	A	B	C	D	E	F	G	H	I	J	K	L
1	**UCL Statistics for Data Sets with Non-Detects**											
2												
3	User Selected Options											
4	Date/Time of Computation			9/24/2014 8:52:54 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	mber of Bootstrap Operations			2000								
9												
10	**Aroclors**											
11												
12	**General Statistics**											
13	Total Number of Observations					43	Number of Distinct Observations					36
14	Number of Detects					18	Number of Non-Detects					25
15	Number of Distinct Detects					17	Number of Distinct Non-Detects					19
16	Minimum Detect					4.95	Minimum Non-Detect					1.3
17	Maximum Detect					16.18	Maximum Non-Detect					5.2
18	Variance Detects					10.21	Percent Non-Detects					58.14%
19	Mean Detects					8.466	SD Detects					3.195
20	Median Detects					7.56	CV Detects					0.377
21	Skewness Detects					1.236	Kurtosis Detects					0.699
22	Mean of Logged Detects					2.078	SD of Logged Detects					0.34
23												
24	**Normal GOF Test on Detects Only**											
25	Shapiro Wilk Test Statistic					0.857	**Shapiro Wilk GOF Test**					
26	5% Shapiro Wilk Critical Value					0.897	Detected Data Not Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.233	**Lilliefors GOF Test**					
28	5% Lilliefors Critical Value					0.209	Detected Data Not Normal at 5% Significance Level					
29	**Detected Data Not Normal at 5% Significance Level**											
30												
31	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
32	Mean					4.303	Standard Error of Mean					0.638
33	SD					4.065	95% KM (BCA) UCL					5.224
34	95% KM (t) UCL					5.376	95% KM (Percentile Bootstrap) UCL					5.309
35	95% KM (z) UCL					5.353	95% KM Bootstrap t UCL					5.498
36	90% KM Chebyshev UCL					6.217	95% KM Chebyshev UCL					7.085
37	97.5% KM Chebyshev UCL					8.288	99% KM Chebyshev UCL					10.65
38												
39	**Gamma GOF Tests on Detected Observations Only**											
40	A-D Test Statistic					0.687	**Anderson-Darling GOF Test**					
41	5% A-D Critical Value					0.74	etected data appear Gamma Distributed at 5% Significance Lev					
42	K-S Test Statistic					0.189	**Kolmogrov-Smirnoff GOF**					
43	5% K-S Critical Value					0.204	etected data appear Gamma Distributed at 5% Significance Lev					
44	**Detected data appear Gamma Distributed at 5% Significance Level**											
45												
46	**Gamma Statistics on Detected Data Only**											
47	k hat (MLE)					8.733	k star (bias corrected MLE)					7.314
48	Theta hat (MLE)					0.969	Theta star (bias corrected MLE)					1.157
49	nu hat (MLE)					314.4	nu star (bias corrected)					263.3
50	MLE Mean (bias corrected)					8.466	MLE Sd (bias corrected)					3.13
51												
52	**Gamma Kaplan-Meier (KM) Statistics**											
53	k hat (KM)					1.121	nu hat (KM)					96.37
54	Approximate Chi Square Value (96.37, α)					74.73	Adjusted Chi Square Value (96.37, β)					74.06
55	5% Gamma Approximate KM-UCL (use when n>=50)					5.549	95% Gamma Adjusted KM-UCL (use when n<50)					5.599
56												
57	**Gamma ROS Statistics using Imputed Non-Detects**											
58	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
59	GROS may not be used when kstar of detected data is small such as < 0.1											
60	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
61	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
62	Minimum					0.01	Mean					4.055

	A	B	C	D	E	F	G	H	I	J	K	L
63					Maximum	16.18					Median	1.484
64					SD	4.33					CV	1.068
65					k hat (MLE)	0.62					k star (bias corrected MLE)	0.592
66					Theta hat (MLE)	6.54					Theta star (bias corrected MLE)	6.847
67					nu hat (MLE)	53.32					nu star (bias corrected)	50.94
68					MLE Mean (bias corrected)	4.055					MLE Sd (bias corrected)	5.269
69											Adjusted Level of Significance (β)	0.0444
70					Approximate Chi Square Value (50.94, α)	35.55					Adjusted Chi Square Value (50.94, β)	35.1
71					95% Gamma Approximate UCL (use when n>=50)	5.811					95% Gamma Adjusted UCL (use when n<50)	5.885
72												
73					**Lognormal GOF Test on Detected Observations Only**							
74					Shapiro Wilk Test Statistic	0.927			**Shapiro Wilk GOF Test**			
75					5% Shapiro Wilk Critical Value	0.897			Detected Data appear Lognormal at 5% Significance Level			
76					Lilliefors Test Statistic	0.166			**Lilliefors GOF Test**			
77					5% Lilliefors Critical Value	0.209			Detected Data appear Lognormal at 5% Significance Level			
78					**Detected Data appear Lognormal at 5% Significance Level**							
79												
80					**Lognormal ROS Statistics Using Imputed Non-Detects**							
81					Mean in Original Scale	5.292					Mean in Log Scale	1.504
82					SD in Original Scale	3.416					SD in Log Scale	0.551
83					95% t UCL (assumes normality of ROS data)	6.168					95% Percentile Bootstrap UCL	6.195
84					95% BCA Bootstrap UCL	6.269					95% Bootstrap t UCL	6.352
85					95% H-UCL (Log ROS)	6.172						
86												
87					**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**							
88					KM Mean (logged)	1.024					95% H-UCL (KM -Log)	5.875
89					KM SD (logged)	0.921					95% Critical H Value (KM-Log)	2.276
90					KM Standard Error of Mean (logged)	0.145						
91												
92					**DL/2 Statistics**							
93					**DL/2 Normal**				**DL/2 Log-Transformed**			
94					Mean in Original Scale	4.182					Mean in Log Scale	0.889
95					SD in Original Scale	4.215					SD in Log Scale	1.076
96					95% t UCL (Assumes normality)	5.263					95% H-Stat UCL	6.511
97					**DL/2 is not a recommended method, provided for comparisons and historical reasons**							
98												
99					**Nonparametric Distribution Free UCL Statistics**							
100					**Detected Data appear Gamma Distributed at 5% Significance Level**							
101												
102					**Suggested UCL to Use**							
103					95% KM (t) UCL	5.376					95% GROS Adjusted Gamma UCL	5.885
104					95% Adjusted Gamma KM-UCL	5.599						
105												
106	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
107	Recommendations are based upon data size, data distribution, and skewness.											
108	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
109	owever, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statisticia											
110												