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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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
k hat	0.527192	
k star (bias corrected)	0.396491	
Theta hat	0.815641	
Theta star	1.084514	
nu hat	7.380695	
nu star	5.550873	
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	

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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	235.8863	
95% Adjusted Gamma UCL	278.2432	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.93001	
Shapiro-Wilk 5% Critical Value	0.762	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	56.08302	
Gamma Statistics		
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	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.212022	
Kolmogrov-Smirnov 5% Critical Value	0.357678	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	62.54789	
95% Adjusted Gamma UCL	76.20041	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.980141	
Shapiro-Wilk 5% Critical Value	0.762	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	56.08302	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:	Cadmium	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	3.417793	
95% Adjusted Gamma UCL	5.478466	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	262.1861	
95% Adjusted Gamma UCL	330.4107	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	285.1972	
95% Adjusted Gamma UCL	372.2225	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	15.17169	
95% Adjusted Gamma UCL	17.80151	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	33.59633	
95% Adjusted Gamma UCL	39.62432	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	8.446473	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	2.812664	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	0.697726	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	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-1.309333	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - 22-tt-22.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	0.2	
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-0.832409	
Mean of log data	-1.220924	
Standard Deviation of log data	0.549442	
Variance of log data	0.301887	
Lilliefors Test Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-0.616186	
Mean of log data	-0.89549	
Standard Deviation of log data	0.315608	
Variance of log data	0.099608	
Lilliefors Test Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - 22-tt-22.xls	
Variable:	Dibenz(a,h)anthracene	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-3.123566	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - 22-tt-22.xls	
Variable:	Indeno(1,2,3-cd)pyrene	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-1.514128	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - 22-tt-22.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	0.27	
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-1.309333	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - 22-tt-22.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	0.0225	
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-3.79424	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - 22-tt-22.xls	
Variable:	Antimony	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	432.1032	
95% Adjusted Gamma UCL	918.2306	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	77.28297	
95% Adjusted Gamma UCL	133.0407	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	3.333112	
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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	116.4762	
95% Adjusted Gamma UCL	133.1366	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	11.36576	
95% Adjusted Gamma UCL	12.57829	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
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	0.037	
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-3.296837	
Mean of log data	-3.950751	
Standard Deviation of log data	0.612043	
Variance of log data	0.374597	
Lilliefors Test Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - 13-tt-27.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.826897	
95% Adjusted Gamma UCL	2.51585	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.842313	
95% Adjusted Gamma UCL	2.442204	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - 13-tt-27.xls	
Variable:	Aroclor 1260	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.144498	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	61.20171	
95% Adjusted Gamma UCL	92.21391	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	240.5332	
95% Adjusted Gamma UCL	264.8789	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	10.74849	
95% Adjusted Gamma UCL	11.91248	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1134.522	
95% Adjusted Gamma UCL	1262.544	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	938.921	
95% Adjusted Gamma UCL	1069.243	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-3.709082	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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:	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1849.15	
95% Adjusted Gamma UCL	1911.674	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.821742	
95% Adjusted Gamma UCL	0.871679	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.535377	
95% Adjusted Gamma UCL	1.771035	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.806547	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	0.507494	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.72416	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	0.878846	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	
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 - nt-1.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	0.2	
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.604801	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-3.079114	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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:	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	8.490059	
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	
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 - 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	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	
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 - nt-1.xls	
Variable:	Manganese	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1066.942	
95% Adjusted Gamma UCL	1081.648	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
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	0.053	
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-2.937463	
Mean of log data	-3.539136	
Standard Deviation of log data	0.848679	
Variance of log data	0.720257	
