate Chi Square Value	12.08118		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	10.85732		
Anderson-Darling Test Statistic	0.584527		
Anderson-Darling 5% Critical Value	0.740101		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.283932		
Kolmogrov-Smirnov 5% Critical Value	0.271373		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	9.268585		
95% Adjusted Gamma UCL	10.31336		
<b>Lognormal Statistics</b>			
Minimum of log data	0.09531		
Maximum of log data	2.778819		
Mean of log data	1.260515		
Standard Deviation of log data	0.9202		
Variance of log data	0.846767		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.902001		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	5.386512		
MLE Standard Deviation	6.21692		
MLE Coefficient of Variation	1.154164		
MLE Skewness	4.99995		
MLE Median	3.527236		
MLE 80% Quantile	7.675881		
MLE 90% Quantile	11.50718		
MLE 95% Quantile	16.02649		
MLE 99% Quantile	29.99104		
MVU Estimate of Median	3.38046		
MVU Estimate of Mean	5.100303		
MVU Estimate of Standard Deviation	4.990167		
MVU Estimate of SE of Mean	1.550199		
95% H-UCL	13.28013		
95% Chebyshev (MVUE) UCL	11.85746		
97.5% Chebyshev (MVUE) UCL	14.78129		
99% Chebyshev (MVUE) UCL	20.52459		
<b>Non-parametric Statistics</b>			
95% CLT UCL	7.708747		
95% Adjusted-CLT UCL	8.478786		
95% Modified-t UCL	8.119426		
95% Jackknife UCL	7.999315		
95% Chebyshev (Mean, Sd) UCL	11.89774		
97.5% Chebyshev (Mean, Sd) UCL	14.80883		
99% Chebyshev (Mean, Sd) UCL	20.52712		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	7.569736		
95% Bootstrap-t UCL	10.41851		
95% Hall's Bootstrap UCL	19.91368		
95% Percentile Bootstrap UCL	7.76		
95% BCA Bootstrap UCL	7.23		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	9.268585		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	27.5		
Maximum	584		
Mean	217.25		
Standard Deviation	198.5759		
Variance	39432.39		
Coefficient of Variation	0.914043		
Skewness	0.899687		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.862791		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	332.3607		
Gamma Statistics			
k hat	1.233414		
k star (bias corrected)	0.930057		
Theta hat	176.1371		
Theta star	233.5879		
nu hat	24.66828		
nu star	18.60113		
5% Approximate Chi Square Value	9.825281		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	8.737484		
Anderson-Darling Test Statistic	0.369805		
Anderson-Darling 5% Critical Value	0.74405		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.226155		
Kolmogrov-Smirnov 5% Critical Value	0.272522		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	411.2957		
95% Adjusted Gamma UCL	462.5011		
Lognormal Statistics			
Minimum of log data	3.314186		
Maximum of log data	6.369901		
Mean of log data	4.923766		
Standard Deviation of log data	1.068839		
Variance of log data	1.142416		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.937252		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	243.4652		
MLE Standard Deviation	355.6869		
MLE Coefficient of Variation	1.460936		
MLE Skewness	7.50093		
MLE Median	137.5195		
MLE 80% Quantile	339.3169		
MLE 90% Quantile	543.062		
MLE 95% Quantile	797.9177		
MLE 99% Quantile	1652.236		
MVU Estimate of Median	129.8454		
MVU Estimate of Mean	224.9923		
MVU Estimate of Standard Deviation	260.4549		
MVU Estimate of SE of Mean	79.96638		
95% H-UCL	773.8606		
95% Chebyshev (MVUE) UCL	573.5577		
97.5% Chebyshev (MVUE) UCL	724.3822		
99% Chebyshev (MVUE) UCL	1020.648		
Non-parametric Statistics			
95% CLT UCL	320.5389		
95% Adjusted-CLT UCL	339.6286		
95% Modified-t UCL	335.3383		
95% Jackknife UCL	332.3607		
95% Chebyshev (Mean, Sd) UCL	490.968		
97.5% Chebyshev (Mean, Sd) UCL	609.406		
99% Chebyshev (Mean, Sd) UCL	842.0545		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	315.6847		
95% Bootstrap-t UCL	384.961		
95% Hall's Bootstrap UCL	350.2501		
95% Percentile Bootstrap UCL	325.04		
95% BCA Bootstrap UCL	365.95		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	332.3607	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	58.1		
Maximum	1090		
Mean	389.02		
Standard Deviation	382.0925		
Variance	145994.7		
Coefficient of Variation	0.982192		
Skewness	1.112545		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.807872		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	610.5118		
Gamma Statistics			
k hat	1.174593		
k star (bias corrected)	0.888882		
Theta hat	331.1957		
Theta star	437.6511		
nu hat	23.49185		
nu star	17.77763		
5% Approximate Chi Square Value	9.228993		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	8.179633		
Anderson-Darling Test Statistic	0.555151		
Anderson-Darling 5% Critical Value	0.745113		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.264481		
Kolmogrov-Smirnov 5% Critical Value	0.272832		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	749.3617		
95% Adjusted Gamma UCL	845.4969		
Lognormal Statistics			
Minimum of log data	4.062166		
Maximum of log data	6.993933		
Mean of log data	5.480983		
Standard Deviation of log data	1.067462		
Variance of log data	1.139476		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.902124		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	424.4188		
MLE Standard Deviation	618.7104		
MLE Coefficient of Variation	1.457783		
MLE Skewness	7.471327		
MLE Median	240.0825		
MLE 80% Quantile	591.6933		
MLE 90% Quantile	946.4063		
MLE 95% Quantile	1389.86		
MLE 99% Quantile	2875.266		
MVU Estimate of Median	226.7188		
MVU Estimate of Mean	392.3158		
MVU Estimate of Standard Deviation	453.4861		
MVU Estimate of SE of Mean	139.2494		
95% H-UCL	1345.634		
95% Chebyshev (MVUE) UCL	999.29		
97.5% Chebyshev (MVUE) UCL	1261.928		
99% Chebyshev (MVUE) UCL	1777.83		
Non-parametric Statistics			
95% CLT UCL	587.7648		
95% Adjusted-CLT UCL	633.1868		
95% Modified-t UCL	617.5967		
95% Jackknife UCL	610.5118		
95% Chebyshev (Mean, Sd) UCL	915.6981		
97.5% Chebyshev (Mean, Sd) UCL	1143.592		
99% Chebyshev (Mean, Sd) UCL	1591.246		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	574.3826		
95% Bootstrap-t UCL	759.6026		
95% Hall's Bootstrap UCL	786.1213		
95% Percentile Bootstrap UCL	582.61		
95% BCA Bootstrap UCL	678.97		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	749.3617		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	75		
Maximum	648		
Mean	317.41		
Standard Deviation	216.8139		
Variance	47008.28		
Coefficient of Variation	0.683072		
Skewness	0.409909		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.873468		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	443.093		
<b>Gamma Statistics</b>			
k hat	2.131557		
k star (bias corrected)	1.558757		
Theta hat	148.9099		
Theta star	203.6302		
nu hat	42.63115		
nu star	31.17514		
5% Approximate Chi Square Value	19.417		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	17.82041		
Anderson-Darling Test Statistic	0.445953		
Anderson-Darling 5% Critical Value	0.735133		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.217307		
Kolmogrov-Smirnov 5% Critical Value	0.269631		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	509.6206		
95% Adjusted Gamma UCL	555.279		
<b>Lognormal Statistics</b>			
Minimum of log data	4.317488		
Maximum of log data	6.473891		
Mean of log data	5.507652		
Standard Deviation of log data	0.787327		
Variance of log data	0.619884		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.914175		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	336.1622		
MLE Standard Deviation	311.5106		
MLE Coefficient of Variation	0.926668		
MLE Skewness	3.575745		
MLE Median	246.5714		
MLE 80% Quantile	479.5956		
MLE 90% Quantile	678.1491		
MLE 95% Quantile	900.3693		
MLE 99% Quantile	1539.134		
MVU Estimate of Median	239.0253		
MVU Estimate of Mean	323.7279		
MVU Estimate of Standard Deviation	266.9479		
MVU Estimate of SE of Mean	83.55212		
95% H-UCL	680.4058		
95% Chebyshev (MVUE) UCL	687.9232		
97.5% Chebyshev (MVUE) UCL	845.5107		
99% Chebyshev (MVUE) UCL	1155.061		
<b>Non-parametric Statistics</b>			
95% CLT UCL	430.1854		
95% Adjusted-CLT UCL	439.6817		
95% Modified-t UCL	444.5742		
95% Jackknife UCL	443.093		
95% Chebyshev (Mean, Sd) UCL	616.2674		
97.5% Chebyshev (Mean, Sd) UCL	745.5832		
99% Chebyshev (Mean, Sd) UCL	999.5991		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	422.9703		
95% Bootstrap-t UCL	462.7257		
95% Hall's Bootstrap UCL	413.6669		
95% Percentile Bootstrap UCL	425.02		
95% BCA Bootstrap UCL	463.71		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	443.093		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	51.5		
Maximum	1260		
Mean	338.345		
Standard Deviation	400.521		
Variance	160417.1		
Coefficient of Variation	1.183765		
Skewness	1.66288		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.73827		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	570.5195		
Gamma Statistics			
k hat	1.017233		
k star (bias corrected)	0.77873		
Theta hat	332.6132		
Theta star	434.4833		
nu hat	20.34466		
nu star	15.57459		
5% Approximate Chi Square Value	7.661688		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	6.719503		
Anderson-Darling Test Statistic	0.719801		
Anderson-Darling 5% Critical Value	0.747958		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.281801		
Kolmogrov-Smirnov 5% Critical Value	0.273659		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	687.7838		
95% Adjusted Gamma UCL	784.2225		
Lognormal Statistics			
Minimum of log data	3.941582		
Maximum of log data	7.138867		
Mean of log data	5.25776		
Standard Deviation of log data	1.088845		
Variance of log data	1.185584		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.906367		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	347.426		
MLE Standard Deviation	523.7495		
MLE Coefficient of Variation	1.507514		
MLE Skewness	7.948514		
MLE Median	192.0508		
MLE 80% Quantile	481.9469		
MLE 90% Quantile	778.1552		
MLE 95% Quantile	1151.603		
MLE 99% Quantile	2417.318		
MVU Estimate of Median	180.9385		
MVU Estimate of Mean	319.8617		
MVU Estimate of Standard Deviation	378.1878		
MVU Estimate of SE of Mean	115.8969		
95% H-UCL	1145.879		
95% Chebyshev (MVUE) UCL	825.0447		
97.5% Chebyshev (MVUE) UCL	1043.638		
99% Chebyshev (MVUE) UCL	1473.022		
Non-parametric Statistics			
95% CLT UCL	546.6754		
95% Adjusted-CLT UCL	617.8404		
95% Modified-t UCL	581.6198		
95% Jackknife UCL	570.5195		
95% Chebyshev (Mean, Sd) UCL	890.4251		
97.5% Chebyshev (Mean, Sd) UCL	1129.311		
99% Chebyshev (Mean, Sd) UCL	1598.555		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	535.1434		
95% Bootstrap-t UCL	750.6387		
95% Hall's Bootstrap UCL	544.7428		
95% Percentile Bootstrap UCL	528.9		
95% BCA Bootstrap UCL	504.81		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	687.7838		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.28		
Maximum	4.8		
Mean	1.532		
Standard Deviation	1.551399		
Variance	2.40684		
Coefficient of Variation	1.012663		
Skewness	1.351213		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.813871		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	2.431317		
<b>Gamma Statistics</b>			
k hat	1.180823		
k star (bias corrected)	0.893243		
Theta hat	1.2974		
Theta star	1.7151		
nu hat	23.61646		
nu star	17.86485		
5% Approximate Chi Square Value	9.291898		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	8.238427		
Anderson-Darling Test Statistic	0.430557		
Anderson-Darling 5% Critical Value	0.745001		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.186179		
Kolmogrov-Smirnov 5% Critical Value	0.272799		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	2.945464		
95% Adjusted Gamma UCL	3.322109		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.272966		
Maximum of log data	1.568616		
Mean of log data	-0.053258		
Standard Deviation of log data	1.054538		
Variance of log data	1.11205		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.913663		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	1.65329		
MLE Standard Deviation	2.36171		
MLE Coefficient of Variation	1.428491		
MLE Skewness	7.200432		
MLE Median	0.948136		
MLE 80% Quantile	2.311339		
MLE 90% Quantile	3.675994		
MLE 95% Quantile	5.373381		
MLE 99% Quantile	11.01874		
MVU Estimate of Median	0.896601		
MVU Estimate of Mean	1.531842		
MVU Estimate of Standard Deviation	1.746345		
MVU Estimate of SE of Mean	0.536866		
95% H-UCL	5.120125		
95% Chebyshev (MVUE) UCL	3.871986		
97.5% Chebyshev (MVUE) UCL	4.884568		
99% Chebyshev (MVUE) UCL	6.87359		
<b>Non-parametric Statistics</b>			
95% CLT UCL	2.338958		
95% Adjusted-CLT UCL	2.562947		
95% Modified-t UCL	2.466255		
95% Jackknife UCL	2.431317		
95% Chebyshev (Mean, Sd) UCL	3.670456		
97.5% Chebyshev (Mean, Sd) UCL	4.595768		
99% Chebyshev (Mean, Sd) UCL	6.413364		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.313053		
95% Bootstrap-t UCL	3.364893		
95% Hall's Bootstrap UCL	4.347664		
95% Percentile Bootstrap UCL	2.309		
95% BCA Bootstrap UCL	2.734		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	2.945464		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	4		
Maximum	31.8		
Mean	9.175		
Standard Deviation	8.167662		
Variance	66.71069		
Coefficient of Variation	0.890208		
Skewness	2.868769		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.573004		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	13.90964		
Gamma Statistics			
k hat	2.690768		
k star (bias corrected)	1.950204		
Theta hat	3.409807		
Theta star	4.704636		
nu hat	53.81536		
nu star	39.00408		
5% Approximate Chi Square Value	25.6964		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	23.83344		
Anderson-Darling Test Statistic	1.198041		
Anderson-Darling 5% Critical Value	0.733231		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.320772		
Kolmogrov-Smirnov 5% Critical Value	0.268871		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	13.92656		
95% Adjusted Gamma UCL	15.01514		
Lognormal Statistics			
Minimum of log data	1.386294		
Maximum of log data	3.459466		
Mean of log data	2.019302		
Standard Deviation of log data	0.573243		
Variance of log data	0.328608		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.803169		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	8.878262		
MLE Standard Deviation	5.537596		
MLE Coefficient of Variation	0.623725		
MLE Skewness	2.113825		
MLE Median	7.533064		
MLE 80% Quantile	12.22756		
MLE 90% Quantile	15.7355		
MLE 95% Quantile	19.34216		
MLE 99% Quantile	28.57882		
MVU Estimate of Median	7.410121		
MVU Estimate of Mean	8.716742		
MVU Estimate of Standard Deviation	5.126148		
MVU Estimate of SE of Mean	1.615828		
95% H-UCL	13.84883		
95% Chebyshev (MVUE) UCL	15.75997		
97.5% Chebyshev (MVUE) UCL	18.80759		
99% Chebyshev (MVUE) UCL	24.79403		
Non-parametric Statistics			
95% CLT UCL	13.4234		
95% Adjusted-CLT UCL	15.92705		
95% Modified-t UCL	14.30016		
95% Jackknife UCL	13.90964		
95% Chebyshev (Mean, Sd) UCL	20.43334		
97.5% Chebyshev (Mean, Sd) UCL	25.30484		
99% Chebyshev (Mean, Sd) UCL	34.87395		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	13.18807		
95% Bootstrap-t UCL	29.37589		
95% Hall's Bootstrap UCL	34.32006		
95% Percentile Bootstrap UCL	14.01		
95% BCA Bootstrap UCL	16.7		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	20.43334		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.29		
Maximum	3.1		
Mean	1.0455		
Standard Deviation	1.059086		
Variance	1.121664		
Coefficient of Variation	1.012995		
Skewness	1.427716		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.732861		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	1.659432		
<b>Gamma Statistics</b>			
k hat	1.38458		
k star (bias corrected)	1.035873		
Theta hat	0.755103		
Theta star	1.009294		
nu hat	27.6916		
nu star	20.71745		
5% Approximate Chi Square Value	11.3802		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	10.19719		
Anderson-Darling Test Statistic	0.829581		
Anderson-Darling 5% Critical Value	0.741317		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.282136		
Kolmogrov-Smirnov 5% Critical Value	0.271727		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.903314		
95% Adjusted Gamma UCL	2.124124		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.237874		
Maximum of log data	1.131402		
Mean of log data	-0.358216		
Standard Deviation of log data	0.906956		
Variance of log data	0.822568		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.851358		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	1.054502		
MLE Standard Deviation	1.191325		
MLE Coefficient of Variation	1.129752		
MLE Skewness	4.831201		
MLE Median	0.698922		
MLE 80% Quantile	1.50405		
MLE 90% Quantile	2.241672		
MLE 95% Quantile	3.107213		
MLE 99% Quantile	5.76245		
MVU Estimate of Median	0.670656		
MVU Estimate of Mean	1.000348		
MVU Estimate of Standard Deviation	0.963148		
MVU Estimate of SE of Mean	0.299463		
95% H-UCL	2.54603		
95% Chebyshev (MVUE) UCL	2.305677		
97.5% Chebyshev (MVUE) UCL	2.870494		
99% Chebyshev (MVUE) UCL	3.979967		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.596382		
95% Adjusted-CLT UCL	1.757949		
95% Modified-t UCL	1.684634		
95% Jackknife UCL	1.659432		
95% Chebyshev (Mean, Sd) UCL	2.50535		
97.5% Chebyshev (Mean, Sd) UCL	3.137028		
99% Chebyshev (Mean, Sd) UCL	4.377837		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.566866		
95% Bootstrap-t UCL	2.642285		
95% Hall's Bootstrap UCL	3.430016		
95% Percentile Bootstrap UCL	1.583		
95% BCA Bootstrap UCL	1.525		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	2.54603		95% H-UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Vanadium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	21.9		
Maximum	114		
Mean	53.55		
Standard Deviation	34.4679		
Variance	1188.036		
Coefficient of Variation	0.643658		
Skewness	1.044629		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.819269		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	73.53039		
<b>Gamma Statistics</b>			
k hat	3.004578		
k star (bias corrected)	2.169871		
Theta hat	17.8228		
Theta star	24.67889		
nu hat	60.09155		
nu star	43.39742		
5% Approximate Chi Square Value	29.28896		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	27.288		
Anderson-Darling Test Statistic	0.552176		
Anderson-Darling 5% Critical Value	0.732167		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.190562		
Kolmogrov-Smirnov 5% Critical Value	0.268447		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	79.34498		
95% Adjusted Gamma UCL	85.16315		
<b>Lognormal Statistics</b>			
Minimum of log data	3.086487		
Maximum of log data	4.736198		
Mean of log data	3.805069		
Standard Deviation of log data	0.617137		
Variance of log data	0.380859		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.892399		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	54.35294		
MLE Standard Deviation	37.00556		
MLE Coefficient of Variation	0.680838		
MLE Skewness	2.358111		
MLE Median	44.92837		
MLE 80% Quantile	75.68277		
MLE 90% Quantile	99.29458		
MLE 95% Quantile	123.9974		
MLE 99% Quantile	188.7703		
MVU Estimate of Median	44.07944		
MVU Estimate of Mean	53.19026		
MVU Estimate of Standard Deviation	33.80483		
MVU Estimate of SE of Mean	10.64486		
95% H-UCL	88.95883		
95% Chebyshev (MVUE) UCL	99.59015		
97.5% Chebyshev (MVUE) UCL	119.6674		
99% Chebyshev (MVUE) UCL	159.1053		
<b>Non-parametric Statistics</b>			
95% CLT UCL	71.47842		
95% Adjusted-CLT UCL	75.32573		
95% Modified-t UCL	74.1305		
95% Jackknife UCL	73.53039		
95% Chebyshev (Mean, Sd) UCL	101.0607		
97.5% Chebyshev (Mean, Sd) UCL	121.6186		
99% Chebyshev (Mean, Sd) UCL	162.0007		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	70.68876		
95% Bootstrap-t UCL	89.99076		
95% Hall's Bootstrap UCL	94.86644		
95% Percentile Bootstrap UCL	72.4		
95% BCA Bootstrap UCL	79.81		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	79.34498	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb01.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	58.4		
Maximum	1190		
Mean	422.06		
Standard Deviation	373.0581		
Variance	139172.4		
Coefficient of Variation	0.883898		
Skewness	1.125084		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.869756		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	638.3148		
Gamma Statistics			
k hat	1.421863		
k star (bias corrected)	1.06197		
Theta hat	296.836		
Theta star	397.431		
nu hat	28.43725		
nu star	21.23941		
5% Approximate Chi Square Value	11.76825		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	10.56248		
Anderson-Darling Test Statistic	0.21899		
Anderson-Darling 5% Critical Value	0.740643		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.142303		
Kolmogrov-Smirnov 5% Critical Value	0.271531		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	761.7363		
95% Adjusted Gamma UCL	848.6932		
Lognormal Statistics			
Minimum of log data	4.067316		
Maximum of log data	7.081709		
Mean of log data	5.653979		
Standard Deviation of log data	0.98115		
Variance of log data	0.962655		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.972273		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	461.8806		
MLE Standard Deviation	587.6313		
MLE Coefficient of Variation	1.272258		
MLE Skewness	5.876101		
MLE Median	285.4249		
MLE 80% Quantile	653.9629		
MLE 90% Quantile	1007.026		
MLE 95% Quantile	1433.638		
MLE 99% Quantile	2796.527		
MVU Estimate of Median	271.9541		
MVU Estimate of Mean	433.3209		
MVU Estimate of Standard Deviation	455.3957		
MVU Estimate of SE of Mean	140.8526		
95% H-UCL	1258.311		
95% Chebyshev (MVUE) UCL	1047.283		
97.5% Chebyshev (MVUE) UCL	1312.945		
99% Chebyshev (MVUE) UCL	1834.786		
Non-parametric Statistics			
95% CLT UCL	616.1056		
95% Adjusted-CLT UCL	660.9535		
95% Modified-t UCL	645.3101		
95% Jackknife UCL	638.3148		
95% Chebyshev (Mean, Sd) UCL	936.2851		
97.5% Chebyshev (Mean, Sd) UCL	1158.791		
99% Chebyshev (Mean, Sd) UCL	1595.86		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	607.454		
95% Bootstrap-t UCL	728.2854		
95% Hall's Bootstrap UCL	642.4698		
95% Percentile Bootstrap UCL	611.57		
95% BCA Bootstrap UCL	726.2		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	638.3148	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	8		
Minimum	0.89		
Maximum	2		
Mean	1.539		
Standard Deviation	0.441826		
Variance	0.19521		
Coefficient of Variation	0.287086		
Skewness	-0.2949		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.87552		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.795118		
<b>Gamma Statistics</b>			
k hat	12.27676		
k star (bias corrected)	8.660396		
Theta hat	0.125359		
Theta star	0.177706		
nu hat	245.5351		
nu star	173.2079		
5% Approximate Chi Square Value	143.7661		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	139.1053		
Anderson-Darling Test Statistic	0.550082		
Anderson-Darling 5% Critical Value	0.724944		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.204771		
Kolmogrov-Smirnov 5% Critical Value	0.266525		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.854172		
95% Adjusted Gamma UCL	1.916296		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.116534		
Maximum of log data	0.693147		
Mean of log data	0.389853		
Standard Deviation of log data	0.311082		
Variance of log data	0.096772		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.873514		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1.549975		
MLE Standard Deviation	0.494074		
MLE Coefficient of Variation	0.318762		
MLE Skewness	0.988676		
MLE Median	1.476764		
MLE 80% Quantile	1.920753		
MLE 90% Quantile	2.202501		
MLE 95% Quantile	2.463501		
MLE 99% Quantile	3.044785		
MVU Estimate of Median	1.469632		
MVU Estimate of Mean	1.54223		
MVU Estimate of Standard Deviation	0.483515		
MVU Estimate of SE of Mean	0.152854		
95% H-UCL	1.904934		
95% Chebyshev (MVUE) UCL	2.208506		
97.5% Chebyshev (MVUE) UCL	2.496805		
99% Chebyshev (MVUE) UCL	3.063111		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.768815		
95% Adjusted-CLT UCL	1.754893		
95% Modified-t UCL	1.792946		
95% Jackknife UCL	1.795118		
95% Chebyshev (Mean, Sd) UCL	2.148015		
97.5% Chebyshev (Mean, Sd) UCL	2.411536		
99% Chebyshev (Mean, Sd) UCL	2.929172		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.758164		
95% Bootstrap-t UCL	1.778239		
95% Hall's Bootstrap UCL	1.735548		
95% Percentile Bootstrap UCL	1.75		
95% BCA Bootstrap UCL	1.79		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.795118	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	7.55		
Maximum	56.2		
Mean	27.105		
Standard Deviation	18.26692		
Variance	333.6803		
Coefficient of Variation	0.673932		
Skewness	0.868162		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.836946		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	37.69399		
<b>Gamma Statistics</b>			
k hat	2.603019		
k star (bias corrected)	1.88878		
Theta hat	10.41291		
Theta star	14.35053		
nu hat	52.06038		
nu star	37.7756		
5% Approximate Chi Square Value	24.6999		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	22.87688		
Anderson-Darling Test Statistic	0.443266		
Anderson-Darling 5% Critical Value	0.73353		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.175274		
Kolmogrov-Smirnov 5% Critical Value	0.26899		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	41.45392		
95% Adjusted Gamma UCL	44.75732		
<b>Lognormal Statistics</b>			
Minimum of log data	2.021548		
Maximum of log data	4.028917		
Mean of log data	3.095505		
Standard Deviation of log data	0.677987		
Variance of log data	0.459666		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.939309		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	27.8084		
MLE Standard Deviation	21.24287		
MLE Coefficient of Variation	0.763901		
MLE Skewness	2.737474		
MLE Median	22.0984		
MLE 80% Quantile	39.1893		
MLE 90% Quantile	52.81092		
MLE 95% Quantile	67.40999		
MLE 99% Quantile	106.9651		
MVU Estimate of Median	21.59525		
MVU Estimate of Mean	27.0753		
MVU Estimate of Standard Deviation	19.01198		
MVU Estimate of SE of Mean	5.97621		
95% H-UCL	48.86638		
95% Chebyshev (MVUE) UCL	53.12499		
97.5% Chebyshev (MVUE) UCL	64.39672		
99% Chebyshev (MVUE) UCL	86.53784		
<b>Non-parametric Statistics</b>			
95% CLT UCL	36.60651		
95% Adjusted-CLT UCL	38.30103		
95% Modified-t UCL	37.9583		
95% Jackknife UCL	37.69399		
95% Chebyshev (Mean, Sd) UCL	52.28421		
97.5% Chebyshev (Mean, Sd) UCL	63.17927		
99% Chebyshev (Mean, Sd) UCL	84.58051		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	36.28423		
95% Bootstrap-t UCL	41.01883		
95% Hall's Bootstrap UCL	36.28712		
95% Percentile Bootstrap UCL	36.365		
95% BCA Bootstrap UCL	39.46		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	41.45392		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	13.6		
Maximum	389		
Mean	78.5		
Standard Deviation	113.8947		
Variance	12972.01		
Coefficient of Variation	1.450888		
Skewness	2.729562		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.591873		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	144.5226		
<b>Gamma Statistics</b>			
k hat	1.009699		
k star (bias corrected)	0.773456		
Theta hat	77.74592		
Theta star	101.4925		
nu hat	20.19399		
nu star	15.46912		
5% Approximate Chi Square Value	7.587774		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	6.650892		
Anderson-Darling Test Statistic	0.802889		
Anderson-Darling 5% Critical Value	0.748095		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.293149		
Kolmogrov-Smirnov 5% Critical Value	0.273699		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	160.0372		
95% Adjusted Gamma UCL	182.5809		
<b>Lognormal Statistics</b>			
Minimum of log data	2.61007		
Maximum of log data	5.963579		
Mean of log data	3.792073		
Standard Deviation of log data	1.014209		
Variance of log data	1.02862		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.910776		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	74.17172		
MLE Standard Deviation	99.43447		
MLE Coefficient of Variation	1.340598		
MLE Skewness	6.431121		
MLE Median	44.34824		
MLE 80% Quantile	104.4888		
MLE 90% Quantile	163.258		
MLE 95% Quantile	235.2025		
MLE 99% Quantile	469.2442		
MVU Estimate of Median	42.11479		
MVU Estimate of Mean	69.20877		
MVU Estimate of Standard Deviation	75.49528		
MVU Estimate of SE of Mean	23.28924		
95% H-UCL	213.8508		
95% Chebyshev (MVUE) UCL	170.7242		
97.5% Chebyshev (MVUE) UCL	214.65		
99% Chebyshev (MVUE) UCL	300.9338		
<b>Non-parametric Statistics</b>			
95% CLT UCL	137.7422		
95% Adjusted-CLT UCL	170.9604		
95% Modified-t UCL	149.704		
95% Jackknife UCL	144.5226		
95% Chebyshev (Mean, Sd) UCL	235.4931		
97.5% Chebyshev (Mean, Sd) UCL	303.4241		
99% Chebyshev (Mean, Sd) UCL	436.8615		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	135.5593		
95% Bootstrap-t UCL	386.1234		
95% Hall's Bootstrap UCL	403.6888		
95% Percentile Bootstrap UCL	142.28		
95% BCA Bootstrap UCL	189.11		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	170.7242		95% Chebyshev (MVUE) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.91		
Maximum	5.8		
Mean	3.091		
Standard Deviation	1.289715		
Variance	1.663366		
Coefficient of Variation	0.417249		
Skewness	0.596775		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.948363		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	3.838624		
<b>Gamma Statistics</b>			
k hat	5.560893		
k star (bias corrected)	3.959292		
Theta hat	0.555846		
Theta star	0.780695		
nu hat	111.2179		
nu star	79.18584		
5% Approximate Chi Square Value	59.68005		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	56.74542		
Anderson-Darling Test Statistic	0.381818		
Anderson-Darling 5% Critical Value	0.728958		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.21672		
Kolmogrov-Smirnov 5% Critical Value	0.26734		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	4.10126		
95% Adjusted Gamma UCL	4.31336		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.094311		
Maximum of log data	1.757858		
Mean of log data	1.035895		
Standard Deviation of log data	0.488367		
Variance of log data	0.238502		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.896753		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	3.174486		
MLE Standard Deviation	1.647513		
MLE Coefficient of Variation	0.518986		
MLE Skewness	1.696744		
MLE Median	2.817626		
MLE 80% Quantile	4.256999		
MLE 90% Quantile	5.277465		
MLE 95% Quantile	6.291866		
MLE 99% Quantile	8.774373		
MVU Estimate of Median	2.784189		
MVU Estimate of Mean	3.133642		
MVU Estimate of Standard Deviation	1.559405		
MVU Estimate of SE of Mean	0.492263		
95% H-UCL	4.544406		
95% Chebyshev (MVUE) UCL	5.279369		
97.5% Chebyshev (MVUE) UCL	6.207826		
99% Chebyshev (MVUE) UCL	8.031602		
<b>Non-parametric Statistics</b>			
95% CLT UCL	3.761843		
95% Adjusted-CLT UCL	3.844084		
95% Modified-t UCL	3.851452		
95% Jackknife UCL	3.838624		
95% Chebyshev (Mean, Sd) UCL	4.86875		
97.5% Chebyshev (Mean, Sd) UCL	5.637984		
99% Chebyshev (Mean, Sd) UCL	7.148994		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	3.740571		
95% Bootstrap-t UCL	3.958582		
95% Hall's Bootstrap UCL	4.315324		
95% Percentile Bootstrap UCL	3.745		
95% BCA Bootstrap UCL	4.02		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	3.838624		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	17.9		
Maximum	248		
Mean	106.06		
Standard Deviation	64.71164		
Variance	4187.596		
Coefficient of Variation	0.610142		
Skewness	1.057526		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.934479		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	143.5721		
Gamma Statistics			
k hat	2.717149		
k star (bias corrected)	1.968671		
Theta hat	39.03356		
Theta star	53.87391		
nu hat	54.34298		
nu star	39.37342		
5% Approximate Chi Square Value	25.99672		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	24.12187		
Anderson-Darling Test Statistic	0.186263		
Anderson-Darling 5% Critical Value	0.733142		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.113374		
Kolmogrov-Smirnov 5% Critical Value	0.268835		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	160.6335		
95% Adjusted Gamma UCL	173.1186		
Lognormal Statistics			
Minimum of log data	2.884801		
Maximum of log data	5.513429		
Mean of log data	4.468845		
Standard Deviation of log data	0.719507		
Variance of log data	0.51769		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.939183		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	113.0342		
MLE Standard Deviation	93.0833		
MLE Coefficient of Variation	0.823497		
MLE Skewness	3.028942		
MLE Median	87.25592		
MLE 80% Quantile	160.265		
MLE 90% Quantile	219.9525		
MLE 95% Quantile	284.9843		
MLE 99% Quantile	465.1772		
MVU Estimate of Median	85.02112		
MVU Estimate of Mean	109.6282		
MVU Estimate of Standard Deviation	82.03017		
MVU Estimate of SE of Mean	25.74793		
95% H-UCL	209.143		
95% Chebyshev (MVUE) UCL	221.8608		
97.5% Chebyshev (MVUE) UCL	270.424		
99% Chebyshev (MVUE) UCL	365.8169		
Non-parametric Statistics			
95% CLT UCL	139.7197		
95% Adjusted-CLT UCL	147.032		
95% Modified-t UCL	144.7127		
95% Jackknife UCL	143.5721		
95% Chebyshev (Mean, Sd) UCL	195.2588		
97.5% Chebyshev (Mean, Sd) UCL	233.8552		
99% Chebyshev (Mean, Sd) UCL	309.6704		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	138.1185		
95% Bootstrap-t UCL	155.5083		
95% Hall's Bootstrap UCL	170.7464		
