	A	B	C	D	E	F	G	H	I	J	K	L	M
1				General Statistics on Uncensored Full Data									
2		Date/Time of Computation		5/8/2015 1:40:12 PM									
3		User Selected Options											
4		From File		20150505_ProUCL_Input_filtered.xls - tab: all_ProUCLInput_filtered_data									
5		Full Precision		OFF									
6													
7	From File: 20150505_ProUCL_Input_filtered_b.xls												
8													
9	General Statistics for Uncensored Data Sets												
10													
11	Variable		NumObs	# Missing	Minimum	Maximum	Mean	SD	SEM	MAD/0.675	Skewness	Kurtosis	CV
12	Aldrin		48	0	0.0329	0.55	0.182	0.141	0.0203	0.158	0.743	-0.206	0.775
13	Arsenic		71	0	1.9	5.29	2.869	0.662	0.0786	0.608	1.621	3.879	0.231
14	Benzo(a)pyrene		71	0	0.33	53	6.718	7.909	0.939	3.262	3.582	17.01	1.177
15	(2-ethylhexyl) phthalate		67	4	3.2	2100	73.89	255.2	31.18	17.79	7.814	62.77	3.454
16	Butylbenzyl phthalate		66	5	2.2	33	10.61	10.19	1.254	2.817	0.921	-0.776	0.961
17	Cadmium		67	4	0.04	0.3	0.118	0.0492	0.00601	0.043	0.887	1.76	0.416
18	Total Chlordane (calc'd)		48	0	0.0438	1.18	0.361	0.239	0.0345	0.267	0.991	1.566	0.662
19	Chromium		65	6	11.9	38.1	22.57	5.733	0.711	5.93	0.418	-0.0625	0.254
20	Copper		67	4	10.5	47.2	24.32	7.783	0.951	8.747	0.562	0.319	0.32
21	CPAH		71	0	0.39	76.99	9.408	11.27	1.337	6.149	3.788	18.95	1.198
22	Total DDD		48	0	0.0507	1.615	0.667	0.456	0.0658	0.426	0.767	-0.453	0.684
23	Total DDE		48	0	0.105	2.451	0.956	0.557	0.0804	0.559	0.677	0.534	0.583
24	Total DDT		48	0	0.0486	2.97	0.412	0.477	0.0688	0.241	3.608	17.5	1.158
25	Total DDTs (calc'd)		48	0	0.18	6.695	1.984	1.186	0.171	0.993	1.418	4.584	0.598
26	Dieldrin		47	1	0.03	0.39	0.119	0.0848	0.0124	0.0738	1.375	1.709	0.716
27	el Range Hydrocarbons		28	18	2.6	69	34.68	14.77	2.79	11.12	0.155	0.394	0.426
28	n TEQ - Mammals 2006		52	19	0.0333	19.11	1.158	2.706	0.375	0.453	5.96	39.57	2.337
29	Hexachlorocyclohexane		45	3	0.062	0.32	0.117	0.071	0.0106	0.0374	1.36	0.733	0.607
30	Hexachlorobenzene		34	12	0.068	1.04	0.317	0.269	0.0461	0.133	1.578	1.588	0.848
31	Total HPAHs (calc'd)		71	0	1	450	65.21	74.69	8.864	48.26	2.836	10.83	1.145
32	Lead		67	4	3.96	31.6	8.398	4.178	0.51	1.705	3.597	16.31	0.497
33	Total LPAHs (calc'd)		71	0	1.5	96	11.59	12.87	1.527	10.38	4.246	26.13	1.11
34	Mercury		61	10	0.009	0.061	0.0323	0.0116	0.00148	0.0119	0.438	-0.187	0.358
35	Naphthalene		65	6	0.55	9.9	3.536	2.025	0.251	1.631	1.128	1.341	0.573
36	Nickel		67	4	12.3	29	20.7	3.264	0.399	2.669	-0.167	0.446	0.158
37	3 TEQ - Mammals 2006		32	39	0.0333	1.27	0.196	0.266	0.047	0.0187	2.93	8.733	1.353
38	Pentachlorophenol		65	6	0.25	12	2.38	2.45	0.304	1.779	1.443	2.634	1.029
39	Phenanthrene		69	2	0.59	71	5.841	8.7	1.047	3.41	6.395	47.53	1.489
40	al Range Hydrocarbons		28	18	9.2	420	229.7	98.08	18.54	59.3	0.0518	0.0856	0.427
41	Total PAHs (calc'd)		71	0	1.5	464.5	77.01	83.24	9.879	53.37	2.6	8.936	1.081
42	PCB Congeners (calc'd)		33	38	598.4	47975	6672	9993	1740	3105	3.022	9.554	1.498
43	PCBs Aroclors (calc'd)		48	0	1.3	53.45	8.173	11.13	1.606	3.669	2.655	7.061	1.361
44	Total PCDD/F (calc'd)		33	13	5.628	307.5	67.47	68.15	11.86	42.27	1.625	3.294	1.01
45	n Hydrocarbons (calc'd)		28	18	11.8	489	264.4	112.2	21.21	70.83	0.0536	0.157	0.424
46	Tributyltin ion		3	43	0.087	1.1	0.636	0.512	0.295	0.563	-0.721	N/A	0.805
47	Zinc		67	4	40.4	165	74.68	21.3	2.602	22.76	1.117	3.504	0.285
48													
49	Percentiles for Uncensored Data Sets												
50													
51	Variable		NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
52	Aldrin		48	0	0.0356	0.0393	0.0408	0.145	0.28	0.28	0.361	0.449	0.522
53	Arsenic		71	0	2.2	2.33	2.465	2.73	3.19	3.3	3.52	3.725	5.227
54	Benzo(a)pyrene		71	0	1.8	2.2	2.4	4.2	8.175	8.6	12	20	35.5
55	(2-ethylhexyl) phthalate		67	4	10.24	17	19	28	51.5	64	97.2	162	872.4
56	Butylbenzyl phthalate		66	5	2.4	2.9	3	4.15	22	23	24.5	30	33
57	Cadmium		67	4	0.06	0.0806	0.087	0.116	0.144	0.151	0.173	0.21	0.243
58	Total Chlordane (calc'd)		48	0	0.0919	0.137	0.15	0.364	0.461	0.494	0.656	0.751	1.013
59	Chromium		65	6	15.46	17.58	17.9	21.9	26.6	27.16	28.98	32.46	36.88
60	Copper		67	4	15.18	16.76	17.3	24.2	29.3	30.34	32.6	36.71	45.35
61	CPAH		71	0	2	2.4	3.019	6.885	11.18	11.92	17.01	26.73	51.16
62	Total DDD		48	0	0.176	0.283	0.318	0.527	0.884	1.025	1.508	1.558	1.589
63	Total DDE		48	0	0.251	0.504	0.537	0.954	1.3	1.35	1.483	2.002	2.402
64	Total DDT		48	0	0.0586	0.0684	0.0708	0.33	0.489	0.504	0.843	0.962	2.233
65	Total DDTs (calc'd)		48	0	0.619	1.064	1.148	2.045	2.615	2.672	2.946	3.282	5.897

	A	B	C	D	E	F	G	H	I	J	K	L	M
66		Dieldrin	47	1	0.0342	0.0553	0.0579	0.106	0.165	0.178	0.212	0.308	0.358
67	el Range Hydrocarbons		28	18	19.5	24.2	27.5	33	42	45.6	53.9	58.28	66.44
68	n TEQ - Mammals 2006		52	19	0.0497	0.083	0.0988	0.356	1.295	1.354	2.357	2.942	11.3
69	Hexachlorocyclohexane		45	3	0.062	0.062	0.062	0.0872	0.163	0.192	0.236	0.248	0.307
70		Hexachlorobenzene	34	12	0.0979	0.136	0.14	0.22	0.357	0.434	0.766	0.918	1.03
71		Total HPAHs (calc'd)	71	0	3.4	14.39	18.7	45.25	84.65	92.09	128.1	180.5	352
72		Lead	67	4	5.8	6.22	6.535	7.4	8.72	9.186	10.62	14.15	26.52
73		Total LPAHs (calc'd)	71	0	2.2	2.4	2.873	10	14.88	17.46	21.5	25.41	54
74		Mercury	61	10	0.02	0.02	0.022	0.032	0.039	0.04	0.047	0.054	0.0604
75		Naphthalene	65	6	1.64	1.98	2.2	3	4.6	5.12	5.96	6.94	9.772
76		Nickel	67	4	17.02	18.72	18.9	20.7	22.5	22.96	24.66	26.04	27.61
77	3 TEQ - Mammals 2006		32	39	0.0801	0.0909	0.0967	0.102	0.139	0.153	0.607	0.723	1.101
78		Pentachlorophenol	65	6	0.3	0.31	0.34	1.5	4.2	4.34	5.64	6.34	9.952
79		Phenanthrene	69	2	1.36	2.2	2.3	4	6.8	7.5	10	11	35.64
80	al Range Hydrocarbons		28	18	121	174	184.9	220	272.5	316	380	386.5	411.9
81		Total PAHs (calc'd)	71	0	4.6	19.87	23.82	59	100.2	113.6	152.6	192.6	423.5
82	PCB Congeners (calc'd)		33	38	1187	2133	2323	3372	5953	6224	16502	27311	42546
83		PCBs Aroclors (calc'd)	48	0	1.4	1.84	2.145	4.175	8.204	9.382	17.46	35.81	47.52
84		Total PCDD/F (calc'd)	33	13	9.428	13.92	16.53	39.1	107.4	126.2	155.6	163	263
85	n Hydrocarbons (calc'd)		28	18	141.2	200	212.5	257.1	311.5	358	435	443.7	477.4
86		Tributyltin ion	3	43	0.214	0.34	0.404	0.72	0.91	0.948	1.024	1.062	1.092
87		Zinc	67	4	49.54	56.42	59.2	73.4	88.83	89.6	96.2	103.8	131.3

	A	B	C	D	E	F	G	H	I	J	K	L	M
1					Outlier Tests for Selected Variables replacing nondetects with 1/2 the Detection Limit								
2			User Selected Options										
3		Date/Time of Computation		5/8/2015 11:03:04 AM									
4				From File	20150505_ProUCL_Input_filtered.xls - tab: all_ProUCLInput_filtered_data								
5				Full Precision	OFF								
6													
7													
8			Rosner's Outlier Test for 10 Outliers in Aldrin										
9													
10													
11				Total N	48								
12				Number NDs	42								
13				Number Detects	48								
14				Mean with NDs=DL/2	0.113								
15				SD with NDs=DL/2	0.117								
16				Number of data	48								
17				Number of suspected outliers	10								
18				NDs replaced with half value.									
19													
20				Potential	Obs.	Test	Critical	Critical					
21	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
22	1	0.113	0.116	0.55	30	3.772	3.11	3.46					
23	2	0.104	0.0987	0.41	31	3.099	3.1	3.46					
24	3	0.0975	0.0885	0.349	17	2.841	3.09	3.45					
25	4	0.0919	0.0809	0.32	24	2.82	3.09	3.44					
26	5	0.0867	0.0739	0.3	23	2.887	3.08	3.43					
27	6	0.0817	0.0669	0.245	48	2.439	3.07	3.418					
28	7	0.0778	0.0626	0.24	25	2.589	3.06	3.406					
29	8	0.0739	0.0579	0.235	47	2.784	3.05	3.394					
30	9	0.0698	0.0525	0.195	28	2.386	3.04	3.382					
31	10	0.0666	0.049	0.17	27	2.109	3.03	3.37					
32													
33	For 5% Significance Level, there is 1 Potential Outlier												
34	Therefore, Observation 0.55 is a Potential Statistical Outlier												
35													
36	For 1% Significance Level, there is 1 Potential Outlier												
37													
38													
39			Rosner's Outlier Test for 10 Outliers in Arsenic										
40													
41													
42				Total N	71								
43				Number NDs	0								
44				Number Detects	71								
45				Mean with NDs=DL/2	2.869								
46				SD with NDs=DL/2	0.662								
47				Number of data	71								
48				Number of suspected outliers	10								
49				NDs replaced with half value.									
50													
51				Potential	Obs.	Test	Critical	Critical					
52	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
53	1	2.869	0.657	5.29	17	3.682	3.265	3.625					
54	2	2.835	0.599	5.2	68	3.95	3.255	3.625					
55	3	2.8	0.53	4.85	18	3.87	3.255	3.615					
56	4	2.77	0.47	3.75	49	2.084	3.245	3.606					
57	5	2.756	0.458	3.7	66	2.063	3.245	3.605					
58	6	2.741	0.446	3.68	16	2.105	3.239	3.599					
59	7	2.727	0.434	3.67	8	2.175	3.233	3.593					
60	8	2.712	0.42	1.9	53	1.932	3.227	3.588					
61	9	2.725	0.411	1.9	62	2.008	3.221	3.582					
62	10	2.738	0.4	3.52	41	1.953	3.215	3.576					
63													
64	For 5% significance level, there are 3 Potential Outliers												
65	5.29, 5.2, 4.85												

For 1% Significance Level, there are 3 Potential Outliers

5.29, 5.2, 4.85

Rosner's Outlier Test for 10 Outliers in Benzo(a)pyrene

Total N	**71**
Number NDs	**29**
Number Detects	**71**
Mean with NDs=DL/2	**6.023**
SD with NDs=DL/2	**7.94**
Number of data	**71**
Number of suspected outliers	**10**
NDs replaced with half value.	

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	6.023	7.884	53	33	5.959	3.265	3.625
2	5.352	5.614	28	51	4.034	3.255	3.625
3	5.023	4.932	27	43	4.456	3.255	3.615
4	4.7	4.168	19	58	3.431	3.245	3.606
5	4.487	3.807	18	5	3.55	3.245	3.605
6	4.282	3.444	13	44	2.531	3.239	3.599
7	4.148	3.293	12	11	2.385	3.233	3.593
8	4.025	3.166	12	49	2.519	3.227	3.588
9	3.898	3.023	10.5	56	2.183	3.221	3.582
10	3.792	2.927	9.7	4	2.019	3.215	3.576

For 5% significance level, there are 5 Potential Outliers

53, 28, 27, 19, 18

For 1% Significance Level, there are 3 Potential Outliers

53, 28, 27

Rosner's Outlier Test for 10 Outliers in Bis(2-ethylhexyl) phthalate

Total N	**67**
Number NDs	**15**
Number Detects	**67**
Mean with NDs=DL/2	**71.5**
SD with NDs=DL/2	**255.7**
Number of data	**67**
Number of suspected outliers	**10**
NDs replaced with half value.	

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	71.5	253.8	2100	3	7.992	3.242	3.602
2	40.77	46.32	240	40	4.301	3.232	3.599
3	37.7	39.36	200	30	4.124	3.232	3.592
4	35.16	33.9	180	31	4.273	3.222	3.582
5	32.87	28.7	120	42	3.036	3.219	3.579
6	31.46	26.66	110	24	2.946	3.213	3.572
7	30.17	24.86	102	29	2.889	3.207	3.566
8	28.98	23.23	94	38	2.799	3.201	3.559
9	27.87	21.79	88	28	2.759	3.195	3.553
10	26.84	20.47	83	19	2.744	3.189	3.546

For 5% significance level, there are 4 Potential Outliers

2100, 240, 200, 180

For 1% Significance Level, there are 4 Potential Outliers

2100, 240, 200, 180

Rosner's Outlier Test for 10 Outliers in Butylbenzyl phthalate

Total N	**66**
Number NDs	**51**
Number Detects	**66**
Mean with NDs=DL/2	**6.337**
SD with NDs=DL/2	**6.192**
Number of data	**66**
Number of suspected outliers	**10**
NDs replaced with half value.	

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	6.337	6.144	33	40	4.339	3.236	3.596
2	5.927	5.259	17	19	2.106	3.226	3.592
3	5.754	5.111	16.5	64	2.103	3.226	3.586
4	5.583	4.965	16	24	2.098	3.216	3.576
5	5.415	4.821	15.5	55	2.092	3.212	3.572
6	5.25	4.681	15	53	2.083	3.206	3.565
7	5.088	4.543	15	65	2.182	3.2	3.558
8	4.919	4.39	14	56	2.068	3.194	3.552
9	4.763	4.259	12.5	57	1.817	3.188	3.545
10	4.627	4.169	12	54	1.769	3.182	3.538

For 5% Significance Level, there is 1 Potential Outlier

Therefore, Observation 33 is a Potential Statistical Outlier

For 1% Significance Level, there is 1 Potential Outlier

Rosner's Outlier Test for 10 Outliers in Cadmium

Total N	**67**
Number NDs	**9**
Number Detects	**67**
Mean with NDs=DL/2	**0.114**
SD with NDs=DL/2	**0.0545**
Number of data	**67**
Number of suspected outliers	**10**
NDs replaced with half value.	

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.114	0.0541	0.3	64	3.445	3.242	3.602
2	0.111	0.0497	0.214	5	2.073	3.232	3.599
3	0.109	0.0484	0.21	47	2.08	3.232	3.592
4	0.108	0.0471	0.21	48	2.172	3.222	3.582
5	0.106	0.0456	0.209	17	2.256	3.219	3.579
6	0.104	0.044	0.204	18	2.261	3.213	3.572
7	0.103	0.0425	0.02	60	1.951	3.207	3.566
8	0.104	0.0414	0.02	62	2.034	3.201	3.559
9	0.106	0.0403	0.025	59	2.004	3.195	3.553
10	0.107	0.0391	0.03	49	1.968	3.189	3.546

For 5% Significance Level, there is 1 Potential Outlier

Therefore, Observation 0.3 is a Potential Statistical Outlier

For 1% Significance Level, there is no Potential Outlier

	A	B	C	D	E	F	G	H	I	J	K	L	M
196													
197	**Rosner's Outlier Test for 10 Outliers in Total Chlordane (calc'd)**												
198													
199													
200				**Total N**	**48**								
201				**Number NDs**	**15**								
202				**Number Detects**	**48**								
203				**Mean with NDs=DL/2**	**0.341**								
204				**SD with NDs=DL/2**	**0.258**								
205				**Number of data**	**48**								
206				**Number of suspected outliers**	**10**								
207				**NDs replaced with half value.**									
208													
209				Potential	Obs.	Test	Critical	Critical					
210	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
211	1	0.341	0.255	1.18	17	3.289	3.11	3.46					
212	2	0.323	0.229	0.825	40	2.195	3.1	3.46					
213	3	0.312	0.218	0.788	39	2.178	3.09	3.45					
214	4	0.302	0.209	0.682	10	1.822	3.09	3.44					
215	5	0.293	0.203	0.67	31	1.859	3.08	3.43					
216	6	0.284	0.196	0.65	46	1.86	3.07	3.418					
217	7	0.276	0.19	0.645	27	1.938	3.06	3.406					
218	8	0.267	0.183	0.619	11	1.923	3.05	3.394					
219	9	0.258	0.177	0.591	28	1.882	3.04	3.382					
220	10	0.249	0.17	0.496	24	1.446	3.03	3.37					
221													
222	For 5% Significance Level, there is 1 Potential Outlier												
223	Therefore, Observation 1.18 is a Potential Statistical Outlier												
224													
225	For 1% Significance Level, there is no Potential Outlier												
226													
227													
228	**Rosner's Outlier Test for 10 Outliers in Chromium**												
229													
230													
231				**Total N**	**65**								
232				**Number NDs**	**0**								
233				**Number Detects**	**65**								
234				**Mean with NDs=DL/2**	**22.57**								
235				**SD with NDs=DL/2**	**5.733**								
236				**Number of data**	**65**								
237				**Number of suspected outliers**	**10**								
238				**NDs replaced with half value.**									
239													
240				Potential	Obs.	Test	Critical	Critical					
241	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
242	1	22.57	5.689	38.1	17	2.731	3.23	3.59					
243	2	22.32	5.431	36.2	18	2.555	3.22	3.585					
244	3	22.1	5.179	33.4	62	2.181	3.22	3.58					
245	4	21.92	5.013	32.7	5	2.15	3.21	3.57					
246	5	21.74	4.856	11.9	58	2.027	3.205	3.565					
247	6	21.91	4.724	31.5	11	2.031	3.199	3.558					
248	7	21.74	4.592	31.4	10	2.103	3.193	3.551					
249	8	21.58	4.449	12.5	22	2.041	3.187	3.544					
250	9	21.74	4.318	12.9	52	2.047	3.181	3.537					
251	10	21.9	4.188	14.5	56	1.766	3.175	3.53					
252													
253	For 5% Significance Level, there is no Potential Outlier												
254													
255	For 1% Significance Level, there is no Potential Outlier												
256													
257													
258	**Rosner's Outlier Test for 10 Outliers in Copper**												
259													
260													

	A	B	C	D	E	F	G	H	I	J	K	L	M
261			**Total N**	**67**									
262			**Number NDs**	**0**									
263			**Number Detects**	**67**									
264			**Mean with NDs=DL/2**	**24.32**									
265			**SD with NDs=DL/2**	**7.783**									
266			**Number of data**	**67**									
267			**Number of suspected outliers**	**10**									
268			**NDs replaced with half value.**										
269													
270				Potential	Obs.	Test	Critical	Critical					
271	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
272	1	24.32	7.724	47.2	17	2.962	3.242	3.602					
273	2	23.98	7.302	44.4	18	2.797	3.232	3.599					
274	3	23.66	6.895	41.5	64	2.587	3.232	3.592					
275	4	23.38	6.57	38	41	2.225	3.222	3.582					
276	5	23.15	6.353	10.5	62	1.991	3.219	3.579					
277	6	23.35	6.193	12.8	22	1.704	3.213	3.572					
278	7	23.53	6.092	33.7	10	1.67	3.207	3.566					
279	8	23.36	5.996	33.7	42	1.725	3.201	3.559					
280	9	23.18	5.89	33.5	52	1.752	3.195	3.553					
281	10	23	5.78	13.4	59	1.662	3.189	3.546					
282													
283	For 5% Significance Level, there is no Potential Outlier												
284													
285	For 1% Significance Level, there is no Potential Outlier												
286													
287													
288			**Rosner's Outlier Test for 10 Outliers in CPAH**										
289													
290													
291			**Total N**	**71**									
292			**Number NDs**	**12**									
293			**Number Detects**	**71**									
294			**Mean with NDs=DL/2**	**9.151**									
295			**SD with NDs=DL/2**	**11.37**									
296			**Number of data**	**71**									
297			**Number of suspected outliers**	**10**									
298			**NDs replaced with half value.**										
299													
300				Potential	Obs.	Test	Critical	Critical					
301	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
302	1	9.151	11.29	76.99	33	6.008	3.265	3.625					
303	2	8.182	7.972	40.09	43	4.002	3.255	3.625					
304	3	7.72	7.022	39.74	51	4.561	3.255	3.615					
305	4	7.249	5.874	27.68	58	3.479	3.245	3.606					
306	5	6.944	5.349	25.78	5	3.522	3.245	3.605					
307	6	6.658	4.848	20.36	49	2.827	3.239	3.599					
308	7	6.447	4.571	19.26	44	2.802	3.233	3.593					
309	8	6.247	4.31	17.01	11	2.496	3.227	3.588					
310	9	6.077	4.121	13.78	4	1.87	3.221	3.582					
311	10	5.952	4.034	13.67	20	1.912	3.215	3.576					
312													
313	For 5% significance level, there are 5 Potential Outliers												
314	76.99, 40.09, 39.74, 27.68, 25.78												
315													
316	For 1% Significance Level, there are 3 Potential Outliers												
317	76.99, 40.09, 39.74												
318													
319													
320			**Rosner's Outlier Test for 10 Outliers in Total DDD**										
321													
322													
323			**Total N**	**48**									
324			**Number NDs**	**9**									
325			**Number Detects**	**48**									

	A	B	C	D	E	F	G	H	I	J	K	L	M
326			Mean with NDs=DL/2	0.643									
327			SD with NDs=DL/2	0.476									
328			Number of data	48									
329			Number of suspected outliers	10									
330			NDs replaced with half value.										
331													
332				Potential	Obs.	Test	Critical	Critical					
333	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
334	1	0.643	0.471	1.615	19	2.063	3.11	3.46					
335	2	0.622	0.459	1.56	28	2.043	3.1	3.46					
336	3	0.602	0.442	1.56	35	2.168	3.09	3.45					
337	4	0.581	0.422	1.555	5	2.307	3.09	3.44					
338	5	0.559	0.4	1.55	32	2.479	3.08	3.43					
339	6	0.536	0.374	1.49	41	2.552	3.07	3.418					
340	7	0.513	0.347	1.28	37	2.21	3.06	3.406					
341	8	0.494	0.329	1.255	27	2.311	3.05	3.394					
342	9	0.475	0.31	1.145	17	2.162	3.04	3.382					
343	10	0.458	0.294	1.055	21	2.031	3.03	3.37					
344													
345	For 5% Significance Level, there is no Potential Outlier												
346													
347	For 1% Significance Level, there is no Potential Outlier												
348													
349													
350			Rosner's Outlier Test for 10 Outliers in Total DDE										
351													
352													
353			Total N	48									
354			Number NDs	1									
355			Number Detects	48									
356			Mean with NDs=DL/2	0.954									
357			SD with NDs=DL/2	0.559									
358			Number of data	48									
359			Number of suspected outliers	10									
360			NDs replaced with half value.										
361													
362				Potential	Obs.	Test	Critical	Critical					
363	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
364	1	0.954	0.553	2.451	17	2.704	3.11	3.46					
365	2	0.923	0.52	2.347	20	2.742	3.1	3.46					
366	3	0.892	0.479	2.235	41	2.802	3.09	3.45					
367	4	0.862	0.439	0.06	22	1.824	3.09	3.44					
368	5	0.88	0.427	0.105	13	1.815	3.08	3.43					
369	6	0.898	0.415	0.138	14	1.832	3.07	3.418					
370	7	0.916	0.402	0.21	15	1.755	3.06	3.406					
371	8	0.933	0.391	0.218	1	1.829	3.05	3.394					
372	9	0.951	0.379	0.265	3	1.81	3.04	3.382					
373	10	0.969	0.367	0.317	2	1.775	3.03	3.37					
374													
375	For 5% Significance Level, there is no Potential Outlier												
376													
377	For 1% Significance Level, there is no Potential Outlier												
378													
379													
380			Rosner's Outlier Test for 10 Outliers in Total DDT										
381													
382													
383			Total N	48									
384			Number NDs	30									
385			Number Detects	48									
386			Mean with NDs=DL/2	0.348									
387			SD with NDs=DL/2	0.496									
388			Number of data	48									
389			Number of suspected outliers	10									
390			NDs replaced with half value.										

	A	B	C	D	E	F	G	H	I	J	K	L	M
391													
392				Potential	Obs.	Test	Critical	Critical					
393	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
394	1	0.348	0.491	2.97	41	5.342	3.11	3.46					
395	2	0.292	0.314	1.402	17	3.532	3.1	3.46					
396	3	0.268	0.27	1	47	2.71	3.09	3.45					
397	4	0.252	0.249	0.89	34	2.559	3.09	3.44					
398	5	0.237	0.232	0.85	25	2.638	3.08	3.43					
399	6	0.223	0.215	0.84	46	2.874	3.07	3.418					
400	7	0.208	0.194	0.775	29	2.919	3.06	3.406					
401	8	0.194	0.174	0.64	42	2.555	3.05	3.394					
402	9	0.183	0.161	0.55	4	2.275	3.04	3.382					
403	10	0.174	0.152	0.495	24	2.115	3.03	3.37					
404													
405	For 5% significance level, there are 2 Potential Outliers												
406	2.97, 1.402												
407													
408	For 1% Significance Level, there are 2 Potential Outliers												
409	2.97, 1.402												
410													
411													
412	**Rosner's Outlier Test for 10 Outliers in Total DDTs (calc'd)**												
413													
414													
415			**Total N**	**48**									
416			**Number NDs**	**1**									
417			**Number Detects**	**48**									
418			**Mean with NDs=DL/2**	**1.982**									
419			**SD with NDs=DL/2**	**1.189**									
420			**Number of data**	**48**									
421			**Number of suspected outliers**	**10**									
422			**NDs replaced with half value.**										
423													
424				Potential	Obs.	Test	Critical	Critical					
425	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
426	1	1.982	1.176	6.695	41	4.006	3.11	3.46					
427	2	1.882	0.975	4.998	17	3.195	3.1	3.46					
428	3	1.814	0.867	0.09	22	1.988	3.09	3.45					
429	4	1.852	0.837	0.2	13	1.975	3.09	3.44					
430	5	1.89	0.807	0.309	15	1.959	3.08	3.43					
431	6	1.927	0.778	0.328	14	2.054	3.07	3.418					
432	7	1.965	0.746	0.461	3	2.015	3.06	3.406					
433	8	2.001	0.716	3.41	19	1.967	3.05	3.394					
434	9	1.966	0.688	0.687	6	1.858	3.04	3.382					
435	10	1.999	0.665	0.787	9	1.823	3.03	3.37					
436													
437	For 5% significance level, there are 2 Potential Outliers												
438	6.695, 4.998												
439													
440	For 1% Significance Level, there is 1 Potential Outlier												
441													
442													
443	**Rosner's Outlier Test for 10 Outliers in Dieldrin**												
444													
445													
446			**Total N**	**47**									
447			**Number NDs**	**40**									
448			**Number Detects**	**47**									
449			**Mean with NDs=DL/2**	**0.0751**									
450			**SD with NDs=DL/2**	**0.0772**									
451			**Number of data**	**47**									
452			**Number of suspected outliers**	**10**									
453			**NDs replaced with half value.**										
454													
455				Potential	Obs.	Test	Critical	Critical					

	A	B	C	D	E	F	G	H	I	J	K	L	M
456	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
457	1	0.0751	0.0763	0.39	40	4.124	3.1	3.46					
458	2	0.0683	0.0619	0.32	39	4.064	3.09	3.45					
459	3	0.0627	0.0495	0.23	30	3.378	3.09	3.44					
460	4	0.0589	0.0429	0.2	38	3.286	3.08	3.43					
461	5	0.0556	0.0374	0.16	44	2.787	3.07	3.41					
462	6	0.0531	0.0341	0.14	45	2.546	3.058	3.4					
463	7	0.051	0.0316	0.124	5	2.308	3.046	3.39					
464	8	0.0492	0.0298	0.12	41	2.379	3.034	3.38					
465	9	0.0474	0.0278	0.106	29	2.108	3.022	3.37					
466	10	0.0458	0.0264	0.1	32	2.048	3.01	3.36					
467													
468	For 5% significance level, there are 4 Potential Outliers												
469	0.39, 0.32, 0.23, 0.2												
470													
471	For 1% Significance Level, there are 2 Potential Outliers												
472	0.39, 0.32												
473													
474													
475	**Rosner's Outlier Test for 10 Outliers in Diesel Range Hydrocarbons**												
476													
477													
478			**Total N**	**28**									
479			**Number NDs**	**0**									
480			**Number Detects**	**28**									
481			**Mean with NDs=DL/2**	**34.68**									
482			**SD with NDs=DL/2**	**14.77**									
483			**Number of data**	**28**									
484			**Number of suspected outliers**	**10**									
485			**NDs replaced with half value.**										
486													
487				Potential	Obs.	Test	Critical	Critical					
488	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
489	1	34.68	14.5	69	10	2.367	2.88	3.2					
490	2	33.41	13.4	2.6	4	2.3	2.86	3.18					
491	3	34.6	12.13	8.9	27	2.118	2.84	3.16					
492	4	35.63	11.17	59.5	9	2.138	2.82	3.14					
493	5	34.63	10.21	56	12	2.092	2.8	3.11					
494	6	33.7	9.348	53	28	2.064	2.776	3.082					
495	7	32.83	8.544	16	26	1.969	2.752	3.054					
496	8	33.63	7.863	48	22	1.828	2.728	3.026					
497	9	32.91	7.325	46	15	1.787	2.704	2.998					
498	10	32.22	6.828	45	13	1.872	2.68	2.97					
499													
500	For 5% Significance Level, there is no Potential Outlier												
501													
502	For 1% Significance Level, there is no Potential Outlier												
503													
504													
505	**Rosner's Outlier Test for 10 Outliers in Dioxin TEQ - Mammals 2006**												
506													
507													
508			**Total N**	**52**									
509			**Number NDs**	**0**									
510			**Number Detects**	**52**									
511			**Mean with NDs=DL/2**	**1.158**									
512			**SD with NDs=DL/2**	**2.706**									
513			**Number of data**	**52**									
514			**Number of suspected outliers**	**10**									
515			**NDs replaced with half value.**										
516													
517				Potential	Obs.	Test	Critical	Critical					
518	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
519	1	1.158	2.68	19.11	49	6.698	3.144	3.496					
520	2	0.806	0.948	3.788	45	3.145	3.134	3.486					

	A	B	C	D	E	F	G	H	I	J	K	L	M
521	3	0.747	0.856	3.207	51	2.876	3.126	3.478					
522	4	0.696	0.787	2.725	50	2.579	3.116	3.476					
523	5	0.654	0.737	2.599	41	2.64	3.106	3.466					
524	6	0.613	0.686	2.358	42	2.545	3.098	3.455					
525	7	0.575	0.642	2.347	38	2.762	3.091	3.444					
526	8	0.535	0.59	2.15	40	2.737	3.083	3.432					
527	9	0.499	0.542	2.043	36	2.847	3.076	3.421					
528	10	0.463	0.493	1.387	34	1.874	3.068	3.41					
529													
530	For 5% significance level, there are 2 Potential Outliers												
531	19.11, 3.788												
532													
533	For 1% Significance Level, there is 1 Potential Outlier												
534													
535													
536	**Rosner's Outlier Test for 10 Outliers in gamma-Hexachlorocyclohexane**												
537													
538													
539			**Total N**	**45**									
540			**Number NDs**	**44**									
541			**Number Detects**	**45**									
542			**Mean with NDs=DL/2**	**0.0621**									
543			**SD with NDs=DL/2**	**0.0507**									
544			**Number of data**	**45**									
545			**Number of suspected outliers**	**10**									
546			**NDs replaced with half value.**										
547													
548				Potential	Obs.	Test	Critical	Critical					
549	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
550	1	0.0621	0.0501	0.32	43	5.147	3.09	3.44					
551	2	0.0562	0.0323	0.145	19	2.746	3.08	3.43					
552	3	0.0541	0.0296	0.125	35	2.39	3.07	3.41					
553	4	0.0524	0.0278	0.12	30	2.427	3.06	3.4					
554	5	0.0508	0.026	0.12	36	2.659	3.05	3.39					
555	6	0.0491	0.0239	0.115	31	2.764	3.038	3.378					
556	7	0.0474	0.0216	0.1	26	2.436	3.026	3.366					
557	8	0.046	0.0201	0.1	37	2.692	3.014	3.354					
558	9	0.0445	0.0182	0.1	45	3.052	3.002	3.342					
559	10	0.043	0.0158	0.095	44	3.293	2.99	3.33					
560													
561	For 5% significance level, there are 10 Potential Outliers												
562	0.32, 0.145, 0.125, 0.12, 0.12, 0.115, 0.1, 0.1, 0.1, 0.095												
563													
564	For 1% Significance Level, there is 1 Potential Outlier												
565													
566													
567	**Rosner's Outlier Test for 10 Outliers in Hexachlorobenzene**												
568													
569													
570			**Total N**	**34**									
571			**Number NDs**	**10**									
572			**Number Detects**	**34**									
573			**Mean with NDs=DL/2**	**0.284**									
574			**SD with NDs=DL/2**	**0.28**									
575			**Number of data**	**34**									
576			**Number of suspected outliers**	**10**									
577			**NDs replaced with half value.**										
578													
579				Potential	Obs.	Test	Critical	Critical					
580	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
581	1	0.284	0.276	1.04	6	2.737	2.97	3.3					
582	2	0.261	0.25	1.01	4	2.992	2.95	3.29					
583	3	0.238	0.214	0.869	1	2.943	2.94	3.27					
584	4	0.218	0.184	0.795	5	3.14	2.91	3.25					
585	5	0.198	0.152	0.698	8	3.287	2.91	3.24					

	A	B	C	D	E	F	G	H	I	J	K	L	M
586	6	0.181	0.121	0.584	3	3.322	2.892	3.22					
587	7	0.167	0.095	0.44	18	2.877	2.874	3.2					
588	8	0.157	0.08	0.369	7	2.657	2.856	3.18					
589	9	0.148	0.0691	0.318	2	2.454	2.838	3.16					
590	10	0.142	0.0611	0.285	19	2.348	2.82	3.14					
591													
592	For 5% significance level, there are 7 Potential Outliers												
593	1.04, 1.01, 0.869, 0.795, 0.698, 0.584, 0.44												
594													
595	For 1% Significance Level, there are 6 Potential Outliers												
596	1.04, 1.01, 0.869, 0.795, 0.698, 0.584												
597													
598													
599	**Rosner's Outlier Test for 10 Outliers in Total HPAHs (calc'd)**												
600													
601													
602			**Total N**	**71**									
603			**Number NDs**	**12**									
604			**Number Detects**	**71**									
605			**Mean with NDs=DL/2**	**64.89**									
606			**SD with NDs=DL/2**	**74.95**									
607			**Number of data**	**71**									
608			**Number of suspected outliers**	**10**									
609			**NDs replaced with half value.**										
610													
611				Potential	Obs.	Test	Critical	Critical					
612	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
613	1	64.89	74.42	450	33	5.175	3.265	3.625					
614	2	59.38	59.32	310	51	4.225	3.255	3.625					
615	3	55.75	51.32	267.1	43	4.118	3.255	3.615					
616	4	52.64	44.69	188	69	3.028	3.245	3.606					
617	5	50.62	41.78	173	5	2.929	3.245	3.605					
618	6	48.77	39.22	154.6	44	2.698	3.239	3.599					
619	7	47.14	37.21	136.4	58	2.399	3.233	3.593					
620	8	45.75	35.75	128.1	4	2.303	3.227	3.588					
621	9	44.44	34.47	119.5	49	2.178	3.221	3.582					
622	10	43.23	33.37	111.1	30	2.034	3.215	3.576					
623													
624	For 5% significance level, there are 3 Potential Outliers												
625	450, 310, 267.1												
626													
627	For 1% Significance Level, there are 3 Potential Outliers												
628	450, 310, 267.1												
629													
630													
631	**Rosner's Outlier Test for 10 Outliers in Lead**												
632													
633													
634			**Total N**	**67**									
635			**Number NDs**	**0**									
636			**Number Detects**	**67**									
637			**Mean with NDs=DL/2**	**8.398**									
638			**SD with NDs=DL/2**	**4.178**									
639			**Number of data**	**67**									
640			**Number of suspected outliers**	**10**									
641			**NDs replaced with half value.**										
642													
643				Potential	Obs.	Test	Critical	Critical					
644	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
645	1	8.398	4.146	31.6	52	5.596	3.242	3.602					
646	2	8.046	3.052	23.9	64	5.195	3.232	3.599					
647	3	7.802	2.339	16.7	51	3.804	3.232	3.592					
648	4	7.663	2.069	14.3	17	3.208	3.222	3.582					
649	5	7.558	1.905	13.8	18	3.277	3.219	3.579					
650	6	7.457	1.743	13.7	5	3.582	3.213	3.572					

	A	B	C	D	E	F	G	H	I	J	K	L	M
651	7	7.355	1.558	10.8	50	2.211	3.207	3.566					
652	8	7.297	1.505	3.96	22	2.217	3.201	3.559					
653	9	7.354	1.452	4.2	49	2.172	3.195	3.553					
654	10	7.408	1.403	10.5	62	2.203	3.189	3.546					
655													
656	For 5% significance level, there are 6 Potential Outliers												
657	31.6, 23.9, 16.7, 14.3, 13.8, 13.7												
658													
659	For 1% Significance Level, there are 6 Potential Outliers												
660	31.6, 23.9, 16.7, 14.3, 13.8, 13.7												
661													
662													
663	**Rosner's Outlier Test for 10 Outliers in Total LPAHs (calc'd)**												
664													
665													
666			**Total N**	**71**									
667			**Number NDs**	**23**									
668			**Number Detects**	**71**									
669			**Mean with NDs=DL/2**	**11.06**									
670			**SD with NDs=DL/2**	**13.19**									
671			**Number of data**	**71**									
672			**Number of suspected outliers**	**10**									
673			**NDs replaced with half value.**										
674													
675				Potential	Obs.	Test	Critical	Critical					
676	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
677	1	11.06	13.09	96	51	6.488	3.265	3.625					
678	2	9.849	8.386	36	49	3.118	3.255	3.625					
679	3	9.47	7.82	29.94	30	2.618	3.255	3.615					
680	4	9.169	7.465	25.6	31	2.201	3.245	3.606					
681	5	8.924	7.24	25.22	10	2.251	3.245	3.605					
682	6	8.677	7.005	24.48	4	2.256	3.239	3.599					
683	7	8.434	6.773	22.75	44	2.113	3.233	3.593					
684	8	8.21	6.581	21.5	36	2.02	3.227	3.588					
685	9	7.999	6.412	21.26	24	2.068	3.221	3.582					
686	10	7.785	6.233	19.82	21	1.931	3.215	3.576					
687													
688	For 5% Significance Level, there is 1 Potential Outlier												
689	Therefore, Observation 96 is a Potential Statistical Outlier												
690													
691	For 1% Significance Level, there is 1 Potential Outlier												
692													
693													
694	**Rosner's Outlier Test for 10 Outliers in Mercury**												
695													
696													
697			**Total N**	**61**									
698			**Number NDs**	**9**									
699			**Number Detects**	**61**									
700			**Mean with NDs=DL/2**	**0.0304**									
701			**SD with NDs=DL/2**	**0.0131**									
702			**Number of data**	**61**									
703			**Number of suspected outliers**	**10**									
704			**NDs replaced with half value.**										
705													
706				Potential	Obs.	Test	Critical	Critical					
707	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
708	1	0.0304	0.013	0.061	20	2.352	3.206	3.566					
709	2	0.0299	0.0126	0.06	58	2.389	3.196	3.557					
710	3	0.0294	0.0121	0.055	17	2.123	3.196	3.556					
711	4	0.0289	0.0117	0.054	30	2.145	3.186	3.546					
712	5	0.0285	0.0113	0.05	18	1.904	3.177	3.537					
713	6	0.0281	0.011	0.048	5	1.806	3.171	3.529					
714	7	0.0277	0.0108	0.047	28	1.787	3.165	3.521					
715	8	0.0274	0.0105	0.047	41	1.86	3.159	3.514					

	A	B	C	D	E	F	G	H	I	J	K	L	M
716	9	0.027	0.0103	0.0465	27	1.895	3.153	3.506					
717	10	0.0266	0.01	0.009	22	1.76	3.147	3.498					
718													
719	For 5% Significance Level, there is no Potential Outlier												
720													
721	For 1% Significance Level, there is no Potential Outlier												
722													
723													
724	**Rosner's Outlier Test for 10 Outliers in Naphthalene**												
725													
726													
727			**Total N**	**65**									
728			**Number NDs**	**45**									
729			**Number Detects**	**65**									
730			**Mean with NDs=DL/2**	**2.549**									
731			**SD with NDs=DL/2**	**2.121**									
732			**Number of data**	**65**									
733			**Number of suspected outliers**	**10**									
734			**NDs replaced with half value.**										
735													
736				Potential	Obs.	Test	Critical	Critical					
737	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
738	1	2.549	2.105	9.9	28	3.493	3.23	3.59					
739	2	2.434	1.923	8.1	29	2.946	3.22	3.585					
740	3	2.344	1.798	7	19	2.589	3.22	3.58					
741	4	2.269	1.71	6.7	27	2.591	3.21	3.57					
742	5	2.196	1.625	6.3	26	2.525	3.205	3.565					
743	6	2.128	1.548	6	24	2.502	3.199	3.558					
744	7	2.062	1.475	5.7	21	2.467	3.193	3.551					
745	8	2	1.406	5.3	22	2.348	3.187	3.544					
746	9	1.942	1.347	5.1	23	2.345	3.181	3.537					
747	10	1.885	1.289	5.05	25	2.455	3.175	3.53					
748													
749	For 5% Significance Level, there is 1 Potential Outlier												
750	Therefore, Observation 9.9 is a Potential Statistical Outlier												
751													
752	For 1% Significance Level, there is no Potential Outlier												
753													
754													
755	**Rosner's Outlier Test for 10 Outliers in Nickel**												
756													
757													
758			**Total N**	**67**									
759			**Number NDs**	**0**									
760			**Number Detects**	**67**									
761			**Mean with NDs=DL/2**	**20.7**									
762			**SD with NDs=DL/2**	**3.264**									
763			**Number of data**	**67**									
764			**Number of suspected outliers**	**10**									
765			**NDs replaced with half value.**										
766													
767				Potential	Obs.	Test	Critical	Critical					
768	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
769	1	20.7	3.24	12.3	62	2.593	3.242	3.602					
770	2	20.83	3.117	29	17	2.622	3.232	3.599					
771	3	20.7	2.968	13.3	54	2.494	3.232	3.592					
772	4	20.82	2.84	13.9	55	2.435	3.222	3.582					
773	5	20.93	2.722	14.5	60	2.361	3.219	3.579					
774	6	21.03	2.616	14.6	49	2.458	3.213	3.572					
775	7	21.14	2.502	26.9	41	2.304	3.207	3.566					
776	8	21.04	2.407	26.2	18	2.144	3.201	3.559					
777	9	20.95	2.329	26.1	5	2.21	3.195	3.553					
778	10	20.86	2.246	25.9	10	2.242	3.189	3.546					
779													
780	For 5% Significance Level, there is no Potential Outlier												

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for 10 Outliers in PCB TEQ - Mammals 2006

Total N	**32**
Number NDs	**0**
Number Detects	**32**
Mean with NDs=DL/2	**0.196**
SD with NDs=DL/2	**0.266**
Number of data	**32**
Number of suspected outliers	**10**
NDs replaced with half value.	

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.196	0.261	1.27	32	4.108	2.94	3.27
2	0.162	0.182	0.723	1	3.078	2.92	3.25
3	0.143	0.152	0.722	29	3.809	2.91	3.24
4	0.123	0.108	0.654	7	4.938	2.89	3.22
5	0.104	0.0343	0.188	13	2.434	2.88	3.2
6	0.101	0.0307	0.177	6	2.486	2.86	3.178
7	0.098	0.0272	0.0333	12	2.375	2.84	3.156
8	0.101	0.0243	0.0392	3	2.528	2.82	3.134
9	0.103	0.0211	0.0508	8	2.478	2.8	3.112
10	0.105	0.0183	0.154	14	2.653	2.78	3.09

For 5% significance level, there are 4 Potential Outliers

1.27, 0.723, 0.722, 0.654

For 1% Significance Level, there are 4 Potential Outliers

1.27, 0.723, 0.722, 0.654

Rosner's Outlier Test for 10 Outliers in Pentachlorophenol

Total N	**65**
Number NDs	**56**
Number Detects	**65**
Mean with NDs=DL/2	**1.452**
SD with NDs=DL/2	**1.853**
Number of data	**65**
Number of suspected outliers	**10**
NDs replaced with half value.	

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	1.452	1.839	12	1	5.736	3.23	3.59
2	1.287	1.302	6.8	40	4.235	3.22	3.585
3	1.2	1.106	4.4	62	2.892	3.22	3.58
4	1.148	1.036	3.2	63	1.98	3.21	3.57
5	1.115	1.01	3.05	53	1.916	3.205	3.565
6	1.082	0.986	2.95	17	1.893	3.199	3.558
7	1.051	0.964	2.9	18	1.919	3.193	3.551
8	1.019	0.94	2.9	55	2.001	3.187	3.544
9	0.986	0.914	2.7	54	1.876	3.181	3.537
10	0.955	0.892	2.5	64	1.731	3.175	3.53

For 5% significance level, there are 2 Potential Outliers

12, 6.8

For 1% Significance Level, there are 2 Potential Outliers

	A	B	C	D	E	F	G	H	I	J	K	L	M
846	12, 6.8												
847													
848													
849				**Rosner's Outlier Test for 10 Outliers in Phenanthrene**									
850													
851													
852				**Total N**	**69**								
853				**Number NDs**	**36**								
854				**Number Detects**	**69**								
855				**Mean with NDs=DL/2**	**4.899**								
856				**SD with NDs=DL/2**	**8.812**								
857				**Number of data**	**69**								
858				**Number of suspected outliers**	**10**								
859				**NDs replaced with half value.**									
860													
861				Potential	Obs.	Test	Critical	Critical					
862	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
863	1	4.899	8.748	71	51	7.556	3.254	3.614					
864	2	3.927	3.555	19	4	4.239	3.244	3.613					
865	3	3.702	3.056	11	30	2.388	3.244	3.604					
866	4	3.591	2.941	11	36	2.519	3.234	3.594					
867	5	3.477	2.813	11	49	2.674	3.233	3.593					
868	6	3.36	2.67	10	43	2.487	3.227	3.587					
869	7	3.255	2.554	9	10	2.25	3.221	3.581					
870	8	3.162	2.465	9	31	2.368	3.215	3.574					
871	9	3.066	2.367	8.7	24	2.38	3.209	3.568					
872	10	2.972	2.269	8.1	44	2.26	3.203	3.562					
873													
874	For 5% significance level, there are 2 Potential Outliers												
875	71, 19												
876													
877	For 1% Significance Level, there are 2 Potential Outliers												
878	71, 19												
879													
880													
881				**Rosner's Outlier Test for 10 Outliers in Residual Range Hydrocarbons**									
882													
883													
884				**Total N**	**28**								
885				**Number NDs**	**0**								
886				**Number Detects**	**28**								
887				**Mean with NDs=DL/2**	**229.7**								
888				**SD with NDs=DL/2**	**98.08**								
889				**Number of data**	**28**								
890				**Number of suspected outliers**	**10**								
891				**NDs replaced with half value.**									
892													
893				Potential	Obs.	Test	Critical	Critical					
894	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
895	1	229.7	96.31	9.2	4	2.289	2.88	3.2					
896	2	237.8	89.73	420	10	2.03	2.86	3.18					
897	3	230.8	83.63	64	27	1.995	2.84	3.16					
898	4	237.5	77.97	390	12	1.956	2.82	3.14					
899	5	231.1	72.74	380	9	2.046	2.8	3.11					
900	6	224.7	66.93	380	28	2.321	2.776	3.082					
901	7	217.6	59.1	350	22	2.24	2.752	3.054					
902	8	211.3	52.43	100	26	2.123	2.728	3.026					
903	9	216.9	47	320	19	2.194	2.704	2.998					
904	10	211.4	41.35	310	13	2.383	2.68	2.97					
905													
906	For 5% Significance Level, there is no Potential Outlier												
907													
908	For 1% Significance Level, there is no Potential Outlier												
909													
910													

	A	B	C	D	E	F	G	H	I	J	K	L	M
911	**Rosner's Outlier Test for 10 Outliers in Total PAHs (calc'd)**												
912													
913													
914				**Total N**	**71**								
915				**Number NDs**	**11**								
916				**Number Detects**	**71**								
917				**Mean with NDs=DL/2**	**76.69**								
918				**SD with NDs=DL/2**	**83.53**								
919				**Number of data**	**71**								
920				**Number of suspected outliers**	**10**								
921				**NDs replaced with half value.**									
922													
923				Potential	Obs.	Test	Critical	Critical					
924	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
925	1	76.69	82.94	464.5	33	4.676	3.265	3.625					
926	2	71.15	69.77	406	51	4.8	3.255	3.625					
927	3	66.3	57.15	286.2	43	3.848	3.255	3.615					
928	4	63.07	50.82	198.2	69	2.658	3.245	3.606					
929	5	61.05	48.38	187.1	5	2.604	3.245	3.605					
930	6	59.14	46.14	177.3	44	2.562	3.239	3.599					
931	7	57.32	44.05	155.5	49	2.229	3.233	3.593					
932	8	55.79	42.61	152.6	4	2.271	3.227	3.588					
933	9	54.25	41.13	148.5	58	2.291	3.221	3.582					
934	10	52.73	39.64	141	30	2.228	3.215	3.576					
935													
936	For 5% significance level, there are 3 Potential Outliers												
937	464.5, 406, 286.2												
938													
939	For 1% Significance Level, there are 3 Potential Outliers												
940	464.5, 406, 286.2												
941													
942													
943	**Rosner's Outlier Test for 10 Outliers in Total PCB Congeners (calc'd)**												
944													
945													
946				**Total N**	**33**								
947				**Number NDs**	**0**								
948				**Number Detects**	**33**								
949				**Mean with NDs=DL/2**	**6672**								
950				**SD with NDs=DL/2**	**9993**								
951				**Number of data**	**33**								
952				**Number of suspected outliers**	**10**								
953				**NDs replaced with half value.**									
954													
955				Potential	Obs.	Test	Critical	Critical					
956	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
957	1	6672	9840	47975	30	4.197	2.95	3.29					
958	2	5382	6807	31010	1	3.765	2.94	3.27					
959	3	4555	5027	24845	26	4.036	2.92	3.25					
960	4	3879	3388	18675	21	4.368	2.91	3.24					
961	5	3368	1949	7811	19	2.28	2.89	3.22					
962	6	3210	1783	6865	31	2.05	2.872	3.198					
963	7	3074	1664	6262	33	1.915	2.854	3.176					
964	8	2952	1568	6166	32	2.05	2.836	3.154					
965	9	2823	1454	5953	22	2.153	2.818	3.132					
966	10	2693	1327	5896	17	2.414	2.8	3.11					
967													
968	For 5% significance level, there are 4 Potential Outliers												
969	47975, 31010, 24845, 18675												
970													
971	For 1% Significance Level, there are 4 Potential Outliers												
972	47975, 31010, 24845, 18675												
973													
974													
975	**Rosner's Outlier Test for 10 Outliers in Total PCBs Aroclors (calc'd)**												

	A	B	C	D	E	F	G	H	I	J	K	L	M
976													
977													
978			**Total N**	**48**									
979			**Number NDs**	**25**									
980			**Number Detects**	**48**									
981			**Mean with NDs=DL/2**	**7.601**									
982			**SD with NDs=DL/2**	**11.44**									
983			**Number of data**	**48**									
984			**Number of suspected outliers**	**10**									
985			**NDs replaced with half value.**										
986													
987				Potential	Obs.	Test	Critical	Critical					
988	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
989	1	7.601	11.32	53.45	25	4.051	3.11	3.46					
990	2	6.626	9.326	40.83	5	3.668	3.1	3.46					
991	3	5.882	7.896	37.35	31	3.985	3.09	3.45					
992	4	5.183	6.384	32.95	30	4.35	3.09	3.44					
993	5	4.552	4.834	20.45	23	3.289	3.08	3.43					
994	6	4.182	4.215	16.18	18	2.846	3.07	3.418					
995	7	3.897	3.821	13.7	48	2.565	3.06	3.406					
996	8	3.657	3.537	13.5	24	2.783	3.05	3.394					
997	9	3.411	3.207	10.93	17	2.345	3.04	3.382					
998	10	3.219	3.004	10.05	45	2.274	3.03	3.37					
999													
1000	For 5% significance level, there are 5 Potential Outliers												
1001	53.45, 40.83, 37.35, 32.95, 20.45												
1002													
1003	For 1% Significance Level, there are 4 Potential Outliers												
1004	53.45, 40.83, 37.35, 32.95												
1005													
1006													
1007			**Rosner's Outlier Test for 10 Outliers in Total PCDD/F (calc'd)**										
1008													
1009													
1010			**Total N**	**33**									
1011			**Number NDs**	**0**									
1012			**Number Detects**	**33**									
1013			**Mean with NDs=DL/2**	**67.47**									
1014			**SD with NDs=DL/2**	**68.15**									
1015			**Number of data**	**33**									
1016			**Number of suspected outliers**	**10**									
1017			**NDs replaced with half value.**										
1018													
1019				Potential	Obs.	Test	Critical	Critical					
1020	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
1021	1	67.47	67.11	307.5	1	3.577	2.95	3.29					
1022	2	59.96	53.64	168.3	25	2.02	2.94	3.27					
1023	3	56.47	50.69	159.5	7	2.032	2.92	3.25					
1024	4	53.03	47.75	157.2	21	2.181	2.91	3.24					
1025	5	49.44	44.28	149.2	29	2.252	2.89	3.22					
1026	6	45.88	40.64	136.1	27	2.22	2.872	3.198					
1027	7	42.54	37.29	128.6	32	2.308	2.854	3.176					
1028	8	39.23	33.74	122.7	28	2.474	2.836	3.154					
1029	9	35.89	29.73	107.4	22	2.405	2.818	3.132					
1030	10	32.91	26.28	97.61	24	2.462	2.8	3.11					
1031													
1032	For 5% Significance Level, there is 1 Potential Outlier												
1033	Therefore, Observation 307.5 is a Potential Statistical Outlier												
1034													
1035	For 1% Significance Level, there is 1 Potential Outlier												
1036													
1037													
1038			**Rosner's Outlier Test for 10 Outliers in Total Petroleum Hydrocarbons (calc'd)**										
1039													
1040													

	A	B	C	D	E	F	G	H	I	J	K	L	M
1041			**Total N**	**28**									
1042			**Number NDs**	**0**									
1043			**Number Detects**	**28**									
1044			**Mean with NDs=DL/2**	**264.4**									
1045			**SD with NDs=DL/2**	**112.2**									
1046			**Number of data**	**28**									
1047			**Number of suspected outliers**	**10**									
1048			**NDs replaced with half value.**										
1049													
1050				Potential	Obs.	Test	Critical	Critical					
1051	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
1052	1	264.4	110.2	11.8	4	2.292	2.88	3.2					
1053	2	273.7	102.6	489	10	2.098	2.86	3.18					
1054	3	265.4	95.02	72.9	27	2.026	2.84	3.16					
1055	4	273.1	88.31	446	12	1.958	2.82	3.14					
1056	5	265.9	82.36	439.5	9	2.107	2.8	3.11					
1057	6	258.4	75.25	433	28	2.32	2.776	3.082					
1058	7	250.4	66.44	398	22	2.221	2.752	3.054					
1059	8	243.4	59.12	116	26	2.155	2.728	3.026					
1060	9	249.8	52.74	360	19	2.09	2.704	2.998					
1061	10	244	47.18	355	13	2.353	2.68	2.97					
1062													
1063	For 5% Significance Level, there is no Potential Outlier												
1064													
1065	For 1% Significance Level, there is no Potential Outlier												
1066													
1067													
1068	**Dixon's Outlier Test for Tributyltin ion**												
1069													
1070	Total N = 3												
1071	Number NDs = 1												
1072	Number Detects = 2												
1073	Number Data (n) = 3												
1074	10% critical value: 0.886												
1075	5% critical value: 0.941												
1076	1% critical value: 0.988												
1077	Note: NDs replaced by DL/2 in Outlier Test												
1078													
1079	**1. Data Value 1.1 is a Potential Outlier (Upper Tail)?**												
1080													
1081	Test Statistic: 0.360												
1082													
1083	For 10% significance level, 1.1 is not an outlier.												
1084	For 5% significance level, 1.1 is not an outlier.												
1085	For 1% significance level, 1.1 is not an outlier.												
1086													
1087	**2. Data Value 0.0435 is a Potential Outlier (Lower Tail)?**												
1088													
1089	Test Statistic: 0.640												
1090													
1091	For 10% significance level, 0.0435 is not an outlier.												
1092	For 5% significance level, 0.0435 is not an outlier.												
1093	For 1% significance level, 0.0435 is not an outlier.												
1094													
1095													
1096	**Rosner's Outlier Test for 10 Outliers in Zinc**												
1097													
1098													
1099			**Total N**	**67**									
1100			**Number NDs**	**0**									
1101			**Number Detects**	**67**									
1102			**Mean with NDs=DL/2**	**74.68**									
1103			**SD with NDs=DL/2**	**21.3**									
1104			**Number of data**	**67**									
1105			**Number of suspected outliers**	**10**									

	A	B	C	D	E	F	G	H	I	J	K	L	M
1106	**NDs replaced with half value.**												
1107													
1108				Potential	Obs.	Test	Critical	Critical					
1109	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)					
1110	1	74.68	21.14	165	5	4.272	3.242	3.602					
1111	2	73.31	18.26	114	64	2.229	3.232	3.599					
1112	3	72.68	17.67	113	17	2.281	3.232	3.592					
1113	4	72.05	17.06	105	18	1.931	3.222	3.582					
1114	5	71.53	16.67	40.4	54	1.867	3.219	3.579					
1115	6	72.03	16.32	41.1	62	1.895	3.213	3.572					
1116	7	72.54	15.96	42.6	49	1.876	3.207	3.566					
1117	8	73.04	15.6	44	60	1.861	3.201	3.559					
1118	9	73.53	15.26	45.9	58	1.811	3.195	3.553					
1119	10	74.01	14.94	101	41	1.806	3.189	3.546					
1120													
1121	For 5% Significance Level, there is 1 Potential Outlier												
1122	Therefore, Observation 165 is a Potential Statistical Outlier												
1123													
1124	For 1% Significance Level, there is 1 Potential Outlier												
1125													

	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			5/8/2015 10:33:08 AM								
5	From File			20150505_ProUCL_Input_filtered.xls - tab: all_ProUCLInput_filtered_data								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	Aldrin											
11												
12	General Statistics											
13	Total Number of Observations					48	Number of Distinct Observations					38
14	Number of Detects					6	Number of Non-Detects					42
15	Number of Distinct Detects					6	Number of Distinct Non-Detects					32
16	Minimum Detect					0.24	Minimum Non-Detect					0.0329
17	Maximum Detect					0.55	Maximum Non-Detect					0.49
18	Variance Detects					0.0117	Percent Non-Detects					87.5%
19	Mean Detects					0.362	SD Detects					0.108
20	Median Detects					0.335	CV Detects					0.299
21	Skewness Detects					1.123	Kurtosis Detects					1.488
22	Mean of Logged Detects					-1.052	SD of Logged Detects					0.284
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic					0.929	Shapiro Wilk GOF Test					
26	5% Shapiro Wilk Critical Value					0.788	Detected Data appear Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.213	Lilliefors GOF Test					
28	5% Lilliefors Critical Value					0.362	Detected Data appear Normal at 5% Significance Level					
29	Detected Data appear Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	Mean					0.0775	Standard Error of Mean					0.0191
33	SD					0.117	95% KM (BCA) UCL					0.108
34	95% KM (t) UCL					0.11	95% KM (Percentile Bootstrap) UCL					0.108
35	95% KM (z) UCL					0.109	95% KM Bootstrap t UCL					0.0984
36	90% KM Chebyshev UCL					0.135	95% KM Chebyshev UCL					0.161
37	97.5% KM Chebyshev UCL					0.197	99% KM Chebyshev UCL					0.268
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic					0.228	Anderson-Darling GOF Test					
41	5% A-D Critical Value					0.698	Detected data appear Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic					0.185	Kolmogrov-Smirnoff GOF					
43	5% K-S Critical Value					0.332	Detected data appear Gamma Distributed at 5% Significance Level					
44	Detected data appear Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)					14.61	k star (bias corrected MLE)					7.416
48	Theta hat (MLE)					0.0247	Theta star (bias corrected MLE)					0.0487
49	nu hat (MLE)					175.3	nu star (bias corrected)					88.99
50	MLE Mean (bias corrected)					0.362	MLE Sd (bias corrected)					0.133
51												
52	Gamma Kaplan-Meier (KM) Statistics											
53	k hat (KM)					0.44	nu hat (KM)					42.28
54	Approximate Chi Square Value (42.28, α)					28.37	Adjusted Chi Square Value (42.28, β)					28.02
55	95% Gamma Approximate KM-UCL (use when n>=50)					0.115	95% Gamma Adjusted KM-UCL (use when n<50)					0.117
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					0.0613
63	Maximum					0.55	Median					0.01
64	SD					0.122	CV					1.988
65	k hat (MLE)					0.557	k star (bias corrected MLE)					0.536

	A	B	C	D	E	F	G	H	I	J	K	L
66					Theta hat (MLE)	0.11				Theta star (bias corrected MLE)		0.115
67					nu hat (MLE)	53.43				nu star (bias corrected)		51.42
68					MLE Mean (bias corrected)	0.0613				MLE Sd (bias corrected)		0.0838
69										Adjusted Level of Significance (β)		0.045
70					Approximate Chi Square Value (51.42, α)	35.95				Adjusted Chi Square Value (51.42, β)		35.55
71					95% Gamma Approximate UCL (use when n>=50)	0.0877				95% Gamma Adjusted UCL (use when n<50)		0.0887
72												
73					**Lognormal GOF Test on Detected Observations Only**							
74					Shapiro Wilk Test Statistic	0.979				**Shapiro Wilk GOF Test**		
75					5% Shapiro Wilk Critical Value	0.788				Detected Data appear Lognormal at 5% Significance Level		
76					Lilliefors Test Statistic	0.167				**Lilliefors GOF Test**		
77					5% Lilliefors Critical Value	0.362				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	0.141				Mean in Log Scale		-2.079
82					SD in Original Scale	0.0933				SD in Log Scale		0.442
83					95% t UCL (assumes normality of ROS data)	0.164				95% Percentile Bootstrap UCL		0.164
84					95% BCA Bootstrap UCL	0.171				95% Bootstrap t UCL		0.177
85					95% H-UCL (Log ROS)	0.155						
86												
87					**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**							
88					KM Mean (logged)	-3.089				95% H-UCL (KM -Log)		0.082
89					KM SD (logged)	0.815				95% Critical H Value (KM-Log)		2.148
90					KM Standard Error of Mean (logged)	0.136						
91												
92					**DL/2 Statistics**							
93					**DL/2 Normal**					**DL/2 Log-Transformed**		
94					Mean in Original Scale	0.113				Mean in Log Scale		-2.687
95					SD in Original Scale	0.117				SD in Log Scale		1.06
96					95% t UCL (Assumes normality)	0.142				95% H-Stat UCL		0.173
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 Normal Distributed at 5% Significance Level**							
101												
102					**Suggested UCL to Use**							
103					95% KM (t) UCL	0.11				95% KM (Percentile Bootstrap) UCL		0.108
104												
105					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
106					Recommendations are based upon data size, data distribution, and skewness.							
107					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
108					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
109												
110												
111	**Arsenic**											
112												
113					**General Statistics**							
114					Total Number of Observations	71				Number of Distinct Observations		57
115										Number of Missing Observations		0
116					Minimum	1.9				Mean		2.869
117					Maximum	5.29				Median		2.73
118					SD	0.662				Std. Error of Mean		0.0786
119					Coefficient of Variation	0.231				Skewness		1.621
120												
121					**Normal GOF Test**							
122					Shapiro Wilk Test Statistic	0.871				**Shapiro Wilk GOF Test**		
123					5% Shapiro Wilk P Value	3.5394E-8				Data Not Normal at 5% Significance Level		
124					Lilliefors Test Statistic	0.109				**Lilliefors GOF Test**		
125					5% Lilliefors Critical Value	0.105				Data Not Normal at 5% Significance Level		
126					**Data Not Normal at 5% Significance Level**							
127												
128					**Assuming Normal Distribution**							
129					**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**		
130					95% Student's-t UCL	3				95% Adjusted-CLT UCL (Chen-1995)		3.015