Lilliefors Test Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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:	Benzo(a)anthracene	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.538455	
95% Adjusted Gamma UCL	0.783023	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.933947	
95% Adjusted Gamma UCL	1.275269	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-3.079114	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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:	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.813076	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	0.543988	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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	90.44452	
95% Adjusted Gamma UCL	91.81217	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	6.760899	
95% Adjusted Gamma UCL	6.890292	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.550123	
95% Adjusted Gamma UCL	0.560119	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	66.14855	
95% Adjusted Gamma UCL	67.23343	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-3.079114	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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:	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	0.14	
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-1.966113	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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:	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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-3.678586	
Standard Deviation of log data	1.175599	
Variance of log data	1.382032	
Lilliefors Test Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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:	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	97.72281	
95% Adjusted Gamma UCL	99.33986	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	7.370183	
95% Adjusted Gamma UCL	7.534732	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-2.132842	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - bw.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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - bw.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.806547	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	0.507494	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.72416	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	0.878846	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.604801	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-3.079114	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 - bw.xls	
Variable:	Aroclor 1254	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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 - bw.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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 - 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	106.5428	
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	
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 - 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1066.942	
95% Adjusted Gamma UCL	1081.648	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	4.716161	
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	
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 - bw.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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	33.71687	
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	
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 - bw.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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	4.081626	
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	
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 - 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	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	
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 - 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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	
Raw Statistics		
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
Normal Statistics		
Lilliefors Test Statisitic	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 Statisitic		
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	-2.040221	
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 Statisitic	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 Statisitic		
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
Non-parametric Statisitics		
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)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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	98.84983	
95% Adjusted Gamma UCL	100.6259	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	7.01323	
95% Adjusted Gamma UCL	7.177567	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	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 Statisitic		
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 Statisitic	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 Statisitic		
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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	447.8547	
95% Adjusted Gamma UCL	466.9579	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	25.16789	
95% Adjusted Gamma UCL	25.40683	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.628889	
95% Adjusted Gamma UCL	1.697428	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	76.97262	
95% Adjusted Gamma UCL	78.21438	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.665579	
95% Adjusted Gamma UCL	1.862323	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.835246	
95% Adjusted Gamma UCL	2.05534	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	204.5788	
95% Adjusted Gamma UCL	223.1526	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	17.28411	
95% Adjusted Gamma UCL	18.72126	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.902601	
Shapiro-Wilk 5% Critical Value	0.842	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
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	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.181499	
Kolmogrov-Smirnov 5% Critical Value	0.269825	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.867941	
Shapiro-Wilk 5% Critical Value	0.842	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
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 Statisitics		
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	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:	Manganese	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	386.5314	
95% Adjusted Gamma UCL	406.1323	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.814931	
95% Adjusted Gamma UCL	2.133861	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	83.75774	