95% Percentile Bootstrap UCL	139.76		
95% BCA Bootstrap UCL	155.23		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	143.5721	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	38.3		
Maximum	168		
Mean	75.275		
Standard Deviation	36.06725		
Variance	1300.846		
Coefficient of Variation	0.47914		
Skewness	2.155951		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.761384		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	96.1825		
Gamma Statistics			
k hat	6.521985		
k star (bias corrected)	4.632057		
Theta hat	11.54173		
Theta star	16.25088		
nu hat	130.4397		
nu star	92.64113		
5% Approximate Chi Square Value	71.44083		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	68.21226		
Anderson-Darling Test Statistic	0.630103		
Anderson-Darling 5% Critical Value	0.728114		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.217609		
Kolmogrov-Smirnov 5% Critical Value	0.267186		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	97.61311		
95% Adjusted Gamma UCL	102.2333		
Lognormal Statistics			
Minimum of log data	3.64545		
Maximum of log data	5.123964		
Mean of log data	4.24253		
Standard Deviation of log data	0.39539		
Variance of log data	0.156334		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.907929		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	75.24102		
MLE Standard Deviation	30.95107		
MLE Coefficient of Variation	0.411359		
MLE Skewness	1.303685		
MLE Median	69.58366		
MLE 80% Quantile	97.18678		
MLE 90% Quantile	115.6544		
MLE 95% Quantile	133.346		
MLE 99% Quantile	174.5494		
MVU Estimate of Median	69.04148		
MVU Estimate of Mean	74.62207		
MVU Estimate of Standard Deviation	29.87531		
MVU Estimate of SE of Mean	9.440051		
95% H-UCL	99.01717		
95% Chebyshev (MVUE) UCL	115.7703		
97.5% Chebyshev (MVUE) UCL	133.5752		
99% Chebyshev (MVUE) UCL	168.5494		
Non-parametric Statistics			
95% CLT UCL	94.03532		
95% Adjusted-CLT UCL	102.344		
95% Modified-t UCL	97.47849		
95% Jackknife UCL	96.1825		
95% Chebyshev (Mean, Sd) UCL	124.9903		
97.5% Chebyshev (Mean, Sd) UCL	146.5021		
99% Chebyshev (Mean, Sd) UCL	188.7579		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	93.14836		
95% Bootstrap-t UCL	117.2706		
95% Hall's Bootstrap UCL	178.5933		
95% Percentile Bootstrap UCL	95.315		
95% BCA Bootstrap UCL	109.34		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	97.61311		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	67		
Maximum	342		
Mean	118.855		
Standard Deviation	86.56994		
Variance	7494.355		
Coefficient of Variation	0.728366		
Skewness	2.340571		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.646103		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	169.038		
<b>Gamma Statistics</b>			
k hat	3.381697		
k star (bias corrected)	2.433854		
Theta hat	35.14656		
Theta star	48.83407		
nu hat	67.63393		
nu star	48.67709		
5% Approximate Chi Square Value	33.65867		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	31.50069		
Anderson-Darling Test Statistic	1.197456		
Anderson-Darling 5% Critical Value	0.731115		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.313251		
Kolmogrov-Smirnov 5% Critical Value	0.26821		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	171.8878		
95% Adjusted Gamma UCL	183.6631		
<b>Lognormal Statistics</b>			
Minimum of log data	4.204693		
Maximum of log data	5.834811		
Mean of log data	4.622824		
Standard Deviation of log data	0.526605		
Variance of log data	0.277313		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.777093		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	116.9189		
MLE Standard Deviation	66.0958		
MLE Coefficient of Variation	0.565313		
MLE Skewness	1.876603		
MLE Median	101.781		
MLE 80% Quantile	158.8253		
MLE 90% Quantile	200.2389		
MLE 95% Quantile	242.0366		
MLE 99% Quantile	346.4391		
MVU Estimate of Median	100.3778		
MVU Estimate of Mean	115.1498		
MVU Estimate of Standard Deviation	61.97055		
MVU Estimate of SE of Mean	19.55111		
95% H-UCL	173.7797		
95% Chebyshev (MVUE) UCL	200.3711		
97.5% Chebyshev (MVUE) UCL	237.2464		
99% Chebyshev (MVUE) UCL	309.6809		
<b>Non-parametric Statistics</b>			
95% CLT UCL	163.8842		
95% Adjusted-CLT UCL	185.5348		
95% Modified-t UCL	172.415		
95% Jackknife UCL	169.038		
95% Chebyshev (Mean, Sd) UCL	238.1834		
97.5% Chebyshev (Mean, Sd) UCL	289.8169		
99% Chebyshev (Mean, Sd) UCL	391.241		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	162.5143		
95% Bootstrap-t UCL	356.6729		
95% Hall's Bootstrap UCL	367.1876		
95% Percentile Bootstrap UCL	164.365		
95% BCA Bootstrap UCL	194.88		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	238.1834	95% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	34.5		
Maximum	108		
Mean	55.99		
Standard Deviation	24.52253		
Variance	601.3543		
Coefficient of Variation	0.43798		
Skewness	1.354105		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.837061		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	70.20525		
<b>Gamma Statistics</b>			
k hat	6.946191		
k star (bias corrected)	4.929001		
Theta hat	8.060532		
Theta star	11.3593		
nu hat	138.9238		
nu star	98.58001		
5% Approximate Chi Square Value	76.67137		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	73.31986		
Anderson-Darling Test Statistic	0.498577		
Anderson-Darling 5% Critical Value	0.727741		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.200468		
Kolmogrov-Smirnov 5% Critical Value	0.267119		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	71.98899		
95% Adjusted Gamma UCL	75.27967		
<b>Lognormal Statistics</b>			
Minimum of log data	3.540959		
Maximum of log data	4.682131		
Mean of log data	3.951468		
Standard Deviation of log data	0.389864		
Variance of log data	0.151994		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.906723		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	56.11845		
MLE Standard Deviation	22.73686		
MLE Coefficient of Variation	0.405158		
MLE Skewness	1.281983		
MLE Median	52.01164		
MLE 80% Quantile	72.30569		
MLE 90% Quantile	85.83639		
MLE 95% Quantile	98.77002		
MLE 99% Quantile	128.804		
MVU Estimate of Median	51.6176		
MVU Estimate of Mean	55.67023		
MVU Estimate of Standard Deviation	21.9689		
MVU Estimate of SE of Mean	6.942057		
95% H-UCL	73.50622		
95% Chebyshev (MVUE) UCL	85.92996		
97.5% Chebyshev (MVUE) UCL	99.02336		
99% Chebyshev (MVUE) UCL	124.7428		
<b>Non-parametric Statistics</b>			
95% CLT UCL	68.74535		
95% Adjusted-CLT UCL	72.29347		
95% Modified-t UCL	70.75868		
95% Jackknife UCL	70.20525		
95% Chebyshev (Mean, Sd) UCL	89.79197		
97.5% Chebyshev (Mean, Sd) UCL	104.4181		
99% Chebyshev (Mean, Sd) UCL	133.1483		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	68.05129		
95% Bootstrap-t UCL	80.38292		
95% Hall's Bootstrap UCL	128.8937		
95% Percentile Bootstrap UCL	68.85		
95% BCA Bootstrap UCL	75.35		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	71.98899		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.12		
Maximum	0.58		
Mean	0.2405		
Standard Deviation	0.137163		
Variance	0.018814		
Coefficient of Variation	0.570323		
Skewness	1.97281		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.770429		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.320011		
<b>Gamma Statistics</b>			
k hat	4.679935		
k star (bias corrected)	3.342621		
Theta hat	0.05139		
Theta star	0.07195		
nu hat	93.5987		
nu star	66.85242		
5% Approximate Chi Square Value	49.03241		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	46.38989		
Anderson-Darling Test Statistic	0.623846		
Anderson-Darling 5% Critical Value	0.729431		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.251893		
Kolmogrov-Smirnov 5% Critical Value	0.267555		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.327906		
95% Adjusted Gamma UCL	0.346584		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.120264		
Maximum of log data	-0.544727		
Mean of log data	-1.535662		
Standard Deviation of log data	0.465783		
Variance of log data	0.216954		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.909423		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.239984		
MLE Standard Deviation	0.118126		
MLE Coefficient of Variation	0.492227		
MLE Skewness	1.595941		
MLE Median	0.215313		
MLE 80% Quantile	0.319156		
MLE 90% Quantile	0.39175		
MLE 95% Quantile	0.463269		
MLE 99% Quantile	0.636195		
MVU Estimate of Median	0.212988		
MVU Estimate of Mean	0.237193		
MVU Estimate of Standard Deviation	0.112392		
MVU Estimate of SE of Mean	0.03549		
95% H-UCL	0.336285		
95% Chebyshev (MVUE) UCL	0.391888		
97.5% Chebyshev (MVUE) UCL	0.458825		
99% Chebyshev (MVUE) UCL	0.590309		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.311845		
95% Adjusted-CLT UCL	0.340759		
95% Modified-t UCL	0.324521		
95% Jackknife UCL	0.320011		
95% Chebyshev (Mean, Sd) UCL	0.429566		
97.5% Chebyshev (Mean, Sd) UCL	0.511375		
99% Chebyshev (Mean, Sd) UCL	0.672072		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.307416		
95% Bootstrap-t UCL	0.397715		
95% Hall's Bootstrap UCL	0.576025		
95% Percentile Bootstrap UCL	0.315		
95% BCA Bootstrap UCL	0.3675		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.327906		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	2.1		
Maximum	12.8		
Mean	8.275		
Standard Deviation	2.943472		
Variance	8.664028		
Coefficient of Variation	0.355707		
Skewness	-0.66563		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.957115		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	9.981275		
Gamma Statistics			
k hat	5.914116		
k star (bias corrected)	4.206548		
Theta hat	1.399195		
Theta star	1.967171		
nu hat	118.2823		
nu star	84.13096		
5% Approximate Chi Square Value	63.98672		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	60.94137		
Anderson-Darling Test Statistic	0.593113		
Anderson-Darling 5% Critical Value	0.728647		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.223155		
Kolmogrov-Smirnov 5% Critical Value	0.267284		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	10.88013		
95% Adjusted Gamma UCL	11.42383		
Lognormal Statistics			
Minimum of log data	0.741937		
Maximum of log data	2.549445		
Mean of log data	2.02632		
Standard Deviation of log data	0.500755		
Variance of log data	0.250756		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.785717		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	8.599444		
MLE Standard Deviation	4.590817		
MLE Coefficient of Variation	0.53385		
MLE Skewness	1.753697		
MLE Median	7.586115		
MLE 80% Quantile	11.58207		
MLE 90% Quantile	14.43694		
MLE 95% Quantile	17.28886		
MLE 99% Quantile	24.31459		
MVU Estimate of Median	7.491488		
MVU Estimate of Mean	8.482695		
MVU Estimate of Standard Deviation	4.332383		
MVU Estimate of SE of Mean	1.36738		
95% H-UCL	12.45887		
95% Chebyshev (MVUE) UCL	14.44297		
97.5% Chebyshev (MVUE) UCL	17.02198		
99% Chebyshev (MVUE) UCL	22.08795		
Non-parametric Statistics			
95% CLT UCL	9.806042		
95% Adjusted-CLT UCL	9.596692		
95% Modified-t UCL	9.948621		
95% Jackknife UCL	9.981275		
95% Chebyshev (Mean, Sd) UCL	12.3323		
97.5% Chebyshev (Mean, Sd) UCL	14.08789		
99% Chebyshev (Mean, Sd) UCL	17.53642		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	9.741691		
95% Bootstrap-t UCL	9.773245		
95% Hall's Bootstrap UCL	9.807531		
95% Percentile Bootstrap UCL	9.69		
95% BCA Bootstrap UCL	9.41		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	9.981275	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls		
Variable:	Vanadium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	18.5		
Maximum	45.6		
Mean	26.65		
Standard Deviation	9.075792		
Variance	82.37		
Coefficient of Variation	0.340555		
Skewness	1.198789		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.854166		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	31.91107		
<b>Gamma Statistics</b>			
k hat	10.97823		
k star (bias corrected)	7.751427		
Theta hat	2.427532		
Theta star	3.438076		
nu hat	219.5646		
nu star	155.0285		
5% Approximate Chi Square Value	127.2405		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	122.8674		
Anderson-Darling Test Statistic	0.518253		
Anderson-Darling 5% Critical Value	0.72501		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.189488		
Kolmogrov-Smirnov 5% Critical Value	0.266585		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	32.47009		
95% Adjusted Gamma UCL	33.62577		
<b>Lognormal Statistics</b>			
Minimum of log data	2.917771		
Maximum of log data	3.819908		
Mean of log data	3.236554		
Standard Deviation of log data	0.311357		
Variance of log data	0.096943		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.896		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	26.70966		
MLE Standard Deviation	8.521915		
MLE Coefficient of Variation	0.319057		
MLE Skewness	0.989652		
MLE Median	25.44587		
MLE 80% Quantile	33.10387		
MLE 90% Quantile	37.96433		
MLE 95% Quantile	42.46735		
MLE 99% Quantile	52.49771		
MVU Estimate of Median	25.32278		
MVU Estimate of Mean	26.57595		
MVU Estimate of Standard Deviation	8.339476		
MVU Estimate of SE of Mean	2.636365		
95% H-UCL	32.83338		
95% Chebyshev (MVUE) UCL	38.0676		
97.5% Chebyshev (MVUE) UCL	43.04004		
99% Chebyshev (MVUE) UCL	52.80745		
<b>Non-parametric Statistics</b>			
95% CLT UCL	31.37076		
95% Adjusted-CLT UCL	32.5333		
95% Modified-t UCL	32.0924		
95% Jackknife UCL	31.91107		
95% Chebyshev (Mean, Sd) UCL	39.16012		
97.5% Chebyshev (Mean, Sd) UCL	44.57325		
99% Chebyshev (Mean, Sd) UCL	55.20631		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	31.03311		
95% Bootstrap-t UCL	34.5248		
95% Hall's Bootstrap UCL	34.12965		
95% Percentile Bootstrap UCL	31.745		
95% BCA Bootstrap UCL	30.425		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	31.91107	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb02.xls	
Variable:	Zinc	
Raw Statistics		
Number of Observations	10	
Number of Missing Data	0	
Number of Valid Observations	10	
Number of Distinct Observations	10	
Minimum	132	
Maximum	450	
Mean	249.95	
Standard Deviation	110.5879	
Variance	12229.69	
Coefficient of Variation	0.44244	
Skewness	0.777001	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.901399	
Shapiro-Wilk 5% Critical Value	0.842	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	314.0557	
Gamma Statistics		
k hat	5.962993	
k star (bias corrected)	4.240762	
Theta hat	41.91687	
Theta star	58.93988	
nu hat	119.2599	
nu star	84.81524	
5% Approximate Chi Square Value	64.58415	
Adjusted Level of Significance	0.0267	
Adjusted Chi Square Value	61.52374	
Anderson-Darling Test Statistic	0.316174	
Anderson-Darling 5% Critical Value	0.728604	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.168517	
Kolmogrov-Smirnov 5% Critical Value	0.267276	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	328.2472	
95% Adjusted Gamma UCL	344.5754	
Lognormal Statistics		
Minimum of log data	4.882802	
Maximum of log data	6.109248	
Mean of log data	5.435073	
Standard Deviation of log data	0.437377	
Variance of log data	0.191299	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.93071	
Shapiro-Wilk 5% Critical Value	0.842	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	252.3262	
MLE Standard Deviation	115.8561	
MLE Coefficient of Variation	0.459152	
MLE Skewness	1.474256	
MLE Median	229.3096	
MLE 80% Quantile	331.8413	
MLE 90% Quantile	402.2616	
MLE 95% Quantile	470.8588	
MLE 99% Quantile	634.2301	
MVU Estimate of Median	227.1249	
MVU Estimate of Mean	249.7588	
MVU Estimate of Standard Deviation	110.9103	
MVU Estimate of SE of Mean	35.03263	
95% H-UCL	344.501	
95% Chebyshev (MVUE) UCL	402.4625	
97.5% Chebyshev (MVUE) UCL	468.5375	
99% Chebyshev (MVUE) UCL	598.329	
Non-parametric Statistics		
95% CLT UCL	307.4721	
95% Adjusted-CLT UCL	316.6536	
95% Modified-t UCL	315.4879	
95% Jackknife UCL	314.0557	
95% Chebyshev (Mean, Sd) UCL	402.385	
97.5% Chebyshev (Mean, Sd) UCL	468.3437	
99% Chebyshev (Mean, Sd) UCL	597.9068	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	303.5624	
95% Bootstrap-t UCL	328.7993	
95% Hall's Bootstrap UCL	351.4986	
95% Percentile Bootstrap UCL	303.55	
95% BCA Bootstrap UCL	328	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	314.0557	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - cb03.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	0.215		
Maximum	4.8		
Mean	1.532083		
Standard Deviation	1.839609		
Variance	3.384161		
Coefficient of Variation	1.200724		
Skewness	1.184648		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.698413		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	2.485787		
Gamma Statistics			
k hat	0.868444		
k star (bias corrected)	0.706889		
Theta hat	1.76417		
Theta star	2.167361		
nu hat	20.84267		
nu star	16.96533		
5% Approximate Chi Square Value	8.646145		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	7.755352		
Anderson-Darling Test Statistic	1.119192		
Anderson-Darling 5% Critical Value	0.761402		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.292341		
Kolmogrov-Smirnov 5% Critical Value	0.253645		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	3.00623		
95% Adjusted Gamma UCL	3.351531		
Lognormal Statistics			
Minimum of log data	-1.537117		
Maximum of log data	1.568616		
Mean of log data	-0.249561		
Standard Deviation of log data	1.191576		
Variance of log data	1.419854		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.844657		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	1.584655		
MLE Standard Deviation	2.806458		
MLE Coefficient of Variation	1.771022		
MLE Skewness	10.86791		
MLE Median	0.779143		
MLE 80% Quantile	2.132557		
MLE 90% Quantile	3.602453		
MLE 95% Quantile	5.532184		
MLE 99% Quantile	12.45405		
MVU Estimate of Median	0.734186		
MVU Estimate of Mean	1.450515		
MVU Estimate of Standard Deviation	1.966845		
MVU Estimate of SE of Mean	0.540503		
95% H-UCL	5.138189		
95% Chebyshev (MVUE) UCL	3.806515		
97.5% Chebyshev (MVUE) UCL	4.825958		
99% Chebyshev (MVUE) UCL	6.828456		
Non-parametric Statistics			
95% CLT UCL	2.405582		
95% Adjusted-CLT UCL	2.599632		
95% Modified-t UCL	2.516055		
95% Jackknife UCL	2.485787		
95% Chebyshev (Mean, Sd) UCL	3.846874		
97.5% Chebyshev (Mean, Sd) UCL	4.848486		
99% Chebyshev (Mean, Sd) UCL	6.815958		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.395195		
95% Bootstrap-t UCL	2.800519		
95% Hall's Bootstrap UCL	2.168065		
95% Percentile Bootstrap UCL	2.420833		
95% BCA Bootstrap UCL	2.92125		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	6.815958	99% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - cb03.xls				
Variable:	Arsenic				
<b>Raw Statistics</b>					
Number of Observations	12				
Number of Missing Data	0				
Number of Valid Observations	12				
Number of Distinct Observations	12				
Minimum	9.1				
Maximum	1410				
Mean	272.4833				
Standard Deviation	396.1096				
Variance	156902.8				
Coefficient of Variation	1.453702				
Skewness	2.491637				
Too Few Distinct Observations?	NO				
<b>Normal Statistics</b>					
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result		
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result		
Shapiro-Wilk Test Statistic	0.673506				
Shapiro-Wilk 5% Critical Value	0.859				
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level		
95% Student's-t UCL	477.8373				
<b>Gamma Statistics</b>					
k hat	0.665204				
k star (bias corrected)	0.554459				
Theta hat	409.6235				
Theta star	491.4402				
nu hat	15.9649				
nu star	13.30701				
5% Approximate Chi Square Value	6.098653				
Adjusted Level of Significance	0.02896				
Adjusted Chi Square Value	5.371491				
Anderson-Darling Test Statistic	0.292071				
Anderson-Darling 5% Critical Value	0.77216				
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.		
Kolmogrov-Smirnov Test Statistic	0.134754				
Kolmogrov-Smirnov 5% Critical Value	0.256123				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level		
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level		
95% Approximate Gamma UCL	594.5475				
95% Adjusted Gamma UCL	675.034				
<b>Lognormal Statistics</b>					
Minimum of log data	2.208274				
Maximum of log data	7.251345				
Mean of log data	4.692516				
Standard Deviation of log data	1.543414				
Variance of log data	2.382128				
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result		
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result		
Shapiro-Wilk Test Statistic	0.963638				
Shapiro-Wilk 5% Critical Value	0.859				
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level		
MLE Mean	359.0924				
MLE Standard Deviation	1125.737				
MLE Coefficient of Variation	3.134952				
MLE Skewness	40.21491				
MLE Median	109.1274				
MLE 80% Quantile	402.1001				
MLE 90% Quantile	792.9842				
MLE 95% Quantile	1382.201				
MLE 99% Quantile	3954.058				
MVU Estimate of Median	98.73988				
MVU Estimate of Mean	300.9537				
MVU Estimate of Standard Deviation	567.5509				
MVU Estimate of SE of Mean	146.9312				
95% H-UCL	2294.99				
95% Chebyshev (MVUE) UCL	941.412				
97.5% Chebyshev (MVUE) UCL	1218.539				
99% Chebyshev (MVUE) UCL	1762.901				
<b>Non-parametric Statistics</b>					
95% CLT UCL	460.5674				
95% Adjusted-CLT UCL	548.4493				
95% Modified-t UCL	491.5451				
95% Jackknife UCL	477.8373				
95% Chebyshev (Mean, Sd) UCL	770.9103				
97.5% Chebyshev (Mean, Sd) UCL	986.5801				
99% Chebyshev (Mean, Sd) UCL	1410.222				
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	454.174				
95% Bootstrap-t UCL	738.6991				
95% Hall's Bootstrap UCL	1108.791				
95% Percentile Bootstrap UCL	457.5583				
95% BCA Bootstrap UCL	600.5833				
<b>Recommendations</b>					
Human Inspection Recommended?	NO				
Appropriate Distribution	GAMMA				
1st Recommended UCL	594.5475		95% Approximate Gamma UCL		
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value	NO				
Recommendation Warning!	NONE				
Alternative UCL	NONE				



Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - cb03.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	0.77		
Maximum	23.1		
Mean	7.389167		
Standard Deviation	7.044311		
Variance	49.62232		
Coefficient of Variation	0.95333		
Skewness	1.272407		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.856103		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	11.04113		
<b>Gamma Statistics</b>			
k hat	1.180644		
k star (bias corrected)	0.941039		
Theta hat	6.258589		
Theta star	7.85214		
nu hat	28.33546		
nu star	22.58493		
5% Approximate Chi Square Value	12.77611		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	11.66367		
Anderson-Darling Test Statistic	0.21647		
Anderson-Darling 5% Critical Value	0.752683		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.132214		
Kolmogrov-Smirnov 5% Critical Value	0.251328		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	13.06217		
95% Adjusted Gamma UCL	14.308		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.261365		
Maximum of log data	3.139833		
Mean of log data	1.520103		
Standard Deviation of log data	1.101985		
Variance of log data	1.21437		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.955269		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	8.392077		
MLE Standard Deviation	12.91446		
MLE Coefficient of Variation	1.538887		
MLE Skewness	8.26101		
MLE Median	4.572695		
MLE 80% Quantile	11.60319		
MLE 90% Quantile	18.84322		
MLE 95% Quantile	28.01858		
MLE 99% Quantile	59.34212		
MVU Estimate of Median	4.346215		
MVU Estimate of Mean	7.806491		
MVU Estimate of Standard Deviation	9.628224		
MVU Estimate of SE of Mean	2.675321		
95% H-UCL	23.52985		
95% Chebyshev (MVUE) UCL	19.46794		
97.5% Chebyshev (MVUE) UCL	24.51386		
99% Chebyshev (MVUE) UCL	34.42559		
<b>Non-parametric Statistics</b>			
95% CLT UCL	10.73401		
95% Adjusted-CLT UCL	11.53212		
95% Modified-t UCL	11.16562		
95% Jackknife UCL	11.04113		
95% Chebyshev (Mean, Sd) UCL	16.25306		
97.5% Chebyshev (Mean, Sd) UCL	20.08848		
99% Chebyshev (Mean, Sd) UCL	27.62241		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	10.52899		
95% Bootstrap-t UCL	12.8667		
95% Hall's Bootstrap UCL	13.02276		
95% Percentile Bootstrap UCL	10.8225		
95% BCA Bootstrap UCL	11.725		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	13.06217		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - cb03.xls		
Variable:	Chromium		
<b>Raw Statistics</b>			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	38.7		
Maximum	768		
Mean	456.7292		
Standard Deviation	300.6963		
Variance	90418.25		
Coefficient of Variation	0.658369		
Skewness	-0.51834		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.821362		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	612.6183		
<b>Gamma Statistics</b>			
k hat	1.273779		
k star (bias corrected)	1.01089		
Theta hat	358.5623		
Theta star	451.809		
nu hat	30.5707		
nu star	24.26136		
5% Approximate Chi Square Value	14.04586		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	12.87259		
Anderson-Darling Test Statistic	1.23704		
Anderson-Darling 5% Critical Value	0.750591		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.259852		
Kolmogrov-Smirnov 5% Critical Value	0.2508		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	788.9066		
95% Adjusted Gamma UCL	860.8115		
<b>Lognormal Statistics</b>			
Minimum of log data	3.65584		
Maximum of log data	6.64379		
Mean of log data	5.682751		
Standard Deviation of log data	1.199602		
Variance of log data	1.439045		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.756454		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	603.215		
MLE Standard Deviation	1081.871		
MLE Coefficient of Variation	1.793507		
MLE Skewness	11.14964		
MLE Median	293.7565		
MLE 80% Quantile	809.4985		
MLE 90% Quantile	1372.295		
MLE 95% Quantile	2113.492		
MLE 99% Quantile	4783.968		
MVU Estimate of Median	276.5831		
MVU Estimate of Mean	551.2946		
MVU Estimate of Standard Deviation	753.7162		
MVU Estimate of SE of Mean	206.9047		
95% H-UCL	1982.636		
95% Chebyshev (MVUE) UCL	1453.171		
97.5% Chebyshev (MVUE) UCL	1843.414		
99% Chebyshev (MVUE) UCL	2609.971		
<b>Non-parametric Statistics</b>			
95% CLT UCL	599.5083		
95% Adjusted-CLT UCL	585.6298		
95% Modified-t UCL	610.4535		
95% Jackknife UCL	612.6183		
95% Chebyshev (Mean, Sd) UCL	835.097		
97.5% Chebyshev (Mean, Sd) UCL	998.8171		
99% Chebyshev (Mean, Sd) UCL	1320.413		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	593.2412		
95% Bootstrap-t UCL	592.0945		
95% Hall's Bootstrap UCL	576.0426		
95% Percentile Bootstrap UCL	584.5833		
95% BCA Bootstrap UCL	632.0833		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	1320.413	99% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - cb03.xls				
Variable:	Copper				
Raw Statistics					
Number of Observations	12				
Number of Missing Data	0				
Number of Valid Observations	12				
Number of Distinct Observations	12				
Minimum	29.2				
Maximum	670				
Mean	269.0042				
Standard Deviation	207.1801				
Variance	42923.61				
Coefficient of Variation	0.770174				
Skewness	0.677516				
Too Few Distinct Observations?	NO				
Normal Statistics					
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.924821				
Shapiro-Wilk 5% Critical Value	0.859				
5% Normality Test Result	NORMAL				
95% Student's-t UCL	376.412				
Gamma Statistics					
k hat	1.368695				
k star (bias corrected)	1.082076				
Theta hat	196.5407				
Theta star	248.6				
nu hat	32.84867				
nu star	25.96984				
5% Approximate Chi Square Value	15.35431				
Adjusted Level of Significance	0.02896				
Adjusted Chi Square Value	14.12111				
Anderson-Darling Test Statistic	0.38949				
Anderson-Darling 5% Critical Value	0.748459				
Anderson-Darling 5% Gamma Test Result	AD GAMMA				
Kolmogrov-Smirnov Test Statistic	0.165803				
Kolmogrov-Smirnov 5% Critical Value	0.250263				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA				
5% Gamma Test Result	GAMMA				
95% Approximate Gamma UCL	454.9858				
95% Adjusted Gamma UCL	494.7199				
Lognormal Statistics					
Minimum of log data	3.374169				
Maximum of log data	6.507278				
Mean of log data	5.186891				
Standard Deviation of log data	1.082899				
Variance of log data	1.17267				
Lilliefors Test Statistic	N/R				
Lilliefors 5% Critical Value	N/R				
Shapiro-Wilk Test Statistic	0.884664				
Shapiro-Wilk 5% Critical Value	0.859				
5% Lognormality Test Result	LOGNORMAL				
MLE Mean	321.5737				
MLE Standard Deviation	480.2774				
MLE Coefficient of Variation	1.493522				
MLE Skewness	7.812029				
MLE Median	178.9115				
MLE 80% Quantile	446.7241				
MLE 90% Quantile	719.3995				
MLE 95% Quantile	1062.373				
MLE 99% Quantile	2221.004				
MVU Estimate of Median	170.3483				
MVU Estimate of Mean	300.0769				
MVU Estimate of Standard Deviation	362.4441				
MVU Estimate of SE of Mean	100.9253				
95% H-UCL	875.4024				
95% Chebyshev (MVUE) UCL	740				
97.5% Chebyshev (MVUE) UCL	930.3551				
99% Chebyshev (MVUE) UCL	1304.271				
Non-parametric Statistics					
95% CLT UCL	367.3792				
95% Adjusted-CLT UCL	379.8779				
95% Modified-t UCL	378.3616				
95% Jackknife UCL	376.412				
95% Chebyshev (Mean, Sd) UCL	529.7001				
97.5% Chebyshev (Mean, Sd) UCL	642.5035				
99% Chebyshev (Mean, Sd) UCL	864.0838				
Bootstrap Statistics					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	363.0177				
95% Bootstrap-t UCL	394.937				
95% Hall's Bootstrap UCL	409.0607				
95% Percentile Bootstrap UCL	364.6167				
95% BCA Bootstrap UCL	406.9417				
Recommendations					
Human Inspection Recommended?	NO				
Appropriate Distribution	NORMAL				
1st Recommended UCL	376.412				
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value	NO				
Recommendation Warning!	NONE				
Alternative UCL	NONE				



Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - cb03.xls	
Variable:	Manganese	
<b>Raw Statistics</b>		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	12	
Minimum	43.6	
Maximum	986	
Mean	283.05	
Standard Deviation	268.6257	
Variance	72159.75	
Coefficient of Variation	0.94904	
Skewness	1.886393	
Too Few Distinct Observations?	NO	
<b>Normal Statistics</b>		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.790516	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	422.3129	
<b>Gamma Statistics</b>		
k hat	1.53495	
k star (bias corrected)	1.206768	
Theta hat	184.4035	
Theta star	234.5522	
nu hat	36.83879	
nu star	28.96243	
5% Approximate Chi Square Value	17.67717	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	16.34343	
Anderson-Darling Test Statistic	0.332658	
Anderson-Darling 5% Critical Value	0.745231	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.174815	
Kolmogrov-Smirnov 5% Critical Value	0.249452	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	463.7515	
95% Adjusted Gamma UCL	501.597	
<b>Lognormal Statistics</b>		
Minimum of log data	3.775057	
Maximum of log data	6.893656	
Mean of log data	5.285791	
Standard Deviation of log data	0.889867	
Variance of log data	0.791863	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.974013	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	293.4543	
MLE Standard Deviation	322.4667	
MLE Coefficient of Variation	1.098865	
MLE Skewness	4.62348	
MLE Median	197.5103	
MLE 80% Quantile	418.9401	
MLE 90% Quantile	619.7209	
MLE 95% Quantile	853.7353	
MLE 99% Quantile	1564.968	
MVU Estimate of Median	191.0838	
MVU Estimate of Mean	281.2375	
MVU Estimate of Standard Deviation	270.1732	
MVU Estimate of SE of Mean	76.56386	
95% H-UCL	608.8832	
95% Chebyshev (MVUE) UCL	614.9716	
97.5% Chebyshev (MVUE) UCL	759.3786	
99% Chebyshev (MVUE) UCL	1043.038	
<b>Non-parametric Statistics</b>		
95% CLT UCL	410.6011	
95% Adjusted-CLT UCL	455.7221	
95% Modified-t UCL	429.3508	
95% Jackknife UCL	422.3129	
95% Chebyshev (Mean, Sd) UCL	621.0632	
97.5% Chebyshev (Mean, Sd) UCL	767.3218	
99% Chebyshev (Mean, Sd) UCL	1054.618	
<b>Bootstrap Statistics</b>		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	403.9	
95% Bootstrap-t UCL	527.2171	
95% Hall's Bootstrap UCL	1056.367	
95% Percentile Bootstrap UCL	410.9667	
95% BCA Bootstrap UCL	396.1333	
<b>Recommendations</b>		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	463.7515	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - cb03.xls				
Variable:	Mercury				
<b>Raw Statistics</b>					
Number of Observations	12				
Number of Missing Data	0				
Number of Valid Observations	12				
Number of Distinct Observations	11				
Minimum	0.058				
Maximum	3.6				
Mean	1.217792				
Standard Deviation	1.246107				
Variance	1.552782				
Coefficient of Variation	1.023251				
Skewness	0.971289				
Too Few Distinct Observations?	NO				
<b>Normal Statistics</b>					
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result		
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result		
Shapiro-Wilk Test Statistic	0.838481				
Shapiro-Wilk 5% Critical Value	0.859				
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level		
95% Student's-t UCL	1.863807				
<b>Gamma Statistics</b>					
k hat	0.81238				
k star (bias corrected)	0.664841				
Theta hat	1.499042				
Theta star	1.831705				
nu hat	19.49712				
nu star	15.95617				
5% Approximate Chi Square Value	7.93001				
Adjusted Level of Significance	0.02896				
Adjusted Chi Square Value	7.082548				
Anderson-Darling Test Statistic	0.333024				
Anderson-Darling 5% Critical Value	0.763389				
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.		