	A	B	C	D	E	F	G	H	I	J	K	L
131							95% Modified-t UCL (Johnson-1978)					3.003
132												
133	Gamma GOF Test											
134	A-D Test Statistic					0.951	Anderson-Darling Gamma GOF Test					
135	5% A-D Critical Value					0.749	Data Not Gamma Distributed at 5% Significance Level					
136	K-S Test Statistic					0.1	Kolmogrov-Smirnoff Gamma GOF Test					
137	5% K-S Critical Value					0.105	Detected data appear Gamma Distributed at 5% Significance Level					
138	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
139												
140	Gamma Statistics											
141	k hat (MLE)					22.05	k star (bias corrected MLE)					21.12
142	Theta hat (MLE)					0.13	Theta star (bias corrected MLE)					0.136
143	nu hat (MLE)					3131	nu star (bias corrected)					3000
144	MLE Mean (bias corrected)					2.869	MLE Sd (bias corrected)					0.624
145							Approximate Chi Square Value (0.05)					2873
146	Adjusted Level of Significance					0.0466	Adjusted Chi Square Value					2871
147												
148	Assuming Gamma Distribution											
149	95% Approximate Gamma UCL (use when n>=50)					2.995	95% Adjusted Gamma UCL (use when n<50)					2.998
150												
151	Lognormal GOF Test											
152	Shapiro Wilk Test Statistic					0.95	Shapiro Wilk Lognormal GOF Test					
153	5% Shapiro Wilk P Value					0.0151	Data Not Lognormal at 5% Significance Level					
154	Lilliefors Test Statistic					0.0917	Lilliefors Lognormal GOF Test					
155	5% Lilliefors Critical Value					0.105	Data appear Lognormal at 5% Significance Level					
156	Data appear Approximate Lognormal at 5% Significance Level											
157												
158	Lognormal Statistics											
159	Minimum of Logged Data					0.642	Mean of logged Data					1.031
160	Maximum of Logged Data					1.666	SD of logged Data					0.209
161												
162	Assuming Lognormal Distribution											
163	95% H-UCL					2.992	90% Chebyshev (MVUE) UCL					3.081
164	95% Chebyshev (MVUE) UCL					3.179	97.5% Chebyshev (MVUE) UCL					3.315
165	99% Chebyshev (MVUE) UCL					3.581						
166												
167	Nonparametric Distribution Free UCL Statistics											
168	Data appear to follow a Discernible Distribution at 5% Significance Level											
169												
170	Nonparametric Distribution Free UCLs											
171	95% CLT UCL					2.998	95% Jackknife UCL					3
172	95% Standard Bootstrap UCL					2.998	95% Bootstrap-t UCL					3.016
173	95% Hall's Bootstrap UCL					3.028	95% Percentile Bootstrap UCL					2.999
174	95% BCA Bootstrap UCL					3.017						
175	90% Chebyshev(Mean, Sd) UCL					3.105	95% Chebyshev(Mean, Sd) UCL					3.212
176	97.5% Chebyshev(Mean, Sd) UCL					3.36	99% Chebyshev(Mean, Sd) UCL					3.651
177												
178	Suggested UCL to Use											
179	95% Approximate Gamma UCL					2.995						
180												
181	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
182	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
183	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
184	For additional insight the user may want to consult a statistician.											
185												
186	Benzo(a)pyrene											
187												
188	General Statistics											
189	Total Number of Observations					71	Number of Distinct Observations					53
190	Number of Detects					42	Number of Non-Detects					29
191	Number of Distinct Detects					39	Number of Distinct Non-Detects					19
192	Minimum Detect					0.53	Minimum Non-Detect					0.33
193	Maximum Detect					53	Maximum Non-Detect					21
194	Variance Detects					82.53	Percent Non-Detects					40.85%
195	Mean Detects					9.005	SD Detects					9.085

	A	B	C	D	E	F	G	H	I	J	K	L
196					Median Detects	6.8					CV Detects	1.009
197					Skewness Detects	3.297					Kurtosis Detects	13.42
198					Mean of Logged Detects	1.885					SD of Logged Detects	0.796
199												
200					**Normal GOF Test on Detects Only**							
201					Shapiro Wilk Test Statistic	0.641	**Shapiro Wilk GOF Test**					
202					5% Shapiro Wilk Critical Value	0.942	Detected Data Not Normal at 5% Significance Level					
203					Lilliefors Test Statistic	0.279	**Lilliefors GOF Test**					
204					5% Lilliefors Critical Value	0.137	Detected Data Not Normal at 5% Significance Level					
205					**Detected Data Not Normal at 5% Significance Level**							
206												
207					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
208					Mean	5.722					Standard Error of Mean	0.97
209					SD	8.022					95% KM (BCA) UCL	7.392
210					95% KM (t) UCL	7.339					95% KM (Percentile Bootstrap) UCL	7.405
211					95% KM (z) UCL	7.318					95% KM Bootstrap t UCL	7.988
212					90% KM Chebyshev UCL	8.633					95% KM Chebyshev UCL	9.952
213					97.5% KM Chebyshev UCL	11.78					99% KM Chebyshev UCL	15.38
214												
215					**Gamma GOF Tests on Detected Observations Only**							
216					A-D Test Statistic	1.177	**Anderson-Darling GOF Test**					
217					5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level					
218					K-S Test Statistic	0.172	**Kolmogrov-Smirnoff GOF**					
219					5% K-S Critical Value	0.139	Detected Data Not Gamma Distributed at 5% Significance Level					
220					**Detected Data Not Gamma Distributed at 5% Significance Level**							
221												
222					**Gamma Statistics on Detected Data Only**							
223					k hat (MLE)	1.745					k star (bias corrected MLE)	1.636
224					Theta hat (MLE)	5.162					Theta star (bias corrected MLE)	5.505
225					nu hat (MLE)	146.6					nu star (bias corrected)	137.4
226					MLE Mean (bias corrected)	9.005					MLE Sd (bias corrected)	7.041
227												
228					**Gamma Kaplan-Meier (KM) Statistics**							
229					k hat (KM)	0.509					nu hat (KM)	72.24
230					Approximate Chi Square Value (72.24, α)	53.67					Adjusted Chi Square Value (72.24, β)	53.34
231					95% Gamma Approximate KM-UCL (use when n>=50)	7.702					95% Gamma Adjusted KM-UCL (use when n<50)	7.75
232												
233					**Gamma ROS Statistics using Imputed Non-Detects**							
234					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
235					GROS may not be used when kstar of detected data is small such as < 0.1							
236					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
237					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
238					Minimum	0.01					Mean	5.41
239					Maximum	53					Median	3.5
240					SD	8.221					CV	1.519
241					k hat (MLE)	0.3					k star (bias corrected MLE)	0.297
242					Theta hat (MLE)	18.03					Theta star (bias corrected MLE)	18.23
243					nu hat (MLE)	42.6					nu star (bias corrected)	42.14
244					MLE Mean (bias corrected)	5.41					MLE Sd (bias corrected)	9.932
245											Adjusted Level of Significance (β)	0.0466
246					Approximate Chi Square Value (42.14, α)	28.26					Adjusted Chi Square Value (42.14, β)	28.02
247					95% Gamma Approximate UCL (use when n>=50)	8.068					95% Gamma Adjusted UCL (use when n<50)	8.136
248												
249					**Lognormal GOF Test on Detected Observations Only**							
250					Shapiro Wilk Test Statistic	0.937	**Shapiro Wilk GOF Test**					
251					5% Shapiro Wilk Critical Value	0.942	Detected Data Not Lognormal at 5% Significance Level					
252					Lilliefors Test Statistic	0.123	**Lilliefors GOF Test**					
253					5% Lilliefors Critical Value	0.137	Detected Data appear Lognormal at 5% Significance Level					
254					**Detected Data appear Approximate Lognormal at 5% Significance Level**							
255												
256					**Lognormal ROS Statistics Using Imputed Non-Detects**							
257					Mean in Original Scale	5.92					Mean in Log Scale	1.231
258					SD in Original Scale	7.908					SD in Log Scale	1.032
259					95% t UCL (assumes normality of ROS data)	7.485					95% Percentile Bootstrap UCL	7.68
260					95% BCA Bootstrap UCL	8.042					95% Bootstrap t UCL	8.221

	A	B	C	D	E	F	G	H	I	J	K	L
261					95% H-UCL (Log ROS)	7.732						
262												
263	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
264					KM Mean (logged)	0.874					95% H-UCL (KM -Log)	11.34
265					KM SD (logged)	1.465					95% Critical H Value (KM-Log)	2.748
266					KM Standard Error of Mean (logged)	0.197						
267												
268	**DL/2 Statistics**											
269				**DL/2 Normal**			**DL/2 Log-Transformed**					
270					Mean in Original Scale	6.023					Mean in Log Scale	1.172
271					SD in Original Scale	7.94					SD in Log Scale	1.199
272					95% t UCL (Assumes normality)	7.593					95% H-Stat UCL	9.415
273	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
274												
275	**Nonparametric Distribution Free UCL Statistics**											
276	**Detected Data appear Approximate Lognormal Distributed at 5% Significance Level**											
277												
278	**Suggested UCL to Use**											
279					95% KM (t) UCL	7.339					95% KM (% Bootstrap) UCL	7.405
280												
281	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
282	Recommendations are based upon data size, data distribution, and skewness.											
283	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
284	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
285												
286	**Bis(2-ethylhexyl) phthalate**											
287												
288	**General Statistics**											
289					Total Number of Observations	67					Number of Distinct Observations	52
290											Number of Missing Observations	4
291					Number of Detects	52					Number of Non-Detects	15
292					Number of Distinct Detects	45					Number of Distinct Non-Detects	10
293					Minimum Detect	4.2					Minimum Non-Detect	3.2
294					Maximum Detect	2100					Maximum Non-Detect	31
295					Variance Detects	83233					Percent Non-Detects	22.39%
296					Mean Detects	89.05					SD Detects	288.5
297					Median Detects	35					CV Detects	3.24
298					Skewness Detects	6.902					Kurtosis Detects	48.89
299					Mean of Logged Detects	3.565					SD of Logged Detects	1.118
300												
301	**Normal GOF Test on Detects Only**											
302					Shapiro Wilk Test Statistic	0.251	**Normal GOF Test on Detected Observations Only**					
303					5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level					
304					Lilliefors Test Statistic	0.384	**Lilliefors GOF Test**					
305					5% Lilliefors Critical Value	0.123	Detected Data Not Normal at 5% Significance Level					
306	**Detected Data Not Normal at 5% Significance Level**											
307												
308	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
309					Mean	71.49					Standard Error of Mean	31.32
310					SD	253.8					95% KM (BCA) UCL	133.6
311					95% KM (t) UCL	123.7					95% KM (Percentile Bootstrap) UCL	131.4
312					95% KM (z) UCL	123					95% KM Bootstrap t UCL	326
313					90% KM Chebyshev UCL	165.4					95% KM Chebyshev UCL	208
314					97.5% KM Chebyshev UCL	267.1					99% KM Chebyshev UCL	383.1
315												
316	**Gamma GOF Tests on Detected Observations Only**											
317					A-D Test Statistic	3.825	**Anderson-Darling GOF Test**					
318					5% A-D Critical Value	0.801	Detected Data Not Gamma Distributed at 5% Significance Level					
319					K-S Test Statistic	0.19	**Kolmogrov-Smirnoff GOF**					
320					5% K-S Critical Value	0.129	Detected Data Not Gamma Distributed at 5% Significance Level					
321	**Detected Data Not Gamma Distributed at 5% Significance Level**											
322												
323	**Gamma Statistics on Detected Data Only**											
324					k hat (MLE)	0.66					k star (bias corrected MLE)	0.634
325					Theta hat (MLE)	135					Theta star (bias corrected MLE)	140.4

	A	B	C	D	E	F	G	H	I	J	K	L
326					nu hat (MLE)	68.6				nu star (bias corrected)		65.98
327					MLE Mean (bias corrected)	89.05				MLE Sd (bias corrected)		111.8
328												
329					Gamma Kaplan-Meier (KM) Statistics							
330					k hat (KM)	0.0793				nu hat (KM)		10.63
331					Approximate Chi Square Value (10.63, α)	4.338				Adjusted Chi Square Value (10.63, β)		4.25
332					95% Gamma Approximate KM-UCL (use when n>=50)	175.1				95% Gamma Adjusted KM-UCL (use when n<50)		178.8
333					Gamma (KM) may not be used when k hat (KM) is < 0.1							
334												
335					Gamma ROS Statistics using Imputed Non-Detects							
336					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
337					GROS may not be used when kstar of detected data is small such as < 0.1							
338					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
339					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
340					Minimum	0.01				Mean		69.11
341					Maximum	2100				Median		24
342					SD	256.3				CV		3.709
343					k hat (MLE)	0.279				k star (bias corrected MLE)		0.277
344					Theta hat (MLE)	247.6				Theta star (bias corrected MLE)		249.9
345					nu hat (MLE)	37.4				nu star (bias corrected)		37.06
346					MLE Mean (bias corrected)	69.11				MLE Sd (bias corrected)		131.4
347										Adjusted Level of Significance (β)		0.0464
348					Approximate Chi Square Value (37.06, α)	24.12				Adjusted Chi Square Value (37.06, β)		23.89
349					95% Gamma Approximate UCL (use when n>=50)	106.2				95% Gamma Adjusted UCL (use when n<50)		107.2
350												
351					Lognormal GOF Test on Detected Observations Only							
352					Lilliefors Test Statistic	0.0853				Lilliefors GOF Test		
353					5% Lilliefors Critical Value	0.123				Detected Data appear Lognormal at 5% Significance Level		
354					Detected Data appear Lognormal at 5% Significance Level							
355												
356					Lognormal ROS Statistics Using Imputed Non-Detects							
357					Mean in Original Scale	71.17				Mean in Log Scale		3.234
358					SD in Original Scale	255.8				SD in Log Scale		1.194
359					95% t UCL (assumes normality of ROS data)	123.3				95% Percentile Bootstrap UCL		131.8
360					95% BCA Bootstrap UCL	174.9				95% Bootstrap t UCL		327.6
361					95% H-UCL (Log ROS)	71.5						
362												
363					UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed							
364					KM Mean (logged)	3.243				95% H-UCL (KM -Log)		72.06
365					KM SD (logged)	1.193				95% Critical H Value (KM-Log)		2.196
366					KM Standard Error of Mean (logged)	0.154						
367												
368					DL/2 Statistics							
369					DL/2 Normal					DL/2 Log-Transformed		
370					Mean in Original Scale	71.5				Mean in Log Scale		3.273
371					SD in Original Scale	255.7				SD in Log Scale		1.156
372					95% t UCL (Assumes normality)	123.6				95% H-Stat UCL		70.65
373					DL/2 is not a recommended method, provided for comparisons and historical reasons							
374												
375					Nonparametric Distribution Free UCL Statistics							
376					Detected Data appear Lognormal Distributed at 5% Significance Level							
377												
378					Suggested UCL to Use							
379					95% KM (Chebyshev) UCL	208						
380												
381					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
382					Recommendations are based upon data size, data distribution, and skewness.							
383					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
384					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
385												
386	Butylbenzyl phthalate											
387												
388					General Statistics							
389					Total Number of Observations	66				Number of Distinct Observations		33
390										Number of Missing Observations		5

	A	B	C	D	E	F	G	H	I	J	K	L
391					Number of Detects	15					Number of Non-Detects	51
392					Number of Distinct Detects	14					Number of Distinct Non-Detects	23
393					Minimum Detect	2.7					Minimum Non-Detect	2.2
394					Maximum Detect	33					Maximum Non-Detect	33
395					Variance Detects	63.57					Percent Non-Detects	77.27%
396					Mean Detects	9.1					SD Detects	7.973
397					Median Detects	8					CV Detects	0.876
398					Skewness Detects	2.158					Kurtosis Detects	5.466
399					Mean of Logged Detects	1.931					SD of Logged Detects	0.749
400												
401					**Normal GOF Test on Detects Only**							
402					Shapiro Wilk Test Statistic	0.753					**Shapiro Wilk GOF Test**	
403					5% Shapiro Wilk Critical Value	0.881					Detected Data Not Normal at 5% Significance Level	
404					Lilliefors Test Statistic	0.255					**Lilliefors GOF Test**	
405					5% Lilliefors Critical Value	0.229					Detected Data Not Normal at 5% Significance Level	
406					**Detected Data Not Normal at 5% Significance Level**							
407												
408					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
409					Mean	4.272					Standard Error of Mean	0.678
410					SD	4.888					95% KM (BCA) UCL	5.448
411					95% KM (t) UCL	5.404					95% KM (Percentile Bootstrap) UCL	5.478
412					95% KM (z) UCL	5.387					95% KM Bootstrap t UCL	5.986
413					90% KM Chebyshev UCL	6.307					95% KM Chebyshev UCL	7.228
414					97.5% KM Chebyshev UCL	8.508					99% KM Chebyshev UCL	11.02
415												
416					**Gamma GOF Tests on Detected Observations Only**							
417					A-D Test Statistic	0.537					**Anderson-Darling GOF Test**	
418					5% A-D Critical Value	0.748					Detected data appear Gamma Distributed at 5% Significance Level	
419					K-S Test Statistic	0.156					**Kolmogrov-Smirnoff GOF**	
420					5% K-S Critical Value	0.224					Detected data appear Gamma Distributed at 5% Significance Level	
421					**Detected data appear Gamma Distributed at 5% Significance Level**							
422												
423					**Gamma Statistics on Detected Data Only**							
424					k hat (MLE)	1.951					k star (bias corrected MLE)	1.605
425					Theta hat (MLE)	4.664					Theta star (bias corrected MLE)	5.669
426					nu hat (MLE)	58.53					nu star (bias corrected)	48.16
427					MLE Mean (bias corrected)	9.1					MLE Sd (bias corrected)	7.182
428												
429					**Gamma Kaplan-Meier (KM) Statistics**							
430					k hat (KM)	0.764					nu hat (KM)	100.8
431					Approximate Chi Square Value (100.80, α)	78.63					Adjusted Chi Square Value (100.80, β)	78.2
432					95% Gamma Approximate KM-UCL (use when n>=50)	5.476					95% Gamma Adjusted KM-UCL (use when n<50)	5.506
433												
434					**Gamma ROS Statistics using Imputed Non-Detects**							
435					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
436					GROS may not be used when kstar of detected data is small such as < 0.1							
437					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
438					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
439					Minimum	0.01					Mean	2.322
440					Maximum	33					Median	0.01
441					SD	5.318					CV	2.29
442					k hat (MLE)	0.213					k star (bias corrected MLE)	0.213
443					Theta hat (MLE)	10.9					Theta star (bias corrected MLE)	10.88
444					nu hat (MLE)	28.11					nu star (bias corrected)	28.16
445					MLE Mean (bias corrected)	2.322					MLE Sd (bias corrected)	5.027
446											Adjusted Level of Significance (β)	0.0464
447					Approximate Chi Square Value (28.16, α)	17.06					Adjusted Chi Square Value (28.16, β)	16.86
448					95% Gamma Approximate UCL (use when n>=50)	3.834					95% Gamma Adjusted UCL (use when n<50)	3.878
449												
450					**Lognormal GOF Test on Detected Observations Only**							
451					Shapiro Wilk Test Statistic	0.93					**Shapiro Wilk GOF Test**	
452					5% Shapiro Wilk Critical Value	0.881					Detected Data appear Lognormal at 5% Significance Level	
453					Lilliefors Test Statistic	0.133					**Lilliefors GOF Test**	
454					5% Lilliefors Critical Value	0.229					Detected Data appear Lognormal at 5% Significance Level	
455					**Detected Data appear Lognormal at 5% Significance Level**							

	A	B	C	D	E	F	G	H	I	J	K	L
456												
457						Lognormal ROS Statistics Using Imputed Non-Detects						
458					Mean in Original Scale	3.19				Mean in Log Scale		0.572
459					SD in Original Scale	4.99				SD in Log Scale		0.994
460				95% t UCL (assumes normality of ROS data)		4.215				95% Percentile Bootstrap UCL		4.183
461					95% BCA Bootstrap UCL	4.652				95% Bootstrap t UCL		4.889
462					95% H-UCL (Log ROS)	3.831						
463												
464						UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed						
465					KM Mean (logged)	1.163				95% H-UCL (KM -Log)		4.563
466					KM SD (logged)	0.634				95% Critical H Value (KM-Log)		1.961
467					KM Standard Error of Mean (logged)	0.094						
468												
469						DL/2 Statistics						
470				DL/2 Normal						DL/2 Log-Transformed		
471					Mean in Original Scale	6.337				Mean in Log Scale		1.359
472					SD in Original Scale	6.192				SD in Log Scale		1.015
473					95% t UCL (Assumes normality)	7.609				95% H-Stat UCL		8.652
474						DL/2 is not a recommended method, provided for comparisons and historical reasons						
475												
476						Nonparametric Distribution Free UCL Statistics						
477						Detected Data appear Gamma Distributed at 5% Significance Level						
478												
479						Suggested UCL to Use						
480					95% KM (t) UCL	5.404				95% GROS Approximate Gamma UCL		3.834
481					95% Approximate Gamma KM-UCL	5.476						
482												
483						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
484						Recommendations are based upon data size, data distribution, and skewness.						
485						These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
486						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
487												
488	Cadmium											
489												
490						General Statistics						
491					Total Number of Observations	67				Number of Distinct Observations		47
492										Number of Missing Observations		4
493					Number of Detects	58				Number of Non-Detects		9
494					Number of Distinct Detects	45				Number of Distinct Non-Detects		7
495					Minimum Detect	0.04				Minimum Non-Detect		0.04
496					Maximum Detect	0.3				Maximum Non-Detect		0.11
497					Variance Detects	0.00228				Percent Non-Detects		13.43%
498					Mean Detects	0.126				SD Detects		0.0478
499					Median Detects	0.123				CV Detects		0.379
500					Skewness Detects	0.931				Kurtosis Detects		2.063
501					Mean of Logged Detects	-2.144				SD of Logged Detects		0.394
502												
503						Normal GOF Test on Detects Only						
504					Shapiro Wilk Test Statistic	0.947				Normal GOF Test on Detected Observations Only		
505					5% Shapiro Wilk P Value	0.025				Detected Data Not Normal at 5% Significance Level		
506					Lilliefors Test Statistic	0.13				Lilliefors GOF Test		
507					5% Lilliefors Critical Value	0.116				Detected Data Not Normal at 5% Significance Level		
508						Detected Data Not Normal at 5% Significance Level						
509												
510						Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs						
511					Mean	0.116				Standard Error of Mean		0.00637
512					SD	0.0514				95% KM (BCA) UCL		0.126
513					95% KM (t) UCL	0.126				95% KM (Percentile Bootstrap) UCL		0.127
514					95% KM (z) UCL	0.126				95% KM Bootstrap t UCL		0.127
515					90% KM Chebyshev UCL	0.135				95% KM Chebyshev UCL		0.144
516					97.5% KM Chebyshev UCL	0.156				99% KM Chebyshev UCL		0.179
517												
518						Gamma GOF Tests on Detected Observations Only						
519					A-D Test Statistic	0.553				Anderson-Darling GOF Test		
520					5% A-D Critical Value	0.752				Detected data appear Gamma Distributed at 5% Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
521					K-S Test Statistic	0.102	Kolmogrov-Smirnoff GOF					
522					5% K-S Critical Value	0.117	Detected data appear Gamma Distributed at 5% Significance Level					
523	Detected data appear Gamma Distributed at 5% Significance Level											
524												
525	Gamma Statistics on Detected Data Only											
526					k hat (MLE)	7.083				k star (bias corrected MLE)		6.728
527					Theta hat (MLE)	0.0178				Theta star (bias corrected MLE)		0.0187
528					nu hat (MLE)	821.6				nu star (bias corrected)		780.4
529					MLE Mean (bias corrected)	0.126				MLE Sd (bias corrected)		0.0486
530												
531	Gamma Kaplan-Meier (KM) Statistics											
532					k hat (KM)	5.064				nu hat (KM)		678.6
533					Approximate Chi Square Value (678.58, α)	619.1				Adjusted Chi Square Value (678.58, β)		617.9
534					95% Gamma Approximate KM-UCL (use when n>=50)	0.127				95% Gamma Adjusted KM-UCL (use when n<50)		0.127
535												
536	Gamma ROS Statistics using Imputed Non-Detects											
537	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
538	GROS may not be used when kstar of detected data is small such as < 0.1											
539	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
540	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
541					Minimum	0.0299				Mean		0.116
542					Maximum	0.3				Median		0.116
543					SD	0.0515				CV		0.444
544					k hat (MLE)	4.928				k star (bias corrected MLE)		4.717
545					Theta hat (MLE)	0.0235				Theta star (bias corrected MLE)		0.0246
546					nu hat (MLE)	660.4				nu star (bias corrected)		632.1
547					MLE Mean (bias corrected)	0.116				MLE Sd (bias corrected)		0.0534
548										Adjusted Level of Significance (β)		0.0464
549					Approximate Chi Square Value (632.13, α)	574.8				Adjusted Chi Square Value (632.13, β)		573.6
550					95% Gamma Approximate UCL (use when n>=50)	0.128				95% Gamma Adjusted UCL (use when n<50)		0.128
551												
552	Lognormal GOF Test on Detected Observations Only											
553					Lilliefors Test Statistic	0.127	Lilliefors GOF Test					
554					5% Lilliefors Critical Value	0.116	Detected Data Not Lognormal at 5% Significance Level					
555	Detected Data appear Approximate Lognormal at 5% Significance Level											
556												
557	Lognormal ROS Statistics Using Imputed Non-Detects											
558					Mean in Original Scale	0.117				Mean in Log Scale		-2.243
559					SD in Original Scale	0.0504				SD in Log Scale		0.45
560					95% t UCL (assumes normality of ROS data)	0.127				95% Percentile Bootstrap UCL		0.127
561					95% BCA Bootstrap UCL	0.128				95% Bootstrap t UCL		0.128
562					95% H-UCL (Log ROS)	0.13						
563												
564	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
565					KM Mean (logged)	-2.264				95% H-UCL (KM -Log)		0.131
566					KM SD (logged)	0.485				95% Critical H Value (KM-Log)		1.857
567					KM Standard Error of Mean (logged)	0.0606						
568												
569	DL/2 Statistics											
570	DL/2 Normal						DL/2 Log-Transformed					
571					Mean in Original Scale	0.114				Mean in Log Scale		-2.315
572					SD in Original Scale	0.0545				SD in Log Scale		0.586
573					95% t UCL (Assumes normality)	0.125				95% H-Stat UCL		0.135
574	DL/2 is not a recommended method, provided for comparisons and historical reasons											
575												
576	Nonparametric Distribution Free UCL Statistics											
577	Detected Data appear Gamma Distributed at 5% Significance Level											
578												
579	Suggested UCL to Use											
580					95% KM (BCA) UCL	0.126				95% GROS Approximate Gamma UCL		0.128
581					95% Approximate Gamma KM-UCL	0.127						
582												
583	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
584	Recommendations are based upon data size, data distribution, and skewness.											
585	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											

	A	B	C	D	E	F	G	H	I	J	K	L
586	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
587												
588	**Total Chlordane (calc'd)**											
589												
590	**General Statistics**											
591	Total Number of Observations					48	Number of Distinct Observations					47
592	Number of Detects					33	Number of Non-Detects					15
593	Number of Distinct Detects					33	Number of Distinct Non-Detects					14
594	Minimum Detect					0.117	Minimum Non-Detect					0.0438
595	Maximum Detect					1.18	Maximum Non-Detect					0.26
596	Variance Detects					0.0443	Percent Non-Detects					31.25%
597	Mean Detects					0.468	SD Detects					0.21
598	Median Detects					0.42	CV Detects					0.45
599	Skewness Detects					1.247	Kurtosis Detects					2.988
600	Mean of Logged Detects					-0.859	SD of Logged Detects					0.471
601												
602	**Normal GOF Test on Detects Only**											
603	Shapiro Wilk Test Statistic					0.912	**Shapiro Wilk GOF Test**					
604	5% Shapiro Wilk Critical Value					0.931	Detected Data Not Normal at 5% Significance Level					
605	Lilliefors Test Statistic					0.174	**Lilliefors GOF Test**					
606	5% Lilliefors Critical Value					0.154	Detected Data Not Normal at 5% Significance Level					
607	**Detected Data Not Normal at 5% Significance Level**											
608												
609	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
610	Mean					0.338	Standard Error of Mean					0.038
611	SD					0.258	95% KM (BCA) UCL					0.399
612	95% KM (t) UCL					0.402	95% KM (Percentile Bootstrap) UCL					0.403
613	95% KM (z) UCL					0.401	95% KM Bootstrap t UCL					0.405
614	90% KM Chebyshev UCL					0.452	95% KM Chebyshev UCL					0.504
615	97.5% KM Chebyshev UCL					0.575	99% KM Chebyshev UCL					0.716
616												
617	**Gamma GOF Tests on Detected Observations Only**											
618	A-D Test Statistic					0.629	**Anderson-Darling GOF Test**					
619	5% A-D Critical Value					0.748	Detected data appear Gamma Distributed at 5% Significance Level					
620	K-S Test Statistic					0.144	**Kolmogrov-Smirnoff GOF**					
621	5% K-S Critical Value					0.154	Detected data appear Gamma Distributed at 5% Significance Level					
622	**Detected data appear Gamma Distributed at 5% Significance Level**											
623												
624	**Gamma Statistics on Detected Data Only**											
625	k hat (MLE)					5.199	k star (bias corrected MLE)					4.747
626	Theta hat (MLE)					0.0899	Theta star (bias corrected MLE)					0.0985
627	nu hat (MLE)					343.2	nu star (bias corrected)					313.3
628	MLE Mean (bias corrected)					0.468	MLE Sd (bias corrected)					0.215
629												
630	**Gamma Kaplan-Meier (KM) Statistics**											
631	k hat (KM)					1.715	nu hat (KM)					164.6
632	Approximate Chi Square Value (164.61, α)					135.9	Adjusted Chi Square Value (164.61, β)					135.1
633	95% Gamma Approximate KM-UCL (use when n>=50)					0.409	95% Gamma Adjusted KM-UCL (use when n<50)					0.412
634												
635	**Gamma ROS Statistics using Imputed Non-Detects**											
636	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
637	GROS may not be used when kstar of detected data is small such as < 0.1											
638	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
639	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
640	Minimum					0.0621	Mean					0.351
641	Maximum					1.18	Median					0.364
642	SD					0.246	CV					0.701
643	k hat (MLE)					1.897	k star (bias corrected MLE)					1.792
644	Theta hat (MLE)					0.185	Theta star (bias corrected MLE)					0.196
645	nu hat (MLE)					182.1	nu star (bias corrected)					172
646	MLE Mean (bias corrected)					0.351	MLE Sd (bias corrected)					0.262
647							Adjusted Level of Significance (β)					0.045
648	Approximate Chi Square Value (172.04, α)					142.7	Adjusted Chi Square Value (172.04, β)					141.9
649	95% Gamma Approximate UCL (use when n>=50)					0.424	95% Gamma Adjusted UCL (use when n<50)					0.426
650												

	A	B	C	D	E	F	G	H	I	J	K	L
651	**Lognormal GOF Test on Detected Observations Only**											
652					Shapiro Wilk Test Statistic	0.944	**Shapiro Wilk GOF Test**					
653					5% Shapiro Wilk Critical Value	0.931	Detected Data appear Lognormal at 5% Significance Level					
654					Lilliefors Test Statistic	0.167	**Lilliefors GOF Test**					
655					5% Lilliefors Critical Value	0.154	Detected Data Not Lognormal at 5% Significance Level					
656	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
657												
658	**Lognormal ROS Statistics Using Imputed Non-Detects**											
659					Mean in Original Scale	0.37			Mean in Log Scale			-1.171
660					SD in Original Scale	0.227			SD in Log Scale			0.609
661					95% t UCL (assumes normality of ROS data)	0.425			95% Percentile Bootstrap UCL			0.425
662					95% BCA Bootstrap UCL	0.431			95% Bootstrap t UCL			0.43
663					95% H-UCL (Log ROS)	0.445						
664												
665	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
666					KM Mean (logged)	-1.533			95% H-UCL (KM -Log)			0.574
667					KM SD (logged)	1.088			95% Critical H Value (KM-Log)			2.432
668					KM Standard Error of Mean (logged)	0.163						
669												
670	**DL/2 Statistics**											
671			**DL/2 Normal**				**DL/2 Log-Transformed**					
672					Mean in Original Scale	0.341			Mean in Log Scale			-1.498
673					SD in Original Scale	0.258			SD in Log Scale			1.079
674					95% t UCL (Assumes normality)	0.404			95% H-Stat UCL			0.585
675	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
676												
677	**Nonparametric Distribution Free UCL Statistics**											
678	**Detected Data appear Gamma Distributed at 5% Significance Level**											
679												
680	**Suggested UCL to Use**											
681					95% KM (Percentile Bootstrap) UCL	0.403			95% GROS Adjusted Gamma UCL			0.426
682					95% Adjusted Gamma KM-UCL	0.412						
683												
684	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
685	Recommendations are based upon data size, data distribution, and skewness.											
686	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
687	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
688												
689												
690	**Chromium**											
691												
692	**General Statistics**											
693					Total Number of Observations	65			Number of Distinct Observations			59
694									Number of Missing Observations			6
695					Minimum	11.9			Mean			22.57
696					Maximum	38.1			Median			21.9
697					SD	5.733			Std. Error of Mean			0.711
698					Coefficient of Variation	0.254			Skewness			0.418
699												
700	**Normal GOF Test**											
701					Shapiro Wilk Test Statistic	0.972	**Shapiro Wilk GOF Test**					
702					5% Shapiro Wilk P Value	0.339	Data appear Normal at 5% Significance Level					
703					Lilliefors Test Statistic	0.0631	**Lilliefors GOF Test**					
704					5% Lilliefors Critical Value	0.11	Data appear Normal at 5% Significance Level					
705	**Data appear Normal at 5% Significance Level**											
706												
707	**Assuming Normal Distribution**											
708			**95% Normal UCL**				**95% UCLs (Adjusted for Skewness)**					
709					95% Student's-t UCL	23.75			95% Adjusted-CLT UCL (Chen-1995)			23.77
710									95% Modified-t UCL (Johnson-1978)			23.76
711												
712	**Gamma GOF Test**											
713					A-D Test Statistic	0.231	**Anderson-Darling Gamma GOF Test**					
714					5% A-D Critical Value	0.75	Detected data appear Gamma Distributed at 5% Significance Level					
715					K-S Test Statistic	0.0764	**Kolmogrov-Smirnoff Gamma GOF Test**					

	A	B	C	D	E	F	G	H	I	J	K	L
716					5% K-S Critical Value	0.11	Detected data appear Gamma Distributed at 5% Significance Level					
717	**Detected data appear Gamma Distributed at 5% Significance Level**											
718												
719	**Gamma Statistics**											
720					k hat (MLE)	15.67				k star (bias corrected MLE)		14.96
721					Theta hat (MLE)	1.44				Theta star (bias corrected MLE)		1.508
722					nu hat (MLE)	2037				nu star (bias corrected)		1945
723					MLE Mean (bias corrected)	22.57				MLE Sd (bias corrected)		5.834
724										Approximate Chi Square Value (0.05)		1843
725					Adjusted Level of Significance	0.0463				Adjusted Chi Square Value		1841
726												
727	**Assuming Gamma Distribution**											
728				95% Approximate Gamma UCL (use when n>=50))		23.81				95% Adjusted Gamma UCL (use when n<50)		23.84
729												
730	**Lognormal GOF Test**											
731					Shapiro Wilk Test Statistic	0.979	**Shapiro Wilk Lognormal GOF Test**					
732					5% Shapiro Wilk P Value	0.614	Data appear Lognormal at 5% Significance Level					
733					Lilliefors Test Statistic	0.0841	**Lilliefors Lognormal GOF Test**					
734					5% Lilliefors Critical Value	0.11	Data appear Lognormal at 5% Significance Level					
735	**Data appear Lognormal at 5% Significance Level**											
736												
737	**Lognormal Statistics**											
738					Minimum of Logged Data	2.477				Mean of logged Data		3.084
739					Maximum of Logged Data	3.64				SD of logged Data		0.258
740												
741	**Assuming Lognormal Distribution**											
742					95% H-UCL	23.89				90% Chebyshev (MVUE) UCL		24.78
743					95% Chebyshev (MVUE) UCL	25.78				97.5% Chebyshev (MVUE) UCL		27.16
744					99% Chebyshev (MVUE) UCL	29.88						
745												
746	**Nonparametric Distribution Free UCL Statistics**											
747	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
748												
749	**Nonparametric Distribution Free UCLs**											
750					95% CLT UCL	23.74				95% Jackknife UCL		23.75
751					95% Standard Bootstrap UCL	23.71				95% Bootstrap-t UCL		23.86
752					95% Hall's Bootstrap UCL	23.86				95% Percentile Bootstrap UCL		23.77
753					95% BCA Bootstrap UCL	23.76						
754					90% Chebyshev(Mean, Sd) UCL	24.7				95% Chebyshev(Mean, Sd) UCL		25.67
755					97.5% Chebyshev(Mean, Sd) UCL	27.01				99% Chebyshev(Mean, Sd) UCL		29.64
756												
757	**Suggested UCL to Use**											
758					95% Student's-t UCL	23.75						
759												
760	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
761	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
762	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
763	For additional insight the user may want to consult a statistician.											
764												
765												
766	**Copper**											
767												
768	**General Statistics**											
769					Total Number of Observations	67				Number of Distinct Observations		62
770										Number of Missing Observations		4
771					Minimum	10.5				Mean		24.32
772					Maximum	47.2				Median		24.2
773					SD	7.783				Std. Error of Mean		0.951
774					Coefficient of Variation	0.32				Skewness		0.562
775												
776	**Normal GOF Test**											
777					Shapiro Wilk Test Statistic	0.954	**Shapiro Wilk GOF Test**					
778					5% Shapiro Wilk P Value	0.0346	Data Not Normal at 5% Significance Level					
779					Lilliefors Test Statistic	0.0967	**Lilliefors GOF Test**					
780					5% Lilliefors Critical Value	0.108	Data appear Normal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
781	Data appear Approximate Normal at 5% Significance Level											
782												
783	Assuming Normal Distribution											
784	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
785					95% Student's-t UCL	25.91			95% Adjusted-CLT UCL (Chen-1995)			25.96
786									95% Modified-t UCL (Johnson-1978)			25.92
787												
788	Gamma GOF Test											
789					A-D Test Statistic	0.635	Anderson-Darling Gamma GOF Test					
790					5% A-D Critical Value	0.751	Detected data appear Gamma Distributed at 5% Significance Level					
791					K-S Test Statistic	0.0969	Kolmogrov-Smirnoff Gamma GOF Test					
792					5% K-S Critical Value	0.109	Detected data appear Gamma Distributed at 5% Significance Level					
793	Detected data appear Gamma Distributed at 5% Significance Level											
794												
795	Gamma Statistics											
796					k hat (MLE)	9.916			k star (bias corrected MLE)			9.482
797					Theta hat (MLE)	2.453			Theta star (bias corrected MLE)			2.565
798					nu hat (MLE)	1329			nu star (bias corrected)			1271
799					MLE Mean (bias corrected)	24.32			MLE Sd (bias corrected)			7.899
800									Approximate Chi Square Value (0.05)			1189
801					Adjusted Level of Significance	0.0464			Adjusted Chi Square Value			1187
802												
803	Assuming Gamma Distribution											
804					95% Approximate Gamma UCL (use when n>=50))	25.99			95% Adjusted Gamma UCL (use when n<50)			26.03
805												
806	Lognormal GOF Test											
807					Shapiro Wilk Test Statistic	0.968	Shapiro Wilk Lognormal GOF Test					
808					5% Shapiro Wilk P Value	0.205	Data appear Lognormal at 5% Significance Level					
809					Lilliefors Test Statistic	0.0909	Lilliefors Lognormal GOF Test					
810					5% Lilliefors Critical Value	0.108	Data appear Lognormal at 5% Significance Level					
811	Data appear Lognormal at 5% Significance Level											
812												
813	Lognormal Statistics											
814					Minimum of Logged Data	2.351			Mean of logged Data			3.14
815					Maximum of Logged Data	3.854			SD of logged Data			0.327
816												
817	Assuming Lognormal Distribution											
818					95% H-UCL	26.17			90% Chebyshev (MVUE) UCL			27.34
819					95% Chebyshev (MVUE) UCL	28.69			97.5% Chebyshev (MVUE) UCL			30.56
820					99% Chebyshev (MVUE) UCL	34.25						
821												
822	Nonparametric Distribution Free UCL Statistics											
823	Data appear to follow a Discernible Distribution at 5% Significance Level											
824												
825	Nonparametric Distribution Free UCLs											
826					95% CLT UCL	25.89			95% Jackknife UCL			25.91
827					95% Standard Bootstrap UCL	25.88			95% Bootstrap-t UCL			26.02
828					95% Hall's Bootstrap UCL	25.93			95% Percentile Bootstrap UCL			25.84
829					95% BCA Bootstrap UCL	25.89						
830					90% Chebyshev(Mean, Sd) UCL	27.17			95% Chebyshev(Mean, Sd) UCL			28.47
831					97.5% Chebyshev(Mean, Sd) UCL	30.26			99% Chebyshev(Mean, Sd) UCL			33.78
832												
833	Suggested UCL to Use											
834					95% Student's-t UCL	25.91						
835												
836	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
837	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
838	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
839	For additional insight the user may want to consult a statistician.											
840												
841	CPAH											
842												
843	General Statistics											
844					Total Number of Observations	71			Number of Distinct Observations			66
845					Number of Detects	59			Number of Non-Detects			12

	A	B	C	D	E	F	G	H	I	J	K	L
846					Number of Distinct Detects	59				Number of Distinct Non-Detects		7
847					Minimum Detect	0.659				Minimum Non-Detect		0.39
848					Maximum Detect	76.99				Maximum Non-Detect		10
849					Variance Detects	141				Percent Non-Detects		16.9%
850					Mean Detects	10.7				SD Detects		11.88
851					Median Detects	8.038				CV Detects		1.11
852					Skewness Detects	3.64				Kurtosis Detects		17.01
853					Mean of Logged Detects	1.996				SD of Logged Detects		0.872
854												
855					**Normal GOF Test on Detects Only**							
856					Shapiro Wilk Test Statistic	0.643			**Normal GOF Test on Detected Observations Only**			
857					5% Shapiro Wilk P Value	0			Detected Data Not Normal at 5% Significance Level			
858					Lilliefors Test Statistic	0.262			**Lilliefors GOF Test**			
859					5% Lilliefors Critical Value	0.115			Detected Data Not Normal at 5% Significance Level			
860					**Detected Data Not Normal at 5% Significance Level**							
861												
862					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
863					Mean	9.109				Standard Error of Mean		1.357
864					SD	11.33				95% KM (BCA) UCL		11.68
865					95% KM (t) UCL	11.37				95% KM (Percentile Bootstrap) UCL		11.52
866					95% KM (z) UCL	11.34				95% KM Bootstrap t UCL		12.42
867					90% KM Chebyshev UCL	13.18				95% KM Chebyshev UCL		15.03
868					97.5% KM Chebyshev UCL	17.59				99% KM Chebyshev UCL		22.61
869												
870					**Gamma GOF Tests on Detected Observations Only**							
871					A-D Test Statistic	1.008			**Anderson-Darling GOF Test**			
872					5% A-D Critical Value	0.769			Detected Data Not Gamma Distributed at 5% Significance Level			
873					K-S Test Statistic	0.141			**Kolmogrov-Smirnoff GOF**			
874					5% K-S Critical Value	0.118			Detected Data Not Gamma Distributed at 5% Significance Level			
875					**Detected Data Not Gamma Distributed at 5% Significance Level**							
876												
877					**Gamma Statistics on Detected Data Only**							
878					k hat (MLE)	1.479				k star (bias corrected MLE)		1.415
879					Theta hat (MLE)	7.238				Theta star (bias corrected MLE)		7.565
880					nu hat (MLE)	174.5				nu star (bias corrected)		167
881					MLE Mean (bias corrected)	10.7				MLE Sd (bias corrected)		8.998
882												
883					**Gamma Kaplan-Meier (KM) Statistics**							
884					k hat (KM)	0.647				nu hat (KM)		91.85
885					Approximate Chi Square Value (91.85, α)	70.75				Adjusted Chi Square Value (91.85, β)		70.37
886					95% Gamma Approximate KM-UCL (use when n>=50)	11.83				95% Gamma Adjusted KM-UCL (use when n<50)		11.89
887												
888					**Gamma ROS Statistics using Imputed Non-Detects**							
889					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
890					GROS may not be used when kstar of detected data is small such as < 0.1							
891					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
892					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
893					Minimum	0.01				Mean		8.96
894					Maximum	76.99				Median		6.173
895					SD	11.5				CV		1.284
896					k hat (MLE)	0.515				k star (bias corrected MLE)		0.503
897					Theta hat (MLE)	17.38				Theta star (bias corrected MLE)		17.81
898					nu hat (MLE)	73.2				nu star (bias corrected)		71.44
899					MLE Mean (bias corrected)	8.96				MLE Sd (bias corrected)		12.63
900										Adjusted Level of Significance (β)		0.0466
901					Approximate Chi Square Value (71.44, α)	52.98				Adjusted Chi Square Value (71.44, β)		52.65
902					95% Gamma Approximate UCL (use when n>=50)	12.08				95% Gamma Adjusted UCL (use when n<50)		12.16
903												
904					**Lognormal GOF Test on Detected Observations Only**							
905					Lilliefors Test Statistic	0.1			**Lilliefors GOF Test**			
906					5% Lilliefors Critical Value	0.115			Detected Data appear Lognormal at 5% Significance Level			
907					**Detected Data appear Lognormal at 5% Significance Level**							
908												
909					**Lognormal ROS Statistics Using Imputed Non-Detects**							
910					Mean in Original Scale	9.175				Mean in Log Scale		1.721

	A	B	C	D	E	F	G	H	I	J	K	L
911					SD in Original Scale	11.35					SD in Log Scale	1.022
912				95% t UCL (assumes normality of ROS data)		11.42					95% Percentile Bootstrap UCL	11.65
913					95% BCA Bootstrap UCL	12.23					95% Bootstrap t UCL	12.52
914					95% H-UCL (Log ROS)	12.44						
915												
916					UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed							
917					KM Mean (logged)	1.611					95% H-UCL (KM -Log)	15
918					KM SD (logged)	1.215					95% Critical H Value (KM-Log)	2.47
919					KM Standard Error of Mean (logged)	0.15						
920												
921					DL/2 Statistics							
922				DL/2 Normal					DL/2 Log-Transformed			
923					Mean in Original Scale	9.151					Mean in Log Scale	1.651
924					SD in Original Scale	11.37					SD in Log Scale	1.176
925					95% t UCL (Assumes normality)	11.4					95% H-Stat UCL	14.64
926					DL/2 is not a recommended method, provided for comparisons and historical reasons							
927												
928					Nonparametric Distribution Free UCL Statistics							
929					Detected Data appear Lognormal Distributed at 5% Significance Level							
930												
931					Suggested UCL to Use							
932					95% KM (BCA) UCL	11.68						
933												
934					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
935					Recommendations are based upon data size, data distribution, and skewness.							
936					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
937					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
938												
939	Total DDD											
940												
941					General Statistics							
942					Total Number of Observations	48					Number of Distinct Observations	45
943					Number of Detects	39					Number of Non-Detects	9
944					Number of Distinct Detects	37					Number of Distinct Non-Detects	8
945					Minimum Detect	0.137					Minimum Non-Detect	0.0507
946					Maximum Detect	1.615					Maximum Non-Detect	0.54
947					Variance Detects	0.201					Percent Non-Detects	18.75%
948					Mean Detects	0.762					SD Detects	0.448
949					Median Detects	0.7					CV Detects	0.588
950					Skewness Detects	0.606					Kurtosis Detects	-0.77
951					Mean of Logged Detects	-0.462					SD of Logged Detects	0.658
952												
953					Normal GOF Test on Detects Only							
954					Shapiro Wilk Test Statistic	0.904			Shapiro Wilk GOF Test			
955					5% Shapiro Wilk Critical Value	0.939			Detected Data Not Normal at 5% Significance Level			
956					Lilliefors Test Statistic	0.143			Lilliefors GOF Test			
957					5% Lilliefors Critical Value	0.142			Detected Data Not Normal at 5% Significance Level			
958					Detected Data Not Normal at 5% Significance Level							
959												
960					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
961					Mean	0.644					Standard Error of Mean	0.0692
962					SD	0.471					95% KM (BCA) UCL	0.756
963					95% KM (t) UCL	0.76					95% KM (Percentile Bootstrap) UCL	0.762
964					95% KM (z) UCL	0.758					95% KM Bootstrap t UCL	0.772
965					90% KM Chebyshev UCL	0.852					95% KM Chebyshev UCL	0.946
966					97.5% KM Chebyshev UCL	1.076					99% KM Chebyshev UCL	1.332
967												
968					Gamma GOF Tests on Detected Observations Only							
969					A-D Test Statistic	0.421			Anderson-Darling GOF Test			
970					5% A-D Critical Value	0.756			Detected data appear Gamma Distributed at 5% Significance Level			
971					K-S Test Statistic	0.113			Kolmogrov-Smirnoff GOF			
972					5% K-S Critical Value	0.142			Detected data appear Gamma Distributed at 5% Significance Level			
973					Detected data appear Gamma Distributed at 5% Significance Level							
974												
975					Gamma Statistics on Detected Data Only							

	A	B	C	D	E	F	G	H	I	J	K	L
976					k hat (MLE)	2.783				k star (bias corrected MLE)		2.586
977					Theta hat (MLE)	0.274				Theta star (bias corrected MLE)		0.295
978					nu hat (MLE)	217.1				nu star (bias corrected)		201.7
979					MLE Mean (bias corrected)	0.762				MLE Sd (bias corrected)		0.474
980												
981					**Gamma Kaplan-Meier (KM) Statistics**							
982					k hat (KM)	1.867				nu hat (KM)		179.3
983					Approximate Chi Square Value (179.28, α)	149.3				Adjusted Chi Square Value (179.28, β)		148.5
984					95% Gamma Approximate KM-UCL (use when n>=50)	0.773				95% Gamma Adjusted KM-UCL (use when n<50)		0.778
985												
986					**Gamma ROS Statistics using Imputed Non-Detects**							
987					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
988					GROS may not be used when kstar of detected data is small such as < 0.1							
989					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
990					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
991					Minimum	0.0278				Mean		0.645
992					Maximum	1.615				Median		0.481
993					SD	0.475				CV		0.737
994					k hat (MLE)	1.493				k star (bias corrected MLE)		1.413
995					Theta hat (MLE)	0.432				Theta star (bias corrected MLE)		0.456
996					nu hat (MLE)	143.3				nu star (bias corrected)		135.7
997					MLE Mean (bias corrected)	0.645				MLE Sd (bias corrected)		0.542
998										Adjusted Level of Significance (β)		0.045
999					Approximate Chi Square Value (135.69, α)	109.8				Adjusted Chi Square Value (135.69, β)		109.1
1000					95% Gamma Approximate UCL (use when n>=50)	0.797				95% Gamma Adjusted UCL (use when n<50)		0.802
1001												
1002					**Lognormal GOF Test on Detected Observations Only**							
1003					Shapiro Wilk Test Statistic	0.949				**Shapiro Wilk GOF Test**		
1004					5% Shapiro Wilk Critical Value	0.939				Detected Data appear Lognormal at 5% Significance Level		
1005					Lilliefors Test Statistic	0.103				**Lilliefors GOF Test**		
1006					5% Lilliefors Critical Value	0.142				Detected Data appear Lognormal at 5% Significance Level		
1007					**Detected Data appear Lognormal at 5% Significance Level**							
1008												
1009					**Lognormal ROS Statistics Using Imputed Non-Detects**							
1010					Mean in Original Scale	0.655				Mean in Log Scale		-0.693
1011					SD in Original Scale	0.462				SD in Log Scale		0.777
1012					95% t UCL (assumes normality of ROS data)	0.767				95% Percentile Bootstrap UCL		0.767
1013					95% BCA Bootstrap UCL	0.773				95% Bootstrap t UCL		0.78
1014					95% H-UCL (Log ROS)	0.859						
1015												
1016					**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**							
1017					KM Mean (logged)	-0.814				95% H-UCL (KM -Log)		1.017
1018					KM SD (logged)	0.993				95% Critical H Value (KM-Log)		2.328
1019					KM Standard Error of Mean (logged)	0.153						
1020												
1021					**DL/2 Statistics**							
1022					**DL/2 Normal**					**DL/2 Log-Transformed**		
1023					Mean in Original Scale	0.643				Mean in Log Scale		-0.813
1024					SD in Original Scale	0.476				SD in Log Scale		1.01
1025					95% t UCL (Assumes normality)	0.758				95% H-Stat UCL		1.043
1026					**DL/2 is not a recommended method, provided for comparisons and historical reasons**							
1027												
1028					**Nonparametric Distribution Free UCL Statistics**							
1029					**Detected Data appear Gamma Distributed at 5% Significance Level**							
1030												
1031					**Suggested UCL to Use**							
1032					95% KM (BCA) UCL	0.756				95% GROS Adjusted Gamma UCL		0.802
1033					95% Adjusted Gamma KM-UCL	0.778						
1034												
1035					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1036					Recommendations are based upon data size, data distribution, and skewness.							
1037					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
1038					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
1039												
1040	**Total DDE**											

	A	B	C	D	E	F	G	H	I	J	K	L
1041												
1042						General Statistics						
1043					Total Number of Observations	48				Number of Distinct Observations		46
1044					Number of Detects	47				Number of Non-Detects		1
1045					Number of Distinct Detects	45				Number of Distinct Non-Detects		1
1046					Minimum Detect	0.105				Minimum Non-Detect		0.12
1047					Maximum Detect	2.451				Maximum Non-Detect		0.12
1048					Variance Detects	0.302				Percent Non-Detects		2.083%
1049					Mean Detects	0.973				SD Detects		0.549
1050					Median Detects	0.967				CV Detects		0.564
1051					Skewness Detects	0.701				Kurtosis Detects		0.608
1052					Mean of Logged Detects	-0.225				SD of Logged Detects		0.708
1053												
1054						Normal GOF Test on Detects Only						
1055					Shapiro Wilk Test Statistic	0.942				Shapiro Wilk GOF Test		
1056					5% Shapiro Wilk Critical Value	0.946				Detected Data Not Normal at 5% Significance Level		
1057					Lilliefors Test Statistic	0.0912				Lilliefors GOF Test		
1058					5% Lilliefors Critical Value	0.129				Detected Data appear Normal at 5% Significance Level		
1059						Detected Data appear Approximate Normal at 5% Significance Level						
1060												
1061						Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs						
1062					Mean	0.955				Standard Error of Mean		0.0805
1063					SD	0.552				95% KM (BCA) UCL		1.086
1064					95% KM (t) UCL	1.09				95% KM (Percentile Bootstrap) UCL		1.081
1065					95% KM (z) UCL	1.088				95% KM Bootstrap t UCL		1.103
1066					90% KM Chebyshev UCL	1.197				95% KM Chebyshev UCL		1.306
1067					97.5% KM Chebyshev UCL	1.458				99% KM Chebyshev UCL		1.757
1068												
1069						Gamma GOF Tests on Detected Observations Only						
1070					A-D Test Statistic	0.541				Anderson-Darling GOF Test		
1071					5% A-D Critical Value	0.758				Detected data appear Gamma Distributed at 5% Significance Level		
1072					K-S Test Statistic	0.0925				Kolmogrov-Smirnoff GOF		
1073					5% K-S Critical Value	0.13				Detected data appear Gamma Distributed at 5% Significance Level		
1074						Detected data appear Gamma Distributed at 5% Significance Level						
1075												
1076						Gamma Statistics on Detected Data Only						
1077					k hat (MLE)	2.677				k star (bias corrected MLE)		2.52
1078					Theta hat (MLE)	0.364				Theta star (bias corrected MLE)		0.386
1079					nu hat (MLE)	251.6				nu star (bias corrected)		236.9
1080					MLE Mean (bias corrected)	0.973				MLE Sd (bias corrected)		0.613
1081												
1082						Gamma Kaplan-Meier (KM) Statistics						
1083					k hat (KM)	2.995				nu hat (KM)		287.5
1084					Approximate Chi Square Value (287.55, α)	249.3				Adjusted Chi Square Value (287.55, β)		248.2
1085					95% Gamma Approximate KM-UCL (use when n>=50)	1.102				95% Gamma Adjusted KM-UCL (use when n<50)		1.107
1086												
1087						Gamma ROS Statistics using Imputed Non-Detects						
1088						GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs						
1089						GROS may not be used when kstar of detected data is small such as < 0.1						
1090						For such situations, GROS method tends to yield inflated values of UCLs and BTVs						
1091						For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates						
1092					Minimum	0.105				Mean		0.957
1093					Maximum	2.451				Median		0.954
1094					SD	0.556				CV		0.581
1095					k hat (MLE)	2.493				k star (bias corrected MLE)		2.351
1096					Theta hat (MLE)	0.384				Theta star (bias corrected MLE)		0.407
1097					nu hat (MLE)	239.4				nu star (bias corrected)		225.7
1098					MLE Mean (bias corrected)	0.957				MLE Sd (bias corrected)		0.624
1099										Adjusted Level of Significance (β)		0.045
1100					Approximate Chi Square Value (225.74, α)	192				Adjusted Chi Square Value (225.74, β)		191
1101					95% Gamma Approximate UCL (use when n>=50)	1.125				95% Gamma Adjusted UCL (use when n<50)		1.13
1102												
1103						Lognormal GOF Test on Detected Observations Only						
1104					Shapiro Wilk Test Statistic	0.923				Shapiro Wilk GOF Test		
1105					5% Shapiro Wilk Critical Value	0.946				Detected Data Not Lognormal at 5% Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
1106					Lilliefors Test Statistic	0.124	Lilliefors GOF Test					
1107					5% Lilliefors Critical Value	0.129	Detected Data appear Lognormal at 5% Significance Level					
1108	Detected Data appear Approximate Lognormal at 5% Significance Level											
1109												
1110	Lognormal ROS Statistics Using Imputed Non-Detects											
1111					Mean in Original Scale	0.957				Mean in Log Scale		-0.257
1112					SD in Original Scale	0.556				SD in Log Scale		0.735
1113				95% t UCL (assumes normality of ROS data)		1.091				95% Percentile Bootstrap UCL		1.088
1114					95% BCA Bootstrap UCL	1.103				95% Bootstrap t UCL		1.102
1115					95% H-UCL (Log ROS)	1.264						
1116												
1117	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
1118					KM Mean (logged)	-0.268				95% H-UCL (KM -Log)		1.275
1119					KM SD (logged)	0.751				95% Critical H Value (KM-Log)		2.082
1120					KM Standard Error of Mean (logged)	0.11						
1121												
1122	DL/2 Statistics											
1123				DL/2 Normal			DL/2 Log-Transformed					
1124					Mean in Original Scale	0.954				Mean in Log Scale		-0.279
1125					SD in Original Scale	0.559				SD in Log Scale		0.794
1126					95% t UCL (Assumes normality)	1.09				95% H-Stat UCL		1.326
1127	DL/2 is not a recommended method, provided for comparisons and historical reasons											
1128												
1129	Nonparametric Distribution Free UCL Statistics											
1130	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
1131												
1132	Suggested UCL to Use											
1133					95% KM (t) UCL	1.09				95% KM (Percentile Bootstrap) UCL		1.081
1134												
1135	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1136	Recommendations are based upon data size, data distribution, and skewness.											
1137	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1138	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1139												
1140	Total DDT											
1141												
1142	General Statistics											
1143					Total Number of Observations	48				Number of Distinct Observations		43
1144					Number of Detects	18				Number of Non-Detects		30
1145					Number of Distinct Detects	18				Number of Distinct Non-Detects		26
1146					Minimum Detect	0.318				Minimum Non-Detect		0.0486
1147					Maximum Detect	2.97				Maximum Non-Detect		0.51
1148					Variance Detects	0.386				Percent Non-Detects		62.5%
1149					Mean Detects	0.757				SD Detects		0.622
1150					Median Detects	0.523				CV Detects		0.821
1151					Skewness Detects	2.948				Kurtosis Detects		10.03
1152					Mean of Logged Detects	-0.467				SD of Logged Detects		0.572
1153												
1154	Normal GOF Test on Detects Only											
1155					Shapiro Wilk Test Statistic	0.646	Shapiro Wilk GOF Test					
1156					5% Shapiro Wilk Critical Value	0.897	Detected Data Not Normal at 5% Significance Level					
1157					Lilliefors Test Statistic	0.249	Lilliefors GOF Test					
1158					5% Lilliefors Critical Value	0.209	Detected Data Not Normal at 5% Significance Level					
1159	Detected Data Not Normal at 5% Significance Level											
1160												
1161	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
1162					Mean	0.323				Standard Error of Mean		0.0751
1163					SD	0.503				95% KM (BCA) UCL		0.451
1164					95% KM (t) UCL	0.449				95% KM (Percentile Bootstrap) UCL		0.447
1165					95% KM (z) UCL	0.446				95% KM Bootstrap t UCL		0.514
1166					90% KM Chebyshev UCL	0.548				95% KM Chebyshev UCL		0.65
1167					97.5% KM Chebyshev UCL	0.791				99% KM Chebyshev UCL		1.07
1168												
1169	Gamma GOF Tests on Detected Observations Only											
1170					A-D Test Statistic	0.919	Anderson-Darling GOF Test					

	A	B	C	D	E	F	G	H	I	J	K	L
1171					5% A-D Critical Value	0.747	Detected Data Not Gamma Distributed at 5% Significance Level					
1172					K-S Test Statistic	0.176	**Kolmogrov-Smirnoff GOF**					
1173					5% K-S Critical Value	0.205	Detected data appear Gamma Distributed at 5% Significance Level					
1174	**Detected data follow Appr. Gamma Distribution at 5% Significance Level**											
1175												
1176	**Gamma Statistics on Detected Data Only**											
1177					k hat (MLE)	2.797				k star (bias corrected MLE)		2.368
1178					Theta hat (MLE)	0.271				Theta star (bias corrected MLE)		0.32
1179					nu hat (MLE)	100.7				nu star (bias corrected)		85.25
1180					MLE Mean (bias corrected)	0.757				MLE Sd (bias corrected)		0.492
1181												
1182	**Gamma Kaplan-Meier (KM) Statistics**											
1183					k hat (KM)	0.412				nu hat (KM)		39.53
1184					Approximate Chi Square Value (39.53, α)	26.12				Adjusted Chi Square Value (39.53, β)		25.78
1185					95% Gamma Approximate KM-UCL (use when n>=50)	0.488				95% Gamma Adjusted KM-UCL (use when n<50)		0.495
1186												
1187	**Gamma ROS Statistics using Imputed Non-Detects**											
1188	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1189	GROS may not be used when kstar of detected data is small such as < 0.1											
1190	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1191	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1192					Minimum	0.01				Mean		0.29
1193					Maximum	2.97				Median		0.01
1194					SD	0.523				CV		1.802
1195					k hat (MLE)	0.367				k star (bias corrected MLE)		0.358
1196					Theta hat (MLE)	0.79				Theta star (bias corrected MLE)		0.81
1197					nu hat (MLE)	35.26				nu star (bias corrected)		34.39
1198					MLE Mean (bias corrected)	0.29				MLE Sd (bias corrected)		0.485
1199										Adjusted Level of Significance (β)		0.045
1200					Approximate Chi Square Value (34.39, α)	21.98				Adjusted Chi Square Value (34.39, β)		21.67
1201					95% Gamma Approximate UCL (use when n>=50)	0.454				95% Gamma Adjusted UCL (use when n<50)		0.461
1202												
1203	**Lognormal GOF Test on Detected Observations Only**											
1204					Shapiro Wilk Test Statistic	0.901	**Shapiro Wilk GOF Test**					
1205					5% Shapiro Wilk Critical Value	0.897	Detected Data appear Lognormal at 5% Significance Level					
1206					Lilliefors Test Statistic	0.16	**Lilliefors GOF Test**					
1207					5% Lilliefors Critical Value	0.209	Detected Data appear Lognormal at 5% Significance Level					
1208	**Detected Data appear Lognormal at 5% Significance Level**											
1209												
1210	**Lognormal ROS Statistics Using Imputed Non-Detects**											
1211					Mean in Original Scale	0.364				Mean in Log Scale		-1.469
1212					SD in Original Scale	0.485				SD in Log Scale		0.871
1213					95% t UCL (assumes normality of ROS data)	0.482				95% Percentile Bootstrap UCL		0.488
1214					95% BCA Bootstrap UCL	0.529				95% Bootstrap t UCL		0.573
1215					95% H-UCL (Log ROS)	0.445						
1216												
1217	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
1218					KM Mean (logged)	-2.013				95% H-UCL (KM -Log)		0.502
1219					KM SD (logged)	1.285				95% Critical H Value (KM-Log)		2.66
1220					KM Standard Error of Mean (logged)	0.197						
1221												
1222	**DL/2 Statistics**											
1223	**DL/2 Normal**						**DL/2 Log-Transformed**					
1224					Mean in Original Scale	0.348				Mean in Log Scale		-1.8
1225					SD in Original Scale	0.496				SD in Log Scale		1.285
1226					95% t UCL (Assumes normality)	0.468				95% H-Stat UCL		0.622
1227	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
1228												
1229	**Nonparametric Distribution Free UCL Statistics**											
1230	**Detected Data appear Approximate Gamma Distributed at 5% Significance Level**											
1231												
1232	**Suggested UCL to Use**											
1233					95% KM (t) UCL	0.449				95% GROS Adjusted Gamma UCL		0.461
1234					95% Adjusted Gamma KM-UCL	0.495						
1235												