95% Adjusted Gamma UCL	91.40035	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	72.64253	
95% Adjusted Gamma UCL	78.01563	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	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	Data follow gamma distribution at 5% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.857857	
Shapiro-Wilk 5% Critical Value	0.842	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
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 Statisitics		
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	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:	Antimony	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	5.321806	
95% Adjusted Gamma UCL	5.612696	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	12.16969	
95% Adjusted Gamma UCL	13.09743	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	383.2901	
95% Adjusted Gamma UCL	401.6238	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1282.009	
95% Adjusted Gamma UCL	1331.357	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.283195	
95% Adjusted Gamma UCL	1.412441	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	2267.471	
95% Adjusted Gamma UCL	2430.447	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	2.04612	
95% Adjusted Gamma UCL	2.239637	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	65.58346	
95% Adjusted Gamma UCL	71.32252	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	68.86135	
95% Adjusted Gamma UCL	75.94932	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	509.6206	
95% Adjusted Gamma UCL	555.279	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	2.945464	
95% Adjusted Gamma UCL	3.322109	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
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	114	
Mean	53.55	
Standard Deviation	34.4679	
Variance	1188.036	
Coefficient of Variation	0.643658	
Skewness	1.044629	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	79.34498	
95% Adjusted Gamma UCL	85.16315	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.854172	
95% Adjusted Gamma UCL	1.916296	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	41.45392	
95% Adjusted Gamma UCL	44.75732	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	4.10126	
95% Adjusted Gamma UCL	4.31336	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	71.98899	
95% Adjusted Gamma UCL	75.27967	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.327906	
95% Adjusted Gamma UCL	0.346584	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	32.47009	
95% Adjusted Gamma UCL	33.62577	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	594.5475	
95% Adjusted Gamma UCL	675.034	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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:	Barium	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	12	
Minimum	20.7	
Maximum	95.5	
Mean	51.5125	
Standard Deviation	29.06418	
Variance	844.7264	
Coefficient of Variation	0.564216	
Skewness	0.44011	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.870746	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	66.58016	
Gamma Statistics		
k hat	3.30825	
k star (bias corrected)	2.536743	
Theta hat	15.57092	
Theta star	20.30655	
nu hat	79.398	
nu star	60.88183	
5% Approximate Chi Square Value	43.93424	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	41.74457	
Anderson-Darling Test Statistic	0.541374	
Anderson-Darling 5% Critical Value	0.738024	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.166994	
Kolmogrov-Smirnov 5% Critical Value	0.247099	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	71.3834	
95% Adjusted Gamma UCL	75.12774	
Lognormal Statistics		
Minimum of log data	3.030134	
Maximum of log data	4.559126	
Mean of log data	3.78314	
Standard Deviation of log data	0.600681	
Variance of log data	0.360818	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.886559	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	52.64382	
MLE Standard Deviation	34.70113	
MLE Coefficient of Variation	0.659168	
MLE Skewness	2.263915	
MLE Median	43.95383	
MLE 80% Quantile	73.0187	
MLE 90% Quantile	95.10822	
MLE 95% Quantile	118.068	
MLE 99% Quantile	177.7405	
MVU Estimate of Median	43.29721	
MVU Estimate of Mean	51.75239	
MVU Estimate of Standard Deviation	32.24382	
MVU Estimate of SE of Mean	9.266588	
95% H-UCL	79.4417	
95% Chebyshev (MVUE) UCL	92.14451	
97.5% Chebyshev (MVUE) UCL	109.6222	
99% Chebyshev (MVUE) UCL	143.9538	
Non-parametric Statisitics		
95% CLT UCL	65.313	
95% Adjusted-CLT UCL	66.45198	
95% Modified-t UCL	66.75782	
95% Jackknife UCL	66.58016	
95% Chebyshev (Mean, Sd) UCL	88.08412	
97.5% Chebyshev (Mean, Sd) UCL	103.9087	
99% Chebyshev (Mean, Sd) UCL	134.993	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	64.71829	
95% Bootstrap-t UCL	67.42645	
95% Hall's Bootstrap UCL	64.62988	
95% Percentile Bootstrap UCL	64.975	
95% BCA Bootstrap UCL	61.65417	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	66.58016	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:	Cadmium	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	13.06217	
95% Adjusted Gamma UCL	14.308	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.924821	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
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	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.165803	
Kolmogrov-Smirnov 5% Critical Value	0.250263	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.884664	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
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 Statisitics		
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	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:	Lead	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	11	
Minimum	24.4	
Maximum	443	
Mean	196.4083	
Standard Deviation	149.3598	
Variance	22308.36	
Coefficient of Variation	0.760456	
Skewness	0.486437	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.905061	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	273.8405	
Gamma Statistics		
k hat	1.390935	
k star (bias corrected)	1.098757	
Theta hat	141.206	
Theta star	178.7551	
nu hat	33.38244	
nu star	26.37016	
5% Approximate Chi Square Value	15.66286	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	14.41589	
Anderson-Darling Test Statistic	0.458207	
Anderson-Darling 5% Critical Value	0.74796	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.173533	
Kolmogrov-Smirnov 5% Critical Value	0.250137	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	330.6753	
95% Adjusted Gamma UCL	359.2785	
Lognormal Statistics		
Minimum of log data	3.194583	
Maximum of log data	6.09357	
Mean of log data	4.879499	
Standard Deviation of log data	1.065971	
Variance of log data	1.136294	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.867509	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	232.211	