Kolmogrov-Smirnov Test Statistic	0.146352				
Kolmogrov-Smirnov 5% Critical Value	0.254196				
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level		
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level		
95% Approximate Gamma UCL	2.450349				
95% Adjusted Gamma UCL	2.743545				
<b>Lognormal Statistics</b>					
Minimum of log data	-2.847312				
Maximum of log data	1.280934				
Mean of log data	-0.53205				
Standard Deviation of log data	1.469845				
Variance of log data	2.160446				
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result		
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result		
Shapiro-Wilk Test Statistic	0.908803				
Shapiro-Wilk 5% Critical Value	0.859				
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level		
MLE Mean	1.730089				
MLE Standard Deviation	4.793004				
MLE Coefficient of Variation	2.770379				
MLE Skewness	29.5738				
MLE Median	0.5874				
MLE 80% Quantile	2.03393				
MLE 90% Quantile	3.883364				
MLE 95% Quantile	6.591929				
MLE 99% Quantile	17.93602				
MVU Estimate of Median	0.536493				
MVU Estimate of Mean	1.482327				
MVU Estimate of Standard Deviation	2.621149				
MVU Estimate of SE of Mean	0.688559				
95% H-UCL	9.458424				
95% Chebyshev (MVUE) UCL	4.483688				
97.5% Chebyshev (MVUE) UCL	5.78238				
99% Chebyshev (MVUE) UCL	8.333408				
<b>Non-parametric Statistics</b>					
95% CLT UCL	1.809478				
95% Adjusted-CLT UCL	1.91725				
95% Modified-t UCL	1.880617				
95% Jackknife UCL	1.863807				
95% Chebyshev (Mean, Sd) UCL	2.785775				
97.5% Chebyshev (Mean, Sd) UCL	3.464242				
99% Chebyshev (Mean, Sd) UCL	4.796961				
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs	2000				
95% Standard Bootstrap UCL	1.797741				
95% Bootstrap-t UCL	2.071307				
95% Hall's Bootstrap UCL	1.780625				
95% Percentile Bootstrap UCL	1.791542				
95% BCA Bootstrap UCL	1.650042				
<b>Recommendations</b>					
Human Inspection Recommended?	NO				
Appropriate Distribution	GAMMA				
1st Recommended UCL	2.450349		95% Approximate Gamma UCL		
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value	NO				
Recommendation Warning!	NONE				
Alternative UCL	NONE				

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - cb03.xls		
Variable:	Nickel		
<b>Raw Statistics</b>			
Number of Observations	12		
Number of Missing Data	0		
Number of Valid Observations	12		
Number of Distinct Observations	12		
Minimum	8.7		
Maximum	78.3		
Mean	25.55		
Standard Deviation	19.31695		
Variance	373.1445		
Coefficient of Variation	0.756045		
Skewness	2.056624		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.778166		
Shapiro-Wilk 5% Critical Value	0.859		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	35.56443		
<b>Gamma Statistics</b>			
k hat	2.627458		
k star (bias corrected)	2.026149		
Theta hat	9.724229		
Theta star	12.61013		
nu hat	63.05899		
nu star	48.62757		
5% Approximate Chi Square Value	33.61746		
Adjusted Level of Significance	0.02896		
Adjusted Chi Square Value	31.7215		
Anderson-Darling Test Statistic	0.402848		
Anderson-Darling 5% Critical Value	0.739945		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.19834		
Kolmogrov-Smirnov 5% Critical Value	0.247835		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	36.95802		
95% Adjusted Gamma UCL	39.16695		
<b>Lognormal Statistics</b>			
Minimum of log data	2.163323		
Maximum of log data	4.360548		
Mean of log data	3.038432		
Standard Deviation of log data	0.637109		
Variance of log data	0.405908		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.955317		
Shapiro-Wilk 5% Critical Value	0.859		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	25.56915		
MLE Standard Deviation	18.09214		
MLE Coefficient of Variation	0.707577		
MLE Skewness	2.476989		
MLE Median	20.8725		
MLE 80% Quantile	35.75856		
MLE 90% Quantile	47.32875		
MLE 95% Quantile	59.52981		
MLE 99% Quantile	91.86762		
MVU Estimate of Median	20.522		
MVU Estimate of Mean	25.07561		
MVU Estimate of Standard Deviation	16.64292		
MVU Estimate of SE of Mean	4.777814		
95% H-UCL	39.94639		
95% Chebyshev (MVUE) UCL	45.90162		
97.5% Chebyshev (MVUE) UCL	54.91305		
99% Chebyshev (MVUE) UCL	72.61426		
<b>Non-parametric Statistics</b>			
95% CLT UCL	34.72224		
95% Adjusted-CLT UCL	38.2597		
95% Modified-t UCL	36.11621		
95% Jackknife UCL	35.56443		
95% Chebyshev (Mean, Sd) UCL	49.85663		
97.5% Chebyshev (Mean, Sd) UCL	60.37413		
99% Chebyshev (Mean, Sd) UCL	81.03371		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	34.2413		
95% Bootstrap-t UCL	44.36177		
95% Hall's Bootstrap UCL	73.74248		
95% Percentile Bootstrap UCL	35.49167		
95% BCA Bootstrap UCL	41.5		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	36.95802		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - cb03.xls	
Variable:	Thallium	
<b>Raw Statistics</b>		
Number of Observations	11	
Number of Missing Data	0	
Number of Valid Observations	11	
Number of Distinct Observations	10	
Minimum	0.24	
Maximum	1.5	
Mean	0.705455	
Standard Deviation	0.480273	
Variance	0.230662	
Coefficient of Variation	0.6808	
Skewness	0.648495	
Too Few Distinct Observations?	NO	
<b>Normal Statistics</b>		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.853829	
Shapiro-Wilk 5% Critical Value	0.85	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	0.967913	
<b>Gamma Statistics</b>		
k hat	2.37187	
k star (bias corrected)	1.785602	
Theta hat	0.297426	
Theta star	0.395079	
nu hat	52.18113	
nu star	39.28325	
5% Approximate Chi Square Value	25.92337	
Adjusted Level of Significance	0.02783	
Adjusted Chi Square Value	24.16594	
Anderson-Darling Test Statistic	0.570246	
Anderson-Darling 5% Critical Value	0.736906	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.197183	
Kolmogrov-Smirnov 5% Critical Value	0.257945	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.069018	
95% Adjusted Gamma UCL	1.146761	
<b>Lognormal Statistics</b>		
Minimum of log data	-1.427116	
Maximum of log data	0.405465	
Mean of log data	-0.574286	
Standard Deviation of log data	0.714432	
Variance of log data	0.510413	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.88538	
Shapiro-Wilk 5% Critical Value	0.85	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.726818	
MLE Standard Deviation	0.593139	
MLE Coefficient of Variation	0.816076	
MLE Skewness	2.991718	
MLE Median	0.563107	
MLE 80% Quantile	1.029846	
MLE 90% Quantile	1.41024	
MLE 95% Quantile	1.823861	
MLE 99% Quantile	2.9668	
MVU Estimate of Median	0.550168	
MVU Estimate of Mean	0.707104	
MVU Estimate of Standard Deviation	0.528524	
MVU Estimate of SE of Mean	0.158105	
95% H-UCL	1.277476	
95% Chebyshev (MVUE) UCL	1.396269	
97.5% Chebyshev (MVUE) UCL	1.694471	
99% Chebyshev (MVUE) UCL	2.280231	
<b>Non-parametric Statistics</b>		
95% CLT UCL	0.943642	
95% Adjusted-CLT UCL	0.973896	
95% Modified-t UCL	0.972632	
95% Jackknife UCL	0.967913	
95% Chebyshev (Mean, Sd) UCL	1.336657	
97.5% Chebyshev (Mean, Sd) UCL	1.609779	
99% Chebyshev (Mean, Sd) UCL	2.146274	
<b>Bootstrap Statistics</b>		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.933513	
95% Bootstrap-t UCL	1.010997	
95% Hall's Bootstrap UCL	0.934803	
95% Percentile Bootstrap UCL	0.935455	
95% BCA Bootstrap UCL	1.034091	
<b>Recommendations</b>		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	0.967913	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - cb03.xls	
Variable:	Vanadium	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	11	
Minimum	13.5	
Maximum	97.4	
Mean	47.02917	
Standard Deviation	29.66972	
Variance	880.292	
Coefficient of Variation	0.630879	
Skewness	0.662133	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.894698	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	62.41076	
Gamma Statistics		
k hat	2.65325	
k star (bias corrected)	2.045493	
Theta hat	17.72511	
Theta star	22.9916	
nu hat	63.67801	
nu star	49.09184	
5% Approximate Chi Square Value	34.00411	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	32.0964	
Anderson-Darling Test Statistic	0.323019	
Anderson-Darling 5% Critical Value	0.73988	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.158434	
Kolmogrov-Smirnov 5% Critical Value	0.247805	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	67.89616	
95% Adjusted Gamma UCL	71.9317	
Lognormal Statistics		
Minimum of log data	2.60269	
Maximum of log data	4.578826	
Mean of log data	3.65064	
Standard Deviation of log data	0.681607	
Variance of log data	0.464588	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.939692	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	48.56653	
MLE Standard Deviation	37.34759	
MLE Coefficient of Variation	0.768999	
MLE Skewness	2.76175	
MLE Median	38.49932	
MLE 80% Quantile	68.48388	
MLE 90% Quantile	92.43499	
MLE 95% Quantile	118.1416	
MLE 99% Quantile	187.9279	
MVU Estimate of Median	37.76013	
MVU Estimate of Mean	47.47555	
MVU Estimate of Standard Deviation	33.90025	
MVU Estimate of SE of Mean	9.716771	
95% H-UCL	79.31564	
95% Chebyshev (MVUE) UCL	89.82997	
97.5% Chebyshev (MVUE) UCL	108.1568	
99% Chebyshev (MVUE) UCL	144.1562	
Non-parametric Statistics		
95% CLT UCL	61.11719	
95% Adjusted-CLT UCL	62.86646	
95% Modified-t UCL	62.68361	
95% Jackknife UCL	62.41076	
95% Chebyshev (Mean, Sd) UCL	84.36274	
97.5% Chebyshev (Mean, Sd) UCL	100.517	
99% Chebyshev (Mean, Sd) UCL	132.2489	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	60.46185	
95% Bootstrap-t UCL	64.74248	
95% Hall's Bootstrap UCL	64.74486	
95% Percentile Bootstrap UCL	60.72083	
95% BCA Bootstrap UCL	66.67083	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	62.41076	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-supplemental\HHRA\Statistics\HH - June 2004\Sed stat - cb03.xls	
Variable:	Zinc	
<b>Raw Statistics</b>		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	12	
Minimum	135	
Maximum	5270	
Mean	1147.75	
Standard Deviation	1444.971	
Variance	2087940	
Coefficient of Variation	1.258959	
Skewness	2.479108	
Too Few Distinct Observations?	NO	
<b>Normal Statistics</b>		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.674072	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1896.862	
<b>Gamma Statistics</b>		
k hat	1.062805	
k star (bias corrected)	0.852659	
Theta hat	1079.926	
Theta star	1346.083	
nu hat	25.50731	
nu star	20.46382	
5% Approximate Chi Square Value	11.19226	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	10.15998	
Anderson-Darling Test Statistic	0.513493	
Anderson-Darling 5% Critical Value	0.755329	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.208201	
Kolmogrov-Smirnov 5% Critical Value	0.251995	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	2098.535	
95% Adjusted Gamma UCL	2311.751	
<b>Lognormal Statistics</b>		
Minimum of log data	4.905275	
Maximum of log data	8.569786	
Mean of log data	6.506253	
Standard Deviation of log data	1.068939	
Variance of log data	1.142631	
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.95399	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1185.083	
MLE Standard Deviation	1731.603	
MLE Coefficient of Variation	1.461166	
MLE Skewness	7.503092	
MLE Median	669.3137	
MLE 80% Quantile	1651.611	
MLE 90% Quantile	2643.448	
MLE 95% Quantile	3884.143	
MLE 99% Quantile	8043.383	
MVU Estimate of Median	638.0823	
MVU Estimate of Mean	1108.34	
MVU Estimate of Standard Deviation	1318.145	
MVU Estimate of SE of Mean	367.605	
95% H-UCL	3158.155	
95% Chebyshev (MVUE) UCL	2710.693	
97.5% Chebyshev (MVUE) UCL	3404.032	
99% Chebyshev (MVUE) UCL	4765.963	
<b>Non-parametric Statistics</b>		
95% CLT UCL	1833.863	
95% Adjusted-CLT UCL	2152.836	
95% Modified-t UCL	1946.615	
95% Jackknife UCL	1896.862	
95% Chebyshev (Mean, Sd) UCL	2965.965	
97.5% Chebyshev (Mean, Sd) UCL	3752.708	
99% Chebyshev (Mean, Sd) UCL	5298.112	
<b>Bootstrap Statistics</b>		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1796.529	
95% Bootstrap-t UCL	3299.638	
95% Hall's Bootstrap UCL	4913.88	
95% Percentile Bootstrap UCL	1864.833	
95% BCA Bootstrap UCL	2337.417	
<b>Recommendations</b>		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	2098.535	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	NO	
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.67		
Maximum	7.2		
Mean	3.552		
Standard Deviation	2.102231		
Variance	4.419373		
Coefficient of Variation	0.591844		
Skewness	0.625019		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.924508		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	4.770623		
<b>Gamma Statistics</b>			
k hat	2.711022		
k star (bias corrected)	1.964382		
Theta hat	1.310207		
Theta star	1.808202		
nu hat	54.22045		
nu star	39.28765		
5% Approximate Chi Square Value	25.92695		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	24.05485		
Anderson-Darling Test Statistic	0.302775		
Anderson-Darling 5% Critical Value	0.733163		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.204755		
Kolmogrov-Smirnov 5% Critical Value	0.268843		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	5.38242		
95% Adjusted Gamma UCL	5.801312		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.400478		
Maximum of log data	1.974081		
Mean of log data	1.071886		
Standard Deviation of log data	0.719937		
Variance of log data	0.518309		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.922905		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	3.784978		
MLE Standard Deviation	3.119303		
MLE Coefficient of Variation	0.824127		
MLE Skewness	3.032117		
MLE Median	2.920882		
MLE 80% Quantile	5.366802		
MLE 90% Quantile	7.366954		
MLE 95% Quantile	9.546566		
MLE 99% Quantile	15.58733		
MVU Estimate of Median	2.845984		
MVU Estimate of Mean	3.670773		
MVU Estimate of Standard Deviation	2.748446		
MVU Estimate of SE of Mean	0.862678		
95% H-UCL	7.007036		
95% Chebyshev (MVUE) UCL	7.431101		
97.5% Chebyshev (MVUE) UCL	9.058197		
99% Chebyshev (MVUE) UCL	12.25431		
<b>Non-parametric Statistics</b>			
95% CLT UCL	4.645472		
95% Adjusted-CLT UCL	4.785868		
95% Modified-t UCL	4.792522		
95% Jackknife UCL	4.770623		
95% Chebyshev (Mean, Sd) UCL	6.449725		
97.5% Chebyshev (Mean, Sd) UCL	7.703573		
99% Chebyshev (Mean, Sd) UCL	10.16651		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	4.603468		
95% Bootstrap-t UCL	5.112999		
95% Hall's Bootstrap UCL	5.837533		
95% Percentile Bootstrap UCL	4.565		
95% BCA Bootstrap UCL	5.042		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	4.770623	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	16.5		
Maximum	325.5		
Mean	111.5		
Standard Deviation	86.92611		
Variance	7556.149		
Coefficient of Variation	0.779606		
Skewness	1.781958		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.835024		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	161.8894		
<b>Gamma Statistics</b>			
k hat	2.014207		
k star (bias corrected)	1.476611		
Theta hat	55.35679		
Theta star	75.51074		
nu hat	40.28413		
nu star	29.53222		
5% Approximate Chi Square Value	18.12349		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	16.58683		
Anderson-Darling Test Statistic	0.240184		
Anderson-Darling 5% Critical Value	0.735532		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.146876		
Kolmogrov-Smirnov 5% Critical Value	0.269791		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	181.6892		
95% Adjusted Gamma UCL	198.5216		
<b>Lognormal Statistics</b>			
Minimum of log data	2.80336		
Maximum of log data	5.785362		
Mean of log data	4.445705		
Standard Deviation of log data	0.817036		
Variance of log data	0.667548		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.961887		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	119.0424		
MLE Standard Deviation	115.9946		
MLE Coefficient of Variation	0.974398		
MLE Skewness	3.848337		
MLE Median	85.25999		
MLE 80% Quantile	170.0514		
MLE 90% Quantile	243.6169		
MLE 95% Quantile	326.9246		
MLE 99% Quantile	570.2822		
MVU Estimate of Median	82.45279		
MVU Estimate of Mean	114.2476		
MVU Estimate of Standard Deviation	98.08115		
MVU Estimate of SE of Mean	30.654		
95% H-UCL	251.1811		
95% Chebyshev (MVUE) UCL	247.8653		
97.5% Chebyshev (MVUE) UCL	305.6818		
99% Chebyshev (MVUE) UCL	419.2511		
<b>Non-parametric Statistics</b>			
95% CLT UCL	156.7145		
95% Adjusted-CLT UCL	173.2656		
95% Modified-t UCL	164.4711		
95% Jackknife UCL	161.8894		
95% Chebyshev (Mean, Sd) UCL	231.3194		
97.5% Chebyshev (Mean, Sd) UCL	283.1653		
99% Chebyshev (Mean, Sd) UCL	385.0066		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	154.1205		
95% Bootstrap-t UCL	193.1109		
95% Hall's Bootstrap UCL	364.3304		
95% Percentile Bootstrap UCL	155.21		
95% BCA Bootstrap UCL	146.56		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	181.6892		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	20.9		
Maximum	109		
Mean	61.155		
Standard Deviation	26.69141		
Variance	712.4314		
Coefficient of Variation	0.436455		
Skewness	0.176658		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.94909		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	76.62751		
<b>Gamma Statistics</b>			
k hat	5.105969		
k star (bias corrected)	3.640845		
Theta hat	11.97716		
Theta star	16.79693		
nu hat	102.1194		
nu star	72.8169		
5% Approximate Chi Square Value	54.16371		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	51.37686		
Anderson-Darling Test Statistic	0.407864		
Anderson-Darling 5% Critical Value	0.729357		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.239259		
Kolmogrov-Smirnov 5% Critical Value	0.267413		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	82.21589		
95% Adjusted Gamma UCL	86.67555		
<b>Lognormal Statistics</b>			
Minimum of log data	3.039749		
Maximum of log data	4.691348		
Mean of log data	4.012303		
Standard Deviation of log data	0.4996		
Variance of log data	0.2496		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.924658		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	62.62114		
MLE Standard Deviation	33.34318		
MLE Coefficient of Variation	0.532459		
MLE Skewness	1.748335		
MLE Median	55.274		
MLE 80% Quantile	84.307		
MLE 90% Quantile	105.0345		
MLE 95% Quantile	125.731		
MLE 99% Quantile	176.6858		
MVU Estimate of Median	54.58769		
MVU Estimate of Mean	61.77518		
MVU Estimate of Standard Deviation	31.47502		
MVU Estimate of SE of Mean	9.934264		
95% H-UCL	90.6235		
95% Chebyshev (MVUE) UCL	105.0776		
97.5% Chebyshev (MVUE) UCL	123.8146		
99% Chebyshev (MVUE) UCL	160.6199		
<b>Non-parametric Statistics</b>			
95% CLT UCL	75.03849		
95% Adjusted-CLT UCL	75.54233		
95% Modified-t UCL	76.7061		
95% Jackknife UCL	76.62751		
95% Chebyshev (Mean, Sd) UCL	97.94657		
97.5% Chebyshev (Mean, Sd) UCL	113.8663		
99% Chebyshev (Mean, Sd) UCL	145.1376		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	74.47526		
95% Bootstrap-t UCL	77.35776		
95% Hall's Bootstrap UCL	75.51599		
95% Percentile Bootstrap UCL	74.66		
95% BCA Bootstrap UCL	71.32		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	76.62751	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.41		
Maximum	8.9		
Mean	3.954		
Standard Deviation	3.038308		
Variance	9.231316		
Coefficient of Variation	0.768414		
Skewness	0.447734		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.904072		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	5.71525		
<b>Gamma Statistics</b>			
k hat	1.447277		
k star (bias corrected)	1.079761		
Theta hat	2.732027		
Theta star	3.661923		
nu hat	28.94554		
nu star	21.59521		
5% Approximate Chi Square Value	12.03373		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	10.8126		
Anderson-Darling Test Statistic	0.306857		
Anderson-Darling 5% Critical Value	0.740183		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.177483		
Kolmogrov-Smirnov 5% Critical Value	0.271397		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	7.095675		
95% Adjusted Gamma UCL	7.897034		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.891598		
Maximum of log data	2.186051		
Mean of log data	0.991061		
Standard Deviation of log data	1.040015		
Variance of log data	1.081632		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.920448		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	4.626853		
MLE Standard Deviation	6.460203		
MLE Coefficient of Variation	1.396241		
MLE Skewness	6.910682		
MLE Median	2.694091		
MLE 80% Quantile	6.487478		
MLE 90% Quantile	10.25208		
MLE 95% Quantile	14.90783		
MLE 99% Quantile	30.26939		
MVU Estimate of Median	2.551574		
MVU Estimate of Mean	4.298088		
MVU Estimate of Standard Deviation	4.823512		
MVU Estimate of SE of Mean	1.484749		
95% H-UCL	13.96042		
95% Chebyshev (MVUE) UCL	10.76996		
97.5% Chebyshev (MVUE) UCL	13.57034		
99% Chebyshev (MVUE) UCL	19.07116		
<b>Non-parametric Statistics</b>			
95% CLT UCL	5.534371		
95% Adjusted-CLT UCL	5.679727		
95% Modified-t UCL	5.737922		
95% Jackknife UCL	5.71525		
95% Chebyshev (Mean, Sd) UCL	8.142019		
97.5% Chebyshev (Mean, Sd) UCL	9.954178		
99% Chebyshev (Mean, Sd) UCL	13.51381		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	5.470836		
95% Bootstrap-t UCL	5.840504		
95% Hall's Bootstrap UCL	5.427854		
95% Percentile Bootstrap UCL	5.493		
95% BCA Bootstrap UCL	5.175		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	5.71525		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	35.2		
Maximum	568		
Mean	167.14		
Standard Deviation	151.8836		
Variance	23068.62		
Coefficient of Variation	0.908721		
Skewness	2.396135		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.71453		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	255.184		
Gamma Statistics			
k hat	2.015626		
k star (bias corrected)	1.477605		
Theta hat	82.92212		
Theta star	113.1155		
nu hat	40.31252		
nu star	29.5521		
5% Approximate Chi Square Value	18.13908		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	16.60169		
Anderson-Darling Test Statistic	0.458743		
Anderson-Darling 5% Critical Value	0.735527		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.232449		
Kolmogrov-Smirnov 5% Critical Value	0.269789		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	272.3036		
95% Adjusted Gamma UCL	297.5203		
Lognormal Statistics			
Minimum of log data	3.561046		
Maximum of log data	6.342121		
Mean of log data	4.850715		
Standard Deviation of log data	0.743752		
Variance of log data	0.553167		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.963704		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	168.5611		
MLE Standard Deviation	144.8792		
MLE Coefficient of Variation	0.859506		
MLE Skewness	3.213477		
MLE Median	127.8318		
MLE 80% Quantile	239.6514		
MLE 90% Quantile	332.4322		
MLE 95% Quantile	434.4959		
MLE 99% Quantile	721.0305		
MVU Estimate of Median	124.3359		
MVU Estimate of Mean	163.0859		
MVU Estimate of Standard Deviation	126.4555		
MVU Estimate of SE of Mean	39.65469		
95% H-UCL	321.7919		
95% Chebyshev (MVUE) UCL	335.9367		
97.5% Chebyshev (MVUE) UCL	410.7294		
99% Chebyshev (MVUE) UCL	557.6452		
Non-parametric Statistics			
95% CLT UCL	246.142		
95% Adjusted-CLT UCL	285.0288		
95% Modified-t UCL	261.2496		
95% Jackknife UCL	255.184		
95% Chebyshev (Mean, Sd) UCL	376.4971		
97.5% Chebyshev (Mean, Sd) UCL	467.086		
99% Chebyshev (Mean, Sd) UCL	645.0305		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	241.9773		
95% Bootstrap-t UCL	369.9794		
95% Hall's Bootstrap UCL	554.2847		
95% Percentile Bootstrap UCL	253.71		
95% BCA Bootstrap UCL	306.02		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	272.3036	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Copper		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	47.7		
Maximum	358		
Mean	184.6		
Standard Deviation	102.9918		
Variance	10607.31		
Coefficient of Variation	0.557919		
Skewness	0.463704		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.94675		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	244.3024		
<b>Gamma Statistics</b>			
k hat	3.091065		
k star (bias corrected)	2.230412		
Theta hat	59.72051		
Theta star	82.76496		
nu hat	61.82131		
nu star	44.60825		
5% Approximate Chi Square Value	30.28637		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	28.2486		
Anderson-Darling Test Statistic	0.235038		
Anderson-Darling 5% Critical Value	0.731926		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.136886		
Kolmogrov-Smirnov 5% Critical Value	0.268393		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	271.894		
95% Adjusted Gamma UCL	291.5076		
<b>Lognormal Statistics</b>			
Minimum of log data	3.864931		
Maximum of log data	5.880533		
Mean of log data	5.0478		
Standard Deviation of log data	0.659653		
Variance of log data	0.435142		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.931705		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	193.5181		
MLE Standard Deviation	142.8869		
MLE Coefficient of Variation	0.738364		
MLE Skewness	2.617637		
MLE Median	155.6796		
MLE 80% Quantile	271.8381		
MLE 90% Quantile	363.3818		
MLE 95% Quantile	460.7838		
MLE 99% Quantile	722.092		
MVU Estimate of Median	152.3225		
MVU Estimate of Mean	188.7195		
MVU Estimate of Standard Deviation	128.7072		
MVU Estimate of SE of Mean	40.48092		
95% H-UCL	332.668		
95% Chebyshev (MVUE) UCL	365.1717		
97.5% Chebyshev (MVUE) UCL	441.5227		
99% Chebyshev (MVUE) UCL	591.4995		
<b>Non-parametric Statistics</b>			
95% CLT UCL	238.171		
95% Adjusted-CLT UCL	243.274		
95% Modified-t UCL	245.0984		
95% Jackknife UCL	244.3024		
95% Chebyshev (Mean, Sd) UCL	326.5644		
97.5% Chebyshev (Mean, Sd) UCL	387.9925		
99% Chebyshev (Mean, Sd) UCL	508.6561		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	234.6158		
95% Bootstrap-t UCL	251.2687		
95% Hall's Bootstrap UCL	263.77		
95% Percentile Bootstrap UCL	235.6		
95% BCA Bootstrap UCL	259.17		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	244.3024		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	59.6		
Maximum	409		
Mean	208.46		
Standard Deviation	115.7264		
Variance	13392.6		
Coefficient of Variation	0.555149		
Skewness	0.564448		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.940433		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	275.5444		
<b>Gamma Statistics</b>			
k hat	3.417273		
k star (bias corrected)	2.458758		
Theta hat	61.00186		
Theta star	84.78265		
nu hat	68.34546		
nu star	49.17516		
5% Approximate Chi Square Value	34.07353		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	31.90118		
Anderson-Darling Test Statistic	0.201961		
Anderson-Darling 5% Critical Value	0.731016		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.160626		
Kolmogrov-Smirnov 5% Critical Value	0.268187		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	300.8509		
95% Adjusted Gamma UCL	321.3378		
<b>Lognormal Statistics</b>			
Minimum of log data	4.087656		
Maximum of log data	6.013715		
Mean of log data	5.186354		
Standard Deviation of log data	0.606321		
Variance of log data	0.367625		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.965655		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	214.8988		
MLE Standard Deviation	143.2427		
MLE Coefficient of Variation	0.666559		
MLE Skewness	2.295829		
MLE Median	178.8155		
MLE 80% Quantile	298.4778		
MLE 90% Quantile	389.7389		
MLE 95% Quantile	484.8078		
MLE 99% Quantile	732.642		
MVU Estimate of Median	175.5532		
MVU Estimate of Mean	210.4775		
MVU Estimate of Standard Deviation	131.2965		
MVU Estimate of SE of Mean	41.35535		
95% H-UCL	347.4969		
95% Chebyshev (MVUE) UCL	390.7413		
97.5% Chebyshev (MVUE) UCL	468.7416		
99% Chebyshev (MVUE) UCL	621.958		
<b>Non-parametric Statistics</b>			
95% CLT UCL	268.6549		
95% Adjusted-CLT UCL	275.6346		
95% Modified-t UCL	276.6331		
95% Jackknife UCL	275.5444		
95% Chebyshev (Mean, Sd) UCL	367.9779		
97.5% Chebyshev (Mean, Sd) UCL	437.0014		
99% Chebyshev (Mean, Sd) UCL	572.5847		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	266.962		
95% Bootstrap-t UCL	289.9437		
95% Hall's Bootstrap UCL	279.5651		
95% Percentile Bootstrap UCL	270.8		
95% BCA Bootstrap UCL	292.36		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	275.5444	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	72.5		
Maximum	2410		
Mean	403.9		
Standard Deviation	708.4401		
Variance	501887.4		
Coefficient of Variation	1.753999		
Skewness	3.103507		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.45931		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	814.5694		
<b>Gamma Statistics</b>			
k hat	0.94253		
k star (bias corrected)	0.726438		
Theta hat	428.5274		
Theta star	556.0008		
nu hat	18.8506		
nu star	14.52876		
5% Approximate Chi Square Value	6.933766		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	6.044942		
Anderson-Darling Test Statistic	1.598857		
Anderson-Darling 5% Critical Value	0.75027		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.35604		
Kolmogrov-Smirnov 5% Critical Value	0.274263		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	846.3171		
95% Adjusted Gamma UCL	970.7562		
<b>Lognormal Statistics</b>			
Minimum of log data	4.283587		
Maximum of log data	7.787382		
Mean of log data	5.384417		
Standard Deviation of log data	0.94019		
Variance of log data	0.883958		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.788963		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	339.1344		
MLE Standard Deviation	404.1908		
MLE Coefficient of Variation	1.191831		
MLE Skewness	5.268442		
MLE Median	217.9831		
MLE 80% Quantile	482.4505		
MLE 90% Quantile	729.6479		
MLE 95% Quantile	1023.548		
MLE 99% Quantile	1941.663		
MVU Estimate of Median	208.5211		
MVU Estimate of Mean	320.1786		
MVU Estimate of Standard Deviation	320.8366		
MVU Estimate of SE of Mean	99.5321		
95% H-UCL	863.3774		
95% Chebyshev (MVUE) UCL	754.029		
97.5% Chebyshev (MVUE) UCL	941.7564		
99% Chebyshev (MVUE) UCL	1310.511		
<b>Non-parametric Statistics</b>			
95% CLT UCL	772.394		
95% Adjusted-CLT UCL	1007.323		
95% Modified-t UCL	851.2135		
95% Jackknife UCL	814.5694		
95% Chebyshev (Mean, Sd) UCL	1380.417		
97.5% Chebyshev (Mean, Sd) UCL	1802.957		
99% Chebyshev (Mean, Sd) UCL	2632.955		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	736.0551		
95% Bootstrap-t UCL	3473.236		
95% Hall's Bootstrap UCL	2546.559		
95% Percentile Bootstrap UCL	844.2		
95% BCA Bootstrap UCL	1075.3		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	1380.417		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.18		
Maximum	2.2		
Mean	0.727		
Standard Deviation	0.623094		
Variance	0.388246		
Coefficient of Variation	0.857075		
Skewness	1.658683		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.82072		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	1.088196		
<b>Gamma Statistics</b>			
k hat	1.860757		
k star (bias corrected)	1.369196		
Theta hat	0.390701		
Theta star	0.530968		
nu hat	37.21514		
nu star	27.38393		
5% Approximate Chi Square Value	16.44731		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	14.99151		
Anderson-Darling Test Statistic	0.314126		
Anderson-Darling 5% Critical Value	0.736596		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.199285		
Kolmogrov-Smirnov 5% Critical Value	0.270175		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.210417		
95% Adjusted Gamma UCL	1.32796		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.714798		
Maximum of log data	0.788457		
Mean of log data	-0.610985		
Standard Deviation of log data	0.796659		
Variance of log data	0.634666		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.966813		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.745536		
MLE Standard Deviation	0.70191		
MLE Coefficient of Variation	0.941484		
MLE Skewness	3.658977		
MLE Median	0.542816		
MLE 80% Quantile	1.064167		
MLE 90% Quantile	1.510925		
MLE 95% Quantile	2.012785		
MLE 99% Quantile	3.462686		
MVU Estimate of Median	0.525812		
MVU Estimate of Mean	0.717203		
MVU Estimate of Standard Deviation	0.599024		
MVU Estimate of SE of Mean	0.187406		
95% H-UCL	1.528608		
95% Chebyshev (MVUE) UCL	1.534087		
97.5% Chebyshev (MVUE) UCL	1.887553		
99% Chebyshev (MVUE) UCL	2.581868		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.051101		
95% Adjusted-CLT UCL	1.161534		
95% Modified-t UCL	1.105421		
95% Jackknife UCL	1.088196		
95% Chebyshev (Mean, Sd) UCL	1.585875		
97.5% Chebyshev (Mean, Sd) UCL	1.957511		
99% Chebyshev (Mean, Sd) UCL	2.687518		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.038456		
95% Bootstrap-t UCL	1.353263		
95% Hall's Bootstrap UCL	2.092055		
95% Percentile Bootstrap UCL	1.059		
95% BCA Bootstrap UCL	1.274		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.210417		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	10.1		
Maximum	177		
Mean	41.315		
Standard Deviation	50.48805		
Variance	2549.043		
Coefficient of Variation	1.222027		
Skewness	2.582024		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.642328		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	70.58197		
Gamma Statistics			
k hat	1.304937		
k star (bias corrected)	0.980123		
Theta hat	31.66052		
Theta star	42.15288		
nu hat	26.09875		
nu star	19.60246		
5% Approximate Chi Square Value	10.55714		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	9.423678		
Anderson-Darling Test Statistic	0.680124		
Anderson-Darling 5% Critical Value	0.742757		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.250725		
Kolmogrov-Smirnov 5% Critical Value	0.272146		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	76.71356		
95% Adjusted Gamma UCL	85.94049		
Lognormal Statistics			
Minimum of log data	2.312535		
Maximum of log data	5.17615		
Mean of log data	3.291465		
Standard Deviation of log data	0.89191		
Variance of log data	0.795504		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.909885		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	40.01353		
MLE Standard Deviation	44.11585		
MLE Coefficient of Variation	1.102524		
MLE Skewness	4.647752		
MLE Median	26.88223		
MLE 80% Quantile	57.1186		
MLE 90% Quantile	84.56922		
MLE 95% Quantile	116.5894		
MLE 99% Quantile	214.0157		
MVU Estimate of Median	25.83022		
MVU Estimate of Mean	38.03763		
MVU Estimate of Standard Deviation	35.95214		
MVU Estimate of SE of Mean	11.18894		
95% H-UCL	94.36968		
95% Chebyshev (MVUE) UCL	86.8091		
97.5% Chebyshev (MVUE) UCL	107.9126		
99% Chebyshev (MVUE) UCL	149.3662		
Non-parametric Statistics			
95% CLT UCL	67.57628		
95% Adjusted-CLT UCL	81.50558		
95% Modified-t UCL	72.75466		
95% Jackknife UCL	70.58197		
95% Chebyshev (Mean, Sd) UCL	110.908		
97.5% Chebyshev (Mean, Sd) UCL	141.0209		
99% Chebyshev (Mean, Sd) UCL	200.1719		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	65.46882		
95% Bootstrap-t UCL	127.3687		
95% Hall's Bootstrap UCL	160.8114		
95% Percentile Bootstrap UCL	69.75		
95% BCA Bootstrap UCL	89.92		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	76.71356	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - cb04.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	7		
Minimum	0.29		
Maximum	5.3		
Mean	1.1295		
Standard Deviation	1.706506		
Variance	2.912164		
Coefficient of Variation	1.510851		
Skewness	2.128128		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.582179		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	2.11873		
<b>Gamma Statistics</b>			
k hat	0.833004		
k star (bias corrected)	0.649769		
Theta hat	1.355936		
Theta star	1.73831		
nu hat	16.66007		
nu star	12.99538		
5% Approximate Chi Square Value	5.888528		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	5.081272		
Anderson-Darling Test Statistic	1.908039		
Anderson-Darling 5% Critical Value	0.754081		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.422386		
Kolmogrov-Smirnov 5% Critical Value	0.27524		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	2.492692		
95% Adjusted Gamma UCL	2.888703		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.237874		
Maximum of log data	1.667707		
Mean of log data	-0.586949		
Standard Deviation of log data	1.09835		
Variance of log data	1.206372		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.648895		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	1.016369		
MLE Standard Deviation	1.55519		
MLE Coefficient of Variation	1.530144		