	A	B	C	D	E	F	G	H	I	J	K	L
1236	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1237	Recommendations are based upon data size, data distribution, and skewness.											
1238	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1239	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1240												
1241	**Total DDTs (calc'd)**											
1242												
1243	**General Statistics**											
1244	Total Number of Observations					48	Number of Distinct Observations					48
1245	Number of Detects					47	Number of Non-Detects					1
1246	Number of Distinct Detects					47	Number of Distinct Non-Detects					1
1247	Minimum Detect					0.2	Minimum Non-Detect					0.18
1248	Maximum Detect					6.695	Maximum Non-Detect					0.18
1249	Variance Detects					1.365	Percent Non-Detects					2.083%
1250	Mean Detects					2.022	SD Detects					1.168
1251	Median Detects					2.053	CV Detects					0.578
1252	Skewness Detects					1.498	Kurtosis Detects					4.903
1253	Mean of Logged Detects					0.515	SD of Logged Detects					0.693
1254												
1255	**Normal GOF Test on Detects Only**											
1256	Shapiro Wilk Test Statistic					0.893	**Shapiro Wilk GOF Test**					
1257	5% Shapiro Wilk Critical Value					0.946	Detected Data Not Normal at 5% Significance Level					
1258	Lilliefors Test Statistic					0.127	**Lilliefors GOF Test**					
1259	5% Lilliefors Critical Value					0.129	Detected Data appear Normal at 5% Significance Level					
1260	**Detected Data appear Approximate Normal at 5% Significance Level**											
1261												
1262	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
1263	Mean					1.984	Standard Error of Mean					0.171
1264	SD					1.174	95% KM (BCA) UCL					2.277
1265	95% KM (t) UCL					2.271	95% KM (Percentile Bootstrap) UCL					2.278
1266	95% KM (z) UCL					2.266	95% KM Bootstrap t UCL					2.304
1267	90% KM Chebyshev UCL					2.498	95% KM Chebyshev UCL					2.73
1268	97.5% KM Chebyshev UCL					3.053	99% KM Chebyshev UCL					3.687
1269												
1270	**Gamma GOF Tests on Detected Observations Only**											
1271	A-D Test Statistic					0.915	**Anderson-Darling GOF Test**					
1272	5% A-D Critical Value					0.757	Detected Data Not Gamma Distributed at 5% Significance Level					
1273	K-S Test Statistic					0.133	**Kolmogrov-Smirnoff GOF**					
1274	5% K-S Critical Value					0.13	Detected Data Not Gamma Distributed at 5% Significance Level					
1275	**Detected Data Not Gamma Distributed at 5% Significance Level**											
1276												
1277	**Gamma Statistics on Detected Data Only**											
1278	k hat (MLE)					2.798	k star (bias corrected MLE)					2.634
1279	Theta hat (MLE)					0.723	Theta star (bias corrected MLE)					0.768
1280	nu hat (MLE)					263	nu star (bias corrected)					247.6
1281	MLE Mean (bias corrected)					2.022	MLE Sd (bias corrected)					1.246
1282												
1283	**Gamma Kaplan-Meier (KM) Statistics**											
1284	k hat (KM)					2.858	nu hat (KM)					274.4
1285	Approximate Chi Square Value (274.38, α)					237	Adjusted Chi Square Value (274.38, β)					235.9
1286	95% Gamma Approximate KM-UCL (use when n>=50)					2.297	95% Gamma Adjusted KM-UCL (use when n<50)					2.307
1287												
1288	**Gamma ROS Statistics using Imputed Non-Detects**											
1289	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1290	GROS may not be used when kstar of detected data is small such as < 0.1											
1291	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1292	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1293	Minimum					0.2	Mean					1.985
1294	Maximum					6.695	Median					2.045
1295	SD					1.184	CV					0.596
1296	k hat (MLE)					2.521	k star (bias corrected MLE)					2.378
1297	Theta hat (MLE)					0.787	Theta star (bias corrected MLE)					0.835
1298	nu hat (MLE)					242.1	nu star (bias corrected)					228.3
1299	MLE Mean (bias corrected)					1.985	MLE Sd (bias corrected)					1.287
1300							Adjusted Level of Significance (β)					0.045

	A	B	C	D	E	F	G	H	I	J	K	L
1301					Approximate Chi Square Value (228.26, α)	194.3				Adjusted Chi Square Value (228.26, β)		193.3
1302					95% Gamma Approximate UCL (use when n>=50)	2.332				95% Gamma Adjusted UCL (use when n<50)		2.344
1303												
1304					**Lognormal GOF Test on Detected Observations Only**							
1305					Shapiro Wilk Test Statistic	0.907				**Shapiro Wilk GOF Test**		
1306					5% Shapiro Wilk Critical Value	0.946				Detected Data Not Lognormal at 5% Significance Level		
1307					Lilliefors Test Statistic	0.164				**Lilliefors GOF Test**		
1308					5% Lilliefors Critical Value	0.129				Detected Data Not Lognormal at 5% Significance Level		
1309					**Detected Data Not Lognormal at 5% Significance Level**							
1310												
1311					**Lognormal ROS Statistics Using Imputed Non-Detects**							
1312					Mean in Original Scale	1.987				Mean in Log Scale		0.48
1313					SD in Original Scale	1.182				SD in Log Scale		0.728
1314					95% t UCL (assumes normality of ROS data)	2.273				95% Percentile Bootstrap UCL		2.282
1315					95% BCA Bootstrap UCL	2.316				95% Bootstrap t UCL		2.334
1316					95% H-UCL (Log ROS)	2.62						
1317												
1318					**DL/2 Statistics**							
1319					**DL/2 Normal**					**DL/2 Log-Transformed**		
1320					Mean in Original Scale	1.982				Mean in Log Scale		0.454
1321					SD in Original Scale	1.189				SD in Log Scale		0.805
1322					95% t UCL (Assumes normality)	2.27				95% H-Stat UCL		2.799
1323					**DL/2 is not a recommended method, provided for comparisons and historical reasons**							
1324												
1325					**Nonparametric Distribution Free UCL Statistics**							
1326					**Detected Data appear Approximate Normal Distributed at 5% Significance Level**							
1327												
1328					**Suggested UCL to Use**							
1329					95% KM (t) UCL	2.271				95% KM (Percentile Bootstrap) UCL		2.278
1330												
1331					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1332					Recommendations are based upon data size, data distribution, and skewness.							
1333					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
1334					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
1335												
1336	**Dieldrin**											
1337												
1338					**General Statistics**							
1339					Total Number of Observations	47				Number of Distinct Observations		37
1340										Number of Missing Observations		1
1341					Number of Detects	7				Number of Non-Detects		40
1342					Number of Distinct Detects	7				Number of Distinct Non-Detects		32
1343					Minimum Detect	0.106				Minimum Non-Detect		0.03
1344					Maximum Detect	0.39				Maximum Non-Detect		0.32
1345					Variance Detects	0.0119				Percent Non-Detects		85.11%
1346					Mean Detects	0.213				SD Detects		0.109
1347					Median Detects	0.2				CV Detects		0.512
1348					Skewness Detects	0.734				Kurtosis Detects		-0.822
1349					Mean of Logged Detects	-1.659				SD of Logged Detects		0.51
1350												
1351					**Normal GOF Test on Detects Only**							
1352					Shapiro Wilk Test Statistic	0.895				**Shapiro Wilk GOF Test**		
1353					5% Shapiro Wilk Critical Value	0.803				Detected Data appear Normal at 5% Significance Level		
1354					Lilliefors Test Statistic	0.221				**Lilliefors GOF Test**		
1355					5% Lilliefors Critical Value	0.335				Detected Data appear Normal at 5% Significance Level		
1356					**Detected Data appear Normal at 5% Significance Level**							
1357												
1358					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
1359					Mean	0.0602				Standard Error of Mean		0.0124
1360					SD	0.0766				95% KM (BCA) UCL		0.0789
1361					95% KM (t) UCL	0.0811				95% KM (Percentile Bootstrap) UCL		0.0812
1362					95% KM (z) UCL	0.0807				95% KM Bootstrap t UCL		0.0801
1363					90% KM Chebyshev UCL	0.0975				95% KM Chebyshev UCL		0.114
1364					97.5% KM Chebyshev UCL	0.138				99% KM Chebyshev UCL		0.184
1365												

	A	B	C	D	E	F	G	H	I	J	K	L
1366					Gamma GOF Tests on Detected Observations Only							
1367					A-D Test Statistic	0.36	Anderson-Darling GOF Test					
1368					5% A-D Critical Value	0.71	Detected data appear Gamma Distributed at 5% Significance Level					
1369					K-S Test Statistic	0.246	Kolmogrov-Smirnoff GOF					
1370					5% K-S Critical Value	0.313	Detected data appear Gamma Distributed at 5% Significance Level					
1371					Detected data appear Gamma Distributed at 5% Significance Level							
1372												
1373					Gamma Statistics on Detected Data Only							
1374					k hat (MLE)	4.634	k star (bias corrected MLE)					2.743
1375					Theta hat (MLE)	0.0459	Theta star (bias corrected MLE)					0.0776
1376					nu hat (MLE)	64.88	nu star (bias corrected)					38.41
1377					MLE Mean (bias corrected)	0.213	MLE Sd (bias corrected)					0.129
1378												
1379					Gamma Kaplan-Meier (KM) Statistics							
1380					k hat (KM)	0.617	nu hat (KM)					57.98
1381					Approximate Chi Square Value (57.98, α)	41.48	Adjusted Chi Square Value (57.98, β)					41.03
1382					95% Gamma Approximate KM-UCL (use when n>=50)	0.0841	95% Gamma Adjusted KM-UCL (use when n<50)					0.0851
1383												
1384					Gamma ROS Statistics using Imputed Non-Detects							
1385					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1386					GROS may not be used when kstar of detected data is small such as < 0.1							
1387					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
1388					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
1389					Minimum	0.01	Mean					0.0402
1390					Maximum	0.39	Median					0.01
1391					SD	0.0829	CV					2.062
1392					k hat (MLE)	0.642	k star (bias corrected MLE)					0.615
1393					Theta hat (MLE)	0.0626	Theta star (bias corrected MLE)					0.0654
1394					nu hat (MLE)	60.36	nu star (bias corrected)					57.84
1395					MLE Mean (bias corrected)	0.0402	MLE Sd (bias corrected)					0.0513
1396							Adjusted Level of Significance (β)					0.0449
1397					Approximate Chi Square Value (57.84, α)	41.36	Adjusted Chi Square Value (57.84, β)					40.91
1398					95% Gamma Approximate UCL (use when n>=50)	0.0562	95% Gamma Adjusted UCL (use when n<50)					0.0568
1399												
1400					Lognormal GOF Test on Detected Observations Only							
1401					Shapiro Wilk Test Statistic	0.916	Shapiro Wilk GOF Test					
1402					5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level					
1403					Lilliefors Test Statistic	0.228	Lilliefors GOF Test					
1404					5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level					
1405					Detected Data appear Lognormal at 5% Significance Level							
1406												
1407					Lognormal ROS Statistics Using Imputed Non-Detects							
1408					Mean in Original Scale	0.0553	Mean in Log Scale					-3.336
1409					SD in Original Scale	0.0778	SD in Log Scale					0.786
1410					95% t UCL (assumes normality of ROS data)	0.0744	95% Percentile Bootstrap UCL					0.0755
1411					95% BCA Bootstrap UCL	0.0823	95% Bootstrap t UCL					0.0853
1412					95% H-UCL (Log ROS)	0.0619						
1413												
1414					UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed							
1415					KM Mean (logged)	-3.186	95% H-UCL (KM -Log)					0.0657
1416					KM SD (logged)	0.708	95% Critical H Value (KM-Log)					2.041
1417					KM Standard Error of Mean (logged)	0.12						
1418												
1419					DL/2 Statistics							
1420					DL/2 Normal		DL/2 Log-Transformed					
1421					Mean in Original Scale	0.0751	Mean in Log Scale					-2.956
1422					SD in Original Scale	0.0772	SD in Log Scale					0.835
1423					95% t UCL (Assumes normality)	0.094	95% H-Stat UCL					0.0962
1424					DL/2 is not a recommended method, provided for comparisons and historical reasons							
1425												
1426					Nonparametric Distribution Free UCL Statistics							
1427					Detected Data appear Normal Distributed at 5% Significance Level							
1428												
1429					Suggested UCL to Use							
1430					95% KM (t) UCL	0.0811	95% KM (Percentile Bootstrap) UCL					0.0812

	A	B	C	D	E	F	G	H	I	J	K	L
1431												
1432	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1433	Recommendations are based upon data size, data distribution, and skewness.											
1434	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1435	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1436												
1437												
1438	**Diesel Range Hydrocarbons**											
1439												
1440	**General Statistics**											
1441	Total Number of Observations					28	Number of Distinct Observations					26
1442							Number of Missing Observations					18
1443	Minimum					2.6	Mean					34.68
1444	Maximum					69	Median					33
1445	SD					14.77	Std. Error of Mean					2.79
1446	Coefficient of Variation					0.426	Skewness					0.155
1447												
1448	**Normal GOF Test**											
1449	Shapiro Wilk Test Statistic					0.987	**Shapiro Wilk GOF Test**					
1450	5% Shapiro Wilk Critical Value					0.924	Data appear Normal at 5% Significance Level					
1451	Lilliefors Test Statistic					0.0844	**Lilliefors GOF Test**					
1452	5% Lilliefors Critical Value					0.167	Data appear Normal at 5% Significance Level					
1453	**Data appear Normal at 5% Significance Level**											
1454												
1455	**Assuming Normal Distribution**											
1456	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
1457	95% Student's-t UCL					39.44	95% Adjusted-CLT UCL (Chen-1995)					39.36
1458							95% Modified-t UCL (Johnson-1978)					39.45
1459												
1460	**Gamma GOF Test**											
1461	A-D Test Statistic					0.77	**Anderson-Darling Gamma GOF Test**					
1462	5% A-D Critical Value					0.75	Data Not Gamma Distributed at 5% Significance Level					
1463	K-S Test Statistic					0.159	**Kolmogrov-Smirnoff Gamma GOF Test**					
1464	5% K-S Critical Value					0.166	Detected data appear Gamma Distributed at 5% Significance Level					
1465	**Detected data follow Appr. Gamma Distribution at 5% Significance Level**											
1466												
1467	**Gamma Statistics**											
1468	k hat (MLE)					3.836	k star (bias corrected MLE)					3.449
1469	Theta hat (MLE)					9.041	Theta star (bias corrected MLE)					10.06
1470	nu hat (MLE)					214.8	nu star (bias corrected)					193.1
1471	MLE Mean (bias corrected)					34.68	MLE Sd (bias corrected)					18.68
1472							Approximate Chi Square Value (0.05)					162
1473	Adjusted Level of Significance					0.0404	Adjusted Chi Square Value					160.2
1474												
1475	**Assuming Gamma Distribution**											
1476	95% Approximate Gamma UCL (use when n>=50))					41.35	95% Adjusted Gamma UCL (use when n<50)					41.81
1477												
1478	**Lognormal GOF Test**											
1479	Shapiro Wilk Test Statistic					0.794	**Shapiro Wilk Lognormal GOF Test**					
1480	5% Shapiro Wilk Critical Value					0.924	Data Not Lognormal at 5% Significance Level					
1481	Lilliefors Test Statistic					0.201	**Lilliefors Lognormal GOF Test**					
1482	5% Lilliefors Critical Value					0.167	Data Not Lognormal at 5% Significance Level					
1483	**Data Not Lognormal at 5% Significance Level**											
1484												
1485	**Lognormal Statistics**											
1486	Minimum of Logged Data					0.956	Mean of logged Data					3.41
1487	Maximum of Logged Data					4.234	SD of logged Data					0.639
1488												
1489	**Assuming Lognormal Distribution**											
1490	95% H-UCL					47.87	90% Chebyshev (MVUE) UCL					51.07
1491	95% Chebyshev (MVUE) UCL					57.52	97.5% Chebyshev (MVUE) UCL					66.48
1492	99% Chebyshev (MVUE) UCL					84.07						
1493												
1494	**Nonparametric Distribution Free UCL Statistics**											
1495	**Data appear to follow a Discernible Distribution at 5% Significance Level**											

	A	B	C	D	E	F	G	H	I	J	K	L
1496												
1497						**Nonparametric Distribution Free UCLs**						
1498					95% CLT UCL	39.27				95% Jackknife UCL		39.44
1499					95% Standard Bootstrap UCL	39.26				95% Bootstrap-t UCL		39.5
1500					95% Hall's Bootstrap UCL	39.54				95% Percentile Bootstrap UCL		39.13
1501					95% BCA Bootstrap UCL	39.14						
1502					90% Chebyshev(Mean, Sd) UCL	43.06				95% Chebyshev(Mean, Sd) UCL		46.85
1503					97.5% Chebyshev(Mean, Sd) UCL	52.11				99% Chebyshev(Mean, Sd) UCL		62.45
1504												
1505						**Suggested UCL to Use**						
1506					95% Student's-t UCL	39.44						
1507												
1508					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1509					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
1510					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
1511					For additional insight the user may want to consult a statistician.							
1512												
1513												
1514	**Dioxin TEQ - Mammals 2006**											
1515												
1516						**General Statistics**						
1517					Total Number of Observations	52				Number of Distinct Observations		52
1518										Number of Missing Observations		19
1519					Minimum	0.0333				Mean		1.158
1520					Maximum	19.11				Median		0.356
1521					SD	2.706				Std. Error of Mean		0.375
1522					Coefficient of Variation	2.337				Skewness		5.96
1523												
1524						**Normal GOF Test**						
1525					Shapiro Wilk Test Statistic	0.394				**Shapiro Wilk GOF Test**		
1526					5% Shapiro Wilk P Value	0				Data Not Normal at 5% Significance Level		
1527					Lilliefors Test Statistic	0.339				**Lilliefors GOF Test**		
1528					5% Lilliefors Critical Value	0.123				Data Not Normal at 5% Significance Level		
1529						**Data Not Normal at 5% Significance Level**						
1530												
1531						**Assuming Normal Distribution**						
1532					**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**		
1533					95% Student's-t UCL	1.787				95% Adjusted-CLT UCL (Chen-1995)		2.107
1534										95% Modified-t UCL (Johnson-1978)		1.839
1535												
1536						**Gamma GOF Test**						
1537					A-D Test Statistic	1.598				**Anderson-Darling Gamma GOF Test**		
1538					5% A-D Critical Value	0.81				Data Not Gamma Distributed at 5% Significance Level		
1539					K-S Test Statistic	0.155				**Kolmogrov-Smirnoff Gamma GOF Test**		
1540					5% K-S Critical Value	0.13				Data Not Gamma Distributed at 5% Significance Level		
1541						**Data Not Gamma Distributed at 5% Significance Level**						
1542												
1543						**Gamma Statistics**						
1544					k hat (MLE)	0.555				k star (bias corrected MLE)		0.535
1545					Theta hat (MLE)	2.088				Theta star (bias corrected MLE)		2.163
1546					nu hat (MLE)	57.68				nu star (bias corrected)		55.68
1547					MLE Mean (bias corrected)	1.158				MLE Sd (bias corrected)		1.583
1548										Approximate Chi Square Value (0.05)		39.54
1549					Adjusted Level of Significance	0.0454				Adjusted Chi Square Value		39.15
1550												
1551						**Assuming Gamma Distribution**						
1552					95% Approximate Gamma UCL (use when n>=50))	1.631				95% Adjusted Gamma UCL (use when n<50)		1.647
1553												
1554						**Lognormal GOF Test**						
1555					Shapiro Wilk Test Statistic	0.948				**Shapiro Wilk Lognormal GOF Test**		
1556					5% Shapiro Wilk P Value	0.0432				Data Not Lognormal at 5% Significance Level		
1557					Lilliefors Test Statistic	0.143				**Lilliefors Lognormal GOF Test**		
1558					5% Lilliefors Critical Value	0.123				Data Not Lognormal at 5% Significance Level		
1559						**Data Not Lognormal at 5% Significance Level**						
1560												

	A	B	C	D	E	F	G	H	I	J	K	L
1561						Lognormal Statistics						
1562					Minimum of Logged Data	-3.403				Mean of logged Data		-0.98
1563					Maximum of Logged Data	2.95				SD of logged Data		1.526
1564												
1565						Assuming Lognormal Distribution						
1566					95% H-UCL	2.257				90% Chebyshev (MVUE) UCL		2.125
1567					95% Chebyshev (MVUE) UCL	2.568				97.5% Chebyshev (MVUE) UCL		3.182
1568					99% Chebyshev (MVUE) UCL	4.388						
1569												
1570						Nonparametric Distribution Free UCL Statistics						
1571						Data do not follow a Discernible Distribution (0.05)						
1572												
1573						Nonparametric Distribution Free UCLs						
1574					95% CLT UCL	1.775				95% Jackknife UCL		1.787
1575					95% Standard Bootstrap UCL	1.757				95% Bootstrap-t UCL		2.702
1576					95% Hall's Bootstrap UCL	4.09				95% Percentile Bootstrap UCL		1.864
1577					95% BCA Bootstrap UCL	2.282						
1578					90% Chebyshev(Mean, Sd) UCL	2.284				95% Chebyshev(Mean, Sd) UCL		2.794
1579					97.5% Chebyshev(Mean, Sd) UCL	3.502				99% Chebyshev(Mean, Sd) UCL		4.892
1580												
1581						Suggested UCL to Use						
1582					95% Chebyshev (Mean, Sd) UCL	2.794						
1583												
1584					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1585					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
1586					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
1587					For additional insight the user may want to consult a statistician.							
1588												
1589	gamma-Hexachlorocyclohexane											
1590												
1591						General Statistics						
1592					Total Number of Observations	45				Number of Distinct Observations		29
1593										Number of Missing Observations		3
1594					Number of Detects	1				Number of Non-Detects		44
1595					Number of Distinct Detects	1				Number of Distinct Non-Detects		28
1596												
1597					Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!							
1598	is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV											
1599												
1600					The data set for variable gamma-Hexachlorocyclohexane was not processed!							
1601												
1602												
1603	Hexachlorobenzene											
1604												
1605						General Statistics						
1606					Total Number of Observations	34				Number of Distinct Observations		27
1607										Number of Missing Observations		12
1608					Number of Detects	24				Number of Non-Detects		10
1609					Number of Distinct Detects	21				Number of Distinct Non-Detects		9
1610					Minimum Detect	0.075				Minimum Non-Detect		0.068
1611					Maximum Detect	1.04				Maximum Non-Detect		0.43
1612					Variance Detects	0.093				Percent Non-Detects		29.41%
1613					Mean Detects	0.356				SD Detects		0.305
1614					Median Detects	0.205				CV Detects		0.856
1615					Skewness Detects	1.229				Kurtosis Detects		0.184
1616					Mean of Logged Detects	-1.349				SD of Logged Detects		0.797
1617												
1618						Normal GOF Test on Detects Only						
1619					Shapiro Wilk Test Statistic	0.795				Shapiro Wilk GOF Test		
1620					5% Shapiro Wilk Critical Value	0.916				Detected Data Not Normal at 5% Significance Level		
1621					Lilliefors Test Statistic	0.232				Lilliefors GOF Test		
1622					5% Lilliefors Critical Value	0.181				Detected Data Not Normal at 5% Significance Level		
1623						Detected Data Not Normal at 5% Significance Level						
1624												
1625						Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs						

	A	B	C	D	E	F	G	H	I	J	K	L
1626					Mean	0.287				Standard Error of Mean		0.0484
1627					SD	0.275				95% KM (BCA) UCL		0.368
1628					95% KM (t) UCL	0.369				95% KM (Percentile Bootstrap) UCL		0.364
1629					95% KM (z) UCL	0.367				95% KM Bootstrap t UCL		0.392
1630					90% KM Chebyshev UCL	0.432				95% KM Chebyshev UCL		0.498
1631					97.5% KM Chebyshev UCL	0.589				99% KM Chebyshev UCL		0.768
1632												
1633					**Gamma GOF Tests on Detected Observations Only**							
1634					A-D Test Statistic	1.022	**Anderson-Darling GOF Test**					
1635					5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level					
1636					K-S Test Statistic	0.185	**Kolmogrov-Smirnoff GOF**					
1637					5% K-S Critical Value	0.181	Detected Data Not Gamma Distributed at 5% Significance Level					
1638					**Detected Data Not Gamma Distributed at 5% Significance Level**							
1639												
1640					**Gamma Statistics on Detected Data Only**							
1641					k hat (MLE)	1.724				k star (bias corrected MLE)		1.537
1642					Theta hat (MLE)	0.207				Theta star (bias corrected MLE)		0.232
1643					nu hat (MLE)	82.77				nu star (bias corrected)		73.76
1644					MLE Mean (bias corrected)	0.356				MLE Sd (bias corrected)		0.287
1645												
1646					**Gamma Kaplan-Meier (KM) Statistics**							
1647					k hat (KM)	1.093				nu hat (KM)		74.31
1648					Approximate Chi Square Value (74.31, α)	55.46				Adjusted Chi Square Value (74.31, β)		54.65
1649					95% Gamma Approximate KM-UCL (use when n>=50)	0.385				95% Gamma Adjusted KM-UCL (use when n<50)		0.39
1650												
1651					**Gamma ROS Statistics using Imputed Non-Detects**							
1652					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1653					GROS may not be used when kstar of detected data is small such as < 0.1							
1654					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
1655					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
1656					Minimum	0.01				Mean		0.274
1657					Maximum	1.04				Median		0.145
1658					SD	0.287				CV		1.047
1659					k hat (MLE)	1.077				k star (bias corrected MLE)		1.001
1660					Theta hat (MLE)	0.254				Theta star (bias corrected MLE)		0.274
1661					nu hat (MLE)	73.21				nu star (bias corrected)		68.08
1662					MLE Mean (bias corrected)	0.274				MLE Sd (bias corrected)		0.274
1663										Adjusted Level of Significance (β)		0.0422
1664					Approximate Chi Square Value (68.08, α)	50.09				Adjusted Chi Square Value (68.08, β)		49.33
1665					95% Gamma Approximate UCL (use when n>=50)	0.372				95% Gamma Adjusted UCL (use when n<50)		0.378
1666												
1667					**Lognormal GOF Test on Detected Observations Only**							
1668					Shapiro Wilk Test Statistic	0.93	**Shapiro Wilk GOF Test**					
1669					5% Shapiro Wilk Critical Value	0.916	Detected Data appear Lognormal at 5% Significance Level					
1670					Lilliefors Test Statistic	0.152	**Lilliefors GOF Test**					
1671					5% Lilliefors Critical Value	0.181	Detected Data appear Lognormal at 5% Significance Level					
1672					**Detected Data appear Lognormal at 5% Significance Level**							
1673												
1674					**Lognormal ROS Statistics Using Imputed Non-Detects**							
1675					Mean in Original Scale	0.284				Mean in Log Scale		-1.634
1676					SD in Original Scale	0.28				SD in Log Scale		0.846
1677					95% t UCL (assumes normality of ROS data)	0.365				95% Percentile Bootstrap UCL		0.37
1678					95% BCA Bootstrap UCL	0.378				95% Bootstrap t UCL		0.392
1679					95% H-UCL (Log ROS)	0.39						
1680												
1681					**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**							
1682					KM Mean (logged)	-1.603				95% H-UCL (KM -Log)		0.377
1683					KM SD (logged)	0.799				95% Critical H Value (KM-Log)		2.22
1684					KM Standard Error of Mean (logged)	0.145						
1685												
1686					**DL/2 Statistics**							
1687					**DL/2 Normal**		**DL/2 Log-Transformed**					
1688					Mean in Original Scale	0.284				Mean in Log Scale		-1.642
1689					SD in Original Scale	0.28				SD in Log Scale		0.872
1690					95% t UCL (Assumes normality)	0.366				95% H-Stat UCL		0.402

	A	B	C	D	E	F	G	H	I	J	K	L
1691	DL/2 is not a recommended method, provided for comparisons and historical reasons											
1692												
1693	Nonparametric Distribution Free UCL Statistics											
1694	Detected Data appear Lognormal Distributed at 5% Significance Level											
1695												
1696	Suggested UCL to Use											
1697					95% KM (BCA) UCL	0.368						
1698												
1699	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1700	Recommendations are based upon data size, data distribution, and skewness.											
1701	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1702	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1703												
1704	Total HPAHs (calc'd)											
1705												
1706	General Statistics											
1707					Total Number of Observations	71			Number of Distinct Observations			67
1708					Number of Detects	59			Number of Non-Detects			12
1709					Number of Distinct Detects	58			Number of Distinct Non-Detects			9
1710					Minimum Detect	4.73			Minimum Non-Detect			1
1711					Maximum Detect	450			Maximum Non-Detect			10
1712					Variance Detects	5792			Percent Non-Detects			16.9%
1713					Mean Detects	77.7			SD Detects			76.11
1714					Median Detects	56.78			CV Detects			0.98
1715					Skewness Detects	2.853			Kurtosis Detects			10.47
1716					Mean of Logged Detects	4			SD of Logged Detects			0.87
1717												
1718	Normal GOF Test on Detects Only											
1719					Shapiro Wilk Test Statistic	0.726			Normal GOF Test on Detected Observations Only			
1720					5% Shapiro Wilk P Value	3.531E-14			Detected Data Not Normal at 5% Significance Level			
1721					Lilliefors Test Statistic	0.188			Lilliefors GOF Test			
1722					5% Lilliefors Critical Value	0.115			Detected Data Not Normal at 5% Significance Level			
1723	Detected Data Not Normal at 5% Significance Level											
1724												
1725	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
1726					Mean	64.76			Standard Error of Mean			8.921
1727					SD	74.53			95% KM (BCA) UCL			80.29
1728					95% KM (t) UCL	79.63			95% KM (Percentile Bootstrap) UCL			81.34
1729					95% KM (z) UCL	79.43			95% KM Bootstrap t UCL			84.93
1730					90% KM Chebyshev UCL	91.52			95% KM Chebyshev UCL			103.6
1731					97.5% KM Chebyshev UCL	120.5			99% KM Chebyshev UCL			153.5
1732												
1733	Gamma GOF Tests on Detected Observations Only											
1734					A-D Test Statistic	0.535			Anderson-Darling GOF Test			
1735					5% A-D Critical Value	0.768			Detected data appear Gamma Distributed at 5% Significance Level			
1736					K-S Test Statistic	0.078			Kolmogrov-Smirnoff GOF			
1737					5% K-S Critical Value	0.118			Detected data appear Gamma Distributed at 5% Significance Level			
1738	Detected data appear Gamma Distributed at 5% Significance Level											
1739												
1740	Gamma Statistics on Detected Data Only											
1741					k hat (MLE)	1.562			k star (bias corrected MLE)			1.494
1742					Theta hat (MLE)	49.74			Theta star (bias corrected MLE)			52.01
1743					nu hat (MLE)	184.3			nu star (bias corrected)			176.3
1744					MLE Mean (bias corrected)	77.7			MLE Sd (bias corrected)			63.57
1745												
1746	Gamma Kaplan-Meier (KM) Statistics											
1747					k hat (KM)	0.755			nu hat (KM)			107.2
1748					Approximate Chi Square Value (107.21, α)	84.32			Adjusted Chi Square Value (107.21, β)			83.9
1749					95% Gamma Approximate KM-UCL (use when n>=50)	82.35			95% Gamma Adjusted KM-UCL (use when n<50)			82.76
1750												
1751	Gamma ROS Statistics using Imputed Non-Detects											
1752	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1753	GROS may not be used when kstar of detected data is small such as < 0.1											
1754	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1755	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											

	A	B	C	D	E	F	G	H	I	J	K	L
1756					Minimum	0.01					Mean	64.57
1757					Maximum	450					Median	45.25
1758					SD	75.23					CV	1.165
1759					k hat (MLE)	0.405					k star (bias corrected MLE)	0.397
1760					Theta hat (MLE)	159.5					Theta star (bias corrected MLE)	162.6
1761					nu hat (MLE)	57.49					nu star (bias corrected)	56.39
1762					MLE Mean (bias corrected)	64.57					MLE Sd (bias corrected)	102.5
1763											Adjusted Level of Significance (β)	0.0466
1764					Approximate Chi Square Value (56.39, α)	40.13					Adjusted Chi Square Value (56.39, β)	39.85
1765					95% Gamma Approximate UCL (use when n>=50)	90.73					95% Gamma Adjusted UCL (use when n<50)	91.37
1766												
1767					**Lognormal GOF Test on Detected Observations Only**							
1768					Lilliefors Test Statistic	0.0687			**Lilliefors GOF Test**			
1769					5% Lilliefors Critical Value	0.115			Detected Data appear Lognormal at 5% Significance Level			
1770					**Detected Data appear Lognormal at 5% Significance Level**							
1771												
1772					**Lognormal ROS Statistics Using Imputed Non-Detects**							
1773					Mean in Original Scale	66.01					Mean in Log Scale	3.684
1774					SD in Original Scale	74.03					SD in Log Scale	1.062
1775					95% t UCL (assumes normality of ROS data)	80.65					95% Percentile Bootstrap UCL	80.81
1776					95% BCA Bootstrap UCL	84.38					95% Bootstrap t UCL	86.28
1777					95% H-UCL (Log ROS)	93.85						
1778												
1779					**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**							
1780					KM Mean (logged)	3.334					95% H-UCL (KM -Log)	209
1781					KM SD (logged)	1.677					95% Critical H Value (KM-Log)	3
1782					KM Standard Error of Mean (logged)	0.201						
1783												
1784					**DL/2 Statistics**							
1785					**DL/2 Normal**				**DL/2 Log-Transformed**			
1786					Mean in Original Scale	64.89					Mean in Log Scale	3.385
1787					SD in Original Scale	74.95					SD in Log Scale	1.613
1788					95% t UCL (Assumes normality)	79.71					95% H-Stat UCL	190.4
1789					**DL/2 is not a recommended method, provided for comparisons and historical reasons**							
1790												
1791					**Nonparametric Distribution Free UCL Statistics**							
1792					**Detected Data appear Gamma Distributed at 5% Significance Level**							
1793												
1794					**Suggested UCL to Use**							
1795					95% KM (BCA) UCL	80.29			95% GROS Approximate Gamma UCL			90.73
1796					95% Approximate Gamma KM-UCL	82.35						
1797												
1798					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1799					Recommendations are based upon data size, data distribution, and skewness.							
1800					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
1801					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
1802												
1803												
1804	**Lead**											
1805												
1806					**General Statistics**							
1807					Total Number of Observations	67			Number of Distinct Observations			60
1808									Number of Missing Observations			4
1809					Minimum	3.96					Mean	8.398
1810					Maximum	31.6					Median	7.4
1811					SD	4.178					Std. Error of Mean	0.51
1812					Coefficient of Variation	0.497					Skewness	3.597
1813												
1814					**Normal GOF Test**							
1815					Shapiro Wilk Test Statistic	0.653			**Shapiro Wilk GOF Test**			
1816					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
1817					Lilliefors Test Statistic	0.244			**Lilliefors GOF Test**			
1818					5% Lilliefors Critical Value	0.108			Data Not Normal at 5% Significance Level			
1819					**Data Not Normal at 5% Significance Level**							
1820												

	A	B	C	D	E	F	G	H	I	J	K	L
1821						Assuming Normal Distribution						
1822					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
1823					95% Student's-t UCL	9.249			95% Adjusted-CLT UCL (Chen-1995)			9.477
1824									95% Modified-t UCL (Johnson-1978)			9.286
1825												
1826						Gamma GOF Test						
1827					A-D Test Statistic	3.134			Anderson-Darling Gamma GOF Test			
1828					5% A-D Critical Value	0.753			Data Not Gamma Distributed at 5% Significance Level			
1829					K-S Test Statistic	0.175			Kolmogrov-Smirnoff Gamma GOF Test			
1830					5% K-S Critical Value	0.109			Data Not Gamma Distributed at 5% Significance Level			
1831						Data Not Gamma Distributed at 5% Significance Level						
1832												
1833						Gamma Statistics						
1834					k hat (MLE)	6.951			k star (bias corrected MLE)			6.65
1835					Theta hat (MLE)	1.208			Theta star (bias corrected MLE)			1.263
1836					nu hat (MLE)	931.4			nu star (bias corrected)			891
1837					MLE Mean (bias corrected)	8.398			MLE Sd (bias corrected)			3.257
1838									Approximate Chi Square Value (0.05)			822.8
1839					Adjusted Level of Significance	0.0464			Adjusted Chi Square Value			821.3
1840												
1841						Assuming Gamma Distribution						
1842					95% Approximate Gamma UCL (use when n>=50))	9.095			95% Adjusted Gamma UCL (use when n<50)			9.11
1843												
1844						Lognormal GOF Test						
1845					Shapiro Wilk Test Statistic	0.898			Shapiro Wilk Lognormal GOF Test			
1846					5% Shapiro Wilk P Value	7.6647E-6			Data Not Lognormal at 5% Significance Level			
1847					Lilliefors Test Statistic	0.139			Lilliefors Lognormal GOF Test			
1848					5% Lilliefors Critical Value	0.108			Data Not Lognormal at 5% Significance Level			
1849						Data Not Lognormal at 5% Significance Level						
1850												
1851						Lognormal Statistics						
1852					Minimum of Logged Data	1.376			Mean of logged Data			2.054
1853					Maximum of Logged Data	3.453			SD of logged Data			0.352
1854												
1855						Assuming Lognormal Distribution						
1856					95% H-UCL	8.965			90% Chebyshev (MVUE) UCL			9.389
1857					95% Chebyshev (MVUE) UCL	9.886			97.5% Chebyshev (MVUE) UCL			10.58
1858					99% Chebyshev (MVUE) UCL	11.93						
1859												
1860						Nonparametric Distribution Free UCL Statistics						
1861						Data do not follow a Discernible Distribution (0.05)						
1862												
1863						Nonparametric Distribution Free UCLs						
1864					95% CLT UCL	9.237			95% Jackknife UCL			9.249
1865					95% Standard Bootstrap UCL	9.244			95% Bootstrap-t UCL			9.797
1866					95% Hall's Bootstrap UCL	13.14			95% Percentile Bootstrap UCL			9.275
1867					95% BCA Bootstrap UCL	9.496						
1868					90% Chebyshev(Mean, Sd) UCL	9.929			95% Chebyshev(Mean, Sd) UCL			10.62
1869					97.5% Chebyshev(Mean, Sd) UCL	11.58			99% Chebyshev(Mean, Sd) UCL			13.48
1870												
1871						Suggested UCL to Use						
1872					95% Student's-t UCL	9.249			or 95% Modified-t UCL			9.286
1873												
1874					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1875					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
1876					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
1877					For additional insight the user may want to consult a statistician.							
1878												
1879	Total LPAHs (calc'd)											
1880												
1881						General Statistics						
1882					Total Number of Observations	71			Number of Distinct Observations			62
1883					Number of Detects	48			Number of Non-Detects			23
1884					Number of Distinct Detects	48			Number of Distinct Non-Detects			14
1885					Minimum Detect	2.335			Minimum Non-Detect			1.5

	A	B	C	D	E	F	G	H	I	J	K	L
1886					Maximum Detect	96					Maximum Non-Detect	10
1887					Variance Detects	194					Percent Non-Detects	32.39%
1888					Mean Detects	15.58					SD Detects	13.93
1889					Median Detects	13.65					CV Detects	0.894
1890					Skewness Detects	4.264					Kurtosis Detects	23.94
1891					Mean of Logged Detects	2.5					SD of Logged Detects	0.715
1892												
1893					**Normal GOF Test on Detects Only**							
1894					Shapiro Wilk Test Statistic	0.629					**Shapiro Wilk GOF Test**	
1895					5% Shapiro Wilk Critical Value	0.947					Detected Data Not Normal at 5% Significance Level	
1896					Lilliefors Test Statistic	0.193					**Lilliefors GOF Test**	
1897					5% Lilliefors Critical Value	0.128					Detected Data Not Normal at 5% Significance Level	
1898					**Detected Data Not Normal at 5% Significance Level**							
1899												
1900					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
1901					Mean	11.1					Standard Error of Mean	1.568
1902					SD	13.06					95% KM (BCA) UCL	14.07
1903					95% KM (t) UCL	13.71					95% KM (Percentile Bootstrap) UCL	13.76
1904					95% KM (z) UCL	13.68					95% KM Bootstrap t UCL	15.05
1905					90% KM Chebyshev UCL	15.8					95% KM Chebyshev UCL	17.93
1906					97.5% KM Chebyshev UCL	20.89					99% KM Chebyshev UCL	26.7
1907												
1908					**Gamma GOF Tests on Detected Observations Only**							
1909					A-D Test Statistic	0.855					**Anderson-Darling GOF Test**	
1910					5% A-D Critical Value	0.761					Detected Data Not Gamma Distributed at 5% Significance Level	
1911					K-S Test Statistic	0.0964					**Kolmogrov-Smirnoff GOF**	
1912					5% K-S Critical Value	0.129					Detected data appear Gamma Distributed at 5% Significance Level	
1913					**Detected data follow Appr. Gamma Distribution at 5% Significance Level**							
1914												
1915					**Gamma Statistics on Detected Data Only**							
1916					k hat (MLE)	2.188					k star (bias corrected MLE)	2.065
1917					Theta hat (MLE)	7.12					Theta star (bias corrected MLE)	7.543
1918					nu hat (MLE)	210					nu star (bias corrected)	198.3
1919					MLE Mean (bias corrected)	15.58					MLE Sd (bias corrected)	10.84
1920												
1921					**Gamma Kaplan-Meier (KM) Statistics**							
1922					k hat (KM)	0.722					nu hat (KM)	102.6
1923					Approximate Chi Square Value (102.58, α)	80.21					Adjusted Chi Square Value (102.58, β)	79.8
1924					95% Gamma Approximate KM-UCL (use when n>=50)	14.2					95% Gamma Adjusted KM-UCL (use when n<50)	14.27
1925												
1926					**Gamma ROS Statistics using Imputed Non-Detects**							
1927					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1928					GROS may not be used when kstar of detected data is small such as < 0.1							
1929					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
1930					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
1931					Minimum	0.01					Mean	10.57
1932					Maximum	96					Median	9.52
1933					SD	13.55					CV	1.282
1934					k hat (MLE)	0.326					k star (bias corrected MLE)	0.322
1935					Theta hat (MLE)	32.36					Theta star (bias corrected MLE)	32.8
1936					nu hat (MLE)	46.36					nu star (bias corrected)	45.74
1937					MLE Mean (bias corrected)	10.57					MLE Sd (bias corrected)	18.62
1938											Adjusted Level of Significance (β)	0.0466
1939					Approximate Chi Square Value (45.74, α)	31.22					Adjusted Chi Square Value (45.74, β)	30.97
1940					95% Gamma Approximate UCL (use when n>=50)	15.48					95% Gamma Adjusted UCL (use when n<50)	15.6
1941												
1942					**Lognormal GOF Test on Detected Observations Only**							
1943					Shapiro Wilk Test Statistic	0.945					**Shapiro Wilk GOF Test**	
1944					5% Shapiro Wilk Critical Value	0.947					Detected Data Not Lognormal at 5% Significance Level	
1945					Lilliefors Test Statistic	0.121					**Lilliefors GOF Test**	
1946					5% Lilliefors Critical Value	0.128					Detected Data appear Lognormal at 5% Significance Level	
1947					**Detected Data appear Approximate Lognormal at 5% Significance Level**							
1948												
1949					**Lognormal ROS Statistics Using Imputed Non-Detects**							
1950					Mean in Original Scale	11.44					Mean in Log Scale	2.015

	A	B	C	D	E	F	G	H	I	J	K	L
1951					SD in Original Scale	12.91					SD in Log Scale	0.929
1952				95% t UCL (assumes normality of ROS data)		14					95% Percentile Bootstrap UCL	14.21
1953					95% BCA Bootstrap UCL	15.16					95% Bootstrap t UCL	15.47
1954					95% H-UCL (Log ROS)	14.72						
1955												
1956				UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed								
1957					KM Mean (logged)	1.852					95% H-UCL (KM -Log)	16.26
1958					KM SD (logged)	1.115					95% Critical H Value (KM-Log)	2.365
1959					KM Standard Error of Mean (logged)	0.135						
1960												
1961					DL/2 Statistics							
1962				DL/2 Normal					DL/2 Log-Transformed			
1963					Mean in Original Scale	11.06					Mean in Log Scale	1.801
1964					SD in Original Scale	13.19					SD in Log Scale	1.207
1965					95% t UCL (Assumes normality)	13.67					95% H-Stat UCL	17.9
1966				DL/2 is not a recommended method, provided for comparisons and historical reasons								
1967												
1968					Nonparametric Distribution Free UCL Statistics							
1969					Detected Data appear Approximate Gamma Distributed at 5% Significance Level							
1970												
1971					Suggested UCL to Use							
1972					95% KM (Percentile Bootstrap) UCL	13.76					95% GROS Approximate Gamma UCL	15.48
1973					95% Approximate Gamma KM-UCL	14.2						
1974												
1975				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.								
1976				Recommendations are based upon data size, data distribution, and skewness.								
1977				These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).								
1978				However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.								
1979												
1980	Mercury											
1981												
1982					General Statistics							
1983					Total Number of Observations	61					Number of Distinct Observations	34
1984											Number of Missing Observations	10
1985					Number of Detects	52					Number of Non-Detects	9
1986					Number of Distinct Detects	34					Number of Distinct Non-Detects	3
1987					Minimum Detect	0.009					Minimum Non-Detect	0.02
1988					Maximum Detect	0.061					Maximum Non-Detect	0.04
1989					Variance Detects	1.3958E-4					Percent Non-Detects	14.75%
1990					Mean Detects	0.0333					SD Detects	0.0118
1991					Median Detects	0.034					CV Detects	0.354
1992					Skewness Detects	0.334					Kurtosis Detects	-0.199
1993					Mean of Logged Detects	-3.47					SD of Logged Detects	0.389
1994												
1995					Normal GOF Test on Detects Only							
1996					Shapiro Wilk Test Statistic	0.976			Normal GOF Test on Detected Observations Only			
1997					5% Shapiro Wilk P Value	0.583			Detected Data appear Normal at 5% Significance Level			
1998					Lilliefors Test Statistic	0.0657			Lilliefors GOF Test			
1999					5% Lilliefors Critical Value	0.123			Detected Data appear Normal at 5% Significance Level			
2000					Detected Data appear Normal at 5% Significance Level							
2001												
2002					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
2003					Mean	0.0312					Standard Error of Mean	0.00162
2004					SD	0.0123					95% KM (BCA) UCL	0.0338
2005					95% KM (t) UCL	0.0339					95% KM (Percentile Bootstrap) UCL	0.0339
2006					95% KM (z) UCL	0.0338					95% KM Bootstrap t UCL	0.034
2007					90% KM Chebyshev UCL	0.036					95% KM Chebyshev UCL	0.0382
2008					97.5% KM Chebyshev UCL	0.0413					99% KM Chebyshev UCL	0.0473
2009												
2010					Gamma GOF Tests on Detected Observations Only							
2011					A-D Test Statistic	0.233			Anderson-Darling GOF Test			
2012					5% A-D Critical Value	0.752			Detected data appear Gamma Distributed at 5% Significance Level			
2013					K-S Test Statistic	0.0893			Kolmogrov-Smirnoff GOF			
2014					5% K-S Critical Value	0.123			Detected data appear Gamma Distributed at 5% Significance Level			
2015					Detected data appear Gamma Distributed at 5% Significance Level							

	A	B	C	D	E	F	G	H	I	J	K	L
2016												
2017						**Gamma Statistics on Detected Data Only**						
2018						k hat (MLE)	7.484				k star (bias corrected MLE)	7.065
2019						Theta hat (MLE)	0.00445				Theta star (bias corrected MLE)	0.00472
2020						nu hat (MLE)	778.3				nu star (bias corrected)	734.8
2021						MLE Mean (bias corrected)	0.0333				MLE Sd (bias corrected)	0.0125
2022												
2023						**Gamma Kaplan-Meier (KM) Statistics**						
2024						k hat (KM)	6.423				nu hat (KM)	783.7
2025						Approximate Chi Square Value (783.67, α)	719.7				Adjusted Chi Square Value (783.67, β)	718.2
2026						95% Gamma Approximate KM-UCL (use when n>=50)	0.0339				95% Gamma Adjusted KM-UCL (use when n<50)	0.034
2027												
2028						**Gamma ROS Statistics using Imputed Non-Detects**						
2029						GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs						
2030						GROS may not be used when kstar of detected data is small such as < 0.1						
2031						For such situations, GROS method tends to yield inflated values of UCLs and BTVs						
2032						For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates						
2033						Minimum	0.009				Mean	0.0312
2034						Maximum	0.061				Median	0.0305
2035						SD	0.0122				CV	0.39
2036						k hat (MLE)	6.367				k star (bias corrected MLE)	6.065
2037						Theta hat (MLE)	0.00491				Theta star (bias corrected MLE)	0.00515
2038						nu hat (MLE)	776.8				nu star (bias corrected)	739.9
2039						MLE Mean (bias corrected)	0.0312				MLE Sd (bias corrected)	0.0127
2040											Adjusted Level of Significance (β)	0.0461
2041						Approximate Chi Square Value (739.89, α)	677.8				Adjusted Chi Square Value (739.89, β)	676.3
2042						95% Gamma Approximate UCL (use when n>=50)	0.0341				95% Gamma Adjusted UCL (use when n<50)	0.0342
2043												
2044						**Lognormal GOF Test on Detected Observations Only**						
2045						Lilliefors Test Statistic	0.109		**Lilliefors GOF Test**			
2046						5% Lilliefors Critical Value	0.123		Detected Data appear Lognormal at 5% Significance Level			
2047						**Detected Data appear Lognormal at 5% Significance Level**						
2048												
2049						**Lognormal ROS Statistics Using Imputed Non-Detects**						
2050						Mean in Original Scale	0.0312				Mean in Log Scale	-3.545
2051						SD in Original Scale	0.0121				SD in Log Scale	0.413
2052						95% t UCL (assumes normality of ROS data)	0.0338				95% Percentile Bootstrap UCL	0.0337
2053						95% BCA Bootstrap UCL	0.0339				95% Bootstrap t UCL	0.0339
2054						95% H-UCL (Log ROS)	0.0346					
2055												
2056						**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**						
2057						KM Mean (logged)	-3.555				95% H-UCL (KM -Log)	0.0348
2058						KM SD (logged)	0.435				95% Critical H Value (KM-Log)	1.822
2059						KM Standard Error of Mean (logged)	0.0595					
2060												
2061						**DL/2 Statistics**						
2062						**DL/2 Normal**			**DL/2 Log-Transformed**			
2063						Mean in Original Scale	0.0304				Mean in Log Scale	-3.601
2064						SD in Original Scale	0.0131				SD in Log Scale	0.493
2065						95% t UCL (Assumes normality)	0.0332				95% H-Stat UCL	0.0347
2066						**DL/2 is not a recommended method, provided for comparisons and historical reasons**						
2067												
2068						**Nonparametric Distribution Free UCL Statistics**						
2069						**Detected Data appear Normal Distributed at 5% Significance Level**						
2070												
2071						**Suggested UCL to Use**						
2072						95% KM (t) UCL	0.0339				95% KM (Percentile Bootstrap) UCL	0.0339
2073												
2074						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
2075						Recommendations are based upon data size, data distribution, and skewness.						
2076						These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
2077						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
2078												
2079	**Naphthalene**											
2080												

	A	B	C	D	E	F	G	H	I	J	K	L
2081	General Statistics											
2082	Total Number of Observations					65	Number of Distinct Observations					44
2083							Number of Missing Observations					6
2084	Number of Detects					20	Number of Non-Detects					45
2085	Number of Distinct Detects					20	Number of Distinct Non-Detects					29
2086	Minimum Detect					1.1	Minimum Non-Detect					0.55
2087	Maximum Detect					9.9	Maximum Non-Detect					9.7
2088	Variance Detects					3.846	Percent Non-Detects					69.23%
2089	Mean Detects					5.078	SD Detects					1.961
2090	Median Detects					4.925	CV Detects					0.386
2091	Skewness Detects					0.494	Kurtosis Detects					1.096
2092	Mean of Logged Detects					1.539	SD of Logged Detects					0.462
2093												
2094	Normal GOF Test on Detects Only											
2095	Shapiro Wilk Test Statistic					0.975	Shapiro Wilk GOF Test					
2096	5% Shapiro Wilk Critical Value					0.905	Detected Data appear Normal at 5% Significance Level					
2097	Lilliefors Test Statistic					0.105	Lilliefors GOF Test					
2098	5% Lilliefors Critical Value					0.198	Detected Data appear Normal at 5% Significance Level					
2099	Detected Data appear Normal at 5% Significance Level											
2100												
2101	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
2102	Mean					2.142	Standard Error of Mean					0.314
2103	SD					2.316	95% KM (BCA) UCL					2.703
2104	95% KM (t) UCL					2.666	95% KM (Percentile Bootstrap) UCL					2.672
2105	95% KM (z) UCL					2.659	95% KM Bootstrap t UCL					2.733
2106	90% KM Chebyshev UCL					3.084	95% KM Chebyshev UCL					3.512
2107	97.5% KM Chebyshev UCL					4.104	99% KM Chebyshev UCL					5.269
2108												
2109	Gamma GOF Tests on Detected Observations Only											
2110	A-D Test Statistic					0.304	Anderson-Darling GOF Test					
2111	5% A-D Critical Value					0.745	Detected data appear Gamma Distributed at 5% Significance Level					
2112	K-S Test Statistic					0.106	Kolmogrov-Smirnoff GOF					
2113	5% K-S Critical Value					0.194	Detected data appear Gamma Distributed at 5% Significance Level					
2114	Detected data appear Gamma Distributed at 5% Significance Level											
2115												
2116	Gamma Statistics on Detected Data Only											
2117	k hat (MLE)					6.022	k star (bias corrected MLE)					5.152
2118	Theta hat (MLE)					0.843	Theta star (bias corrected MLE)					0.986
2119	nu hat (MLE)					240.9	nu star (bias corrected)					206.1
2120	MLE Mean (bias corrected)					5.078	MLE Sd (bias corrected)					2.237
2121												
2122	Gamma Kaplan-Meier (KM) Statistics											
2123	k hat (KM)					0.855	nu hat (KM)					111.1
2124	Approximate Chi Square Value (111.15, α)					87.81	Adjusted Chi Square Value (111.15, β)					87.34
2125	95% Gamma Approximate KM-UCL (use when n>=50)					2.711	95% Gamma Adjusted KM-UCL (use when n<50)					2.725
2126												
2127	Gamma ROS Statistics using Imputed Non-Detects											
2128	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2129	GROS may not be used when kstar of detected data is small such as < 0.1											
2130	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2131	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2132	Minimum					0.01	Mean					2.153
2133	Maximum					9.9	Median					1.328
2134	SD					2.296	CV					1.066
2135	k hat (MLE)					0.643	k star (bias corrected MLE)					0.623
2136	Theta hat (MLE)					3.349	Theta star (bias corrected MLE)					3.454
2137	nu hat (MLE)					83.58	nu star (bias corrected)					81.05
2138	MLE Mean (bias corrected)					2.153	MLE Sd (bias corrected)					2.727
2139							Adjusted Level of Significance (β)					0.0463
2140	Approximate Chi Square Value (81.05, α)					61.31	Adjusted Chi Square Value (81.05, β)					60.92
2141	95% Gamma Approximate UCL (use when n>=50)					2.847	95% Gamma Adjusted UCL (use when n<50)					2.865
2142												
2143	Lognormal GOF Test on Detected Observations Only											
2144	Shapiro Wilk Test Statistic					0.896	Shapiro Wilk GOF Test					
2145	5% Shapiro Wilk Critical Value					0.905	Detected Data Not Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
2146					Lilliefors Test Statistic	0.14	**Lilliefors GOF Test**					
2147					5% Lilliefors Critical Value	0.198	Detected Data appear Lognormal at 5% Significance Level					
2148	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
2149												
2150	**Lognormal ROS Statistics Using Imputed Non-Detects**											
2151					Mean in Original Scale	2.637				Mean in Log Scale		0.758
2152					SD in Original Scale	1.981				SD in Log Scale		0.619
2153				95% t UCL (assumes normality of ROS data)		3.047				95% Percentile Bootstrap UCL		3.035
2154					95% BCA Bootstrap UCL	3.126				95% Bootstrap t UCL		3.118
2155					95% H-UCL (Log ROS)	3.003						
2156												
2157	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
2158					KM Mean (logged)	0.231				95% H-UCL (KM -Log)		2.722
2159					KM SD (logged)	0.991				95% Critical H Value (KM-Log)		2.248
2160					KM Standard Error of Mean (logged)	0.165						
2161												
2162	**DL/2 Statistics**											
2163				**DL/2 Normal**			**DL/2 Log-Transformed**					
2164					Mean in Original Scale	2.549				Mean in Log Scale		0.618
2165					SD in Original Scale	2.121				SD in Log Scale		0.815
2166					95% t UCL (Assumes normality)	2.988				95% H-Stat UCL		3.203
2167	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
2168												
2169	**Nonparametric Distribution Free UCL Statistics**											
2170	**Detected Data appear Normal Distributed at 5% Significance Level**											
2171												
2172	**Suggested UCL to Use**											
2173					95% KM (t) UCL	2.666				95% KM (Percentile Bootstrap) UCL		2.672
2174												
2175	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2176	Recommendations are based upon data size, data distribution, and skewness.											
2177	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
2178	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
2179												
2180												
2181	**Nickel**											
2182												
2183	**General Statistics**											
2184					Total Number of Observations	67				Number of Distinct Observations		51
2185										Number of Missing Observations		4
2186					Minimum	12.3				Mean		20.7
2187					Maximum	29				Median		20.7
2188					SD	3.264				Std. Error of Mean		0.399
2189					Coefficient of Variation	0.158				Skewness		-0.167
2190												
2191	**Normal GOF Test**											
2192					Shapiro Wilk Test Statistic	0.983	**Shapiro Wilk GOF Test**					
2193					5% Shapiro Wilk P Value	0.753	Data appear Normal at 5% Significance Level					
2194					Lilliefors Test Statistic	0.0761	**Lilliefors GOF Test**					
2195					5% Lilliefors Critical Value	0.108	Data appear Normal at 5% Significance Level					
2196	**Data appear Normal at 5% Significance Level**											
2197												
2198	**Assuming Normal Distribution**											
2199				**95% Normal UCL**			**95% UCLs (Adjusted for Skewness)**					
2200					95% Student's-t UCL	21.36				95% Adjusted-CLT UCL (Chen-1995)		21.35
2201										95% Modified-t UCL (Johnson-1978)		21.36
2202												
2203	**Gamma GOF Test**											
2204					A-D Test Statistic	0.59	**Anderson-Darling Gamma GOF Test**					
2205					5% A-D Critical Value	0.749	Detected data appear Gamma Distributed at 5% Significance Level					
2206					K-S Test Statistic	0.0917	**Kolmogrov-Smirnoff Gamma GOF Test**					
2207					5% K-S Critical Value	0.109	Detected data appear Gamma Distributed at 5% Significance Level					
2208	**Detected data appear Gamma Distributed at 5% Significance Level**											
2209												
2210	**Gamma Statistics**											

	A	B	C	D	E	F	G	H	I	J	K	L
2211					k hat (MLE)	38.56				k star (bias corrected MLE)		36.84
2212					Theta hat (MLE)	0.537				Theta star (bias corrected MLE)		0.562
2213					nu hat (MLE)	5166				nu star (bias corrected)		4936
2214					MLE Mean (bias corrected)	20.7				MLE Sd (bias corrected)		3.41
2215										Approximate Chi Square Value (0.05)		4774
2216					Adjusted Level of Significance	0.0464				Adjusted Chi Square Value		4771
2217												
2218					**Assuming Gamma Distribution**							
2219					95% Approximate Gamma UCL (use when n>=50))	21.4				95% Adjusted Gamma UCL (use when n<50)		21.42
2220												
2221					**Lognormal GOF Test**							
2222					Shapiro Wilk Test Statistic	0.956				**Shapiro Wilk Lognormal GOF Test**		
2223					5% Shapiro Wilk P Value	0.0477				Data Not Lognormal at 5% Significance Level		
2224					Lilliefors Test Statistic	0.103				**Lilliefors Lognormal GOF Test**		
2225					5% Lilliefors Critical Value	0.108				Data appear Lognormal at 5% Significance Level		
2226					**Data appear Approximate Lognormal at 5% Significance Level**							
2227												
2228					**Lognormal Statistics**							
2229					Minimum of Logged Data	2.51				Mean of logged Data		3.017
2230					Maximum of Logged Data	3.367				SD of logged Data		0.166
2231												
2232					**Assuming Lognormal Distribution**							
2233					95% H-UCL	21.45				90% Chebyshev (MVUE) UCL		21.98
2234					95% Chebyshev (MVUE) UCL	22.55				97.5% Chebyshev (MVUE) UCL		23.35
2235					99% Chebyshev (MVUE) UCL	24.91						
2236												
2237					**Nonparametric Distribution Free UCL Statistics**							
2238					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
2239												
2240					**Nonparametric Distribution Free UCLs**							
2241					95% CLT UCL	21.36				95% Jackknife UCL		21.36
2242					95% Standard Bootstrap UCL	21.34				95% Bootstrap-t UCL		21.38
2243					95% Hall's Bootstrap UCL	21.37				95% Percentile Bootstrap UCL		21.36
2244					95% BCA Bootstrap UCL	21.4						
2245					90% Chebyshev(Mean, Sd) UCL	21.9				95% Chebyshev(Mean, Sd) UCL		22.44
2246					97.5% Chebyshev(Mean, Sd) UCL	23.19				99% Chebyshev(Mean, Sd) UCL		24.67
2247												
2248					**Suggested UCL to Use**							
2249					95% Student's-t UCL	21.36						
2250												
2251					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
2252					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
2253					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
2254					For additional insight the user may want to consult a statistician.							
2255												
2256					**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**							
2257					**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**							
2258												
2259												
2260	**PCB TEQ - Mammals 2006**											
2261												
2262					**General Statistics**							
2263					Total Number of Observations	32				Number of Distinct Observations		32
2264										Number of Missing Observations		39
2265					Minimum	0.0333				Mean		0.196
2266					Maximum	1.27				Median		0.102
2267					SD	0.266				Std. Error of Mean		0.047
2268					Coefficient of Variation	1.353				Skewness		2.93
2269												
2270					**Normal GOF Test**							
2271					Shapiro Wilk Test Statistic	0.516				**Shapiro Wilk GOF Test**		
2272					5% Shapiro Wilk Critical Value	0.93				Data Not Normal at 5% Significance Level		
2273					Lilliefors Test Statistic	0.388				**Lilliefors GOF Test**		
2274					5% Lilliefors Critical Value	0.157				Data Not Normal at 5% Significance Level		
2275					**Data Not Normal at 5% Significance Level**							

