	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			7/30/2013 1:39:28 PM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	mber of Bootstrap Operations			2000								
9												
10	PAHs											
11												
12	General Statistics											
13	Total Number of Observations					71	Number of Distinct Observations					68
14	Number of Detects					60	Number of Non-Detects					11
15	Number of Distinct Detects					60	Number of Distinct Non-Detects					8
16	Minimum Detect					6.12	Minimum Non-Detect					1.5
17	Maximum Detect					464.5	Maximum Non-Detect					10
18	Variance Detects					7048	Percent Non-Detects					15.49%
19	Mean Detects					90.37	SD Detects					83.96
20	Median Detects					69.47	CV Detects					0.929
21	Skewness Detects					2.652	Kurtosis Detects					8.811
22	Mean of Logged Detects					4.165	SD of Logged Detects					0.869
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic					0.742	Normal GOF Test on Detected Observations Only					
26	5% Shapiro Wilk P Value					1.122E-13	Detected Data Not Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.169	Lilliefors GOF Test					
28	5% Lilliefors Critical Value					0.114	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					76.64	Standard Error of Mean					9.931
33	SD					82.98	95% KM (BCA) UCL					94.76
34	95% KM (t) UCL					93.2	95% KM (Percentile Bootstrap) UCL					93.65
35	95% KM (z) UCL					92.98	95% KM Bootstrap t UCL					97.87
36	90% KM Chebyshev UCL					106.4	95% KM Chebyshev UCL					119.9
37	97.5% KM Chebyshev UCL					138.7	99% KM Chebyshev UCL					175.5
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic					0.458	Anderson-Darling GOF Test					
41	5% A-D Critical Value					0.767	etected data appear Gamma Distributed at 5% Significance Lev					
42	K-S Test Statistic					0.0733	Kolmogrov-Smirnoff GOF					
43	5% K-S Critical Value					0.117	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)					1.62	k star (bias corrected MLE)					1.551
48	Theta hat (MLE)					55.77	Theta star (bias corrected MLE)					58.28
49	nu hat (MLE)					194.5	nu star (bias corrected)					186.1
50	MLE Mean (bias corrected)					90.37	MLE Sd (bias corrected)					72.58
51												
52	Gamma Kaplan-Meier (KM) Statistics											
53	k hat (KM)					0.853	nu hat (KM)					121.1
54	Approximate Chi Square Value (121.14, α)					96.73	Adjusted Chi Square Value (121.14, β)					96.28
55	5% Gamma Approximate KM-UCL (use when n>=50)					95.99	95% Gamma Adjusted KM-UCL (use when n<50)					96.44
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					76.37

	A	B	C	D	E	F	G	H	I	J	K	L
63					Maximum	464.5					Median	59
64					SD	83.82					CV	1.097
65					k hat (MLE)	0.426					k star (bias corrected MLE)	0.417
66					Theta hat (MLE)	179.3					Theta star (bias corrected MLE)	183
67					nu hat (MLE)	60.48					nu star (bias corrected)	59.25
68					MLE Mean (bias corrected)	76.37					MLE Sd (bias corrected)	118.2
69											Adjusted Level of Significance (β)	0.0466
70					Approximate Chi Square Value (59.25, α)	42.55					Adjusted Chi Square Value (59.25, β)	42.26
71					95% Gamma Approximate UCL (use when n>=50)	106.3					95% Gamma Adjusted UCL (use when n<50)	107.1
72												
73					**Lognormal GOF Test on Detected Observations Only**							
74					Lilliefors Test Statistic	0.0869			**Lilliefors GOF Test**			
75					5% Lilliefors Critical Value	0.114			Detected Data appear Lognormal at 5% Significance Level			
76					**Detected Data appear Lognormal at 5% Significance Level**							
77												
78					**Lognormal ROS Statistics Using Imputed Non-Detects**							
79					Mean in Original Scale	77.97					Mean in Log Scale	3.879
80					SD in Original Scale	82.42					SD in Log Scale	1.045
81					95% t UCL (assumes normality of ROS data)	94.27					95% Percentile Bootstrap UCL	95.3
82					95% BCA Bootstrap UCL	97.95					95% Bootstrap t UCL	99.62
83					95% H-UCL (Log ROS)	111.3						
84												
85					**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**							
86					KM Mean (logged)	3.593					95% H-UCL (KM -Log)	207.9
87					KM SD (logged)	1.557					95% Critical H Value (KM-Log)	2.856
88					KM Standard Error of Mean (logged)	0.187						
89												
90					**DL/2 Statistics**							
91					**DL/2 Normal**				**DL/2 Log-Transformed**			
92					Mean in Original Scale	76.69					Mean in Log Scale	3.6
93					SD in Original Scale	83.53					SD in Log Scale	1.567
94					95% t UCL (Assumes normality)	93.22					95% H-Stat UCL	214
95					**DL/2 is not a recommended method, provided for comparisons and historical reasons**							
96												
97					**Nonparametric Distribution Free UCL Statistics**							
98					**Detected Data appear Gamma Distributed at 5% Significance Level**							
99												
100					**Suggested UCL to Use**							
101					95% KM (BCA) UCL	94.76			95% GROS Approximate Gamma UCL			106.3
102					95% Approximate Gamma KM-UCL	95.99						
103												
104	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
105	Recommendations are based upon data size, data distribution, and skewness.											
106	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
107	owever, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statisticia											
108												