MLE Standard Deviation	337.7216	
MLE Coefficient of Variation	1.454374	
MLE Skewness	7.439416	
MLE Median	131.5648	
MLE 80% Quantile	323.8385	
MLE 90% Quantile	517.6359	
MLE 95% Quantile	759.7745	
MLE 99% Quantile	1570.184	
MVU Estimate of Median	125.4591	
MVU Estimate of Mean	217.2755	
MVU Estimate of Standard Deviation	257.5516	
MVU Estimate of SE of Mean	71.84895	
95% H-UCL	616.0518	
95% Chebyshev (MVUE) UCL	530.4578	
97.5% Chebyshev (MVUE) UCL	665.972	
99% Chebyshev (MVUE) UCL	932.1635	
Non-parametric Statisitics		
95% CLT UCL	267.3286	
95% Adjusted-CLT UCL	273.7979	
95% Modified-t UCL	274.8496	
95% Jackknife UCL	273.8405	
95% Chebyshev (Mean, Sd) UCL	384.3487	
97.5% Chebyshev (Mean, Sd) UCL	465.6706	
99% Chebyshev (Mean, Sd) UCL	625.4118	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	264.5934	
95% Bootstrap-t UCL	286.7929	
95% Hall's Bootstrap UCL	272.7888	
95% Percentile Bootstrap UCL	266.9	
95% BCA Bootstrap UCL	294.4	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	273.8405	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:	Manganese	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	463.7515	
95% Adjusted Gamma UCL	501.597	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	2.450349	
95% Adjusted Gamma UCL	2.743545	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	36.95802	
95% Adjusted Gamma UCL	39.16695	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.069018	
95% Adjusted Gamma UCL	1.146761	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	2098.535	
95% Adjusted Gamma UCL	2311.751	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	5.38242	
95% Adjusted Gamma UCL	5.801312	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	181.6892	
95% Adjusted Gamma UCL	198.5216	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	82.21589	
95% Adjusted Gamma UCL	86.67555	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	7.095675	
95% Adjusted Gamma UCL	7.897034	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	271.894	
95% Adjusted Gamma UCL	291.5076	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	300.8509	
95% Adjusted Gamma UCL	321.3378	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.210417	
95% Adjusted Gamma UCL	1.32796	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	157.7147	
95% Adjusted Gamma UCL	171.9078	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	58.06497	
95% Adjusted Gamma UCL	62.00139	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	17.1554	
95% Adjusted Gamma UCL	19.49628	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	219.0093	
95% Adjusted Gamma UCL	238.4489	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	95.35166	
95% Adjusted Gamma UCL	98.62014	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	4.528335	
95% Adjusted Gamma UCL	4.814992	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	658.7397	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	98.43269	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	15.17723	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	884.6877	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1704.067	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	4.141609	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	1.29042	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	30.53433	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	172.7749	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1396.026	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.581993	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	0.391033	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.525208	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	0.387665	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	
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	0.23375	
Standard Deviation	0.154455	
Variance	0.023856	
Coefficient of Variation	0.660769	
Skewness	-0.046857	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.941251	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
Minimum of log data	-3.101093	
Maximum of log data	-0.867501	
Mean of log data	-1.719079	
Standard Deviation of log data	0.965857	
Variance of log data	0.932879	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	0.415494	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.776722	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	0.399133	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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.541085	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
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	0.388641	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	6.755389	
95% Adjusted Gamma UCL	10.52719	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	35.61057	
95% Adjusted Gamma UCL	36.86841	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	50.69595	
95% Adjusted Gamma UCL	55.70229	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.410538	
95% Adjusted Gamma UCL	1.524895	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	13.65521	
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	43.20632	
95% Adjusted Gamma UCL	45.3056	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	139.7424	
95% Adjusted Gamma UCL	149.2748	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	391.4951	
95% Adjusted Gamma UCL	411.9734	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	10.66747	
95% Adjusted Gamma UCL	11.59509	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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	
Raw Statistics		
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	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Gamma Statistics		
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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	24.29996	
95% Adjusted Gamma UCL	25.43756	
Lognormal Statistics		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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	
Non-parametric Statisitics		
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	
Bootstrap Statistics		
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	
Recommendations		
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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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% signifcance 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% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance 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 Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	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 Statisitics		
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	

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