MLE Skewness	8.173016		
MLE Median	0.556021		
MLE 80% Quantile	1.406573		
MLE 90% Quantile	2.28058		
MLE 95% Quantile	3.386631		
MLE 99% Quantile	7.155002		
MVU Estimate of Median	0.523299		
MVU Estimate of Mean	0.934024		
MVU Estimate of Standard Deviation	1.115363		
MVU Estimate of SE of Mean	0.341496		
95% H-UCL	3.412364		
95% Chebyshev (MVUE) UCL	2.422569		
97.5% Chebyshev (MVUE) UCL	3.066663		
99% Chebyshev (MVUE) UCL	4.331862		
<b>Non-parametric Statistics</b>			
95% CLT UCL	2.017136		
95% Adjusted-CLT UCL	2.405185		
95% Modified-t UCL	2.179257		
95% Jackknife UCL	2.11873		
95% Chebyshev (Mean, Sd) UCL	3.481757		
97.5% Chebyshev (Mean, Sd) UCL	4.49958		
99% Chebyshev (Mean, Sd) UCL	6.498897		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.987107		
95% Bootstrap-t UCL	9.523025		
95% Hall's Bootstrap UCL	12.33319		
95% Percentile Bootstrap UCL	2.079		
95% BCA Bootstrap UCL	2.63		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	6.498897	99% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	18.5		
Maximum	85.4		
Mean	55.305		
Standard Deviation	22.55956		
Variance	508.9336		
Coefficient of Variation	0.407912		
Skewness	-0.29779		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.92541		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	68.38235		
Gamma Statistics			
k hat	5.429777		
k star (bias corrected)	3.867511		
Theta hat	10.1855		
Theta star	14.2999		
nu hat	108.5955		
nu star	77.35022		
5% Approximate Chi Square Value	58.08651		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	55.19384		
Anderson-Darling Test Statistic	0.503555		
Anderson-Darling 5% Critical Value	0.729073		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.194269		
Kolmogrov-Smirnov 5% Critical Value	0.267361		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	73.64625		
95% Adjusted Gamma UCL	77.506		
Lognormal Statistics			
Minimum of log data	2.917771		
Maximum of log data	4.447346		
Mean of log data	3.917961		
Standard Deviation of log data	0.490803		
Variance of log data	0.240888		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.884831		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	56.73579		
MLE Standard Deviation	29.61032		
MLE Coefficient of Variation	0.521898		
MLE Skewness	1.707849		
MLE Median	50.2978		
MLE 80% Quantile	76.14885		
MLE 90% Quantile	94.50411		
MLE 95% Quantile	112.768		
MLE 99% Quantile	157.5227		
MVU Estimate of Median	49.69497		
MVU Estimate of Mean	55.99799		
MVU Estimate of Standard Deviation	28.01058		
MVU Estimate of SE of Mean	8.84191		
95% H-UCL	81.41004		
95% Chebyshev (MVUE) UCL	94.53898		
97.5% Chebyshev (MVUE) UCL	111.2157		
99% Chebyshev (MVUE) UCL	143.9739		
Non-parametric Statistics			
95% CLT UCL	67.03932		
95% Adjusted-CLT UCL	66.32149		
95% Modified-t UCL	68.27038		
95% Jackknife UCL	68.38235		
95% Chebyshev (Mean, Sd) UCL	86.4012		
97.5% Chebyshev (Mean, Sd) UCL	99.85655		
99% Chebyshev (Mean, Sd) UCL	126.287		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	66.14506		
95% Bootstrap-t UCL	67.45979		
95% Hall's Bootstrap UCL	65.64746		
95% Percentile Bootstrap UCL	65.5		
95% BCA Bootstrap UCL	70.97		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	68.38235		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb04.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	112		
Maximum	8750		
Mean	1397.45		
Standard Deviation	2604.441		
Variance	6783114		
Coefficient of Variation	1.86371		
Skewness	3.067879		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.487409		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	2907.196		
Gamma Statistics			
k hat	0.74542		
k star (bias corrected)	0.588461		
Theta hat	1874.714		
Theta star	2374.754		
nu hat	14.90841		
nu star	11.76922		
5% Approximate Chi Square Value	5.074427		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	4.335623		
Anderson-Darling Test Statistic	0.991081		
Anderson-Darling 5% Critical Value	0.757337		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.316081		
Kolmogrov-Smirnov 5% Critical Value	0.276069		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	3241.133		
95% Adjusted Gamma UCL	3793.433		
Lognormal Statistics			
Minimum of log data	4.718499		
Maximum of log data	9.076809		
Mean of log data	6.438654		
Standard Deviation of log data	1.176954		
Variance of log data	1.385222		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.925074		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1250.457		
MLE Standard Deviation	2164.307		
MLE Coefficient of Variation	1.730812		
MLE Skewness	10.37745		
MLE Median	625.5641		
MLE 80% Quantile	1691.177		
MLE 90% Quantile	2838.526		
MLE 95% Quantile	4336.157		
MLE 99% Quantile	9664.839		
MVU Estimate of Median	583.445		
MVU Estimate of Mean	1130.682		
MVU Estimate of Standard Deviation	1462.033		
MVU Estimate of SE of Mean	444.0075		
95% H-UCL	4892.839		
95% Chebyshev (MVUE) UCL	3066.066		
97.5% Chebyshev (MVUE) UCL	3903.509		
99% Chebyshev (MVUE) UCL	5548.502		
Non-parametric Statistics			
95% CLT UCL	2752.146		
95% Adjusted-CLT UCL	3605.901		
95% Modified-t UCL	3040.364		
95% Jackknife UCL	2907.196		
95% Chebyshev (Mean, Sd) UCL	4987.424		
97.5% Chebyshev (Mean, Sd) UCL	6540.809		
99% Chebyshev (Mean, Sd) UCL	9592.133		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2686.674		
95% Bootstrap-t UCL	9494.277		
95% Hall's Bootstrap UCL	9107.356		
95% Percentile Bootstrap UCL	2994.15		
95% BCA Bootstrap UCL	3874.6		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	3066.066	95% Chebyshev (MVUE) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	5		
Minimum	0.85		
Maximum	7.8		
Mean	1.72		
Standard Deviation	2.175137		
Variance	4.731222		
Coefficient of Variation	1.264615		
Skewness	2.975116		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.460289		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	2.980886		
Gamma Statistics			
k hat	1.605557		
k star (bias corrected)	1.190557		
Theta hat	1.071279		
Theta star	1.444702		
nu hat	32.11115		
nu star	23.81114		
5% Approximate Chi Square Value	13.70341		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	12.38923		
Anderson-Darling Test Statistic	2.394523		
Anderson-Darling 5% Critical Value	0.738459		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.458527		
Kolmogrov-Smirnov 5% Critical Value	0.270843		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level	
95% Approximate Gamma UCL	2.988682		
95% Adjusted Gamma UCL	3.305706		
Lognormal Statistics			
Minimum of log data	-0.162519		
Maximum of log data	2.054124		
Mean of log data	0.199661		
Standard Deviation of log data	0.710093		
Variance of log data	0.504233		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.548611		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	1.571101		
MLE Standard Deviation	1.272218		
MLE Coefficient of Variation	0.809762		
MLE Skewness	2.960259		
MLE Median	1.220988		
MLE 80% Quantile	2.22485		
MLE 90% Quantile	3.04083		
MLE 95% Quantile	3.926562		
MLE 99% Quantile	6.368334		
MVU Estimate of Median	1.190521		
MVU Estimate of Mean	1.525147		
MVU Estimate of Standard Deviation	1.125207		
MVU Estimate of SE of Mean	0.353307		
95% H-UCL	2.872544		
95% Chebyshev (MVUE) UCL	3.065176		
97.5% Chebyshev (MVUE) UCL	3.731547		
99% Chebyshev (MVUE) UCL	5.040506		
Non-parametric Statistics			
95% CLT UCL	2.851394		
95% Adjusted-CLT UCL	3.54286		
95% Modified-t UCL	3.088741		
95% Jackknife UCL	2.980886		
95% Chebyshev (Mean, Sd) UCL	4.71822		
97.5% Chebyshev (Mean, Sd) UCL	6.015552		
99% Chebyshev (Mean, Sd) UCL	8.56391		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	2.772689		
95% Bootstrap-t UCL	77.39227		
95% Hall's Bootstrap UCL	19.92711		
95% Percentile Bootstrap UCL	2.975		
95% BCA Bootstrap UCL	3.665		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	4.71822	95% Chebyshev (Mean, Sd) UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	22.4		
Maximum	257		
Mean	98.04		
Standard Deviation	72.0231		
Variance	5187.327		
Coefficient of Variation	0.73463		
Skewness	1.255465		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.895131		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	139.7904		
<b>Gamma Statistics</b>			
k hat	2.115573		
k star (bias corrected)	1.547567		
Theta hat	46.34207		
Theta star	63.35104		
nu hat	42.31145		
nu star	30.95135		
5% Approximate Chi Square Value	19.24024		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	17.65173		
Anderson-Darling Test Statistic	0.182708		
Anderson-Darling 5% Critical Value	0.735187		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.115717		
Kolmogrov-Smirnov 5% Critical Value	0.269653		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	157.7147		
95% Adjusted Gamma UCL	171.9078		
<b>Lognormal Statistics</b>			
Minimum of log data	3.109061		
Maximum of log data	5.549076		
Mean of log data	4.330793		
Standard Deviation of log data	0.784627		
Variance of log data	0.615639		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.962682		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	103.4008		
MLE Standard Deviation	95.37785		
MLE Coefficient of Variation	0.922409		
MLE Skewness	3.55205		
MLE Median	76.00454		
MLE 80% Quantile	147.4962		
MLE 90% Quantile	208.3123		
MLE 95% Quantile	276.3046		
MLE 99% Quantile	471.4602		
MVU Estimate of Median	73.69422		
MVU Estimate of Mean	99.60611		
MVU Estimate of Standard Deviation	81.83027		
MVU Estimate of SE of Mean	25.6153		
95% H-UCL	208.512		
95% Chebyshev (MVUE) UCL	211.2606		
97.5% Chebyshev (MVUE) UCL	259.5736		
99% Chebyshev (MVUE) UCL	354.4751		
<b>Non-parametric Statistics</b>			
95% CLT UCL	135.5027		
95% Adjusted-CLT UCL	145.1645		
95% Modified-t UCL	141.2975		
95% Jackknife UCL	139.7904		
95% Chebyshev (Mean, Sd) UCL	197.317		
97.5% Chebyshev (Mean, Sd) UCL	240.2742		
99% Chebyshev (Mean, Sd) UCL	324.6554		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	133.3669		
95% Bootstrap-t UCL	159.9272		
95% Hall's Bootstrap UCL	206.4159		
95% Percentile Bootstrap UCL	133.8		
95% BCA Bootstrap UCL	154.63		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	139.7904		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	8.4		
Maximum	59.5		
Mean	40.295		
Standard Deviation	18.58818		
Variance	345.5203		
Coefficient of Variation	0.461302		
Skewness	-0.645975		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.898321		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	51.07022		
<b>Gamma Statistics</b>			
k hat	3.443989		
k star (bias corrected)	2.477459		
Theta hat	11.7001		
Theta star	16.26465		
nu hat	68.87978		
nu star	49.54918		
5% Approximate Chi Square Value	34.38535		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	32.20225		
Anderson-Darling Test Statistic	0.642449		
Anderson-Darling 5% Critical Value	0.730941		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.233356		
Kolmogrov-Smirnov 5% Critical Value	0.26817		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	58.06497		
95% Adjusted Gamma UCL	62.00139		
<b>Lognormal Statistics</b>			
Minimum of log data	2.128232		
Maximum of log data	4.085976		
Mean of log data	3.544078		
Standard Deviation of log data	0.660734		
Variance of log data	0.436569		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.820327		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	43.05002		
MLE Standard Deviation	31.85087		
MLE Coefficient of Variation	0.739857		
MLE Skewness	2.624562		
MLE Median	34.60777		
MLE 80% Quantile	60.48516		
MLE 90% Quantile	80.89248		
MLE 95% Quantile	102.6151		
MLE 99% Quantile	160.926		
MVU Estimate of Median	33.85905		
MVU Estimate of Mean	41.97861		
MVU Estimate of Standard Deviation	28.67936		
MVU Estimate of SE of Mean	9.019927		
95% H-UCL	74.10022		
95% Chebyshev (MVUE) UCL	81.29555		
97.5% Chebyshev (MVUE) UCL	98.30803		
99% Chebyshev (MVUE) UCL	131.7257		
<b>Non-parametric Statistics</b>			
95% CLT UCL	49.96361		
95% Adjusted-CLT UCL	48.68059		
95% Modified-t UCL	50.87009		
95% Jackknife UCL	51.07022		
95% Chebyshev (Mean, Sd) UCL	65.91703		
97.5% Chebyshev (Mean, Sd) UCL	77.0037		
99% Chebyshev (Mean, Sd) UCL	98.78133		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	49.48214		
95% Bootstrap-t UCL	49.95587		
95% Hall's Bootstrap UCL	48.17656		
95% Percentile Bootstrap UCL	49.145		
95% BCA Bootstrap UCL	51.3		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	51.07022		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.88		
Maximum	34.6		
Mean	8.583		
Standard Deviation	9.966377		
Variance	99.32867		
Coefficient of Variation	1.161176		
Skewness	2.292825		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.717126		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	14.36032		
<b>Gamma Statistics</b>			
k hat	1.062875		
k star (bias corrected)	0.810679		
Theta hat	8.075266		
Theta star	10.58742		
nu hat	21.2575		
nu star	16.21359		
5% Approximate Chi Square Value	8.1118		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	7.137832		
Anderson-Darling Test Statistic	0.350434		
Anderson-Darling 5% Critical Value	0.747133		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.175334		
Kolmogrov-Smirnov 5% Critical Value	0.273419		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	17.1554		
95% Adjusted Gamma UCL	19.49628		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.127833		
Maximum of log data	3.543854		
Mean of log data	1.610517		
Standard Deviation of log data	1.143788		
Variance of log data	1.308252		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.947648		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	9.627689		
MLE Standard Deviation	15.81903		
MLE Coefficient of Variation	1.643076		
MLE Skewness	9.365043		
MLE Median	5.0054		
MLE 80% Quantile	13.15785		
MLE 90% Quantile	21.76461		
MLE 95% Quantile	32.8532		
MLE 99% Quantile	71.59098		
MVU Estimate of Median	4.686615		
MVU Estimate of Mean	8.767318		
MVU Estimate of Standard Deviation	10.96823		
MVU Estimate of SE of Mean	3.342868		
95% H-UCL	35.26916		
95% Chebyshev (MVUE) UCL	23.33854		
97.5% Chebyshev (MVUE) UCL	29.64352		
99% Chebyshev (MVUE) UCL	42.02843		
<b>Non-parametric Statistics</b>			
95% CLT UCL	13.76699		
95% Adjusted-CLT UCL	16.20867		
95% Modified-t UCL	14.74117		
95% Jackknife UCL	14.36032		
95% Chebyshev (Mean, Sd) UCL	22.3207		
97.5% Chebyshev (Mean, Sd) UCL	28.26502		
99% Chebyshev (Mean, Sd) UCL	39.94147		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	13.52473		
95% Bootstrap-t UCL	19.74013		
95% Hall's Bootstrap UCL	33.29326		
95% Percentile Bootstrap UCL	14.266		
95% BCA Bootstrap UCL	17.768		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	17.1554		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	31.8		
Maximum	969		
Mean	280.29		
Standard Deviation	266.8435		
Variance	71205.47		
Coefficient of Variation	0.952027		
Skewness	2.187306		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.763661		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	434.9742		
Gamma Statistics			
k hat	1.501945		
k star (bias corrected)	1.118028		
Theta hat	186.618		
Theta star	250.7003		
nu hat	30.0389		
nu star	22.36056		
5% Approximate Chi Square Value	12.60733		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	11.35356		
Anderson-Darling Test Statistic	0.311317		
Anderson-Darling 5% Critical Value	0.739216		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.14646		
Kolmogrov-Smirnov 5% Critical Value	0.271115		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	497.1269		
95% Adjusted Gamma UCL	552.0244		
Lognormal Statistics			
Minimum of log data	3.459466		
Maximum of log data	6.876265		
Mean of log data	5.26737		
Standard Deviation of log data	0.957177		
Variance of log data	0.916188		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.953089		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	306.5756		
MLE Standard Deviation	375.4447		
MLE Coefficient of Variation	1.22464		
MLE Skewness	5.510564		
MLE Median	193.9054		
MLE 80% Quantile	435.3651		
MLE 90% Quantile	663.3766		
MLE 95% Quantile	936.2913		
MLE 99% Quantile	1796.803		
MVU Estimate of Median	185.1874		
MVU Estimate of Mean	288.6989		
MVU Estimate of Standard Deviation	295.125		
MVU Estimate of SE of Mean	91.44484		
95% H-UCL	802.4665		
95% Chebyshev (MVUE) UCL	687.2977		
97.5% Chebyshev (MVUE) UCL	859.7717		
99% Chebyshev (MVUE) UCL	1198.564		
Non-parametric Statistics			
95% CLT UCL	419.0882		
95% Adjusted-CLT UCL	481.454		
95% Modified-t UCL	444.702		
95% Jackknife UCL	434.9742		
95% Chebyshev (Mean, Sd) UCL	648.1084		
97.5% Chebyshev (Mean, Sd) UCL	807.2637		
99% Chebyshev (Mean, Sd) UCL	1119.894		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	411.5675		
95% Bootstrap-t UCL	592.3136		
95% Hall's Bootstrap UCL	1098.379		
95% Percentile Bootstrap UCL	428.71		
95% BCA Bootstrap UCL	535.61		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	497.1269	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	39.9		
Maximum	386		
Mean	179.6		
Standard Deviation	97.3556		
Variance	9478.113		
Coefficient of Variation	0.542069		
Skewness	0.627691		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.919824		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	236.0352		
Gamma Statistics			
k hat	3.041908		
k star (bias corrected)	2.196002		
Theta hat	59.04189		
Theta star	81.78497		
nu hat	60.83816		
nu star	43.92005		
5% Approximate Chi Square Value	29.71911		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	27.7022		
Anderson-Darling Test Statistic	0.566315		
Anderson-Darling 5% Critical Value	0.732063		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.247033		
Kolmogrov-Smirnov 5% Critical Value	0.268424		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	265.4198		
95% Adjusted Gamma UCL	284.7442		
Lognormal Statistics			
Minimum of log data	3.686376		
Maximum of log data	5.955837		
Mean of log data	5.017449		
Standard Deviation of log data	0.687049		
Variance of log data	0.472037		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.864858		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	191.2281		
MLE Standard Deviation	148.526		
MLE Coefficient of Variation	0.776696		
MLE Skewness	2.798633		
MLE Median	151.0255		
MLE 80% Quantile	269.8875		
MLE 90% Quantile	365.1495		
MLE 95% Quantile	467.6146		
MLE 99% Quantile	746.5965		
MVU Estimate of Median	147.4952		
MVU Estimate of Mean	186.0346		
MVU Estimate of Standard Deviation	132.4942		
MVU Estimate of SE of Mean	41.63571		
95% H-UCL	339.7689		
95% Chebyshev (MVUE) UCL	367.5204		
97.5% Chebyshev (MVUE) UCL	446.0495		
99% Chebyshev (MVUE) UCL	600.3046		
Non-parametric Statistics			
95% CLT UCL	230.2394		
95% Adjusted-CLT UCL	236.769		
95% Modified-t UCL	237.0537		
95% Jackknife UCL	236.0352		
95% Chebyshev (Mean, Sd) UCL	313.7954		
97.5% Chebyshev (Mean, Sd) UCL	371.8619		
99% Chebyshev (Mean, Sd) UCL	485.9223		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	227.345		
95% Bootstrap-t UCL	240.9736		
95% Hall's Bootstrap UCL	261.401		
95% Percentile Bootstrap UCL	229.12		
95% BCA Bootstrap UCL	218.19		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	236.0352	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	19.9		
Maximum	328		
Mean	136.96		
Standard Deviation	90.36974		
Variance	8166.689		
Coefficient of Variation	0.659826		
Skewness	0.914277		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.941195		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	189.3456		
<b>Gamma Statistics</b>			
k hat	2.165511		
k star (bias corrected)	1.582524		
Theta hat	63.24605		
Theta star	86.54528		
nu hat	43.31021		
nu star	31.65048		
5% Approximate Chi Square Value	19.793		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	18.17936		
Anderson-Darling Test Statistic	0.22202		
Anderson-Darling 5% Critical Value	0.735017		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.17378		
Kolmogrov-Smirnov 5% Critical Value	0.269585		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	219.0093		
95% Adjusted Gamma UCL	238.4489		
<b>Lognormal Statistics</b>			
Minimum of log data	2.99072		
Maximum of log data	5.793014		
Mean of log data	4.671373		
Standard Deviation of log data	0.825774		
Variance of log data	0.681903		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.934032		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	150.2536		
MLE Standard Deviation	148.564		
MLE Coefficient of Variation	0.988755		
MLE Skewness	3.932909		
MLE Median	106.8443		
MLE 80% Quantile	214.6807		
MLE 90% Quantile	308.7378		
MLE 95% Quantile	415.6199		
MLE 99% Quantile	729.3277		
MVU Estimate of Median	103.2519		
MVU Estimate of Mean	144.0512		
MVU Estimate of Standard Deviation	125.111		
MVU Estimate of SE of Mean	39.08423		
95% H-UCL	321.0273		
95% Chebyshev (MVUE) UCL	314.4154		
97.5% Chebyshev (MVUE) UCL	388.1321		
99% Chebyshev (MVUE) UCL	532.9343		
<b>Non-parametric Statistics</b>			
95% CLT UCL	183.9657		
95% Adjusted-CLT UCL	192.7941		
95% Modified-t UCL	190.7227		
95% Jackknife UCL	189.3456		
95% Chebyshev (Mean, Sd) UCL	261.5261		
97.5% Chebyshev (Mean, Sd) UCL	315.4259		
99% Chebyshev (Mean, Sd) UCL	421.3017		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	181.0107		
95% Bootstrap-t UCL	202.1063		
95% Hall's Bootstrap UCL	239.8264		
95% Percentile Bootstrap UCL	185.33		
95% BCA Bootstrap UCL	209.1		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	189.3456	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	50		
Maximum	133		
Mean	78.815		
Standard Deviation	25.65316		
Variance	658.0845		
Coefficient of Variation	0.325486		
Skewness	1.148924		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.906617		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	93.68565		
<b>Gamma Statistics</b>			
k hat	11.76879		
k star (bias corrected)	8.304819		
Theta hat	6.696951		
Theta star	9.490273		
nu hat	235.3758		
nu star	166.0964		
5% Approximate Chi Square Value	137.2906		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	132.7405		
Anderson-Darling Test Statistic	0.282509		
Anderson-Darling 5% Critical Value	0.72497		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.173178		
Kolmogrov-Smirnov 5% Critical Value	0.266549		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	95.35166		
95% Adjusted Gamma UCL	98.62014		
<b>Lognormal Statistics</b>			
Minimum of log data	3.912023		
Maximum of log data	4.890349		
Mean of log data	4.324017		
Standard Deviation of log data	0.302689		
Variance of log data	0.091621		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.963991		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	79.02997		
MLE Standard Deviation	24.48002		
MLE Coefficient of Variation	0.309756		
MLE Skewness	0.958989		
MLE Median	75.49126		
MLE 80% Quantile	97.49381		
MLE 90% Quantile	111.3827		
MLE 95% Quantile	124.2058		
MLE 99% Quantile	152.6383		
MVU Estimate of Median	75.14608		
MVU Estimate of Mean	78.6567		
MVU Estimate of Standard Deviation	23.98503		
MVU Estimate of SE of Mean	7.58265		
95% H-UCL	96.50374		
95% Chebyshev (MVUE) UCL	111.7087		
97.5% Chebyshev (MVUE) UCL	126.0103		
99% Chebyshev (MVUE) UCL	154.1031		
<b>Non-parametric Statistics</b>			
95% CLT UCL	92.15845		
95% Adjusted-CLT UCL	95.30774		
95% Modified-t UCL	94.17688		
95% Jackknife UCL	93.68565		
95% Chebyshev (Mean, Sd) UCL	114.1754		
97.5% Chebyshev (Mean, Sd) UCL	129.4759		
99% Chebyshev (Mean, Sd) UCL	159.5308		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	91.6549		
95% Bootstrap-t UCL	101.4432		
95% Hall's Bootstrap UCL	103.7625		
95% Percentile Bootstrap UCL	91.48		
95% BCA Bootstrap UCL	89.055		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	93.68565		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.02		
Maximum	0.56		
Mean	0.231		
Standard Deviation	0.186872		
Variance	0.034921		
Coefficient of Variation	0.808969		
Skewness	0.936545		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.884627		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.339326		
Gamma Statistics			
k hat	1.464392		
k star (bias corrected)	1.091741		
Theta hat	0.157745		
Theta star	0.211589		
nu hat	29.28783		
nu star	21.83482		
5% Approximate Chi Square Value	12.21294		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	10.98153		
Anderson-Darling Test Statistic	0.184615		
Anderson-Darling 5% Critical Value	0.739874		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.122711		
Kolmogrov-Smirnov 5% Critical Value	0.271307		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.412992		
95% Adjusted Gamma UCL	0.459302		
Lognormal Statistics			
Minimum of log data	-3.912023		
Maximum of log data	-0.579818		
Mean of log data	-1.844111		
Standard Deviation of log data	1.03095		
Variance of log data	1.062858		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.942748		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.269097		
MLE Standard Deviation	0.370401		
MLE Coefficient of Variation	1.376456		
MLE Skewness	6.737245		
MLE Median	0.158166		
MLE 80% Quantile	0.377963		
MLE 90% Quantile	0.594913		
MLE 95% Quantile	0.862261		
MLE 99% Quantile	1.739989		
MVU Estimate of Median	0.149941		
MVU Estimate of Mean	0.250373		
MVU Estimate of Standard Deviation	0.278211		
MVU Estimate of SE of Mean	0.085704		
95% H-UCL	0.798976		
95% Chebyshev (MVUE) UCL	0.623948		
97.5% Chebyshev (MVUE) UCL	0.785595		
99% Chebyshev (MVUE) UCL	1.103118		
Non-parametric Statistics			
95% CLT UCL	0.328201		
95% Adjusted-CLT UCL	0.346902		
95% Modified-t UCL	0.342243		
95% Jackknife UCL	0.339326		
95% Chebyshev (Mean, Sd) UCL	0.488585		
97.5% Chebyshev (Mean, Sd) UCL	0.600042		
99% Chebyshev (Mean, Sd) UCL	0.818979		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.324284		
95% Bootstrap-t UCL	0.397597		
95% Hall's Bootstrap UCL	0.435495		
95% Percentile Bootstrap UCL	0.325		
95% BCA Bootstrap UCL	0.31		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.339326	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	6.2		
Maximum	49.4		
Mean	18.625		
Standard Deviation	12.40657		
Variance	153.9229		
Coefficient of Variation	0.666124		
Skewness	1.825212		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.819529		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	25.81685		
Gamma Statistics			
k hat	3.043372		
k star (bias corrected)	2.197027		
Theta hat	6.119856		
Theta star	8.477364		
nu hat	60.86745		
nu star	43.94055		
5% Approximate Chi Square Value	29.73599		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	27.71846		
Anderson-Darling Test Statistic	0.323573		
Anderson-Darling 5% Critical Value	0.732059		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.147827		
Kolmogrov-Smirnov 5% Critical Value	0.268423		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	27.52196		
95% Adjusted Gamma UCL	29.52519		
Lognormal Statistics			
Minimum of log data	1.824549		
Maximum of log data	3.89995		
Mean of log data	2.751309		
Standard Deviation of log data	0.61739		
Variance of log data	0.381171		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.955055		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	18.95171		
MLE Standard Deviation	12.90941		
MLE Coefficient of Variation	0.681174		
MLE Skewness	2.359585		
MLE Median	15.66312		
MLE 80% Quantile	26.39049		
MLE 90% Quantile	34.62775		
MLE 95% Quantile	43.24649		
MLE 99% Quantile	65.84866		
MVU Estimate of Median	15.36692		
MVU Estimate of Mean	18.54594		
MVU Estimate of Standard Deviation	11.79189		
MVU Estimate of SE of Mean	3.713146		
95% H-UCL	31.02688		
95% Chebyshev (MVUE) UCL	34.73117		
97.5% Chebyshev (MVUE) UCL	41.73454		
99% Chebyshev (MVUE) UCL	55.49128		
Non-parametric Statistics			
95% CLT UCL	25.07826		
95% Adjusted-CLT UCL	27.49787		
95% Modified-t UCL	26.19426		
95% Jackknife UCL	25.81685		
95% Chebyshev (Mean, Sd) UCL	35.72627		
97.5% Chebyshev (Mean, Sd) UCL	43.12601		
99% Chebyshev (Mean, Sd) UCL	57.66135		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	24.66399		
95% Bootstrap-t UCL	30.03059		
95% Hall's Bootstrap UCL	56.33815		
95% Percentile Bootstrap UCL	24.87		
95% BCA Bootstrap UCL	29.21		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	27.52196	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.75		
Maximum	6.1		
Mean	3.215		
Standard Deviation	1.583254		
Variance	2.506694		
Coefficient of Variation	0.492459		
Skewness	0.434459		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.960795		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	4.132783		
<b>Gamma Statistics</b>			
k hat	3.883525		
k star (bias corrected)	2.785134		
Theta hat	0.827856		
Theta star	1.154343		
nu hat	77.6705		
nu star	55.70268		
5% Approximate Chi Square Value	39.54746		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	37.19303		
Anderson-Darling Test Statistic	0.265037		
Anderson-Darling 5% Critical Value	0.729715		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.153619		
Kolmogrov-Smirnov 5% Critical Value	0.267893		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	4.528335		
95% Adjusted Gamma UCL	4.814992		
<b>Lognormal Statistics</b>			
Minimum of log data	-0.287682		
Maximum of log data	1.808289		
Mean of log data	1.033588		
Standard Deviation of log data	0.593393		
Variance of log data	0.352116		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.918998		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	3.352299		
MLE Standard Deviation	2.177892		
MLE Coefficient of Variation	0.649671		
MLE Skewness	2.223223		
MLE Median	2.811135		
MLE 80% Quantile	4.641352		
MLE 90% Quantile	6.026092		
MLE 95% Quantile	7.46123		
MLE 99% Quantile	11.17659		
MVU Estimate of Median	2.761998		
MVU Estimate of Mean	3.28652		
MVU Estimate of Standard Deviation	2.004148		
MVU Estimate of SE of Mean	0.631453		
95% H-UCL	5.344102		
95% Chebyshev (MVUE) UCL	6.03896		
97.5% Chebyshev (MVUE) UCL	7.229943		
99% Chebyshev (MVUE) UCL	9.569399		
<b>Non-parametric Statistics</b>			
95% CLT UCL	4.038527		
95% Adjusted-CLT UCL	4.112026		
95% Modified-t UCL	4.144247		
95% Jackknife UCL	4.132783		
95% Chebyshev (Mean, Sd) UCL	5.397366		
97.5% Chebyshev (Mean, Sd) UCL	6.341677		
99% Chebyshev (Mean, Sd) UCL	8.196594		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	3.982181		
95% Bootstrap-t UCL	4.207179		
95% Hall's Bootstrap UCL	4.30067		
95% Percentile Bootstrap UCL	3.98		
95% BCA Bootstrap UCL	4.35		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	4.132783	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	10.4		
Maximum	103		
Mean	53.025		
Standard Deviation	33.18208		
Variance	1101.051		
Coefficient of Variation	0.625782		
Skewness	0.201495		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.935598		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	72.26003		
Gamma Statistics			
k hat	2.243299		
k star (bias corrected)	1.636976		
Theta hat	23.63706		
Theta star	32.39204		
nu hat	44.86598		
nu star	32.73952		
5% Approximate Chi Square Value	20.65724		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	19.00502		
Anderson-Darling Test Statistic	0.293111		
Anderson-Darling 5% Critical Value	0.734753		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.1585		
Kolmogrov-Smirnov 5% Critical Value	0.269479		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	84.03897		
95% Adjusted Gamma UCL	91.345		
Lognormal Statistics			
Minimum of log data	2.341806		
Maximum of log data	4.634729		
Mean of log data	3.731621		
Standard Deviation of log data	0.797348		
Variance of log data	0.635763		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.918459		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	57.36891		
MLE Standard Deviation	54.07497		
MLE Coefficient of Variation	0.942583		
MLE Skewness	3.6652		
MLE Median	41.74672		
MLE 80% Quantile	81.89023		
MLE 90% Quantile	116.3046		
MLE 95% Quantile	154.9741		
MLE 99% Quantile	266.7339		
MVU Estimate of Median	40.4368		
MVU Estimate of Mean	55.1844		
MVU Estimate of Standard Deviation	46.13447		
MVU Estimate of SE of Mean	14.43279		
95% H-UCL	117.739		
95% Chebyshev (MVUE) UCL	118.0955		
97.5% Chebyshev (MVUE) UCL	145.3172		
99% Chebyshev (MVUE) UCL	198.7889		
Non-parametric Statistics			
95% CLT UCL	70.28461		
95% Adjusted-CLT UCL	70.99902		
95% Modified-t UCL	72.37146		
95% Jackknife UCL	72.26003		
95% Chebyshev (Mean, Sd) UCL	98.76335		
97.5% Chebyshev (Mean, Sd) UCL	118.5544		
99% Chebyshev (Mean, Sd) UCL	157.43		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	69.46763		
95% Bootstrap-t UCL	73.45278		
95% Hall's Bootstrap UCL	68.8935		
95% Percentile Bootstrap UCL	69.105		
95% BCA Bootstrap UCL	74.73		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	72.26003	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	250		
Maximum	3840		
Mean	1420.5		
Standard Deviation	1130.775		
Variance	1278652		
Coefficient of Variation	0.79604		
Skewness	1.101455		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.903865		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	2075.989		
Gamma Statistics			
k hat	1.682544		
k star (bias corrected)	1.244448		
Theta hat	844.2572		
Theta star	1141.47		
nu hat	33.65088		
nu star	24.88895		
5% Approximate Chi Square Value	14.52489		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	13.16696		
Anderson-Darling Test Statistic	0.172404		
Anderson-Darling 5% Critical Value	0.737897		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.129897		
Kolmogrov-Smirnov 5% Critical Value	0.270642		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2434.08		
95% Adjusted Gamma UCL	2685.111		
Lognormal Statistics			
Minimum of log data	5.521461		
Maximum of log data	8.253228		
Mean of log data	6.933066		
Standard Deviation of log data	0.904149		
Variance of log data	0.817485		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.961763		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	1543.5		
MLE Standard Deviation	1735.869		
MLE Coefficient of Variation	1.124632		
MLE Skewness	4.796325		
MLE Median	1025.633		
MLE 80% Quantile	2201.89		
MLE 90% Quantile	3277.698		
MLE 95% Quantile	4538.674		
MLE 99% Quantile	8401.079		
MVU Estimate of Median	984.4058		
MVU Estimate of Mean	1464.808		
MVU Estimate of Standard Deviation	1405.508		
MVU Estimate of SE of Mean	437.0808		
95% H-UCL	3710.346		
95% Chebyshev (MVUE) UCL	3369.999		
97.5% Chebyshev (MVUE) UCL	4194.377		
99% Chebyshev (MVUE) UCL	5813.707		
Non-parametric Statistics			
95% CLT UCL	2008.671		
95% Adjusted-CLT UCL	2141.754		
95% Modified-t UCL	2096.747		
95% Jackknife UCL	2075.989		
95% Chebyshev (Mean, Sd) UCL	2979.166		
97.5% Chebyshev (Mean, Sd) UCL	3653.602		
99% Chebyshev (Mean, Sd) UCL	4978.4		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1980.657		
95% Bootstrap-t UCL	2337.742		
95% Hall's Bootstrap UCL	2372.929		
95% Percentile Bootstrap UCL	2009.3		
95% BCA Bootstrap UCL	2328.3		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	2075.989	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb06.xls		
Variable:	Chromium VI		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.04134		
Maximum	1.2597		
Mean	0.364377		
Standard Deviation	0.346897		
Variance	0.120337		
Coefficient of Variation	0.952027		
Skewness	2.187306		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.763661		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.565466		
Gamma Statistics			
k hat	1.501945		
k star (bias corrected)	1.118028		
Theta hat	0.242603		
Theta star	0.32591		
nu hat	30.0389		
nu star	22.36056		
5% Approximate Chi Square Value	12.60733		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	11.35356		
Anderson-Darling Test Statistic	0.311317		
Anderson-Darling 5% Critical Value	0.739216		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.14646		
Kolmogrov-Smirnov 5% Critical Value	0.271115		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.646265		
95% Adjusted Gamma UCL	0.717632		
Lognormal Statistics			
Minimum of log data	-3.185925		
Maximum of log data	0.230874		
Mean of log data	-1.378021		
Standard Deviation of log data	0.957177		
Variance of log data	0.916188		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.953089		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.398548		