	A	B	C	D	E	F	G	H	I	J	K	L
2276												
2277						Assuming Normal Distribution						
2278				95% Normal UCL				95% UCLs (Adjusted for Skewness)				
2279					95% Student's-t UCL	0.276			95% Adjusted-CLT UCL (Chen-1995)			0.3
2280									95% Modified-t UCL (Johnson-1978)			0.28
2281												
2282						Gamma GOF Test						
2283					A-D Test Statistic	4.665			Anderson-Darling Gamma GOF Test			
2284					5% A-D Critical Value	0.769			Data Not Gamma Distributed at 5% Significance Level			
2285					K-S Test Statistic	0.3			Kolmogrov-Smirnoff Gamma GOF Test			
2286					5% K-S Critical Value	0.159			Data Not Gamma Distributed at 5% Significance Level			
2287						Data Not Gamma Distributed at 5% Significance Level						
2288												
2289						Gamma Statistics						
2290					k hat (MLE)	1.3			k star (bias corrected MLE)			1.199
2291					Theta hat (MLE)	0.151			Theta star (bias corrected MLE)			0.164
2292					nu hat (MLE)	83.21			nu star (bias corrected)			76.74
2293					MLE Mean (bias corrected)	0.196			MLE Sd (bias corrected)			0.179
2294									Approximate Chi Square Value (0.05)			57.56
2295					Adjusted Level of Significance	0.0416			Adjusted Chi Square Value			56.67
2296												
2297						Assuming Gamma Distribution						
2298					95% Approximate Gamma UCL (use when n>=50))	0.262			95% Adjusted Gamma UCL (use when n<50)			0.266
2299												
2300						Lognormal GOF Test						
2301					Shapiro Wilk Test Statistic	0.785			Shapiro Wilk Lognormal GOF Test			
2302					5% Shapiro Wilk Critical Value	0.93			Data Not Lognormal at 5% Significance Level			
2303					Lilliefors Test Statistic	0.256			Lilliefors Lognormal GOF Test			
2304					5% Lilliefors Critical Value	0.157			Data Not Lognormal at 5% Significance Level			
2305						Data Not Lognormal at 5% Significance Level						
2306												
2307						Lognormal Statistics						
2308					Minimum of Logged Data	-3.401			Mean of logged Data			-2.06
2309					Maximum of Logged Data	0.239			SD of logged Data			0.799
2310												
2311						Assuming Lognormal Distribution						
2312					95% H-UCL	0.241			90% Chebyshev (MVUE) UCL			0.254
2313					95% Chebyshev (MVUE) UCL	0.291			97.5% Chebyshev (MVUE) UCL			0.342
2314					99% Chebyshev (MVUE) UCL	0.442						
2315												
2316						Nonparametric Distribution Free UCL Statistics						
2317						Data do not follow a Discernible Distribution (0.05)						
2318												
2319						Nonparametric Distribution Free UCLs						
2320					95% CLT UCL	0.274			95% Jackknife UCL			0.276
2321					95% Standard Bootstrap UCL	0.273			95% Bootstrap-t UCL			0.362
2322					95% Hall's Bootstrap UCL	0.279			95% Percentile Bootstrap UCL			0.284
2323					95% BCA Bootstrap UCL	0.313						
2324					90% Chebyshev(Mean, Sd) UCL	0.337			95% Chebyshev(Mean, Sd) UCL			0.401
2325					97.5% Chebyshev(Mean, Sd) UCL	0.49			99% Chebyshev(Mean, Sd) UCL			0.664
2326												
2327						Suggested UCL to Use						
2328					95% Chebyshev (Mean, Sd) UCL	0.401						
2329												
2330						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
2331						These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)						
2332						and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.						
2333						For additional insight the user may want to consult a statistician.						
2334												
2335	Pentachlorophenol											
2336												
2337						General Statistics						
2338					Total Number of Observations	65			Number of Distinct Observations			44
2339									Number of Missing Observations			6
2340					Number of Detects	9			Number of Non-Detects			56

	A	B	C	D	E	F	G	H	I	J	K	L
2341					Number of Distinct Detects	9				Number of Distinct Non-Detects		37
2342					Minimum Detect	1.5				Minimum Non-Detect		0.25
2343					Maximum Detect	12				Maximum Non-Detect		8.8
2344					Variance Detects	11.98				Percent Non-Detects		86.15%
2345					Mean Detects	3.789				SD Detects		3.461
2346					Median Detects	2.4				CV Detects		0.914
2347					Skewness Detects	2.114				Kurtosis Detects		4.191
2348					Mean of Logged Detects	1.081				SD of Logged Detects		0.679
2349												
2350					**Normal GOF Test on Detects Only**							
2351					Shapiro Wilk Test Statistic	0.671			**Shapiro Wilk GOF Test**			
2352					5% Shapiro Wilk Critical Value	0.829			Detected Data Not Normal at 5% Significance Level			
2353					Lilliefors Test Statistic	0.379			**Lilliefors GOF Test**			
2354					5% Lilliefors Critical Value	0.295			Detected Data Not Normal at 5% Significance Level			
2355					**Detected Data Not Normal at 5% Significance Level**							
2356												
2357					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
2358					Mean	0.863				Standard Error of Mean		0.243
2359					SD	1.757				95% KM (BCA) UCL		1.243
2360					95% KM (t) UCL	1.269				95% KM (Percentile Bootstrap) UCL		1.269
2361					95% KM (z) UCL	1.263				95% KM Bootstrap t UCL		1.424
2362					90% KM Chebyshev UCL	1.593				95% KM Chebyshev UCL		1.923
2363					97.5% KM Chebyshev UCL	2.382				99% KM Chebyshev UCL		3.283
2364												
2365					**Gamma GOF Tests on Detected Observations Only**							
2366					A-D Test Statistic	1.015			**Anderson-Darling GOF Test**			
2367					5% A-D Critical Value	0.729			Detected Data Not Gamma Distributed at 5% Significance Level			
2368					K-S Test Statistic	0.334			**Kolmogrov-Smirnoff GOF**			
2369					5% K-S Critical Value	0.282			Detected Data Not Gamma Distributed at 5% Significance Level			
2370					**Detected Data Not Gamma Distributed at 5% Significance Level**							
2371												
2372					**Gamma Statistics on Detected Data Only**							
2373					k hat (MLE)	2.141				k star (bias corrected MLE)		1.501
2374					Theta hat (MLE)	1.77				Theta star (bias corrected MLE)		2.524
2375					nu hat (MLE)	38.54				nu star (bias corrected)		27.02
2376					MLE Mean (bias corrected)	3.789				MLE Sd (bias corrected)		3.092
2377												
2378					**Gamma Kaplan-Meier (KM) Statistics**							
2379					k hat (KM)	0.241				nu hat (KM)		31.36
2380					Approximate Chi Square Value (31.36, α)	19.57				Adjusted Chi Square Value (31.36, β)		19.36
2381					95% Gamma Approximate KM-UCL (use when n>=50)	1.383				95% Gamma Adjusted KM-UCL (use when n<50)		1.398
2382												
2383					**Gamma ROS Statistics using Imputed Non-Detects**							
2384					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
2385					GROS may not be used when kstar of detected data is small such as < 0.1							
2386					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
2387					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
2388					Minimum	0.01				Mean		0.533
2389					Maximum	12				Median		0.01
2390					SD	1.797				CV		3.369
2391					k hat (MLE)	0.226				k star (bias corrected MLE)		0.226
2392					Theta hat (MLE)	2.356				Theta star (bias corrected MLE)		2.358
2393					nu hat (MLE)	29.42				nu star (bias corrected)		29.4
2394					MLE Mean (bias corrected)	0.533				MLE Sd (bias corrected)		1.121
2395										Adjusted Level of Significance (β)		0.0463
2396					Approximate Chi Square Value (29.40, α)	18.02				Adjusted Chi Square Value (29.40, β)		17.82
2397					95% Gamma Approximate UCL (use when n>=50)	0.87				95% Gamma Adjusted UCL (use when n<50)		0.88
2398												
2399					**Lognormal GOF Test on Detected Observations Only**							
2400					Shapiro Wilk Test Statistic	0.826			**Shapiro Wilk GOF Test**			
2401					5% Shapiro Wilk Critical Value	0.829			Detected Data Not Lognormal at 5% Significance Level			
2402					Lilliefors Test Statistic	0.287			**Lilliefors GOF Test**			
2403					5% Lilliefors Critical Value	0.295			Detected Data appear Lognormal at 5% Significance Level			
2404					**Detected Data appear Approximate Lognormal at 5% Significance Level**							
2405												

	A	B	C	D	E	F	G	H	I	J	K	L
2406	**Lognormal ROS Statistics Using Imputed Non-Detects**											
2407					Mean in Original Scale	0.867					Mean in Log Scale	-0.735
2408					SD in Original Scale	1.709					SD in Log Scale	0.884
2409				95% t UCL (assumes normality of ROS data)		1.22					95% Percentile Bootstrap UCL	1.242
2410					95% BCA Bootstrap UCL	1.369					95% Bootstrap t UCL	1.7
2411					95% H-UCL (Log ROS)	0.901						
2412												
2413	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
2414					KM Mean (logged)	-0.908					95% H-UCL (KM -Log)	0.861
2415					KM SD (logged)	0.983					95% Critical H Value (KM-Log)	2.243
2416					KM Standard Error of Mean (logged)	0.153						
2417												
2418	**DL/2 Statistics**											
2419	**DL/2 Normal**						**DL/2 Log-Transformed**					
2420					Mean in Original Scale	1.452					Mean in Log Scale	-0.359
2421					SD in Original Scale	1.853					SD in Log Scale	1.301
2422					95% t UCL (Assumes normality)	1.836					95% H-Stat UCL	2.331
2423	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
2424												
2425	**Nonparametric Distribution Free UCL Statistics**											
2426	**Detected Data appear Approximate Lognormal Distributed at 5% Significance Level**											
2427												
2428	**Suggested UCL to Use**											
2429					95% KM (t) UCL	1.269					95% KM (% Bootstrap) UCL	1.269
2430												
2431	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2432	Recommendations are based upon data size, data distribution, and skewness.											
2433	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
2434	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
2435												
2436	**Phenanthrene**											
2437												
2438	**General Statistics**											
2439					Total Number of Observations	69					Number of Distinct Observations	48
2440											Number of Missing Observations	2
2441					Number of Detects	33					Number of Non-Detects	36
2442					Number of Distinct Detects	28					Number of Distinct Non-Detects	27
2443					Minimum Detect	0.91					Minimum Non-Detect	0.59
2444					Maximum Detect	71					Maximum Non-Detect	13
2445					Variance Detects	140.3					Percent Non-Detects	52.17%
2446					Mean Detects	8.273					SD Detects	11.85
2447					Median Detects	6.3					CV Detects	1.432
2448					Skewness Detects	4.92					Kurtosis Detects	26.4
2449					Mean of Logged Detects	1.72					SD of Logged Detects	0.837
2450												
2451	**Normal GOF Test on Detects Only**											
2452					Shapiro Wilk Test Statistic	0.44	**Shapiro Wilk GOF Test**					
2453					5% Shapiro Wilk Critical Value	0.931	Detected Data Not Normal at 5% Significance Level					
2454					Lilliefors Test Statistic	0.348	**Lilliefors GOF Test**					
2455					5% Lilliefors Critical Value	0.154	Detected Data Not Normal at 5% Significance Level					
2456	**Detected Data Not Normal at 5% Significance Level**											
2457												
2458	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
2459					Mean	4.601					Standard Error of Mean	1.089
2460					SD	8.854					95% KM (BCA) UCL	6.982
2461					95% KM (t) UCL	6.417					95% KM (Percentile Bootstrap) UCL	6.669
2462					95% KM (z) UCL	6.392					95% KM Bootstrap t UCL	8.546
2463					90% KM Chebyshev UCL	7.868					95% KM Chebyshev UCL	9.347
2464					97.5% KM Chebyshev UCL	11.4					99% KM Chebyshev UCL	15.43
2465												
2466	**Gamma GOF Tests on Detected Observations Only**											
2467					A-D Test Statistic	1.434	**Anderson-Darling GOF Test**					
2468					5% A-D Critical Value	0.767	Detected Data Not Gamma Distributed at 5% Significance Level					
2469					K-S Test Statistic	0.203	**Kolmogrov-Smirnoff GOF**					
2470					5% K-S Critical Value	0.156	Detected Data Not Gamma Distributed at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
2471	Detected Data Not Gamma Distributed at 5% Significance Level											
2472												
2473	Gamma Statistics on Detected Data Only											
2474					k hat (MLE)	1.415			k star (bias corrected MLE)			1.307
2475					Theta hat (MLE)	5.847			Theta star (bias corrected MLE)			6.332
2476					nu hat (MLE)	93.39			nu star (bias corrected)			86.23
2477					MLE Mean (bias corrected)	8.273			MLE Sd (bias corrected)			7.238
2478												
2479	Gamma Kaplan-Meier (KM) Statistics											
2480					k hat (KM)	0.27			nu hat (KM)			37.27
2481					Approximate Chi Square Value (37.27, α)	24.29			Adjusted Chi Square Value (37.27, β)			24.07
2482					95% Gamma Approximate KM-UCL (use when n>=50)	7.059			95% Gamma Adjusted KM-UCL (use when n<50)			7.125
2483												
2484	Gamma ROS Statistics using Imputed Non-Detects											
2485	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2486	GROS may not be used when kstar of detected data is small such as < 0.1											
2487	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2488	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2489					Minimum	0.01			Mean			3.988
2490					Maximum	71			Median			0.01
2491					SD	9.119			CV			2.287
2492					k hat (MLE)	0.246			k star (bias corrected MLE)			0.245
2493					Theta hat (MLE)	16.18			Theta star (bias corrected MLE)			16.25
2494					nu hat (MLE)	34.02			nu star (bias corrected)			33.87
2495					MLE Mean (bias corrected)	3.988			MLE Sd (bias corrected)			8.049
2496									Adjusted Level of Significance (β)			0.0465
2497					Approximate Chi Square Value (33.87, α)	21.56			Adjusted Chi Square Value (33.87, β)			21.35
2498					95% Gamma Approximate UCL (use when n>=50)	6.265			95% Gamma Adjusted UCL (use when n<50)			6.326
2499												
2500	Lognormal GOF Test on Detected Observations Only											
2501					Shapiro Wilk Test Statistic	0.934			Shapiro Wilk GOF Test			
2502					5% Shapiro Wilk Critical Value	0.931			Detected Data appear Lognormal at 5% Significance Level			
2503					Lilliefors Test Statistic	0.148			Lilliefors GOF Test			
2504					5% Lilliefors Critical Value	0.154			Detected Data appear Lognormal at 5% Significance Level			
2505	Detected Data appear Lognormal at 5% Significance Level											
2506												
2507	Lognormal ROS Statistics Using Imputed Non-Detects											
2508					Mean in Original Scale	4.592			Mean in Log Scale			0.883
2509					SD in Original Scale	8.875			SD in Log Scale			1.033
2510					95% t UCL (assumes normality of ROS data)	6.374			95% Percentile Bootstrap UCL			6.605
2511					95% BCA Bootstrap UCL	7.618			95% Bootstrap t UCL			8.705
2512					95% H-UCL (Log ROS)	5.469						
2513												
2514	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
2515					KM Mean (logged)	0.787			95% H-UCL (KM -Log)			5.822
2516					KM SD (logged)	1.154			95% Critical H Value (KM-Log)			2.204
2517					KM Standard Error of Mean (logged)	0.159						
2518												
2519	DL/2 Statistics											
2520					DL/2 Normal				DL/2 Log-Transformed			
2521					Mean in Original Scale	4.899			Mean in Log Scale			0.997
2522					SD in Original Scale	8.812			SD in Log Scale			1.043
2523					95% t UCL (Assumes normality)	6.668			95% H-Stat UCL			6.211
2524	DL/2 is not a recommended method, provided for comparisons and historical reasons											
2525												
2526	Nonparametric Distribution Free UCL Statistics											
2527	Detected Data appear Lognormal Distributed at 5% Significance Level											
2528												
2529	Suggested UCL to Use											
2530					95% KM (t) UCL	6.417			95% KM (% Bootstrap) UCL			6.669
2531												
2532	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2533	Recommendations are based upon data size, data distribution, and skewness.											
2534	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
2535	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											

	A	B	C	D	E	F	G	H	I	J	K	L
2536												
2537												
2538	**Residual Range Hydrocarbons**											
2539												
2540						**General Statistics**						
2541					Total Number of Observations	28			Number of Distinct Observations			21
2542									Number of Missing Observations			18
2543					Minimum	9.2			Mean			229.7
2544					Maximum	420			Median			220
2545					SD	98.08			Std. Error of Mean			18.54
2546					Coefficient of Variation	0.427			Skewness			0.0518
2547												
2548						**Normal GOF Test**						
2549					Shapiro Wilk Test Statistic	0.957			**Shapiro Wilk GOF Test**			
2550					5% Shapiro Wilk Critical Value	0.924			Data appear Normal at 5% Significance Level			
2551					Lilliefors Test Statistic	0.177			**Lilliefors GOF Test**			
2552					5% Lilliefors Critical Value	0.167			Data Not Normal at 5% Significance Level			
2553						**Data appear Approximate Normal at 5% Significance Level**						
2554												
2555						**Assuming Normal Distribution**						
2556					**95% Normal UCL**				**95% UCLs (Adjusted for Skewness)**			
2557					95% Student's-t UCL	261.2			95% Adjusted-CLT UCL (Chen-1995)			260.3
2558									95% Modified-t UCL (Johnson-1978)			261.3
2559												
2560						**Gamma GOF Test**						
2561					A-D Test Statistic	1.263			**Anderson-Darling Gamma GOF Test**			
2562					5% A-D Critical Value	0.752			Data Not Gamma Distributed at 5% Significance Level			
2563					K-S Test Statistic	0.19			**Kolmogrov-Smirnoff Gamma GOF Test**			
2564					5% K-S Critical Value	0.166			Data Not Gamma Distributed at 5% Significance Level			
2565						**Data Not Gamma Distributed at 5% Significance Level**						
2566												
2567						**Gamma Statistics**						
2568					k hat (MLE)	3.365			k star (bias corrected MLE)			3.028
2569					Theta hat (MLE)	68.25			Theta star (bias corrected MLE)			75.84
2570					nu hat (MLE)	188.4			nu star (bias corrected)			169.6
2571					MLE Mean (bias corrected)	229.7			MLE Sd (bias corrected)			132
2572									Approximate Chi Square Value (0.05)			140.5
2573					Adjusted Level of Significance	0.0404			Adjusted Chi Square Value			138.8
2574												
2575						**Assuming Gamma Distribution**						
2576					95% Approximate Gamma UCL (use when n>=50))	277.3			95% Adjusted Gamma UCL (use when n<50)			280.5
2577												
2578						**Lognormal GOF Test**						
2579					Shapiro Wilk Test Statistic	0.707			**Shapiro Wilk Lognormal GOF Test**			
2580					5% Shapiro Wilk Critical Value	0.924			Data Not Lognormal at 5% Significance Level			
2581					Lilliefors Test Statistic	0.243			**Lilliefors Lognormal GOF Test**			
2582					5% Lilliefors Critical Value	0.167			Data Not Lognormal at 5% Significance Level			
2583						**Data Not Lognormal at 5% Significance Level**						
2584												
2585						**Lognormal Statistics**						
2586					Minimum of Logged Data	2.219			Mean of logged Data			5.281
2587					Maximum of Logged Data	6.04			SD of logged Data			0.73
2588												
2589						**Assuming Lognormal Distribution**						
2590					95% H-UCL	347			90% Chebyshev (MVUE) UCL			367.3
2591					95% Chebyshev (MVUE) UCL	418.9			97.5% Chebyshev (MVUE) UCL			490.5
2592					99% Chebyshev (MVUE) UCL	631						
2593												
2594						**Nonparametric Distribution Free UCL Statistics**						
2595						**Data appear to follow a Discernible Distribution at 5% Significance Level**						
2596												
2597						**Nonparametric Distribution Free UCLs**						
2598					95% CLT UCL	260.2			95% Jackknife UCL			261.2
2599					95% Standard Bootstrap UCL	260.6			95% Bootstrap-t UCL			262.2
2600					95% Hall's Bootstrap UCL	261.2			95% Percentile Bootstrap UCL			259.6

	A	B	C	D	E	F	G	H	I	J	K	L
2601					95% BCA Bootstrap UCL	259.9						
2602					90% Chebyshev(Mean, Sd) UCL	285.3					95% Chebyshev(Mean, Sd) UCL	310.5
2603					97.5% Chebyshev(Mean, Sd) UCL	345.4					99% Chebyshev(Mean, Sd) UCL	414.1
2604												
2605					**Suggested UCL to Use**							
2606					95% Student's-t UCL	261.2						
2607												
2608	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2609	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
2610	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
2611	For additional insight the user may want to consult a statistician.											
2612												
2613	**Total PAHs (calc'd)**											
2614												
2615					**General Statistics**							
2616					Total Number of Observations	71					Number of Distinct Observations	68
2617					Number of Detects	60					Number of Non-Detects	11
2618					Number of Distinct Detects	60					Number of Distinct Non-Detects	8
2619					Minimum Detect	6.12					Minimum Non-Detect	1.5
2620					Maximum Detect	464.5					Maximum Non-Detect	10
2621					Variance Detects	7048					Percent Non-Detects	15.49%
2622					Mean Detects	90.37					SD Detects	83.96
2623					Median Detects	69.47					CV Detects	0.929
2624					Skewness Detects	2.652					Kurtosis Detects	8.811
2625					Mean of Logged Detects	4.165					SD of Logged Detects	0.869
2626												
2627					**Normal GOF Test on Detects Only**							
2628					Shapiro Wilk Test Statistic	0.742			**Normal GOF Test on Detected Observations Only**			
2629					5% Shapiro Wilk P Value	1.122E-13			Detected Data Not Normal at 5% Significance Level			
2630					Lilliefors Test Statistic	0.169			**Lilliefors GOF Test**			
2631					5% Lilliefors Critical Value	0.114			Detected Data Not Normal at 5% Significance Level			
2632					**Detected Data Not Normal at 5% Significance Level**							
2633												
2634					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
2635					Mean	76.64					Standard Error of Mean	9.931
2636					SD	82.98					95% KM (BCA) UCL	94.87
2637					95% KM (t) UCL	93.2					95% KM (Percentile Bootstrap) UCL	93.06
2638					95% KM (z) UCL	92.98					95% KM Bootstrap t UCL	98.81
2639					90% KM Chebyshev UCL	106.4					95% KM Chebyshev UCL	119.9
2640					97.5% KM Chebyshev UCL	138.7					99% KM Chebyshev UCL	175.5
2641												
2642					**Gamma GOF Tests on Detected Observations Only**							
2643					A-D Test Statistic	0.458			**Anderson-Darling GOF Test**			
2644					5% A-D Critical Value	0.767			Detected data appear Gamma Distributed at 5% Significance Level			
2645					K-S Test Statistic	0.0733			**Kolmogrov-Smirnoff GOF**			
2646					5% K-S Critical Value	0.117			Detected data appear Gamma Distributed at 5% Significance Level			
2647					**Detected data appear Gamma Distributed at 5% Significance Level**							
2648												
2649					**Gamma Statistics on Detected Data Only**							
2650					k hat (MLE)	1.62					k star (bias corrected MLE)	1.551
2651					Theta hat (MLE)	55.77					Theta star (bias corrected MLE)	58.28
2652					nu hat (MLE)	194.5					nu star (bias corrected)	186.1
2653					MLE Mean (bias corrected)	90.37					MLE Sd (bias corrected)	72.58
2654												
2655					**Gamma Kaplan-Meier (KM) Statistics**							
2656					k hat (KM)	0.853					nu hat (KM)	121.1
2657					Approximate Chi Square Value (121.14, α)	96.73					Adjusted Chi Square Value (121.14, β)	96.28
2658					95% Gamma Approximate KM-UCL (use when n>=50)	95.99					95% Gamma Adjusted KM-UCL (use when n<50)	96.44
2659												
2660					**Gamma ROS Statistics using Imputed Non-Detects**							
2661	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2662	GROS may not be used when kstar of detected data is small such as < 0.1											
2663	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2664	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2665					Minimum	0.01					Mean	76.37

	A	B	C	D	E	F	G	H	I	J	K	L
2666					Maximum	464.5					Median	59
2667					SD	83.82					CV	1.097
2668					k hat (MLE)	0.426					k star (bias corrected MLE)	0.417
2669					Theta hat (MLE)	179.3					Theta star (bias corrected MLE)	183
2670					nu hat (MLE)	60.48					nu star (bias corrected)	59.25
2671					MLE Mean (bias corrected)	76.37					MLE Sd (bias corrected)	118.2
2672											Adjusted Level of Significance (β)	0.0466
2673					Approximate Chi Square Value (59.25, α)	42.55					Adjusted Chi Square Value (59.25, β)	42.26
2674					95% Gamma Approximate UCL (use when n>=50)	106.3					95% Gamma Adjusted UCL (use when n<50)	107.1
2675												
2676					**Lognormal GOF Test on Detected Observations Only**							
2677					Lilliefors Test Statistic	0.0869	**Lilliefors GOF Test**					
2678					5% Lilliefors Critical Value	0.114	Detected Data appear Lognormal at 5% Significance Level					
2679					**Detected Data appear Lognormal at 5% Significance Level**							
2680												
2681					**Lognormal ROS Statistics Using Imputed Non-Detects**							
2682					Mean in Original Scale	77.97					Mean in Log Scale	3.879
2683					SD in Original Scale	82.42					SD in Log Scale	1.045
2684					95% t UCL (assumes normality of ROS data)	94.27					95% Percentile Bootstrap UCL	94.68
2685					95% BCA Bootstrap UCL	95.56					95% Bootstrap t UCL	99.34
2686					95% H-UCL (Log ROS)	111.3						
2687												
2688					**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**							
2689					KM Mean (logged)	3.593					95% H-UCL (KM -Log)	207.9
2690					KM SD (logged)	1.557					95% Critical H Value (KM-Log)	2.856
2691					KM Standard Error of Mean (logged)	0.187						
2692												
2693					**DL/2 Statistics**							
2694					**DL/2 Normal**		**DL/2 Log-Transformed**					
2695					Mean in Original Scale	76.69					Mean in Log Scale	3.6
2696					SD in Original Scale	83.53					SD in Log Scale	1.567
2697					95% t UCL (Assumes normality)	93.22					95% H-Stat UCL	214
2698					**DL/2 is not a recommended method, provided for comparisons and historical reasons**							
2699												
2700					**Nonparametric Distribution Free UCL Statistics**							
2701					**Detected Data appear Gamma Distributed at 5% Significance Level**							
2702												
2703					**Suggested UCL to Use**							
2704					95% KM (BCA) UCL	94.87					95% GROS Approximate Gamma UCL	106.3
2705					95% Approximate Gamma KM-UCL	95.99						
2706												
2707					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
2708					Recommendations are based upon data size, data distribution, and skewness.							
2709					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
2710					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
2711												
2712												
2713	**Total PCB Congeners (calc'd)**											
2714												
2715					**General Statistics**							
2716					Total Number of Observations	33					Number of Distinct Observations	33
2717											Number of Missing Observations	38
2718					Minimum	598.4					Mean	6672
2719					Maximum	47975					Median	3372
2720					SD	9993					Std. Error of Mean	1740
2721					Coefficient of Variation	1.498					Skewness	3.022
2722												
2723					**Normal GOF Test**							
2724					Shapiro Wilk Test Statistic	0.562	**Shapiro Wilk GOF Test**					
2725					5% Shapiro Wilk Critical Value	0.931	Data Not Normal at 5% Significance Level					
2726					Lilliefors Test Statistic	0.341	**Lilliefors GOF Test**					
2727					5% Lilliefors Critical Value	0.154	Data Not Normal at 5% Significance Level					
2728					**Data Not Normal at 5% Significance Level**							
2729												
2730					**Assuming Normal Distribution**							

	A	B	C	D	E	F	G	H	I	J	K	L
2731					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
2732					95% Student's-t UCL	9619			95% Adjusted-CLT UCL (Chen-1995)			10511
2733									95% Modified-t UCL (Johnson-1978)			9771
2734												
2735					Gamma GOF Test							
2736					A-D Test Statistic	2.202			Anderson-Darling Gamma GOF Test			
2737					5% A-D Critical Value	0.776			Data Not Gamma Distributed at 5% Significance Level			
2738					K-S Test Statistic	0.22			Kolmogrov-Smirnoff Gamma GOF Test			
2739					5% K-S Critical Value	0.158			Data Not Gamma Distributed at 5% Significance Level			
2740					Data Not Gamma Distributed at 5% Significance Level							
2741												
2742					Gamma Statistics							
2743					k hat (MLE)	0.988			k star (bias corrected MLE)			0.919
2744					Theta hat (MLE)	6752			Theta star (bias corrected MLE)			7264
2745					nu hat (MLE)	65.22			nu star (bias corrected)			60.63
2746					MLE Mean (bias corrected)	6672			MLE Sd (bias corrected)			6962
2747									Approximate Chi Square Value (0.05)			43.72
2748					Adjusted Level of Significance	0.0419			Adjusted Chi Square Value			42.98
2749												
2750					Assuming Gamma Distribution							
2751					95% Approximate Gamma UCL (use when n>=50))	9252			95% Adjusted Gamma UCL (use when n<50)			9412
2752												
2753					Lognormal GOF Test							
2754					Shapiro Wilk Test Statistic	0.938			Shapiro Wilk Lognormal GOF Test			
2755					5% Shapiro Wilk Critical Value	0.931			Data appear Lognormal at 5% Significance Level			
2756					Lilliefors Test Statistic	0.146			Lilliefors Lognormal GOF Test			
2757					5% Lilliefors Critical Value	0.154			Data appear Lognormal at 5% Significance Level			
2758					Data appear Lognormal at 5% Significance Level							
2759												
2760					Lognormal Statistics							
2761					Minimum of Logged Data	6.394			Mean of logged Data			8.221
2762					Maximum of Logged Data	10.78			SD of logged Data			0.994
2763												
2764					Assuming Lognormal Distribution							
2765					95% H-UCL	9336			90% Chebyshev (MVUE) UCL			9529
2766					95% Chebyshev (MVUE) UCL	11145			97.5% Chebyshev (MVUE) UCL			13387
2767					99% Chebyshev (MVUE) UCL	17793						
2768												
2769					Nonparametric Distribution Free UCL Statistics							
2770					Data appear to follow a Discernible Distribution at 5% Significance Level							
2771												
2772					Nonparametric Distribution Free UCLs							
2773					95% CLT UCL	9534			95% Jackknife UCL			9619
2774					95% Standard Bootstrap UCL	9524			95% Bootstrap-t UCL			12011
2775					95% Hall's Bootstrap UCL	10939			95% Percentile Bootstrap UCL			9482
2776					95% BCA Bootstrap UCL	10674						
2777					90% Chebyshev(Mean, Sd) UCL	11891			95% Chebyshev(Mean, Sd) UCL			14255
2778					97.5% Chebyshev(Mean, Sd) UCL	17536			99% Chebyshev(Mean, Sd) UCL			23981
2779												
2780					Suggested UCL to Use							
2781					95% H-UCL	9336						
2782												
2783					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
2784					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
2785					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
2786					For additional insight the user may want to consult a statistician.							
2787												
2788					ProUCL computes and outputs H-statistic based UCLs for historical reasons only.							
2789					H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.							
2790					It is therefore recommended to avoid the use of H-statistic based 95% UCLs.							
2791					Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.							
2792												
2793	Total PCBs Aroclors (calc'd)											
2794												
2795					General Statistics							

	A	B	C	D	E	F	G	H	I	J	K	L
2796					Total Number of Observations	48					Number of Distinct Observations	41
2797					Number of Detects	23					Number of Non-Detects	25
2798					Number of Distinct Detects	22					Number of Distinct Non-Detects	19
2799					Minimum Detect	4.95					Minimum Non-Detect	1.3
2800					Maximum Detect	53.45					Maximum Non-Detect	5.2
2801					Variance Detects	178.9					Percent Non-Detects	52.08%
2802					Mean Detects	14.67					SD Detects	13.38
2803					Median Detects	8.35					CV Detects	0.912
2804					Skewness Detects	1.815					Kurtosis Detects	2.447
2805					Mean of Logged Detects	2.401					SD of Logged Detects	0.711
2806												
2807					**Normal GOF Test on Detects Only**							
2808					Shapiro Wilk Test Statistic	0.708			**Shapiro Wilk GOF Test**			
2809					5% Shapiro Wilk Critical Value	0.914			Detected Data Not Normal at 5% Significance Level			
2810					Lilliefors Test Statistic	0.268			**Lilliefors GOF Test**			
2811					5% Lilliefors Critical Value	0.185			Detected Data Not Normal at 5% Significance Level			
2812					**Detected Data Not Normal at 5% Significance Level**							
2813												
2814					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
2815					Mean	7.71					Standard Error of Mean	1.661
2816					SD	11.25					95% KM (BCA) UCL	10.56
2817					95% KM (t) UCL	10.5					95% KM (Percentile Bootstrap) UCL	10.66
2818					95% KM (z) UCL	10.44					95% KM Bootstrap t UCL	11.39
2819					90% KM Chebyshev UCL	12.69					95% KM Chebyshev UCL	14.95
2820					97.5% KM Chebyshev UCL	18.08					99% KM Chebyshev UCL	24.23
2821												
2822					**Gamma GOF Tests on Detected Observations Only**							
2823					A-D Test Statistic	1.769			**Anderson-Darling GOF Test**			
2824					5% A-D Critical Value	0.756			Detected Data Not Gamma Distributed at 5% Significance Level			
2825					K-S Test Statistic	0.24			**Kolmogrov-Smirnoff GOF**			
2826					5% K-S Critical Value	0.184			Detected Data Not Gamma Distributed at 5% Significance Level			
2827					**Detected Data Not Gamma Distributed at 5% Significance Level**							
2828												
2829					**Gamma Statistics on Detected Data Only**							
2830					k hat (MLE)	1.904					k star (bias corrected MLE)	1.685
2831					Theta hat (MLE)	7.703					Theta star (bias corrected MLE)	8.706
2832					nu hat (MLE)	87.61					nu star (bias corrected)	77.51
2833					MLE Mean (bias corrected)	14.67					MLE Sd (bias corrected)	11.3
2834												
2835					**Gamma Kaplan-Meier (KM) Statistics**							
2836					k hat (KM)	0.47					nu hat (KM)	45.07
2837					Approximate Chi Square Value (45.07, α)	30.67					Adjusted Chi Square Value (45.07, β)	30.3
2838					95% Gamma Approximate KM-UCL (use when n>=50)	11.33					95% Gamma Adjusted KM-UCL (use when n<50)	11.47
2839												
2840					**Gamma ROS Statistics using Imputed Non-Detects**							
2841					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
2842					GROS may not be used when kstar of detected data is small such as < 0.1							
2843					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
2844					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
2845					Minimum	0.01					Mean	7.035
2846					Maximum	53.45					Median	0.01
2847					SD	11.77					CV	1.673
2848					k hat (MLE)	0.226					k star (bias corrected MLE)	0.225
2849					Theta hat (MLE)	31.17					Theta star (bias corrected MLE)	31.2
2850					nu hat (MLE)	21.67					nu star (bias corrected)	21.65
2851					MLE Mean (bias corrected)	7.035					MLE Sd (bias corrected)	14.81
2852											Adjusted Level of Significance (β)	0.045
2853					Approximate Chi Square Value (21.65, α)	12.07					Adjusted Chi Square Value (21.65, β)	11.85
2854					95% Gamma Approximate UCL (use when n>=50)	12.61					95% Gamma Adjusted UCL (use when n<50)	12.85
2855												
2856					**Lognormal GOF Test on Detected Observations Only**							
2857					Shapiro Wilk Test Statistic	0.861			**Shapiro Wilk GOF Test**			
2858					5% Shapiro Wilk Critical Value	0.914			Detected Data Not Lognormal at 5% Significance Level			
2859					Lilliefors Test Statistic	0.216			**Lilliefors GOF Test**			
2860					5% Lilliefors Critical Value	0.185			Detected Data Not Lognormal at 5% Significance Level			

	A	B	C	D	E	F	G	H	I	J	K	L
2861	Detected Data Not Lognormal at 5% Significance Level											
2862												
2863	Lognormal ROS Statistics Using Imputed Non-Detects											
2864					Mean in Original Scale	7.921				Mean in Log Scale		1.412
2865					SD in Original Scale	11.25				SD in Log Scale		1.094
2866				95% t UCL (assumes normality of ROS data)		10.65				95% Percentile Bootstrap UCL		10.69
2867					95% BCA Bootstrap UCL	11.25				95% Bootstrap t UCL		11.83
2868					95% H-UCL (Log ROS)	11.01						
2869												
2870	DL/2 Statistics											
2871			DL/2 Normal				DL/2 Log-Transformed					
2872					Mean in Original Scale	7.601				Mean in Log Scale		1.167
2873					SD in Original Scale	11.44				SD in Log Scale		1.314
2874					95% t UCL (Assumes normality)	10.37				95% H-Stat UCL		12.77
2875	DL/2 is not a recommended method, provided for comparisons and historical reasons											
2876												
2877	Nonparametric Distribution Free UCL Statistics											
2878	Data do not follow a Discernible Distribution at 5% Significance Level											
2879												
2880	Suggested UCL to Use											
2881					95% KM (t) UCL	10.5				95% KM (% Bootstrap) UCL		10.66
2882												
2883	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2884	Recommendations are based upon data size, data distribution, and skewness.											
2885	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
2886	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
2887												
2888												
2889	Total PCDD/F (calc'd)											
2890												
2891	General Statistics											
2892					Total Number of Observations	33				Number of Distinct Observations		33
2893										Number of Missing Observations		13
2894					Minimum	5.628				Mean		67.47
2895					Maximum	307.5				Median		39.1
2896					SD	68.15				Std. Error of Mean		11.86
2897					Coefficient of Variation	1.01				Skewness		1.625
2898												
2899	Normal GOF Test											
2900					Shapiro Wilk Test Statistic	0.817				Shapiro Wilk GOF Test		
2901					5% Shapiro Wilk Critical Value	0.931				Data Not Normal at 5% Significance Level		
2902					Lilliefors Test Statistic	0.182				Lilliefors GOF Test		
2903					5% Lilliefors Critical Value	0.154				Data Not Normal at 5% Significance Level		
2904	Data Not Normal at 5% Significance Level											
2905												
2906	Assuming Normal Distribution											
2907			95% Normal UCL				95% UCLs (Adjusted for Skewness)					
2908					95% Student's-t UCL	87.56				95% Adjusted-CLT UCL (Chen-1995)		90.57
2909										95% Modified-t UCL (Johnson-1978)		88.12
2910												
2911	Gamma GOF Test											
2912					A-D Test Statistic	0.64				Anderson-Darling Gamma GOF Test		
2913					5% A-D Critical Value	0.774				Detected data appear Gamma Distributed at 5% Significance Level		
2914					K-S Test Statistic	0.12				Kolmogrov-Smirnoff Gamma GOF Test		
2915					5% K-S Critical Value	0.157				Detected data appear Gamma Distributed at 5% Significance Level		
2916	Detected data appear Gamma Distributed at 5% Significance Level											
2917												
2918	Gamma Statistics											
2919					k hat (MLE)	1.086				k star (bias corrected MLE)		1.008
2920					Theta hat (MLE)	62.11				Theta star (bias corrected MLE)		66.95
2921					nu hat (MLE)	71.69				nu star (bias corrected)		66.5
2922					MLE Mean (bias corrected)	67.47				MLE Sd (bias corrected)		67.21
2923										Approximate Chi Square Value (0.05)		48.74
2924					Adjusted Level of Significance	0.0419				Adjusted Chi Square Value		47.95
2925												

	A	B	C	D	E	F	G	H	I	J	K	L
2926					Assuming Gamma Distribution							
2927				95% Approximate Gamma UCL (use when n>=50)		92.06			95% Adjusted Gamma UCL (use when n<50)			93.56
2928												
2929					Lognormal GOF Test							
2930					Shapiro Wilk Test Statistic	0.951			Shapiro Wilk Lognormal GOF Test			
2931					5% Shapiro Wilk Critical Value	0.931			Data appear Lognormal at 5% Significance Level			
2932					Lilliefors Test Statistic	0.0956			Lilliefors Lognormal GOF Test			
2933					5% Lilliefors Critical Value	0.154			Data appear Lognormal at 5% Significance Level			
2934					Data appear Lognormal at 5% Significance Level							
2935												
2936					Lognormal Statistics							
2937					Minimum of Logged Data	1.728			Mean of logged Data			3.685
2938					Maximum of Logged Data	5.729			SD of logged Data			1.099
2939												
2940					Assuming Lognormal Distribution							
2941					95% H-UCL	119.8			90% Chebyshev (MVUE) UCL			118.8
2942					95% Chebyshev (MVUE) UCL	140.5			97.5% Chebyshev (MVUE) UCL			170.7
2943					99% Chebyshev (MVUE) UCL	229.9						
2944												
2945					Nonparametric Distribution Free UCL Statistics							
2946					Data appear to follow a Discernible Distribution at 5% Significance Level							
2947												
2948					Nonparametric Distribution Free UCLs							
2949					95% CLT UCL	86.98			95% Jackknife UCL			87.56
2950					95% Standard Bootstrap UCL	86.3			95% Bootstrap-t UCL			92.47
2951					95% Hall's Bootstrap UCL	95.81			95% Percentile Bootstrap UCL			86.8
2952					95% BCA Bootstrap UCL	92.12						
2953					90% Chebyshev(Mean, Sd) UCL	103.1			95% Chebyshev(Mean, Sd) UCL			119.2
2954					97.5% Chebyshev(Mean, Sd) UCL	141.6			99% Chebyshev(Mean, Sd) UCL			185.5
2955												
2956					Suggested UCL to Use							
2957					95% Adjusted Gamma UCL	93.56						
2958												
2959					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
2960					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
2961					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
2962					For additional insight the user may want to consult a statistician.							
2963												
2964												
2965	Total Petroleum Hydrocarbons (calc'd)											
2966												
2967					General Statistics							
2968					Total Number of Observations	28			Number of Distinct Observations			28
2969									Number of Missing Observations			18
2970					Minimum	11.8			Mean			264.4
2971					Maximum	489			Median			257.1
2972					SD	112.2			Std. Error of Mean			21.21
2973					Coefficient of Variation	0.424			Skewness			0.0536
2974												
2975					Normal GOF Test							
2976					Shapiro Wilk Test Statistic	0.962			Shapiro Wilk GOF Test			
2977					5% Shapiro Wilk Critical Value	0.924			Data appear Normal at 5% Significance Level			
2978					Lilliefors Test Statistic	0.169			Lilliefors GOF Test			
2979					5% Lilliefors Critical Value	0.167			Data Not Normal at 5% Significance Level			
2980					Data appear Approximate Normal at 5% Significance Level							
2981												
2982					Assuming Normal Distribution							
2983					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
2984					95% Student's-t UCL	300.5			95% Adjusted-CLT UCL (Chen-1995)			299.5
2985									95% Modified-t UCL (Johnson-1978)			300.5
2986												
2987					Gamma GOF Test							
2988					A-D Test Statistic	1.197			Anderson-Darling Gamma GOF Test			
2989					5% A-D Critical Value	0.752			Data Not Gamma Distributed at 5% Significance Level			
2990					K-S Test Statistic	0.193			Kolmogrov-Smirnoff Gamma GOF Test			

	A	B	C	D	E	F	G	H	I	J	K	L
2991					5% K-S Critical Value	0.166	Data Not Gamma Distributed at 5% Significance Level					
2992					**Data Not Gamma Distributed at 5% Significance Level**							
2993												
2994					**Gamma Statistics**							
2995					k hat (MLE)	3.459				k star (bias corrected MLE)		3.112
2996					Theta hat (MLE)	76.43				Theta star (bias corrected MLE)		84.95
2997					nu hat (MLE)	193.7				nu star (bias corrected)		174.3
2998					MLE Mean (bias corrected)	264.4				MLE Sd (bias corrected)		149.9
2999										Approximate Chi Square Value (0.05)		144.7
3000					Adjusted Level of Significance	0.0404				Adjusted Chi Square Value		143.1
3001												
3002					**Assuming Gamma Distribution**							
3003					95% Approximate Gamma UCL (use when n>=50))	318.3				95% Adjusted Gamma UCL (use when n<50)		322
3004												
3005					**Lognormal GOF Test**							
3006					Shapiro Wilk Test Statistic	0.719				**Shapiro Wilk Lognormal GOF Test**		
3007					5% Shapiro Wilk Critical Value	0.924				Data Not Lognormal at 5% Significance Level		
3008					Lilliefors Test Statistic	0.245				**Lilliefors Lognormal GOF Test**		
3009					5% Lilliefors Critical Value	0.167				Data Not Lognormal at 5% Significance Level		
3010					**Data Not Lognormal at 5% Significance Level**							
3011												
3012					**Lognormal Statistics**							
3013					Minimum of Logged Data	2.468				Mean of logged Data		5.426
3014					Maximum of Logged Data	6.192				SD of logged Data		0.712
3015												
3016					**Assuming Lognormal Distribution**							
3017					95% H-UCL	392.3				90% Chebyshev (MVUE) UCL		416.1
3018					95% Chebyshev (MVUE) UCL	473.4				97.5% Chebyshev (MVUE) UCL		553
3019					99% Chebyshev (MVUE) UCL	709.2						
3020												
3021					**Nonparametric Distribution Free UCL Statistics**							
3022					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
3023												
3024					**Nonparametric Distribution Free UCLs**							
3025					95% CLT UCL	299.2				95% Jackknife UCL		300.5
3026					95% Standard Bootstrap UCL	298.2				95% Bootstrap-t UCL		300.6
3027					95% Hall's Bootstrap UCL	302.8				95% Percentile Bootstrap UCL		299.8
3028					95% BCA Bootstrap UCL	297.8						
3029					90% Chebyshev(Mean, Sd) UCL	328				95% Chebyshev(Mean, Sd) UCL		356.8
3030					97.5% Chebyshev(Mean, Sd) UCL	396.8				99% Chebyshev(Mean, Sd) UCL		475.4
3031												
3032					**Suggested UCL to Use**							
3033					95% Student's-t UCL	300.5						
3034												
3035					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
3036					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
3037					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
3038					For additional insight the user may want to consult a statistician.							
3039												
3040	**Tributyltin ion**											
3041												
3042					**General Statistics**							
3043					Total Number of Observations	3				Number of Distinct Observations		3
3044										Number of Missing Observations		43
3045					Number of Detects	2				Number of Non-Detects		1
3046					Number of Distinct Detects	2				Number of Distinct Non-Detects		1
3047					Minimum Detect	0.72				Minimum Non-Detect		0.087
3048					Maximum Detect	1.1				Maximum Non-Detect		0.087
3049					Variance Detects	0.0722				Percent Non-Detects		33.33%
3050					Mean Detects	0.91				SD Detects		0.269
3051					Median Detects	0.91				CV Detects		0.295
3052					Skewness Detects	N/A				Kurtosis Detects		N/A
3053					Mean of Logged Detects	-0.117				SD of Logged Detects		0.3
3054												
3055					**Warning: Data set has only 2 Detected Values.**							

	A	B	C	D	E	F	G	H	I	J	K	L
3056	This is not enough to compute meaningful or reliable statistics and estimates.											
3057												
3058												
3059	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
3060	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
3061	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
3062	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0											
3063												
3064	Normal GOF Test on Detects Only											
3065	Not Enough Data to Perform GOF Test											
3066												
3067	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
3068					Mean	0.636			Standard Error of Mean			0.341
3069					SD	0.418			95% KM (BCA) UCL			N/A
3070					95% KM (t) UCL	1.632			95% KM (Percentile Bootstrap) UCL			N/A
3071					95% KM (z) UCL	1.197			95% KM Bootstrap t UCL			N/A
3072					90% KM Chebyshev UCL	1.659			95% KM Chebyshev UCL			2.123
3073					97.5% KM Chebyshev UCL	2.766			99% KM Chebyshev UCL			4.03
3074												
3075	Gamma GOF Tests on Detected Observations Only											
3076	Not Enough Data to Perform GOF Test											
3077												
3078	Gamma Statistics on Detected Data Only											
3079					k hat (MLE)	22.6			k star (bias corrected MLE)			N/A
3080					Theta hat (MLE)	0.0403			Theta star (bias corrected MLE)			N/A
3081					nu hat (MLE)	90.4			nu star (bias corrected)			N/A
3082					MLE Mean (bias corrected)	N/A			MLE Sd (bias corrected)			N/A
3083												
3084	Gamma Kaplan-Meier (KM) Statistics											
3085					k hat (KM)	2.314			nu hat (KM)			13.89
3086									Adjusted Level of Significance (β)			0.00136
3087					Approximate Chi Square Value (13.89, α)	6.494			Adjusted Chi Square Value (13.89, β)			3.163
3088					95% Gamma Approximate KM-UCL (use when n>=50)	1.359			95% Gamma Adjusted KM-UCL (use when n<50)			2.791
3089												
3090	Lognormal GOF Test on Detected Observations Only											
3091	Not Enough Data to Perform GOF Test											
3092												
3093	Lognormal ROS Statistics Using Imputed Non-Detects											
3094					Mean in Original Scale	0.72			Mean in Log Scale			-0.437
3095					SD in Original Scale	0.38			SD in Log Scale			0.595
3096					95% t UCL (assumes normality of ROS data)	1.361			95% Percentile Bootstrap UCL			N/A
3097					95% BCA Bootstrap UCL	N/A			95% Bootstrap t UCL			N/A
3098					95% H-UCL (Log ROS)	19.97						
3099												
3100	DL/2 Statistics											
3101				DL/2 Normal					DL/2 Log-Transformed			
3102					Mean in Original Scale	0.621			Mean in Log Scale			-1.123
3103					SD in Original Scale	0.535			SD in Log Scale			1.756
3104					95% t UCL (Assumes normality)	1.523			95% H-Stat UCL			3.546E+12
3105	DL/2 is not a recommended method, provided for comparisons and historical reasons											
3106												
3107	Nonparametric Distribution Free UCL Statistics											
3108	Data do not follow a Discernible Distribution at 5% Significance Level											
3109												
3110	Suggested UCL to Use											
3111					95% KM (BCA) UCL	N/A						
3112	Warning: One or more Recommended UCL(s) not available!											
3113												
3114	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
3115	Recommendations are based upon data size, data distribution, and skewness.											
3116	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
3117	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
3118												
3119												
3120	Zinc											

	A	B	C	D	E	F	G	H	I	J	K	L
3121												
3122						General Statistics						
3123					Total Number of Observations	67				Number of Distinct Observations		64
3124										Number of Missing Observations		4
3125					Minimum	40.4				Mean		74.68
3126					Maximum	165				Median		73.4
3127					SD	21.3				Std. Error of Mean		2.602
3128					Coefficient of Variation	0.285				Skewness		1.117
3129												
3130						Normal GOF Test						
3131					Shapiro Wilk Test Statistic	0.938				Shapiro Wilk GOF Test		
3132					5% Shapiro Wilk P Value	0.00337				Data Not Normal at 5% Significance Level		
3133					Lilliefors Test Statistic	0.0863				Lilliefors GOF Test		
3134					5% Lilliefors Critical Value	0.108				Data appear Normal at 5% Significance Level		
3135						Data appear Approximate Normal at 5% Significance Level						
3136												
3137						Assuming Normal Distribution						
3138					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
3139					95% Student's-t UCL	79.02				95% Adjusted-CLT UCL (Chen-1995)		79.34
3140										95% Modified-t UCL (Johnson-1978)		79.08
3141												
3142						Gamma GOF Test						
3143					A-D Test Statistic	0.314				Anderson-Darling Gamma GOF Test		
3144					5% A-D Critical Value	0.75				Detected data appear Gamma Distributed at 5% Significance Level		
3145					K-S Test Statistic	0.058				Kolmogrov-Smirnoff Gamma GOF Test		
3146					5% K-S Critical Value	0.109				Detected data appear Gamma Distributed at 5% Significance Level		
3147						Detected data appear Gamma Distributed at 5% Significance Level						
3148												
3149						Gamma Statistics						
3150					k hat (MLE)	13.3				k star (bias corrected MLE)		12.71
3151					Theta hat (MLE)	5.615				Theta star (bias corrected MLE)		5.874
3152					nu hat (MLE)	1782				nu star (bias corrected)		1704
3153					MLE Mean (bias corrected)	74.68				MLE Sd (bias corrected)		20.94
3154										Approximate Chi Square Value (0.05)		1609
3155					Adjusted Level of Significance	0.0464				Adjusted Chi Square Value		1607
3156												
3157						Assuming Gamma Distribution						
3158					95% Approximate Gamma UCL (use when n>=50))	79.08				95% Adjusted Gamma UCL (use when n<50)		79.18
3159												
3160						Lognormal GOF Test						
3161					Shapiro Wilk Test Statistic	0.978				Shapiro Wilk Lognormal GOF Test		
3162					5% Shapiro Wilk P Value	0.546				Data appear Lognormal at 5% Significance Level		
3163					Lilliefors Test Statistic	0.0711				Lilliefors Lognormal GOF Test		
3164					5% Lilliefors Critical Value	0.108				Data appear Lognormal at 5% Significance Level		
3165						Data appear Lognormal at 5% Significance Level						
3166												
3167						Lognormal Statistics						
3168					Minimum of Logged Data	3.699				Mean of logged Data		4.275
3169					Maximum of Logged Data	5.106				SD of logged Data		0.278
3170												
3171						Assuming Lognormal Distribution						
3172					95% H-UCL	79.31				90% Chebyshev (MVUE) UCL		82.4
3173					95% Chebyshev (MVUE) UCL	85.9				97.5% Chebyshev (MVUE) UCL		90.76
3174					99% Chebyshev (MVUE) UCL	100.3						
3175												
3176						Nonparametric Distribution Free UCL Statistics						
3177						Data appear to follow a Discernible Distribution at 5% Significance Level						
3178												
3179						Nonparametric Distribution Free UCLs						
3180					95% CLT UCL	78.96				95% Jackknife UCL		79.02
3181					95% Standard Bootstrap UCL	78.94				95% Bootstrap-t UCL		79.41
3182					95% Hall's Bootstrap UCL	79.7				95% Percentile Bootstrap UCL		79.21
3183					95% BCA Bootstrap UCL	79.26						
3184					90% Chebyshev(Mean, Sd) UCL	82.48				95% Chebyshev(Mean, Sd) UCL		86.02
3185					97.5% Chebyshev(Mean, Sd) UCL	90.93				99% Chebyshev(Mean, Sd) UCL		100.6

	A	B	C	D	E	F	G	H	I	J	K	L
3186												
3187						**Suggested UCL to Use**						
3188					95% Student's-t UCL	79.02						
3189												
3190	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
3191	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
3192	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
3193	For additional insight the user may want to consult a statistician.											
3194												

	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			5/8/2015 1:22:38 PM								
5	From File			20150505_ProUCL_Input_noOUTs_filtered_allICs.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9	highlighted cell indicates method/value selected for given analyte in Tables 7.3-1 and AppH-2											
10	Aldrin											
11												
12	General Statistics											
13	Total Number of Observations					47	Number of Distinct Observations					37
14							Number of Missing Observations					1
15	Number of Detects					5	Number of Non-Detects					42
16	Number of Distinct Detects					5	Number of Distinct Non-Detects					32
17	Minimum Detect					0.24	Minimum Non-Detect					0.0329
18	Maximum Detect					0.41	Maximum Non-Detect					0.49
19	Variance Detects					0.00392	Percent Non-Detects					89.36%
20	Mean Detects					0.324	SD Detects					0.0626
21	Median Detects					0.32	CV Detects					0.193
22	Skewness Detects					0.0926	Kurtosis Detects					0.574
23	Mean of Logged Detects					-1.143	SD of Logged Detects					0.197
24												
25	Normal GOF Test on Detects Only											
26	Shapiro Wilk Test Statistic					0.994	Shapiro Wilk GOF Test					
27	5% Shapiro Wilk Critical Value					0.762	Detected Data appear Normal at 5% Significance Level					
28	Lilliefors Test Statistic					0.152	Lilliefors GOF Test					
29	5% Lilliefors Critical Value					0.396	Detected Data appear Normal at 5% Significance Level					
30	Detected Data appear Normal at 5% Significance Level											
31												
32	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
33	Mean					0.0674	Standard Error of Mean					0.0164
34	SD					0.0953	95% KM (BCA) UCL					0.0958
35	95% KM (t) UCL					0.095	95% KM (Percentile Bootstrap) UCL					0.0932
36	95% KM (z) UCL					0.0944	95% KM Bootstrap t UCL					0.077
37	90% KM Chebyshev UCL					0.117	95% KM Chebyshev UCL					0.139
38	97.5% KM Chebyshev UCL					0.17	99% KM Chebyshev UCL					0.23
39												
40	Gamma GOF Tests on Detected Observations Only											
41	A-D Test Statistic					0.182	Anderson-Darling GOF Test					
42	5% A-D Critical Value					0.679	Detected data appear Gamma Distributed at 5% Significance Level					
43	K-S Test Statistic					0.155	Kolmogrov-Smirnoff GOF					
44	5% K-S Critical Value					0.357	Detected data appear Gamma Distributed at 5% Significance Level					
45	Detected data appear Gamma Distributed at 5% Significance Level											
46												
47	Gamma Statistics on Detected Data Only											
48	k hat (MLE)					32.78	k star (bias corrected MLE)					13.24
49	Theta hat (MLE)					0.00988	Theta star (bias corrected MLE)					0.0244
50	nu hat (MLE)					327.8	nu star (bias corrected)					132.4
51	MLE Mean (bias corrected)					0.324	MLE Sd (bias corrected)					0.089
52												
53	Gamma Kaplan-Meier (KM) Statistics											
54	k hat (KM)					0.501	nu hat (KM)					47.11
55	Approximate Chi Square Value (47.11, α)					32.36	Adjusted Chi Square Value (47.11, β)					31.97
56	95% Gamma Approximate KM-UCL (use when n>=50)					0.0982	95% Gamma Adjusted KM-UCL (use when n<50)					0.0994
57												
58	Gamma ROS Statistics using Imputed Non-Detects											
59	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
60	GROS may not be used when kstar of detected data is small such as < 0.1											
61	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
62	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
63	Minimum					0.01	Mean					0.107
64	Maximum					0.41	Median					0.0775
65	SD					0.0843	CV					0.791

	A	B	C	D	E	F	G	H	I	J	K	L
66					k hat (MLE)	2.215					k star (bias corrected MLE)	2.088
67					Theta hat (MLE)	0.0481					Theta star (bias corrected MLE)	0.0511
68					nu hat (MLE)	208.2					nu star (bias corrected)	196.2
69					MLE Mean (bias corrected)	0.107					MLE Sd (bias corrected)	0.0738
70											Adjusted Level of Significance (β)	0.0449
71					Approximate Chi Square Value (196.23, α)	164.8					Adjusted Chi Square Value (196.23, β)	163.9
72					95% Gamma Approximate UCL (use when n>=50)	0.127					95% Gamma Adjusted UCL (use when n<50)	0.128
73												
74					**Lognormal GOF Test on Detected Observations Only**							
75					Shapiro Wilk Test Statistic	0.988			**Shapiro Wilk GOF Test**			
76					5% Shapiro Wilk Critical Value	0.762			Detected Data appear Lognormal at 5% Significance Level			
77					Lilliefors Test Statistic	0.179			**Lilliefors GOF Test**			
78					5% Lilliefors Critical Value	0.396			Detected Data appear Lognormal at 5% Significance Level			
79					**Detected Data appear Lognormal at 5% Significance Level**							
80												
81					**Lognormal ROS Statistics Using Imputed Non-Detects**							
82					Mean in Original Scale	0.159					Mean in Log Scale	-1.892
83					SD in Original Scale	0.0631					SD in Log Scale	0.298
84					95% t UCL (assumes normality of ROS data)	0.174					95% Percentile Bootstrap UCL	0.175
85					95% BCA Bootstrap UCL	0.178					95% Bootstrap t UCL	0.181
86					95% H-UCL (Log ROS)	0.17						
87												
88					**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**							
89					KM Mean (logged)	-3.142					95% H-UCL (KM -Log)	0.071
90					KM SD (logged)	0.738					95% Critical H Value (KM-Log)	2.067
91					KM Standard Error of Mean (logged)	0.128						
92												
93					**DL/2 Statistics**							
94					**DL/2 Normal**				**DL/2 Log-Transformed**			
95					Mean in Original Scale	0.104					Mean in Log Scale	-2.731
96					SD in Original Scale	0.0987					SD in Log Scale	1.025
97					95% t UCL (Assumes normality)	0.128					95% H-Stat UCL	0.157
98					**DL/2 is not a recommended method, provided for comparisons and historical reasons**							
99												
100					**Nonparametric Distribution Free UCL Statistics**							
101					**Detected Data appear Normal Distributed at 5% Significance Level**							
102												
103					**Suggested UCL to Use**							
104					95% KM (t) UCL	0.095					95% KM (Percentile Bootstrap) UCL	0.0932
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					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
110												
111												
112	**Arsenic**											
113												
114					**General Statistics**							
115					Total Number of Observations	68					Number of Distinct Observations	54
116											Number of Missing Observations	3
117					Minimum	1.9					Mean	2.77
118					Maximum	3.75					Median	2.713
119					SD	0.47					Std. Error of Mean	0.057
120					Coefficient of Variation	0.17					Skewness	0.275
121												
122					**Normal GOF Test**							
123					Shapiro Wilk Test Statistic	0.958			**Shapiro Wilk GOF Test**			
124					5% Shapiro Wilk P Value	0.0588			Data appear Normal at 5% Significance Level			
125					Lilliefors Test Statistic	0.112			**Lilliefors GOF Test**			
126					5% Lilliefors Critical Value	0.107			Data Not Normal at 5% Significance Level			
127					**Data appear Approximate Normal at 5% Significance Level**							
128												
129					**Assuming Normal Distribution**							
130					**95% Normal UCL**				**95% UCLs (Adjusted for Skewness)**			

	A	B	C	D	E	F	G	H	I	J	K	L
131					95% Student's-t UCL	2.865			95% Adjusted-CLT UCL (Chen-1995)			2.866
132									95% Modified-t UCL (Johnson-1978)			2.866
133												
134						**Gamma GOF Test**						
135					A-D Test Statistic	0.421	**Anderson-Darling Gamma GOF Test**					
136					5% A-D Critical Value	0.749	Detected data appear Gamma Distributed at 5% Significance Level					
137					K-S Test Statistic	0.0948	**Kolmogrov-Smirnoff Gamma GOF Test**					
138					5% K-S Critical Value	0.108	Detected data appear Gamma Distributed at 5% Significance Level					
139					**Detected data appear Gamma Distributed at 5% Significance Level**							
140												
141						**Gamma Statistics**						
142					k hat (MLE)	35.37			k star (bias corrected MLE)			33.82
143					Theta hat (MLE)	0.0783			Theta star (bias corrected MLE)			0.0819
144					nu hat (MLE)	4810			nu star (bias corrected)			4599
145					MLE Mean (bias corrected)	2.77			MLE Sd (bias corrected)			0.476
146									Approximate Chi Square Value (0.05)			4442
147					Adjusted Level of Significance	0.0465			Adjusted Chi Square Value			4439
148												
149						**Assuming Gamma Distribution**						
150					95% Approximate Gamma UCL (use when n>=50))	2.868			95% Adjusted Gamma UCL (use when n<50)			2.87
151												
152						**Lognormal GOF Test**						
153					Shapiro Wilk Test Statistic	0.966	**Shapiro Wilk Lognormal GOF Test**					
154					5% Shapiro Wilk P Value	0.157	Data appear Lognormal at 5% Significance Level					
155					Lilliefors Test Statistic	0.0843	**Lilliefors Lognormal GOF Test**					
156					5% Lilliefors Critical Value	0.107	Data appear Lognormal at 5% Significance Level					
157						**Data appear Lognormal at 5% Significance Level**						
158												
159						**Lognormal Statistics**						
160					Minimum of Logged Data	0.642			Mean of logged Data			1.005
161					Maximum of Logged Data	1.322			SD of logged Data			0.17
162												
163						**Assuming Lognormal Distribution**						
164					95% H-UCL	2.871			90% Chebyshev (MVUE) UCL			2.943
165					95% Chebyshev (MVUE) UCL	3.021			97.5% Chebyshev (MVUE) UCL			3.13
166					99% Chebyshev (MVUE) UCL	3.343						
167												
168						**Nonparametric Distribution Free UCL Statistics**						
169						**Data appear to follow a Discernible Distribution at 5% Significance Level**						
170												
171						**Nonparametric Distribution Free UCLs**						
172					95% CLT UCL	2.864			95% Jackknife UCL			2.865
173					95% Standard Bootstrap UCL	2.865			95% Bootstrap-t UCL			2.863
174					95% Hall's Bootstrap UCL	2.867			95% Percentile Bootstrap UCL			2.865
175					95% BCA Bootstrap UCL	2.863						
176					90% Chebyshev(Mean, Sd) UCL	2.941			95% Chebyshev(Mean, Sd) UCL			3.019
177					97.5% Chebyshev(Mean, Sd) UCL	3.126			99% Chebyshev(Mean, Sd) UCL			3.337
178												
179						**Suggested UCL to Use**						
180					95% Student's-t UCL	2.865						
181												
182	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
183	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
184	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
185	For additional insight the user may want to consult a statistician.											
186												
187	**Benzo(a)pyrene**											
188												
189						**General Statistics**						
190					Total Number of Observations	66			Number of Distinct Observations			48
191									Number of Missing Observations			5
192					Number of Detects	37			Number of Non-Detects			29
193					Number of Distinct Detects	34			Number of Distinct Non-Detects			19
194					Minimum Detect	0.53			Minimum Non-Detect			0.33
195					Maximum Detect	13			Maximum Non-Detect			21