MLE Standard Deviation	0.488078		
MLE Coefficient of Variation	1.22464		
MLE Skewness	5.510564		
MLE Median	0.252077		
MLE 80% Quantile	0.565975		
MLE 90% Quantile	0.86239		
MLE 95% Quantile	1.217179		
MLE 99% Quantile	2.335844		
MVU Estimate of Median	0.240744		
MVU Estimate of Mean	0.375309		
MVU Estimate of Standard Deviation	0.383662		
MVU Estimate of SE of Mean	0.118878		
95% H-UCL	1.043206		
95% Chebyshev (MVUE) UCL	0.893487		
97.5% Chebyshev (MVUE) UCL	1.117703		
99% Chebyshev (MVUE) UCL	1.558133		
Non-parametric Statistics			
95% CLT UCL	0.544815		
95% Adjusted-CLT UCL	0.62589		
95% Modified-t UCL	0.578113		
95% Jackknife UCL	0.565466		
95% Chebyshev (Mean, Sd) UCL	0.842541		
97.5% Chebyshev (Mean, Sd) UCL	1.049443		
99% Chebyshev (Mean, Sd) UCL	1.455862		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.53685		
95% Bootstrap-t UCL	0.800786		
95% Hall's Bootstrap UCL	1.433146		
95% Percentile Bootstrap UCL	0.562978		
95% BCA Bootstrap UCL	0.680667		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.646265		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb07.xls		
Variable:	Arsenic		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	13.3		
Maximum	234		
Mean	91.1		
Standard Deviation	102.5243		
Variance	10511.23		
Coefficient of Variation	1.125404		
Skewness	1.293522		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.858426		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	211.7385		
<b>Gamma Statistics</b>			
k hat	0.956947		
k star (bias corrected)	0.405903		
Theta hat	95.19859		
Theta star	224.4376		
nu hat	7.655575		
nu star	3.247227		
5% Approximate Chi Square Value	0.449073		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.330954		
Anderson-Darling 5% Critical Value	0.667245		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.291496		
Kolmogrov-Smirnov 5% Critical Value	0.402887		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	658.7397		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	2.587764		
Maximum of log data	5.455321		
Mean of log data	3.905612		
Standard Deviation of log data	1.340958		
Variance of log data	1.79817		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.924773		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	122.0824		
MLE Standard Deviation	274.0359		
MLE Coefficient of Variation	2.244679		
MLE Skewness	18.04404		
MLE Median	49.68047		
MLE 80% Quantile	154.2727		
MLE 90% Quantile	278.3122		
MLE 95% Quantile	451.0095		
MLE 99% Quantile	1124.036		
MVU Estimate of Median	39.24299		
MVU Estimate of Mean	90.64846		
MVU Estimate of Standard Deviation	108.4533		
MVU Estimate of SE of Mean	53.37087		
95% H-UCL	1285456		
95% Chebyshev (MVUE) UCL	323.2867		
97.5% Chebyshev (MVUE) UCL	423.9495		
99% Chebyshev (MVUE) UCL	621.682		
<b>Non-parametric Statistics</b>			
95% CLT UCL	175.4187		
95% Adjusted-CLT UCL	210.8447		
95% Modified-t UCL	217.2642		
95% Jackknife UCL	211.7385		
95% Chebyshev (Mean, Sd) UCL	314.5465		
97.5% Chebyshev (Mean, Sd) UCL	411.232		
99% Chebyshev (Mean, Sd) UCL	601.152		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	211.7385		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb07.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	13.4		
Maximum	56.8		
Mean	31.925		
Standard Deviation	20.55649		
Variance	422.5692		
Coefficient of Variation	0.643899		
Skewness	0.479675		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.90292		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	56.11344		
<b>Gamma Statistics</b>			
k hat	3.050182		
k star (bias corrected)	0.929212		
Theta hat	10.46659		
Theta star	34.35706		
nu hat	24.40146		
nu star	7.433698		
5% Approximate Chi Square Value	2.410996		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.365603		
Anderson-Darling 5% Critical Value	0.659383		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.291741		
Kolmogrov-Smirnov 5% Critical Value	0.39654		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	98.43269		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	2.595255		
Maximum of log data	4.039536		
Mean of log data	3.2906		
Standard Deviation of log data	0.692177		
Variance of log data	0.479109		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.905607		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	34.12922		
MLE Standard Deviation	26.75684		
MLE Coefficient of Variation	0.783986		
MLE Skewness	2.833824		
MLE Median	26.85896		
MLE 80% Quantile	48.20626		
MLE 90% Quantile	65.3689		
MLE 95% Quantile	83.86683		
MLE 99% Quantile	134.3707		
MVU Estimate of Median	25.27907		
MVU Estimate of Mean	31.95147		
MVU Estimate of Standard Deviation	21.37158		
MVU Estimate of SE of Mean	10.66884		
95% H-UCL	427.3199		
95% Chebyshev (MVUE) UCL	78.45589		
97.5% Chebyshev (MVUE) UCL	98.57838		
99% Chebyshev (MVUE) UCL	138.1051		
<b>Non-parametric Statistics</b>			
95% CLT UCL	48.83121		
95% Adjusted-CLT UCL	51.46521		
95% Modified-t UCL	56.52429		
95% Jackknife UCL	56.11344		
95% Chebyshev (Mean, Sd) UCL	76.72683		
97.5% Chebyshev (Mean, Sd) UCL	96.11261		
99% Chebyshev (Mean, Sd) UCL	134.1922		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	56.11344		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb07.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.25		
Maximum	5.6		
Mean	1.9575		
Standard Deviation	2.488351		
Variance	6.191892		
Coefficient of Variation	1.271188		
Skewness	1.731982		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.796947		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	4.885497		
<b>Gamma Statistics</b>			
k hat	0.875939		
k star (bias corrected)	0.385651		
Theta hat	2.234744		
Theta star	5.075826		
nu hat	7.007515		
nu star	3.085212		
5% Approximate Chi Square Value	0.397919		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.308271		
Anderson-Darling 5% Critical Value	0.668441		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.252965		
Kolmogrov-Smirnov 5% Critical Value	0.40371		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	15.17723		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.386294		
Maximum of log data	1.722767		
Mean of log data	0.001992		
Standard Deviation of log data	1.365386		
Variance of log data	1.864278		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.968715		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	2.545001		
MLE Standard Deviation	5.94206		
MLE Coefficient of Variation	2.334797		
MLE Skewness	19.73201		
MLE Median	1.001994		
MLE 80% Quantile	3.176382		
MLE 90% Quantile	5.792202		
MLE 95% Quantile	9.469266		
MLE 99% Quantile	23.9958		
MVU Estimate of Median	0.784286		
MVU Estimate of Mean	1.86497		
MVU Estimate of Standard Deviation	2.263894		
MVU Estimate of SE of Mean	1.113039		
95% H-UCL	37562.5		
95% Chebyshev (MVUE) UCL	6.716594		
97.5% Chebyshev (MVUE) UCL	8.815895		
99% Chebyshev (MVUE) UCL	12.93957		
<b>Non-parametric Statistics</b>			
95% CLT UCL	4.003987		
95% Adjusted-CLT UCL	5.155252		
95% Modified-t UCL	5.065071		
95% Jackknife UCL	4.885497		
95% Chebyshev (Mean, Sd) UCL	7.380736		
97.5% Chebyshev (Mean, Sd) UCL	9.727374		
99% Chebyshev (Mean, Sd) UCL	14.33689		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	4.885497		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb07.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	53.1		
Maximum	784		
Mean	327.275		
Standard Deviation	326.819		
Variance	106810.6		
Coefficient of Variation	0.998607		
Skewness	1.292248		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.895969		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	711.8369		
Gamma Statistics			
k hat	1.253495		
k star (bias corrected)	0.48004		
Theta hat	261.0901		
Theta star	681.7657		
nu hat	10.02796		
nu star	3.840322		
5% Approximate Chi Square Value	0.659369		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.213699		
Anderson-Darling 5% Critical Value	0.66446		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.205888		
Kolmogrov-Smirnov 5% Critical Value	0.400949		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1906.128		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	3.972177		
Maximum of log data	6.664409		
Mean of log data	5.341588		
Standard Deviation of log data	1.159777		
Variance of log data	1.345083		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.993029		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	409.1694		
MLE Standard Deviation	689.3629		
MLE Coefficient of Variation	1.684786		
MLE Skewness	9.83663		
MLE Median	208.8441		
MLE 80% Quantile	556.4624		
MLE 90% Quantile	926.9517		
MLE 95% Quantile	1407.29		
MLE 99% Quantile	3100.223		
MVU Estimate of Median	175.4592		
MVU Estimate of Mean	331.3252		
MVU Estimate of Standard Deviation	351.6447		
MVU Estimate of SE of Mean	174.0889		
95% H-UCL	425039.6		
95% Chebyshev (MVUE) UCL	1090.161		
97.5% Chebyshev (MVUE) UCL	1418.51		
99% Chebyshev (MVUE) UCL	2063.488		
Non-parametric Statistics			
95% CLT UCL	596.0597		
95% Adjusted-CLT UCL	708.8764		
95% Modified-t UCL	729.434		
95% Jackknife UCL	711.8369		
95% Chebyshev (Mean, Sd) UCL	1039.56		
97.5% Chebyshev (Mean, Sd) UCL	1347.767		
99% Chebyshev (Mean, Sd) UCL	1953.179		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	711.8369	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb07.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	56.5		
Maximum	437		
Mean	164.525		
Standard Deviation	183.0822		
Variance	33519.1		
Coefficient of Variation	1.112793		
Skewness	1.909775		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.721894		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	379.9545		
Gamma Statistics			
k hat	1.422504		
k star (bias corrected)	0.522293		
Theta hat	115.6587		
Theta star	315.0054		
nu hat	11.38003		
nu star	4.178342		
5% Approximate Chi Square Value	0.793086		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.575153		
Anderson-Darling 5% Critical Value	0.663027		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.328356		
Kolmogrov-Smirnov 5% Critical Value	0.399949		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	866.7929		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	4.034241		
Maximum of log data	6.079933		
Mean of log data	4.712087		
Standard Deviation of log data	0.956413		
Variance of log data	0.914726		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.825608		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	175.8181		
MLE Standard Deviation	215.0516		
MLE Coefficient of Variation	1.223148		
MLE Skewness	5.499386		
MLE Median	111.2842		
MLE 80% Quantile	249.699		
MLE 90% Quantile	380.3446		
MLE 95% Quantile	536.6717		
MLE 99% Quantile	1029.372		
MVU Estimate of Median	98.98925		
MVU Estimate of Mean	153.5835		
MVU Estimate of Standard Deviation	137.9593		
MVU Estimate of SE of Mean	68.62751		
95% H-UCL	20277.96		
95% Chebyshev (MVUE) UCL	452.7238		
97.5% Chebyshev (MVUE) UCL	582.1621		
99% Chebyshev (MVUE) UCL	836.4185		
Non-parametric Statistics			
95% CLT UCL	315.0967		
95% Adjusted-CLT UCL	408.4972		
95% Modified-t UCL	394.5231		
95% Jackknife UCL	379.9545		
95% Chebyshev (Mean, Sd) UCL	563.5435		
97.5% Chebyshev (Mean, Sd) UCL	736.1991		
99% Chebyshev (Mean, Sd) UCL	1075.348		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	866.7929	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb07.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations		4	
Number of Missing Data		0	
Number of Valid Observations		4	
Number of Distinct Observations		4	
Minimum		26.2	
Maximum		377	
Mean		149.025	
Standard Deviation		158.5422	
Variance		25135.62	
Coefficient of Variation		1.063863	
Skewness		1.549135	
Too Few Distinct Observations?		NO	
<b>Normal Statistics</b>			
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.85331	
Shapiro-Wilk 5% Critical Value		0.748	
5% Normality Test Result		NORMAL	Data are normal at 5% significance level
95% Student's-t UCL		335.5786	
<b>Gamma Statistics</b>			
k hat		1.223934	
k star (bias corrected)		0.47265	
Theta hat		121.759	
Theta star		315.2966	
nu hat		9.791474	
nu star		3.781202	
5% Approximate Chi Square Value		0.636941	
Adjusted Level of Significance		N/A	
Adjusted Chi Square Value		N/A	
Anderson-Darling Test Statistic		0.24362	
Anderson-Darling 5% Critical Value		0.664711	
Anderson-Darling 5% Gamma Test Result		AD GAMMA	Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.215253	
Kolmogrov-Smirnov 5% Critical Value		0.401124	
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA	Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA	Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		884.6877	
95% Adjusted Gamma UCL		N/A	
<b>Lognormal Statistics</b>			
Minimum of log data		3.265759	
Maximum of log data		5.932245	
Mean of log data		4.542921	
Standard Deviation of log data		1.140978	
Variance of log data		1.301831	
Lilliefors Test Statistic		N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.993963	
Shapiro-Wilk 5% Critical Value		0.748	
5% Lognormality Test Result		LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean		180.1585	
MLE Standard Deviation		294.7133	
MLE Coefficient of Variation		1.635855	
MLE Skewness		9.285153	
MLE Median		93.96491	
MLE 80% Quantile		246.4226	
MLE 90% Quantile		407.108	
MLE 95% Quantile		613.8992	
MLE 99% Quantile		1335.201	
MVU Estimate of Median		79.40345	
MVU Estimate of Mean		147.0437	
MVU Estimate of Standard Deviation		153.92	
MVU Estimate of SE of Mean		76.24142	
95% H-UCL		150025.5	
95% Chebyshev (MVUE) UCL		479.3724	
97.5% Chebyshev (MVUE) UCL		623.1713	
99% Chebyshev (MVUE) UCL		905.6363	
<b>Non-parametric Statistics</b>			
95% CLT UCL		279.4143	
95% Adjusted-CLT UCL		345.022	
95% Modified-t UCL		345.8121	
95% Jackknife UCL		335.5786	
95% Chebyshev (Mean, Sd) UCL		494.5596	
97.5% Chebyshev (Mean, Sd) UCL		644.0727	
99% Chebyshev (Mean, Sd) UCL		937.7623	
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs		2000	
95% Standard Bootstrap UCL		N/R	Not enough distinct data warning
95% Bootstrap-t UCL		N/R	Not enough distinct data warning
95% Hall's Bootstrap UCL		N/R	Not enough distinct data warning
95% Percentile Bootstrap UCL		N/R	Not enough distinct data warning
95% BCA Bootstrap UCL		N/R	Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?		NO	
Appropriate Distribution		NORMAL	
1st Recommended UCL		335.5786	95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value		NO	
Recommendation Warning!		NONE	
Alternative UCL		NONE	

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb07.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	84.3		
Maximum	645		
Mean	334.325		
Standard Deviation	284.2995		
Variance	80826.22		
Coefficient of Variation	0.850369		
Skewness	0.199496		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.846536		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	668.855		
<b>Gamma Statistics</b>			
k hat	1.483952		
k star (bias corrected)	0.537655		
Theta hat	225.2936		
Theta star	621.821		
nu hat	11.87162		
nu star	4.301238		
5% Approximate Chi Square Value	0.84387		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.509662		
Anderson-Darling 5% Critical Value	0.662506		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.319624		
Kolmogrov-Smirnov 5% Critical Value	0.399585		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1704.067		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	4.434382		
Maximum of log data	6.46925		
Mean of log data	5.438785		
Standard Deviation of log data	1.057281		
Variance of log data	1.117842		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.828591		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	402.5046		
MLE Standard Deviation	577.4572		
MLE Coefficient of Variation	1.43466		
MLE Skewness	7.256866		
MLE Median	230.1625		
MLE 80% Quantile	562.3855		
MLE 90% Quantile	895.508		
MLE 95% Quantile	1310.301		
MLE 99% Quantile	2691.948		
MVU Estimate of Median	199.3233		
MVU Estimate of Mean	339.5304		
MVU Estimate of Standard Deviation	332.9626		
MVU Estimate of SE of Mean	165.2793		
95% H-UCL	130939.5		
95% Chebyshev (MVUE) UCL	1059.966		
97.5% Chebyshev (MVUE) UCL	1371.699		
99% Chebyshev (MVUE) UCL	1984.039		
<b>Non-parametric Statistics</b>			
95% CLT UCL	568.1406		
95% Adjusted-CLT UCL	583.2912		
95% Modified-t UCL	671.2182		
95% Jackknife UCL	668.855		
95% Chebyshev (Mean, Sd) UCL	953.9415		
97.5% Chebyshev (Mean, Sd) UCL	1222.05		
99% Chebyshev (Mean, Sd) UCL	1748.697		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NORMAL		
1st Recommended UCL	668.855		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb07.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.09		
Maximum	1.4		
Mean	0.5625		
Standard Deviation	0.618621		
Variance	0.382692		
Coefficient of Variation	1.09977		
Skewness	1.081166		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.860852		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	1.29042		
<b>Gamma Statistics</b>			
k hat	0.935394		
k star (bias corrected)	0.400515		
Theta hat	0.601351		
Theta star	1.404441		
nu hat	7.483151		
nu star	3.204121		
5% Approximate Chi Square Value	0.435173		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.420126		
Anderson-Darling 5% Critical Value	0.667564		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.322955		
Kolmogrov-Smirnov 5% Critical Value	0.403106		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	4.141609		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.407946		
Maximum of log data	0.336472		
Mean of log data	-1.197393		
Standard Deviation of log data	1.372463		
Variance of log data	1.883654		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.858381		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.774478		
MLE Standard Deviation	1.829062		
MLE Coefficient of Variation	2.361672		
MLE Skewness	20.25723		
MLE Median	0.30198		
MLE 80% Quantile	0.963038		
MLE 90% Quantile	1.761598		
MLE 95% Quantile	2.88726		
MLE 99% Quantile	7.351872		
MVU Estimate of Median	0.235734		
MVU Estimate of Mean	0.565333		
MVU Estimate of Standard Deviation	0.689107		
MVU Estimate of SE of Mean	0.338704		
95% H-UCL	12620.08		
95% Chebyshev (MVUE) UCL	2.04171		
97.5% Chebyshev (MVUE) UCL	2.680539		
99% Chebyshev (MVUE) UCL	3.935396		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.07127		
95% Adjusted-CLT UCL	1.249934		
95% Modified-t UCL	1.318288		
95% Jackknife UCL	1.29042		
95% Chebyshev (Mean, Sd) UCL	1.910753		
97.5% Chebyshev (Mean, Sd) UCL	2.494143		
99% Chebyshev (Mean, Sd) UCL	3.6401		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.29042		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb07.xls		
Variable:	Nickel		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	7.8		
Maximum	23.3		
Mean	13.775		
Standard Deviation	6.911524		
Variance	47.76917		
Coefficient of Variation	0.501744		
Skewness	1.177876		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.910527		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	21.90766		
<b>Gamma Statistics</b>			
k hat	5.772268		
k star (bias corrected)	1.609734		
Theta hat	2.38641		
Theta star	8.557316		
nu hat	46.17815		
nu star	12.87787		
5% Approximate Chi Square Value	5.809614		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.274569		
Anderson-Darling 5% Critical Value	0.658732		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.243178		
Kolmogrov-Smirnov 5% Critical Value	0.395742		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	30.53433		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	2.054124		
Maximum of log data	3.148453		
Mean of log data	2.533741		
Standard Deviation of log data	0.4804		
Variance of log data	0.230784		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.964355		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	14.14177		
MLE Standard Deviation	7.205197		
MLE Coefficient of Variation	0.509498		
MLE Skewness	1.660752		
MLE Median	12.60055		
MLE 80% Quantile	18.90977		
MLE 90% Quantile	23.3607		
MLE 95% Quantile	27.77119		
MLE 99% Quantile	38.51901		
MVU Estimate of Median	12.24018		
MVU Estimate of Mean	13.71972		
MVU Estimate of Standard Deviation	6.480471		
MVU Estimate of SE of Mean	3.238949		
95% H-UCL	50.07588		
95% Chebyshev (MVUE) UCL	27.83797		
97.5% Chebyshev (MVUE) UCL	33.94695		
99% Chebyshev (MVUE) UCL	45.94686		
<b>Non-parametric Statistics</b>			
95% CLT UCL	19.45922		
95% Adjusted-CLT UCL	21.63389		
95% Modified-t UCL	22.24687		
95% Jackknife UCL	21.90766		
95% Chebyshev (Mean, Sd) UCL	28.83832		
97.5% Chebyshev (Mean, Sd) UCL	35.35623		
99% Chebyshev (Mean, Sd) UCL	48.1594		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	21.90766		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb07.xls		
Variable:	Vanadium		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	15.8		
Maximum	102		
Mean	46.65		
Standard Deviation	38.18285		
Variance	1457.93		
Coefficient of Variation	0.818496		
Skewness	1.609438		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.852083		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	91.57906		
<b>Gamma Statistics</b>			
k hat	2.292902		
k star (bias corrected)	0.739892		
Theta hat	20.34539		
Theta star	63.04972		
nu hat	18.34322		
nu star	5.919138		
5% Approximate Chi Square Value	1.598194		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.290741		
Anderson-Darling 5% Critical Value	0.660216		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.253859		
Kolmogrov-Smirnov 5% Critical Value	0.397508		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	172.7749		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	2.76001		
Maximum of log data	4.624973		
Mean of log data	3.609036		
Standard Deviation of log data	0.778248		
Variance of log data	0.60567		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.980402		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	49.99243		
MLE Standard Deviation	45.61326		
MLE Coefficient of Variation	0.912403		
MLE Skewness	3.496768		
MLE Median	36.93045		
MLE 80% Quantile	71.28287		
MLE 90% Quantile	100.3923		
MLE 95% Quantile	132.8545		
MLE 99% Quantile	225.7079		
MVU Estimate of Median	34.19731		
MVU Estimate of Mean	45.90876		
MVU Estimate of Standard Deviation	34.23288		
MVU Estimate of SE of Mean	17.07465		
95% H-UCL	1192.34		
95% Chebyshev (MVUE) UCL	120.3354		
97.5% Chebyshev (MVUE) UCL	152.5399		
99% Chebyshev (MVUE) UCL	215.7993		
<b>Non-parametric Statistics</b>			
95% CLT UCL	78.0526		
95% Adjusted-CLT UCL	94.46843		
95% Modified-t UCL	94.1396		
95% Jackknife UCL	91.57906		
95% Chebyshev (Mean, Sd) UCL	129.8676		
97.5% Chebyshev (Mean, Sd) UCL	165.8759		
99% Chebyshev (Mean, Sd) UCL	236.6073		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	91.57906		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - cb07.xls		
Variable:	Zinc		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	74.6		
Maximum	671		
Mean	304.4		
Standard Deviation	266.535		
Variance	71040.91		
Coefficient of Variation	0.875608		
Skewness	1.165241		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.909915		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	618.0268		
<b>Gamma Statistics</b>			
k hat	1.703121		
k star (bias corrected)	0.592447		
Theta hat	178.7306		
Theta star	513.8012		
nu hat	13.62497		
nu star	4.739576		
5% Approximate Chi Square Value	1.033452		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.228441		
Anderson-Darling 5% Critical Value	0.661631		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.222904		
Kolmogrov-Smirnov 5% Critical Value	0.398844		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	1396.026		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	4.312141		
Maximum of log data	6.508769		
Mean of log data	5.396901		
Standard Deviation of log data	0.956381		
Variance of log data	0.914664		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.987244		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	348.7073		
MLE Standard Deviation	426.4986		
MLE Coefficient of Variation	1.223085		
MLE Skewness	5.498912		
MLE Median	220.7213		
MLE 80% Quantile	495.24		
MLE 90% Quantile	754.3452		
MLE 95% Quantile	1064.379		
MLE 99% Quantile	2041.505		
MVU Estimate of Median	196.3372		
MVU Estimate of Mean	304.6116		
MVU Estimate of Standard Deviation	273.615		
MVU Estimate of SE of Mean	136.1092		
95% H-UCL	40205.39		
95% Chebyshev (MVUE) UCL	897.8978		
97.5% Chebyshev (MVUE) UCL	1154.613		
99% Chebyshev (MVUE) UCL	1658.881		
<b>Non-parametric Statistics</b>			
95% CLT UCL	523.6055		
95% Adjusted-CLT UCL	606.5697		
95% Modified-t UCL	630.9676		
95% Jackknife UCL	618.0268		
95% Chebyshev (Mean, Sd) UCL	885.2996		
97.5% Chebyshev (Mean, Sd) UCL	1136.655		
99% Chebyshev (Mean, Sd) UCL	1630.395		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	618.0268		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Benzo(a)anthracene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	0.11		
Maximum	0.42		
Mean	0.2375		
Standard Deviation	0.13048		
Variance	0.017025		
Coefficient of Variation	0.549389		
Skewness	1.189667		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.888549		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.391033		
<b>Gamma Statistics</b>			
k hat	4.647311		
k star (bias corrected)	1.328494		
Theta hat	0.051105		
Theta star	0.178774		
nu hat	37.17849		
nu star	10.62795		
5% Approximate Chi Square Value	4.337058		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.347663		
Anderson-Darling 5% Critical Value	0.658977		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.291062		
Kolmogrov-Smirnov 5% Critical Value	0.395985		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.581993		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.207275		
Maximum of log data	-0.867501		
Mean of log data	-1.549018		
Standard Deviation of log data	0.547125		
Variance of log data	0.299346		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.943919		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.246759		
MLE Standard Deviation	0.145771		
MLE Coefficient of Variation	0.590742		
MLE Skewness	1.978382		
MLE Median	0.212457		
MLE 80% Quantile	0.337329		
MLE 90% Quantile	0.429145		
MLE 95% Quantile	0.52257		
MLE 99% Quantile	0.758506		
MVU Estimate of Median	0.204596		
MVU Estimate of Mean	0.237122		
MVU Estimate of Standard Deviation	0.126941		
MVU Estimate of SE of Mean	0.063429		
95% H-UCL	1.237762		
95% Chebyshev (MVUE) UCL	0.513602		
97.5% Chebyshev (MVUE) UCL	0.633235		
99% Chebyshev (MVUE) UCL	0.868231		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.34481		
95% Adjusted-CLT UCL	0.386276		
95% Modified-t UCL	0.397501		
95% Jackknife UCL	0.391033		
95% Chebyshev (Mean, Sd) UCL	0.521874		
97.5% Chebyshev (Mean, Sd) UCL	0.644923		
99% Chebyshev (Mean, Sd) UCL	0.886629		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.391033		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Benzo(a)pyrene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	0.14		
Maximum	0.42		
Mean	0.245		
Standard Deviation	0.121244		
Variance	0.0147		
Coefficient of Variation	0.494872		
Skewness	1.539601		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.839545		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.387665		
<b>Gamma Statistics</b>			
k hat	6.242426		
k star (bias corrected)	1.727273		
Theta hat	0.039248		
Theta star	0.141842		
nu hat	49.9394		
nu star	13.81818		
5% Approximate Chi Square Value	6.445934		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.426119		
Anderson-Darling 5% Critical Value	0.65855		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.344827		
Kolmogrov-Smirnov 5% Critical Value	0.395651		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.525208		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.966113		
Maximum of log data	-0.867501		
Mean of log data	-1.488727		
Standard Deviation of log data	0.45613		
Variance of log data	0.208055		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.913179		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.250399		
MLE Standard Deviation	0.120421		
MLE Coefficient of Variation	0.480917		
MLE Skewness	1.553977		
MLE Median	0.22566		
MLE 80% Quantile	0.331775		
MLE 90% Quantile	0.405514		
MLE 95% Quantile	0.477881		
MLE 99% Quantile	0.651963		
MVU Estimate of Median	0.219837		
MVU Estimate of Mean	0.243683		
MVU Estimate of Standard Deviation	0.109466		
MVU Estimate of SE of Mean	0.054715		
95% H-UCL	0.790091		
95% Chebyshev (MVUE) UCL	0.482181		
97.5% Chebyshev (MVUE) UCL	0.585379		
99% Chebyshev (MVUE) UCL	0.788092		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.344714		
95% Adjusted-CLT UCL	0.394578		
95% Modified-t UCL	0.395443		
95% Jackknife UCL	0.387665		
95% Chebyshev (Mean, Sd) UCL	0.509244		
97.5% Chebyshev (Mean, Sd) UCL	0.623583		
99% Chebyshev (Mean, Sd) UCL	0.848179		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.387665		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Benzo(b)fluoranthene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.045		
Maximum	0.42		
Mean	0.23375		
Standard Deviation	0.154455		
Variance	0.023856		
Coefficient of Variation	0.660769		
Skewness	-0.046857		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.989276		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.415494		
<b>Gamma Statistics</b>			
k hat	2.033621		
k star (bias corrected)	0.675072		
Theta hat	0.114943		
Theta star	0.346259		
nu hat	16.26897		
nu star	5.400576		
5% Approximate Chi Square Value	1.341177		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.328305		
Anderson-Darling 5% Critical Value	0.660512		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.284914		
Kolmogrov-Smirnov 5% Critical Value	0.397855		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.941251		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.101093		
Maximum of log data	-0.867501		
Mean of log data	-1.719079		
Standard Deviation of log data	0.965857		
Variance of log data	0.932879		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.881582		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.28575		
MLE Standard Deviation	0.354815		
MLE Coefficient of Variation	1.241699		
MLE Skewness	5.639568		
MLE Median	0.179231		
MLE 80% Quantile	0.40538		
MLE 90% Quantile	0.620051		
MLE 95% Quantile	0.877881		
MLE 99% Quantile	1.694696		
MVU Estimate of Median	0.15905		
MVU Estimate of Mean	0.248851		
MVU Estimate of Standard Deviation	0.225485		
MVU Estimate of SE of Mean	0.112147		
95% H-UCL	36.15615		
95% Chebyshev (MVUE) UCL	0.737688		
97.5% Chebyshev (MVUE) UCL	0.949208		
99% Chebyshev (MVUE) UCL	1.364699		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.360778		
95% Adjusted-CLT UCL	0.358844		
95% Modified-t UCL	0.415192		
95% Jackknife UCL	0.415494		
95% Chebyshev (Mean, Sd) UCL	0.570376		
97.5% Chebyshev (Mean, Sd) UCL	0.716035		
99% Chebyshev (Mean, Sd) UCL	1.002152		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.415494		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Benzo(k)fluoranthene		
Raw Statistics			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	4		
Minimum	0.045		
Maximum	0.42		
Mean	0.1935		
Standard Deviation	0.165889		
Variance	0.027519		
Coefficient of Variation	0.857305		
Skewness	1.096114		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.924813		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.388698		
Gamma Statistics			
k hat	1.7202		
k star (bias corrected)	0.596717		
Theta hat	0.112487		
Theta star	0.324274		
nu hat	13.7616		
nu star	4.773734		
5% Approximate Chi Square Value	1.048743		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.208864		
Anderson-Darling 5% Critical Value	0.661568		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.199514		
Kolmogrov-Smirnov 5% Critical Value	0.39879		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.880785		
95% Adjusted Gamma UCL	N/A		
Lognormal Statistics			
Minimum of log data	-3.101093		
Maximum of log data	-0.867501		
Mean of log data	-1.960469		
Standard Deviation of log data	0.962545		
Variance of log data	0.926494		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.992642		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.223751		
MLE Standard Deviation	0.27637		
MLE Coefficient of Variation	1.235167		
MLE Skewness	5.589919		
MLE Median	0.140792		
MLE 80% Quantile	0.317551		
MLE 90% Quantile	0.485004		
MLE 95% Quantile	0.68586		
MLE 99% Quantile	1.32103		
MVU Estimate of Median	0.125044		
MVU Estimate of Mean	0.195068		
MVU Estimate of Standard Deviation	0.176217		
MVU Estimate of SE of Mean	0.087648		
95% H-UCL	27.4036		
95% Chebyshev (MVUE) UCL	0.577118		
97.5% Chebyshev (MVUE) UCL	0.742432		
99% Chebyshev (MVUE) UCL	1.067158		
Non-parametric Statistics			
95% CLT UCL	0.329931		
95% Adjusted-CLT UCL	0.378504		
95% Modified-t UCL	0.396274		
95% Jackknife UCL	0.388698		
95% Chebyshev (Mean, Sd) UCL	0.555046		
97.5% Chebyshev (Mean, Sd) UCL	0.711487		
99% Chebyshev (Mean, Sd) UCL	1.018785		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.388698	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Indeno(1,2,3-cd)pyrene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	0.06		
Maximum	0.42		
Mean	0.225		
Standard Deviation	0.147986		
Variance	0.0219		
Coefficient of Variation	0.657718		
Skewness	0.599833		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.931549		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.399133		
<b>Gamma Statistics</b>			
k hat	2.547841		
k star (bias corrected)	0.803627		
Theta hat	0.08831		
Theta star	0.279981		
nu hat	20.38272		
nu star	6.429014		
5% Approximate Chi Square Value	1.86235		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.347912		
Anderson-Darling 5% Critical Value	0.659925		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.290886		
Kolmogrov-Smirnov 5% Critical Value	0.397166		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.776722		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.813411		
Maximum of log data	-0.867501		
Mean of log data	-1.700552		
Standard Deviation of log data	0.810674		
Variance of log data	0.657192		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.906982		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.25361		
MLE Standard Deviation	0.24449		
MLE Coefficient of Variation	0.964037		
MLE Skewness	3.788054		
MLE Median	0.182583		
MLE 80% Quantile	0.36221		
MLE 90% Quantile	0.517453		
MLE 95% Quantile	0.692814		
MLE 99% Quantile	1.203309		
MVU Estimate of Median	0.167949		
MVU Estimate of Mean	0.231026		
MVU Estimate of Standard Deviation	0.178837		
MVU Estimate of SE of Mean	0.089165		
95% H-UCL	7.864952		
95% Chebyshev (MVUE) UCL	0.619688		
97.5% Chebyshev (MVUE) UCL	0.787862		
99% Chebyshev (MVUE) UCL	1.118207		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.346708		
95% Adjusted-CLT UCL	0.37042		
95% Modified-t UCL	0.402832		
95% Jackknife UCL	0.399133		
95% Chebyshev (Mean, Sd) UCL	0.547529		
97.5% Chebyshev (Mean, Sd) UCL	0.687088		
99% Chebyshev (Mean, Sd) UCL	0.961223		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning	
95% Bootstrap-t UCL	N/R	Not enough distinct data warning	
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning	
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning	
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning	
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.399133	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Phenanthrene		
<b>Raw Statistics</b>			
Number of Observations	4		
Number of Missing Data	0		
Number of Valid Observations	4		
Number of Distinct Observations	3		
Minimum	0.13		
Maximum	0.42		
Mean	0.2425		
Standard Deviation	0.124197		
Variance	0.015425		
Coefficient of Variation	0.512154		
Skewness	1.426729		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.858254		
Shapiro-Wilk 5% Critical Value	0.748		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.388641		
<b>Gamma Statistics</b>			
k hat	5.686263		
k star (bias corrected)	1.588232		
Theta hat	0.042647		
Theta star	0.152685		
nu hat	45.4901		
nu star	12.70586		
5% Approximate Chi Square Value	5.694433		
Adjusted Level of Significance	N/A		
Adjusted Chi Square Value	N/A		
Anderson-Darling Test Statistic	0.391843		
Anderson-Darling 5% Critical Value	0.658765		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.326588		
Kolmogrov-Smirnov 5% Critical Value	0.395758		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.541085		
95% Adjusted Gamma UCL	N/A		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.040221		
Maximum of log data	-0.867501		
Mean of log data	-1.507254		
Standard Deviation of log data	0.482715		
Variance of log data	0.233013		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.92908		
Shapiro-Wilk 5% Critical Value	0.748		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.248889		
MLE Standard Deviation	0.127493		
MLE Coefficient of Variation	0.512248		
MLE Skewness	1.671158		
MLE Median	0.221517		
MLE 80% Quantile	0.333084		
MLE 90% Quantile	0.411904		
MLE 95% Quantile	0.490079		
MLE 99% Quantile	0.680818		
MVU Estimate of Median	0.215121		
MVU Estimate of Mean	0.241387		
MVU Estimate of Standard Deviation	0.11455		
MVU Estimate of SE of Mean	0.057252		
95% H-UCL	0.891393		
95% Chebyshev (MVUE) UCL	0.490941		
97.5% Chebyshev (MVUE) UCL	0.598924		
99% Chebyshev (MVUE) UCL	0.811034		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.344643		
95% Adjusted-CLT UCL	0.391977		
95% Modified-t UCL	0.396024		
95% Jackknife UCL	0.388641		
95% Chebyshev (Mean, Sd) UCL	0.513182		
97.5% Chebyshev (Mean, Sd) UCL	0.630306		
99% Chebyshev (Mean, Sd) UCL	0.860374		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	N/R		Not enough distinct data warning
95% Bootstrap-t UCL	N/R		Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R		Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R		Not enough distinct data warning
95% BCA Bootstrap UCL	N/R		Not enough distinct data warning
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.388641		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Antimony		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	0.17		
Maximum	9.1		
Mean	3.415714		
Standard Deviation	3.373949		
Variance	11.38353		
Coefficient of Variation	0.987772		
Skewness	0.688341		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.896199		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	5.89372		
Gamma Statistics			
k hat	0.759008		
k star (bias corrected)	0.528957		
Theta hat	4.500236		
Theta star	6.457454		
nu hat	10.62611		
nu star	7.405396		
5% Approximate Chi Square Value	2.395084		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	1.62694		
Anderson-Darling Test Statistic	0.41785		
Anderson-Darling 5% Critical Value	0.735829		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.229796		
Kolmogrov-Smirnov 5% Critical Value	0.32255		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	10.5611		
95% Adjusted Gamma UCL	15.54741		
Lognormal Statistics			
Minimum of log data	-1.771957		
Maximum of log data	2.208274		
Mean of log data	0.440953		
Standard Deviation of log data	1.608272		
Variance of log data	2.586539		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.87993		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	5.664523		
MLE Standard Deviation	19.8531		
MLE Coefficient of Variation	3.504814		
MLE Skewness	53.5666		
MLE Median	1.554188		
MLE 80% Quantile	6.049302		
MLE 90% Quantile	12.27522		
MLE 95% Quantile	21.90162		
MLE 99% Quantile	65.48323		
MVU Estimate of Median	1.286222		
MVU Estimate of Mean	4.176229		
MVU Estimate of Standard Deviation	6.967031		
MVU Estimate of SE of Mean	2.453051		
95% H-UCL	212.1116		
95% Chebyshev (MVUE) UCL	14.86883		
97.5% Chebyshev (MVUE) UCL	19.49553		
99% Chebyshev (MVUE) UCL	28.58378		
Non-parametric Statistics			
95% CLT UCL	5.513285		
95% Adjusted-CLT UCL	5.867792		
95% Modified-t UCL	5.949016		
95% Jackknife UCL	5.89372		
95% Chebyshev (Mean, Sd) UCL	8.974325		
97.5% Chebyshev (Mean, Sd) UCL	11.37954		
99% Chebyshev (Mean, Sd) UCL	16.10412		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	5.351629		
95% Bootstrap-t UCL	6.839204		
95% Hall's Bootstrap UCL	5.995034		
95% Percentile Bootstrap UCL	5.42		
95% BCA Bootstrap UCL	5.02		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	5.89372	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	6.4		
Maximum	288		
Mean	142.3857		
Standard Deviation	127.9853		
Variance	16380.23		
Coefficient of Variation	0.898863		
Skewness	-0.097159		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.821133		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	236.3849		
Gamma Statistics			
k hat	0.722353		
k star (bias corrected)	0.508011		
Theta hat	197.1138		
Theta star	280.2807		
nu hat	10.11294		
nu star	7.112156		
5% Approximate Chi Square Value	2.231704		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	1.498987		
Anderson-Darling Test Statistic	0.791923		
Anderson-Darling 5% Critical Value	0.737843		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.296431		
Kolmogrov-Smirnov 5% Critical Value	0.323166		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	453.7651		
95% Adjusted Gamma UCL	675.5693		
Lognormal Statistics			
Minimum of log data	1.856298		
Maximum of log data	5.66296		
Mean of log data	4.125546		
Standard Deviation of log data	1.698104		
Variance of log data	2.883558		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.789297		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	261.733		
MLE Standard Deviation	1075.266		
MLE Coefficient of Variation	4.108256		
MLE Skewness	81.66297		
MLE Median	61.90159		
MLE 80% Quantile	259.9382		
MLE 90% Quantile	548.7318		
MLE 95% Quantile	1011.235		
MLE 99% Quantile	3214.208		
MVU Estimate of Median	50.09704		
MVU Estimate of Mean	184.1229		
MVU Estimate of Standard Deviation	325.0256		
MVU Estimate of SE of Mean	113.1072		
95% H-UCL	14565.14		
95% Chebyshev (MVUE) UCL	677.1458		
97.5% Chebyshev (MVUE) UCL	890.4771		
99% Chebyshev (MVUE) UCL	1309.525		
Non-parametric Statistics			
95% CLT UCL	221.9537		
95% Adjusted-CLT UCL	220.0555		
95% Modified-t UCL	236.0888		
95% Jackknife UCL	236.3849		
95% Chebyshev (Mean, Sd) UCL	353.2426		
97.5% Chebyshev (Mean, Sd) UCL	444.4805		
99% Chebyshev (Mean, Sd) UCL	623.6998		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	216.0487		
95% Bootstrap-t UCL	231.2317		
95% Hall's Bootstrap UCL	195.1058		
95% Percentile Bootstrap UCL	215.9571		
95% BCA Bootstrap UCL	194.9571		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	236.3849	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Barium		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	10.6		
Maximum	78.4		
Mean	41.81429		
Standard Deviation	28.12226		
Variance	790.8614		
Coefficient of Variation	0.672551		
Skewness	0.162531		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.899784		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	62.46876		
Gamma Statistics			
k hat	2.093405		
k star (bias corrected)	1.291469		
Theta hat	19.9743		
Theta star	32.3773		
nu hat	29.30767		
nu star	18.08057		
5% Approximate Chi Square Value	9.447737		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	7.639129		
Anderson-Darling Test Statistic	0.384625		
Anderson-Darling 5% Critical Value	0.714648		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.184581		
Kolmogrov-Smirnov 5% Critical Value	0.31498		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	80.02193		
95% Adjusted Gamma UCL	98.96758		
Lognormal Statistics			
Minimum of log data	2.360854		
Maximum of log data	4.361824		
Mean of log data	3.475772		
Standard Deviation of log data	0.831094		
Variance of log data	0.690717		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.888438		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	45.6558		
MLE Standard Deviation	45.54486		
MLE Coefficient of Variation	0.99757		
MLE Skewness	3.985438		
MLE Median	32.32277		
MLE 80% Quantile	65.23828		
MLE 90% Quantile	94.04071		
MLE 95% Quantile	126.8394		
MLE 99% Quantile	223.385		
MVU Estimate of Median	30.75728		
MVU Estimate of Mean	43.01844		
MVU Estimate of Standard Deviation	36.2906		
MVU Estimate of SE of Mean	13.60107		
95% H-UCL	136.8722		
95% Chebyshev (MVUE) UCL	102.3041		
97.5% Chebyshev (MVUE) UCL	127.9571		
99% Chebyshev (MVUE) UCL	178.3474		
Non-parametric Statistics			
95% CLT UCL	59.29779		
95% Adjusted-CLT UCL	59.99549		
95% Modified-t UCL	62.57759		
95% Jackknife UCL	62.46876		
95% Chebyshev (Mean, Sd) UCL	88.14596		
97.5% Chebyshev (Mean, Sd) UCL	108.1937		
99% Chebyshev (Mean, Sd) UCL	147.5736		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	58.10809		
95% Bootstrap-t UCL	63.0644		
95% Hall's Bootstrap UCL	56.63166		
95% Percentile Bootstrap UCL	58.51429		
95% BCA Bootstrap UCL	54.78571		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	62.46876	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	0.1		
Maximum	7.4		
Mean	3.26		
Standard Deviation	3.180273		
Variance	10.11413		
Coefficient of Variation	0.975544		
Skewness	0.2101		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.847689		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	5.59576		
Gamma Statistics			
k hat	0.634746		
k star (bias corrected)	0.45795		
Theta hat	5.135913		
Theta star	7.11868		
nu hat	8.886443		
nu star	6.411301		
5% Approximate Chi Square Value	1.852998		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	1.207131		
Anderson-Darling Test Statistic	0.572403		
Anderson-Darling 5% Critical Value	0.74324		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.239145		
Kolmogrov-Smirnov 5% Critical Value	0.324771		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	11.27947		
95% Adjusted Gamma UCL	17.31448		
Lognormal Statistics			
Minimum of log data	-2.302585		
Maximum of log data	2.00148		
Mean of log data	0.216282		
Standard Deviation of log data	1.851064		
Variance of log data	3.426437		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.840807		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	6.886067		
MLE Standard Deviation	37.56969		
MLE Coefficient of Variation	5.455899		
MLE Skewness	178.7725		
MLE Median	1.241452		
MLE 80% Quantile	5.93241		
MLE 90% Quantile	13.39523		
MLE 95% Quantile	26.08294		
MLE 99% Quantile	92.0062		
MVU Estimate of Median	0.964174		
MVU Estimate of Mean	4.424843		
MVU Estimate of Standard Deviation	8.544614		
MVU Estimate of SE of Mean	2.909212		
95% H-UCL	790.6508		
95% Chebyshev (MVUE) UCL	17.1058		
97.5% Chebyshev (MVUE) UCL	22.59287		
99% Chebyshev (MVUE) UCL	33.37114		
Non-parametric Statistics			
95% CLT UCL	5.237163		
95% Adjusted-CLT UCL	5.339157		
95% Modified-t UCL	5.611669		
95% Jackknife UCL	5.59576		
95% Chebyshev (Mean, Sd) UCL	8.499527		
97.5% Chebyshev (Mean, Sd) UCL	10.76668		
99% Chebyshev (Mean, Sd) UCL	15.22005		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	5.088939		
95% Bootstrap-t UCL	5.688364		
95% Hall's Bootstrap UCL	4.639981		
95% Percentile Bootstrap UCL	5.042857		
95% BCA Bootstrap UCL	4.805714		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	5.59576	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	3.3		
Maximum	2200		
Mean	572.8		
Standard Deviation	775.9201		
Variance	602052.1		
Coefficient of Variation	1.354609		
Skewness	1.899929		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.765785		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	1142.677		
Gamma Statistics			
k hat	0.457603		
k star (bias corrected)	0.356725		
Theta hat	1251.741		
Theta star	1605.717		
nu hat	6.406436		
nu star	4.994154		
5% Approximate Chi Square Value	1.149085		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	0.688795		
Anderson-Darling Test Statistic	0.28575		
Anderson-Darling 5% Critical Value	0.758442		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.201503		
Kolmogrov-Smirnov 5% Critical Value	0.328904		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	2489.504		
95% Adjusted Gamma UCL	4153.127		
Lognormal Statistics			
Minimum of log data	1.193922		
Maximum of log data	7.696213		
Mean of log data	4.943082		
Standard Deviation of log data	2.343759		
Variance of log data	5.493208		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.922876		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	2185.688		
MLE Standard Deviation	34003.83		
MLE Coefficient of Variation	15.5575		
MLE Skewness	3812.141		
MLE Median	140.2017		
MLE 80% Quantile	1015.929		
MLE 90% Quantile	2849.255		
MLE 95% Quantile	6624.738		
MLE 99% Quantile	32684.83		
MVU Estimate of Median	92.67972		
MVU Estimate of Mean	948.7365		
MVU Estimate of Standard Deviation	2343.641		
MVU Estimate of SE of Mean	733.4998		
95% H-UCL	3954148		
95% Chebyshev (MVUE) UCL	4145.988		
97.5% Chebyshev (MVUE) UCL	5529.441		
99% Chebyshev (MVUE) UCL	8246.968		
Non-parametric Statistics			
95% CLT UCL	1055.187		
95% Adjusted-CLT UCL	1280.215		
95% Modified-t UCL	1177.777		
95% Jackknife UCL	1142.677		
95% Chebyshev (Mean, Sd) UCL	1851.135		
97.5% Chebyshev (Mean, Sd) UCL	2404.272		
99% Chebyshev (Mean, Sd) UCL	3490.802		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1015.588		
95% Bootstrap-t UCL	1637.587		
95% Hall's Bootstrap UCL	2972.649		
95% Percentile Bootstrap UCL	1095.9		
95% BCA Bootstrap UCL	947.2571		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	4153.127	95% Adjusted Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	7.1		
Maximum	489		
Mean	241.9143		
Standard Deviation	217.0626		
Variance	47116.17		
Coefficient of Variation	0.897271		
Skewness	-0.063132		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.823714		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	401.3365		
Gamma Statistics			
k hat	0.7228		
k star (bias corrected)	0.508266		
Theta hat	334.6907		
Theta star	475.9596		
nu hat	10.11919		
nu star	7.115729		
5% Approximate Chi Square Value	2.233679		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	1.500526		
Anderson-Darling Test Statistic	0.654956		
Anderson-Darling 5% Critical Value	0.737816		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.259006		
Kolmogrov-Smirnov 5% Critical Value	0.323158		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	770.6555		
95% Adjusted Gamma UCL	1147.195		
Lognormal Statistics			
Minimum of log data	1.960095		
Maximum of log data	6.192362		
Mean of log data	4.656175		
Standard Deviation of log data	1.732712		
Variance of log data	3.00229		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.832669		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	472.1611		
MLE Standard Deviation	2065.217		
MLE Coefficient of Variation	4.373966		
MLE Skewness	96.80279		
MLE Median	105.2328		
MLE 80% Quantile	455.0087		
MLE 90% Quantile	975.2655		
MLE 95% Quantile	1819.807		
MLE 99% Quantile	5922.196		
MVU Estimate of Median	84.40475		
MVU Estimate of Mean	325.8093		
MVU Estimate of Standard Deviation	587.3391		
MVU Estimate of SE of Mean	203.4247		
95% H-UCL	30789.06		
95% Chebyshev (MVUE) UCL	1212.517		
97.5% Chebyshev (MVUE) UCL	1596.196		
99% Chebyshev (MVUE) UCL	2349.859		
Non-parametric Statistics			
95% CLT UCL	376.8613		
95% Adjusted-CLT UCL	374.7695		
95% Modified-t UCL	401.0103		
95% Jackknife UCL	401.3365		
95% Chebyshev (Mean, Sd) UCL	599.5269		
97.5% Chebyshev (Mean, Sd) UCL	754.2661		
99% Chebyshev (Mean, Sd) UCL	1058.221		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	370.447		
95% Bootstrap-t UCL	408.5807		
95% Hall's Bootstrap UCL	337.6011		
95% Percentile Bootstrap UCL	372.1143		
95% BCA Bootstrap UCL	340.9429		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	401.3365	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Lead		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	1.9		
Maximum	285		
Mean	116.9143		
Standard Deviation	110.9738		
Variance	12315.19		
Coefficient of Variation	0.94919		
Skewness	0.313883		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.891116		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	198.4193		
Gamma Statistics			
k hat	0.643793		
k star (bias corrected)	0.46312		
Theta hat	181.6024		
Theta star	252.4494		
nu hat	9.013097		
nu star	6.483675		
5% Approximate Chi Square Value	1.891282		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	1.236299		
Anderson-Darling Test Statistic	0.493762		
Anderson-Darling 5% Critical Value	0.742682		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.287095		
Kolmogrov-Smirnov 5% Critical Value	0.324606		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	400.8045		
95% Adjusted Gamma UCL	613.1479		
Lognormal Statistics			
Minimum of log data	0.641854		
Maximum of log data	5.652489		
Mean of log data	3.811506		
Standard Deviation of log data	1.915381		
Variance of log data	3.668683		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.866138		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	283.1132		
MLE Standard Deviation	1749.819		
MLE Coefficient of Variation	6.180634		
MLE Skewness	254.6436		
MLE Median	45.21846		
MLE 80% Quantile	228.1497		
MLE 90% Quantile	529.9431		
MLE 95% Quantile	1056.067		
MLE 99% Quantile	3892.009		
MVU Estimate of Median	34.47437		
MVU Estimate of Mean	174.3932		
MVU Estimate of Standard Deviation	348.9594		
MVU Estimate of SE of Mean	117.6454		
95% H-UCL	44909.69		
95% Chebyshev (MVUE) UCL	687.1974		
97.5% Chebyshev (MVUE) UCL	909.0882		
99% Chebyshev (MVUE) UCL	1344.95		
Non-parametric Statistics			
95% CLT UCL	185.9063		
95% Adjusted-CLT UCL	191.2233		
95% Modified-t UCL	199.2487		
95% Jackknife UCL	198.4193		
95% Chebyshev (Mean, Sd) UCL	299.7446		
97.5% Chebyshev (Mean, Sd) UCL	378.8555		
99% Chebyshev (Mean, Sd) UCL	534.2534		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	180.9653		
95% Bootstrap-t UCL	196.0629		
95% Hall's Bootstrap UCL	183.1586		
95% Percentile Bootstrap UCL	179.4286		
95% BCA Bootstrap UCL	168.0714		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	198.4193	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Manganese		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	84		
Maximum	776		
Mean	387.1857		
Standard Deviation	332.4105		
Variance	110496.7		
Coefficient of Variation	0.85853		
Skewness	0.368219		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.752854		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	631.3256		
Gamma Statistics			
k hat	1.380446		
k star (bias corrected)	0.884064		
Theta hat	280.4788		
Theta star	437.9611		
nu hat	19.32624		
nu star	12.3769		
5% Approximate Chi Square Value	5.475266		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	4.172886		
Anderson-Darling Test Statistic	0.790105		
Anderson-Darling 5% Critical Value	0.722737		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.302024		
Kolmogrov-Smirnov 5% Critical Value	0.317629		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	875.2375		
95% Adjusted Gamma UCL	1148.404		
Lognormal Statistics			
Minimum of log data	4.430817		
Maximum of log data	6.654153		
Mean of log data	5.554872		
Standard Deviation of log data	1.011089		
Variance of log data	1.022301		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.810061		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	430.963		
MLE Standard Deviation	574.9088		
MLE Coefficient of Variation	1.33401		
MLE Skewness	6.376009		
MLE Median	258.4939		
MLE 80% Quantile	607.433		
MLE 90% Quantile	947.7787		
MLE 95% Quantile	1363.913		
MLE 99% Quantile	2715.318		
MVU Estimate of Median	240.1276		
MVU Estimate of Mean	392.0781		
MVU Estimate of Standard Deviation	404.5273		
MVU Estimate of SE of Mean	150.373		
95% H-UCL	2008.978		
95% Chebyshev (MVUE) UCL	1047.539		
97.5% Chebyshev (MVUE) UCL	1331.157		
99% Chebyshev (MVUE) UCL	1888.27		
Non-parametric Statistics			
95% CLT UCL	593.8441		
95% Adjusted-CLT UCL	612.5278		
95% Modified-t UCL	634.2398		
95% Jackknife UCL	631.3256		
95% Chebyshev (Mean, Sd) UCL	934.835		
97.5% Chebyshev (Mean, Sd) UCL	1171.803		
99% Chebyshev (Mean, Sd) UCL	1637.282		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	577.3555		
95% Bootstrap-t UCL	656.5531		
95% Hall's Bootstrap UCL	502.8224		
95% Percentile Bootstrap UCL	571.4714		
95% BCA Bootstrap UCL	559.6143		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	875.2375	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value	
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Mercury		
<b>Raw Statistics</b>			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	0.023		
Maximum	5.6		
Mean	1.874714		
Standard Deviation	2.099701		
Variance	4.408742		
Coefficient of Variation	1.120011		
Skewness	1.069165		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.871209		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	3.416845		
<b>Gamma Statistics</b>			
k hat	0.596969		
k star (bias corrected)	0.436363		
Theta hat	3.140386		
Theta star	4.296222		
nu hat	8.357572		
nu star	6.109088		
5% Approximate Chi Square Value	1.695357		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	1.087925		
Anderson-Darling Test Statistic	0.183219		
Anderson-Darling 5% Critical Value	0.745567		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.129517		
Kolmogrov-Smirnov 5% Critical Value	0.325464		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	6.755389		
95% Adjusted Gamma UCL	10.52719		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.772261		
Maximum of log data	1.722767		
Mean of log data	-0.407339		
Standard Deviation of log data	1.978336		
Variance of log data	3.913814		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.933987		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	4.709434		
MLE Standard Deviation	32.99618		
MLE Coefficient of Variation	7.0064		
MLE Skewness	364.9609		
MLE Median	0.665418		
MLE 80% Quantile	3.540807		
MLE 90% Quantile	8.455547		
MLE 95% Quantile	17.23641		
MLE 99% Quantile	66.30536		
MVU Estimate of Median	0.497844		
MVU Estimate of Mean	2.776422		
MVU Estimate of Standard Deviation	5.746021		
MVU Estimate of SE of Mean	1.917863		
95% H-UCL	1036.253		
95% Chebyshev (MVUE) UCL	11.13619		
97.5% Chebyshev (MVUE) UCL	14.75347		
99% Chebyshev (MVUE) UCL	21.85892		
<b>Non-parametric Statistics</b>			
95% CLT UCL	3.18009		
95% Adjusted-CLT UCL	3.522767		
95% Modified-t UCL	3.470296		
95% Jackknife UCL	3.416845		
95% Chebyshev (Mean, Sd) UCL	5.33399		
97.5% Chebyshev (Mean, Sd) UCL	6.830821		
99% Chebyshev (Mean, Sd) UCL	9.771056		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	3.078841		
95% Bootstrap-t UCL	4.911499		
95% Hall's Bootstrap UCL	5.172464		
95% Percentile Bootstrap UCL	3.147143		
95% BCA Bootstrap UCL	2.903286		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	3.416845	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	1.6		
Maximum	22		
Mean	10.12857		
Standard Deviation	7.226505		
Variance	52.22238		
Coefficient of Variation	0.713477		
Skewness	0.637385		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.955217		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	15.4361		
Gamma Statistics			
k hat	1.907431		
k star (bias corrected)	1.185199		
Theta hat	5.310059		
Theta star	8.545884		
nu hat	26.70404		
nu star	16.59278		
5% Approximate Chi Square Value	8.380705		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	6.696065		
Anderson-Darling Test Statistic	0.149079		
Anderson-Darling 5% Critical Value	0.716074		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.121383		
Kolmogrov-Smirnov 5% Critical Value	0.315462		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	20.05335		
95% Adjusted Gamma UCL	25.0985		
Lognormal Statistics			
Minimum of log data	0.470004		
Maximum of log data	3.091042		
Mean of log data	2.030887		
Standard Deviation of log data	0.896071		
Variance of log data	0.802943		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.959308		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	11.3857		
MLE Standard Deviation	12.63814		
MLE Coefficient of Variation	1.110001		
MLE Skewness	4.697635		
MLE Median	7.620842		
MLE 80% Quantile	16.24958		
MLE 90% Quantile	24.10305		
MLE 95% Quantile	33.27891		
MLE 99% Quantile	61.26129		
MVU Estimate of Median	7.193056		
MVU Estimate of Mean	10.60605		
MVU Estimate of Standard Deviation	9.665172		
MVU Estimate of SE of Mean	3.613098		
95% H-UCL	39.62879		
95% Chebyshev (MVUE) UCL	26.35518		
97.5% Chebyshev (MVUE) UCL	33.16984		
99% Chebyshev (MVUE) UCL	46.55592		
Non-parametric Statistics			
95% CLT UCL	14.62126		
95% Adjusted-CLT UCL	15.32436		
95% Modified-t UCL	15.54577		
95% Jackknife UCL	15.4361		
95% Chebyshev (Mean, Sd) UCL	22.0343		
97.5% Chebyshev (Mean, Sd) UCL	27.18592		
99% Chebyshev (Mean, Sd) UCL	37.30528		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	14.34619		
95% Bootstrap-t UCL	17.22726		
95% Hall's Bootstrap UCL	17.14659		
95% Percentile Bootstrap UCL	14.38571		
95% BCA Bootstrap UCL	13.45714		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	15.4361	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	4.2		
Maximum	42.2		
Mean	20.17143		
Standard Deviation	14.12371		
Variance	199.479		
Coefficient of Variation	0.700184		
Skewness	0.416709		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.941829		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	30.54462		
Gamma Statistics			
k hat	1.979767		
k star (bias corrected)	1.226533		
Theta hat	10.18879		
Theta star	16.44589		
nu hat	27.71674		
nu star	17.17147		
5% Approximate Chi Square Value	8.793531		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	7.060083		
Anderson-Darling Test Statistic	0.24655		
Anderson-Darling 5% Critical Value	0.715157		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.171742		
Kolmogrov-Smirnov 5% Critical Value	0.315187		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	39.38953		
95% Adjusted Gamma UCL	49.06076		
Lognormal Statistics			
Minimum of log data	1.435085		
Maximum of log data	3.74242		
Mean of log data	2.73094		
Standard Deviation of log data	0.860018		
Variance of log data	0.739631		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.940723		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	22.21473		
MLE Standard Deviation	23.24772		
MLE Coefficient of Variation	1.0465		
MLE Skewness	4.285588		
MLE Median	15.34731		
MLE 80% Quantile	31.74246		
MLE 90% Quantile	46.34268		
MLE 95% Quantile	63.15991		
MLE 99% Quantile	113.4477		
MVU Estimate of Median	14.55239		
MVU Estimate of Mean	20.82861		
MVU Estimate of Standard Deviation	18.19796		
MVU Estimate of SE of Mean	6.812892		
95% H-UCL	71.07468		
95% Chebyshev (MVUE) UCL	50.52531		
97.5% Chebyshev (MVUE) UCL	63.3751		
99% Chebyshev (MVUE) UCL	88.61602		
Non-parametric Statistics			
95% CLT UCL	28.95208		
95% Adjusted-CLT UCL	29.85047		
95% Modified-t UCL	30.68475		
95% Jackknife UCL	30.54462		
95% Chebyshev (Mean, Sd) UCL	43.44036		
97.5% Chebyshev (Mean, Sd) UCL	53.50884		
99% Chebyshev (Mean, Sd) UCL	73.28643		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	28.19604		
95% Bootstrap-t UCL	33.66595		
95% Hall's Bootstrap UCL	28.10073		
95% Percentile Bootstrap UCL	28.47143		
95% BCA Bootstrap UCL	26.97143		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	30.54462	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	36.4		
Maximum	1090		
Mean	575.8429		
Standard Deviation	486.5025		
Variance	236684.7		
Coefficient of Variation	0.844853		
Skewness	-0.024331		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.813999		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	933.156		
Gamma Statistics			
k hat	0.960357		
k star (bias corrected)	0.644013		
Theta hat	599.6136		
Theta star	894.1475		
nu hat	13.44499		
nu star	9.016186		
5% Approximate Chi Square Value	3.335968		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	2.38198		
Anderson-Darling Test Statistic	0.581224		
Anderson-Darling 5% Critical Value	0.72887		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.262671		
Kolmogrov-Smirnov 5% Critical Value	0.320085		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1556.342		
95% Adjusted Gamma UCL	2179.66		
Lognormal Statistics			
Minimum of log data	3.594569		
Maximum of log data	6.993933		
Mean of log data	5.7519		
Standard Deviation of log data	1.407266		
Variance of log data	1.980399		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.846543		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	847.3375		
MLE Standard Deviation	2117.603		
MLE Coefficient of Variation	2.499126		
MLE Skewness	23.106		
MLE Median	314.7881		
MLE 80% Quantile	1033.845		
MLE 90% Quantile	1920.301		
MLE 95% Quantile	3187.056		
MLE 99% Quantile	8309.888		
MVU Estimate of Median	272.5555		
MVU Estimate of Mean	683.0814		
MVU Estimate of Standard Deviation	992.0093		
MVU Estimate of SE of Mean	357.3944		
95% H-UCL	14141.01		
95% Chebyshev (MVUE) UCL	2240.927		
97.5% Chebyshev (MVUE) UCL	2915.009		
99% Chebyshev (MVUE) UCL	4239.11		
Non-parametric Statistics			
95% CLT UCL	878.2996		
95% Adjusted-CLT UCL	876.4928		
95% Modified-t UCL	932.8742		
95% Jackknife UCL	933.156		
95% Chebyshev (Mean, Sd) UCL	1377.36		
97.5% Chebyshev (Mean, Sd) UCL	1724.177		
99% Chebyshev (Mean, Sd) UCL	2405.432		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	859.7545		
95% Bootstrap-t UCL	939.0557		
95% Hall's Bootstrap UCL	778.5736		
95% Percentile Bootstrap UCL	854.2143		
95% BCA Bootstrap UCL	780.2		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	933.156	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 16-tt-33.xls		
Variable:	Chromium VI		
Raw Statistics			
Number of Observations	7		
Number of Missing Data	0		
Number of Valid Observations	7		
Number of Distinct Observations	7		
Minimum	0.00429		
Maximum	2.86		
Mean	0.74464		
Standard Deviation	1.008696		
Variance	1.017468		
Coefficient of Variation	1.354609		
Skewness	1.899929		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.765785		
Shapiro-Wilk 5% Critical Value	0.803		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	1.48548		
Gamma Statistics			
k hat	0.457603		
k star (bias corrected)	0.356725		
Theta hat	1.627264		
Theta star	2.087433		
nu hat	6.406436		
nu star	4.994154		
5% Approximate Chi Square Value	1.149085		
Adjusted Level of Significance	0.01584		
Adjusted Chi Square Value	0.688795		
Anderson-Darling Test Statistic	0.28575		
Anderson-Darling 5% Critical Value	0.758442		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.201503		
Kolmogrov-Smirnov 5% Critical Value	0.328904		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	3.236355		
95% Adjusted Gamma UCL	5.399066		
Lognormal Statistics			
Minimum of log data	-5.451469		
Maximum of log data	1.050822		
Mean of log data	-1.702309		
Standard Deviation of log data	2.343759		
Variance of log data	5.493208		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.922876		
Shapiro-Wilk 5% Critical Value	0.803		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	2.841395		
MLE Standard Deviation	44.20499		
MLE Coefficient of Variation	15.5575		
MLE Skewness	3812.141		
MLE Median	0.182262		
MLE 80% Quantile	1.320708		
MLE 90% Quantile	3.704031		
MLE 95% Quantile	8.61216		
MLE 99% Quantile	42.49028		
MVU Estimate of Median	0.120484		
MVU Estimate of Mean	1.233357		
MVU Estimate of Standard Deviation	3.046733		
MVU Estimate of SE of Mean	0.95355		
95% H-UCL	5140.392		
95% Chebyshev (MVUE) UCL	5.389784		
97.5% Chebyshev (MVUE) UCL	7.188274		
99% Chebyshev (MVUE) UCL	10.72106		
Non-parametric Statistics			
95% CLT UCL	1.371743		
95% Adjusted-CLT UCL	1.664279		
95% Modified-t UCL	1.53111		
95% Jackknife UCL	1.48548		
95% Chebyshev (Mean, Sd) UCL	2.406476		
97.5% Chebyshev (Mean, Sd) UCL	3.125554		
99% Chebyshev (Mean, Sd) UCL	4.538043		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.321768		
95% Bootstrap-t UCL	2.17995		
95% Hall's Bootstrap UCL	3.864634		
95% Percentile Bootstrap UCL	1.388029		
95% BCA Bootstrap UCL	1.231137		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	GAMMA		
1st Recommended UCL	5.399066		95% Adjusted Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Benzo(a)anthracene		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.04		
Maximum	1		
Mean	0.2122		
Standard Deviation	0.284563		
Variance	0.080976		
Coefficient of Variation	1.341014		
Skewness	2.860483		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.57721		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.377156		
<b>Gamma Statistics</b>			
k hat	1.240964		
k star (bias corrected)	0.935341		
Theta hat	0.170996		
Theta star	0.226869		
nu hat	24.81928		
nu star	18.70683		
5% Approximate Chi Square Value	9.902189		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	8.809518		
Anderson-Darling Test Statistic	0.797999		
Anderson-Darling 5% Critical Value	0.743913		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.276267		
Kolmogrov-Smirnov 5% Critical Value	0.272483		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.40088		
95% Adjusted Gamma UCL	0.450602		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.218876		
Maximum of log data	0		
Mean of log data	-2.004442		
Standard Deviation of log data	0.895518		
Variance of log data	0.801952		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.92478		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.201198		
MLE Standard Deviation	0.223129		
MLE Coefficient of Variation	1.109004		
MLE Skewness	4.690965		
MLE Median	0.134735		
MLE 80% Quantile	0.287156		
MLE 90% Quantile	0.425836		
MLE 95% Quantile	0.587832		
MLE 99% Quantile	1.081699		
MVU Estimate of Median	0.129421		
MVU Estimate of Mean	0.191168		
MVU Estimate of Standard Deviation	0.181494		
MVU Estimate of SE of Mean	0.056472		
95% H-UCL	0.477181		
95% Chebyshev (MVUE) UCL	0.437322		
97.5% Chebyshev (MVUE) UCL	0.543833		
99% Chebyshev (MVUE) UCL	0.753053		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.360215		
95% Adjusted-CLT UCL	0.447191		
95% Modified-t UCL	0.390722		
95% Jackknife UCL	0.377156		
95% Chebyshev (Mean, Sd) UCL	0.604443		
97.5% Chebyshev (Mean, Sd) UCL	0.774167		
99% Chebyshev (Mean, Sd) UCL	1.107557		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.352406		
95% Bootstrap-t UCL	0.867963		
95% Hall's Bootstrap UCL	0.930438		
95% Percentile Bootstrap UCL	0.3842		
95% BCA Bootstrap UCL	0.4709		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	0.477181		95% H-UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Benzo(a)pyrene		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.045		
Maximum	1.1		
Mean	0.209		
Standard Deviation	0.320745		
Variance	0.102878		
Coefficient of Variation	1.534667		
Skewness	2.900714		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.545041		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.39493		
<b>Gamma Statistics</b>			
k hat	1.017167		
k star (bias corrected)	0.778684		
Theta hat	0.205473		
Theta star	0.268402		
nu hat	20.34335		
nu star	15.57368		
5% Approximate Chi Square Value	7.661046		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	6.718906		
Anderson-Darling Test Statistic	1.033923		
Anderson-Darling 5% Critical Value	0.74796		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.293841		
Kolmogrov-Smirnov 5% Critical Value	0.27366		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.424863		
95% Adjusted Gamma UCL	0.484439		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.101093		
Maximum of log data	0.09531		
Mean of log data	-2.131768		
Standard Deviation of log data	0.96641		
Variance of log data	0.933948		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.864346		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.18923		
MLE Standard Deviation	0.235173		
MLE Coefficient of Variation	1.242794		
MLE Skewness	5.647921		
MLE Median	0.118627		
MLE 80% Quantile	0.268434		
MLE 90% Quantile	0.410684		
MLE 95% Quantile	0.58157		
MLE 99% Quantile	1.12311		
MVU Estimate of Median	0.113192		
MVU Estimate of Mean	0.177942		
MVU Estimate of Standard Deviation	0.183864		
MVU Estimate of SE of Mean	0.056932		
95% H-UCL	0.502944		
95% Chebyshev (MVUE) UCL	0.426102		
97.5% Chebyshev (MVUE) UCL	0.533481		
99% Chebyshev (MVUE) UCL	0.744407		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.375835		
95% Adjusted-CLT UCL	0.475249		
95% Modified-t UCL	0.410437		
95% Jackknife UCL	0.39493		