	A	B	C	D	E	F	G	H	I	J	K	L
196					Variance Detects	8.69					Percent Non-Detects	43.94%
197					Mean Detects	6.304					SD Detects	2.948
198					Median Detects	6.3					CV Detects	0.468
199					Skewness Detects	0.276					Kurtosis Detects	-0.202
200					Mean of Logged Detects	1.695					SD of Logged Detects	0.626
201												
202					**Normal GOF Test on Detects Only**							
203					Shapiro Wilk Test Statistic	0.979			**Shapiro Wilk GOF Test**			
204					5% Shapiro Wilk Critical Value	0.936			Detected Data appear Normal at 5% Significance Level			
205					Lilliefors Test Statistic	0.0595			**Lilliefors GOF Test**			
206					5% Lilliefors Critical Value	0.146			Detected Data appear Normal at 5% Significance Level			
207					**Detected Data appear Normal at 5% Significance Level**							
208												
209					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
210					Mean	3.952					Standard Error of Mean	0.462
211					SD	3.582					95% KM (BCA) UCL	4.707
212					95% KM (t) UCL	4.723					95% KM (Percentile Bootstrap) UCL	4.734
213					95% KM (z) UCL	4.712					95% KM Bootstrap t UCL	4.765
214					90% KM Chebyshev UCL	5.338					95% KM Chebyshev UCL	5.966
215					97.5% KM Chebyshev UCL	6.838					99% KM Chebyshev UCL	8.55
216												
217					**Gamma GOF Tests on Detected Observations Only**							
218					A-D Test Statistic	0.447			**Anderson-Darling GOF Test**			
219					5% A-D Critical Value	0.753			Detected data appear Gamma Distributed at 5% Significance Level			
220					K-S Test Statistic	0.12			**Kolmogrov-Smirnoff GOF**			
221					5% K-S Critical Value	0.146			Detected data appear Gamma Distributed at 5% Significance Level			
222					**Detected data appear Gamma Distributed at 5% Significance Level**							
223												
224					**Gamma Statistics on Detected Data Only**							
225					k hat (MLE)	3.585					k star (bias corrected MLE)	3.312
226					Theta hat (MLE)	1.758					Theta star (bias corrected MLE)	1.903
227					nu hat (MLE)	265.3					nu star (bias corrected)	245.1
228					MLE Mean (bias corrected)	6.304					MLE Sd (bias corrected)	3.463
229												
230					**Gamma Kaplan-Meier (KM) Statistics**							
231					k hat (KM)	1.217					nu hat (KM)	160.7
232					Approximate Chi Square Value (160.68, α)	132.4					Adjusted Chi Square Value (160.68, β)	131.8
233					95% Gamma Approximate KM-UCL (use when n>=50)	4.797					95% Gamma Adjusted KM-UCL (use when n<50)	4.818
234												
235					**Gamma ROS Statistics using Imputed Non-Detects**							
236					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
237					GROS may not be used when kstar of detected data is small such as < 0.1							
238					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
239					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
240					Minimum	0.169					Mean	4.234
241					Maximum	13					Median	3.25
242					SD	3.282					CV	0.775
243					k hat (MLE)	1.452					k star (bias corrected MLE)	1.396
244					Theta hat (MLE)	2.917					Theta star (bias corrected MLE)	3.033
245					nu hat (MLE)	191.6					nu star (bias corrected)	184.3
246					MLE Mean (bias corrected)	4.234					MLE Sd (bias corrected)	3.584
247											Adjusted Level of Significance (β)	0.0464
248					Approximate Chi Square Value (184.26, α)	153.9					Adjusted Chi Square Value (184.26, β)	153.2
249					95% Gamma Approximate UCL (use when n>=50)	5.071					95% Gamma Adjusted UCL (use when n<50)	5.091
250												
251					**Lognormal GOF Test on Detected Observations Only**							
252					Shapiro Wilk Test Statistic	0.887			**Shapiro Wilk GOF Test**			
253					5% Shapiro Wilk Critical Value	0.936			Detected Data Not Lognormal at 5% Significance Level			
254					Lilliefors Test Statistic	0.161			**Lilliefors GOF Test**			
255					5% Lilliefors Critical Value	0.146			Detected Data Not Lognormal at 5% Significance Level			
256					**Detected Data Not Lognormal at 5% Significance Level**							
257												
258					**Lognormal ROS Statistics Using Imputed Non-Detects**							
259					Mean in Original Scale	4.316					Mean in Log Scale	1.181
260					SD in Original Scale	3.18					SD in Log Scale	0.775

	A	B	C	D	E	F	G	H	I	J	K	L
261					95% t UCL (assumes normality of ROS data)	4.969					95% Percentile Bootstrap UCL	4.982
262					95% BCA Bootstrap UCL	4.979					95% Bootstrap t UCL	5.041
263					95% H-UCL (Log ROS)	5.374						
264												
265					DL/2 Statistics							
266					DL/2 Normal						DL/2 Log-Transformed	
267					Mean in Original Scale	4.282					Mean in Log Scale	1.012
268					SD in Original Scale	3.444					SD in Log Scale	1.08
269					95% t UCL (Assumes normality)	4.989					95% H-Stat UCL	6.674
270					DL/2 is not a recommended method, provided for comparisons and historical reasons							
271												
272					Nonparametric Distribution Free UCL Statistics							
273					Detected Data appear Normal Distributed at 5% Significance Level							
274												
275					Suggested UCL to Use							
276					95% KM (t) UCL	4.723					95% KM (Percentile Bootstrap) UCL	4.734
277												
278					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
279					Recommendations are based upon data size, data distribution, and skewness.							
280					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
281					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
282												
283	Bis(2-ethylhexyl) phthalate											
284												
285					General Statistics							
286					Total Number of Observations	63					Number of Distinct Observations	48
287											Number of Missing Observations	8
288					Number of Detects	48					Number of Non-Detects	15
289					Number of Distinct Detects	41					Number of Distinct Non-Detects	10
290					Minimum Detect	4.2					Minimum Non-Detect	3.2
291					Maximum Detect	120					Maximum Non-Detect	31
292					Variance Detects	876.4					Percent Non-Detects	23.81%
293					Mean Detects	39.8					SD Detects	29.6
294					Median Detects	33					CV Detects	0.744
295					Skewness Detects	1.039					Kurtosis Detects	0.394
296					Mean of Logged Detects	3.37					SD of Logged Detects	0.874
297												
298					Normal GOF Test on Detects Only							
299					Shapiro Wilk Test Statistic	0.893					Shapiro Wilk GOF Test	
300					5% Shapiro Wilk Critical Value	0.947					Detected Data Not Normal at 5% Significance Level	
301					Lilliefors Test Statistic	0.143					Lilliefors GOF Test	
302					5% Lilliefors Critical Value	0.128					Detected Data Not Normal at 5% Significance Level	
303					Detected Data Not Normal at 5% Significance Level							
304												
305					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
306					Mean	32.86					Standard Error of Mean	3.675
307					SD	28.63					95% KM (BCA) UCL	39.59
308					95% KM (t) UCL	38.99					95% KM (Percentile Bootstrap) UCL	38.83
309					95% KM (z) UCL	38.9					95% KM Bootstrap t UCL	39.78
310					90% KM Chebyshev UCL	43.88					95% KM Chebyshev UCL	48.87
311					97.5% KM Chebyshev UCL	55.8					99% KM Chebyshev UCL	69.42
312												
313					Gamma GOF Tests on Detected Observations Only							
314					A-D Test Statistic	0.25					Anderson-Darling GOF Test	
315					5% A-D Critical Value	0.765					Detected data appear Gamma Distributed at 5% Significance Level	
316					K-S Test Statistic	0.0618					Kolmogrov-Smirnoff GOF	
317					5% K-S Critical Value	0.13					Detected data appear Gamma Distributed at 5% Significance Level	
318					Detected data appear Gamma Distributed at 5% Significance Level							
319												
320					Gamma Statistics on Detected Data Only							
321					k hat (MLE)	1.743					k star (bias corrected MLE)	1.648
322					Theta hat (MLE)	22.84					Theta star (bias corrected MLE)	24.16
323					nu hat (MLE)	167.3					nu star (bias corrected)	158.2
324					MLE Mean (bias corrected)	39.8					MLE Sd (bias corrected)	31.01
325												

	A	B	C	D	E	F	G	H	I	J	K	L
326						Gamma Kaplan-Meier (KM) Statistics						
327					k hat (KM)	1.317					nu hat (KM)	166
328					Approximate Chi Square Value (165.96, α)	137.2					Adjusted Chi Square Value (165.96, β)	136.6
329					95% Gamma Approximate KM-UCL (use when n>=50)	39.75					95% Gamma Adjusted KM-UCL (use when n<50)	39.93
330												
331						Gamma ROS Statistics using Imputed Non-Detects						
332						GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs						
333						GROS may not be used when kstar of detected data is small such as < 0.1						
334						For such situations, GROS method tends to yield inflated values of UCLs and BTVs						
335						For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates						
336					Minimum	0.01					Mean	32.31
337					Maximum	120					Median	23
338					SD	29.23					CV	0.905
339					k hat (MLE)	1.031					k star (bias corrected MLE)	0.992
340					Theta hat (MLE)	31.35					Theta star (bias corrected MLE)	32.56
341					nu hat (MLE)	129.9					nu star (bias corrected)	125
342					MLE Mean (bias corrected)	32.31					MLE Sd (bias corrected)	32.44
343											Adjusted Level of Significance (β)	0.0462
344					Approximate Chi Square Value (125.03, α)	100.2					Adjusted Chi Square Value (125.03, β)	99.68
345					95% Gamma Approximate UCL (use when n>=50)	40.32					95% Gamma Adjusted UCL (use when n<50)	40.53
346												
347						Lognormal GOF Test on Detected Observations Only						
348					Shapiro Wilk Test Statistic	0.941			Shapiro Wilk GOF Test			
349					5% Shapiro Wilk Critical Value	0.947			Detected Data Not Lognormal at 5% Significance Level			
350					Lilliefors Test Statistic	0.0991			Lilliefors GOF Test			
351					5% Lilliefors Critical Value	0.128			Detected Data appear Lognormal at 5% Significance Level			
352						Detected Data appear Approximate Lognormal at 5% Significance Level						
353												
354						Lognormal ROS Statistics Using Imputed Non-Detects						
355					Mean in Original Scale	32.76					Mean in Log Scale	3.1
356					SD in Original Scale	28.79					SD in Log Scale	0.932
357					95% t UCL (assumes normality of ROS data)	38.82					95% Percentile Bootstrap UCL	38.58
358					95% BCA Bootstrap UCL	38.91					95% Bootstrap t UCL	39.59
359					95% H-UCL (Log ROS)	44.49						
360												
361						UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed						
362					KM Mean (logged)	3.074					95% H-UCL (KM -Log)	46.52
363					KM SD (logged)	0.985					95% Critical H Value (KM-Log)	2.243
364					KM Standard Error of Mean (logged)	0.134						
365												
366						DL/2 Statistics						
367					DL/2 Normal				DL/2 Log-Transformed			
368					Mean in Original Scale	32.87					Mean in Log Scale	3.106
369					SD in Original Scale	28.7					SD in Log Scale	0.938
370					95% t UCL (Assumes normality)	38.9					95% H-Stat UCL	45.15
371						DL/2 is not a recommended method, provided for comparisons and historical reasons						
372												
373						Nonparametric Distribution Free UCL Statistics						
374						Detected Data appear Gamma Distributed at 5% Significance Level						
375												
376						Suggested UCL to Use						
377					95% KM (BCA) UCL	39.59			95% GROS Approximate Gamma UCL			40.32
378					95% Approximate Gamma KM-UCL	39.75						
379												
380						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
381						Recommendations are based upon data size, data distribution, and skewness.						
382						These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
383						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
384												
385	Butylbenzyl phthalate											
386												
387						General Statistics						
388					Total Number of Observations	65			Number of Distinct Observations			33
389									Number of Missing Observations			6
390					Number of Detects	14			Number of Non-Detects			51

	A	B	C	D	E	F	G	H	I	J	K	L
391					Number of Distinct Detects	13				Number of Distinct Non-Detects		23
392					Minimum Detect	2.7				Minimum Non-Detect		2.2
393					Maximum Detect	17				Maximum Non-Detect		33
394					Variance Detects	21.38				Percent Non-Detects		78.46%
395					Mean Detects	7.393				SD Detects		4.624
396					Median Detects	7.6				CV Detects		0.626
397					Skewness Detects	1.008				Kurtosis Detects		0.432
398					Mean of Logged Detects	1.819				SD of Logged Detects		0.634
399												
400					**Normal GOF Test on Detects Only**							
401					Shapiro Wilk Test Statistic	0.862			**Shapiro Wilk GOF Test**			
402					5% Shapiro Wilk Critical Value	0.874			Detected Data Not Normal at 5% Significance Level			
403					Lilliefors Test Statistic	0.166			**Lilliefors GOF Test**			
404					5% Lilliefors Critical Value	0.237			Detected Data appear Normal at 5% Significance Level			
405					**Detected Data appear Approximate Normal at 5% Significance Level**							
406												
407					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
408					Mean	3.83				Standard Error of Mean		0.513
409					SD	3.372				95% KM (BCA) UCL		4.712
410					95% KM (t) UCL	4.686				95% KM (Percentile Bootstrap) UCL		4.671
411					95% KM (z) UCL	4.674				95% KM Bootstrap t UCL		5.109
412					90% KM Chebyshev UCL	5.369				95% KM Chebyshev UCL		6.066
413					97.5% KM Chebyshev UCL	7.033				99% KM Chebyshev UCL		8.934
414												
415					**Gamma GOF Tests on Detected Observations Only**							
416					A-D Test Statistic	0.52			**Anderson-Darling GOF Test**			
417					5% A-D Critical Value	0.743			Detected data appear Gamma Distributed at 5% Significance Level			
418					K-S Test Statistic	0.156			**Kolmogrov-Smirnoff GOF**			
419					5% K-S Critical Value	0.231			Detected data appear Gamma Distributed at 5% Significance Level			
420					**Detected data appear Gamma Distributed at 5% Significance Level**							
421												
422					**Gamma Statistics on Detected Data Only**							
423					k hat (MLE)	2.907				k star (bias corrected MLE)		2.332
424					Theta hat (MLE)	2.543				Theta star (bias corrected MLE)		3.17
425					nu hat (MLE)	81.4				nu star (bias corrected)		65.29
426					MLE Mean (bias corrected)	7.393				MLE Sd (bias corrected)		4.841
427												
428					**Gamma Kaplan-Meier (KM) Statistics**							
429					k hat (KM)	1.29				nu hat (KM)		167.7
430					Approximate Chi Square Value (167.67, α)	138.7				Adjusted Chi Square Value (167.67, β)		138.1
431					95% Gamma Approximate KM-UCL (use when n>=50)	4.629				95% Gamma Adjusted KM-UCL (use when n<50)		4.649
432												
433					**Gamma ROS Statistics using Imputed Non-Detects**							
434					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
435					GROS may not be used when kstar of detected data is small such as < 0.1							
436					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
437					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
438					Minimum	0.01				Mean		1.961
439					Maximum	17				Median		0.01
440					SD	3.71				CV		1.892
441					k hat (MLE)	0.225				k star (bias corrected MLE)		0.225
442					Theta hat (MLE)	8.723				Theta star (bias corrected MLE)		8.728
443					nu hat (MLE)	29.22				nu star (bias corrected)		29.21
444					MLE Mean (bias corrected)	1.961				MLE Sd (bias corrected)		4.137
445										Adjusted Level of Significance (β)		0.0463
446					Approximate Chi Square Value (29.21, α)	17.87				Adjusted Chi Square Value (29.21, β)		17.67
447					95% Gamma Approximate UCL (use when n>=50)	3.205				95% Gamma Adjusted UCL (use when n<50)		3.241
448												
449					**Lognormal GOF Test on Detected Observations Only**							
450					Shapiro Wilk Test Statistic	0.908			**Shapiro Wilk GOF Test**			
451					5% Shapiro Wilk Critical Value	0.874			Detected Data appear Lognormal at 5% Significance Level			
452					Lilliefors Test Statistic	0.168			**Lilliefors GOF Test**			
453					5% Lilliefors Critical Value	0.237			Detected Data appear Lognormal at 5% Significance Level			
454					**Detected Data appear Lognormal at 5% Significance Level**							
455												

	A	B	C	D	E	F	G	H	I	J	K	L
456	Lognormal ROS Statistics Using Imputed Non-Detects											
457					Mean in Original Scale	2.769					Mean in Log Scale	0.57
458					SD in Original Scale	3.325					SD in Log Scale	0.895
459				95% t UCL (assumes normality of ROS data)		3.457					95% Percentile Bootstrap UCL	3.526
460					95% BCA Bootstrap UCL	3.582					95% Bootstrap t UCL	3.717
461					95% H-UCL (Log ROS)	3.367						
462												
463	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
464					KM Mean (logged)	1.127					95% H-UCL (KM -Log)	4.154
465					KM SD (logged)	0.568					95% Critical H Value (KM-Log)	1.911
466					KM Standard Error of Mean (logged)	0.088						
467												
468	DL/2 Statistics											
469	DL/2 Normal						DL/2 Log-Transformed					
470					Mean in Original Scale	5.927					Mean in Log Scale	1.326
471					SD in Original Scale	5.259					SD in Log Scale	0.987
472					95% t UCL (Assumes normality)	7.016					95% H-Stat UCL	8.08
473	DL/2 is not a recommended method, provided for comparisons and historical reasons											
474												
475	Nonparametric Distribution Free UCL Statistics											
476	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
477												
478	Suggested UCL to Use											
479					95% KM (t) UCL	4.686					95% KM (Percentile Bootstrap) UCL	4.671
480												
481	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
482	Recommendations are based upon data size, data distribution, and skewness.											
483	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
484	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
485												
486	Cadmium											
487												
488	General Statistics											
489					Total Number of Observations	66					Number of Distinct Observations	46
490											Number of Missing Observations	5
491					Number of Detects	57					Number of Non-Detects	9
492					Number of Distinct Detects	44					Number of Distinct Non-Detects	7
493					Minimum Detect	0.04					Minimum Non-Detect	0.04
494					Maximum Detect	0.214					Maximum Non-Detect	0.11
495					Variance Detects	0.00177					Percent Non-Detects	13.64%
496					Mean Detects	0.123					SD Detects	0.0421
497					Median Detects	0.122					CV Detects	0.343
498					Skewness Detects	0.304					Kurtosis Detects	-0.075
499					Mean of Logged Detects	-2.161					SD of Logged Detects	0.377
500												
501	Normal GOF Test on Detects Only											
502					Shapiro Wilk Test Statistic	0.959	Normal GOF Test on Detected Observations Only					
503					5% Shapiro Wilk P Value	0.102	Detected Data appear Normal at 5% Significance Level					
504					Lilliefors Test Statistic	0.11	Lilliefors GOF Test					
505					5% Lilliefors Critical Value	0.117	Detected Data appear Normal at 5% Significance Level					
506	Detected Data appear Normal at 5% Significance Level											
507												
508	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
509					Mean	0.113					Standard Error of Mean	0.00581
510					SD	0.0465					95% KM (BCA) UCL	0.121
511					95% KM (t) UCL	0.123					95% KM (Percentile Bootstrap) UCL	0.122
512					95% KM (z) UCL	0.123					95% KM Bootstrap t UCL	0.123
513					90% KM Chebyshev UCL	0.13					95% KM Chebyshev UCL	0.138
514					97.5% KM Chebyshev UCL	0.149					99% KM Chebyshev UCL	0.171
515												
516	Gamma GOF Tests on Detected Observations Only											
517					A-D Test Statistic	0.607	Anderson-Darling GOF Test					
518					5% A-D Critical Value	0.752	Detected data appear Gamma Distributed at 5% Significance Level					
519					K-S Test Statistic	0.113	Kolmogrov-Smirnoff GOF					
520					5% K-S Critical Value	0.118	Detected data appear Gamma Distributed at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
521	Detected data appear Gamma Distributed at 5% Significance Level											
522												
523	Gamma Statistics on Detected Data Only											
524					k hat (MLE)	7.951			k star (bias corrected MLE)			7.544
525					Theta hat (MLE)	0.0155			Theta star (bias corrected MLE)			0.0163
526					nu hat (MLE)	906.4			nu star (bias corrected)			860
527					MLE Mean (bias corrected)	0.123			MLE Sd (bias corrected)			0.0447
528												
529	Gamma Kaplan-Meier (KM) Statistics											
530					k hat (KM)	5.896			nu hat (KM)			778.3
531					Approximate Chi Square Value (778.32, α)	714.6			Adjusted Chi Square Value (778.32, β)			713.2
532					95% Gamma Approximate KM-UCL (use when n>=50)	0.123			95% Gamma Adjusted KM-UCL (use when n<50)			0.123
533												
534	Gamma ROS Statistics using Imputed Non-Detects											
535	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
536	GROS may not be used when kstar of detected data is small such as < 0.1											
537	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
538	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
539					Minimum	0.0366			Mean			0.114
540					Maximum	0.214			Median			0.116
541					SD	0.0456			CV			0.4
542					k hat (MLE)	5.818			k star (bias corrected MLE)			5.564
543					Theta hat (MLE)	0.0196			Theta star (bias corrected MLE)			0.0205
544					nu hat (MLE)	768			nu star (bias corrected)			734.4
545					MLE Mean (bias corrected)	0.114			MLE Sd (bias corrected)			0.0483
546									Adjusted Level of Significance (β)			0.0464
547					Approximate Chi Square Value (734.42, α)	672.5			Adjusted Chi Square Value (734.42, β)			671.2
548					95% Gamma Approximate UCL (use when n>=50)	0.124			95% Gamma Adjusted UCL (use when n<50)			0.125
549												
550	Lognormal GOF Test on Detected Observations Only											
551					Lilliefors Test Statistic	0.138			Lilliefors GOF Test			
552					5% Lilliefors Critical Value	0.117			Detected Data Not Lognormal at 5% Significance Level			
553	Detected Data Not Lognormal at 5% Significance Level											
554												
555	Lognormal ROS Statistics Using Imputed Non-Detects											
556					Mean in Original Scale	0.114			Mean in Log Scale			-2.255
557					SD in Original Scale	0.0451			SD in Log Scale			0.429
558					95% t UCL (assumes normality of ROS data)	0.123			95% Percentile Bootstrap UCL			0.124
559					95% BCA Bootstrap UCL	0.123			95% Bootstrap t UCL			0.124
560					95% H-UCL (Log ROS)	0.127						
561												
562	DL/2 Statistics											
563			DL/2 Normal						DL/2 Log-Transformed			
564					Mean in Original Scale	0.111			Mean in Log Scale			-2.332
565					SD in Original Scale	0.0497			SD in Log Scale			0.573
566					95% t UCL (Assumes normality)	0.121			95% H-Stat UCL			0.131
567	DL/2 is not a recommended method, provided for comparisons and historical reasons											
568												
569	Nonparametric Distribution Free UCL Statistics											
570	Detected Data appear Normal Distributed at 5% Significance Level											
571												
572	Suggested UCL to Use											
573					95% KM (t) UCL	0.123			95% KM (Percentile Bootstrap) UCL			0.122
574												
575	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
576	Recommendations are based upon data size, data distribution, and skewness.											
577	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
578	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
579												
580												
581	Total Chlordane (calc'd)											
582												
583	General Statistics											
584					Total Number of Observations	47			Number of Distinct Observations			46
585									Number of Missing Observations			1

	A	B	C	D	E	F	G	H	I	J	K	L
586					Number of Detects	32					Number of Non-Detects	15
587					Number of Distinct Detects	32					Number of Distinct Non-Detects	14
588					Minimum Detect	0.117					Minimum Non-Detect	0.0438
589					Maximum Detect	0.825					Maximum Non-Detect	0.26
590					Variance Detects	0.0289					Percent Non-Detects	31.91%
591					Mean Detects	0.445					SD Detects	0.17
592					Median Detects	0.415					CV Detects	0.381
593					Skewness Detects	0.339					Kurtosis Detects	0.0558
594					Mean of Logged Detects	-0.891					SD of Logged Detects	0.44
595												
596					**Normal GOF Test on Detects Only**							
597					Shapiro Wilk Test Statistic	0.956			**Shapiro Wilk GOF Test**			
598					5% Shapiro Wilk Critical Value	0.93			Detected Data appear Normal at 5% Significance Level			
599					Lilliefors Test Statistic	0.134			**Lilliefors GOF Test**			
600					5% Lilliefors Critical Value	0.157			Detected Data appear Normal at 5% Significance Level			
601					**Detected Data appear Normal at 5% Significance Level**							
602												
603					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
604					Mean	0.32					Standard Error of Mean	0.0341
605					SD	0.23					95% KM (BCA) UCL	0.372
606					95% KM (t) UCL	0.378					95% KM (Percentile Bootstrap) UCL	0.376
607					95% KM (z) UCL	0.376					95% KM Bootstrap t UCL	0.38
608					90% KM Chebyshev UCL	0.423					95% KM Chebyshev UCL	0.469
609					97.5% KM Chebyshev UCL	0.534					99% KM Chebyshev UCL	0.66
610												
611					**Gamma GOF Tests on Detected Observations Only**							
612					A-D Test Statistic	0.659			**Anderson-Darling GOF Test**			
613					5% A-D Critical Value	0.747			Detected data appear Gamma Distributed at 5% Significance Level			
614					K-S Test Statistic	0.147			**Kolmogrov-Smirnoff GOF**			
615					5% K-S Critical Value	0.156			Detected data appear Gamma Distributed at 5% Significance Level			
616					**Detected data appear Gamma Distributed at 5% Significance Level**							
617												
618					**Gamma Statistics on Detected Data Only**							
619					k hat (MLE)	6.224					k star (bias corrected MLE)	5.661
620					Theta hat (MLE)	0.0716					Theta star (bias corrected MLE)	0.0787
621					nu hat (MLE)	398.3					nu star (bias corrected)	362.3
622					MLE Mean (bias corrected)	0.445					MLE Sd (bias corrected)	0.187
623												
624					**Gamma Kaplan-Meier (KM) Statistics**							
625					k hat (KM)	1.946					nu hat (KM)	182.9
626					Approximate Chi Square Value (182.89, α)	152.6					Adjusted Chi Square Value (182.89, β)	151.7
627					95% Gamma Approximate KM-UCL (use when n>=50)	0.384					95% Gamma Adjusted KM-UCL (use when n<50)	0.386
628												
629					**Gamma ROS Statistics using Imputed Non-Detects**							
630					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
631					GROS may not be used when kstar of detected data is small such as < 0.1							
632					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
633					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
634					Minimum	0.108					Mean	0.347
635					Maximum	0.825					Median	0.362
636					SD	0.202					CV	0.581
637					k hat (MLE)	2.859					k star (bias corrected MLE)	2.691
638					Theta hat (MLE)	0.121					Theta star (bias corrected MLE)	0.129
639					nu hat (MLE)	268.7					nu star (bias corrected)	252.9
640					MLE Mean (bias corrected)	0.347					MLE Sd (bias corrected)	0.212
641											Adjusted Level of Significance (β)	0.0449
642					Approximate Chi Square Value (252.92, α)	217.1					Adjusted Chi Square Value (252.92, β)	216
643					95% Gamma Approximate UCL (use when n>=50)	0.404					95% Gamma Adjusted UCL (use when n<50)	0.406
644												
645					**Lognormal GOF Test on Detected Observations Only**							
646					Shapiro Wilk Test Statistic	0.914			**Shapiro Wilk GOF Test**			
647					5% Shapiro Wilk Critical Value	0.93			Detected Data Not Lognormal at 5% Significance Level			
648					Lilliefors Test Statistic	0.175			**Lilliefors GOF Test**			
649					5% Lilliefors Critical Value	0.157			Detected Data Not Lognormal at 5% Significance Level			
650					**Detected Data Not Lognormal at 5% Significance Level**							

	A	B	C	D	E	F	G	H	I	J	K	L
651												
652						Lognormal ROS Statistics Using Imputed Non-Detects						
653					Mean in Original Scale	0.356				Mean in Log Scale		-1.183
654					SD in Original Scale	0.192				SD in Log Scale		0.564
655				95% t UCL (assumes normality of ROS data)		0.403				95% Percentile Bootstrap UCL		0.402
656					95% BCA Bootstrap UCL	0.401				95% Bootstrap t UCL		0.404
657					95% H-UCL (Log ROS)	0.422						
658												
659						DL/2 Statistics						
660				DL/2 Normal					DL/2 Log-Transformed			
661					Mean in Original Scale	0.323				Mean in Log Scale		-1.533
662					SD in Original Scale	0.229				SD in Log Scale		1.062
663					95% t UCL (Assumes normality)	0.379				95% H-Stat UCL		0.552
664						DL/2 is not a recommended method, provided for comparisons and historical reasons						
665												
666						Nonparametric Distribution Free UCL Statistics						
667						Detected Data appear Normal Distributed at 5% Significance Level						
668												
669						Suggested UCL to Use						
670					95% KM (t) UCL	0.378				95% KM (Percentile Bootstrap) UCL		0.376
671												
672						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
673						Recommendations are based upon data size, data distribution, and skewness.						
674						These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
675						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
676												
677	Chromium											
678												
679						General Statistics						
680					Total Number of Observations	65				Number of Distinct Observations		59
681										Number of Missing Observations		6
682					Minimum	11.9				Mean		22.57
683					Maximum	38.1				Median		21.9
684					SD	5.733				Std. Error of Mean		0.711
685					Coefficient of Variation	0.254				Skewness		0.418
686												
687						Normal GOF Test						
688					Shapiro Wilk Test Statistic	0.972				Shapiro Wilk GOF Test		
689					5% Shapiro Wilk P Value	0.339				Data appear Normal at 5% Significance Level		
690					Lilliefors Test Statistic	0.0631				Lilliefors GOF Test		
691					5% Lilliefors Critical Value	0.11				Data appear Normal at 5% Significance Level		
692						Data appear Normal at 5% Significance Level						
693												
694						Assuming Normal Distribution						
695					95% Normal UCL					95% UCLs (Adjusted for Skewness)		
696					95% Student's-t UCL	23.75				95% Adjusted-CLT UCL (Chen-1995)		23.77
697										95% Modified-t UCL (Johnson-1978)		23.76
698												
699						Gamma GOF Test						
700					A-D Test Statistic	0.231				Anderson-Darling Gamma GOF Test		
701					5% A-D Critical Value	0.75				Detected data appear Gamma Distributed at 5% Significance Level		
702					K-S Test Statistic	0.0764				Kolmogrov-Smirnoff Gamma GOF Test		
703					5% K-S Critical Value	0.11				Detected data appear Gamma Distributed at 5% Significance Level		
704						Detected data appear Gamma Distributed at 5% Significance Level						
705												
706						Gamma Statistics						
707					k hat (MLE)	15.67				k star (bias corrected MLE)		14.96
708					Theta hat (MLE)	1.44				Theta star (bias corrected MLE)		1.508
709					nu hat (MLE)	2037				nu star (bias corrected)		1945
710					MLE Mean (bias corrected)	22.57				MLE Sd (bias corrected)		5.834
711										Approximate Chi Square Value (0.05)		1843
712					Adjusted Level of Significance	0.0463				Adjusted Chi Square Value		1841
713												
714						Assuming Gamma Distribution						
715					95% Approximate Gamma UCL (use when n>=50))	23.81				95% Adjusted Gamma UCL (use when n<50)		23.84

	A	B	C	D	E	F	G	H	I	J	K	L
716												
717						Lognormal GOF Test						
718					Shapiro Wilk Test Statistic	0.979	Shapiro Wilk Lognormal GOF Test					
719					5% Shapiro Wilk P Value	0.614	Data appear Lognormal at 5% Significance Level					
720					Lilliefors Test Statistic	0.0841	Lilliefors Lognormal GOF Test					
721					5% Lilliefors Critical Value	0.11	Data appear Lognormal at 5% Significance Level					
722					Data appear Lognormal at 5% Significance Level							
723												
724						Lognormal Statistics						
725					Minimum of Logged Data	2.477				Mean of logged Data		3.084
726					Maximum of Logged Data	3.64				SD of logged Data		0.258
727												
728						Assuming Lognormal Distribution						
729					95% H-UCL	23.89				90% Chebyshev (MVUE) UCL		24.78
730					95% Chebyshev (MVUE) UCL	25.78				97.5% Chebyshev (MVUE) UCL		27.16
731					99% Chebyshev (MVUE) UCL	29.88						
732												
733						Nonparametric Distribution Free UCL Statistics						
734						Data appear to follow a Discernible Distribution at 5% Significance Level						
735												
736						Nonparametric Distribution Free UCLs						
737					95% CLT UCL	23.74				95% Jackknife UCL		23.75
738					95% Standard Bootstrap UCL	23.76				95% Bootstrap-t UCL		23.84
739					95% Hall's Bootstrap UCL	23.78				95% Percentile Bootstrap UCL		23.74
740					95% BCA Bootstrap UCL	23.77						
741					90% Chebyshev(Mean, Sd) UCL	24.7				95% Chebyshev(Mean, Sd) UCL		25.67
742					97.5% Chebyshev(Mean, Sd) UCL	27.01				99% Chebyshev(Mean, Sd) UCL		29.64
743												
744						Suggested UCL to Use						
745					95% Student's-t UCL	23.75						
746												
747					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
748					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
749					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
750					For additional insight the user may want to consult a statistician.							
751												
752												
753	Copper											
754												
755						General Statistics						
756					Total Number of Observations	67				Number of Distinct Observations		62
757										Number of Missing Observations		4
758					Minimum	10.5				Mean		24.32
759					Maximum	47.2				Median		24.2
760					SD	7.783				Std. Error of Mean		0.951
761					Coefficient of Variation	0.32				Skewness		0.562
762												
763						Normal GOF Test						
764					Shapiro Wilk Test Statistic	0.954	Shapiro Wilk GOF Test					
765					5% Shapiro Wilk P Value	0.0346	Data Not Normal at 5% Significance Level					
766					Lilliefors Test Statistic	0.0967	Lilliefors GOF Test					
767					5% Lilliefors Critical Value	0.108	Data appear Normal at 5% Significance Level					
768						Data appear Approximate Normal at 5% Significance Level						
769												
770						Assuming Normal Distribution						
771					95% Normal UCL		95% UCLs (Adjusted for Skewness)					
772					95% Student's-t UCL	25.91				95% Adjusted-CLT UCL (Chen-1995)		25.96
773										95% Modified-t UCL (Johnson-1978)		25.92
774												
775						Gamma GOF Test						
776					A-D Test Statistic	0.635	Anderson-Darling Gamma GOF Test					
777					5% A-D Critical Value	0.751	Detected data appear Gamma Distributed at 5% Significance Level					
778					K-S Test Statistic	0.0969	Kolmogrov-Smirnoff Gamma GOF Test					
779					5% K-S Critical Value	0.109	Detected data appear Gamma Distributed at 5% Significance Level					
780						Detected data appear Gamma Distributed at 5% Significance Level						

	A	B	C	D	E	F	G	H	I	J	K	L
781												
782						Gamma Statistics						
783					k hat (MLE)	9.916					k star (bias corrected MLE)	9.482
784					Theta hat (MLE)	2.453					Theta star (bias corrected MLE)	2.565
785					nu hat (MLE)	1329					nu star (bias corrected)	1271
786					MLE Mean (bias corrected)	24.32					MLE Sd (bias corrected)	7.899
787											Approximate Chi Square Value (0.05)	1189
788					Adjusted Level of Significance	0.0464					Adjusted Chi Square Value	1187
789												
790						Assuming Gamma Distribution						
791					95% Approximate Gamma UCL (use when n>=50))	25.99					95% Adjusted Gamma UCL (use when n<50)	26.03
792												
793						Lognormal GOF Test						
794					Shapiro Wilk Test Statistic	0.968			Shapiro Wilk Lognormal GOF Test			
795					5% Shapiro Wilk P Value	0.205			Data appear Lognormal at 5% Significance Level			
796					Lilliefors Test Statistic	0.0909			Lilliefors Lognormal GOF Test			
797					5% Lilliefors Critical Value	0.108			Data appear Lognormal at 5% Significance Level			
798						Data appear Lognormal at 5% Significance Level						
799												
800						Lognormal Statistics						
801					Minimum of Logged Data	2.351					Mean of logged Data	3.14
802					Maximum of Logged Data	3.854					SD of logged Data	0.327
803												
804						Assuming Lognormal Distribution						
805					95% H-UCL	26.17					90% Chebyshev (MVUE) UCL	27.34
806					95% Chebyshev (MVUE) UCL	28.69					97.5% Chebyshev (MVUE) UCL	30.56
807					99% Chebyshev (MVUE) UCL	34.25						
808												
809						Nonparametric Distribution Free UCL Statistics						
810						Data appear to follow a Discernible Distribution at 5% Significance Level						
811												
812						Nonparametric Distribution Free UCLs						
813					95% CLT UCL	25.89					95% Jackknife UCL	25.91
814					95% Standard Bootstrap UCL	25.87					95% Bootstrap-t UCL	25.96
815					95% Hall's Bootstrap UCL	25.96					95% Percentile Bootstrap UCL	25.88
816					95% BCA Bootstrap UCL	26.04						
817					90% Chebyshev(Mean, Sd) UCL	27.17					95% Chebyshev(Mean, Sd) UCL	28.47
818					97.5% Chebyshev(Mean, Sd) UCL	30.26					99% Chebyshev(Mean, Sd) UCL	33.78
819												
820						Suggested UCL to Use						
821					95% Student's-t UCL	25.91						
822												
823						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
824						These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)						
825						and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.						
826						For additional insight the user may want to consult a statistician.						
827												
828	CPAH											
829												
830						General Statistics						
831					Total Number of Observations	66					Number of Distinct Observations	61
832											Number of Missing Observations	5
833					Number of Detects	54					Number of Non-Detects	12
834					Number of Distinct Detects	54					Number of Distinct Non-Detects	7
835					Minimum Detect	0.659					Minimum Non-Detect	0.39
836					Maximum Detect	20.36					Maximum Non-Detect	10
837					Variance Detects	20.94					Percent Non-Detects	18.18%
838					Mean Detects	7.801					SD Detects	4.576
839					Median Detects	7.203					CV Detects	0.587
840					Skewness Detects	0.654					Kurtosis Detects	0.113
841					Mean of Logged Detects	1.842					SD of Logged Detects	0.73
842												
843						Normal GOF Test on Detects Only						
844					Shapiro Wilk Test Statistic	0.946			Normal GOF Test on Detected Observations Only			
845					5% Shapiro Wilk P Value	0.0297			Detected Data Not Normal at 5% Significance Level			

	A	B	C	D	E	F	G	H	I	J	K	L
846					Lilliefors Test Statistic	0.104	**Lilliefors GOF Test**					
847					5% Lilliefors Critical Value	0.121	Detected Data appear Normal at 5% Significance Level					
848	**Detected Data appear Approximate Normal at 5% Significance Level**											
849												
850	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
851					Mean	6.613				Standard Error of Mean		0.61
852					SD	4.875				95% KM (BCA) UCL		7.668
853					95% KM (t) UCL	7.631				95% KM (Percentile Bootstrap) UCL		7.576
854					95% KM (z) UCL	7.616				95% KM Bootstrap t UCL		7.611
855					90% KM Chebyshev UCL	8.443				95% KM Chebyshev UCL		9.271
856					97.5% KM Chebyshev UCL	10.42				99% KM Chebyshev UCL		12.68
857												
858	**Gamma GOF Tests on Detected Observations Only**											
859					A-D Test Statistic	0.402	**Anderson-Darling GOF Test**					
860					5% A-D Critical Value	0.76	Detected data appear Gamma Distributed at 5% Significance Level					
861					K-S Test Statistic	0.0807	**Kolmogrov-Smirnoff GOF**					
862					5% K-S Critical Value	0.122	Detected data appear Gamma Distributed at 5% Significance Level					
863	**Detected data appear Gamma Distributed at 5% Significance Level**											
864												
865	**Gamma Statistics on Detected Data Only**											
866					k hat (MLE)	2.51				k star (bias corrected MLE)		2.383
867					Theta hat (MLE)	3.107				Theta star (bias corrected MLE)		3.273
868					nu hat (MLE)	271.1				nu star (bias corrected)		257.4
869					MLE Mean (bias corrected)	7.801				MLE Sd (bias corrected)		5.053
870												
871	**Gamma Kaplan-Meier (KM) Statistics**											
872					k hat (KM)	1.84				nu hat (KM)		242.9
873					Approximate Chi Square Value (242.94, α)	207.9				Adjusted Chi Square Value (242.94, β)		207.1
874					95% Gamma Approximate KM-UCL (use when n>=50)	7.73				95% Gamma Adjusted KM-UCL (use when n<50)		7.756
875												
876	**Gamma ROS Statistics using Imputed Non-Detects**											
877	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
878	GROS may not be used when kstar of detected data is small such as < 0.1											
879	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
880	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
881					Minimum	0.175				Mean		6.686
882					Maximum	20.36				Median		5.76
883					SD	4.805				CV		0.719
884					k hat (MLE)	1.561				k star (bias corrected MLE)		1.5
885					Theta hat (MLE)	4.284				Theta star (bias corrected MLE)		4.458
886					nu hat (MLE)	206				nu star (bias corrected)		198
887					MLE Mean (bias corrected)	6.686				MLE Sd (bias corrected)		5.459
888										Adjusted Level of Significance (β)		0.0464
889					Approximate Chi Square Value (198.00, α)	166.4				Adjusted Chi Square Value (198.00, β)		165.8
890					95% Gamma Approximate UCL (use when n>=50)	7.954				95% Gamma Adjusted UCL (use when n<50)		7.985
891												
892	**Lognormal GOF Test on Detected Observations Only**											
893					Lilliefors Test Statistic	0.0955	**Lilliefors GOF Test**					
894					5% Lilliefors Critical Value	0.121	Detected Data appear Lognormal at 5% Significance Level					
895	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
896												
897	**Lognormal ROS Statistics Using Imputed Non-Detects**											
898					Mean in Original Scale	6.726				Mean in Log Scale		1.606
899					SD in Original Scale	4.746				SD in Log Scale		0.848
900					95% t UCL (assumes normality of ROS data)	7.701				95% Percentile Bootstrap UCL		7.666
901					95% BCA Bootstrap UCL	7.721				95% Bootstrap t UCL		7.738
902					95% H-UCL (Log ROS)	8.939						
903												
904	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
905					KM Mean (logged)	1.456				95% H-UCL (KM -Log)		10.86
906					KM SD (logged)	1.112				95% Critical H Value (KM-Log)		2.255
907					KM Standard Error of Mean (logged)	0.144						
908												
909	**DL/2 Statistics**											
910	**DL/2 Normal**						**DL/2 Log-Transformed**					

	A	B	C	D	E	F	G	H	I	J	K	L
911					Mean in Original Scale	6.658					Mean in Log Scale	1.499
912					SD in Original Scale	4.848					SD in Log Scale	1.07
913					95% t UCL (Assumes normality)	7.654					95% H-Stat UCL	10.72
914					**DL/2 is not a recommended method, provided for comparisons and historical reasons**							
915												
916					**Nonparametric Distribution Free UCL Statistics**							
917					**Detected Data appear Approximate Normal Distributed at 5% Significance Level**							
918												
919					**Suggested UCL to Use**							
920					95% KM (t) UCL	7.631					95% KM (Percentile Bootstrap) UCL	7.576
921												
922					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
923					Recommendations are based upon data size, data distribution, and skewness.							
924					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
925					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
926												
927	**Total DDD**											
928												
929					**General Statistics**							
930					Total Number of Observations	48					Number of Distinct Observations	45
931					Number of Detects	39					Number of Non-Detects	9
932					Number of Distinct Detects	37					Number of Distinct Non-Detects	8
933					Minimum Detect	0.137					Minimum Non-Detect	0.0507
934					Maximum Detect	1.615					Maximum Non-Detect	0.54
935					Variance Detects	0.201					Percent Non-Detects	18.75%
936					Mean Detects	0.762					SD Detects	0.448
937					Median Detects	0.7					CV Detects	0.588
938					Skewness Detects	0.606					Kurtosis Detects	-0.77
939					Mean of Logged Detects	-0.462					SD of Logged Detects	0.658
940												
941					**Normal GOF Test on Detects Only**							
942					Shapiro Wilk Test Statistic	0.904					**Shapiro Wilk GOF Test**	
943					5% Shapiro Wilk Critical Value	0.939					Detected Data Not Normal at 5% Significance Level	
944					Lilliefors Test Statistic	0.143					**Lilliefors GOF Test**	
945					5% Lilliefors Critical Value	0.142					Detected Data Not Normal at 5% Significance Level	
946					**Detected Data Not Normal at 5% Significance Level**							
947												
948					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
949					Mean	0.644					Standard Error of Mean	0.0692
950					SD	0.471					95% KM (BCA) UCL	0.76
951					95% KM (t) UCL	0.76					95% KM (Percentile Bootstrap) UCL	0.762
952					95% KM (z) UCL	0.758					95% KM Bootstrap t UCL	0.769
953					90% KM Chebyshev UCL	0.852					95% KM Chebyshev UCL	0.946
954					97.5% KM Chebyshev UCL	1.076					99% KM Chebyshev UCL	1.332
955												
956					**Gamma GOF Tests on Detected Observations Only**							
957					A-D Test Statistic	0.421					**Anderson-Darling GOF Test**	
958					5% A-D Critical Value	0.756					Detected data appear Gamma Distributed at 5% Significance Level	
959					K-S Test Statistic	0.113					**Kolmogrov-Smirnoff GOF**	
960					5% K-S Critical Value	0.142					Detected data appear Gamma Distributed at 5% Significance Level	
961					**Detected data appear Gamma Distributed at 5% Significance Level**							
962												
963					**Gamma Statistics on Detected Data Only**							
964					k hat (MLE)	2.783					k star (bias corrected MLE)	2.586
965					Theta hat (MLE)	0.274					Theta star (bias corrected MLE)	0.295
966					nu hat (MLE)	217.1					nu star (bias corrected)	201.7
967					MLE Mean (bias corrected)	0.762					MLE Sd (bias corrected)	0.474
968												
969					**Gamma Kaplan-Meier (KM) Statistics**							
970					k hat (KM)	1.867					nu hat (KM)	179.3
971					Approximate Chi Square Value (179.28, α)	149.3					Adjusted Chi Square Value (179.28, β)	148.5
972					95% Gamma Approximate KM-UCL (use when n>=50)	0.773					95% Gamma Adjusted KM-UCL (use when n<50)	0.778
973												
974					**Gamma ROS Statistics using Imputed Non-Detects**							
975					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							

	A	B	C	D	E	F	G	H	I	J	K	L
976	GROS may not be used when kstar of detected data is small such as < 0.1											
977	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
978	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
979					Minimum	0.0278				Mean		0.645
980					Maximum	1.615				Median		0.481
981					SD	0.475				CV		0.737
982					k hat (MLE)	1.493				k star (bias corrected MLE)		1.413
983					Theta hat (MLE)	0.432				Theta star (bias corrected MLE)		0.456
984					nu hat (MLE)	143.3				nu star (bias corrected)		135.7
985					MLE Mean (bias corrected)	0.645				MLE Sd (bias corrected)		0.542
986										Adjusted Level of Significance (β)		0.045
987					Approximate Chi Square Value (135.69, α)	109.8				Adjusted Chi Square Value (135.69, β)		109.1
988					95% Gamma Approximate UCL (use when n>=50)	0.797				95% Gamma Adjusted UCL (use when n<50)		0.802
989												
990	**Lognormal GOF Test on Detected Observations Only**											
991					Shapiro Wilk Test Statistic	0.949	**Shapiro Wilk GOF Test**					
992					5% Shapiro Wilk Critical Value	0.939	Detected Data appear Lognormal at 5% Significance Level					
993					Lilliefors Test Statistic	0.103	**Lilliefors GOF Test**					
994					5% Lilliefors Critical Value	0.142	Detected Data appear Lognormal at 5% Significance Level					
995	**Detected Data appear Lognormal at 5% Significance Level**											
996												
997	**Lognormal ROS Statistics Using Imputed Non-Detects**											
998					Mean in Original Scale	0.655				Mean in Log Scale		-0.693
999					SD in Original Scale	0.462				SD in Log Scale		0.777
1000					95% t UCL (assumes normality of ROS data)	0.767				95% Percentile Bootstrap UCL		0.769
1001					95% BCA Bootstrap UCL	0.775				95% Bootstrap t UCL		0.783
1002					95% H-UCL (Log ROS)	0.859						
1003												
1004	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
1005					KM Mean (logged)	-0.814				95% H-UCL (KM -Log)		1.017
1006					KM SD (logged)	0.993				95% Critical H Value (KM-Log)		2.328
1007					KM Standard Error of Mean (logged)	0.153						
1008												
1009	**DL/2 Statistics**											
1010		**DL/2 Normal**					**DL/2 Log-Transformed**					
1011					Mean in Original Scale	0.643				Mean in Log Scale		-0.813
1012					SD in Original Scale	0.476				SD in Log Scale		1.01
1013					95% t UCL (Assumes normality)	0.758				95% H-Stat UCL		1.043
1014	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
1015												
1016	**Nonparametric Distribution Free UCL Statistics**											
1017	**Detected Data appear Gamma Distributed at 5% Significance Level**											
1018												
1019	**Suggested UCL to Use**											
1020					95% KM (BCA) UCL	0.76				95% GROS Adjusted Gamma UCL		0.802
1021					95% Adjusted Gamma KM-UCL	0.778						
1022												
1023	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1024	Recommendations are based upon data size, data distribution, and skewness.											
1025	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1026	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1027												
1028	**Total DDE**											
1029												
1030	**General Statistics**											
1031					Total Number of Observations	48				Number of Distinct Observations		46
1032					Number of Detects	47				Number of Non-Detects		1
1033					Number of Distinct Detects	45				Number of Distinct Non-Detects		1
1034					Minimum Detect	0.105				Minimum Non-Detect		0.12
1035					Maximum Detect	2.451				Maximum Non-Detect		0.12
1036					Variance Detects	0.302				Percent Non-Detects		2.083%
1037					Mean Detects	0.973				SD Detects		0.549
1038					Median Detects	0.967				CV Detects		0.564
1039					Skewness Detects	0.701				Kurtosis Detects		0.608
1040					Mean of Logged Detects	-0.225				SD of Logged Detects		0.708

	A	B	C	D	E	F	G	H	I	J	K	L
1041												
1042						**Normal GOF Test on Detects Only**						
1043					Shapiro Wilk Test Statistic	0.942	**Shapiro Wilk GOF Test**					
1044					5% Shapiro Wilk Critical Value	0.946	Detected Data Not Normal at 5% Significance Level					
1045					Lilliefors Test Statistic	0.0912	**Lilliefors GOF Test**					
1046					5% Lilliefors Critical Value	0.129	Detected Data appear Normal at 5% Significance Level					
1047					**Detected Data appear Approximate Normal at 5% Significance Level**							
1048												
1049					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
1050					Mean	0.955	Standard Error of Mean					0.0805
1051					SD	0.552	95% KM (BCA) UCL					1.094
1052					95% KM (t) UCL	1.09	95% KM (Percentile Bootstrap) UCL					1.097
1053					95% KM (z) UCL	1.088	95% KM Bootstrap t UCL					1.1
1054					90% KM Chebyshev UCL	1.197	95% KM Chebyshev UCL					1.306
1055					97.5% KM Chebyshev UCL	1.458	99% KM Chebyshev UCL					1.757
1056												
1057					**Gamma GOF Tests on Detected Observations Only**							
1058					A-D Test Statistic	0.541	**Anderson-Darling GOF Test**					
1059					5% A-D Critical Value	0.758	Detected data appear Gamma Distributed at 5% Significance Level					
1060					K-S Test Statistic	0.0925	**Kolmogrov-Smirnoff GOF**					
1061					5% K-S Critical Value	0.13	Detected data appear Gamma Distributed at 5% Significance Level					
1062					**Detected data appear Gamma Distributed at 5% Significance Level**							
1063												
1064					**Gamma Statistics on Detected Data Only**							
1065					k hat (MLE)	2.677	k star (bias corrected MLE)					2.52
1066					Theta hat (MLE)	0.364	Theta star (bias corrected MLE)					0.386
1067					nu hat (MLE)	251.6	nu star (bias corrected)					236.9
1068					MLE Mean (bias corrected)	0.973	MLE Sd (bias corrected)					0.613
1069												
1070					**Gamma Kaplan-Meier (KM) Statistics**							
1071					k hat (KM)	2.995	nu hat (KM)					287.5
1072					Approximate Chi Square Value (287.55, α)	249.3	Adjusted Chi Square Value (287.55, β)					248.2
1073					95% Gamma Approximate KM-UCL (use when n>=50)	1.102	95% Gamma Adjusted KM-UCL (use when n<50)					1.107
1074												
1075					**Gamma ROS Statistics using Imputed Non-Detects**							
1076					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1077					GROS may not be used when kstar of detected data is small such as < 0.1							
1078					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
1079					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
1080					Minimum	0.105	Mean					0.957
1081					Maximum	2.451	Median					0.954
1082					SD	0.556	CV					0.581
1083					k hat (MLE)	2.493	k star (bias corrected MLE)					2.351
1084					Theta hat (MLE)	0.384	Theta star (bias corrected MLE)					0.407
1085					nu hat (MLE)	239.4	nu star (bias corrected)					225.7
1086					MLE Mean (bias corrected)	0.957	MLE Sd (bias corrected)					0.624
1087							Adjusted Level of Significance (β)					0.045
1088					Approximate Chi Square Value (225.74, α)	192	Adjusted Chi Square Value (225.74, β)					191
1089					95% Gamma Approximate UCL (use when n>=50)	1.125	95% Gamma Adjusted UCL (use when n<50)					1.13
1090												
1091					**Lognormal GOF Test on Detected Observations Only**							
1092					Shapiro Wilk Test Statistic	0.923	**Shapiro Wilk GOF Test**					
1093					5% Shapiro Wilk Critical Value	0.946	Detected Data Not Lognormal at 5% Significance Level					
1094					Lilliefors Test Statistic	0.124	**Lilliefors GOF Test**					
1095					5% Lilliefors Critical Value	0.129	Detected Data appear Lognormal at 5% Significance Level					
1096					**Detected Data appear Approximate Lognormal at 5% Significance Level**							
1097												
1098					**Lognormal ROS Statistics Using Imputed Non-Detects**							
1099					Mean in Original Scale	0.957	Mean in Log Scale					-0.257
1100					SD in Original Scale	0.556	SD in Log Scale					0.735
1101					95% t UCL (assumes normality of ROS data)	1.091	95% Percentile Bootstrap UCL					1.089
1102					95% BCA Bootstrap UCL	1.095	95% Bootstrap t UCL					1.103
1103					95% H-UCL (Log ROS)	1.264						
1104												
1105					**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**							

	A	B	C	D	E	F	G	H	I	J	K	L
1106					KM Mean (logged)	-0.268				95% H-UCL (KM -Log)		1.275
1107					KM SD (logged)	0.751				95% Critical H Value (KM-Log)		2.082
1108				KM Standard Error of Mean (logged)		0.11						
1109												
1110					DL/2 Statistics							
1111				DL/2 Normal					DL/2 Log-Transformed			
1112					Mean in Original Scale	0.954				Mean in Log Scale		-0.279
1113					SD in Original Scale	0.559				SD in Log Scale		0.794
1114				95% t UCL (Assumes normality)		1.09				95% H-Stat UCL		1.326
1115					DL/2 is not a recommended method, provided for comparisons and historical reasons							
1116												
1117					Nonparametric Distribution Free UCL Statistics							
1118					Detected Data appear Approximate Normal Distributed at 5% Significance Level							
1119												
1120					Suggested UCL to Use							
1121					95% KM (t) UCL	1.09				95% KM (Percentile Bootstrap) UCL		1.097
1122												
1123					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1124					Recommendations are based upon data size, data distribution, and skewness.							
1125					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
1126					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
1127												
1128	Total DDT											
1129												
1130					General Statistics							
1131					Total Number of Observations	46				Number of Distinct Observations		41
1132										Number of Missing Observations		2
1133					Number of Detects	16				Number of Non-Detects		30
1134					Number of Distinct Detects	16				Number of Distinct Non-Detects		26
1135					Minimum Detect	0.318				Minimum Non-Detect		0.0486
1136					Maximum Detect	1				Maximum Non-Detect		0.51
1137					Variance Detects	0.0498				Percent Non-Detects		65.22%
1138					Mean Detects	0.579				SD Detects		0.223
1139					Median Detects	0.492				CV Detects		0.386
1140					Skewness Detects	0.617				Kurtosis Detects		-1.053
1141					Mean of Logged Detects	-0.615				SD of Logged Detects		0.378
1142												
1143					Normal GOF Test on Detects Only							
1144					Shapiro Wilk Test Statistic	0.894				Shapiro Wilk GOF Test		
1145					5% Shapiro Wilk Critical Value	0.887				Detected Data appear Normal at 5% Significance Level		
1146					Lilliefors Test Statistic	0.208				Lilliefors GOF Test		
1147					5% Lilliefors Critical Value	0.222				Detected Data appear Normal at 5% Significance Level		
1148					Detected Data appear Normal at 5% Significance Level							
1149												
1150					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
1151					Mean	0.242				Standard Error of Mean		0.0437
1152					SD	0.282				95% KM (BCA) UCL		0.322
1153					95% KM (t) UCL	0.315				95% KM (Percentile Bootstrap) UCL		0.314
1154					95% KM (z) UCL	0.314				95% KM Bootstrap t UCL		0.321
1155					90% KM Chebyshev UCL	0.373				95% KM Chebyshev UCL		0.432
1156					97.5% KM Chebyshev UCL	0.515				99% KM Chebyshev UCL		0.676
1157												
1158					Gamma GOF Tests on Detected Observations Only							
1159					A-D Test Statistic	0.55				Anderson-Darling GOF Test		
1160					5% A-D Critical Value	0.74				Detected data appear Gamma Distributed at 5% Significance Level		
1161					K-S Test Statistic	0.178				Kolmogrov-Smirnoff GOF		
1162					5% K-S Critical Value	0.215				Detected data appear Gamma Distributed at 5% Significance Level		
1163					Detected data appear Gamma Distributed at 5% Significance Level							
1164												
1165					Gamma Statistics on Detected Data Only							
1166					k hat (MLE)	7.536				k star (bias corrected MLE)		6.165
1167					Theta hat (MLE)	0.0768				Theta star (bias corrected MLE)		0.0938
1168					nu hat (MLE)	241.2				nu star (bias corrected)		197.3
1169					MLE Mean (bias corrected)	0.579				MLE Sd (bias corrected)		0.233
1170												

	A	B	C	D	E	F	G	H	I	J	K	L
1171	**Gamma Kaplan-Meier (KM) Statistics**											
1172					k hat (KM)	0.734					nu hat (KM)	67.5
1173					Approximate Chi Square Value (67.50, α)	49.59					Adjusted Chi Square Value (67.50, β)	49.09
1174					95% Gamma Approximate KM-UCL (use when n>=50)	0.329					95% Gamma Adjusted KM-UCL (use when n<50)	0.332
1175												
1176	**Gamma ROS Statistics using Imputed Non-Detects**											
1177	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1178	GROS may not be used when kstar of detected data is small such as < 0.1											
1179	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1180	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1181					Minimum	0.01					Mean	0.233
1182					Maximum	1					Median	0.0762
1183					SD	0.288					CV	1.233
1184					k hat (MLE)	0.672					k star (bias corrected MLE)	0.643
1185					Theta hat (MLE)	0.347					Theta star (bias corrected MLE)	0.363
1186					nu hat (MLE)	61.86					nu star (bias corrected)	59.16
1187					MLE Mean (bias corrected)	0.233					MLE Sd (bias corrected)	0.291
1188											Adjusted Level of Significance (β)	0.0448
1189					Approximate Chi Square Value (59.16, α)	42.47					Adjusted Chi Square Value (59.16, β)	42.01
1190					95% Gamma Approximate UCL (use when n>=50)	0.325					95% Gamma Adjusted UCL (use when n<50)	0.328
1191												
1192	**Lognormal GOF Test on Detected Observations Only**											
1193					Shapiro Wilk Test Statistic	0.927	**Shapiro Wilk GOF Test**					
1194					5% Shapiro Wilk Critical Value	0.887	Detected Data appear Lognormal at 5% Significance Level					
1195					Lilliefors Test Statistic	0.155	**Lilliefors GOF Test**					
1196					5% Lilliefors Critical Value	0.222	Detected Data appear Lognormal at 5% Significance Level					
1197	**Detected Data appear Lognormal at 5% Significance Level**											
1198												
1199	**Lognormal ROS Statistics Using Imputed Non-Detects**											
1200					Mean in Original Scale	0.321					Mean in Log Scale	-1.323
1201					SD in Original Scale	0.23					SD in Log Scale	0.578
1202					95% t UCL (assumes normality of ROS data)	0.378					95% Percentile Bootstrap UCL	0.381
1203					95% BCA Bootstrap UCL	0.382					95% Bootstrap t UCL	0.387
1204					95% H-UCL (Log ROS)	0.372						
1205												
1206	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
1207					KM Mean (logged)	-2.132					95% H-UCL (KM -Log)	0.368
1208					KM SD (logged)	1.175					95% Critical H Value (KM-Log)	2.519
1209					KM Standard Error of Mean (logged)	0.186						
1210												
1211	**DL/2 Statistics**											
1212		**DL/2 Normal**					**DL/2 Log-Transformed**					
1213					Mean in Original Scale	0.268					Mean in Log Scale	-1.909
1214					SD in Original Scale	0.27					SD in Log Scale	1.194
1215					95% t UCL (Assumes normality)	0.335					95% H-Stat UCL	0.475
1216	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
1217												
1218	**Nonparametric Distribution Free UCL Statistics**											
1219	**Detected Data appear Normal Distributed at 5% Significance Level**											
1220												
1221	**Suggested UCL to Use**											
1222					95% KM (t) UCL	0.315					95% KM (Percentile Bootstrap) UCL	0.314
1223												
1224	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1225	Recommendations are based upon data size, data distribution, and skewness.											
1226	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1227	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1228												
1229	**Total DDTs (calc'd)**											
1230												
1231	**General Statistics**											
1232					Total Number of Observations	46					Number of Distinct Observations	46
1233											Number of Missing Observations	2
1234					Number of Detects	45					Number of Non-Detects	1
1235					Number of Distinct Detects	45					Number of Distinct Non-Detects	1

	A	B	C	D	E	F	G	H	I	J	K	L
1236					Minimum Detect	0.2					Minimum Non-Detect	0.18
1237					Maximum Detect	3.41					Maximum Non-Detect	0.18
1238					Variance Detects	0.7					Percent Non-Detects	2.174%
1239					Mean Detects	1.852					SD Detects	0.837
1240					Median Detects	2.038					CV Detects	0.452
1241					Skewness Detects	-0.295					Kurtosis Detects	-0.861
1242					Mean of Logged Detects	0.46					SD of Logged Detects	0.654
1243												
1244					**Normal GOF Test on Detects Only**							
1245					Shapiro Wilk Test Statistic	0.956			**Shapiro Wilk GOF Test**			
1246					5% Shapiro Wilk Critical Value	0.945			Detected Data appear Normal at 5% Significance Level			
1247					Lilliefors Test Statistic	0.106			**Lilliefors GOF Test**			
1248					5% Lilliefors Critical Value	0.132			Detected Data appear Normal at 5% Significance Level			
1249					**Detected Data appear Normal at 5% Significance Level**							
1250												
1251					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
1252					Mean	1.816					Standard Error of Mean	0.127
1253					SD	0.854					95% KM (BCA) UCL	2.028
1254					95% KM (t) UCL	2.03					95% KM (Percentile Bootstrap) UCL	2.028
1255					95% KM (z) UCL	2.025					95% KM Bootstrap t UCL	2.029
1256					90% KM Chebyshev UCL	2.198					95% KM Chebyshev UCL	2.371
1257					97.5% KM Chebyshev UCL	2.611					99% KM Chebyshev UCL	3.083
1258												
1259					**Gamma GOF Tests on Detected Observations Only**							
1260					A-D Test Statistic	1.403			**Anderson-Darling GOF Test**			
1261					5% A-D Critical Value	0.755			Detected Data Not Gamma Distributed at 5% Significance Level			
1262					K-S Test Statistic	0.168			**Kolmogrov-Smirnoff GOF**			
1263					5% K-S Critical Value	0.133			Detected Data Not Gamma Distributed at 5% Significance Level			
1264					**Detected Data Not Gamma Distributed at 5% Significance Level**							
1265												
1266					**Gamma Statistics on Detected Data Only**							
1267					k hat (MLE)	3.351					k star (bias corrected MLE)	3.143
1268					Theta hat (MLE)	0.553					Theta star (bias corrected MLE)	0.589
1269					nu hat (MLE)	301.6					nu star (bias corrected)	282.9
1270					MLE Mean (bias corrected)	1.852					MLE Sd (bias corrected)	1.045
1271												
1272					**Gamma Kaplan-Meier (KM) Statistics**							
1273					k hat (KM)	4.525					nu hat (KM)	416.3
1274					Approximate Chi Square Value (416.29, α)	370					Adjusted Chi Square Value (416.29, β)	368.6
1275					95% Gamma Approximate KM-UCL (use when n>=50)	2.043					95% Gamma Adjusted KM-UCL (use when n<50)	2.051
1276												
1277					**Gamma ROS Statistics using Imputed Non-Detects**							
1278					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1279					GROS may not be used when kstar of detected data is small such as < 0.1							
1280					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
1281					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
1282					Minimum	0.2					Mean	1.823
1283					Maximum	3.41					Median	2.006
1284					SD	0.85					CV	0.466
1285					k hat (MLE)	3.19					k star (bias corrected MLE)	2.996
1286					Theta hat (MLE)	0.572					Theta star (bias corrected MLE)	0.609
1287					nu hat (MLE)	293.4					nu star (bias corrected)	275.6
1288					MLE Mean (bias corrected)	1.823					MLE Sd (bias corrected)	1.053
1289											Adjusted Level of Significance (β)	0.0448
1290					Approximate Chi Square Value (275.64, α)	238.2					Adjusted Chi Square Value (275.64, β)	237.1
1291					95% Gamma Approximate UCL (use when n>=50)	2.11					95% Gamma Adjusted UCL (use when n<50)	2.12
1292												
1293					**Lognormal GOF Test on Detected Observations Only**							
1294					Shapiro Wilk Test Statistic	0.846			**Shapiro Wilk GOF Test**			
1295					5% Shapiro Wilk Critical Value	0.945			Detected Data Not Lognormal at 5% Significance Level			
1296					Lilliefors Test Statistic	0.182			**Lilliefors GOF Test**			
1297					5% Lilliefors Critical Value	0.132			Detected Data Not Lognormal at 5% Significance Level			
1298					**Detected Data Not Lognormal at 5% Significance Level**							
1299												
1300					**Lognormal ROS Statistics Using Imputed Non-Detects**							