95% Chebyshev (Mean, Sd) UCL	0.651117		
97.5% Chebyshev (Mean, Sd) UCL	0.842421		
99% Chebyshev (Mean, Sd) UCL	1.218202		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.366483		
95% Bootstrap-t UCL	1.045179		
95% Hall's Bootstrap UCL	0.955371		
95% Percentile Bootstrap UCL	0.3884		
95% BCA Bootstrap UCL	0.526		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	LOGNORMAL		
1st Recommended UCL	0.502944		95% H-UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Benzo(b)fluoranthene		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.076		
Maximum	2.3		
Mean	0.3961		
Standard Deviation	0.671834		
Variance	0.451361		
Coefficient of Variation	1.696122		
Skewness	3.111463		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.455334		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.78555		
Gamma Statistics			
k hat	1.002657		
k star (bias corrected)	0.768527		
Theta hat	0.39505		
Theta star	0.515402		
nu hat	20.05315		
nu star	15.37054		
5% Approximate Chi Square Value	7.518782		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	6.586873		
Anderson-Darling Test Statistic	1.635025		
Anderson-Darling 5% Critical Value	0.748222		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.406156		
Kolmogrov-Smirnov 5% Critical Value	0.273736		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.809741		
95% Adjusted Gamma UCL	0.924303		
Lognormal Statistics			
Minimum of log data	-2.577022		
Maximum of log data	0.832909		
Mean of log data	-1.501595		
Standard Deviation of log data	0.913493		
Variance of log data	0.83447		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.780002		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.338118		
MLE Standard Deviation	0.386046		
MLE Coefficient of Variation	1.14175		
MLE Skewness	4.913625		
MLE Median	0.222774		
MLE 80% Quantile	0.482057		
MLE 90% Quantile	0.720538		
MLE 95% Quantile	1.001101		
MLE 99% Quantile	1.864867		
MVU Estimate of Median	0.213637		
MVU Estimate of Mean	0.320459		
MVU Estimate of Standard Deviation	0.311006		
MVU Estimate of SE of Mean	0.096657		
95% H-UCL	0.824804		
95% Chebyshev (MVUE) UCL	0.741777		
97.5% Chebyshev (MVUE) UCL	0.924082		
99% Chebyshev (MVUE) UCL	1.282185		
Non-parametric Statistics			
95% CLT UCL	0.745553		
95% Adjusted-CLT UCL	0.968914		
95% Modified-t UCL	0.820389		
95% Jackknife UCL	0.78555		
95% Chebyshev (Mean, Sd) UCL	1.322159		
97.5% Chebyshev (Mean, Sd) UCL	1.722866		
99% Chebyshev (Mean, Sd) UCL	2.509976		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.727962		
95% Bootstrap-t UCL	3.222918		
95% Hall's Bootstrap UCL	2.990218		
95% Percentile Bootstrap UCL	0.8151		
95% BCA Bootstrap UCL	1.043		
Recommendations			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	1.322159		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Benzo(k)fluoranthene		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.069		
Maximum	2.1		
Mean	0.3614		
Standard Deviation	0.614174		
Variance	0.37721		
Coefficient of Variation	1.69943		
Skewness	3.099236		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.464703		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.717425		
<b>Gamma Statistics</b>			
k hat	0.988331		
k star (bias corrected)	0.758498		
Theta hat	0.365667		
Theta star	0.476468		
nu hat	19.76662		
nu star	15.16997		
5% Approximate Chi Square Value	7.378726		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	6.456981		
Anderson-Darling Test Statistic	1.511272		
Anderson-Darling 5% Critical Value	0.748676		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.385499		
Kolmogrov-Smirnov 5% Critical Value	0.273854		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.743005		
95% Adjusted Gamma UCL	0.84907		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.673649		
Maximum of log data	0.741937		
Mean of log data	-1.602608		
Standard Deviation of log data	0.923479		
Variance of log data	0.852814		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.802112		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.308448		
MLE Standard Deviation	0.357885		
MLE Coefficient of Variation	1.160276		
MLE Skewness	5.042839		
MLE Median	0.201371		
MLE 80% Quantile	0.439434		
MLE 90% Quantile	0.659722		
MLE 95% Quantile	0.919905		
MLE 99% Quantile	1.725307		
MVU Estimate of Median	0.192932		
MVU Estimate of Mean	0.291921		
MVU Estimate of Standard Deviation	0.286747		
MVU Estimate of SE of Mean	0.089059		
95% H-UCL	0.764441		
95% Chebyshev (MVUE) UCL	0.680119		
97.5% Chebyshev (MVUE) UCL	0.848093		
99% Chebyshev (MVUE) UCL	1.178045		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.680862		
95% Adjusted-CLT UCL	0.88425		
95% Modified-t UCL	0.74915		
95% Jackknife UCL	0.717425		
95% Chebyshev (Mean, Sd) UCL	1.20798		
97.5% Chebyshev (Mean, Sd) UCL	1.574296		
99% Chebyshev (Mean, Sd) UCL	2.293853		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.668391		
95% Bootstrap-t UCL	2.715538		
95% Hall's Bootstrap UCL	2.292066		
95% Percentile Bootstrap UCL	0.7419		
95% BCA Bootstrap UCL	0.9475		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	1.20798		95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Dibenz(a,h)anthracene		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	6		
Minimum	0.08		
Maximum	0.26		
Mean	0.205		
Standard Deviation	0.050662		
Variance	0.002567		
Coefficient of Variation	0.247133		
Skewness	-1.701489		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.804436		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.234368		
<b>Gamma Statistics</b>			
k hat	12.40491		
k star (bias corrected)	8.750102		
Theta hat	0.016526		
Theta star	0.023428		
nu hat	248.0981		
nu star	175.002		
5% Approximate Chi Square Value	145.4018		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	140.7135		
Anderson-Darling Test Statistic	1.155753		
Anderson-Darling 5% Critical Value	0.724937		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.368326		
Kolmogrov-Smirnov 5% Critical Value	0.266519		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.246733		
95% Adjusted Gamma UCL	0.254954		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.525729		
Maximum of log data	-1.347074		
Mean of log data	-1.625593		
Standard Deviation of log data	0.335474		
Variance of log data	0.112543		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.673303		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.208186		
MLE Standard Deviation	0.071853		
MLE Coefficient of Variation	0.345137		
MLE Skewness	1.076525		
MLE Median	0.196795		
MLE 80% Quantile	0.261292		
MLE 90% Quantile	0.302852		
MLE 95% Quantile	0.341728		
MLE 99% Quantile	0.429436		
MVU Estimate of Median	0.19569		
MVU Estimate of Mean	0.20697		
MVU Estimate of Standard Deviation	0.070064		
MVU Estimate of SE of Mean	0.022147		
95% H-UCL	0.260799		
95% Chebyshev (MVUE) UCL	0.303507		
97.5% Chebyshev (MVUE) UCL	0.345279		
99% Chebyshev (MVUE) UCL	0.427331		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.231352		
95% Adjusted-CLT UCL	0.222141		
95% Modified-t UCL	0.232931		
95% Jackknife UCL	0.234368		
95% Chebyshev (Mean, Sd) UCL	0.274833		
97.5% Chebyshev (Mean, Sd) UCL	0.30505		
99% Chebyshev (Mean, Sd) UCL	0.364405		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.230411		
95% Bootstrap-t UCL	0.228009		
95% Hall's Bootstrap UCL	0.225593		
95% Percentile Bootstrap UCL	0.2275		
95% BCA Bootstrap UCL	0.2325		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	0.234368		95% Student's-t UCL
2nd Recommended UCL	0.232931		95% Modified-t UCL
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Indeno(1,2,3-cd)pyrene		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.021		
Maximum	0.37		
Mean	0.1875		
Standard Deviation	0.110909		
Variance	0.012301		
Coefficient of Variation	0.591513		
Skewness	-0.242103		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.915027		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	0.251792		
<b>Gamma Statistics</b>			
k hat	1.915476		
k star (bias corrected)	1.4075		
Theta hat	0.097887		
Theta star	0.133215		
nu hat	38.30951		
nu star	28.14999		
5% Approximate Chi Square Value	17.04294		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	15.55796		
Anderson-Darling Test Statistic	0.808554		
Anderson-Darling 5% Critical Value	0.736197		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.316761		
Kolmogrov-Smirnov 5% Critical Value	0.270031		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.309696		
95% Adjusted Gamma UCL	0.339256		
<b>Lognormal Statistics</b>			
Minimum of log data	-3.863233		
Maximum of log data	-0.994252		
Mean of log data	-1.957166		
Standard Deviation of log data	0.93641		
Variance of log data	0.876864		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.818812		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.218989		
MLE Standard Deviation	0.259421		
MLE Coefficient of Variation	1.184631		
MLE Skewness	5.216346		
MLE Median	0.141258		
MLE 80% Quantile	0.311642		
MLE 90% Quantile	0.470538		
MLE 95% Quantile	0.659172		
MLE 99% Quantile	1.247228		
MVU Estimate of Median	0.135175		
MVU Estimate of Mean	0.206864		
MVU Estimate of Standard Deviation	0.206362		
MVU Estimate of SE of Mean	0.064036		
95% H-UCL	0.554108		
95% Chebyshev (MVUE) UCL	0.485991		
97.5% Chebyshev (MVUE) UCL	0.606769		
99% Chebyshev (MVUE) UCL	0.844014		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.245189		
95% Adjusted-CLT UCL	0.24232		
95% Modified-t UCL	0.251344		
95% Jackknife UCL	0.251792		
95% Chebyshev (Mean, Sd) UCL	0.340377		
97.5% Chebyshev (Mean, Sd) UCL	0.406527		
99% Chebyshev (Mean, Sd) UCL	0.536466		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.24159		
95% Bootstrap-t UCL	0.248896		
95% Hall's Bootstrap UCL	0.242273		
95% Percentile Bootstrap UCL	0.2436		
95% BCA Bootstrap UCL	0.2294		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.251792		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - 09.xls		
Variable:	Phenanthrene		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.062		
Maximum	1.9		
Mean	0.306		
Standard Deviation	0.563675		
Variance	0.31773		
Coefficient of Variation	1.842075		
Skewness	3.088523		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.465821		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.632752		
<b>Gamma Statistics</b>			
k hat	0.841504		
k star (bias corrected)	0.655719		
Theta hat	0.363635		
Theta star	0.466663		
nu hat	16.83008		
nu star	13.11439		
5% Approximate Chi Square Value	5.968625		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	5.154885		
Anderson-Darling Test Statistic	1.454101		
Anderson-Darling 5% Critical Value	0.753786		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.310461		
Kolmogrov-Smirnov 5% Critical Value	0.275164		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.67235		
95% Adjusted Gamma UCL	0.778485		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.780621		
Maximum of log data	0.641854		
Mean of log data	-1.884818		
Standard Deviation of log data	1.009828		
Variance of log data	1.019752		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.797821		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	0.252854		
MLE Standard Deviation	0.336639		
MLE Coefficient of Variation	1.331356		
MLE Skewness	6.353906		
MLE Median	0.151857		
MLE 80% Quantile	0.356467		
MLE 90% Quantile	0.555888		
MLE 95% Quantile	0.799594		
MLE 99% Quantile	1.590489		
MVU Estimate of Median	0.144273		
MVU Estimate of Mean	0.236109		
MVU Estimate of Standard Deviation	0.256303		
MVU Estimate of SE of Mean	0.079094		
95% H-UCL	0.7235		
95% Chebyshev (MVUE) UCL	0.580873		
97.5% Chebyshev (MVUE) UCL	0.730052		
99% Chebyshev (MVUE) UCL	1.023086		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.599195		
95% Adjusted-CLT UCL	0.785215		
95% Modified-t UCL	0.661767		
95% Jackknife UCL	0.632752		
95% Chebyshev (Mean, Sd) UCL	1.082972		
97.5% Chebyshev (Mean, Sd) UCL	1.419169		
99% Chebyshev (Mean, Sd) UCL	2.079562		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.577336		
95% Bootstrap-t UCL	2.70164		
95% Hall's Bootstrap UCL	1.830365		
95% Percentile Bootstrap UCL	0.6509		
95% BCA Bootstrap UCL	0.8424		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	2.079562		99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	YES		Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Antimony		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.255		
Maximum	1.3		
Mean	0.814999		
Standard Deviation	0.3391		
Variance	0.114989		
Coefficient of Variation	0.416074		
Skewness	-0.636802		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.922745		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.011569		
<b>Gamma Statistics</b>			
k hat	4.534134		
k star (bias corrected)	3.240561		
Theta hat	0.179747		
Theta star	0.251499		
nu hat	90.68268		
nu star	64.81121		
5% Approximate Chi Square Value	47.28487		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	44.69321		
Anderson-Darling Test Statistic	0.729943		
Anderson-Darling 5% Critical Value	0.729422		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level	
Kolmogrov-Smirnov Test Statistic	0.244606		
Kolmogrov-Smirnov 5% Critical Value	0.267612		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.117082		
95% Adjusted Gamma UCL	1.181859		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.366492		
Maximum of log data	0.262364		
Mean of log data	-0.318877		
Standard Deviation of log data	0.558664		
Variance of log data	0.312106		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.814077		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level	
MLE Mean	0.84974		
MLE Standard Deviation	0.514286		
MLE Coefficient of Variation	0.605227		
MLE Skewness	2.037374		
MLE Median	0.726965		
MLE 80% Quantile	1.165551		
MLE 90% Quantile	1.490343		
MLE 95% Quantile	1.822348		
MLE 99% Quantile	2.665992		
MVU Estimate of Median	0.715692		
MVU Estimate of Mean	0.835126		
MVU Estimate of Standard Deviation	0.478045		
MVU Estimate of SE of Mean	0.150731		
95% H-UCL	1.30522		
95% Chebyshev (MVUE) UCL	1.492146		
97.5% Chebyshev (MVUE) UCL	1.776439		
99% Chebyshev (MVUE) UCL	2.334878		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.991381		
95% Adjusted-CLT UCL	0.968308		
95% Modified-t UCL	1.00797		
95% Jackknife UCL	1.011569		
95% Chebyshev (Mean, Sd) UCL	1.282416		
97.5% Chebyshev (Mean, Sd) UCL	1.484667		
99% Chebyshev (Mean, Sd) UCL	1.881951		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.985795		
95% Bootstrap-t UCL	0.982794		
95% Hall's Bootstrap UCL	0.96666		
95% Percentile Bootstrap UCL	0.9785		
95% BCA Bootstrap UCL	0.942499		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.011569	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls				
Variable:	Arsenic				
<b>Raw Statistics</b>					
Number of Observations			10		
Number of Missing Data			0		
Number of Valid Observations			10		
Number of Distinct Observations			10		
Minimum			18.1		
Maximum			48.5		
Mean			29.27		
Standard Deviation			9.657243		
Variance			93.26233		
Coefficient of Variation			0.329937		
Skewness			0.954765		
Too Few Distinct Observations?			NO		
<b>Normal Statistics</b>					
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.902903		
Shapiro-Wilk 5% Critical Value			0.842		
5% Normality Test Result			NORMAL		Data are normal at 5% significance level
95% Student's-t UCL			34.86812		
<b>Gamma Statistics</b>					
k hat			11.13382		
k star (bias corrected)			7.860344		
Theta hat			2.628926		
Theta star			3.723756		
nu hat			222.6765		
nu star			157.2069		
5% Approximate Chi Square Value			129.2157		
Adjusted Level of Significance			0.0267		
Adjusted Chi Square Value			124.8073		
Anderson-Darling Test Statistic			0.374276		
Anderson-Darling 5% Critical Value			0.725002		
Anderson-Darling 5% Gamma Test Result			AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic			0.232568		
Kolmogrov-Smirnov 5% Critical Value			0.266578		
Kolmogrov-Smirnov 5% Gamma Test Result			KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result			GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL			35.61057		
95% Adjusted Gamma UCL			36.86841		
<b>Lognormal Statistics</b>					
Minimum of log data			2.895912		
Maximum of log data			3.881564		
Mean of log data			3.330983		
Standard Deviation of log data			0.313616		
Variance of log data			0.098355		
Lilliefors Test Statistic			N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value			N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic			0.947913		
Shapiro-Wilk 5% Critical Value			0.842		
5% Lognormality Test Result			LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean			29.37549		
MLE Standard Deviation			9.443863		
MLE Coefficient of Variation			0.321488		
MLE Skewness			0.997691		
MLE Median			27.96582		
MLE 80% Quantile			36.45172		
MLE 90% Quantile			41.84531		
MLE 95% Quantile			46.84675		
MLE 99% Quantile			58.00064		
MVU Estimate of Median			27.82857		
MVU Estimate of Mean			29.22623		
MVU Estimate of Standard Deviation			9.238708		
MVU Estimate of SE of Mean			2.920615		
95% H-UCL			36.1736		
95% Chebyshev (MVUE) UCL			41.95689		
97.5% Chebyshev (MVUE) UCL			47.46546		
99% Chebyshev (MVUE) UCL			58.28597		
<b>Non-parametric Statistics</b>					
95% CLT UCL			34.2932		
95% Adjusted-CLT UCL			35.27841		
95% Modified-t UCL			35.02179		
95% Jackknife UCL			34.86812		
95% Chebyshev (Mean, Sd) UCL			42.58159		
97.5% Chebyshev (Mean, Sd) UCL			48.34153		
99% Chebyshev (Mean, Sd) UCL			59.6558		
<b>Bootstrap Statistics</b>					
Number of Bootstrap Runs			2000		
95% Standard Bootstrap UCL			34.06442		
95% Bootstrap-t UCL			36.94451		
95% Hall's Bootstrap UCL			37.03663		
95% Percentile Bootstrap UCL			34.33		
95% BCA Bootstrap UCL			33.3		
<b>Recommendations</b>					
Human Inspection Recommended?			NO		
Appropriate Distribution			NORMAL		
1st Recommended UCL			34.86812		95% Student's-t UCL
2nd Recommended UCL					
3rd Recommended UCL					
Recommended UCL > Max Data Value			NO		
Recommendation Warning!			NONE		
Alternative UCL			NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	6		
Maximum	73.9		
Mean	21		
Standard Deviation	19.35855		
Variance	374.7533		
Coefficient of Variation	0.921836		
Skewness	2.714351		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.633826		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	32.22179		
<b>Gamma Statistics</b>			
k hat	2.264515		
k star (bias corrected)	1.651827		
Theta hat	9.273508		
Theta star	12.71319		
nu hat	45.29031		
nu star	33.03655		
5% Approximate Chi Square Value	20.89362		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	19.23097		
Anderson-Darling Test Statistic	0.780293		
Anderson-Darling 5% Critical Value	0.734681		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.254439		
Kolmogrov-Smirnov 5% Critical Value	0.26945		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	33.20476		
95% Adjusted Gamma UCL	36.07553		
<b>Lognormal Statistics</b>			
Minimum of log data	1.791759		
Maximum of log data	4.302713		
Mean of log data	2.807766		
Standard Deviation of log data	0.664217		
Variance of log data	0.441184		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.908982		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	20.66327		
MLE Standard Deviation	15.3875		
MLE Coefficient of Variation	0.744679		
MLE Skewness	2.646994		
MLE Median	16.57286		
MLE 80% Quantile	29.05031		
MLE 90% Quantile	38.91129		
MLE 95% Quantile	49.42233		
MLE 99% Quantile	77.69057		
MVU Estimate of Median	16.21055		
MVU Estimate of Mean	20.14295		
MVU Estimate of Standard Deviation	13.83859		
MVU Estimate of SE of Mean	4.351901		
95% H-UCL	35.71449		
95% Chebyshev (MVUE) UCL	39.11245		
97.5% Chebyshev (MVUE) UCL	47.32056		
99% Chebyshev (MVUE) UCL	63.44382		
<b>Non-parametric Statistics</b>			
95% CLT UCL	31.06932		
95% Adjusted-CLT UCL	36.68392		
95% Modified-t UCL	33.09755		
95% Jackknife UCL	32.22179		
95% Chebyshev (Mean, Sd) UCL	47.68392		
97.5% Chebyshev (Mean, Sd) UCL	59.23007		
99% Chebyshev (Mean, Sd) UCL	81.91025		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	30.81446		
95% Bootstrap-t UCL	56.74535		
95% Hall's Bootstrap UCL	79.83297		
95% Percentile Bootstrap UCL	32.5		
95% BCA Bootstrap UCL	29.56		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	33.20476		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Cadmium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.19		
Maximum	1.2		
Mean	0.485		
Standard Deviation	0.293277		
Variance	0.086011		
Coefficient of Variation	0.604694		
Skewness	1.869526		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.803539		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.655007		
Gamma Statistics			
k hat	3.962246		
k star (bias corrected)	2.840239		
Theta hat	0.122405		
Theta star	0.17076		
nu hat	79.24492		
nu star	56.80478		
5% Approximate Chi Square Value	40.47793		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	38.09383		
Anderson-Darling Test Statistic	0.439702		
Anderson-Darling 5% Critical Value	0.729495		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.209483		
Kolmogrov-Smirnov 5% Critical Value	0.267844		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.680626		
95% Adjusted Gamma UCL	0.723223		
Lognormal Statistics			
Minimum of log data	-1.660731		
Maximum of log data	0.182322		
Mean of log data	-0.855073		
Standard Deviation of log data	0.520497		
Variance of log data	0.270917		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.956591		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.48694		
MLE Standard Deviation	0.271627		
MLE Coefficient of Variation	0.557823		
MLE Skewness	1.847045		
MLE Median	0.425252		
MLE 80% Quantile	0.660174		
MLE 90% Quantile	0.83008		
MLE 95% Quantile	1.001146		
MLE 99% Quantile	1.427042		
MVU Estimate of Median	0.419524		
MVU Estimate of Mean	0.479756		
MVU Estimate of Standard Deviation	0.255074		
MVU Estimate of SE of Mean	0.080482		
95% H-UCL	0.719339		
95% Chebyshev (MVUE) UCL	0.830567		
97.5% Chebyshev (MVUE) UCL	0.982363		
99% Chebyshev (MVUE) UCL	1.280538		
Non-parametric Statistics			
95% CLT UCL	0.637547		
95% Adjusted-CLT UCL	0.696133		
95% Modified-t UCL	0.664145		
95% Jackknife UCL	0.655007		
95% Chebyshev (Mean, Sd) UCL	0.889254		
97.5% Chebyshev (Mean, Sd) UCL	1.064175		
99% Chebyshev (Mean, Sd) UCL	1.407773		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.63174		
95% Bootstrap-t UCL	0.869514		
95% Hall's Bootstrap UCL	1.531159		
95% Percentile Bootstrap UCL	0.64		
95% BCA Bootstrap UCL	0.6165		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.680626	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	9.3		
Maximum	91.8		
Mean	44.64		
Standard Deviation	24.59504		
Variance	604.916		
Coefficient of Variation	0.550964		
Skewness	0.673314		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.954883		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	58.89728		
Gamma Statistics			
k hat	3.208709		
k star (bias corrected)	2.312763		
Theta hat	13.91214		
Theta star	19.30159		
nu hat	64.17417		
nu star	46.25525		
5% Approximate Chi Square Value	31.64772		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	29.56066		
Anderson-Darling Test Statistic	0.202979		
Anderson-Darling 5% Critical Value	0.731598		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.162636		
Kolmogrov-Smirnov 5% Critical Value	0.268319		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	65.24434		
95% Adjusted Gamma UCL	69.85075		
Lognormal Statistics			
Minimum of log data	2.230014		
Maximum of log data	4.519612		
Mean of log data	3.634786		
Standard Deviation of log data	0.653929		
Variance of log data	0.427623		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.94099		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	46.9272		
MLE Standard Deviation	34.27961		
MLE Coefficient of Variation	0.730485		
MLE Skewness	2.581248		
MLE Median	37.89373		
MLE 80% Quantile	65.84845		
MLE 90% Quantile	87.80204		
MLE 95% Quantile	111.1076		
MLE 99% Quantile	173.4388		
MVU Estimate of Median	37.09057		
MVU Estimate of Mean	45.78592		
MVU Estimate of Standard Deviation	30.93845		
MVU Estimate of SE of Mean	9.732412		
95% H-UCL	80.12684		
95% Chebyshev (MVUE) UCL	88.20852		
97.5% Chebyshev (MVUE) UCL	106.5648		
99% Chebyshev (MVUE) UCL	142.6222		
Non-parametric Statistics			
95% CLT UCL	57.43307		
95% Adjusted-CLT UCL	59.20255		
95% Modified-t UCL	59.17328		
95% Jackknife UCL	58.89728		
95% Chebyshev (Mean, Sd) UCL	78.54192		
97.5% Chebyshev (Mean, Sd) UCL	93.21131		
99% Chebyshev (Mean, Sd) UCL	122.0265		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	56.87261		
95% Bootstrap-t UCL	62.01817		
95% Hall's Bootstrap UCL	69.67695		
95% Percentile Bootstrap UCL	56.54		
95% BCA Bootstrap UCL	62.75		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	58.89728	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	4.2		
Maximum	102		
Mean	46.71		
Standard Deviation	28.28146		
Variance	799.841		
Coefficient of Variation	0.605469		
Skewness	0.529678		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.97559		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	63.10423		
Gamma Statistics			
k hat	2.115066		
k star (bias corrected)	1.547213		
Theta hat	22.08441		
Theta star	30.18977		
nu hat	42.30133		
nu star	30.94426		
5% Approximate Chi Square Value	19.23465		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	17.64639		
Anderson-Darling Test Statistic	0.303514		
Anderson-Darling 5% Critical Value	0.735189		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.175552		
Kolmogrov-Smirnov 5% Critical Value	0.269654		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	75.14597		
95% Adjusted Gamma UCL	81.90947		
Lognormal Statistics			
Minimum of log data	1.435085		
Maximum of log data	4.624973		
Mean of log data	3.589311		
Standard Deviation of log data	0.897206		
Variance of log data	0.804979		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.860718		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	54.15228		
MLE Standard Deviation	60.21991		
MLE Coefficient of Variation	1.112048		
MLE Skewness	4.711356		
MLE Median	36.20911		
MLE 80% Quantile	77.28114		
MLE 90% Quantile	114.6886		
MLE 95% Quantile	158.4145		
MLE 99% Quantile	291.8419		
MVU Estimate of Median	34.7755		
MVU Estimate of Mean	51.44088		
MVU Estimate of Standard Deviation	48.9395		
MVU Estimate of SE of Mean	15.22579		
95% H-UCL	128.7711		
95% Chebyshev (MVUE) UCL	117.8085		
97.5% Chebyshev (MVUE) UCL	146.5259		
99% Chebyshev (MVUE) UCL	202.9355		
Non-parametric Statistics			
95% CLT UCL	61.42056		
95% Adjusted-CLT UCL	63.0212		
95% Modified-t UCL	63.3539		
95% Jackknife UCL	63.10423		
95% Chebyshev (Mean, Sd) UCL	85.6933		
97.5% Chebyshev (Mean, Sd) UCL	102.5614		
99% Chebyshev (Mean, Sd) UCL	135.6955		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	60.87235		
95% Bootstrap-t UCL	65.01623		
95% Hall's Bootstrap UCL	66.5194		
95% Percentile Bootstrap UCL	61.73		
95% BCA Bootstrap UCL	67.77		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	63.10423		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls			
Variable:	Lead			
<b>Raw Statistics</b>				
Number of Observations			10	
Number of Missing Data			0	
Number of Valid Observations			10	
Number of Distinct Observations			10	
Minimum			2.4	
Maximum			86.8	
Mean			30.21	
Standard Deviation			23.11909	
Variance			534.4921	
Coefficient of Variation			0.765279	
Skewness			1.738054	
Too Few Distinct Observations?			NO	
<b>Normal Statistics</b>				
Lilliefors Test Statistic		N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.847756		
Shapiro-Wilk 5% Critical Value		0.842		
5% Normality Test Result		NORMAL		Data are normal at 5% significance level
95% Student's-t UCL		43.6117		
<b>Gamma Statistics</b>				
k hat		1.809111		
k star (bias corrected)		1.333044		
Theta hat		16.69881		
Theta star		22.66241		
nu hat		36.18222		
nu star		26.66089		
5% Approximate Chi Square Value		15.88737		
Adjusted Level of Significance		0.0267		
Adjusted Chi Square Value		14.45947		
Anderson-Darling Test Statistic		0.329381		
Anderson-Darling 5% Critical Value		0.736973		
Anderson-Darling 5% Gamma Test Result		AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic		0.1587		
Kolmogrov-Smirnov 5% Critical Value		0.27031		
Kolmogrov-Smirnov 5% Gamma Test Result		KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result		GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL		50.69595		
95% Adjusted Gamma UCL		55.70229		
<b>Lognormal Statistics</b>				
Minimum of log data		0.875469		
Maximum of log data		4.463607		
Mean of log data		3.107022		
Standard Deviation of log data		0.940876		
Variance of log data		0.885248		
Lilliefors Test Statistic		N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value		N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic		0.88266		
Shapiro-Wilk 5% Critical Value		0.842		
5% Lognormality Test Result		LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean		34.80099		
MLE Standard Deviation		41.5225		
MLE Coefficient of Variation		1.193141		
MLE Skewness		5.277963		
MLE Median		22.35437		
MLE 80% Quantile		49.50444		
MLE 90% Quantile		74.89206		
MLE 95% Quantile		105.0843		
MLE 99% Quantile		199.4373		
MVU Estimate of Median		21.38265		
MVU Estimate of Mean		32.85246		
MVU Estimate of Standard Deviation		32.94671		
MVU Estimate of SE of Mean		10.22046		
95% H-UCL		88.69591		
95% Chebyshev (MVUE) UCL		77.40242		
97.5% Chebyshev (MVUE) UCL		96.67922		
99% Chebyshev (MVUE) UCL		134.5448		
<b>Non-parametric Statistics</b>				
95% CLT UCL		42.23536		
95% Adjusted-CLT UCL		46.52888		
95% Modified-t UCL		44.2814		
95% Jackknife UCL		43.6117		
95% Chebyshev (Mean, Sd) UCL		62.07746		
97.5% Chebyshev (Mean, Sd) UCL		75.86654		
99% Chebyshev (Mean, Sd) UCL		102.9525		
<b>Bootstrap Statistics</b>				
Number of Bootstrap Runs		2000		
95% Standard Bootstrap UCL		41.97113		
95% Bootstrap-t UCL		52.2262		
95% Hall's Bootstrap UCL		101.8814		
95% Percentile Bootstrap UCL		42.23		
95% BCA Bootstrap UCL		40.83		
<b>Recommendations</b>				
Human Inspection Recommended?		NO		
Appropriate Distribution		NORMAL		
1st Recommended UCL		43.6117		95% Student's-t UCL
2nd Recommended UCL				
3rd Recommended UCL				
Recommended UCL > Max Data Value		NO		
Recommendation Warning!		NONE		
Alternative UCL		NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\June 2004-revised\Sed stat - 09.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	43.2		
Maximum	2640		
Mean	364.82		
Standard Deviation	801.4987		
Variance	642400.2		
Coefficient of Variation	2.19697		
Skewness	3.131973		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.429492		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	829.4337		
<b>Gamma Statistics</b>			
k hat	0.62661		
k star (bias corrected)	0.505293		
Theta hat	582.2126		
Theta star	721.9964		
nu hat	12.53219		
nu star	10.10587		
5% Approximate Chi Square Value	4.007189		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	3.366598		
Anderson-Darling Test Statistic	1.731082		
Anderson-Darling 5% Critical Value	0.766851		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.362474		
Kolmogrov-Smirnov 5% Critical Value	0.278384		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA		Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA		Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	920.0521		
95% Adjusted Gamma UCL	1095.118		
<b>Lognormal Statistics</b>			
Minimum of log data	3.76584		
Maximum of log data	7.878534		
Mean of log data	4.91959		
Standard Deviation of log data	1.156303		
Variance of log data	1.337037		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.778515		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	267.2296		
MLE Standard Deviation	447.7785		
MLE Coefficient of Variation	1.675632		
MLE Skewness	9.731641		
MLE Median	136.9465		
MLE 80% Quantile	363.8225		
MLE 90% Quantile	605.1276		
MLE 95% Quantile	917.5513		
MLE 99% Quantile	2016.565		
MVU Estimate of Median	128.0379		
MVU Estimate of Mean	242.7102		
MVU Estimate of Standard Deviation	307.4754		
MVU Estimate of SE of Mean	93.58756		
95% H-UCL	1003.365		
95% Chebyshev (MVUE) UCL	650.6489		
97.5% Chebyshev (MVUE) UCL	827.1644		
99% Chebyshev (MVUE) UCL	1173.895		
<b>Non-parametric Statistics</b>			
95% CLT UCL	781.7183		
95% Adjusted-CLT UCL	1049.944		
95% Modified-t UCL	871.2716		
95% Jackknife UCL	829.4337		
95% Chebyshev (Mean, Sd) UCL	1469.61		
97.5% Chebyshev (Mean, Sd) UCL	1947.653		
99% Chebyshev (Mean, Sd) UCL	2886.677		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	764.1891		
95% Bootstrap-t UCL	5869.552		
95% Hall's Bootstrap UCL	3363.569		
95% Percentile Bootstrap UCL	861.38		
95% BCA Bootstrap UCL	657.76		
<b>Recommendations</b>			
Human Inspection Recommended?	YES		
Appropriate Distribution	NON-PARAMETRIC		
1st Recommended UCL	2886.677		99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	YES		Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE		
Alternative UCL	YES		Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.0245		
Maximum	0.68		
Mean	0.25815		
Standard Deviation	0.219144		
Variance	0.048024		
Coefficient of Variation	0.8489		
Skewness	0.780688		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.908802		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	0.385183		
Gamma Statistics			
k hat	1.094118		
k star (bias corrected)	0.832549		
Theta hat	0.235944		
Theta star	0.310072		
nu hat	21.88235		
nu star	16.65098		
5% Approximate Chi Square Value	8.422089		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	7.426705		
Anderson-Darling Test Statistic	0.502461		
Anderson-Darling 5% Critical Value	0.746568		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.209607		
Kolmogrov-Smirnov 5% Critical Value	0.273255		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.510378		
95% Adjusted Gamma UCL	0.578783		
Lognormal Statistics			
Minimum of log data	-3.709082		
Maximum of log data	-0.385662		
Mean of log data	-1.876381		
Standard Deviation of log data	1.259728		
Variance of log data	1.586914		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.846829		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.338604		
MLE Standard Deviation	0.667714		
MLE Coefficient of Variation	1.971963		
MLE Skewness	13.58414		
MLE Median	0.153143		
MLE 80% Quantile	0.444009		
MLE 90% Quantile	0.77288		
MLE 95% Quantile	1.21637		
MLE 99% Quantile	2.868374		
MVU Estimate of Median	0.141379		
MVU Estimate of Mean	0.300327		
MVU Estimate of Standard Deviation	0.420391		
MVU Estimate of SE of Mean	0.12643		
95% H-UCL	1.574841		
95% Chebyshev (MVUE) UCL	0.851423		
97.5% Chebyshev (MVUE) UCL	1.089882		
99% Chebyshev (MVUE) UCL	1.55829		
Non-parametric Statistics			
95% CLT UCL	0.372137		
95% Adjusted-CLT UCL	0.390418		
95% Modified-t UCL	0.388035		
95% Jackknife UCL	0.385183		
95% Chebyshev (Mean, Sd) UCL	0.560219		
97.5% Chebyshev (Mean, Sd) UCL	0.690924		
99% Chebyshev (Mean, Sd) UCL	0.947669		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.365223		
95% Bootstrap-t UCL	0.428245		
95% Hall's Bootstrap UCL	0.443825		
95% Percentile Bootstrap UCL	0.37915		
95% BCA Bootstrap UCL	0.415		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	0.385183	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Nickel		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	5.7		
Maximum	12.5		
Mean	8.01		
Standard Deviation	2.532653		
Variance	6.414333		
Coefficient of Variation	0.316186		
Skewness	0.850633		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.837419		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	9.478131		
Gamma Statistics			
k hat	12.17064		
k star (bias corrected)	8.586116		
Theta hat	0.658141		
Theta star	0.932901		
nu hat	243.4128		
nu star	171.7223		
5% Approximate Chi Square Value	142.4122		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	137.7744		
Anderson-Darling Test Statistic	0.7012		
Anderson-Darling 5% Critical Value	0.724949		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.260528		
Kolmogrov-Smirnov 5% Critical Value	0.26653		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	9.65855		