	A	B	C	D	E	F	G	H	I	J	K	L
1301					Mean in Original Scale	1.819					Mean in Log Scale	0.426
1302					SD in Original Scale	0.857					SD in Log Scale	0.686
1303				95% t UCL (assumes normality of ROS data)		2.032					95% Percentile Bootstrap UCL	2.014
1304					95% BCA Bootstrap UCL	2.013					95% Bootstrap t UCL	2.013
1305					95% H-UCL (Log ROS)	2.383						
1306												
1307					DL/2 Statistics							
1308				DL/2 Normal					DL/2 Log-Transformed			
1309					Mean in Original Scale	1.814					Mean in Log Scale	0.398
1310					SD in Original Scale	0.867					SD in Log Scale	0.773
1311					95% t UCL (Assumes normality)	2.029					95% H-Stat UCL	2.555
1312					DL/2 is not a recommended method, provided for comparisons and historical reasons							
1313												
1314					Nonparametric Distribution Free UCL Statistics							
1315					Detected Data appear Normal Distributed at 5% Significance Level							
1316												
1317					Suggested UCL to Use							
1318					95% KM (t) UCL	2.03					95% KM (Percentile Bootstrap) UCL	2.028
1319												
1320					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1321					Recommendations are based upon data size, data distribution, and skewness.							
1322					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
1323					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
1324												
1325	Dieldrin											
1326												
1327					General Statistics							
1328					Total Number of Observations	43					Number of Distinct Observations	35
1329											Number of Missing Observations	5
1330					Number of Detects	3					Number of Non-Detects	40
1331					Number of Distinct Detects	3					Number of Distinct Non-Detects	32
1332					Minimum Detect	0.106					Minimum Non-Detect	0.03
1333					Maximum Detect	0.124					Maximum Non-Detect	0.32
1334					Variance Detects	8.9333E-5					Percent Non-Detects	93.02%
1335					Mean Detects	0.117					SD Detects	0.00945
1336					Median Detects	0.12					CV Detects	0.081
1337					Skewness Detects	-1.39					Kurtosis Detects	N/A
1338					Mean of Logged Detects	-2.151					SD of Logged Detects	0.0827
1339												
1340					Warning: Data set has only 3 Detected Values.							
1341					This is not enough to compute meaningful or reliable statistics and estimates.							
1342												
1343												
1344					Normal GOF Test on Detects Only							
1345					Shapiro Wilk Test Statistic	0.907			Shapiro Wilk GOF Test			
1346					5% Shapiro Wilk Critical Value	0.767			Detected Data appear Normal at 5% Significance Level			
1347					Lilliefors Test Statistic	0.304			Lilliefors GOF Test			
1348					5% Lilliefors Critical Value	0.512			Detected Data appear Normal at 5% Significance Level			
1349					Detected Data appear Normal at 5% Significance Level							
1350												
1351					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
1352					Mean	0.0389					Standard Error of Mean	0.00597
1353					SD	0.0263					95% KM (BCA) UCL	N/A
1354					95% KM (t) UCL	0.0489					95% KM (Percentile Bootstrap) UCL	N/A
1355					95% KM (z) UCL	0.0487					95% KM Bootstrap t UCL	N/A
1356					90% KM Chebyshev UCL	0.0568					95% KM Chebyshev UCL	0.0649
1357					97.5% KM Chebyshev UCL	0.0762					99% KM Chebyshev UCL	0.0983
1358												
1359					Gamma GOF Tests on Detected Observations Only							
1360					Not Enough Data to Perform GOF Test							
1361												
1362					Gamma Statistics on Detected Data Only							
1363					k hat (MLE)	222.4					k star (bias corrected MLE)	N/A
1364					Theta hat (MLE)	5.2462E-4					Theta star (bias corrected MLE)	N/A
1365					nu hat (MLE)	1334					nu star (bias corrected)	N/A

	A	B	C	D	E	F	G	H	I	J	K	L
1366					MLE Mean (bias corrected)	N/A					MLE Sd (bias corrected)	N/A
1367												
1368					Gamma Kaplan-Meier (KM) Statistics							
1369					k hat (KM)	2.186					nu hat (KM)	188
1370											Adjusted Level of Significance (β)	0.0444
1371					Approximate Chi Square Value (187.96, α)	157.2					Adjusted Chi Square Value (187.96, β)	156.3
1372					95% Gamma Approximate KM-UCL (use when n>=50)	0.0465					95% Gamma Adjusted KM-UCL (use when n<50)	0.0468
1373												
1374					Lognormal GOF Test on Detected Observations Only							
1375					Shapiro Wilk Test Statistic	0.899			Shapiro Wilk GOF Test			
1376					5% Shapiro Wilk Critical Value	0.767			Detected Data appear Lognormal at 5% Significance Level			
1377					Lilliefors Test Statistic	0.31			Lilliefors GOF Test			
1378					5% Lilliefors Critical Value	0.512			Detected Data appear Lognormal at 5% Significance Level			
1379					Detected Data appear Lognormal at 5% Significance Level							
1380												
1381					Lognormal ROS Statistics Using Imputed Non-Detects							
1382					Mean in Original Scale	0.078					Mean in Log Scale	-2.56
1383					SD in Original Scale	0.012					SD in Log Scale	0.133
1384					95% t UCL (assumes normality of ROS data)	0.0811					95% Percentile Bootstrap UCL	0.0812
1385					95% BCA Bootstrap UCL	0.0818					95% Bootstrap t UCL	0.0828
1386					95% H-UCL (Log ROS)	0.0807						
1387												
1388					UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed							
1389					KM Mean (logged)	-3.367					95% H-UCL (KM -Log)	0.0422
1390					KM SD (logged)	0.412					95% Critical H Value (KM-Log)	1.841
1391					KM Standard Error of Mean (logged)	0.0938						
1392												
1393					DL/2 Statistics							
1394					DL/2 Normal				DL/2 Log-Transformed			
1395					Mean in Original Scale	0.0556					Mean in Log Scale	-3.111
1396					SD in Original Scale	0.0374					SD in Log Scale	0.684
1397					95% t UCL (Assumes normality)	0.0652					95% H-Stat UCL	0.0699
1398					DL/2 is not a recommended method, provided for comparisons and historical reasons							
1399												
1400					Nonparametric Distribution Free UCL Statistics							
1401					Detected Data appear Normal Distributed at 5% Significance Level							
1402												
1403					Suggested UCL to Use							
1404					95% KM (t) UCL	0.0489					95% KM (Percentile Bootstrap) UCL	N/A
1405					Warning: One or more Recommended UCL(s) not available!							
1406												
1407					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1408					Recommendations are based upon data size, data distribution, and skewness.							
1409					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
1410					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
1411												
1412												
1413	Diesel Range Hydrocarbons											
1414												
1415					General Statistics							
1416					Total Number of Observations	28					Number of Distinct Observations	26
1417											Number of Missing Observations	18
1418					Minimum	2.6					Mean	34.68
1419					Maximum	69					Median	33
1420					SD	14.77					Std. Error of Mean	2.79
1421					Coefficient of Variation	0.426					Skewness	0.155
1422												
1423					Normal GOF Test							
1424					Shapiro Wilk Test Statistic	0.987			Shapiro Wilk GOF Test			
1425					5% Shapiro Wilk Critical Value	0.924			Data appear Normal at 5% Significance Level			
1426					Lilliefors Test Statistic	0.0844			Lilliefors GOF Test			
1427					5% Lilliefors Critical Value	0.167			Data appear Normal at 5% Significance Level			
1428					Data appear Normal at 5% Significance Level							
1429												
1430					Assuming Normal Distribution							

	A	B	C	D	E	F	G	H	I	J	K	L
1431				95% Normal UCL					95% UCLs (Adjusted for Skewness)			
1432					95% Student's-t UCL	39.44			95% Adjusted-CLT UCL (Chen-1995)			39.36
1433									95% Modified-t UCL (Johnson-1978)			39.45
1434												
1435					Gamma GOF Test							
1436					A-D Test Statistic	0.77			Anderson-Darling Gamma GOF Test			
1437					5% A-D Critical Value	0.75			Data Not Gamma Distributed at 5% Significance Level			
1438					K-S Test Statistic	0.159			Kolmogrov-Smirnoff Gamma GOF Test			
1439					5% K-S Critical Value	0.166			Detected data appear Gamma Distributed at 5% Significance Level			
1440					Detected data follow Appr. Gamma Distribution at 5% Significance Level							
1441												
1442					Gamma Statistics							
1443					k hat (MLE)	3.836			k star (bias corrected MLE)			3.449
1444					Theta hat (MLE)	9.041			Theta star (bias corrected MLE)			10.06
1445					nu hat (MLE)	214.8			nu star (bias corrected)			193.1
1446					MLE Mean (bias corrected)	34.68			MLE Sd (bias corrected)			18.68
1447									Approximate Chi Square Value (0.05)			162
1448					Adjusted Level of Significance	0.0404			Adjusted Chi Square Value			160.2
1449												
1450					Assuming Gamma Distribution							
1451					95% Approximate Gamma UCL (use when n>=50))	41.35			95% Adjusted Gamma UCL (use when n<50)			41.81
1452												
1453					Lognormal GOF Test							
1454					Shapiro Wilk Test Statistic	0.794			Shapiro Wilk Lognormal GOF Test			
1455					5% Shapiro Wilk Critical Value	0.924			Data Not Lognormal at 5% Significance Level			
1456					Lilliefors Test Statistic	0.201			Lilliefors Lognormal GOF Test			
1457					5% Lilliefors Critical Value	0.167			Data Not Lognormal at 5% Significance Level			
1458					Data Not Lognormal at 5% Significance Level							
1459												
1460					Lognormal Statistics							
1461					Minimum of Logged Data	0.956			Mean of logged Data			3.41
1462					Maximum of Logged Data	4.234			SD of logged Data			0.639
1463												
1464					Assuming Lognormal Distribution							
1465					95% H-UCL	47.87			90% Chebyshev (MVUE) UCL			51.07
1466					95% Chebyshev (MVUE) UCL	57.52			97.5% Chebyshev (MVUE) UCL			66.48
1467					99% Chebyshev (MVUE) UCL	84.07						
1468												
1469					Nonparametric Distribution Free UCL Statistics							
1470					Data appear to follow a Discernible Distribution at 5% Significance Level							
1471												
1472					Nonparametric Distribution Free UCLs							
1473					95% CLT UCL	39.27			95% Jackknife UCL			39.44
1474					95% Standard Bootstrap UCL	39.16			95% Bootstrap-t UCL			39.57
1475					95% Hall's Bootstrap UCL	39.35			95% Percentile Bootstrap UCL			39.22
1476					95% BCA Bootstrap UCL	39.55						
1477					90% Chebyshev(Mean, Sd) UCL	43.06			95% Chebyshev(Mean, Sd) UCL			46.85
1478					97.5% Chebyshev(Mean, Sd) UCL	52.11			99% Chebyshev(Mean, Sd) UCL			62.45
1479												
1480					Suggested UCL to Use							
1481					95% Student's-t UCL	39.44						
1482												
1483					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1484					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
1485					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
1486					For additional insight the user may want to consult a statistician.							
1487												
1488												
1489	Dioxin TEQ - Mammals 2006											
1490												
1491					General Statistics							
1492					Total Number of Observations	50			Number of Distinct Observations			50
1493									Number of Missing Observations			21
1494					Minimum	0.0333			Mean			0.747
1495					Maximum	3.207			Median			0.341

	A	B	C	D	E	F	G	H	I	J	K	L
1496					SD	0.856					Std. Error of Mean	0.121
1497					Coefficient of Variation	1.146					Skewness	1.266
1498												
1499					Normal GOF Test							
1500					Shapiro Wilk Test Statistic	0.786	Shapiro Wilk GOF Test					
1501					5% Shapiro Wilk Critical Value	0.947	Data Not Normal at 5% Significance Level					
1502					Lilliefors Test Statistic	0.256	Lilliefors GOF Test					
1503					5% Lilliefors Critical Value	0.125	Data Not Normal at 5% Significance Level					
1504					Data Not Normal at 5% Significance Level							
1505												
1506					Assuming Normal Distribution							
1507				95% Normal UCL			95% UCLs (Adjusted for Skewness)					
1508					95% Student's-t UCL	0.949	95% Adjusted-CLT UCL (Chen-1995)					0.969
1509							95% Modified-t UCL (Johnson-1978)					0.953
1510												
1511					Gamma GOF Test							
1512					A-D Test Statistic	1.384	Anderson-Darling Gamma GOF Test					
1513					5% A-D Critical Value	0.794	Data Not Gamma Distributed at 5% Significance Level					
1514					K-S Test Statistic	0.136	Kolmogrov-Smirnoff Gamma GOF Test					
1515					5% K-S Critical Value	0.13	Data Not Gamma Distributed at 5% Significance Level					
1516					Data Not Gamma Distributed at 5% Significance Level							
1517												
1518					Gamma Statistics							
1519					k hat (MLE)	0.738	k star (bias corrected MLE)					0.707
1520					Theta hat (MLE)	1.012	Theta star (bias corrected MLE)					1.056
1521					nu hat (MLE)	73.8	nu star (bias corrected)					70.7
1522					MLE Mean (bias corrected)	0.747	MLE Sd (bias corrected)					0.888
1523							Approximate Chi Square Value (0.05)					52.34
1524					Adjusted Level of Significance	0.0452	Adjusted Chi Square Value					51.87
1525												
1526					Assuming Gamma Distribution							
1527					95% Approximate Gamma UCL (use when n>=50))	1.008	95% Adjusted Gamma UCL (use when n<50)					1.018
1528												
1529					Lognormal GOF Test							
1530					Shapiro Wilk Test Statistic	0.92	Shapiro Wilk Lognormal GOF Test					
1531					5% Shapiro Wilk Critical Value	0.947	Data Not Lognormal at 5% Significance Level					
1532					Lilliefors Test Statistic	0.161	Lilliefors Lognormal GOF Test					
1533					5% Lilliefors Critical Value	0.125	Data Not Lognormal at 5% Significance Level					
1534					Data Not Lognormal at 5% Significance Level							
1535												
1536					Lognormal Statistics							
1537					Minimum of Logged Data	-3.403	Mean of logged Data					-1.105
1538					Maximum of Logged Data	1.165	SD of logged Data					1.409
1539												
1540					Assuming Lognormal Distribution							
1541					95% H-UCL	1.576	90% Chebyshev (MVUE) UCL					1.528
1542					95% Chebyshev (MVUE) UCL	1.831	97.5% Chebyshev (MVUE) UCL					2.251
1543					99% Chebyshev (MVUE) UCL	3.076						
1544												
1545					Nonparametric Distribution Free UCL Statistics							
1546					Data do not follow a Discernible Distribution (0.05)							
1547												
1548					Nonparametric Distribution Free UCLs							
1549					95% CLT UCL	0.946	95% Jackknife UCL					0.949
1550					95% Standard Bootstrap UCL	0.941	95% Bootstrap-t UCL					0.98
1551					95% Hall's Bootstrap UCL	0.977	95% Percentile Bootstrap UCL					0.95
1552					95% BCA Bootstrap UCL	0.967						
1553					90% Chebyshev(Mean, Sd) UCL	1.11	95% Chebyshev(Mean, Sd) UCL					1.274
1554					97.5% Chebyshev(Mean, Sd) UCL	1.502	99% Chebyshev(Mean, Sd) UCL					1.951
1555												
1556					Suggested UCL to Use							
1557					95% Chebyshev (Mean, Sd) UCL	1.274						
1558												
1559	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1560	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											

	A	B	C	D	E	F	G	H	I	J	K	L
1561	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1562	For additional insight the user may want to consult a statistician.											
1563												
1564	**Hexachlorobenzene**											
1565												
1566	**General Statistics**											
1567	Total Number of Observations					27	Number of Distinct Observations					20
1568							Number of Missing Observations					19
1569	Number of Detects					17	Number of Non-Detects					10
1570	Number of Distinct Detects					14	Number of Distinct Non-Detects					9
1571	Minimum Detect					0.075	Minimum Non-Detect					0.068
1572	Maximum Detect					0.369	Maximum Non-Detect					0.43
1573	Variance Detects					0.00655	Percent Non-Detects					37.04%
1574	Mean Detects					0.183	SD Detects					0.0809
1575	Median Detects					0.16	CV Detects					0.442
1576	Skewness Detects					0.957	Kurtosis Detects					0.388
1577	Mean of Logged Detects					-1.785	SD of Logged Detects					0.431
1578												
1579	**Normal GOF Test on Detects Only**											
1580	Shapiro Wilk Test Statistic					0.924	**Shapiro Wilk GOF Test**					
1581	5% Shapiro Wilk Critical Value					0.892	Detected Data appear Normal at 5% Significance Level					
1582	Lilliefors Test Statistic					0.172	**Lilliefors GOF Test**					
1583	5% Lilliefors Critical Value					0.215	Detected Data appear Normal at 5% Significance Level					
1584	**Detected Data appear Normal at 5% Significance Level**											
1585												
1586	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
1587	Mean					0.16	Standard Error of Mean					0.0166
1588	SD					0.0772	95% KM (BCA) UCL					0.189
1589	95% KM (t) UCL					0.188	95% KM (Percentile Bootstrap) UCL					0.188
1590	95% KM (z) UCL					0.187	95% KM Bootstrap t UCL					0.192
1591	90% KM Chebyshev UCL					0.21	95% KM Chebyshev UCL					0.232
1592	97.5% KM Chebyshev UCL					0.264	99% KM Chebyshev UCL					0.325
1593												
1594	**Gamma GOF Tests on Detected Observations Only**											
1595	A-D Test Statistic					0.227	**Anderson-Darling GOF Test**					
1596	5% A-D Critical Value					0.741	Detected data appear Gamma Distributed at 5% Significance Level					
1597	K-S Test Statistic					0.116	**Kolmogrov-Smirnoff GOF**					
1598	5% K-S Critical Value					0.21	Detected data appear Gamma Distributed at 5% Significance Level					
1599	**Detected data appear Gamma Distributed at 5% Significance Level**											
1600												
1601	**Gamma Statistics on Detected Data Only**											
1602	k hat (MLE)					5.868	k star (bias corrected MLE)					4.872
1603	Theta hat (MLE)					0.0312	Theta star (bias corrected MLE)					0.0376
1604	nu hat (MLE)					199.5	nu star (bias corrected)					165.6
1605	MLE Mean (bias corrected)					0.183	MLE Sd (bias corrected)					0.083
1606												
1607	**Gamma Kaplan-Meier (KM) Statistics**											
1608	k hat (KM)					4.304	nu hat (KM)					232.4
1609	Approximate Chi Square Value (232.41, α)					198.1	Adjusted Chi Square Value (232.41, β)					196.1
1610	95% Gamma Approximate KM-UCL (use when n>=50)					0.188	95% Gamma Adjusted KM-UCL (use when n<50)					0.19
1611												
1612	**Gamma ROS Statistics using Imputed Non-Detects**											
1613	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1614	GROS may not be used when kstar of detected data is small such as < 0.1											
1615	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1616	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1617	Minimum					0.0359	Mean					0.157
1618	Maximum					0.369	Median					0.14
1619	SD					0.0762	CV					0.487
1620	k hat (MLE)					4.555	k star (bias corrected MLE)					4.074
1621	Theta hat (MLE)					0.0344	Theta star (bias corrected MLE)					0.0384
1622	nu hat (MLE)					246	nu star (bias corrected)					220
1623	MLE Mean (bias corrected)					0.157	MLE Sd (bias corrected)					0.0776
1624							Adjusted Level of Significance (β)					0.0401
1625	Approximate Chi Square Value (219.99, α)					186.7	Adjusted Chi Square Value (219.99, β)					184.7

	A	B	C	D	E	F	G	H	I	J	K	L
1626	95% Gamma Approximate UCL (use when n>=50)					0.184	95% Gamma Adjusted UCL (use when n<50)					0.186
1627												
1628	Lognormal GOF Test on Detected Observations Only											
1629	Shapiro Wilk Test Statistic					0.984	Shapiro Wilk GOF Test					
1630	5% Shapiro Wilk Critical Value					0.892	Detected Data appear Lognormal at 5% Significance Level					
1631	Lilliefors Test Statistic					0.1	Lilliefors GOF Test					
1632	5% Lilliefors Critical Value					0.215	Detected Data appear Lognormal at 5% Significance Level					
1633	Detected Data appear Lognormal at 5% Significance Level											
1634												
1635	Lognormal ROS Statistics Using Imputed Non-Detects											
1636	Mean in Original Scale					0.158	Mean in Log Scale					-1.941
1637	SD in Original Scale					0.074	SD in Log Scale					0.436
1638	95% t UCL (assumes normality of ROS data)					0.182	95% Percentile Bootstrap UCL					0.181
1639	95% BCA Bootstrap UCL					0.185	95% Bootstrap t UCL					0.189
1640	95% H-UCL (Log ROS)					0.186						
1641												
1642	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
1643	KM Mean (logged)					-1.942	95% H-UCL (KM -Log)					0.192
1644	KM SD (logged)					0.471	95% Critical H Value (KM-Log)					1.946
1645	KM Standard Error of Mean (logged)					0.105						
1646												
1647	DL/2 Statistics											
1648	DL/2 Normal						DL/2 Log-Transformed					
1649	Mean in Original Scale					0.157	Mean in Log Scale					-1.992
1650	SD in Original Scale					0.08	SD in Log Scale					0.57
1651	95% t UCL (Assumes normality)					0.183	95% H-Stat UCL					0.201
1652	DL/2 is not a recommended method, provided for comparisons and historical reasons											
1653												
1654	Nonparametric Distribution Free UCL Statistics											
1655	Detected Data appear Normal Distributed at 5% Significance Level											
1656												
1657	Suggested UCL to Use											
1658	95% KM (t) UCL					0.188	95% KM (Percentile Bootstrap) UCL					0.188
1659												
1660	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1661	Recommendations are based upon data size, data distribution, and skewness.											
1662	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1663	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1664												
1665												
1666	Total HPAHs (calc'd)											
1667												
1668	General Statistics											
1669	Total Number of Observations					68	Number of Distinct Observations					64
1670							Number of Missing Observations					3
1671	Number of Detects					56	Number of Non-Detects					12
1672	Number of Distinct Detects					55	Number of Distinct Non-Detects					9
1673	Minimum Detect					4.73	Minimum Non-Detect					1
1674	Maximum Detect					188	Maximum Non-Detect					10
1675	Variance Detects					1750	Percent Non-Detects					17.65%
1676	Mean Detects					63.52	SD Detects					41.83
1677	Median Detects					55.96	CV Detects					0.659
1678	Skewness Detects					0.978	Kurtosis Detects					0.762
1679	Mean of Logged Detects					3.903	SD of Logged Detects					0.78
1680												
1681	Normal GOF Test on Detects Only											
1682	Shapiro Wilk Test Statistic					0.923	Normal GOF Test on Detected Observations Only					
1683	5% Shapiro Wilk P Value					0.00157	Detected Data Not Normal at 5% Significance Level					
1684	Lilliefors Test Statistic					0.11	Lilliefors GOF Test					
1685	5% Lilliefors Critical Value					0.118	Detected Data appear Normal at 5% Significance Level					
1686	Detected Data appear Approximate Normal at 5% Significance Level											
1687												
1688	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
1689	Mean					52.51	Standard Error of Mean					5.446
1690	SD					44.5	95% KM (BCA) UCL					61.23

	A	B	C	D	E	F	G	H	I	J	K	L
1691					95% KM (t) UCL	61.6			95% KM (Percentile Bootstrap) UCL			61.7
1692					95% KM (z) UCL	61.47					95% KM Bootstrap t UCL	62.88
1693					90% KM Chebyshev UCL	68.85					95% KM Chebyshev UCL	76.25
1694					97.5% KM Chebyshev UCL	86.52					99% KM Chebyshev UCL	106.7
1695												
1696					Gamma GOF Tests on Detected Observations Only							
1697					A-D Test Statistic	0.175	Anderson-Darling GOF Test					
1698					5% A-D Critical Value	0.762	Detected data appear Gamma Distributed at 5% Significance Level					
1699					K-S Test Statistic	0.0632	Kolmogrov-Smirnoff GOF					
1700					5% K-S Critical Value	0.12	Detected data appear Gamma Distributed at 5% Significance Level					
1701					Detected data appear Gamma Distributed at 5% Significance Level							
1702												
1703					Gamma Statistics on Detected Data Only							
1704					k hat (MLE)	2.163			k star (bias corrected MLE)			2.059
1705					Theta hat (MLE)	29.37			Theta star (bias corrected MLE)			30.85
1706					nu hat (MLE)	242.2			nu star (bias corrected)			230.6
1707					MLE Mean (bias corrected)	63.52			MLE Sd (bias corrected)			44.27
1708												
1709					Gamma Kaplan-Meier (KM) Statistics							
1710					k hat (KM)	1.392			nu hat (KM)			189.4
1711					Approximate Chi Square Value (189.36, α)	158.5			Adjusted Chi Square Value (189.36, β)			157.9
1712					95% Gamma Approximate KM-UCL (use when n>=50)	62.73			95% Gamma Adjusted KM-UCL (use when n<50)			62.97
1713												
1714					Gamma ROS Statistics using Imputed Non-Detects							
1715					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1716					GROS may not be used when kstar of detected data is small such as < 0.1							
1717					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
1718					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
1719					Minimum	0.01			Mean			52.7
1720					Maximum	188			Median			44.78
1721					SD	44.62			CV			0.847
1722					k hat (MLE)	0.72			k star (bias corrected MLE)			0.699
1723					Theta hat (MLE)	73.15			Theta star (bias corrected MLE)			75.45
1724					nu hat (MLE)	97.99			nu star (bias corrected)			95
1725					MLE Mean (bias corrected)	52.7			MLE Sd (bias corrected)			63.06
1726									Adjusted Level of Significance (β)			0.0465
1727					Approximate Chi Square Value (95.00, α)	73.52			Adjusted Chi Square Value (95.00, β)			73.11
1728					95% Gamma Approximate UCL (use when n>=50)	68.1			95% Gamma Adjusted UCL (use when n<50)			68.48
1729												
1730					Lognormal GOF Test on Detected Observations Only							
1731					Lilliefors Test Statistic	0.09	Lilliefors GOF Test					
1732					5% Lilliefors Critical Value	0.118	Detected Data appear Lognormal at 5% Significance Level					
1733					Detected Data appear Lognormal at 5% Significance Level							
1734												
1735					Lognormal ROS Statistics Using Imputed Non-Detects							
1736					Mean in Original Scale	54.04			Mean in Log Scale			3.615
1737					SD in Original Scale	43.16			SD in Log Scale			0.946
1738					95% t UCL (assumes normality of ROS data)	62.76			95% Percentile Bootstrap UCL			63.1
1739					95% BCA Bootstrap UCL	63.27			95% Bootstrap t UCL			63.8
1740					95% H-UCL (Log ROS)	75.12						
1741												
1742					UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed							
1743					KM Mean (logged)	3.225			95% H-UCL (KM -Log)			155.9
1744					KM SD (logged)	1.629			95% Critical H Value (KM-Log)			2.504
1745					KM Standard Error of Mean (logged)	0.2						
1746												
1747					DL/2 Statistics							
1748					DL/2 Normal		DL/2 Log-Transformed					
1749					Mean in Original Scale	52.64			Mean in Log Scale			3.278
1750					SD in Original Scale	44.69			SD in Log Scale			1.562
1751					95% t UCL (Assumes normality)	61.68			95% H-Stat UCL			142.9
1752					DL/2 is not a recommended method, provided for comparisons and historical reasons							
1753												
1754					Nonparametric Distribution Free UCL Statistics							
1755					Detected Data appear Approximate Normal Distributed at 5% Significance Level							

	A	B	C	D	E	F	G	H	I	J	K	L
1756												
1757						Suggested UCL to Use						
1758					95% KM (t) UCL	61.6			95% KM (Percentile Bootstrap) UCL			61.7
1759												
1760					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1761					Recommendations are based upon data size, data distribution, and skewness.							
1762					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
1763					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
1764												
1765	Lead											
1766												
1767						General Statistics						
1768					Total Number of Observations	61			Number of Distinct Observations			54
1769									Number of Missing Observations			10
1770					Minimum	3.96			Mean			7.355
1771					Maximum	10.8			Median			7.2
1772					SD	1.558			Std. Error of Mean			0.2
1773					Coefficient of Variation	0.212			Skewness			0.0676
1774												
1775						Normal GOF Test						
1776					Shapiro Wilk Test Statistic	0.978			Shapiro Wilk GOF Test			
1777					5% Shapiro Wilk P Value	0.589			Data appear Normal at 5% Significance Level			
1778					Lilliefors Test Statistic	0.0641			Lilliefors GOF Test			
1779					5% Lilliefors Critical Value	0.113			Data appear Normal at 5% Significance Level			
1780						Data appear Normal at 5% Significance Level						
1781												
1782						Assuming Normal Distribution						
1783					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
1784					95% Student's-t UCL	7.688			95% Adjusted-CLT UCL (Chen-1995)			7.685
1785									95% Modified-t UCL (Johnson-1978)			7.688
1786												
1787						Gamma GOF Test						
1788					A-D Test Statistic	0.282			Anderson-Darling Gamma GOF Test			
1789					5% A-D Critical Value	0.749			Detected data appear Gamma Distributed at 5% Significance Level			
1790					K-S Test Statistic	0.0631			Kolmogrov-Smirnoff Gamma GOF Test			
1791					5% K-S Critical Value	0.114			Detected data appear Gamma Distributed at 5% Significance Level			
1792						Detected data appear Gamma Distributed at 5% Significance Level						
1793												
1794						Gamma Statistics						
1795					k hat (MLE)	21.59			k star (bias corrected MLE)			20.54
1796					Theta hat (MLE)	0.341			Theta star (bias corrected MLE)			0.358
1797					nu hat (MLE)	2634			nu star (bias corrected)			2506
1798					MLE Mean (bias corrected)	7.355			MLE Sd (bias corrected)			1.623
1799									Approximate Chi Square Value (0.05)			2391
1800					Adjusted Level of Significance	0.0461			Adjusted Chi Square Value			2388
1801												
1802						Assuming Gamma Distribution						
1803					95% Approximate Gamma UCL (use when n>=50))	7.709			95% Adjusted Gamma UCL (use when n<50)			7.718
1804												
1805						Lognormal GOF Test						
1806					Shapiro Wilk Test Statistic	0.963			Shapiro Wilk Lognormal GOF Test			
1807					5% Shapiro Wilk P Value	0.143			Data appear Lognormal at 5% Significance Level			
1808					Lilliefors Test Statistic	0.0723			Lilliefors Lognormal GOF Test			
1809					5% Lilliefors Critical Value	0.113			Data appear Lognormal at 5% Significance Level			
1810						Data appear Lognormal at 5% Significance Level						
1811												
1812						Lognormal Statistics						
1813					Minimum of Logged Data	1.376			Mean of logged Data			1.972
1814					Maximum of Logged Data	2.38			SD of logged Data			0.222
1815												
1816						Assuming Lognormal Distribution						
1817					95% H-UCL	7.737			90% Chebyshev (MVUE) UCL			7.996
1818					95% Chebyshev (MVUE) UCL	8.283			97.5% Chebyshev (MVUE) UCL			8.682
1819					99% Chebyshev (MVUE) UCL	9.466						
1820												

	A	B	C	D	E	F	G	H	I	J	K	L
1821					Nonparametric Distribution Free UCL Statistics							
1822					Data appear to follow a Discernible Distribution at 5% Significance Level							
1823												
1824					Nonparametric Distribution Free UCLs							
1825					95% CLT UCL	7.683			95% Jackknife UCL			7.688
1826					95% Standard Bootstrap UCL	7.677			95% Bootstrap-t UCL			7.686
1827					95% Hall's Bootstrap UCL	7.686			95% Percentile Bootstrap UCL			7.685
1828					95% BCA Bootstrap UCL	7.696						
1829					90% Chebyshev(Mean, Sd) UCL	7.953			95% Chebyshev(Mean, Sd) UCL			8.225
1830					97.5% Chebyshev(Mean, Sd) UCL	8.601			99% Chebyshev(Mean, Sd) UCL			9.34
1831												
1832					Suggested UCL to Use							
1833					95% Student's-t UCL	7.688						
1834												
1835					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1836					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
1837					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
1838					For additional insight the user may want to consult a statistician.							
1839												
1840	Total LPAHs (calc'd)											
1841												
1842					General Statistics							
1843					Total Number of Observations	70			Number of Distinct Observations			61
1844									Number of Missing Observations			1
1845					Number of Detects	47			Number of Non-Detects			23
1846					Number of Distinct Detects	47			Number of Distinct Non-Detects			14
1847					Minimum Detect	2.335			Minimum Non-Detect			1.5
1848					Maximum Detect	36			Maximum Non-Detect			10
1849					Variance Detects	54.64			Percent Non-Detects			32.86%
1850					Mean Detects	13.87			SD Detects			7.392
1851					Median Detects	13.49			CV Detects			0.533
1852					Skewness Detects	0.673			Kurtosis Detects			0.671
1853					Mean of Logged Detects	2.456			SD of Logged Detects			0.654
1854												
1855					Normal GOF Test on Detects Only							
1856					Shapiro Wilk Test Statistic	0.959			Shapiro Wilk GOF Test			
1857					5% Shapiro Wilk Critical Value	0.946			Detected Data appear Normal at 5% Significance Level			
1858					Lilliefors Test Statistic	0.117			Lilliefors GOF Test			
1859					5% Lilliefors Critical Value	0.129			Detected Data appear Normal at 5% Significance Level			
1860					Detected Data appear Normal at 5% Significance Level							
1861												
1862					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
1863					Mean	9.888			Standard Error of Mean			1.003
1864					SD	8.282			95% KM (BCA) UCL			11.62
1865					95% KM (t) UCL	11.56			95% KM (Percentile Bootstrap) UCL			11.55
1866					95% KM (z) UCL	11.54			95% KM Bootstrap t UCL			11.63
1867					90% KM Chebyshev UCL	12.9			95% KM Chebyshev UCL			14.26
1868					97.5% KM Chebyshev UCL	16.15			99% KM Chebyshev UCL			19.86
1869												
1870					Gamma GOF Tests on Detected Observations Only							
1871					A-D Test Statistic	0.571			Anderson-Darling GOF Test			
1872					5% A-D Critical Value	0.756			Detected data appear Gamma Distributed at 5% Significance Level			
1873					K-S Test Statistic	0.101			Kolmogrov-Smirnoff GOF			
1874					5% K-S Critical Value	0.13			Detected data appear Gamma Distributed at 5% Significance Level			
1875					Detected data appear Gamma Distributed at 5% Significance Level							
1876												
1877					Gamma Statistics on Detected Data Only							
1878					k hat (MLE)	3.044			k star (bias corrected MLE)			2.864
1879					Theta hat (MLE)	4.555			Theta star (bias corrected MLE)			4.842
1880					nu hat (MLE)	286.1			nu star (bias corrected)			269.2
1881					MLE Mean (bias corrected)	13.87			MLE Sd (bias corrected)			8.194
1882												
1883					Gamma Kaplan-Meier (KM) Statistics							
1884					k hat (KM)	1.426			nu hat (KM)			199.6
1885					Approximate Chi Square Value (199.58, α)	167.9			Adjusted Chi Square Value (199.58, β)			167.3

	A	B	C	D	E	F	G	H	I	J	K	L
1886	95% Gamma Approximate KM-UCL (use when n>=50)					11.75	95% Gamma Adjusted KM-UCL (use when n<50)					11.8
1887												
1888	**Gamma ROS Statistics using Imputed Non-Detects**											
1889	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1890	GROS may not be used when kstar of detected data is small such as < 0.1											
1891	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1892	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1893	Minimum					0.01	Mean					9.902
1894	Maximum					36	Median					9.26
1895	SD					8.339	CV					0.842
1896	k hat (MLE)					0.885	k star (bias corrected MLE)					0.856
1897	Theta hat (MLE)					11.19	Theta star (bias corrected MLE)					11.56
1898	nu hat (MLE)					123.9	nu star (bias corrected)					119.9
1899	MLE Mean (bias corrected)					9.902	MLE Sd (bias corrected)					10.7
1900							Adjusted Level of Significance (β)					0.0466
1901	Approximate Chi Square Value (119.89, α)					95.61	Adjusted Chi Square Value (119.89, β)					95.16
1902	95% Gamma Approximate UCL (use when n>=50)					12.42	95% Gamma Adjusted UCL (use when n<50)					12.48
1903												
1904	**Lognormal GOF Test on Detected Observations Only**											
1905	Shapiro Wilk Test Statistic					0.916	**Shapiro Wilk GOF Test**					
1906	5% Shapiro Wilk Critical Value					0.946	Detected Data Not Lognormal at 5% Significance Level					
1907	Lilliefors Test Statistic					0.139	**Lilliefors GOF Test**					
1908	5% Lilliefors Critical Value					0.129	Detected Data Not Lognormal at 5% Significance Level					
1909	**Detected Data Not Lognormal at 5% Significance Level**											
1910												
1911	**Lognormal ROS Statistics Using Imputed Non-Detects**											
1912	Mean in Original Scale					10.34	Mean in Log Scale					2.015
1913	SD in Original Scale					7.902	SD in Log Scale					0.841
1914	95% t UCL (assumes normality of ROS data)					11.91	95% Percentile Bootstrap UCL					11.95
1915	95% BCA Bootstrap UCL					11.92	95% Bootstrap t UCL					12.07
1916	95% H-UCL (Log ROS)					13.26						
1917												
1918	**DL/2 Statistics**											
1919	**DL/2 Normal**						**DL/2 Log-Transformed**					
1920	Mean in Original Scale					9.849	Mean in Log Scale					1.762
1921	SD in Original Scale					8.386	SD in Log Scale					1.169
1922	95% t UCL (Assumes normality)					11.52	95% H-Stat UCL					15.66
1923	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
1924												
1925	**Nonparametric Distribution Free UCL Statistics**											
1926	**Detected Data appear Normal Distributed at 5% Significance Level**											
1927												
1928	**Suggested UCL to Use**											
1929	95% KM (t) UCL					11.56	95% KM (Percentile Bootstrap) UCL					11.55
1930												
1931	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1932	Recommendations are based upon data size, data distribution, and skewness.											
1933	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1934	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1935												
1936	**Mercury**											
1937												
1938	**General Statistics**											
1939	Total Number of Observations					61	Number of Distinct Observations					34
1940							Number of Missing Observations					10
1941	Number of Detects					52	Number of Non-Detects					9
1942	Number of Distinct Detects					34	Number of Distinct Non-Detects					3
1943	Minimum Detect					0.009	Minimum Non-Detect					0.02
1944	Maximum Detect					0.061	Maximum Non-Detect					0.04
1945	Variance Detects					1.3958E-4	Percent Non-Detects					14.75%
1946	Mean Detects					0.0333	SD Detects					0.0118
1947	Median Detects					0.034	CV Detects					0.354
1948	Skewness Detects					0.334	Kurtosis Detects					-0.199
1949	Mean of Logged Detects					-3.47	SD of Logged Detects					0.389
1950												

	A	B	C	D	E	F	G	H	I	J	K	L
1951	**Normal GOF Test on Detects Only**											
1952					Shapiro Wilk Test Statistic	0.976	**Normal GOF Test on Detected Observations Only**					
1953					5% Shapiro Wilk P Value	0.583	Detected Data appear Normal at 5% Significance Level					
1954					Lilliefors Test Statistic	0.0657	**Lilliefors GOF Test**					
1955					5% Lilliefors Critical Value	0.123	Detected Data appear Normal at 5% Significance Level					
1956	**Detected Data appear Normal at 5% Significance Level**											
1957												
1958	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
1959					Mean	0.0312			Standard Error of Mean			0.00162
1960					SD	0.0123			95% KM (BCA) UCL			0.0338
1961					95% KM (t) UCL	0.0339			95% KM (Percentile Bootstrap) UCL			0.0338
1962					95% KM (z) UCL	0.0338			95% KM Bootstrap t UCL			0.0339
1963					90% KM Chebyshev UCL	0.036			95% KM Chebyshev UCL			0.0382
1964					97.5% KM Chebyshev UCL	0.0413			99% KM Chebyshev UCL			0.0473
1965												
1966	**Gamma GOF Tests on Detected Observations Only**											
1967					A-D Test Statistic	0.233	**Anderson-Darling GOF Test**					
1968					5% A-D Critical Value	0.752	Detected data appear Gamma Distributed at 5% Significance Level					
1969					K-S Test Statistic	0.0893	**Kolmogrov-Smirnoff GOF**					
1970					5% K-S Critical Value	0.123	Detected data appear Gamma Distributed at 5% Significance Level					
1971	**Detected data appear Gamma Distributed at 5% Significance Level**											
1972												
1973	**Gamma Statistics on Detected Data Only**											
1974					k hat (MLE)	7.484			k star (bias corrected MLE)			7.065
1975					Theta hat (MLE)	0.00445			Theta star (bias corrected MLE)			0.00472
1976					nu hat (MLE)	778.3			nu star (bias corrected)			734.8
1977					MLE Mean (bias corrected)	0.0333			MLE Sd (bias corrected)			0.0125
1978												
1979	**Gamma Kaplan-Meier (KM) Statistics**											
1980					k hat (KM)	6.423			nu hat (KM)			783.7
1981					Approximate Chi Square Value (783.67, α)	719.7			Adjusted Chi Square Value (783.67, β)			718.2
1982					95% Gamma Approximate KM-UCL (use when n>=50)	0.0339			95% Gamma Adjusted KM-UCL (use when n<50)			0.034
1983												
1984	**Gamma ROS Statistics using Imputed Non-Detects**											
1985	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1986	GROS may not be used when kstar of detected data is small such as < 0.1											
1987	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1988	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1989					Minimum	0.009			Mean			0.0312
1990					Maximum	0.061			Median			0.0305
1991					SD	0.0122			CV			0.39
1992					k hat (MLE)	6.367			k star (bias corrected MLE)			6.065
1993					Theta hat (MLE)	0.00491			Theta star (bias corrected MLE)			0.00515
1994					nu hat (MLE)	776.8			nu star (bias corrected)			739.9
1995					MLE Mean (bias corrected)	0.0312			MLE Sd (bias corrected)			0.0127
1996									Adjusted Level of Significance (β)			0.0461
1997					Approximate Chi Square Value (739.89, α)	677.8			Adjusted Chi Square Value (739.89, β)			676.3
1998					95% Gamma Approximate UCL (use when n>=50)	0.0341			95% Gamma Adjusted UCL (use when n<50)			0.0342
1999												
2000	**Lognormal GOF Test on Detected Observations Only**											
2001					Lilliefors Test Statistic	0.109	**Lilliefors GOF Test**					
2002					5% Lilliefors Critical Value	0.123	Detected Data appear Lognormal at 5% Significance Level					
2003	**Detected Data appear Lognormal at 5% Significance Level**											
2004												
2005	**Lognormal ROS Statistics Using Imputed Non-Detects**											
2006					Mean in Original Scale	0.0312			Mean in Log Scale			-3.545
2007					SD in Original Scale	0.0121			SD in Log Scale			0.413
2008					95% t UCL (assumes normality of ROS data)	0.0338			95% Percentile Bootstrap UCL			0.0339
2009					95% BCA Bootstrap UCL	0.0337			95% Bootstrap t UCL			0.0339
2010					95% H-UCL (Log ROS)	0.0346						
2011												
2012	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
2013					KM Mean (logged)	-3.555			95% H-UCL (KM -Log)			0.0348
2014					KM SD (logged)	0.435			95% Critical H Value (KM-Log)			1.822
2015					KM Standard Error of Mean (logged)	0.0595						

	A	B	C	D	E	F	G	H	I	J	K	L
2016												
2017						DL/2 Statistics						
2018				DL/2 Normal					DL/2 Log-Transformed			
2019					Mean in Original Scale	0.0304					Mean in Log Scale	-3.601
2020					SD in Original Scale	0.0131					SD in Log Scale	0.493
2021					95% t UCL (Assumes normality)	0.0332					95% H-Stat UCL	0.0347
2022					DL/2 is not a recommended method, provided for comparisons and historical reasons							
2023												
2024					Nonparametric Distribution Free UCL Statistics							
2025					Detected Data appear Normal Distributed at 5% Significance Level							
2026												
2027					Suggested UCL to Use							
2028					95% KM (t) UCL	0.0339					95% KM (Percentile Bootstrap) UCL	0.0338
2029												
2030					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
2031					Recommendations are based upon data size, data distribution, and skewness.							
2032					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
2033					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
2034												
2035	Naphthalene											
2036												
2037					General Statistics							
2038					Total Number of Observations	64					Number of Distinct Observations	43
2039											Number of Missing Observations	7
2040					Number of Detects	19					Number of Non-Detects	45
2041					Number of Distinct Detects	19					Number of Distinct Non-Detects	29
2042					Minimum Detect	1.1					Minimum Non-Detect	0.55
2043					Maximum Detect	8.1					Maximum Non-Detect	9.7
2044					Variance Detects	2.7					Percent Non-Detects	70.31%
2045					Mean Detects	4.824					SD Detects	1.643
2046					Median Detects	4.8					CV Detects	0.341
2047					Skewness Detects	-0.155					Kurtosis Detects	0.452
2048					Mean of Logged Detects	1.5					SD of Logged Detects	0.438
2049												
2050					Normal GOF Test on Detects Only							
2051					Shapiro Wilk Test Statistic	0.99			Shapiro Wilk GOF Test			
2052					5% Shapiro Wilk Critical Value	0.901			Detected Data appear Normal at 5% Significance Level			
2053					Lilliefors Test Statistic	0.0809			Lilliefors GOF Test			
2054					5% Lilliefors Critical Value	0.203			Detected Data appear Normal at 5% Significance Level			
2055					Detected Data appear Normal at 5% Significance Level							
2056												
2057					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
2058					Mean	2.02					Standard Error of Mean	0.294
2059					SD	2.12					95% KM (BCA) UCL	2.621
2060					95% KM (t) UCL	2.511					95% KM (Percentile Bootstrap) UCL	2.536
2061					95% KM (z) UCL	2.504					95% KM Bootstrap t UCL	2.526
2062					90% KM Chebyshev UCL	2.902					95% KM Chebyshev UCL	3.302
2063					97.5% KM Chebyshev UCL	3.856					99% KM Chebyshev UCL	4.945
2064												
2065					Gamma GOF Tests on Detected Observations Only							
2066					A-D Test Statistic	0.401			Anderson-Darling GOF Test			
2067					5% A-D Critical Value	0.742			Detected data appear Gamma Distributed at 5% Significance Level			
2068					K-S Test Statistic	0.123			Kolmogrov-Smirnoff GOF			
2069					5% K-S Critical Value	0.199			Detected data appear Gamma Distributed at 5% Significance Level			
2070					Detected data appear Gamma Distributed at 5% Significance Level							
2071												
2072					Gamma Statistics on Detected Data Only							
2073					k hat (MLE)	6.948					k star (bias corrected MLE)	5.886
2074					Theta hat (MLE)	0.694					Theta star (bias corrected MLE)	0.819
2075					nu hat (MLE)	264					nu star (bias corrected)	223.7
2076					MLE Mean (bias corrected)	4.824					MLE Sd (bias corrected)	1.988
2077												
2078					Gamma Kaplan-Meier (KM) Statistics							
2079					k hat (KM)	0.909					nu hat (KM)	116.3
2080					Approximate Chi Square Value (116.29, α)	92.39					Adjusted Chi Square Value (116.29, β)	91.9

	A	B	C	D	E	F	G	H	I	J	K	L
2081	95% Gamma Approximate KM-UCL (use when n>=50)					2.543	95% Gamma Adjusted KM-UCL (use when n<50)					2.556
2082												
2083	**Gamma ROS Statistics using Imputed Non-Detects**											
2084	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2085	GROS may not be used when kstar of detected data is small such as < 0.1											
2086	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2087	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2088	Minimum					0.01	Mean					2.187
2089	Maximum					8.1	Median					1.45
2090	SD					2.007	CV					0.917
2091	k hat (MLE)					0.939	k star (bias corrected MLE)					0.906
2092	Theta hat (MLE)					2.329	Theta star (bias corrected MLE)					2.415
2093	nu hat (MLE)					120.2	nu star (bias corrected)					115.9
2094	MLE Mean (bias corrected)					2.187	MLE Sd (bias corrected)					2.298
2095							Adjusted Level of Significance (β)					0.0463
2096	Approximate Chi Square Value (115.94, α)					92.08	Adjusted Chi Square Value (115.94, β)					91.59
2097	95% Gamma Approximate UCL (use when n>=50)					2.754	95% Gamma Adjusted UCL (use when n<50)					2.769
2098												
2099	**Lognormal GOF Test on Detected Observations Only**											
2100	Shapiro Wilk Test Statistic					0.855	**Shapiro Wilk GOF Test**					
2101	5% Shapiro Wilk Critical Value					0.901	Detected Data Not Lognormal at 5% Significance Level					
2102	Lilliefors Test Statistic					0.156	**Lilliefors GOF Test**					
2103	5% Lilliefors Critical Value					0.203	Detected Data appear Lognormal at 5% Significance Level					
2104	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
2105												
2106	**Lognormal ROS Statistics Using Imputed Non-Detects**											
2107	Mean in Original Scale					2.525	Mean in Log Scale					0.736
2108	SD in Original Scale					1.768	SD in Log Scale					0.589
2109	95% t UCL (assumes normality of ROS data)					2.894	95% Percentile Bootstrap UCL					2.903
2110	95% BCA Bootstrap UCL					2.901	95% Bootstrap t UCL					2.986
2111	95% H-UCL (Log ROS)					2.864						
2112												
2113	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
2114	KM Mean (logged)					0.199	95% H-UCL (KM -Log)					2.549
2115	KM SD (logged)					0.965	95% Critical H Value (KM-Log)					2.231
2116	KM Standard Error of Mean (logged)					0.165						
2117												
2118	**DL/2 Statistics**											
2119	**DL/2 Normal**						**DL/2 Log-Transformed**					
2120	Mean in Original Scale					2.434	Mean in Log Scale					0.591
2121	SD in Original Scale					1.923	SD in Log Scale					0.793
2122	95% t UCL (Assumes normality)					2.835	95% H-Stat UCL					3.048
2123	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
2124												
2125	**Nonparametric Distribution Free UCL Statistics**											
2126	**Detected Data appear Normal Distributed at 5% Significance Level**											
2127												
2128	**Suggested UCL to Use**											
2129	95% KM (t) UCL					2.511	95% KM (Percentile Bootstrap) UCL					2.536
2130												
2131	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2132	Recommendations are based upon data size, data distribution, and skewness.											
2133	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
2134	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
2135												
2136												
2137	**Nickel**											
2138												
2139	**General Statistics**											
2140	Total Number of Observations					67	Number of Distinct Observations					51
2141							Number of Missing Observations					4
2142	Minimum					12.3	Mean					20.7
2143	Maximum					29	Median					20.7
2144	SD					3.264	Std. Error of Mean					0.399
2145	Coefficient of Variation					0.158	Skewness					-0.167

	A	B	C	D	E	F	G	H	I	J	K	L
2146												
2147						**Normal GOF Test**						
2148					Shapiro Wilk Test Statistic	0.983	**Shapiro Wilk GOF Test**					
2149					5% Shapiro Wilk P Value	0.753	Data appear Normal at 5% Significance Level					
2150					Lilliefors Test Statistic	0.0761	**Lilliefors GOF Test**					
2151					5% Lilliefors Critical Value	0.108	Data appear Normal at 5% Significance Level					
2152					**Data appear Normal at 5% Significance Level**							
2153												
2154					**Assuming Normal Distribution**							
2155				**95% Normal UCL**			**95% UCLs (Adjusted for Skewness)**					
2156					95% Student's-t UCL	21.36	95% Adjusted-CLT UCL (Chen-1995)					21.35
2157							95% Modified-t UCL (Johnson-1978)					21.36
2158												
2159					**Gamma GOF Test**							
2160					A-D Test Statistic	0.59	**Anderson-Darling Gamma GOF Test**					
2161					5% A-D Critical Value	0.749	Detected data appear Gamma Distributed at 5% Significance Level					
2162					K-S Test Statistic	0.0917	**Kolmogrov-Smirnoff Gamma GOF Test**					
2163					5% K-S Critical Value	0.109	Detected data appear Gamma Distributed at 5% Significance Level					
2164					**Detected data appear Gamma Distributed at 5% Significance Level**							
2165												
2166					**Gamma Statistics**							
2167					k hat (MLE)	38.56	k star (bias corrected MLE)					36.84
2168					Theta hat (MLE)	0.537	Theta star (bias corrected MLE)					0.562
2169					nu hat (MLE)	5166	nu star (bias corrected)					4936
2170					MLE Mean (bias corrected)	20.7	MLE Sd (bias corrected)					3.41
2171							Approximate Chi Square Value (0.05)					4774
2172					Adjusted Level of Significance	0.0464	Adjusted Chi Square Value					4771
2173												
2174					**Assuming Gamma Distribution**							
2175					95% Approximate Gamma UCL (use when n>=50))	21.4	95% Adjusted Gamma UCL (use when n<50)					21.42
2176												
2177					**Lognormal GOF Test**							
2178					Shapiro Wilk Test Statistic	0.956	**Shapiro Wilk Lognormal GOF Test**					
2179					5% Shapiro Wilk P Value	0.0477	Data Not Lognormal at 5% Significance Level					
2180					Lilliefors Test Statistic	0.103	**Lilliefors Lognormal GOF Test**					
2181					5% Lilliefors Critical Value	0.108	Data appear Lognormal at 5% Significance Level					
2182					**Data appear Approximate Lognormal at 5% Significance Level**							
2183												
2184					**Lognormal Statistics**							
2185					Minimum of Logged Data	2.51	Mean of logged Data					3.017
2186					Maximum of Logged Data	3.367	SD of logged Data					0.166
2187												
2188					**Assuming Lognormal Distribution**							
2189					95% H-UCL	21.45	90% Chebyshev (MVUE) UCL					21.98
2190					95% Chebyshev (MVUE) UCL	22.55	97.5% Chebyshev (MVUE) UCL					23.35
2191					99% Chebyshev (MVUE) UCL	24.91						
2192												
2193					**Nonparametric Distribution Free UCL Statistics**							
2194					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
2195												
2196					**Nonparametric Distribution Free UCLs**							
2197					95% CLT UCL	21.36	95% Jackknife UCL					21.36
2198					95% Standard Bootstrap UCL	21.34	95% Bootstrap-t UCL					21.34
2199					95% Hall's Bootstrap UCL	21.33	95% Percentile Bootstrap UCL					21.34
2200					95% BCA Bootstrap UCL	21.3						
2201					90% Chebyshev(Mean, Sd) UCL	21.9	95% Chebyshev(Mean, Sd) UCL					22.44
2202					97.5% Chebyshev(Mean, Sd) UCL	23.19	99% Chebyshev(Mean, Sd) UCL					24.67
2203												
2204					**Suggested UCL to Use**							
2205					95% Student's-t UCL	21.36						
2206												
2207					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
2208					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
2209					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
2210					For additional insight the user may want to consult a statistician.							

	A	B	C	D	E	F	G	H	I	J	K	L
2211												
2212	Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be											
2213	reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.											
2214												
2215												
2216	PCB TEQ - Mammals 2006											
2217												
2218	General Statistics											
2219	Total Number of Observations					28	Number of Distinct Observations					28
2220							Number of Missing Observations					42
2221	Minimum					0.0333	Mean					0.104
2222	Maximum					0.188	Median					0.1
2223	SD					0.0343	Std. Error of Mean					0.00649
2224	Coefficient of Variation					0.33	Skewness					0.415
2225												
2226	Normal GOF Test											
2227	Shapiro Wilk Test Statistic					0.895	Shapiro Wilk GOF Test					
2228	5% Shapiro Wilk Critical Value					0.924	Data Not Normal at 5% Significance Level					
2229	Lilliefors Test Statistic					0.229	Lilliefors GOF Test					
2230	5% Lilliefors Critical Value					0.167	Data Not Normal at 5% Significance Level					
2231	Data Not Normal at 5% Significance Level											
2232												
2233	Assuming Normal Distribution											
2234	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
2235	95% Student's-t UCL					0.115	95% Adjusted-CLT UCL (Chen-1995)					0.115
2236							95% Modified-t UCL (Johnson-1978)					0.115
2237												
2238	Gamma GOF Test											
2239	A-D Test Statistic					1.64	Anderson-Darling Gamma GOF Test					
2240	5% A-D Critical Value					0.746	Data Not Gamma Distributed at 5% Significance Level					
2241	K-S Test Statistic					0.228	Kolmogrov-Smirnoff Gamma GOF Test					
2242	5% K-S Critical Value					0.165	Data Not Gamma Distributed at 5% Significance Level					
2243	Data Not Gamma Distributed at 5% Significance Level											
2244												
2245	Gamma Statistics											
2246	k hat (MLE)					8.407	k star (bias corrected MLE)					7.53
2247	Theta hat (MLE)					0.0124	Theta star (bias corrected MLE)					0.0138
2248	nu hat (MLE)					470.8	nu star (bias corrected)					421.7
2249	MLE Mean (bias corrected)					0.104	MLE Sd (bias corrected)					0.0379
2250							Approximate Chi Square Value (0.05)					375.1
2251	Adjusted Level of Significance					0.0404	Adjusted Chi Square Value					372.3
2252												
2253	Assuming Gamma Distribution											
2254	95% Approximate Gamma UCL (use when n>=50))					0.117	95% Adjusted Gamma UCL (use when n<50)					0.118
2255												
2256	Lognormal GOF Test											
2257	Shapiro Wilk Test Statistic					0.843	Shapiro Wilk Lognormal GOF Test					
2258	5% Shapiro Wilk Critical Value					0.924	Data Not Lognormal at 5% Significance Level					
2259	Lilliefors Test Statistic					0.255	Lilliefors Lognormal GOF Test					
2260	5% Lilliefors Critical Value					0.167	Data Not Lognormal at 5% Significance Level					
2261	Data Not Lognormal at 5% Significance Level											
2262												
2263	Lognormal Statistics											
2264	Minimum of Logged Data					-3.401	Mean of logged Data					-2.324
2265	Maximum of Logged Data					-1.674	SD of logged Data					0.378
2266												
2267	Assuming Lognormal Distribution											
2268	95% H-UCL					0.12	90% Chebyshev (MVUE) UCL					0.128
2269	95% Chebyshev (MVUE) UCL					0.138	97.5% Chebyshev (MVUE) UCL					0.153
2270	99% Chebyshev (MVUE) UCL					0.181						
2271												
2272	Nonparametric Distribution Free UCL Statistics											
2273	Data do not follow a Discernible Distribution (0.05)											
2274												
2275	Nonparametric Distribution Free UCLs											

	A	B	C	D	E	F	G	H	I	J	K	L
2276					95% CLT UCL	0.115				95% Jackknife UCL		0.115
2277				95% Standard Bootstrap UCL		0.114				95% Bootstrap-t UCL		0.116
2278				95% Hall's Bootstrap UCL		0.117				95% Percentile Bootstrap UCL		0.115
2279				95% BCA Bootstrap UCL		0.115						
2280			90% Chebyshev(Mean, Sd) UCL			0.123				95% Chebyshev(Mean, Sd) UCL		0.132
2281			97.5% Chebyshev(Mean, Sd) UCL			0.145				99% Chebyshev(Mean, Sd) UCL		0.169
2282												
2283					**Suggested UCL to Use**							
2284				95% Student's-t UCL		0.115				or 95% Modified-t UCL		0.115
2285												
2286			Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.									
2287			These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)									
2288			and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.									
2289			For additional insight the user may want to consult a statistician.									
2290												
2291	**Pentachlorophenol**											
2292												
2293					**General Statistics**							
2294				Total Number of Observations		63				Number of Distinct Observations		42
2295										Number of Missing Observations		8
2296				Number of Detects		7				Number of Non-Detects		56
2297				Number of Distinct Detects		7				Number of Distinct Non-Detects		37
2298				Minimum Detect		1.5				Minimum Non-Detect		0.25
2299				Maximum Detect		2.9				Maximum Non-Detect		8.8
2300				Variance Detects		0.228				Percent Non-Detects		88.89%
2301				Mean Detects		2.186				SD Detects		0.478
2302				Median Detects		2.3				CV Detects		0.219
2303				Skewness Detects		0.00787				Kurtosis Detects		-0.716
2304				Mean of Logged Detects		0.761				SD of Logged Detects		0.226
2305												
2306					**Normal GOF Test on Detects Only**							
2307				Shapiro Wilk Test Statistic		0.974				**Shapiro Wilk GOF Test**		
2308				5% Shapiro Wilk Critical Value		0.803				Detected Data appear Normal at 5% Significance Level		
2309				Lilliefors Test Statistic		0.166				**Lilliefors GOF Test**		
2310				5% Lilliefors Critical Value		0.335				Detected Data appear Normal at 5% Significance Level		
2311					**Detected Data appear Normal at 5% Significance Level**							
2312												
2313					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
2314				Mean		0.59				Standard Error of Mean		0.13
2315				SD		0.758				95% KM (BCA) UCL		0.83
2316				95% KM (t) UCL		0.807				95% KM (Percentile Bootstrap) UCL		0.805
2317				95% KM (z) UCL		0.803				95% KM Bootstrap t UCL		0.763
2318				90% KM Chebyshev UCL		0.979				95% KM Chebyshev UCL		1.155
2319				97.5% KM Chebyshev UCL		1.399				99% KM Chebyshev UCL		1.879
2320												
2321					**Gamma GOF Tests on Detected Observations Only**							
2322				A-D Test Statistic		0.226				**Anderson-Darling GOF Test**		
2323				5% A-D Critical Value		0.707				Detected data appear Gamma Distributed at 5% Significance Level		
2324				K-S Test Statistic		0.196				**Kolmogrov-Smirnoff GOF**		
2325				5% K-S Critical Value		0.311				Detected data appear Gamma Distributed at 5% Significance Level		
2326					**Detected data appear Gamma Distributed at 5% Significance Level**							
2327												
2328					**Gamma Statistics on Detected Data Only**							
2329				k hat (MLE)		23.64				k star (bias corrected MLE)		13.6
2330				Theta hat (MLE)		0.0925				Theta star (bias corrected MLE)		0.161
2331				nu hat (MLE)		330.9				nu star (bias corrected)		190.4
2332				MLE Mean (bias corrected)		2.186				MLE Sd (bias corrected)		0.593
2333												
2334					**Gamma Kaplan-Meier (KM) Statistics**							
2335				k hat (KM)		0.608				nu hat (KM)		76.55
2336				Approximate Chi Square Value (76.55, α)		57.39				Adjusted Chi Square Value (76.55, β)		57
2337				95% Gamma Approximate KM-UCL (use when n>=50)		0.787				95% Gamma Adjusted KM-UCL (use when n<50)		0.793
2338												
2339					**Gamma ROS Statistics using Imputed Non-Detects**							
2340					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							

	A	B	C	D	E	F	G	H	I	J	K	L
2341	GROS may not be used when kstar of detected data is small such as < 0.1											
2342	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2343	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2344					Minimum	0.01				Mean		0.896
2345					Maximum	2.9				Median		0.779
2346					SD	0.558				CV		0.623
2347					k hat (MLE)	2.595				k star (bias corrected MLE)		2.482
2348					Theta hat (MLE)	0.345				Theta star (bias corrected MLE)		0.361
2349					nu hat (MLE)	327				nu star (bias corrected)		312.7
2350					MLE Mean (bias corrected)	0.896				MLE Sd (bias corrected)		0.569
2351										Adjusted Level of Significance (β)		0.0462
2352					Approximate Chi Square Value (312.74, α)	272.8				Adjusted Chi Square Value (312.74, β)		271.9
2353					95% Gamma Approximate UCL (use when n>=50)	1.027				95% Gamma Adjusted UCL (use when n<50)		1.03
2354												
2355	**Lognormal GOF Test on Detected Observations Only**											
2356					Shapiro Wilk Test Statistic	0.967	**Shapiro Wilk GOF Test**					
2357					5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level					
2358					Lilliefors Test Statistic	0.197	**Lilliefors GOF Test**					
2359					5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level					
2360	**Detected Data appear Lognormal at 5% Significance Level**											
2361												
2362	**Lognormal ROS Statistics Using Imputed Non-Detects**											
2363					Mean in Original Scale	1.154				Mean in Log Scale		0.093
2364					SD in Original Scale	0.43				SD in Log Scale		0.297
2365					95% t UCL (assumes normality of ROS data)	1.244				95% Percentile Bootstrap UCL		1.246
2366					95% BCA Bootstrap UCL	1.259				95% Bootstrap t UCL		1.271
2367					95% H-UCL (Log ROS)	1.226						
2368												
2369	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
2370					KM Mean (logged)	-1.008				95% H-UCL (KM -Log)		0.638
2371					KM SD (logged)	0.822				95% Critical H Value (KM-Log)		2.111
2372					KM Standard Error of Mean (logged)	0.141						
2373												
2374	**DL/2 Statistics**											
2375		**DL/2 Normal**					**DL/2 Log-Transformed**					
2376					Mean in Original Scale	1.2				Mean in Log Scale		-0.441
2377					SD in Original Scale	1.106				SD in Log Scale		1.236
2378					95% t UCL (Assumes normality)	1.433				95% H-Stat UCL		1.962
2379	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
2380												
2381	**Nonparametric Distribution Free UCL Statistics**											
2382	**Detected Data appear Normal Distributed at 5% Significance Level**											
2383												
2384	**Suggested UCL to Use**											
2385					95% KM (t) UCL	0.807				95% KM (Percentile Bootstrap) UCL		0.805
2386												
2387	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2388	Recommendations are based upon data size, data distribution, and skewness.											
2389	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
2390	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
2391												
2392	**Phenanthrene**											
2393												
2394	**General Statistics**											
2395					Total Number of Observations	67				Number of Distinct Observations		46
2396										Number of Missing Observations		4
2397					Number of Detects	31				Number of Non-Detects		36
2398					Number of Distinct Detects	26				Number of Distinct Non-Detects		27
2399					Minimum Detect	0.91				Minimum Non-Detect		0.59
2400					Maximum Detect	11				Maximum Non-Detect		13
2401					Variance Detects	8.866				Percent Non-Detects		53.73%
2402					Mean Detects	5.904				SD Detects		2.978
2403					Median Detects	6				CV Detects		0.504
2404					Skewness Detects	0.0497				Kurtosis Detects		-0.789
2405					Mean of Logged Detects	1.598				SD of Logged Detects		0.683

	A	B	C	D	E	F	G	H	I	J	K	L
2406												
2407						Normal GOF Test on Detects Only						
2408					Shapiro Wilk Test Statistic	0.959		Shapiro Wilk GOF Test				
2409					5% Shapiro Wilk Critical Value	0.929		Detected Data appear Normal at 5% Significance Level				
2410					Lilliefors Test Statistic	0.0739		Lilliefors GOF Test				
2411					5% Lilliefors Critical Value	0.159		Detected Data appear Normal at 5% Significance Level				
2412					Detected Data appear Normal at 5% Significance Level							
2413												
2414					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
2415					Mean	3.395			Standard Error of Mean			0.418
2416					SD	3.221			95% KM (BCA) UCL			4.171
2417					95% KM (t) UCL	4.093			95% KM (Percentile Bootstrap) UCL			4.089
2418					95% KM (z) UCL	4.083			95% KM Bootstrap t UCL			4.113
2419					90% KM Chebyshev UCL	4.65			95% KM Chebyshev UCL			5.218
2420					97.5% KM Chebyshev UCL	6.007			99% KM Chebyshev UCL			7.556
2421												
2422					Gamma GOF Tests on Detected Observations Only							
2423					A-D Test Statistic	0.664		Anderson-Darling GOF Test				
2424					5% A-D Critical Value	0.753		Detected data appear Gamma Distributed at 5% Significance Level				
2425					K-S Test Statistic	0.125		Kolmogrov-Smirnoff GOF				
2426					5% K-S Critical Value	0.159		Detected data appear Gamma Distributed at 5% Significance Level				
2427					Detected data appear Gamma Distributed at 5% Significance Level							
2428												
2429					Gamma Statistics on Detected Data Only							
2430					k hat (MLE)	2.976			k star (bias corrected MLE)			2.709
2431					Theta hat (MLE)	1.984			Theta star (bias corrected MLE)			2.179
2432					nu hat (MLE)	184.5			nu star (bias corrected)			168
2433					MLE Mean (bias corrected)	5.904			MLE Sd (bias corrected)			3.587
2434												
2435					Gamma Kaplan-Meier (KM) Statistics							
2436					k hat (KM)	1.111			nu hat (KM)			148.9
2437					Approximate Chi Square Value (148.90, α)	121.7			Adjusted Chi Square Value (148.90, β)			121.2
2438					95% Gamma Approximate KM-UCL (use when n>=50)	4.154			95% Gamma Adjusted KM-UCL (use when n<50)			4.173
2439												
2440					Gamma ROS Statistics using Imputed Non-Detects							
2441					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
2442					GROS may not be used when kstar of detected data is small such as < 0.1							
2443					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
2444					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
2445					Minimum	0.0851			Mean			3.438
2446					Maximum	11			Median			2.079
2447					SD	3.121			CV			0.908
2448					k hat (MLE)	1.035			k star (bias corrected MLE)			0.999
2449					Theta hat (MLE)	3.321			Theta star (bias corrected MLE)			3.442
2450					nu hat (MLE)	138.7			nu star (bias corrected)			133.9
2451					MLE Mean (bias corrected)	3.438			MLE Sd (bias corrected)			3.44
2452									Adjusted Level of Significance (β)			0.0464
2453					Approximate Chi Square Value (133.86, α)	108.1			Adjusted Chi Square Value (133.86, β)			107.6
2454					95% Gamma Approximate UCL (use when n>=50)	4.257			95% Gamma Adjusted UCL (use when n<50)			4.277
2455												
2456					Lognormal GOF Test on Detected Observations Only							
2457					Shapiro Wilk Test Statistic	0.882		Shapiro Wilk GOF Test				
2458					5% Shapiro Wilk Critical Value	0.929		Detected Data Not Lognormal at 5% Significance Level				
2459					Lilliefors Test Statistic	0.151		Lilliefors GOF Test				
2460					5% Lilliefors Critical Value	0.159		Detected Data appear Lognormal at 5% Significance Level				
2461					Detected Data appear Approximate Lognormal at 5% Significance Level							
2462												
2463					Lognormal ROS Statistics Using Imputed Non-Detects							
2464					Mean in Original Scale	3.522			Mean in Log Scale			0.918
2465					SD in Original Scale	3.02			SD in Log Scale			0.821
2466					95% t UCL (assumes normality of ROS data)	4.138			95% Percentile Bootstrap UCL			4.176
2467					95% BCA Bootstrap UCL	4.195			95% Bootstrap t UCL			4.203
2468					95% H-UCL (Log ROS)	4.346						
2469												
2470					UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed							

	A	B	C	D	E	F	G	H	I	J	K	L
2471					KM Mean (logged)	0.703				95% H-UCL (KM -Log)		4.732
2472					KM SD (logged)	1.056				95% Critical H Value (KM-Log)		2.26
2473				KM Standard Error of Mean (logged)		0.151						
2474												
2475					DL/2 Statistics							
2476				DL/2 Normal					DL/2 Log-Transformed			
2477					Mean in Original Scale	3.702				Mean in Log Scale		0.919
2478					SD in Original Scale	3.056				SD in Log Scale		0.946
2479				95% t UCL (Assumes normality)		4.325				95% H-Stat UCL		5.084
2480					DL/2 is not a recommended method, provided for comparisons and historical reasons							
2481												
2482					Nonparametric Distribution Free UCL Statistics							
2483					Detected Data appear Normal Distributed at 5% Significance Level							
2484												
2485					Suggested UCL to Use							
2486					95% KM (t) UCL	4.093				95% KM (Percentile Bootstrap) UCL		4.089
2487												
2488					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
2489					Recommendations are based upon data size, data distribution, and skewness.							
2490					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
2491					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
2492												
2493												
2494	Residual Range Hydrocarbons											
2495												
2496					General Statistics							
2497					Total Number of Observations	28				Number of Distinct Observations		21
2498										Number of Missing Observations		18
2499					Minimum	9.2				Mean		229.7
2500					Maximum	420				Median		220
2501					SD	98.08				Std. Error of Mean		18.54
2502					Coefficient of Variation	0.427				Skewness		0.0518
2503												
2504					Normal GOF Test							
2505					Shapiro Wilk Test Statistic	0.957				Shapiro Wilk GOF Test		
2506					5% Shapiro Wilk Critical Value	0.924				Data appear Normal at 5% Significance Level		
2507					Lilliefors Test Statistic	0.177				Lilliefors GOF Test		
2508					5% Lilliefors Critical Value	0.167				Data Not Normal at 5% Significance Level		
2509					Data appear Approximate Normal at 5% Significance Level							
2510												
2511					Assuming Normal Distribution							
2512				95% Normal UCL					95% UCLs (Adjusted for Skewness)			
2513					95% Student's-t UCL	261.2				95% Adjusted-CLT UCL (Chen-1995)		260.3
2514										95% Modified-t UCL (Johnson-1978)		261.3
2515												
2516					Gamma GOF Test							
2517					A-D Test Statistic	1.263				Anderson-Darling Gamma GOF Test		
2518					5% A-D Critical Value	0.752				Data Not Gamma Distributed at 5% Significance Level		
2519					K-S Test Statistic	0.19				Kolmogrov-Smirnoff Gamma GOF Test		
2520					5% K-S Critical Value	0.166				Data Not Gamma Distributed at 5% Significance Level		
2521					Data Not Gamma Distributed at 5% Significance Level							
2522												
2523					Gamma Statistics							
2524					k hat (MLE)	3.365				k star (bias corrected MLE)		3.028
2525					Theta hat (MLE)	68.25				Theta star (bias corrected MLE)		75.84
2526					nu hat (MLE)	188.4				nu star (bias corrected)		169.6
2527					MLE Mean (bias corrected)	229.7				MLE Sd (bias corrected)		132
2528										Approximate Chi Square Value (0.05)		140.5
2529					Adjusted Level of Significance	0.0404				Adjusted Chi Square Value		138.8
2530												
2531					Assuming Gamma Distribution							
2532					95% Approximate Gamma UCL (use when n>=50))	277.3				95% Adjusted Gamma UCL (use when n<50)		280.5
2533												
2534					Lognormal GOF Test							
2535					Shapiro Wilk Test Statistic	0.707				Shapiro Wilk Lognormal GOF Test		

	A	B	C	D	E	F	G	H	I	J	K	L
2536					5% Shapiro Wilk Critical Value	0.924	Data Not Lognormal at 5% Significance Level					
2537					Lilliefors Test Statistic	0.243	**Lilliefors Lognormal GOF Test**					
2538					5% Lilliefors Critical Value	0.167	Data Not Lognormal at 5% Significance Level					
2539	**Data Not Lognormal at 5% Significance Level**											
2540												
2541	**Lognormal Statistics**											
2542					Minimum of Logged Data	2.219				Mean of logged Data		5.281
2543					Maximum of Logged Data	6.04				SD of logged Data		0.73
2544												
2545	**Assuming Lognormal Distribution**											
2546					95% H-UCL	347				90% Chebyshev (MVUE) UCL		367.3
2547					95% Chebyshev (MVUE) UCL	418.9				97.5% Chebyshev (MVUE) UCL		490.5
2548					99% Chebyshev (MVUE) UCL	631						
2549												
2550	**Nonparametric Distribution Free UCL Statistics**											
2551	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
2552												
2553	**Nonparametric Distribution Free UCLs**											
2554					95% CLT UCL	260.2				95% Jackknife UCL		261.2
2555					95% Standard Bootstrap UCL	260.4				95% Bootstrap-t UCL		260.9
2556					95% Hall's Bootstrap UCL	260.6				95% Percentile Bootstrap UCL		259.2
2557					95% BCA Bootstrap UCL	258.6						
2558					90% Chebyshev(Mean, Sd) UCL	285.3				95% Chebyshev(Mean, Sd) UCL		310.5
2559					97.5% Chebyshev(Mean, Sd) UCL	345.4				99% Chebyshev(Mean, Sd) UCL		414.1
2560												
2561	**Suggested UCL to Use**											
2562					95% Student's-t UCL	261.2						
2563												
2564	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2565	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
2566	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
2567	For additional insight the user may want to consult a statistician.											
2568												
2569	**Total PAHs (calc'd)**											
2570												
2571	**General Statistics**											
2572					Total Number of Observations	68				Number of Distinct Observations		65
2573										Number of Missing Observations		3
2574					Number of Detects	57				Number of Non-Detects		11
2575					Number of Distinct Detects	57				Number of Distinct Non-Detects		8
2576					Minimum Detect	6.12				Minimum Non-Detect		1.5
2577					Maximum Detect	198.2				Maximum Non-Detect		10
2578					Variance Detects	2217				Percent Non-Detects		16.18%
2579					Mean Detects	74.84				SD Detects		47.09
2580					Median Detects	67.1				CV Detects		0.629
2581					Skewness Detects	0.743				Kurtosis Detects		0.0146
2582					Mean of Logged Detects	4.072				SD of Logged Detects		0.785
2583												
2584	**Normal GOF Test on Detects Only**											
2585					Shapiro Wilk Test Statistic	0.937	**Normal GOF Test on Detected Observations Only**					
2586					5% Shapiro Wilk P Value	0.00741	Detected Data Not Normal at 5% Significance Level					
2587					Lilliefors Test Statistic	0.0912	**Lilliefors GOF Test**					
2588					5% Lilliefors Critical Value	0.117	Detected Data appear Normal at 5% Significance Level					
2589	**Detected Data appear Approximate Normal at 5% Significance Level**											
2590												
2591	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
2592					Mean	63.01				Standard Error of Mean		6.179
2593					SD	50.5				95% KM (BCA) UCL		73.56
2594					95% KM (t) UCL	73.32				95% KM (Percentile Bootstrap) UCL		72.91
2595					95% KM (z) UCL	73.18				95% KM Bootstrap t UCL		74.47
2596					90% KM Chebyshev UCL	81.55				95% KM Chebyshev UCL		89.95
2597					97.5% KM Chebyshev UCL	101.6				99% KM Chebyshev UCL		124.5
2598												
2599	**Gamma GOF Tests on Detected Observations Only**											
2600					A-D Test Statistic	0.244	**Anderson-Darling GOF Test**					

	A	B	C	D	E	F	G	H	I	J	K	L
2601					5% A-D Critical Value	0.762	Detected data appear Gamma Distributed at 5% Significance Level					
2602					K-S Test Statistic	0.0571	**Kolmogrov-Smirnoff GOF**					
2603					5% K-S Critical Value	0.119	Detected data appear Gamma Distributed at 5% Significance Level					
2604	**Detected data appear Gamma Distributed at 5% Significance Level**											
2605												
2606	**Gamma Statistics on Detected Data Only**											
2607					k hat (MLE)	2.203				k star (bias corrected MLE)		2.099
2608					Theta hat (MLE)	33.96				Theta star (bias corrected MLE)		35.65
2609					nu hat (MLE)	251.2				nu star (bias corrected)		239.3
2610					MLE Mean (bias corrected)	74.84				MLE Sd (bias corrected)		51.65
2611												
2612	**Gamma Kaplan-Meier (KM) Statistics**											
2613					k hat (KM)	1.557				nu hat (KM)		211.7
2614					Approximate Chi Square Value (211.74, α)	179.1				Adjusted Chi Square Value (211.74, β)		178.4
2615					95% Gamma Approximate KM-UCL (use when n>=50)	74.51				95% Gamma Adjusted KM-UCL (use when n<50)		74.78
2616												
2617	**Gamma ROS Statistics using Imputed Non-Detects**											
2618	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2619	GROS may not be used when kstar of detected data is small such as < 0.1											
2620	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2621	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2622					Minimum	1.469				Mean		63.68
2623					Maximum	198.2				Median		54.96
2624					SD	50.1				CV		0.787
2625					k hat (MLE)	1.172				k star (bias corrected MLE)		1.13
2626					Theta hat (MLE)	54.32				Theta star (bias corrected MLE)		56.34
2627					nu hat (MLE)	159.4				nu star (bias corrected)		153.7
2628					MLE Mean (bias corrected)	63.68				MLE Sd (bias corrected)		59.9
2629										Adjusted Level of Significance (β)		0.0465
2630					Approximate Chi Square Value (153.72, α)	126.1				Adjusted Chi Square Value (153.72, β)		125.5
2631					95% Gamma Approximate UCL (use when n>=50)	77.65				95% Gamma Adjusted UCL (use when n<50)		77.98
2632												
2633	**Lognormal GOF Test on Detected Observations Only**											
2634					Lilliefors Test Statistic	0.105	**Lilliefors GOF Test**					
2635					5% Lilliefors Critical Value	0.117	Detected Data appear Lognormal at 5% Significance Level					
2636	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
2637												
2638	**Lognormal ROS Statistics Using Imputed Non-Detects**											
2639					Mean in Original Scale	64.62				Mean in Log Scale		3.809
2640					SD in Original Scale	49.01				SD in Log Scale		0.938
2641					95% t UCL (assumes normality of ROS data)	74.54				95% Percentile Bootstrap UCL		74.35
2642					95% BCA Bootstrap UCL	74.35				95% Bootstrap t UCL		75.37
2643					95% H-UCL (Log ROS)	90.35						
2644												
2645	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
2646					KM Mean (logged)	3.49				95% H-UCL (KM -Log)		158.5
2647					KM SD (logged)	1.509				95% Critical H Value (KM-Log)		2.372
2648					KM Standard Error of Mean (logged)	0.185						
2649												
2650	**DL/2 Statistics**											
2651				**DL/2 Normal**						**DL/2 Log-Transformed**		
2652					Mean in Original Scale	63.07				Mean in Log Scale		3.497
2653					SD in Original Scale	50.82				SD in Log Scale		1.52
2654					95% t UCL (Assumes normality)	73.34				95% H-Stat UCL		163.2
2655	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
2656												
2657	**Nonparametric Distribution Free UCL Statistics**											
2658	**Detected Data appear Approximate Normal Distributed at 5% Significance Level**											
2659												
2660	**Suggested UCL to Use**											
2661					95% KM (t) UCL	73.32				95% KM (Percentile Bootstrap) UCL		72.91
2662												
2663	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2664	Recommendations are based upon data size, data distribution, and skewness.											
2665	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Total PCB Congeners (calc'd)

General Statistics

Total Number of Observations	29	Number of Distinct Observations	29
		Number of Missing Observations	42
Minimum	598.4	Mean	3368
Maximum	7811	Median	3079
SD	1949	Std. Error of Mean	361.8
Coefficient of Variation	0.578	Skewness	0.691

Normal GOF Test

Shapiro Wilk Test Statistic	0.921	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.926	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.171	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.165	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3984	95% Adjusted-CLT UCL (Chen-1995)	4013
		95% Modified-t UCL (Johnson-1978)	3992

Gamma GOF Test

A-D Test Statistic	0.424	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.102	**Kolmogrov-Smirnoff Gamma GOF Test**	
5% K-S Critical Value	0.164	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.875	k star (bias corrected MLE)	2.601
Theta hat (MLE)	1172	Theta star (bias corrected MLE)	1295
nu hat (MLE)	166.8	nu star (bias corrected)	150.8
MLE Mean (bias corrected)	3368	MLE Sd (bias corrected)	2089
		Approximate Chi Square Value (0.05)	123.5
Adjusted Level of Significance	0.0407	Adjusted Chi Square Value	122

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	4116	95% Adjusted Gamma UCL (use when n<50)	4165

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.948	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.926	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.126	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.165	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	6.394	Mean of logged Data	7.938
Maximum of Logged Data	8.963	SD of logged Data	0.655

Assuming Lognormal Distribution

95% H-UCL	4497	90% Chebyshev (MVUE) UCL	4791
95% Chebyshev (MVUE) UCL	5401	97.5% Chebyshev (MVUE) UCL	6248
99% Chebyshev (MVUE) UCL	7912		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	3964	95% Jackknife UCL	3984
95% Standard Bootstrap UCL	3965	95% Bootstrap-t UCL	4063

	A	B	C	D	E	F	G	H	I	J	K	L
2731					95% Hall's Bootstrap UCL	4040				95% Percentile Bootstrap UCL		4006
2732					95% BCA Bootstrap UCL	4031						
2733					90% Chebyshev(Mean, Sd) UCL	4454				95% Chebyshev(Mean, Sd) UCL		4946
2734					97.5% Chebyshev(Mean, Sd) UCL	5628				99% Chebyshev(Mean, Sd) UCL		6969
2735												
2736					**Suggested UCL to Use**							
2737					95% Adjusted Gamma UCL	4165						
2738												
2739					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
2740					These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
2741					and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
2742					For additional insight the user may want to consult a statistician.							
2743												
2744	**Total PCBs Aroclors (calc'd)**											
2745												
2746					**General Statistics**							
2747					Total Number of Observations	43				Number of Distinct Observations		36
2748										Number of Missing Observations		5
2749					Number of Detects	18				Number of Non-Detects		25
2750					Number of Distinct Detects	17				Number of Distinct Non-Detects		19
2751					Minimum Detect	4.95				Minimum Non-Detect		1.3
2752					Maximum Detect	16.18				Maximum Non-Detect		5.2
2753					Variance Detects	10.21				Percent Non-Detects		58.14%
2754					Mean Detects	8.466				SD Detects		3.195
2755					Median Detects	7.56				CV Detects		0.377
2756					Skewness Detects	1.236				Kurtosis Detects		0.699
2757					Mean of Logged Detects	2.078				SD of Logged Detects		0.34
2758												
2759					**Normal GOF Test on Detects Only**							
2760					Shapiro Wilk Test Statistic	0.857				**Shapiro Wilk GOF Test**		
2761					5% Shapiro Wilk Critical Value	0.897				Detected Data Not Normal at 5% Significance Level		
2762					Lilliefors Test Statistic	0.233				**Lilliefors GOF Test**		
2763					5% Lilliefors Critical Value	0.209				Detected Data Not Normal at 5% Significance Level		
2764					**Detected Data Not Normal at 5% Significance Level**							
2765												
2766					**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**							
2767					Mean	4.303				Standard Error of Mean		0.638
2768					SD	4.065				95% KM (BCA) UCL		5.401
2769					95% KM (t) UCL	5.376				95% KM (Percentile Bootstrap) UCL		5.285
2770					95% KM (z) UCL	5.353				95% KM Bootstrap t UCL		5.469
2771					90% KM Chebyshev UCL	6.217				95% KM Chebyshev UCL		7.085
2772					97.5% KM Chebyshev UCL	8.288				99% KM Chebyshev UCL		10.65
2773												
2774					**Gamma GOF Tests on Detected Observations Only**							
2775					A-D Test Statistic	0.687				**Anderson-Darling GOF Test**		
2776					5% A-D Critical Value	0.74				Detected data appear Gamma Distributed at 5% Significance Level		
2777					K-S Test Statistic	0.189				**Kolmogrov-Smirnoff GOF**		
2778					5% K-S Critical Value	0.204				Detected data appear Gamma Distributed at 5% Significance Level		
2779					**Detected data appear Gamma Distributed at 5% Significance Level**							
2780												
2781					**Gamma Statistics on Detected Data Only**							
2782					k hat (MLE)	8.733				k star (bias corrected MLE)		7.314
2783					Theta hat (MLE)	0.969				Theta star (bias corrected MLE)		1.157
2784					nu hat (MLE)	314.4				nu star (bias corrected)		263.3
2785					MLE Mean (bias corrected)	8.466				MLE Sd (bias corrected)		3.13
2786												
2787					**Gamma Kaplan-Meier (KM) Statistics**							
2788					k hat (KM)	1.121				nu hat (KM)		96.37
2789					Approximate Chi Square Value (96.37, α)	74.73				Adjusted Chi Square Value (96.37, β)		74.06
2790					95% Gamma Approximate KM-UCL (use when n>=50)	5.549				95% Gamma Adjusted KM-UCL (use when n<50)		5.599
2791												
2792					**Gamma ROS Statistics using Imputed Non-Detects**							
2793					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
2794					GROS may not be used when kstar of detected data is small such as < 0.1							
2795					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							

	A	B	C	D	E	F	G	H	I	J	K	L
2796	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2797					Minimum	0.01					Mean	4.055
2798					Maximum	16.18					Median	1.484
2799					SD	4.33					CV	1.068
2800					k hat (MLE)	0.62					k star (bias corrected MLE)	0.592
2801					Theta hat (MLE)	6.54					Theta star (bias corrected MLE)	6.847
2802					nu hat (MLE)	53.32					nu star (bias corrected)	50.94
2803					MLE Mean (bias corrected)	4.055					MLE Sd (bias corrected)	5.269
2804											Adjusted Level of Significance (β)	0.0444
2805					Approximate Chi Square Value (50.94, α)	35.55					Adjusted Chi Square Value (50.94, β)	35.1
2806					95% Gamma Approximate UCL (use when n>=50)	5.811					95% Gamma Adjusted UCL (use when n<50)	5.885
2807												
2808	**Lognormal GOF Test on Detected Observations Only**											
2809					Shapiro Wilk Test Statistic	0.927	**Shapiro Wilk GOF Test**					
2810					5% Shapiro Wilk Critical Value	0.897	Detected Data appear Lognormal at 5% Significance Level					
2811					Lilliefors Test Statistic	0.166	**Lilliefors GOF Test**					
2812					5% Lilliefors Critical Value	0.209	Detected Data appear Lognormal at 5% Significance Level					
2813	**Detected Data appear Lognormal at 5% Significance Level**											
2814												
2815	**Lognormal ROS Statistics Using Imputed Non-Detects**											
2816					Mean in Original Scale	5.292					Mean in Log Scale	1.504
2817					SD in Original Scale	3.416					SD in Log Scale	0.551
2818					95% t UCL (assumes normality of ROS data)	6.168					95% Percentile Bootstrap UCL	6.168
2819					95% BCA Bootstrap UCL	6.312					95% Bootstrap t UCL	6.381
2820					95% H-UCL (Log ROS)	6.172						
2821												
2822	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
2823					KM Mean (logged)	1.024					95% H-UCL (KM -Log)	5.875
2824					KM SD (logged)	0.921					95% Critical H Value (KM-Log)	2.276
2825					KM Standard Error of Mean (logged)	0.145						
2826												
2827	**DL/2 Statistics**											
2828	**DL/2 Normal**						**DL/2 Log-Transformed**					
2829					Mean in Original Scale	4.182					Mean in Log Scale	0.889
2830					SD in Original Scale	4.215					SD in Log Scale	1.076
2831					95% t UCL (Assumes normality)	5.263					95% H-Stat UCL	6.511
2832	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
2833												
2834	**Nonparametric Distribution Free UCL Statistics**											
2835	**Detected Data appear Gamma Distributed at 5% Significance Level**											
2836												
2837	**Suggested UCL to Use**											
2838					95% KM (t) UCL	5.376					95% GROS Adjusted Gamma UCL	5.885
2839					95% Adjusted Gamma KM-UCL	5.599						
2840												
2841	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2842	Recommendations are based upon data size, data distribution, and skewness.											
2843	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
2844	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
2845												
2846												
2847	**Total PCDD/F (calc'd)**											
2848												
2849	**General Statistics**											
2850					Total Number of Observations	32					Number of Distinct Observations	32
2851											Number of Missing Observations	14
2852					Minimum	5.628					Mean	59.96
2853					Maximum	168.3					Median	35.96
2854					SD	53.64					Std. Error of Mean	9.483
2855					Coefficient of Variation	0.895					Skewness	0.814
2856												
2857	**Normal GOF Test**											
2858					Shapiro Wilk Test Statistic	0.842	**Shapiro Wilk GOF Test**					
2859					5% Shapiro Wilk Critical Value	0.93	Data Not Normal at 5% Significance Level					
2860					Lilliefors Test Statistic	0.194	**Lilliefors GOF Test**					

	A	B	C	D	E	F	G	H	I	J	K	L
2861					5% Lilliefors Critical Value	0.157	Data Not Normal at 5% Significance Level					
2862	**Data Not Normal at 5% Significance Level**											
2863												
2864	**Assuming Normal Distribution**											
2865	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
2866					95% Student's-t UCL	76.04	95% Adjusted-CLT UCL (Chen-1995)					77.02
2867							95% Modified-t UCL (Johnson-1978)					76.27
2868												
2869	**Gamma GOF Test**											
2870					A-D Test Statistic	0.755	**Anderson-Darling Gamma GOF Test**					
2871					5% A-D Critical Value	0.771	Detected data appear Gamma Distributed at 5% Significance Level					
2872					K-S Test Statistic	0.124	**Kolmogrov-Smirnoff Gamma GOF Test**					
2873					5% K-S Critical Value	0.159	Detected data appear Gamma Distributed at 5% Significance Level					
2874	**Detected data appear Gamma Distributed at 5% Significance Level**											
2875												
2876	**Gamma Statistics**											
2877					k hat (MLE)	1.198	k star (bias corrected MLE)					1.106
2878					Theta hat (MLE)	50.07	Theta star (bias corrected MLE)					54.21
2879					nu hat (MLE)	76.65	nu star (bias corrected)					70.8
2880					MLE Mean (bias corrected)	59.96	MLE Sd (bias corrected)					57.01
2881							Approximate Chi Square Value (0.05)					52.42
2882					Adjusted Level of Significance	0.0416	Adjusted Chi Square Value					51.58
2883												
2884	**Assuming Gamma Distribution**											
2885					95% Approximate Gamma UCL (use when n>=50)	80.98	95% Adjusted Gamma UCL (use when n<50)					82.31
2886												
2887	**Lognormal GOF Test**											
2888					Shapiro Wilk Test Statistic	0.932	**Shapiro Wilk Lognormal GOF Test**					
2889					5% Shapiro Wilk Critical Value	0.93	Data appear Lognormal at 5% Significance Level					
2890					Lilliefors Test Statistic	0.1	**Lilliefors Lognormal GOF Test**					
2891					5% Lilliefors Critical Value	0.157	Data appear Lognormal at 5% Significance Level					
2892	**Data appear Lognormal at 5% Significance Level**											
2893												
2894	**Lognormal Statistics**											
2895					Minimum of Logged Data	1.728	Mean of logged Data					3.621
2896					Maximum of Logged Data	5.126	SD of logged Data					1.052
2897												
2898	**Assuming Lognormal Distribution**											
2899					95% H-UCL	104.2	90% Chebyshev (MVUE) UCL					104.6
2900					95% Chebyshev (MVUE) UCL	123.3	97.5% Chebyshev (MVUE) UCL					149.2
2901					99% Chebyshev (MVUE) UCL	200.1						
2902												
2903	**Nonparametric Distribution Free UCL Statistics**											
2904	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
2905												
2906	**Nonparametric Distribution Free UCLs**											
2907					95% CLT UCL	75.56	95% Jackknife UCL					76.04
2908					95% Standard Bootstrap UCL	75.51	95% Bootstrap-t UCL					78.62
2909					95% Hall's Bootstrap UCL	76.86	95% Percentile Bootstrap UCL					75.57
2910					95% BCA Bootstrap UCL	77.46						
2911					90% Chebyshev(Mean, Sd) UCL	88.41	95% Chebyshev(Mean, Sd) UCL					101.3
2912					97.5% Chebyshev(Mean, Sd) UCL	119.2	99% Chebyshev(Mean, Sd) UCL					154.3
2913												
2914	**Suggested UCL to Use**											
2915					95% Adjusted Gamma UCL	82.31						
2916												
2917	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2918	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
2919	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
2920	For additional insight the user may want to consult a statistician.											
2921												
2922												
2923	**Total Petroleum Hydrocarbons (calc'd)**											
2924												
2925	**General Statistics**											

	A	B	C	D	E	F	G	H	I	J	K	L
2926					Total Number of Observations	28					Number of Distinct Observations	28
2927											Number of Missing Observations	18
2928					Minimum	11.8					Mean	264.4
2929					Maximum	489					Median	257.1
2930					SD	112.2					Std. Error of Mean	21.21
2931					Coefficient of Variation	0.424					Skewness	0.0536
2932												
2933					**Normal GOF Test**							
2934					Shapiro Wilk Test Statistic	0.962			**Shapiro Wilk GOF Test**			
2935					5% Shapiro Wilk Critical Value	0.924			Data appear Normal at 5% Significance Level			
2936					Lilliefors Test Statistic	0.169			**Lilliefors GOF Test**			
2937					5% Lilliefors Critical Value	0.167			Data Not Normal at 5% Significance Level			
2938					**Data appear Approximate Normal at 5% Significance Level**							
2939												
2940					**Assuming Normal Distribution**							
2941					**95% Normal UCL**				**95% UCLs (Adjusted for Skewness)**			
2942					95% Student's-t UCL	300.5			95% Adjusted-CLT UCL (Chen-1995)			299.5
2943									95% Modified-t UCL (Johnson-1978)			300.5
2944												
2945					**Gamma GOF Test**							
2946					A-D Test Statistic	1.197			**Anderson-Darling Gamma GOF Test**			
2947					5% A-D Critical Value	0.752			Data Not Gamma Distributed at 5% Significance Level			
2948					K-S Test Statistic	0.193			**Kolmogrov-Smirnoff Gamma GOF Test**			
2949					5% K-S Critical Value	0.166			Data Not Gamma Distributed at 5% Significance Level			
2950					**Data Not Gamma Distributed at 5% Significance Level**							
2951												
2952					**Gamma Statistics**							
2953					k hat (MLE)	3.459			k star (bias corrected MLE)			3.112
2954					Theta hat (MLE)	76.43			Theta star (bias corrected MLE)			84.95
2955					nu hat (MLE)	193.7			nu star (bias corrected)			174.3
2956					MLE Mean (bias corrected)	264.4			MLE Sd (bias corrected)			149.9
2957									Approximate Chi Square Value (0.05)			144.7
2958					Adjusted Level of Significance	0.0404			Adjusted Chi Square Value			143.1
2959												
2960					**Assuming Gamma Distribution**							
2961					95% Approximate Gamma UCL (use when n>=50))	318.3			95% Adjusted Gamma UCL (use when n<50)			322
2962												
2963					**Lognormal GOF Test**							
2964					Shapiro Wilk Test Statistic	0.719			**Shapiro Wilk Lognormal GOF Test**			
2965					5% Shapiro Wilk Critical Value	0.924			Data Not Lognormal at 5% Significance Level			
2966					Lilliefors Test Statistic	0.245			**Lilliefors Lognormal GOF Test**			
2967					5% Lilliefors Critical Value	0.167			Data Not Lognormal at 5% Significance Level			
2968					**Data Not Lognormal at 5% Significance Level**							
2969												
2970					**Lognormal Statistics**							
2971					Minimum of Logged Data	2.468			Mean of logged Data			5.426
2972					Maximum of Logged Data	6.192			SD of logged Data			0.712
2973												
2974					**Assuming Lognormal Distribution**							
2975					95% H-UCL	392.3			90% Chebyshev (MVUE) UCL			416.1
2976					95% Chebyshev (MVUE) UCL	473.4			97.5% Chebyshev (MVUE) UCL			553
2977					99% Chebyshev (MVUE) UCL	709.2						
2978												
2979					**Nonparametric Distribution Free UCL Statistics**							
2980					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
2981												
2982					**Nonparametric Distribution Free UCLs**							
2983					95% CLT UCL	299.2			95% Jackknife UCL			300.5
2984					95% Standard Bootstrap UCL	298.3			95% Bootstrap-t UCL			299.9
2985					95% Hall's Bootstrap UCL	301.4			95% Percentile Bootstrap UCL			298.7
2986					95% BCA Bootstrap UCL	297.8						
2987					90% Chebyshev(Mean, Sd) UCL	328			95% Chebyshev(Mean, Sd) UCL			356.8
2988					97.5% Chebyshev(Mean, Sd) UCL	396.8			99% Chebyshev(Mean, Sd) UCL			475.4
2989												
2990					**Suggested UCL to Use**							

	A	B	C	D	E	F	G	H	I	J	K	L
2991					95% Student's-t UCL	300.5						
2992												
2993	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2994	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
2995	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
2996	For additional insight the user may want to consult a statistician.											
2997												
2998	**Tributyltin ion**											
2999												
3000	**General Statistics**											
3001	Total Number of Observations					3	Number of Distinct Observations					3
3002							Number of Missing Observations					43
3003	Number of Detects					2	Number of Non-Detects					1
3004	Number of Distinct Detects					2	Number of Distinct Non-Detects					1
3005	Minimum Detect					0.72	Minimum Non-Detect					0.087
3006	Maximum Detect					1.1	Maximum Non-Detect					0.087
3007	Variance Detects					0.0722	Percent Non-Detects					33.33%
3008	Mean Detects					0.91	SD Detects					0.269
3009	Median Detects					0.91	CV Detects					0.295
3010	Skewness Detects					N/A	Kurtosis Detects					N/A
3011	Mean of Logged Detects					-0.117	SD of Logged Detects					0.3
3012												
3013	**Warning: Data set has only 2 Detected Values.**											
3014	**This is not enough to compute meaningful or reliable statistics and estimates.**											
3015												
3016												
3017	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**											
3018	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**											
3019	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**											
3020	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0**											
3021												
3022	**Normal GOF Test on Detects Only**											
3023	**Not Enough Data to Perform GOF Test**											
3024												
3025	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
3026	Mean					0.636	Standard Error of Mean					0.341
3027	SD					0.418	95% KM (BCA) UCL					N/A
3028	95% KM (t) UCL					1.632	95% KM (Percentile Bootstrap) UCL					N/A
3029	95% KM (z) UCL					1.197	95% KM Bootstrap t UCL					N/A
3030	90% KM Chebyshev UCL					1.659	95% KM Chebyshev UCL					2.123
3031	97.5% KM Chebyshev UCL					2.766	99% KM Chebyshev UCL					4.03
3032												
3033	**Gamma GOF Tests on Detected Observations Only**											
3034	**Not Enough Data to Perform GOF Test**											
3035												
3036	**Gamma Statistics on Detected Data Only**											
3037	k hat (MLE)					22.6	k star (bias corrected MLE)					N/A
3038	Theta hat (MLE)					0.0403	Theta star (bias corrected MLE)					N/A
3039	nu hat (MLE)					90.4	nu star (bias corrected)					N/A
3040	MLE Mean (bias corrected)					N/A	MLE Sd (bias corrected)					N/A
3041												
3042	**Gamma Kaplan-Meier (KM) Statistics**											
3043	k hat (KM)					2.314	nu hat (KM)					13.89
3044							Adjusted Level of Significance (β)					0.00136
3045	Approximate Chi Square Value (13.89, α)					6.494	Adjusted Chi Square Value (13.89, β)					3.163
3046	95% Gamma Approximate KM-UCL (use when n>=50)					1.359	95% Gamma Adjusted KM-UCL (use when n<50)					2.791
3047												
3048	**Lognormal GOF Test on Detected Observations Only**											
3049	**Not Enough Data to Perform GOF Test**											
3050												
3051	**Lognormal ROS Statistics Using Imputed Non-Detects**											
3052	Mean in Original Scale					0.72	Mean in Log Scale					-0.437
3053	SD in Original Scale					0.38	SD in Log Scale					0.595
3054	95% t UCL (assumes normality of ROS data)					1.361	95% Percentile Bootstrap UCL					N/A
3055	95% BCA Bootstrap UCL					N/A	95% Bootstrap t UCL					N/A

	A	B	C	D	E	F	G	H	I	J	K	L
3056					95% H-UCL (Log ROS)	19.97						
3057												
3058						DL/2 Statistics						
3059					DL/2 Normal				DL/2 Log-Transformed			
3060					Mean in Original Scale	0.621					Mean in Log Scale	-1.123
3061					SD in Original Scale	0.535					SD in Log Scale	1.756
3062					95% t UCL (Assumes normality)	1.523					95% H-Stat UCL	3.546E+12
3063					DL/2 is not a recommended method, provided for comparisons and historical reasons							
3064												
3065						Nonparametric Distribution Free UCL Statistics						
3066						Data do not follow a Discernible Distribution at 5% Significance Level						
3067												
3068						Suggested UCL to Use						
3069					95% KM (BCA) UCL	N/A						
3070						Warning: One or more Recommended UCL(s) not available!						
3071												
3072						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
3073						Recommendations are based upon data size, data distribution, and skewness.						
3074						These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
3075						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
3076												
3077												
3078	Zinc											
3079												
3080						General Statistics						
3081					Total Number of Observations	66			Number of Distinct Observations			63
3082									Number of Missing Observations			5
3083					Minimum	40.4			Mean			73.31
3084					Maximum	114			Median			72.7
3085					SD	18.26			Std. Error of Mean			2.247
3086					Coefficient of Variation	0.249			Skewness			0.114
3087												
3088						Normal GOF Test						
3089					Shapiro Wilk Test Statistic	0.966			Shapiro Wilk GOF Test			
3090					5% Shapiro Wilk P Value	0.171			Data appear Normal at 5% Significance Level			
3091					Lilliefors Test Statistic	0.0824			Lilliefors GOF Test			
3092					5% Lilliefors Critical Value	0.109			Data appear Normal at 5% Significance Level			
3093						Data appear Normal at 5% Significance Level						
3094												
3095						Assuming Normal Distribution						
3096					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
3097					95% Student's-t UCL	77.06			95% Adjusted-CLT UCL (Chen-1995)			77.04
3098									95% Modified-t UCL (Johnson-1978)			77.06
3099												
3100						Gamma GOF Test						
3101					A-D Test Statistic	0.45			Anderson-Darling Gamma GOF Test			
3102					5% A-D Critical Value	0.75			Detected data appear Gamma Distributed at 5% Significance Level			
3103					K-S Test Statistic	0.081			Kolmogrov-Smirnoff Gamma GOF Test			
3104					5% K-S Critical Value	0.11			Detected data appear Gamma Distributed at 5% Significance Level			
3105						Detected data appear Gamma Distributed at 5% Significance Level						
3106												
3107						Gamma Statistics						
3108					k hat (MLE)	15.71			k star (bias corrected MLE)			15.01
3109					Theta hat (MLE)	4.666			Theta star (bias corrected MLE)			4.884
3110					nu hat (MLE)	2074			nu star (bias corrected)			1981
3111					MLE Mean (bias corrected)	73.31			MLE Sd (bias corrected)			18.92
3112									Approximate Chi Square Value (0.05)			1879
3113					Adjusted Level of Significance	0.0464			Adjusted Chi Square Value			1877
3114												
3115						Assuming Gamma Distribution						
3116					95% Approximate Gamma UCL (use when n>=50))	77.3			95% Adjusted Gamma UCL (use when n<50)			77.4
3117												
3118						Lognormal GOF Test						
3119					Shapiro Wilk Test Statistic	0.958			Shapiro Wilk Lognormal GOF Test			
3120					5% Shapiro Wilk P Value	0.0617			Data appear Lognormal at 5% Significance Level			

	A	B	C	D	E	F	G	H	I	J	K	L
3121					Lilliefors Test Statistic	0.0897	**Lilliefors Lognormal GOF Test**					
3122					5% Lilliefors Critical Value	0.109	Data appear Lognormal at 5% Significance Level					
3123	**Data appear Lognormal at 5% Significance Level**											
3124												
3125	**Lognormal Statistics**											
3126					Minimum of Logged Data	3.699				Mean of logged Data		4.263
3127					Maximum of Logged Data	4.736				SD of logged Data		0.26
3128												
3129	**Assuming Lognormal Distribution**											
3130					95% H-UCL	77.66				90% Chebyshev (MVUE) UCL		80.53
3131					95% Chebyshev (MVUE) UCL	83.77				97.5% Chebyshev (MVUE) UCL		88.26
3132					99% Chebyshev (MVUE) UCL	97.09						
3133												
3134	**Nonparametric Distribution Free UCL Statistics**											
3135	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
3136												
3137	**Nonparametric Distribution Free UCLs**											
3138					95% CLT UCL	77.01				95% Jackknife UCL		77.06
3139					95% Standard Bootstrap UCL	76.97				95% Bootstrap-t UCL		77.01
3140					95% Hall's Bootstrap UCL	77				95% Percentile Bootstrap UCL		76.98
3141					95% BCA Bootstrap UCL	76.8						
3142					90% Chebyshev(Mean, Sd) UCL	80.05				95% Chebyshev(Mean, Sd) UCL		83.11
3143					97.5% Chebyshev(Mean, Sd) UCL	87.34				99% Chebyshev(Mean, Sd) UCL		95.67
3144												
3145	**Suggested UCL to Use**											
3146					95% Student's-t UCL	77.06						
3147												
3148	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
3149	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
3150	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
3151	For additional insight the user may want to consult a statistician.											
3152												

	A	B	C	D	E	F	G	H	I	J	K	L
1				Background Statistics for Data Sets with Non-Detects								
2		User Selected Options										
3		Date/Time of Computation		5/8/2015 10:30:22 AM								
4		From File		20150505_ProUCL_Input_filtered.xls - tab: all_ProUCLInput_filtered_data								
5		Full Precision		OFF								
6		Confidence Coefficient		95%								
7		Coverage		95%								
8		Different or Future K Observations		1								
9		Number of Bootstrap Operations		2000								
10	highlighted cell indicates method/value selected for given analyte in Tables 7.3-1 and AppH-2											
11	Aldrin											
12												
13				General Statistics								
14				Total Number of Observations		48		Number of Missing Observations				0
15				Number of Distinct Observations		38						
16				Number of Detects		6		Number of Non-Detects				42
17				Number of Distinct Detects		6		Number of Distinct Non-Detects				32
18				Minimum Detect		0.24		Minimum Non-Detect				0.0329
19				Maximum Detect		0.55		Maximum Non-Detect				0.49
20				Variance Detected		0.0117		Percent Non-Detects				87.5%
21				Mean Detected		0.362		SD Detected				0.108
22				Mean of Detected Logged Data		-1.052		SD of Detected Logged Data				0.284
23												
24				Critical Values for Background Threshold Values (BTVs)								
25				Tolerance Factor K (For UTL)		2.069		d2max (for USL)				2.941
26												
27				Normal GOF Test on Detects Only								
28				Shapiro Wilk Test Statistic		0.929		Shapiro Wilk GOF Test				
29				5% Shapiro Wilk Critical Value		0.788		Detected Data appear Normal at 5% Significance Level				
30				Lilliefors Test Statistic		0.213		Lilliefors GOF Test				
31				5% Lilliefors Critical Value		0.362		Detected Data appear Normal at 5% Significance Level				
32				Detected Data appear Normal at 5% Significance Level								
33												
34				Kaplan Meier (KM) Background Statistics Assuming Normal Distribution								
35				Mean		0.0775		SD				0.117
36				95% UTL95% Coverage		0.319		95% KM UPL (t)				0.275
37				90% KM Percentile (z)		0.227		95% KM Percentile (z)				0.27
38				99% KM Percentile (z)		0.349		95% KM USL				0.421
39												
40				DL/2 Substitution Background Statistics Assuming Normal Distribution								
41				Mean		0.113		SD				0.117
42				95% UTL95% Coverage		0.355		95% UPL (t)				0.312
43				90% Percentile (z)		0.263		95% Percentile (z)				0.306
44				99% Percentile (z)		0.385		95% USL				0.457
45				DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons								
46												
47				Gamma GOF Tests on Detected Observations Only								
48				A-D Test Statistic		0.228		Anderson-Darling GOF Test				
49				5% A-D Critical Value		0.698		Detected data appear Gamma Distributed at 5% Significance Level				
50				K-S Test Statistic		0.185		Kolmogrov-Smirnoff GOF				
51				5% K-S Critical Value		0.332		Detected data appear Gamma Distributed at 5% Significance Level				
52				Detected data appear Gamma Distributed at 5% Significance Level								
53												
54				Gamma Statistics on Detected Data Only								
55				k hat (MLE)		14.61		k star (bias corrected MLE)				7.416
56				Theta hat (MLE)		0.0247		Theta star (bias corrected MLE)				0.0487
57				nu hat (MLE)		175.3		nu star (bias corrected)				88.99
58				MLE Mean (bias corrected)		0.362						
59				MLE Sd (bias corrected)		0.133		95% Percentile of Chisquare (2k)				24.78
60												
61				Gamma ROS Statistics using Imputed Non-Detects								
62				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs								
63				GROS may not be used when kstar of detected data is small such as < 0.1								
64				For such situations, GROS method tends to yield inflated values of UCLs and BTVs								
65				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates								

	A	B	C	D	E	F	G	H	I	J	K	L
66					Minimum	0.01					Mean	0.0613
67					Maximum	0.55					Median	0.01
68					SD	0.122					CV	1.988
69					k hat (MLE)	0.557					k star (bias corrected MLE)	0.536
70					Theta hat (MLE)	0.11					Theta star (bias corrected MLE)	0.115
71					nu hat (MLE)	53.43					nu star (bias corrected)	51.42
72					MLE Mean (bias corrected)	0.0613					MLE Sd (bias corrected)	0.0838
73					95% Percentile of Chisquare (2k)	4.015					90% Percentile	0.164
74					95% Percentile	0.23					99% Percentile	0.392
75	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
76	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
77					WH	HW					WH	HW
78	95% Approx. Gamma UTL with 95% Coverage				0.275	0.272			95% Approx. Gamma UPL		0.203	0.194
79				95% Gamma USL	0.508	0.545						
80												
81	**The following statistics are computed using gamma distribution and KM estimates**											
82	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
83					k hat (KM)	0.44					nu hat (KM)	42.28
84					WH	HW					WH	HW
85	95% Approx. Gamma UTL with 95% Coverage				0.275	0.268			95% Approx. Gamma UPL		0.216	0.208
86				95% Gamma USL	0.452	0.46						
87												
88	**Lognormal GOF Test on Detected Observations Only**											
89				Shapiro Wilk Test Statistic		0.979	**Shapiro Wilk GOF Test**					
90				5% Shapiro Wilk Critical Value		0.788	Detected Data appear Lognormal at 5% Significance Level					
91				Lilliefors Test Statistic		0.167	**Lilliefors GOF Test**					
92				5% Lilliefors Critical Value		0.362	Detected Data appear Lognormal at 5% Significance Level					
93	**Detected Data appear Lognormal at 5% Significance Level**											
94												
95	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
96				Mean in Original Scale		0.141			Mean in Log Scale			-2.079
97				SD in Original Scale		0.0933			SD in Log Scale			0.442
98				95% UTL95% Coverage		0.312			95% BCA UTL95% Coverage			0.48
99				95% Bootstrap (%) UTL95% Coverage		0.501			95% UPL (t)			0.265
100				90% Percentile (z)		0.22			95% Percentile (z)			0.259
101				99% Percentile (z)		0.35			95% USL			0.459
102												
103	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
104				KM Mean of Logged Data		-3.089			95% KM UTL (Lognormal)95% Coverage			0.246
105				KM SD of Logged Data		0.815			95% KM UPL (Lognormal)			0.181
106				95% KM Percentile Lognormal (z)		0.174			95% KM USL (Lognormal)			0.501
107												
108	**Background DL/2 Statistics Assuming Lognormal Distribution**											
109				Mean in Original Scale		0.113			Mean in Log Scale			-2.687
110				SD in Original Scale		0.117			SD in Log Scale			1.06
111				95% UTL95% Coverage		0.61			95% UPL (t)			0.411
112				90% Percentile (z)		0.265			95% Percentile (z)			0.39
113				99% Percentile (z)		0.802			95% USL			1.539
114	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
115												
116	**Nonparametric Distribution Free Background Statistics**											
117	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
118												
119	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
120				Order of Statistic, r		47			95% UTL with95% Coverage			0.49
121				Approximate f		1.237			Confidence Coefficient (CC) achieved by UTL			0.699
122				95% UPL		0.481			95% USL			0.55
123				95% KM Chebyshev UPL		0.592						
124												
125	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
126	data set free of outliers and consists of observations collected from clean unimpacted locations.											
127	The use of USL tends to provide a balance between false positives and false negatives provided the data											
128	represents a background data set and when many onsite observations need to be compared with the BTV.											
129												
130	**Arsenic**											

	A	B	C	D	E	F	G	H	I	J	K	L
131												
132	**General Statistics**											
133					Total Number of Observations	71				Number of Distinct Observations		57
134					Minimum	1.9				First Quartile		2.465
135					Second Largest	5.2				Median		2.73
136					Maximum	5.29				Third Quartile		3.19
137					Mean	2.869				SD		0.662
138					Coefficient of Variation	0.231				Skewness		1.621
139					Mean of logged Data	1.031				SD of logged Data		0.209
140												
141					**Critical Values for Background Threshold Values (BTVs)**							
142					Tolerance Factor K (For UTL)	1.983				d2max (for USL)		3.089
143												
144					**Normal GOF Test**							
145					Shapiro Wilk Test Statistic	0.871				**Normal GOF Test**		
146					5% Shapiro Wilk P Value	3.5394E-8				Data Not Normal at 5% Significance Level		
147					Lilliefors Test Statistic	0.109				**Lilliefors GOF Test**		
148					5% Lilliefors Critical Value	0.105				Data Not Normal at 5% Significance Level		
149					**Data Not Normal at 5% Significance Level**							
150												
151					**Background Statistics Assuming Normal Distribution**							
152				95% UTL with	95% Coverage	4.182				90% Percentile (z)		3.718
153					95% UPL (t)	3.981				95% Percentile (z)		3.958
154					95% USL	4.915				99% Percentile (z)		4.41
155												
156					**Gamma GOF Test**							
157					A-D Test Statistic	0.951				**Anderson-Darling Gamma GOF Test**		
158					5% A-D Critical Value	0.749				Data Not Gamma Distributed at 5% Significance Level		
159					K-S Test Statistic	0.1				**Kolmogrov-Smirnoff Gamma GOF Test**		
160					5% K-S Critical Value	0.105				Detected data appear Gamma Distributed at 5% Significance Level		
161					**Detected data follow Appr. Gamma Distribution at 5% Significance Level**							
162												
163					**Gamma Statistics**							
164					k hat (MLE)	22.05				k star (bias corrected MLE)		21.12
165					Theta hat (MLE)	0.13				Theta star (bias corrected MLE)		0.136
166					nu hat (MLE)	3131				nu star (bias corrected)		3000
167					MLE Mean (bias corrected)	2.869				MLE Sd (bias corrected)		0.624
168												
169					**Background Statistics Assuming Gamma Distribution**							
170				95% Wilson Hilferty (WH) Approx. Gamma UPL		3.975				90% Percentile		3.693
171				95% Hawkins Wixley (HW) Approx. Gamma UPL		3.977				95% Percentile		3.967
172				95% WH Approx. Gamma UTL with	95% Coverage	4.212				99% Percentile		4.517
173				95% HW Approx. Gamma UTL with	95% Coverage	4.219						
174					95% WH USL	5.154				95% HW USL		5.197
175												
176					**Lognormal GOF Test**							
177					Shapiro Wilk Test Statistic	0.95				**Shapiro Wilk Lognormal GOF Test**		
178					5% Shapiro Wilk P Value	0.0151				Data Not Lognormal at 5% Significance Level		
179					Lilliefors Test Statistic	0.0917				**Lilliefors Lognormal GOF Test**		
180					5% Lilliefors Critical Value	0.105				Data appear Lognormal at 5% Significance Level		
181					**Data appear Approximate Lognormal at 5% Significance Level**							
182												
183					**Background Statistics assuming Lognormal Distribution**							
184				95% UTL with	95% Coverage	4.248				90% Percentile (z)		3.668
185					95% UPL (t)	3.986				95% Percentile (z)		3.958
186					95% USL	5.356				99% Percentile (z)		4.565
187												
188					**Nonparametric Distribution Free Background Statistics**							
189					**Data appear Approximate Gamma Distribution at 5% Significance Level**							
190												
191					**Nonparametric Upper Limits for Background Threshold Values**							
192					Order of Statistic, r	70				95% UTL with	95% Coverage	5.2
193					Approximate f	1.842				Confidence Coefficient (CC) achieved by UTL		0.876
194				95% Percentile Bootstrap UTL with	95% Coverage	5.2				95% BCA Bootstrap UTL with	95% Coverage	5.025
195					95% UPL	4.19				90% Percentile		3.52

	A	B	C	D	E	F	G	H	I	J	K	L
196					90% Chebyshev UPL	4.87					95% Percentile	3.725
197					95% Chebyshev UPL	5.776					99% Percentile	5.227
198					95% USL	5.29						
199												
200	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
201	data set free of outliers and consists of observations collected from clean unimpacted locations.											
202	The use of USL tends to provide a balance between false positives and false negatives provided the data											
203	represents a background data set and when many onsite observations need to be compared with the BTV.											
204												
205	**Benzo(a)pyrene**											
206												
207	**General Statistics**											
208					Total Number of Observations	71					Number of Missing Observations	0
209					Number of Distinct Observations	53						
210					Number of Detects	42					Number of Non-Detects	29
211					Number of Distinct Detects	39					Number of Distinct Non-Detects	19
212					Minimum Detect	0.53					Minimum Non-Detect	0.33
213					Maximum Detect	53					Maximum Non-Detect	21
214					Variance Detected	82.53					Percent Non-Detects	40.85%
215					Mean Detected	9.005					SD Detected	9.085
216					Mean of Detected Logged Data	1.885					SD of Detected Logged Data	0.796
217												
218	**Critical Values for Background Threshold Values (BTVs)**											
219					Tolerance Factor K (For UTL)	1.983					d2max (for USL)	3.089
220												
221	**Normal GOF Test on Detects Only**											
222					Shapiro Wilk Test Statistic	0.641					**Shapiro Wilk GOF Test**	
223					5% Shapiro Wilk Critical Value	0.942					Data Not Normal at 5% Significance Level	
224					Lilliefors Test Statistic	0.279					**Lilliefors GOF Test**	
225					5% Lilliefors Critical Value	0.137					Data Not Normal at 5% Significance Level	
226	**Data Not Normal at 5% Significance Level**											
227												
228	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
229					Mean	5.722					SD	8.022
230					95% UTL95% Coverage	21.63					95% KM UPL (t)	19.19
231					90% KM Percentile (z)	16					95% KM Percentile (z)	18.92
232					99% KM Percentile (z)	24.38					95% KM USL	30.5
233												
234	**DL/2 Substitution Background Statistics Assuming Normal Distribution**											
235					Mean	6.023					SD	7.94
236					95% UTL95% Coverage	21.76					95% UPL (t)	19.35
237					90% Percentile (z)	16.2					95% Percentile (z)	19.08
238					99% Percentile (z)	24.49					95% USL	30.55
239	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
240												
241	**Gamma GOF Tests on Detected Observations Only**											
242					A-D Test Statistic	1.177					**Anderson-Darling GOF Test**	
243					5% A-D Critical Value	0.763					Data Not Gamma Distributed at 5% Significance Level	
244					K-S Test Statistic	0.172					**Kolmogrov-Smirnoff GOF**	
245					5% K-S Critical Value	0.139					Data Not Gamma Distributed at 5% Significance Level	
246	**Data Not Gamma Distributed at 5% Significance Level**											
247												
248	**Gamma Statistics on Detected Data Only**											
249					k hat (MLE)	1.745					k star (bias corrected MLE)	1.636
250					Theta hat (MLE)	5.162					Theta star (bias corrected MLE)	5.505
251					nu hat (MLE)	146.6					nu star (bias corrected)	137.4
252					MLE Mean (bias corrected)	9.005						
253					MLE Sd (bias corrected)	7.041					95% Percentile of Chisquare (2k)	8.281
254												
255	**Gamma ROS Statistics using Imputed Non-Detects**											
256	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
257	GROS may not be used when kstar of detected data is small such as < 0.1											
258	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
259	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
260					Minimum	0.01					Mean	5.41

	A	B	C	D	E	F	G	H	I	J	K	L
261					Maximum	53					Median	3.5
262					SD	8.221					CV	1.519
263					k hat (MLE)	0.3					k star (bias corrected MLE)	0.297
264					Theta hat (MLE)	18.03					Theta star (bias corrected MLE)	18.23
265					nu hat (MLE)	42.6					nu star (bias corrected)	42.14
266					MLE Mean (bias corrected)	5.41					MLE Sd (bias corrected)	9.932
267					95% Percentile of Chisquare (2k)	2.724					90% Percentile	15.98
268					95% Percentile	24.84					99% Percentile	47.89
269					**The following statistics are computed using Gamma ROS Statistics on Imputed Data**							
270					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
271					WH	HW					WH	HW
272				95% Approx. Gamma UTL with 95% Coverage	29.98	37.97				95% Approx. Gamma UPL	22.54	26.73
273				95% Gamma USL	70.58	110.4						
274												
275					**The following statistics are computed using gamma distribution and KM estimates**							
276					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
277					k hat (KM)	0.509					nu hat (KM)	72.24
278					WH	HW					WH	HW
279				95% Approx. Gamma UTL with 95% Coverage	23.69	25.76				95% Approx. Gamma UPL	18.85	19.86
280				95% Gamma USL	48.15	58.81						
281												
282					**Lognormal GOF Test on Detected Observations Only**							
283					Shapiro Wilk Test Statistic	0.937	**Shapiro Wilk GOF Test**					
284					5% Shapiro Wilk Critical Value	0.942	Data Not Lognormal at 5% Significance Level					
285					Lilliefors Test Statistic	0.123	**Lilliefors GOF Test**					
286					5% Lilliefors Critical Value	0.137	Detected Data appear Lognormal at 5% Significance Level					
287					**Detected Data appear Approximate Lognormal at 5% Significance Level**							
288												
289					**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**							
290					Mean in Original Scale	5.92					Mean in Log Scale	1.231
291					SD in Original Scale	7.908					SD in Log Scale	1.032
292					95% UTL95% Coverage	26.51					95% BCA UTL95% Coverage	27.5
293					95% Bootstrap (%) UTL95% Coverage	28					95% UPL (t)	19.37
294					90% Percentile (z)	12.86					95% Percentile (z)	18.71
295					99% Percentile (z)	37.8					95% USL	83.07
296												
297					**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**							
298					KM Mean of Logged Data	0.874					95% KM UTL (Lognormal)95% Coverage	43.77
299					KM SD of Logged Data	1.465					95% KM UPL (Lognormal)	28.04
300					95% KM Percentile Lognormal (z)	26.68					95% KM USL (Lognormal)	221.4
301												
302					**Background DL/2 Statistics Assuming Lognormal Distribution**							
303					Mean in Original Scale	6.023					Mean in Log Scale	1.172
304					SD in Original Scale	7.94					SD in Log Scale	1.199
305					95% UTL95% Coverage	34.79					95% UPL (t)	24.16
306					90% Percentile (z)	15.01					95% Percentile (z)	23.2
307					99% Percentile (z)	52.53					95% USL	131.1
308					**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**							
309												
310					**Nonparametric Distribution Free Background Statistics**							
311					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
312												
313					**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**							
314					Order of Statistic, r	70					95% UTL with95% Coverage	28
315					Approximate f	1.842					Confidence Coefficient (CC) achieved by UTL	0.876
316					95% UPL	23.4					95% USL	53
317					95% KM Chebyshev UPL	40.94						
318												
319					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
320					data set free of outliers and consists of observations collected from clean unimpacted locations.							
321					The use of USL tends to provide a balance between false positives and false negatives provided the data							
322					represents a background data set and when many onsite observations need to be compared with the BTV.							
323												
324	**Bis(2-ethylhexyl) phthalate**											
325												

	A	B	C	D	E	F	G	H	I	J	K	L
326	General Statistics											
327				Total Number of Observations		67				Number of Missing Observations		4
328				Number of Distinct Observations		52						
329				Number of Detects		52				Number of Non-Detects		15
330				Number of Distinct Detects		45				Number of Distinct Non-Detects		10
331				Minimum Detect		4.2				Minimum Non-Detect		3.2
332				Maximum Detect		2100				Maximum Non-Detect		31
333				Variance Detected		83233				Percent Non-Detects		22.39%
334				Mean Detected		89.05				SD Detected		288.5
335				Mean of Detected Logged Data		3.565				SD of Detected Logged Data		1.118
336												
337	Critical Values for Background Threshold Values (BTVs)											
338				Tolerance Factor K (For UTL)		1.994				d2max (for USL)		3.068
339												
340	Normal GOF Test on Detects Only											
341				Shapiro Wilk Test Statistic		0.251	Normal GOF Test on Detected Observations Only					
342				5% Shapiro Wilk P Value		0	Data Not Normal at 5% Significance Level					
343				Lilliefors Test Statistic		0.384	Lilliefors GOF Test					
344				5% Lilliefors Critical Value		0.123	Data Not Normal at 5% Significance Level					
345	Data Not Normal at 5% Significance Level											
346												
347	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
348				Mean		71.49				SD		253.8
349				95% UTL95% Coverage		577.6				95% KM UPL (t)		498.1
350				90% KM Percentile (z)		396.8				95% KM Percentile (z)		489
351				99% KM Percentile (z)		662				95% KM USL		850.2
352												
353	DL/2 Substitution Background Statistics Assuming Normal Distribution											
354				Mean		71.5				SD		255.7
355				95% UTL95% Coverage		581.4				95% UPL (t)		501.3
356				90% Percentile (z)		399.2				95% Percentile (z)		492.2
357				99% Percentile (z)		666.4				95% USL		856.1
358	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
359												
360	Gamma GOF Tests on Detected Observations Only											
361				A-D Test Statistic		3.825	Anderson-Darling GOF Test					
362				5% A-D Critical Value		0.801	Data Not Gamma Distributed at 5% Significance Level					
363				K-S Test Statistic		0.19	Kolmogrov-Smirnoff GOF					
364				5% K-S Critical Value		0.129	Data Not Gamma Distributed at 5% Significance Level					
365	Data Not Gamma Distributed at 5% Significance Level											
366												
367	Gamma Statistics on Detected Data Only											
368				k hat (MLE)		0.66				k star (bias corrected MLE)		0.634
369				Theta hat (MLE)		135				Theta star (bias corrected MLE)		140.4
370				nu hat (MLE)		68.6				nu star (bias corrected)		65.98
371				MLE Mean (bias corrected)		89.05						
372				MLE Sd (bias corrected)		111.8				95% Percentile of Chisquare (2k)		4.475
373												
374	Gamma ROS Statistics using Imputed Non-Detects											
375	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
376	GROS may not be used when kstar of detected data is small such as < 0.1											
377	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
378	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
379				Minimum		0.01				Mean		69.11
380				Maximum		2100				Median		24
381				SD		256.3				CV		3.709
382				k hat (MLE)		0.279				k star (bias corrected MLE)		0.277
383				Theta hat (MLE)		247.6				Theta star (bias corrected MLE)		249.9
384				nu hat (MLE)		37.4				nu star (bias corrected)		37.06
385				MLE Mean (bias corrected)		69.11				MLE Sd (bias corrected)		131.4
386				95% Percentile of Chisquare (2k)		2.596				90% Percentile		205.7
387				95% Percentile		324.4				99% Percentile		636.2
388	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
389	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
390					WH	HW					WH	HW