95% Adjusted Gamma UCL	9.98368		
Lognormal Statistics			
Minimum of log data	1.740466		
Maximum of log data	2.525729		
Mean of log data	2.039046		
Standard Deviation of log data	0.298154		
Variance of log data	0.088896		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.858292		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	8.032486		
MLE Standard Deviation	2.449142		
MLE Coefficient of Variation	0.304905		
MLE Skewness	0.94306		
MLE Median	7.683276		
MLE 80% Quantile	9.884682		
MLE 90% Quantile	11.27034		
MLE 95% Quantile	12.54735		
MLE 99% Quantile	15.37207		
MVU Estimate of Median	7.649188		
MVU Estimate of Mean	7.995708		
MVU Estimate of Standard Deviation	2.401108		
MVU Estimate of SE of Mean	0.759101		
95% H-UCL	9.77459		
95% Chebyshev (MVUE) UCL	11.30455		
97.5% Chebyshev (MVUE) UCL	12.73629		
99% Chebyshev (MVUE) UCL	15.54866		
Non-parametric Statistics			
95% CLT UCL	9.327356		
95% Adjusted-CLT UCL	9.557552		
95% Modified-t UCL	9.514037		
95% Jackknife UCL	9.478131		
95% Chebyshev (Mean, Sd) UCL	11.50102		
97.5% Chebyshev (Mean, Sd) UCL	13.01159		
99% Chebyshev (Mean, Sd) UCL	15.97881		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	9.25573		
95% Bootstrap-t UCL	9.983131		
95% Hall's Bootstrap UCL	9.25652		
95% Percentile Bootstrap UCL	9.4		
95% BCA Bootstrap UCL	9.77		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	9.65855	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Thallium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.26		
Maximum	2.4		
Mean	0.916		
Standard Deviation	0.646498		
Variance	0.41796		
Coefficient of Variation	0.705784		
Skewness	1.417515		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.874335		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	1.290763		
<b>Gamma Statistics</b>			
k hat	2.527244		
k star (bias corrected)	1.835737		
Theta hat	0.36245		
Theta star	0.498982		
nu hat	50.54487		
nu star	36.71474		
5% Approximate Chi Square Value	23.84246		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	22.05444		
Anderson-Darling Test Statistic	0.203432		
Anderson-Darling 5% Critical Value	0.733787		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.143553		
Kolmogrov-Smirnov 5% Critical Value	0.269093		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	1.410538		
95% Adjusted Gamma UCL	1.524895		
<b>Lognormal Statistics</b>			
Minimum of log data	-1.347074		
Maximum of log data	0.875469		
Mean of log data	-0.298439		
Standard Deviation of log data	0.68726		
Variance of log data	0.472326		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.981565		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.939623		
MLE Standard Deviation	0.730082		
MLE Coefficient of Variation	0.776994		
MLE Skewness	2.80007		
MLE Median	0.741975		
MLE 80% Quantile	1.32617		
MLE 90% Quantile	1.794434		
MLE 95% Quantile	2.298147		
MLE 99% Quantile	3.669762		
MVU Estimate of Median	0.724621		
MVU Estimate of Mean	0.914087		
MVU Estimate of Standard Deviation	0.651228		
MVU Estimate of SE of Mean	0.204644		
95% H-UCL	1.669928		
95% Chebyshev (MVUE) UCL	1.806109		
97.5% Chebyshev (MVUE) UCL	2.192087		
99% Chebyshev (MVUE) UCL	2.950267		
<b>Non-parametric Statistics</b>			
95% CLT UCL	1.252275		
95% Adjusted-CLT UCL	1.350196		
95% Modified-t UCL	1.306037		
95% Jackknife UCL	1.290763		
95% Chebyshev (Mean, Sd) UCL	1.807136		
97.5% Chebyshev (Mean, Sd) UCL	2.192732		
99% Chebyshev (Mean, Sd) UCL	2.950159		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	1.23956		
95% Bootstrap-t UCL	1.452206		
95% Hall's Bootstrap UCL	1.717645		
95% Percentile Bootstrap UCL	1.252		
95% BCA Bootstrap UCL	1.204		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	1.290763	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Vanadium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	6.5		
Maximum	19.3		
Mean	11.34		
Standard Deviation	3.99394		
Variance	15.95156		
Coefficient of Variation	0.352199		
Skewness	0.895421		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.931609		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	13.6521		
Gamma Statistics			
k hat	9.568093		
k star (bias corrected)	6.764332		
Theta hat	1.185189		
Theta star	1.676441		
nu hat	191.3619		
nu star	135.2866		
5% Approximate Chi Square Value	109.4089		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	105.368		
Anderson-Darling Test Statistic	0.202948		
Anderson-Darling 5% Critical Value	0.725439		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.121291		
Kolmogrov-Smirnov 5% Critical Value	0.266699		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	14.02217		
95% Adjusted Gamma UCL	14.55993		
Lognormal Statistics			
Minimum of log data	1.871802		
Maximum of log data	2.960105		
Mean of log data	2.37517		
Standard Deviation of log data	0.341555		
Variance of log data	0.11666		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.973765		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	11.39871		
MLE Standard Deviation	4.009646		
MLE Coefficient of Variation	0.351763		
MLE Skewness	1.098816		
MLE Median	10.75284		
MLE 80% Quantile	14.35049		
MLE 90% Quantile	16.67764		
MLE 95% Quantile	18.85972		
MLE 99% Quantile	23.79862		
MVU Estimate of Median	10.69027		
MVU Estimate of Mean	11.3296		
MVU Estimate of Standard Deviation	3.906112		
MVU Estimate of SE of Mean	1.234677		
95% H-UCL	14.34875		
95% Chebyshev (MVUE) UCL	16.71144		
97.5% Chebyshev (MVUE) UCL	19.04016		
99% Chebyshev (MVUE) UCL	23.61449		
Non-parametric Statistics			
95% CLT UCL	13.41744		
95% Adjusted-CLT UCL	13.79957		
95% Modified-t UCL	13.71482		
95% Jackknife UCL	13.65521		
95% Chebyshev (Mean, Sd) UCL	16.84527		
97.5% Chebyshev (Mean, Sd) UCL	19.2274		
99% Chebyshev (Mean, Sd) UCL	23.90664		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	13.31183		
95% Bootstrap-t UCL	14.88728		
95% Hall's Bootstrap UCL	15.76312		
95% Percentile Bootstrap UCL	13.44		
95% BCA Bootstrap UCL	13		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	13.65521	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - 09.xls		
Variable:	Zinc		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	57.1		
Maximum	479		
Mean	156.45		
Standard Deviation	123.7781		
Variance	15321.02		
Coefficient of Variation	0.791167		
Skewness	2.331672		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.70913		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	228.2018		
<b>Gamma Statistics</b>			
k hat	2.708463		
k star (bias corrected)	1.962591		
Theta hat	57.76338		
Theta star	79.71605		
nu hat	54.16927		
nu star	39.25182		
5% Approximate Chi Square Value	25.89781		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	24.02687		
Anderson-Darling Test Statistic	0.632547		
Anderson-Darling 5% Critical Value	0.733171		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.280624		
Kolmogrov-Smirnov 5% Critical Value	0.268846		
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level	
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level	
95% Approximate Gamma UCL	237.1223		
95% Adjusted Gamma UCL	255.5867		
<b>Lognormal Statistics</b>			
Minimum of log data	4.044804		
Maximum of log data	6.171701		
Mean of log data	4.856916		
Standard Deviation of log data	0.615511		
Variance of log data	0.378854		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.918041		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	155.4529		
MLE Standard Deviation	105.5032		
MLE Coefficient of Variation	0.678682		
MLE Skewness	2.348655		
MLE Median	128.6269		
MLE 80% Quantile	216.3772		
MLE 90% Quantile	283.6803		
MLE 95% Quantile	354.0478		
MLE 99% Quantile	538.3964		
MVU Estimate of Median	126.2092		
MVU Estimate of Mean	152.1469		
MVU Estimate of Standard Deviation	96.42738		
MVU Estimate of SE of Mean	30.36545		
95% H-UCL	253.9635		
95% Chebyshev (MVUE) UCL	284.5068		
97.5% Chebyshev (MVUE) UCL	341.7791		
99% Chebyshev (MVUE) UCL	454.2793		
<b>Non-parametric Statistics</b>			
95% CLT UCL	220.833		
95% Adjusted-CLT UCL	251.6714		
95% Modified-t UCL	233.012		
95% Jackknife UCL	228.2018		
95% Chebyshev (Mean, Sd) UCL	327.0663		
97.5% Chebyshev (Mean, Sd) UCL	400.8921		
99% Chebyshev (Mean, Sd) UCL	545.9087		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	215.7287		
95% Bootstrap-t UCL	373.1235		
95% Hall's Bootstrap UCL	571.4204		
95% Percentile Bootstrap UCL	221.44		
95% BCA Bootstrap UCL	214.21		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	237.1223	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - kf-sd.xls		
Variable:	Arsenic		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	11.7		
Maximum	90.4		
Mean	38.14		
Standard Deviation	23.4761		
Variance	551.1271		
Coefficient of Variation	0.615524		
Skewness	1.111001		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.903877		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	51.74865		
Gamma Statistics			
k hat	2.932375		
k star (bias corrected)	2.119329		
Theta hat	13.00652		
Theta star	17.99626		
nu hat	58.6475		
nu star	42.38658		
5% Approximate Chi Square Value	28.4586		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	26.48876		
Anderson-Darling Test Statistic	0.291952		
Anderson-Darling 5% Critical Value	0.73241		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.151968		
Kolmogrov-Smirnov 5% Critical Value	0.268542		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	56.80617		
95% Adjusted Gamma UCL	61.03058		
Lognormal Statistics			
Minimum of log data	2.459589		
Maximum of log data	4.504244		
Mean of log data	3.461169		
Standard Deviation of log data	0.656502		
Variance of log data	0.430995		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.939397		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	39.51447		
MLE Standard Deviation	29.0045		
MLE Coefficient of Variation	0.734022		
MLE Skewness	2.597549		
MLE Median	31.8542		
MLE 80% Quantile	55.47396		
MLE 90% Quantile	74.05254		
MLE 95% Quantile	93.79539		
MLE 99% Quantile	146.6713		
MVU Estimate of Median	31.17377		
MVU Estimate of Mean	38.54503		
MVU Estimate of Standard Deviation	26.15447		
MVU Estimate of SE of Mean	8.226871		
95% H-UCL	67.6748		
95% Chebyshev (MVUE) UCL	74.40513		
97.5% Chebyshev (MVUE) UCL	89.92182		
99% Chebyshev (MVUE) UCL	120.4014		
Non-parametric Statistics			
95% CLT UCL	50.35105		
95% Adjusted-CLT UCL	53.13795		
95% Modified-t UCL	52.18335		
95% Jackknife UCL	51.74865		
95% Chebyshev (Mean, Sd) UCL	70.49957		
97.5% Chebyshev (Mean, Sd) UCL	84.50158		
99% Chebyshev (Mean, Sd) UCL	112.0058		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	49.38966		
95% Bootstrap-t UCL	55.54236		
95% Hall's Bootstrap UCL	61.84676		
95% Percentile Bootstrap UCL	50.97		
95% BCA Bootstrap UCL	55.4		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	51.74865	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - kf-sd.xls		
Variable:	Barium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	15.9		
Maximum	54.7		
Mean	33.1		
Standard Deviation	13.36937		
Variance	178.74		
Coefficient of Variation	0.403908		
Skewness	0.069468		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.924821		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	40.84997		
<b>Gamma Statistics</b>			
k hat	6.220926		
k star (bias corrected)	4.421315		
Theta hat	5.320751		
Theta star	7.486461		
nu hat	124.4185		
nu star	88.4263		
5% Approximate Chi Square Value	67.74264		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	64.60372		
Anderson-Darling Test Statistic	0.447792		
Anderson-Darling 5% Critical Value	0.728378		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.232247		
Kolmogrov-Smirnov 5% Critical Value	0.267235		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	43.20632		
95% Adjusted Gamma UCL	45.3056		
<b>Lognormal Statistics</b>			
Minimum of log data	2.766319		
Maximum of log data	4.001864		
Mean of log data	3.417012		
Standard Deviation of log data	0.441695		
Variance of log data	0.195095		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.906702		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	33.6011		
MLE Standard Deviation	15.59561		
MLE Coefficient of Variation	0.46414		
MLE Skewness	1.492408		
MLE Median	30.4782		
MLE 80% Quantile	44.2672		
MLE 90% Quantile	53.76323		
MLE 95% Quantile	63.02932		
MLE 99% Quantile	85.14829		
MVU Estimate of Median	30.18207		
MVU Estimate of Mean	33.25203		
MVU Estimate of Standard Deviation	14.91636		
MVU Estimate of SE of Mean	4.711342		
95% H-UCL	46.0546		
95% Chebyshev (MVUE) UCL	53.78829		
97.5% Chebyshev (MVUE) UCL	62.67435		
99% Chebyshev (MVUE) UCL	80.12929		
<b>Non-parametric Statistics</b>			
95% CLT UCL	40.05406		
95% Adjusted-CLT UCL	40.15329		
95% Modified-t UCL	40.86545		
95% Jackknife UCL	40.84997		
95% Chebyshev (Mean, Sd) UCL	51.5284		
97.5% Chebyshev (Mean, Sd) UCL	59.50239		
99% Chebyshev (Mean, Sd) UCL	75.16573		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	39.65549		
95% Bootstrap-t UCL	40.47053		
95% Hall's Bootstrap UCL	39.85463		
95% Percentile Bootstrap UCL	40.08		
95% BCA Bootstrap UCL	38.54		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	40.84997		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - kf-sd.xls		
Variable:	Cadmium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	9		
Minimum	0.06		
Maximum	1.1		
Mean	0.5565		
Standard Deviation	0.438723		
Variance	0.192478		
Coefficient of Variation	0.788362		
Skewness	0.102236		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.819965		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL		Data not normal at 5% significance level
95% Student's-t UCL	0.81082		
<b>Gamma Statistics</b>			
k hat	1.294838		
k star (bias corrected)	0.973053		
Theta hat	0.429783		
Theta star	0.571911		
nu hat	25.89676		
nu star	19.46107		
5% Approximate Chi Square Value	10.45337		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	9.326286		
Anderson-Darling Test Statistic	0.750906		
Anderson-Darling 5% Critical Value	0.742939		
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA		Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.271264		
Kolmogrov-Smirnov 5% Critical Value	0.272199		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	APPROX GAMMA		Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.036038		
95% Adjusted Gamma UCL	1.161243		
<b>Lognormal Statistics</b>			
Minimum of log data	-2.813411		
Maximum of log data	0.09531		
Mean of log data	-1.019536		
Standard Deviation of log data	1.090442		
Variance of log data	1.189064		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.861775		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	0.653767		
MLE Standard Deviation	0.988034		
MLE Coefficient of Variation	1.511293		
MLE Skewness	7.985679		
MLE Median	0.360762		
MLE 80% Quantile	0.906547		
MLE 90% Quantile	1.464747		
MLE 95% Quantile	2.168947		
MLE 99% Quantile	4.557766		
MVU Estimate of Median	0.339829		
MVU Estimate of Mean	0.601715		
MVU Estimate of Standard Deviation	0.712628		
MVU Estimate of SE of Mean	0.218354		
95% H-UCL	2.162685		
95% Chebyshev (MVUE) UCL	1.553498		
97.5% Chebyshev (MVUE) UCL	1.965335		
99% Chebyshev (MVUE) UCL	2.77431		
<b>Non-parametric Statistics</b>			
95% CLT UCL	0.784701		
95% Adjusted-CLT UCL	0.789494		
95% Modified-t UCL	0.811567		
95% Jackknife UCL	0.81082		
95% Chebyshev (Mean, Sd) UCL	1.161238		
97.5% Chebyshev (Mean, Sd) UCL	1.422909		
99% Chebyshev (Mean, Sd) UCL	1.93691		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.772847		
95% Bootstrap-t UCL	0.81314		
95% Hall's Bootstrap UCL	0.736901		
95% Percentile Bootstrap UCL	0.788		
95% BCA Bootstrap UCL	0.7335		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	1.036038		95% Approximate Gamma UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - kf-sd.xls		
Variable:	Chromium		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	20.8		
Maximum	113		
Mean	67.41		
Standard Deviation	35.09246		
Variance	1231.481		
Coefficient of Variation	0.520582		
Skewness	-0.270861		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.904705		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	87.75244		
Gamma Statistics			
k hat	3.097592		
k star (bias corrected)	2.234981		
Theta hat	21.76206		
Theta star	30.16133		
nu hat	61.95185		
nu star	44.69963		
5% Approximate Chi Square Value	30.36176		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	28.32123		
Anderson-Darling Test Statistic	0.620312		
Anderson-Darling 5% Critical Value	0.731908		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.197435		
Kolmogrov-Smirnov 5% Critical Value	0.268389		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	99.24331		
95% Adjusted Gamma UCL	106.3937		
Lognormal Statistics			
Minimum of log data	3.034953		
Maximum of log data	4.727388		
Mean of log data	4.040779		
Standard Deviation of log data	0.66835		
Variance of log data	0.446692		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.840779		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	NOT LOGNORMAL		Data not lognormal at 5% significance level
MLE Mean	71.10267		
MLE Standard Deviation	53.35696		
MLE Coefficient of Variation	0.750421		
MLE Skewness	2.673851		
MLE Median	56.87063		
MLE 80% Quantile	100.0365		
MLE 90% Quantile	134.2373		
MLE 95% Quantile	170.7524		
MLE 99% Quantile	269.1748		
MVU Estimate of Median	55.612		
MVU Estimate of Mean	69.28727		
MVU Estimate of Standard Deviation	47.91678		
MVU Estimate of SE of Mean	15.06674		
95% H-UCL	123.5027		
95% Chebyshev (MVUE) UCL	134.9617		
97.5% Chebyshev (MVUE) UCL	163.379		
99% Chebyshev (MVUE) UCL	219.1994		
Non-parametric Statistics			
95% CLT UCL	85.66329		
95% Adjusted-CLT UCL	84.64765		
95% Modified-t UCL	87.59402		
95% Jackknife UCL	87.75244		
95% Chebyshev (Mean, Sd) UCL	115.7816		
97.5% Chebyshev (Mean, Sd) UCL	136.7121		
99% Chebyshev (Mean, Sd) UCL	177.8259		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	84.64558		
95% Bootstrap-t UCL	86.23952		
95% Hall's Bootstrap UCL	83.24071		
95% Percentile Bootstrap UCL	85.02		
95% BCA Bootstrap UCL	80.53		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	87.75244		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - kf-sd.xls		
Variable:	Copper		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	21.9		
Maximum	185		
Mean	79.46		
Standard Deviation	56.01375		
Variance	3137.54		
Coefficient of Variation	0.70493		
Skewness	0.868314		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.892112		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	111.9301		
Gamma Statistics			
k hat	2.197108		
k star (bias corrected)	1.604642		
Theta hat	36.16573		
Theta star	49.51883		
nu hat	43.94216		
nu star	32.09284		
5% Approximate Chi Square Value	20.14358		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	18.51419		
Anderson-Darling Test Statistic	0.315787		
Anderson-Darling 5% Critical Value	0.73491		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.166897		
Kolmogrov-Smirnov 5% Critical Value	0.269542		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	126.596		
95% Adjusted Gamma UCL	137.7374		
Lognormal Statistics			
Minimum of log data	3.086487		
Maximum of log data	5.220356		
Mean of log data	4.130747		
Standard Deviation of log data	0.762691		
Variance of log data	0.581698		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.929604		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	83.229		
MLE Standard Deviation	73.93215		
MLE Coefficient of Variation	0.888298		
MLE Skewness	3.365826		
MLE Median	62.22438		
MLE 80% Quantile	118.5365		
MLE 90% Quantile	165.8038		
MLE 95% Quantile	218.1917		
MLE 99% Quantile	366.7816		
MVU Estimate of Median	60.43598		
MVU Estimate of Mean	80.36632		
MVU Estimate of Standard Deviation	64.02868		
MVU Estimate of SE of Mean	20.06256		
95% H-UCL	162.9202		
95% Chebyshev (MVUE) UCL	167.817		
97.5% Chebyshev (MVUE) UCL	205.657		
99% Chebyshev (MVUE) UCL	279.9863		
Non-parametric Statistics			
95% CLT UCL	108.5955		
95% Adjusted-CLT UCL	113.7925		
95% Modified-t UCL	112.7407		
95% Jackknife UCL	111.9301		
95% Chebyshev (Mean, Sd) UCL	156.6696		
97.5% Chebyshev (Mean, Sd) UCL	190.0783		
99% Chebyshev (Mean, Sd) UCL	255.7032		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	107.2331		
95% Bootstrap-t UCL	126.6228		
95% Hall's Bootstrap UCL	133.2518		
95% Percentile Bootstrap UCL	106.89		
95% BCA Bootstrap UCL	120.56		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	111.9301		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - kf-sd.xls		
Variable:	Lead		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	31.6		
Maximum	171		
Mean	96.77		
Standard Deviation	50.7332		
Variance	2573.858		
Coefficient of Variation	0.524266		
Skewness	0.057602		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.931234		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	126.1791		
<b>Gamma Statistics</b>			
k hat	3.406969		
k star (bias corrected)	2.451545		
Theta hat	28.40355		
Theta star	39.47307		
nu hat	68.13938		
nu star	49.0309		
5% Approximate Chi Square Value	33.95333		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	31.78513		
Anderson-Darling Test Statistic	0.378369		
Anderson-Darling 5% Critical Value	0.731045		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.168702		
Kolmogrov-Smirnov 5% Critical Value	0.268194		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	139.7424		
95% Adjusted Gamma UCL	149.2748		
<b>Lognormal Statistics</b>			
Minimum of log data	3.453157		
Maximum of log data	5.141664		
Mean of log data	4.418459		
Standard Deviation of log data	0.619648		
Variance of log data	0.383963		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.904892		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	100.5284		
MLE Standard Deviation	68.77874		
MLE Coefficient of Variation	0.684172		
MLE Skewness	2.372771		
MLE Median	82.96835		
MLE 80% Quantile	140.0587		
MLE 90% Quantile	183.9578		
MLE 95% Quantile	229.931		
MLE 99% Quantile	350.6398		
MVU Estimate of Median	81.38797		
MVU Estimate of Mean	98.35867		
MVU Estimate of Standard Deviation	62.77986		
MVU Estimate of SE of Mean	19.76759		
95% H-UCL	164.9997		
95% Chebyshev (MVUE) UCL	184.5236		
97.5% Chebyshev (MVUE) UCL	221.8073		
99% Chebyshev (MVUE) UCL	295.0437		
<b>Non-parametric Statistics</b>			
95% CLT UCL	123.1588		
95% Adjusted-CLT UCL	123.471		
95% Modified-t UCL	126.2278		
95% Jackknife UCL	126.1791		
95% Chebyshev (Mean, Sd) UCL	166.7009		
97.5% Chebyshev (Mean, Sd) UCL	196.96		
99% Chebyshev (Mean, Sd) UCL	256.3983		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	122.2285		
95% Bootstrap-t UCL	126.4934		
95% Hall's Bootstrap UCL	122.1296		
95% Percentile Bootstrap UCL	122.98		
95% BCA Bootstrap UCL	116.99		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	126.1791		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - kf-sd.xls		
Variable:	Manganese		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	83.5		
Maximum	503		
Mean	294.15		
Standard Deviation	119.1125		
Variance	14187.78		
Coefficient of Variation	0.404938		
Skewness	0.048159		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.984171		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	363.1973		
<b>Gamma Statistics</b>			
k hat	5.448608		
k star (bias corrected)	3.880693		
Theta hat	53.98626		
Theta star	75.79833		
nu hat	108.9722		
nu star	77.61385		
5% Approximate Chi Square Value	58.3152		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	55.41648		
Anderson-Darling Test Statistic	0.286538		
Anderson-Darling 5% Critical Value	0.729056		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.158572		
Kolmogrov-Smirnov 5% Critical Value	0.267358		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	391.4951		
95% Adjusted Gamma UCL	411.9734		
<b>Lognormal Statistics</b>			
Minimum of log data	4.424847		
Maximum of log data	6.22059		
Mean of log data	5.589526		
Standard Deviation of log data	0.499858		
Variance of log data	0.249858		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.896005		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	303.2187		
MLE Standard Deviation	161.5455		
MLE Coefficient of Variation	0.532769		
MLE Skewness	1.749529		
MLE Median	267.6086		
MLE 80% Quantile	408.2604		
MLE 90% Quantile	508.692		
MLE 95% Quantile	608.9837		
MLE 99% Quantile	855.9351		
MVU Estimate of Median	264.2825		
MVU Estimate of Mean	299.118		
MVU Estimate of Standard Deviation	152.4849		
MVU Estimate of SE of Mean	48.12766		
95% H-UCL	438.9194		
95% Chebyshev (MVUE) UCL	508.9016		
97.5% Chebyshev (MVUE) UCL	599.6751		
99% Chebyshev (MVUE) UCL	777.9822		
<b>Non-parametric Statistics</b>			
95% CLT UCL	356.1062		
95% Adjusted-CLT UCL	356.7191		
95% Modified-t UCL	363.2929		
95% Jackknife UCL	363.1973		
95% Chebyshev (Mean, Sd) UCL	458.3352		
97.5% Chebyshev (Mean, Sd) UCL	529.3783		
99% Chebyshev (Mean, Sd) UCL	668.9286		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	353.2251		
95% Bootstrap-t UCL	366.654		
95% Hall's Bootstrap UCL	367.104		
95% Percentile Bootstrap UCL	352.4		
95% BCA Bootstrap UCL	381.2		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	363.1973		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - kf-sd.xls		
Variable:	Mercury		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	0.1		
Maximum	1.6		
Mean	0.505		
Standard Deviation	0.459764		
Variance	0.211383		
Coefficient of Variation	0.910425		
Skewness	1.630357		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.822358		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level	
95% Student's-t UCL	0.771517		
Gamma Statistics			
k hat	1.5288		
k star (bias corrected)	1.136827		
Theta hat	0.330324		
Theta star	0.444219		
nu hat	30.576		
nu star	22.73653		
5% Approximate Chi Square Value	12.89033		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	11.62072		
Anderson-Darling Test Statistic	0.323374		
Anderson-Darling 5% Critical Value	0.73902		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.189272		
Kolmogrov-Smirnov 5% Critical Value	0.271045		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	0.890742		
95% Adjusted Gamma UCL	0.988058		
Lognormal Statistics			
Minimum of log data	-2.302585		
Maximum of log data	0.470004		
Mean of log data	-1.044606		
Standard Deviation of log data	0.912847		
Variance of log data	0.833289		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.951426		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	0.533679		
MLE Standard Deviation	0.608692		
MLE Coefficient of Variation	1.140558		
MLE Skewness	4.905398		
MLE Median	0.35183		
MLE 80% Quantile	0.760902		
MLE 90% Quantile	1.13701		
MLE 95% Quantile	1.579371		
MLE 99% Quantile	2.940781		
MVU Estimate of Median	0.337419		
MVU Estimate of Mean	0.505852		
MVU Estimate of Standard Deviation	0.490546		
MVU Estimate of SE of Mean	0.152462		
95% H-UCL	1.300527		
95% Chebyshev (MVUE) UCL	1.17042		
97.5% Chebyshev (MVUE) UCL	1.457979		
99% Chebyshev (MVUE) UCL	2.022834		
Non-parametric Statistics			
95% CLT UCL	0.744146		
95% Adjusted-CLT UCL	0.824239		
95% Modified-t UCL	0.78401		
95% Jackknife UCL	0.771517		
95% Chebyshev (Mean, Sd) UCL	1.138742		
97.5% Chebyshev (Mean, Sd) UCL	1.412962		
99% Chebyshev (Mean, Sd) UCL	1.951615		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	0.740199		
95% Bootstrap-t UCL	0.938455		
95% Hall's Bootstrap UCL	1.10309		
95% Percentile Bootstrap UCL	0.731		
95% BCA Bootstrap UCL	0.707		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	GAMMA		
1st Recommended UCL	0.890742	95% Approximate Gamma UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - kf-sd.xls		
Variable:	Nickel		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	1.25		
Maximum	12.6		
Mean	6.73		
Standard Deviation	3.954126		
Variance	15.63511		
Coefficient of Variation	0.587537		
Skewness	-0.112254		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.945658		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	9.022132		
<b>Gamma Statistics</b>			
k hat	2.242342		
k star (bias corrected)	1.636306		
Theta hat	3.001327		
Theta star	4.112923		
nu hat	44.84684		
nu star	32.72612		
5% Approximate Chi Square Value	20.64658		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	18.99483		
Anderson-Darling Test Statistic	0.478994		
Anderson-Darling 5% Critical Value	0.734756		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.203856		
Kolmogrov-Smirnov 5% Critical Value	0.26948		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	10.66747		
95% Adjusted Gamma UCL	11.59509		
<b>Lognormal Statistics</b>			
Minimum of log data	0.223144		
Maximum of log data	2.533697		
Mean of log data	1.667324		
Standard Deviation of log data	0.821453		
Variance of log data	0.674785		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.868139		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	7.423988		
MLE Standard Deviation	7.287661		
MLE Coefficient of Variation	0.981637		
MLE Skewness	3.890827		
MLE Median	5.29797		
MLE 80% Quantile	10.60634		
MLE 90% Quantile	15.22427		
MLE 95% Quantile	20.46291		
MLE 99% Quantile	35.80271		
MVU Estimate of Median	5.121669		
MVU Estimate of Mean	7.121221		
MVU Estimate of Standard Deviation	6.149596		
MVU Estimate of SE of Mean	1.921542		
95% H-UCL	15.76383		
95% Chebyshev (MVUE) UCL	15.49703		
97.5% Chebyshev (MVUE) UCL	19.12125		
99% Chebyshev (MVUE) UCL	26.24033		
<b>Non-parametric Statistics</b>			
95% CLT UCL	8.786732		
95% Adjusted-CLT UCL	8.739304		
95% Modified-t UCL	9.014734		
95% Jackknife UCL	9.022132		
95% Chebyshev (Mean, Sd) UCL	12.18039		
97.5% Chebyshev (Mean, Sd) UCL	14.53877		
99% Chebyshev (Mean, Sd) UCL	19.17137		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	8.678111		
95% Bootstrap-t UCL	8.969388		
95% Hall's Bootstrap UCL	8.487765		
95% Percentile Bootstrap UCL	8.675		
95% BCA Bootstrap UCL	8.235		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	9.022132	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - kf-sd.xls		
Variable:	Vanadium		
<b>Raw Statistics</b>			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	9.1		
Maximum	29.6		
Mean	18.79		
Standard Deviation	7.338248		
Variance	53.84989		
Coefficient of Variation	0.39054		
Skewness	0.025053		
Too Few Distinct Observations?	NO		
<b>Normal Statistics</b>			
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.929833		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL		Data are normal at 5% significance level
95% Student's-t UCL	23.04384		
<b>Gamma Statistics</b>			
k hat	6.652585		
k star (bias corrected)	4.723476		
Theta hat	2.824466		
Theta star	3.978002		
nu hat	133.0517		
nu star	94.46953		
5% Approximate Chi Square Value	73.04878		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	69.78195		
Anderson-Darling Test Statistic	0.399951		
Anderson-Darling 5% Critical Value	0.727999		
Anderson-Darling 5% Gamma Test Result	AD GAMMA		Data follow gamma distribution at 5% significance level.
Kolmogrov-Smirnov Test Statistic	0.183557		
Kolmogrov-Smirnov 5% Critical Value	0.267166		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA		Data follow gamma distribution at 5% significance level
5% Gamma Test Result	GAMMA		Data follow gamma distribution at 5% significance level
95% Approximate Gamma UCL	24.29996		
95% Adjusted Gamma UCL	25.43756		
<b>Lognormal Statistics</b>			
Minimum of log data	2.208274		
Maximum of log data	3.387774		
Mean of log data	2.856287		
Standard Deviation of log data	0.42643		
Variance of log data	0.181842		
Lilliefors Test Statistic	N/R		Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R		Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statistic	0.911046		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL		Data are lognormal at 5% significance level
MLE Mean	19.05269		
MLE Standard Deviation	8.508371		
MLE Coefficient of Variation	0.44657		
MLE Skewness	1.428769		
MLE Median	17.39682		
MLE 80% Quantile	24.94368		
MLE 90% Quantile	30.09171		
MLE 95% Quantile	35.08468		
MLE 99% Quantile	46.90683		
MVU Estimate of Median	17.23923		
MVU Estimate of Mean	18.86895		
MVU Estimate of Standard Deviation	8.163449		
MVU Estimate of SE of Mean	2.57882		
95% H-UCL	25.75953		
95% Chebyshev (MVUE) UCL	30.10977		
97.5% Chebyshev (MVUE) UCL	34.97368		
99% Chebyshev (MVUE) UCL	44.52788		
<b>Non-parametric Statistics</b>			
95% CLT UCL	22.60698		
95% Adjusted-CLT UCL	22.62662		
95% Modified-t UCL	23.04691		
95% Jackknife UCL	23.04384		
95% Chebyshev (Mean, Sd) UCL	28.90508		
97.5% Chebyshev (Mean, Sd) UCL	33.28188		
99% Chebyshev (Mean, Sd) UCL	41.87926		
<b>Bootstrap Statistics</b>			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	22.42892		
95% Bootstrap-t UCL	23.17239		
95% Hall's Bootstrap UCL	22.33703		
95% Percentile Bootstrap UCL	22.49		
95% BCA Bootstrap UCL	21.59		
<b>Recommendations</b>			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	23.04384		95% Student's-t UCL
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		

Data File	J:\NE\WELLSG&H\OU3-2004\HHRA\Statistics\HH - June 2004\Sed stat - kf-sd.xls		
Variable:	Zinc		
Raw Statistics			
Number of Observations	10		
Number of Missing Data	0		
Number of Valid Observations	10		
Number of Distinct Observations	10		
Minimum	115		
Maximum	461		
Mean	280.5		
Standard Deviation	118.636		
Variance	14074.5		
Coefficient of Variation	0.422945		
Skewness	-0.055201		
Too Few Distinct Observations?	NO		
Normal Statistics			
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.942481		
Shapiro-Wilk 5% Critical Value	0.842		
5% Normality Test Result	NORMAL	Data are normal at 5% significance level	
95% Student's-t UCL	349.2711		
Gamma Statistics			
k hat	5.418991		
k star (bias corrected)	3.859961		
Theta hat	51.7624		
Theta star	72.66913		
nu hat	108.3798		
nu star	77.19921		
5% Approximate Chi Square Value	57.95555		
Adjusted Level of Significance	0.0267		
Adjusted Chi Square Value	55.06635		
Anderson-Darling Test Statistic	0.389243		
Anderson-Darling 5% Critical Value	0.729082		
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% significance level.	
Kolmogrov-Smirnov Test Statistic	0.186485		
Kolmogrov-Smirnov 5% Critical Value	0.267363		
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% significance level	
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% significance level	
95% Approximate Gamma UCL	373.6377		
95% Adjusted Gamma UCL	393.2416		
Lognormal Statistics			
Minimum of log data	4.744932		
Maximum of log data	6.133398		
Mean of log data	5.541477		
Standard Deviation of log data	0.480527		
Variance of log data	0.230907		
Lilliefors Test Statistic	N/R	Shapiro Wilk method yields a more accurate result	
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result	
Shapiro-Wilk Test Statistic	0.915157		
Shapiro-Wilk 5% Critical Value	0.842		
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level	
MLE Mean	286.2686		
MLE Standard Deviation	145.8964		
MLE Coefficient of Variation	0.509649		
MLE Skewness	1.661323		
MLE Median	255.0545		
MLE 80% Quantile	382.804		
MLE 90% Quantile	472.9337		
MLE 95% Quantile	562.2491		
MLE 99% Quantile	779.9145		
MVU Estimate of Median	252.1237		
MVU Estimate of Mean	282.7107		
MVU Estimate of Standard Deviation	138.3482		
MVU Estimate of SE of Mean	43.67748		
95% H-UCL	406.7491		
95% Chebyshev (MVUE) UCL	473.0964		
97.5% Chebyshev (MVUE) UCL	555.4765		
99% Chebyshev (MVUE) UCL	717.2961		
Non-parametric Statistics			
95% CLT UCL	342.2083		
95% Adjusted-CLT UCL	341.5086		
95% Modified-t UCL	349.1619		
95% Jackknife UCL	349.2711		
95% Chebyshev (Mean, Sd) UCL	444.0284		
97.5% Chebyshev (Mean, Sd) UCL	514.7873		
99% Chebyshev (Mean, Sd) UCL	653.7795		
Bootstrap Statistics			
Number of Bootstrap Runs	2000		
95% Standard Bootstrap UCL	340.0475		
95% Bootstrap-t UCL	352.3293		
95% Hall's Bootstrap UCL	336.0954		
95% Percentile Bootstrap UCL	337.5		
95% BCA Bootstrap UCL	329.3		
Recommendations			
Human Inspection Recommended?	NO		
Appropriate Distribution	NORMAL		
1st Recommended UCL	349.2711	95% Student's-t UCL	
2nd Recommended UCL			
3rd Recommended UCL			
Recommended UCL > Max Data Value	NO		
Recommendation Warning!	NONE		
Alternative UCL	NONE		