	A	B	C	D	E	F	G	H	I	J	K	L
391	95% Approx. Gamma UTL with 95% Coverage				320.7	377.3				95% Approx. Gamma UPL	239.3	265.3
392				95% Gamma USL	735.4	1042						
393												
394	**The following statistics are computed using gamma distribution and KM estimates**											
395	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
396					k hat (KM)	0.0793					nu hat (KM)	10.63
397					WH	HW					WH	HW
398	95% Approx. Gamma UTL with 95% Coverage				263	250.9				95% Approx. Gamma UPL	206	192.6
399				95% Gamma USL	536.7	554.8						
400												
401	**Lognormal GOF Test on Detected Observations Only**											
402				Lilliefors Test Statistic		0.0853	**Lilliefors GOF Test**					
403				5% Lilliefors Critical Value		0.123	Detected Data appear Lognormal at 5% Significance Level					
404	**Detected Data appear Lognormal at 5% Significance Level**											
405												
406	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
407				Mean in Original Scale		71.17				Mean in Log Scale		3.234
408				SD in Original Scale		255.8				SD in Log Scale		1.194
409				95% UTL95% Coverage		274.5				95% BCA UTL95% Coverage		228
410				95% Bootstrap (%) UTL95% Coverage		240				95% UPL (t)		188.8
411				90% Percentile (z)		117.3				95% Percentile (z)		180.9
412				99% Percentile (z)		408.1				95% USL		989.2
413												
414	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
415				KM Mean of Logged Data		3.243				95% KM UTL (Lognormal)95% Coverage		276.5
416				KM SD of Logged Data		1.193				95% KM UPL (Lognormal)		190.3
417				95% KM Percentile Lognormal (z)		182.3				95% KM USL (Lognormal)		996.1
418												
419	**Background DL/2 Statistics Assuming Lognormal Distribution**											
420				Mean in Original Scale		71.5				Mean in Log Scale		3.273
421				SD in Original Scale		255.7				SD in Log Scale		1.156
422				95% UTL95% Coverage		264.5				95% UPL (t)		184.1
423				90% Percentile (z)		116.1				95% Percentile (z)		176.7
424				99% Percentile (z)		388.3				95% USL		914.9
425	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
426												
427	**Nonparametric Distribution Free Background Statistics**											
428	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
429												
430	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
431				Order of Statistic, r		66				95% UTL with95% Coverage		240
432				Approximate f		1.737				Confidence Coefficient (CC) achieved by UTL		0.854
433				95% UPL		192				95% USL		2100
434				95% KM Chebyshev UPL		1186						
435												
436	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
437	data set free of outliers and consists of observations collected from clean unimpacted locations.											
438	The use of USL tends to provide a balance between false positives and false negatives provided the data											
439	represents a background data set and when many onsite observations need to be compared with the BTV.											
440												
441	**Butylbenzyl phthalate**											
442												
443	**General Statistics**											
444				Total Number of Observations		66				Number of Missing Observations		5
445				Number of Distinct Observations		33						
446				Number of Detects		15				Number of Non-Detects		51
447				Number of Distinct Detects		14				Number of Distinct Non-Detects		23
448				Minimum Detect		2.7				Minimum Non-Detect		2.2
449				Maximum Detect		33				Maximum Non-Detect		33
450				Variance Detected		63.57				Percent Non-Detects		77.27%
451				Mean Detected		9.1				SD Detected		7.973
452				Mean of Detected Logged Data		1.931				SD of Detected Logged Data		0.749
453												
454	**Critical Values for Background Threshold Values (BTVs)**											
455				Tolerance Factor K (For UTL)		1.997				d2max (for USL)		3.062

	A	B	C	D	E	F	G	H	I	J	K	L
456												
457						Normal GOF Test on Detects Only						
458					Shapiro Wilk Test Statistic	0.753		Shapiro Wilk GOF Test				
459					5% Shapiro Wilk Critical Value	0.881		Data Not Normal at 5% Significance Level				
460					Lilliefors Test Statistic	0.255		Lilliefors GOF Test				
461					5% Lilliefors Critical Value	0.229		Data Not Normal at 5% Significance Level				
462						Data Not Normal at 5% Significance Level						
463												
464						Kaplan Meier (KM) Background Statistics Assuming Normal Distribution						
465					Mean	4.272					SD	4.888
466					95% UTL95% Coverage	14.03					95% KM UPL (t)	12.49
467					90% KM Percentile (z)	10.54					95% KM Percentile (z)	12.31
468					99% KM Percentile (z)	15.64					95% KM USL	19.24
469												
470						DL/2 Substitution Background Statistics Assuming Normal Distribution						
471					Mean	6.337					SD	6.192
472					95% UTL95% Coverage	18.7					95% UPL (t)	16.75
473					90% Percentile (z)	14.27					95% Percentile (z)	16.52
474					99% Percentile (z)	20.74					95% USL	25.3
475						DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons						
476												
477						Gamma GOF Tests on Detected Observations Only						
478					A-D Test Statistic	0.537		Anderson-Darling GOF Test				
479					5% A-D Critical Value	0.748		Detected data appear Gamma Distributed at 5% Significance Level				
480					K-S Test Statistic	0.156		Kolmogrov-Smirnoff GOF				
481					5% K-S Critical Value	0.224		Detected data appear Gamma Distributed at 5% Significance Level				
482						Detected data appear Gamma Distributed at 5% Significance Level						
483												
484						Gamma Statistics on Detected Data Only						
485					k hat (MLE)	1.951					k star (bias corrected MLE)	1.605
486					Theta hat (MLE)	4.664					Theta star (bias corrected MLE)	5.669
487					nu hat (MLE)	58.53					nu star (bias corrected)	48.16
488					MLE Mean (bias corrected)	9.1						
489					MLE Sd (bias corrected)	7.182					95% Percentile of Chisquare (2k)	8.177
490												
491						Gamma ROS Statistics using Imputed Non-Detects						
492						GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs						
493						GROS may not be used when kstar of detected data is small such as < 0.1						
494						For such situations, GROS method tends to yield inflated values of UCLs and BTVs						
495						For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates						
496					Minimum	0.01					Mean	2.322
497					Maximum	33					Median	0.01
498					SD	5.318					CV	2.29
499					k hat (MLE)	0.213					k star (bias corrected MLE)	0.213
500					Theta hat (MLE)	10.9					Theta star (bias corrected MLE)	10.88
501					nu hat (MLE)	28.11					nu star (bias corrected)	28.16
502					MLE Mean (bias corrected)	2.322					MLE Sd (bias corrected)	5.027
503					95% Percentile of Chisquare (2k)	2.161					90% Percentile	7.02
504					95% Percentile	11.76					99% Percentile	24.68
505						The following statistics are computed using Gamma ROS Statistics on Imputed Data						
506						Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods						
507					WH	HW					WH	HW
508			95% Approx. Gamma UTL with 95% Coverage		12.16	13.13			95% Approx. Gamma UPL		8.614	8.642
509			95% Gamma USL		31.04	41.72						
510												
511						The following statistics are computed using gamma distribution and KM estimates						
512						Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods						
513					k hat (KM)	0.764					nu hat (KM)	100.8
514					WH	HW					WH	HW
515			95% Approx. Gamma UTL with 95% Coverage		11.98	11.79			95% Approx. Gamma UPL		10.15	9.915
516			95% Gamma USL		19.73	20.13						
517												
518						Lognormal GOF Test on Detected Observations Only						
519					Shapiro Wilk Test Statistic	0.93		Shapiro Wilk GOF Test				
520					5% Shapiro Wilk Critical Value	0.881		Detected Data appear Lognormal at 5% Significance Level				

	A	B	C	D	E	F	G	H	I	J	K	L
521					Lilliefors Test Statistic	0.133	**Lilliefors GOF Test**					
522					5% Lilliefors Critical Value	0.229	Detected Data appear Lognormal at 5% Significance Level					
523	**Detected Data appear Lognormal at 5% Significance Level**											
524												
525	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
526					Mean in Original Scale	3.19					Mean in Log Scale	0.572
527					SD in Original Scale	4.99					SD in Log Scale	0.994
528					95% UTL95% Coverage	12.89					95% BCA UTL95% Coverage	16.75
529					95% Bootstrap (%) UTL95% Coverage	17					95% UPL (t)	9.419
530					90% Percentile (z)	6.332					95% Percentile (z)	9.085
531					99% Percentile (z)	17.88					95% USL	37.15
532												
533	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
534					KM Mean of Logged Data	1.163					95% KM UTL (Lognormal)95% Coverage	11.34
535					KM SD of Logged Data	0.634					95% KM UPL (Lognormal)	9.285
536					95% KM Percentile Lognormal (z)	9.073					95% KM USL (Lognormal)	22.28
537												
538	**Background DL/2 Statistics Assuming Lognormal Distribution**											
539					Mean in Original Scale	6.337					Mean in Log Scale	1.359
540					SD in Original Scale	6.192					SD in Log Scale	1.015
541					95% UTL95% Coverage	29.53					95% UPL (t)	21.43
542					90% Percentile (z)	14.29					95% Percentile (z)	20.66
543					99% Percentile (z)	41.25					95% USL	87.05
544	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
545												
546	**Nonparametric Distribution Free Background Statistics**											
547	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
548												
549	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
550					Order of Statistic, r	65					95% UTL with95% Coverage	33
551					Approximate f	1.711					Confidence Coefficient (CC) achieved by UTL	0.848
552					95% UPL	30.65					95% USL	33
553					95% KM Chebyshev UPL	25.74						
554												
555	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
556	data set free of outliers and consists of observations collected from clean unimpacted locations.											
557	The use of USL tends to provide a balance between false positives and false negatives provided the data											
558	represents a background data set and when many onsite observations need to be compared with the BTV.											
559												
560	**Cadmium**											
561												
562	**General Statistics**											
563					Total Number of Observations	67					Number of Missing Observations	4
564					Number of Distinct Observations	47						
565					Number of Detects	58					Number of Non-Detects	9
566					Number of Distinct Detects	45					Number of Distinct Non-Detects	7
567					Minimum Detect	0.04					Minimum Non-Detect	0.04
568					Maximum Detect	0.3					Maximum Non-Detect	0.11
569					Variance Detected	0.00228					Percent Non-Detects	13.43%
570					Mean Detected	0.126					SD Detected	0.0478
571					Mean of Detected Logged Data	-2.144					SD of Detected Logged Data	0.394
572												
573	**Critical Values for Background Threshold Values (BTVs)**											
574					Tolerance Factor K (For UTL)	1.994					d2max (for USL)	3.068
575												
576	**Normal GOF Test on Detects Only**											
577					Shapiro Wilk Test Statistic	0.947	**Normal GOF Test on Detected Observations Only**					
578					5% Shapiro Wilk P Value	0.025	Data Not Normal at 5% Significance Level					
579					Lilliefors Test Statistic	0.13	**Lilliefors GOF Test**					
580					5% Lilliefors Critical Value	0.116	Data Not Normal at 5% Significance Level					
581	**Data Not Normal at 5% Significance Level**											
582												
583	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
584					Mean	0.116					SD	0.0514
585					95% UTL95% Coverage	0.218					95% KM UPL (t)	0.202

	A	B	C	D	E	F	G	H	I	J	K	L
586				90% KM Percentile (z)		0.182				95% KM Percentile (z)		0.2
587				99% KM Percentile (z)		0.235				95% KM USL		0.274
588												
589				DL/2 Substitution Background Statistics Assuming Normal Distribution								
590				Mean		0.114				SD		0.0545
591				95% UTL95% Coverage		0.222				95% UPL (t)		0.205
592				90% Percentile (z)		0.184				95% Percentile (z)		0.203
593				99% Percentile (z)		0.24				95% USL		0.281
594				DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons								
595												
596				Gamma GOF Tests on Detected Observations Only								
597				A-D Test Statistic		0.553				Anderson-Darling GOF Test		
598				5% A-D Critical Value		0.752				Detected data appear Gamma Distributed at 5% Significance Level		
599				K-S Test Statistic		0.102				Kolmogrov-Smirnoff GOF		
600				5% K-S Critical Value		0.117				Detected data appear Gamma Distributed at 5% Significance Level		
601				Detected data appear Gamma Distributed at 5% Significance Level								
602												
603				Gamma Statistics on Detected Data Only								
604				k hat (MLE)		7.083				k star (bias corrected MLE)		6.728
605				Theta hat (MLE)		0.0178				Theta star (bias corrected MLE)		0.0187
606				nu hat (MLE)		821.6				nu star (bias corrected)		780.4
607				MLE Mean (bias corrected)		0.126						
608				MLE Sd (bias corrected)		0.0486				95% Percentile of Chisquare (2k)		22.97
609												
610				Gamma ROS Statistics using Imputed Non-Detects								
611				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs								
612				GROS may not be used when kstar of detected data is small such as < 0.1								
613				For such situations, GROS method tends to yield inflated values of UCLs and BTVs								
614				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates								
615				Minimum		0.0299				Mean		0.116
616				Maximum		0.3				Median		0.116
617				SD		0.0515				CV		0.444
618				k hat (MLE)		4.928				k star (bias corrected MLE)		4.717
619				Theta hat (MLE)		0.0235				Theta star (bias corrected MLE)		0.0246
620				nu hat (MLE)		660.4				nu star (bias corrected)		632.1
621				MLE Mean (bias corrected)		0.116				MLE Sd (bias corrected)		0.0534
622				95% Percentile of Chisquare (2k)		17.53				90% Percentile		0.187
623				95% Percentile		0.215				99% Percentile		0.275
624				The following statistics are computed using Gamma ROS Statistics on Imputed Data								
625				Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods								
626					WH	HW					WH	HW
627			95% Approx. Gamma UTL with 95% Coverage		0.243	0.248				95% Approx. Gamma UPL	0.217	0.22
628				95% Gamma USL	0.347	0.366						
629												
630				The following statistics are computed using gamma distribution and KM estimates								
631				Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods								
632				k hat (KM)		5.064				nu hat (KM)		678.6
633					WH	HW					WH	HW
634			95% Approx. Gamma UTL with 95% Coverage		0.243	0.249				95% Approx. Gamma UPL	0.217	0.22
635				95% Gamma USL	0.348	0.367						
636												
637				Lognormal GOF Test on Detected Observations Only								
638				Lilliefors Test Statistic		0.127				Lilliefors GOF Test		
639				5% Lilliefors Critical Value		0.116				Data Not Lognormal at 5% Significance Level		
640				Detected Data appear Approximate Lognormal at 5% Significance Level								
641												
642				Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects								
643				Mean in Original Scale		0.117				Mean in Log Scale		-2.243
644				SD in Original Scale		0.0504				SD in Log Scale		0.45
645				95% UTL95% Coverage		0.26				95% BCA UTL95% Coverage		0.213
646				95% Bootstrap (%) UTL95% Coverage		0.214				95% UPL (t)		0.226
647				90% Percentile (z)		0.189				95% Percentile (z)		0.223
648				99% Percentile (z)		0.302				95% USL		0.422
649												
650				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution								

	A	B	C	D	E	F	G	H	I	J	K	L
651					KM Mean of Logged Data	-2.264				95% KM UTL (Lognormal)95% Coverage		0.273
652					KM SD of Logged Data	0.485				95% KM UPL (Lognormal)		0.235
653					95% KM Percentile Lognormal (z)	0.231				95% KM USL (Lognormal)		0.46
654												
655					Background DL/2 Statistics Assuming Lognormal Distribution							
656					Mean in Original Scale	0.114				Mean in Log Scale		-2.315
657					SD in Original Scale	0.0545				SD in Log Scale		0.586
658					95% UTL95% Coverage	0.317				95% UPL (t)		0.264
659					90% Percentile (z)	0.209				95% Percentile (z)		0.259
660					99% Percentile (z)	0.386				95% USL		0.595
661					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
662												
663					Nonparametric Distribution Free Background Statistics							
664					Data appear to follow a Discernible Distribution at 5% Significance Level							
665												
666					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
667					Order of Statistic, r	66				95% UTL with95% Coverage		0.214
668					Approximate f	1.737				Confidence Coefficient (CC) achieved by UTL		0.854
669					95% UPL	0.21				95% USL		0.3
670					95% KM Chebyshev UPL	0.342						
671												
672					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
673					data set free of outliers and consists of observations collected from clean unimpacted locations.							
674					The use of USL tends to provide a balance between false positives and false negatives provided the data							
675					represents a background data set and when many onsite observations need to be compared with the BTV.							
676												
677	Total Chlordane (calc'd)											
678												
679					General Statistics							
680					Total Number of Observations	48				Number of Missing Observations		0
681					Number of Distinct Observations	47						
682					Number of Detects	33				Number of Non-Detects		15
683					Number of Distinct Detects	33				Number of Distinct Non-Detects		14
684					Minimum Detect	0.117				Minimum Non-Detect		0.0438
685					Maximum Detect	1.18				Maximum Non-Detect		0.26
686					Variance Detected	0.0443				Percent Non-Detects		31.25%
687					Mean Detected	0.468				SD Detected		0.21
688					Mean of Detected Logged Data	-0.859				SD of Detected Logged Data		0.471
689												
690					Critical Values for Background Threshold Values (BTVs)							
691					Tolerance Factor K (For UTL)	2.069				d2max (for USL)		2.941
692												
693					Normal GOF Test on Detects Only							
694					Shapiro Wilk Test Statistic	0.912				Shapiro Wilk GOF Test		
695					5% Shapiro Wilk Critical Value	0.931				Data Not Normal at 5% Significance Level		
696					Lilliefors Test Statistic	0.174				Lilliefors GOF Test		
697					5% Lilliefors Critical Value	0.154				Data Not Normal at 5% Significance Level		
698					Data Not Normal at 5% Significance Level							
699												
700					Kaplan Meier (KM) Background Statistics Assuming Normal Distribution							
701					Mean	0.338				SD		0.258
702					95% UTL95% Coverage	0.872				95% KM UPL (t)		0.776
703					90% KM Percentile (z)	0.669				95% KM Percentile (z)		0.763
704					99% KM Percentile (z)	0.939				95% KM USL		1.098
705												
706					DL/2 Substitution Background Statistics Assuming Normal Distribution							
707					Mean	0.341				SD		0.258
708					95% UTL95% Coverage	0.874				95% UPL (t)		0.778
709					90% Percentile (z)	0.671				95% Percentile (z)		0.765
710					99% Percentile (z)	0.941				95% USL		1.099
711					DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons							
712												
713					Gamma GOF Tests on Detected Observations Only							
714					A-D Test Statistic	0.629				Anderson-Darling GOF Test		
715					5% A-D Critical Value	0.748				Detected data appear Gamma Distributed at 5% Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
716				K-S Test Statistic		0.144	Kolmogrov-Smirnoff GOF					
717				5% K-S Critical Value		0.154	Detected data appear Gamma Distributed at 5% Significance Level					
718	Detected data appear Gamma Distributed at 5% Significance Level											
719												
720	Gamma Statistics on Detected Data Only											
721				k hat (MLE)		5.199	k star (bias corrected MLE)					4.747
722				Theta hat (MLE)		0.0899	Theta star (bias corrected MLE)					0.0985
723				nu hat (MLE)		343.2	nu star (bias corrected)					313.3
724				MLE Mean (bias corrected)		0.468						
725				MLE Sd (bias corrected)		0.215	95% Percentile of Chisquare (2k)					17.61
726												
727	Gamma ROS Statistics using Imputed Non-Detects											
728	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
729	GROS may not be used when kstar of detected data is small such as < 0.1											
730	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
731	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
732				Minimum		0.0621	Mean					0.351
733				Maximum		1.18	Median					0.364
734				SD		0.246	CV					0.701
735				k hat (MLE)		1.897	k star (bias corrected MLE)					1.792
736				Theta hat (MLE)		0.185	Theta star (bias corrected MLE)					0.196
737				nu hat (MLE)		182.1	nu star (bias corrected)					172
738				MLE Mean (bias corrected)		0.351	MLE Sd (bias corrected)					0.262
739				95% Percentile of Chisquare (2k)		8.805	90% Percentile					0.701
740				95% Percentile		0.863	99% Percentile					1.225
741	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
742	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
743					WH	HW					WH	HW
744	95% Approx. Gamma UTL with 95% Coverage				1.065	1.124	95% Approx. Gamma UPL				0.876	0.907
745				95% Gamma USL	1.609	1.783						
746												
747	The following statistics are computed using gamma distribution and KM estimates											
748	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
749				k hat (KM)		1.715	nu hat (KM)					164.6
750					WH	HW					WH	HW
751	95% Approx. Gamma UTL with 95% Coverage				1.204	1.317	95% Approx. Gamma UPL				0.961	1.021
752				95% Gamma USL	1.923	2.254						
753												
754	Lognormal GOF Test on Detected Observations Only											
755				Shapiro Wilk Test Statistic		0.944	Shapiro Wilk GOF Test					
756				5% Shapiro Wilk Critical Value		0.931	Detected Data appear Lognormal at 5% Significance Level					
757				Lilliefors Test Statistic		0.167	Lilliefors GOF Test					
758				5% Lilliefors Critical Value		0.154	Data Not Lognormal at 5% Significance Level					
759	Detected Data appear Approximate Lognormal at 5% Significance Level											
760												
761	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
762				Mean in Original Scale		0.37	Mean in Log Scale					-1.171
763				SD in Original Scale		0.227	SD in Log Scale					0.609
764				95% UTL95% Coverage		1.093	95% BCA UTL95% Coverage					1.043
765				95% Bootstrap (%) UTL95% Coverage		1.056	95% UPL (t)					0.871
766				90% Percentile (z)		0.677	95% Percentile (z)					0.845
767				99% Percentile (z)		1.279	95% USL					1.86
768												
769	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
770				KM Mean of Logged Data		-1.533	95% KM UTL (Lognormal)95% Coverage					2.051
771				KM SD of Logged Data		1.088	95% KM UPL (Lognormal)					1.366
772				95% KM Percentile Lognormal (z)		1.293	95% KM USL (Lognormal)					5.301
773												
774	Background DL/2 Statistics Assuming Lognormal Distribution											
775				Mean in Original Scale		0.341	Mean in Log Scale					-1.498
776				SD in Original Scale		0.258	SD in Log Scale					1.079
777				95% UTL95% Coverage		2.081	95% UPL (t)					1.392
778				90% Percentile (z)		0.891	95% Percentile (z)					1.318
779				99% Percentile (z)		2.749	95% USL					5.333
780	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											

	A	B	C	D	E	F	G	H	I	J	K	L
781												
782						Nonparametric Distribution Free Background Statistics						
783						Data appear to follow a Discernible Distribution at 5% Significance Level						
784												
785						Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)						
786						Order of Statistic, r	47			95% UTL with95% Coverage		0.825
787						Approximate f	1.237			Confidence Coefficient (CC) achieved by UTL		0.699
788						95% UPL	0.808			95% USL		1.18
789						95% KM Chebyshev UPL	1.476					
790												
791						Note: The use of USL to estimate a BTV is recommended only when the data set represents a background						
792						data set free of outliers and consists of observations collected from clean unimpacted locations.						
793						The use of USL tends to provide a balance between false positives and false negatives provided the data						
794						represents a background data set and when many onsite observations need to be compared with the BTV.						
795												
796	Chromium											
797												
798	General Statistics											
799						Total Number of Observations	65			Number of Distinct Observations		59
800										Number of Missing Observations		6
801						Minimum	11.9			First Quartile		17.9
802						Second Largest	36.2			Median		21.9
803						Maximum	38.1			Third Quartile		26.6
804						Mean	22.57			SD		5.733
805						Coefficient of Variation	0.254			Skewness		0.418
806						Mean of logged Data	3.084			SD of logged Data		0.258
807												
808						Critical Values for Background Threshold Values (BTVs)						
809						Tolerance Factor K (For UTL)	2			d2max (for USL)		3.057
810												
811						Normal GOF Test						
812						Shapiro Wilk Test Statistic	0.972			Normal GOF Test		
813						5% Shapiro Wilk P Value	0.339			Data appear Normal at 5% Significance Level		
814						Lilliefors Test Statistic	0.0631			Lilliefors GOF Test		
815						5% Lilliefors Critical Value	0.11			Data appear Normal at 5% Significance Level		
816						Data appear Normal at 5% Significance Level						
817												
818						Background Statistics Assuming Normal Distribution						
819						95% UTL with 95% Coverage	34.03			90% Percentile (z)		29.91
820						95% UPL (t)	32.21			95% Percentile (z)		32
821						95% USL	40.09			99% Percentile (z)		35.9
822												
823						Gamma GOF Test						
824						A-D Test Statistic	0.231			Anderson-Darling Gamma GOF Test		
825						5% A-D Critical Value	0.75			Detected data appear Gamma Distributed at 5% Significance Level		
826						K-S Test Statistic	0.0764			Kolmogrov-Smirnoff Gamma GOF Test		
827						5% K-S Critical Value	0.11			Detected data appear Gamma Distributed at 5% Significance Level		
828						Detected data appear Gamma Distributed at 5% Significance Level						
829												
830						Gamma Statistics						
831						k hat (MLE)	15.67			k star (bias corrected MLE)		14.96
832						Theta hat (MLE)	1.44			Theta star (bias corrected MLE)		1.508
833						nu hat (MLE)	2037			nu star (bias corrected)		1945
834						MLE Mean (bias corrected)	22.57			MLE Sd (bias corrected)		5.834
835												
836						Background Statistics Assuming Gamma Distribution						
837						95% Wilson Hilferty (WH) Approx. Gamma UPL	33.05			90% Percentile		30.29
838						95% Hawkins Wixley (HW) Approx. Gamma UPL	33.2			95% Percentile		32.94
839						95% WH Approx. Gamma UTL with 95% Coverage	35.46			99% Percentile		38.3
840						95% HW Approx. Gamma UTL with 95% Coverage	35.72					
841						95% WH USL	44.32			95% HW USL		45.12
842												
843						Lognormal GOF Test						
844						Shapiro Wilk Test Statistic	0.979			Shapiro Wilk Lognormal GOF Test		
845						5% Shapiro Wilk P Value	0.614			Data appear Lognormal at 5% Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
846					Lilliefors Test Statistic	0.0841	**Lilliefors Lognormal GOF Test**					
847					5% Lilliefors Critical Value	0.11	Data appear Lognormal at 5% Significance Level					
848	**Data appear Lognormal at 5% Significance Level**											
849												
850	**Background Statistics assuming Lognormal Distribution**											
851				95% UTL with	95% Coverage	36.63				90% Percentile (z)		30.42
852					95% UPL (t)	33.74				95% Percentile (z)		33.42
853					95% USL	48.13				99% Percentile (z)		39.85
854												
855	**Nonparametric Distribution Free Background Statistics**											
856	**Data appear Normal at 5% Significance Level**											
857												
858	**Nonparametric Upper Limits for Background Threshold Values**											
859					Order of Statistic, r	64				95% UTL with	95% Coverage	36.2
860					Approximate f	1.684				Confidence Coefficient (CC) achieved by UTL		0.842
861				95% Percentile Bootstrap UTL with	95% Coverage	36.2				95% BCA Bootstrap UTL with	95% Coverage	35.64
862					95% UPL	33.19				90% Percentile		28.98
863					90% Chebyshev UPL	39.9				95% Percentile		32.46
864					95% Chebyshev UPL	47.75				99% Percentile		36.88
865					95% USL	38.1						
866												
867				Note: The use of USL to estimate a BTV is recommended only when the data set represents a background								
868				data set free of outliers and consists of observations collected from clean unimpacted locations.								
869				The use of USL tends to provide a balance between false positives and false negatives provided the data								
870				represents a background data set and when many onsite observations need to be compared with the BTV.								
871												
872	**Copper**											
873												
874	**General Statistics**											
875					Total Number of Observations	67				Number of Distinct Observations		62
876										Number of Missing Observations		4
877					Minimum	10.5				First Quartile		17.3
878					Second Largest	44.4				Median		24.2
879					Maximum	47.2				Third Quartile		29.3
880					Mean	24.32				SD		7.783
881					Coefficient of Variation	0.32				Skewness		0.562
882					Mean of logged Data	3.14				SD of logged Data		0.327
883												
884	**Critical Values for Background Threshold Values (BTVs)**											
885					Tolerance Factor K (For UTL)	1.994				d2max (for USL)		3.068
886												
887	**Normal GOF Test**											
888					Shapiro Wilk Test Statistic	0.954	**Normal GOF Test**					
889					5% Shapiro Wilk P Value	0.0346	Data Not Normal at 5% Significance Level					
890					Lilliefors Test Statistic	0.0967	**Lilliefors GOF Test**					
891					5% Lilliefors Critical Value	0.108	Data appear Normal at 5% Significance Level					
892	**Data appear Approximate Normal at 5% Significance Level**											
893												
894	**Background Statistics Assuming Normal Distribution**											
895				95% UTL with	95% Coverage	39.84				90% Percentile (z)		34.3
896					95% UPL (t)	37.4				95% Percentile (z)		37.12
897					95% USL	48.2				99% Percentile (z)		42.43
898												
899	**Gamma GOF Test**											
900					A-D Test Statistic	0.635	**Anderson-Darling Gamma GOF Test**					
901					5% A-D Critical Value	0.751	Detected data appear Gamma Distributed at 5% Significance Level					
902					K-S Test Statistic	0.0969	**Kolmogrov-Smirnoff Gamma GOF Test**					
903					5% K-S Critical Value	0.109	Detected data appear Gamma Distributed at 5% Significance Level					
904	**Detected data appear Gamma Distributed at 5% Significance Level**											
905												
906	**Gamma Statistics**											
907					k hat (MLE)	9.916				k star (bias corrected MLE)		9.482
908					Theta hat (MLE)	2.453				Theta star (bias corrected MLE)		2.565
909					nu hat (MLE)	1329				nu star (bias corrected)		1271
910					MLE Mean (bias corrected)	24.32				MLE Sd (bias corrected)		7.899

	A	B	C	D	E	F	G	H	I	J	K	L
911												
912						Background Statistics Assuming Gamma Distribution						
913					95% Wilson Hilferty (WH) Approx. Gamma UPL	38.76					90% Percentile	34.83
914					95% Hawkins Wixley (HW) Approx. Gamma UPL	39.03					95% Percentile	38.6
915					95% WH Approx. Gamma UTL with 95% Coverage	42.19					99% Percentile	46.35
916					95% HW Approx. Gamma UTL with 95% Coverage	42.64						
917					95% WH USL	55.44					95% HW USL	56.93
918												
919						Lognormal GOF Test						
920					Shapiro Wilk Test Statistic	0.968					Shapiro Wilk Lognormal GOF Test	
921					5% Shapiro Wilk P Value	0.205					Data appear Lognormal at 5% Significance Level	
922					Lilliefors Test Statistic	0.0909					Lilliefors Lognormal GOF Test	
923					5% Lilliefors Critical Value	0.108					Data appear Lognormal at 5% Significance Level	
924						Data appear Lognormal at 5% Significance Level						
925												
926						Background Statistics assuming Lognormal Distribution						
927					95% UTL with 95% Coverage	44.33					90% Percentile (z)	35.12
928					95% UPL (t)	40.01					95% Percentile (z)	39.55
929					95% USL	62.96					99% Percentile (z)	49.41
930												
931						Nonparametric Distribution Free Background Statistics						
932						Data appear Approximate Normal at 5% Significance Level						
933												
934						Nonparametric Upper Limits for Background Threshold Values						
935					Order of Statistic, r	66					95% UTL with 95% Coverage	44.4
936					Approximate f	1.737					Confidence Coefficient (CC) achieved by UTL	0.854
937					95% Percentile Bootstrap UTL with 95% Coverage	44.4					95% BCA Bootstrap UTL with 95% Coverage	43.53
938					95% UPL	40.1					90% Percentile	32.6
939					90% Chebyshev UPL	47.84					95% Percentile	36.71
940					95% Chebyshev UPL	58.5					99% Percentile	45.35
941					95% USL	47.2						
942												
943						Note: The use of USL to estimate a BTV is recommended only when the data set represents a background						
944						data set free of outliers and consists of observations collected from clean unimpacted locations.						
945						The use of USL tends to provide a balance between false positives and false negatives provided the data						
946						represents a background data set and when many onsite observations need to be compared with the BTV.						
947												
948	CPAH											
949												
950						General Statistics						
951					Total Number of Observations	71					Number of Missing Observations	0
952					Number of Distinct Observations	66						
953					Number of Detects	59					Number of Non-Detects	12
954					Number of Distinct Detects	59					Number of Distinct Non-Detects	7
955					Minimum Detect	0.659					Minimum Non-Detect	0.39
956					Maximum Detect	76.99					Maximum Non-Detect	10
957					Variance Detected	141					Percent Non-Detects	16.9%
958					Mean Detected	10.7					SD Detected	11.88
959					Mean of Detected Logged Data	1.996					SD of Detected Logged Data	0.872
960												
961						Critical Values for Background Threshold Values (BTVs)						
962					Tolerance Factor K (For UTL)	1.983					d2max (for USL)	3.089
963												
964						Normal GOF Test on Detects Only						
965					Shapiro Wilk Test Statistic	0.643					Normal GOF Test on Detected Observations Only	
966					5% Shapiro Wilk P Value	0					Data Not Normal at 5% Significance Level	
967					Lilliefors Test Statistic	0.262					Lilliefors GOF Test	
968					5% Lilliefors Critical Value	0.115					Data Not Normal at 5% Significance Level	
969						Data Not Normal at 5% Significance Level						
970												
971						Kaplan Meier (KM) Background Statistics Assuming Normal Distribution						
972					Mean	9.109					SD	11.33
973					95% UTL95% Coverage	31.56					95% KM UPL (t)	28.12
974					90% KM Percentile (z)	23.62					95% KM Percentile (z)	27.74
975					99% KM Percentile (z)	35.46					95% KM USL	44.1

	A	B	C	D	E	F	G	H	I	J	K	L
976												
977					DL/2 Substitution Background Statistics Assuming Normal Distribution							
978					Mean	9.151					SD	11.37
979				95% UTL95% Coverage		31.7					95% UPL (t)	28.24
980				90% Percentile (z)		23.73					95% Percentile (z)	27.86
981				99% Percentile (z)		35.61					95% USL	44.28
982					DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons							
983												
984					Gamma GOF Tests on Detected Observations Only							
985				A-D Test Statistic		1.008	Anderson-Darling GOF Test					
986				5% A-D Critical Value		0.769	Data Not Gamma Distributed at 5% Significance Level					
987				K-S Test Statistic		0.141	Kolmogrov-Smirnoff GOF					
988				5% K-S Critical Value		0.118	Data Not Gamma Distributed at 5% Significance Level					
989					Data Not Gamma Distributed at 5% Significance Level							
990												
991					Gamma Statistics on Detected Data Only							
992				k hat (MLE)		1.479	k star (bias corrected MLE)					1.415
993				Theta hat (MLE)		7.238	Theta star (bias corrected MLE)					7.565
994				nu hat (MLE)		174.5	nu star (bias corrected)					167
995				MLE Mean (bias corrected)		10.7						
996				MLE Sd (bias corrected)		8.998	95% Percentile of Chisquare (2k)					7.518
997												
998					Gamma ROS Statistics using Imputed Non-Detects							
999					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1000					GROS may not be used when kstar of detected data is small such as < 0.1							
1001					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
1002					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
1003				Minimum		0.01	Mean					8.96
1004				Maximum		76.99	Median					6.173
1005				SD		11.5	CV					1.284
1006				k hat (MLE)		0.515	k star (bias corrected MLE)					0.503
1007				Theta hat (MLE)		17.38	Theta star (bias corrected MLE)					17.81
1008				nu hat (MLE)		73.2	nu star (bias corrected)					71.44
1009				MLE Mean (bias corrected)		8.96	MLE Sd (bias corrected)					12.63
1010				95% Percentile of Chisquare (2k)		3.857	90% Percentile					24.21
1011				95% Percentile		34.34	99% Percentile					59.25
1012					The following statistics are computed using Gamma ROS Statistics on Imputed Data							
1013					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
1014					WH	HW					WH	HW
1015				95% Approx. Gamma UTL with 95% Coverage	40.64	50.26	95% Approx. Gamma UPL				32.1	37.81
1016				95% Gamma USL	84.34	122.7						
1017												
1018					The following statistics are computed using gamma distribution and KM estimates							
1019					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
1020				k hat (KM)		0.647	nu hat (KM)					91.85
1021					WH	HW					WH	HW
1022				95% Approx. Gamma UTL with 95% Coverage	33.13	35.49	95% Approx. Gamma UPL				27.06	28.28
1023				95% Gamma USL	62.76	73.79						
1024												
1025					Lognormal GOF Test on Detected Observations Only							
1026				Lilliefors Test Statistic		0.1	Lilliefors GOF Test					
1027				5% Lilliefors Critical Value		0.115	Detected Data appear Lognormal at 5% Significance Level					
1028					Detected Data appear Lognormal at 5% Significance Level							
1029												
1030					Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects							
1031				Mean in Original Scale		9.175	Mean in Log Scale					1.721
1032				SD in Original Scale		11.35	SD in Log Scale					1.022
1033				95% UTL95% Coverage		42.42	95% BCA UTL95% Coverage					40.09
1034				95% Bootstrap (%) UTL95% Coverage		40.09	95% UPL (t)					31.09
1035				90% Percentile (z)		20.72	95% Percentile (z)					30.04
1036				99% Percentile (z)		60.29	95% USL					131.5
1037												
1038					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
1039				KM Mean of Logged Data		1.611	95% KM UTL (Lognormal)95% Coverage					55.73
1040				KM SD of Logged Data		1.215	95% KM UPL (Lognormal)					38.52

	A	B	C	D	E	F	G	H	I	J	K	L
1041					95% KM Percentile Lognormal (z)	36.97					95% KM USL (Lognormal)	213.9
1042												
1043					Background DL/2 Statistics Assuming Lognormal Distribution							
1044					Mean in Original Scale	9.151					Mean in Log Scale	1.651
1045					SD in Original Scale	11.37					SD in Log Scale	1.176
1046					95% UTL95% Coverage	53.66					95% UPL (t)	37.53
1047					90% Percentile (z)	23.53					95% Percentile (z)	36.07
1048					99% Percentile (z)	80.4					95% USL	197.2
1049					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
1050												
1051					Nonparametric Distribution Free Background Statistics							
1052					Data appear to follow a Discernible Distribution at 5% Significance Level							
1053												
1054					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
1055					Order of Statistic, r	70					95% UTL with95% Coverage	40.09
1056					Approximate f	1.842					Confidence Coefficient (CC) achieved by UTL	0.876
1057					95% UPL	32.51					95% USL	76.99
1058					95% KM Chebyshev UPL	58.83						
1059												
1060					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
1061					data set free of outliers and consists of observations collected from clean unimpacted locations.							
1062					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1063					represents a background data set and when many onsite observations need to be compared with the BTV.							
1064												
1065	Total DDD											
1066												
1067					General Statistics							
1068					Total Number of Observations	48					Number of Missing Observations	0
1069					Number of Distinct Observations	45						
1070					Number of Detects	39					Number of Non-Detects	9
1071					Number of Distinct Detects	37					Number of Distinct Non-Detects	8
1072					Minimum Detect	0.137					Minimum Non-Detect	0.0507
1073					Maximum Detect	1.615					Maximum Non-Detect	0.54
1074					Variance Detected	0.201					Percent Non-Detects	18.75%
1075					Mean Detected	0.762					SD Detected	0.448
1076					Mean of Detected Logged Data	-0.462					SD of Detected Logged Data	0.658
1077												
1078					Critical Values for Background Threshold Values (BTVs)							
1079					Tolerance Factor K (For UTL)	2.069					d2max (for USL)	2.941
1080												
1081					Normal GOF Test on Detects Only							
1082					Shapiro Wilk Test Statistic	0.904					Shapiro Wilk GOF Test	
1083					5% Shapiro Wilk Critical Value	0.939					Data Not Normal at 5% Significance Level	
1084					Lilliefors Test Statistic	0.143					Lilliefors GOF Test	
1085					5% Lilliefors Critical Value	0.142					Data Not Normal at 5% Significance Level	
1086					Data Not Normal at 5% Significance Level							
1087												
1088					Kaplan Meier (KM) Background Statistics Assuming Normal Distribution							
1089					Mean	0.644					SD	0.471
1090					95% UTL95% Coverage	1.619					95% KM UPL (t)	1.443
1091					90% KM Percentile (z)	1.248					95% KM Percentile (z)	1.419
1092					99% KM Percentile (z)	1.74					95% KM USL	2.03
1093												
1094					DL/2 Substitution Background Statistics Assuming Normal Distribution							
1095					Mean	0.643					SD	0.476
1096					95% UTL95% Coverage	1.628					95% UPL (t)	1.45
1097					90% Percentile (z)	1.253					95% Percentile (z)	1.426
1098					99% Percentile (z)	1.751					95% USL	2.043
1099					DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons							
1100												
1101					Gamma GOF Tests on Detected Observations Only							
1102					A-D Test Statistic	0.421					Anderson-Darling GOF Test	
1103					5% A-D Critical Value	0.756					Detected data appear Gamma Distributed at 5% Significance Level	
1104					K-S Test Statistic	0.113					Kolmogrov-Smirnoff GOF	
1105					5% K-S Critical Value	0.142					Detected data appear Gamma Distributed at 5% Significance Level	

	A	B	C	D	E	F	G	H	I	J	K	L
1106	Detected data appear Gamma Distributed at 5% Significance Level											
1107												
1108	Gamma Statistics on Detected Data Only											
1109					k hat (MLE)	2.783				k star (bias corrected MLE)		2.586
1110					Theta hat (MLE)	0.274				Theta star (bias corrected MLE)		0.295
1111					nu hat (MLE)	217.1				nu star (bias corrected)		201.7
1112					MLE Mean (bias corrected)	0.762						
1113					MLE Sd (bias corrected)	0.474				95% Percentile of Chisquare (2k)		11.34
1114												
1115	Gamma ROS Statistics using Imputed Non-Detects											
1116	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1117	GROS may not be used when kstar of detected data is small such as < 0.1											
1118	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1119	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1120					Minimum	0.0278				Mean		0.645
1121					Maximum	1.615				Median		0.481
1122					SD	0.475				CV		0.737
1123					k hat (MLE)	1.493				k star (bias corrected MLE)		1.413
1124					Theta hat (MLE)	0.432				Theta star (bias corrected MLE)		0.456
1125					nu hat (MLE)	143.3				nu star (bias corrected)		135.7
1126					MLE Mean (bias corrected)	0.645				MLE Sd (bias corrected)		0.542
1127					95% Percentile of Chisquare (2k)	7.512				90% Percentile		1.363
1128					95% Percentile	1.713				99% Percentile		2.506
1129	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
1130	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
1131					WH	HW					WH	HW
1132			95% Approx. Gamma UTL with 95% Coverage		2.144	2.327				95% Approx. Gamma UPL	1.735	1.835
1133				95% Gamma USL	3.34	3.858						
1134												
1135	The following statistics are computed using gamma distribution and KM estimates											
1136	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
1137					k hat (KM)	1.867				nu hat (KM)		179.3
1138					WH	HW					WH	HW
1139			95% Approx. Gamma UTL with 95% Coverage		2.127	2.302				95% Approx. Gamma UPL	1.722	1.817
1140				95% Gamma USL	3.31	3.809						
1141												
1142	Lognormal GOF Test on Detected Observations Only											
1143				Shapiro Wilk Test Statistic		0.949				Shapiro Wilk GOF Test		
1144				5% Shapiro Wilk Critical Value		0.939				Detected Data appear Lognormal at 5% Significance Level		
1145				Lilliefors Test Statistic		0.103				Lilliefors GOF Test		
1146				5% Lilliefors Critical Value		0.142				Detected Data appear Lognormal at 5% Significance Level		
1147	Detected Data appear Lognormal at 5% Significance Level											
1148												
1149	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
1150				Mean in Original Scale		0.655				Mean in Log Scale		-0.693
1151				SD in Original Scale		0.462				SD in Log Scale		0.777
1152				95% UTL95% Coverage		2.496				95% BCA UTL95% Coverage		1.596
1153				95% Bootstrap (%) UTL95% Coverage		1.596				95% UPL (t)		1.868
1154				90% Percentile (z)		1.354				95% Percentile (z)		1.796
1155				99% Percentile (z)		3.05				95% USL		4.919
1156												
1157	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
1158				KM Mean of Logged Data		-0.814				95% KM UTL (Lognormal)95% Coverage		3.458
1159				KM SD of Logged Data		0.993				95% KM UPL (Lognormal)		2.387
1160				95% KM Percentile Lognormal (z)		2.27				95% KM USL (Lognormal)		8.223
1161												
1162	Background DL/2 Statistics Assuming Lognormal Distribution											
1163				Mean in Original Scale		0.643				Mean in Log Scale		-0.813
1164				SD in Original Scale		0.476				SD in Log Scale		1.01
1165				95% UTL95% Coverage		3.582				95% UPL (t)		2.457
1166				90% Percentile (z)		1.618				95% Percentile (z)		2.335
1167				99% Percentile (z)		4.648				95% USL		8.647
1168	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
1169												
1170	Nonparametric Distribution Free Background Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
1171	Data appear to follow a Discernible Distribution at 5% Significance Level											
1172												
1173	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
1174					Order of Statistic, r	47			95% UTL with95% Coverage			1.56
1175					Approximate f	1.237			Confidence Coefficient (CC) achieved by UTL			0.699
1176					95% UPL	1.56			95% USL			1.615
1177					95% KM Chebyshev UPL	2.72						
1178												
1179	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
1180	data set free of outliers and consists of observations collected from clean unimpacted locations.											
1181	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1182	represents a background data set and when many onsite observations need to be compared with the BTV.											
1183												
1184	Total DDE											
1185												
1186	General Statistics											
1187					Total Number of Observations	48			Number of Missing Observations			0
1188					Number of Distinct Observations	46						
1189					Number of Detects	47			Number of Non-Detects			1
1190					Number of Distinct Detects	45			Number of Distinct Non-Detects			1
1191					Minimum Detect	0.105			Minimum Non-Detect			0.12
1192					Maximum Detect	2.451			Maximum Non-Detect			0.12
1193					Variance Detected	0.302			Percent Non-Detects			2.083%
1194					Mean Detected	0.973			SD Detected			0.549
1195					Mean of Detected Logged Data	-0.225			SD of Detected Logged Data			0.708
1196												
1197	Critical Values for Background Threshold Values (BTVs)											
1198					Tolerance Factor K (For UTL)	2.069			d2max (for USL)			2.941
1199												
1200	Normal GOF Test on Detects Only											
1201					Shapiro Wilk Test Statistic	0.942			Shapiro Wilk GOF Test			
1202					5% Shapiro Wilk Critical Value	0.946			Data Not Normal at 5% Significance Level			
1203					Lilliefors Test Statistic	0.0912			Lilliefors GOF Test			
1204					5% Lilliefors Critical Value	0.129			Detected Data appear Normal at 5% Significance Level			
1205	Detected Data appear Approximate Normal at 5% Significance Level											
1206												
1207	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
1208					Mean	0.955			SD			0.552
1209					95% UTL95% Coverage	2.097			95% KM UPL (t)			1.891
1210					90% KM Percentile (z)	1.663			95% KM Percentile (z)			1.863
1211					99% KM Percentile (z)	2.239			95% KM USL			2.579
1212												
1213	DL/2 Substitution Background Statistics Assuming Normal Distribution											
1214					Mean	0.954			SD			0.559
1215					95% UTL95% Coverage	2.111			95% UPL (t)			1.903
1216					90% Percentile (z)	1.671			95% Percentile (z)			1.874
1217					99% Percentile (z)	2.255			95% USL			2.599
1218	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
1219												
1220	Gamma GOF Tests on Detected Observations Only											
1221					A-D Test Statistic	0.541			Anderson-Darling GOF Test			
1222					5% A-D Critical Value	0.758			Detected data appear Gamma Distributed at 5% Significance Level			
1223					K-S Test Statistic	0.0925			Kolmogrov-Smirnoff GOF			
1224					5% K-S Critical Value	0.13			Detected data appear Gamma Distributed at 5% Significance Level			
1225	Detected data appear Gamma Distributed at 5% Significance Level											
1226												
1227	Gamma Statistics on Detected Data Only											
1228					k hat (MLE)	2.677			k star (bias corrected MLE)			2.52
1229					Theta hat (MLE)	0.364			Theta star (bias corrected MLE)			0.386
1230					nu hat (MLE)	251.6			nu star (bias corrected)			236.9
1231					MLE Mean (bias corrected)	0.973						
1232					MLE Sd (bias corrected)	0.613			95% Percentile of Chisquare (2k)			11.13
1233												
1234	Gamma ROS Statistics using Imputed Non-Detects											
1235	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											

	A	B	C	D	E	F	G	H	I	J	K	L
1236	GROS may not be used when kstar of detected data is small such as < 0.1											
1237	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1238	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1239					Minimum	0.105					Mean	0.957
1240					Maximum	2.451					Median	0.954
1241					SD	0.556					CV	0.581
1242					k hat (MLE)	2.493					k star (bias corrected MLE)	2.351
1243					Theta hat (MLE)	0.384					Theta star (bias corrected MLE)	0.407
1244					nu hat (MLE)	239.4					nu star (bias corrected)	225.7
1245					MLE Mean (bias corrected)	0.957					MLE Sd (bias corrected)	0.624
1246					95% Percentile of Chisquare (2k)	10.61					90% Percentile	1.792
1247					95% Percentile	2.157					99% Percentile	2.961
1248	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
1249	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
1250					WH	HW					WH	HW
1251			95% Approx. Gamma UTL with 95% Coverage		2.604	2.751				95% Approx. Gamma UPL	2.185	2.269
1252				95% Gamma USL	3.784	4.174						
1253												
1254	**The following statistics are computed using gamma distribution and KM estimates**											
1255	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
1256					k hat (KM)	2.995					nu hat (KM)	287.5
1257					WH	HW					WH	HW
1258			95% Approx. Gamma UTL with 95% Coverage		2.608	2.762				95% Approx. Gamma UPL	2.187	2.275
1259				95% Gamma USL	3.796	4.204						
1260												
1261	**Lognormal GOF Test on Detected Observations Only**											
1262					Shapiro Wilk Test Statistic	0.923	**Shapiro Wilk GOF Test**					
1263					5% Shapiro Wilk Critical Value	0.946	Data Not Lognormal at 5% Significance Level					
1264					Lilliefors Test Statistic	0.124	**Lilliefors GOF Test**					
1265					5% Lilliefors Critical Value	0.129	Detected Data appear Lognormal at 5% Significance Level					
1266	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
1267												
1268	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
1269					Mean in Original Scale	0.957					Mean in Log Scale	-0.257
1270					SD in Original Scale	0.556					SD in Log Scale	0.735
1271					95% UTL95% Coverage	3.534					95% BCA UTL95% Coverage	2.375
1272					95% Bootstrap (%) UTL95% Coverage	2.415					95% UPL (t)	2.687
1273					90% Percentile (z)	1.982					95% Percentile (z)	2.589
1274					99% Percentile (z)	4.272					95% USL	6.71
1275												
1276	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
1277					KM Mean of Logged Data	-0.268					95% KM UTL (Lognormal)95% Coverage	3.619
1278					KM SD of Logged Data	0.751					95% KM UPL (Lognormal)	2.734
1279					95% KM Percentile Lognormal (z)	2.632					95% KM USL (Lognormal)	6.968
1280												
1281	**Background DL/2 Statistics Assuming Lognormal Distribution**											
1282					Mean in Original Scale	0.954					Mean in Log Scale	-0.279
1283					SD in Original Scale	0.559					SD in Log Scale	0.794
1284					95% UTL95% Coverage	3.906					95% UPL (t)	2.905
1285					90% Percentile (z)	2.092					95% Percentile (z)	2.791
1286					99% Percentile (z)	4.793					95% USL	7.807
1287	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
1288												
1289	**Nonparametric Distribution Free Background Statistics**											
1290	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
1291												
1292	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
1293					Order of Statistic, r	47					95% UTL with95% Coverage	2.347
1294					Approximate f	1.237					Confidence Coefficient (CC) achieved by UTL	0.699
1295					95% UPL	2.297					95% USL	2.451
1296					95% KM Chebyshev UPL	3.386						
1297												
1298	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
1299	data set free of outliers and consists of observations collected from clean unimpacted locations.											
1300	The use of USL tends to provide a balance between false positives and false negatives provided the data											

	A	B	C	D	E	F	G	H	I	J	K	L
1301	represents a background data set and when many onsite observations need to be compared with the BTV.											
1302												
1303	**Total DDT**											
1304												
1305	**General Statistics**											
1306	Total Number of Observations					48	Number of Missing Observations					0
1307	Number of Distinct Observations					43						
1308	Number of Detects					18	Number of Non-Detects					30
1309	Number of Distinct Detects					18	Number of Distinct Non-Detects					26
1310	Minimum Detect					0.318	Minimum Non-Detect					0.0486
1311	Maximum Detect					2.97	Maximum Non-Detect					0.51
1312	Variance Detected					0.386	Percent Non-Detects					62.5%
1313	Mean Detected					0.757	SD Detected					0.622
1314	Mean of Detected Logged Data					-0.467	SD of Detected Logged Data					0.572
1315												
1316	**Critical Values for Background Threshold Values (BTVs)**											
1317	Tolerance Factor K (For UTL)					2.069	d2max (for USL)					2.941
1318												
1319	**Normal GOF Test on Detects Only**											
1320	Shapiro Wilk Test Statistic					0.646	**Shapiro Wilk GOF Test**					
1321	5% Shapiro Wilk Critical Value					0.897	Data Not Normal at 5% Significance Level					
1322	Lilliefors Test Statistic					0.249	**Lilliefors GOF Test**					
1323	5% Lilliefors Critical Value					0.209	Data Not Normal at 5% Significance Level					
1324	**Data Not Normal at 5% Significance Level**											
1325												
1326	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
1327	Mean					0.323	SD					0.503
1328	95% UTL95% Coverage					1.363	95% KM UPL (t)					1.175
1329	90% KM Percentile (z)					0.967	95% KM Percentile (z)					1.15
1330	99% KM Percentile (z)					1.492	95% KM USL					1.801
1331												
1332	**DL/2 Substitution Background Statistics Assuming Normal Distribution**											
1333	Mean					0.348	SD					0.496
1334	95% UTL95% Coverage					1.374	95% UPL (t)					1.189
1335	90% Percentile (z)					0.984	95% Percentile (z)					1.164
1336	99% Percentile (z)					1.502	95% USL					1.807
1337	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
1338												
1339	**Gamma GOF Tests on Detected Observations Only**											
1340	A-D Test Statistic					0.919	**Anderson-Darling GOF Test**					
1341	5% A-D Critical Value					0.747	Data Not Gamma Distributed at 5% Significance Level					
1342	K-S Test Statistic					0.176	**Kolmogrov-Smirnoff GOF**					
1343	5% K-S Critical Value					0.205	Detected data appear Gamma Distributed at 5% Significance Level					
1344	**Detected data follow Appr. Gamma Distribution at 5% Significance Level**											
1345												
1346	**Gamma Statistics on Detected Data Only**											
1347	k hat (MLE)					2.797	k star (bias corrected MLE)					2.368
1348	Theta hat (MLE)					0.271	Theta star (bias corrected MLE)					0.32
1349	nu hat (MLE)					100.7	nu star (bias corrected)					85.25
1350	MLE Mean (bias corrected)					0.757						
1351	MLE Sd (bias corrected)					0.492	95% Percentile of Chisquare (2k)					10.66
1352												
1353	**Gamma ROS Statistics using Imputed Non-Detects**											
1354	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1355	GROS may not be used when kstar of detected data is small such as < 0.1											
1356	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1357	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1358	Minimum					0.01	Mean					0.29
1359	Maximum					2.97	Median					0.01
1360	SD					0.523	CV					1.802
1361	k hat (MLE)					0.367	k star (bias corrected MLE)					0.358
1362	Theta hat (MLE)					0.79	Theta star (bias corrected MLE)					0.81
1363	nu hat (MLE)					35.26	nu star (bias corrected)					34.39
1364	MLE Mean (bias corrected)					0.29	MLE Sd (bias corrected)					0.485
1365	95% Percentile of Chisquare (2k)					3.091	90% Percentile					0.835

	A	B	C	D	E	F	G	H	I	J	K	L
1366					95% Percentile	1.252					99% Percentile	2.313
1367	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
1368	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
1369					WH	HW					WH	HW
1370	95% Approx. Gamma UTL with 95% Coverage				1.58	1.745				95% Approx. Gamma UPL	1.118	1.163
1371				95% Gamma USL	3.12	3.936						
1372												
1373	**The following statistics are computed using gamma distribution and KM estimates**											
1374	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
1375					k hat (KM)	0.412					nu hat (KM)	39.53
1376					WH	HW					WH	HW
1377	95% Approx. Gamma UTL with 95% Coverage				1.403	1.468				95% Approx. Gamma UPL	1.059	1.071
1378				95% Gamma USL	2.481	2.819						
1379												
1380	**Lognormal GOF Test on Detected Observations Only**											
1381				Shapiro Wilk Test Statistic		0.901	**Shapiro Wilk GOF Test**					
1382				5% Shapiro Wilk Critical Value		0.897	Detected Data appear Lognormal at 5% Significance Level					
1383				Lilliefors Test Statistic		0.16	**Lilliefors GOF Test**					
1384				5% Lilliefors Critical Value		0.209	Detected Data appear Lognormal at 5% Significance Level					
1385	**Detected Data appear Lognormal at 5% Significance Level**											
1386												
1387	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
1388				Mean in Original Scale		0.364				Mean in Log Scale		-1.469
1389				SD in Original Scale		0.485				SD in Log Scale		0.871
1390				95% UTL95% Coverage		1.394				95% BCA UTL95% Coverage		2.281
1391				95% Bootstrap (%) UTL95% Coverage		2.421				95% UPL (t)		1.007
1392				90% Percentile (z)		0.702				95% Percentile (z)		0.964
1393				99% Percentile (z)		1.745				95% USL		2.98
1394												
1395	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
1396				KM Mean of Logged Data		-2.013				95% KM UTL (Lognormal)95% Coverage		1.906
1397				KM SD of Logged Data		1.285				95% KM UPL (Lognormal)		1.18
1398				95% KM Percentile Lognormal (z)		1.106				95% KM USL (Lognormal)		5.848
1399												
1400	**Background DL/2 Statistics Assuming Lognormal Distribution**											
1401				Mean in Original Scale		0.348				Mean in Log Scale		-1.8
1402				SD in Original Scale		0.496				SD in Log Scale		1.285
1403				95% UTL95% Coverage		2.36				95% UPL (t)		1.461
1404				90% Percentile (z)		0.858				95% Percentile (z)		1.369
1405				99% Percentile (z)		3.288				95% USL		7.244
1406	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
1407												
1408	**Nonparametric Distribution Free Background Statistics**											
1409	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
1410												
1411	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
1412				Order of Statistic, r		47				95% UTL with95% Coverage		1.402
1413				Approximate f		1.237				Confidence Coefficient (CC) achieved by UTL		0.699
1414				95% UPL		1.221				95% USL		2.97
1415				95% KM Chebyshev UPL		2.537						
1416												
1417	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
1418	data set free of outliers and consists of observations collected from clean unimpacted locations.											
1419	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1420	represents a background data set and when many onsite observations need to be compared with the BTV.											
1421												
1422	**Total DDTs (calc'd)**											
1423												
1424	**General Statistics**											
1425				Total Number of Observations		48				Number of Missing Observations		0
1426				Number of Distinct Observations		48						
1427				Number of Detects		47				Number of Non-Detects		1
1428				Number of Distinct Detects		47				Number of Distinct Non-Detects		1
1429				Minimum Detect		0.2				Minimum Non-Detect		0.18
1430				Maximum Detect		6.695				Maximum Non-Detect		0.18

	A	B	C	D	E	F	G	H	I	J	K	L
1431					Variance Detected	1.365					Percent Non-Detects	2.083%
1432					Mean Detected	2.022					SD Detected	1.168
1433					Mean of Detected Logged Data	0.515					SD of Detected Logged Data	0.693
1434												
1435					**Critical Values for Background Threshold Values (BTVs)**							
1436					Tolerance Factor K (For UTL)	2.069					d2max (for USL)	2.941
1437												
1438					**Normal GOF Test on Detects Only**							
1439					Shapiro Wilk Test Statistic	0.893			**Shapiro Wilk GOF Test**			
1440					5% Shapiro Wilk Critical Value	0.946			Data Not Normal at 5% Significance Level			
1441					Lilliefors Test Statistic	0.127			**Lilliefors GOF Test**			
1442					5% Lilliefors Critical Value	0.129			Detected Data appear Normal at 5% Significance Level			
1443					**Detected Data appear Approximate Normal at 5% Significance Level**							
1444												
1445					**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**							
1446					Mean	1.984					SD	1.174
1447					95% UTL95% Coverage	4.411					95% KM UPL (t)	3.973
1448					90% KM Percentile (z)	3.488					95% KM Percentile (z)	3.914
1449					99% KM Percentile (z)	4.714					95% KM USL	5.435
1450												
1451					**DL/2 Substitution Background Statistics Assuming Normal Distribution**							
1452					Mean	1.982					SD	1.189
1453					95% UTL95% Coverage	4.441					95% UPL (t)	3.998
1454					90% Percentile (z)	3.506					95% Percentile (z)	3.938
1455					99% Percentile (z)	4.748					95% USL	5.479
1456					**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**							
1457												
1458					**Gamma GOF Tests on Detected Observations Only**							
1459					A-D Test Statistic	0.915			**Anderson-Darling GOF Test**			
1460					5% A-D Critical Value	0.757			Data Not Gamma Distributed at 5% Significance Level			
1461					K-S Test Statistic	0.133			**Kolmogrov-Smirnoff GOF**			
1462					5% K-S Critical Value	0.13			Data Not Gamma Distributed at 5% Significance Level			
1463					**Data Not Gamma Distributed at 5% Significance Level**							
1464												
1465					**Gamma Statistics on Detected Data Only**							
1466					k hat (MLE)	2.798					k star (bias corrected MLE)	2.634
1467					Theta hat (MLE)	0.723					Theta star (bias corrected MLE)	0.768
1468					nu hat (MLE)	263					nu star (bias corrected)	247.6
1469					MLE Mean (bias corrected)	2.022						
1470					MLE Sd (bias corrected)	1.246					95% Percentile of Chisquare (2k)	11.48
1471												
1472					**Gamma ROS Statistics using Imputed Non-Detects**							
1473					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1474					GROS may not be used when kstar of detected data is small such as < 0.1							
1475					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
1476					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
1477					Minimum	0.2					Mean	1.985
1478					Maximum	6.695					Median	2.045
1479					SD	1.184					CV	0.596
1480					k hat (MLE)	2.521					k star (bias corrected MLE)	2.378
1481					Theta hat (MLE)	0.787					Theta star (bias corrected MLE)	0.835
1482					nu hat (MLE)	242.1					nu star (bias corrected)	228.3
1483					MLE Mean (bias corrected)	1.985					MLE Sd (bias corrected)	1.287
1484					95% Percentile of Chisquare (2k)	10.69					90% Percentile	3.709
1485					95% Percentile	4.462					99% Percentile	6.117
1486					**The following statistics are computed using Gamma ROS Statistics on Imputed Data**							
1487					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
1488						WH	HW				WH	HW
1489				95% Approx. Gamma UTL with 95% Coverage		5.367	5.678			95% Approx. Gamma UPL	4.51	4.689
1490				95% Gamma USL		7.781	8.597					
1491												
1492					**The following statistics are computed using gamma distribution and KM estimates**							
1493					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
1494					k hat (KM)	2.858					nu hat (KM)	274.4
1495					WH	HW					WH	HW

	A	B	C	D	E	F	G	H	I	J	K	L
1496	95% Approx. Gamma UTL with 95% Coverage				5.356	5.676			95% Approx. Gamma UPL		4.5	4.685
1497				95% Gamma USL	7.765	8.601						
1498												
1499					Lognormal GOF Test on Detected Observations Only							
1500				Shapiro Wilk Test Statistic		0.907	Shapiro Wilk GOF Test					
1501				5% Shapiro Wilk Critical Value		0.946	Data Not Lognormal at 5% Significance Level					
1502				Lilliefors Test Statistic		0.164	Lilliefors GOF Test					
1503				5% Lilliefors Critical Value		0.129	Data Not Lognormal at 5% Significance Level					
1504					Data Not Lognormal at 5% Significance Level							
1505												
1506					Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects							
1507				Mean in Original Scale		1.987				Mean in Log Scale		0.48
1508				SD in Original Scale		1.182				SD in Log Scale		0.728
1509				95% UTL95% Coverage		7.281				95% BCA UTL95% Coverage		5.545
1510				95% Bootstrap (%) UTL95% Coverage		5.545				95% UPL (t)		5.549
1511				90% Percentile (z)		4.106				95% Percentile (z)		5.349
1512				99% Percentile (z)		8.784				95% USL		13.74
1513												
1514					Background DL/2 Statistics Assuming Lognormal Distribution							
1515				Mean in Original Scale		1.982				Mean in Log Scale		0.454
1516				SD in Original Scale		1.189				SD in Log Scale		0.805
1517				95% UTL95% Coverage		8.325				95% UPL (t)		6.165
1518				90% Percentile (z)		4.418				95% Percentile (z)		5.919
1519				99% Percentile (z)		10.25				95% USL		16.8
1520					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
1521												
1522					Nonparametric Distribution Free Background Statistics							
1523					Data appear to follow a Discernible Distribution at 5% Significance Level							
1524												
1525					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
1526				Order of Statistic, r		47				95% UTL with95% Coverage		4.998
1527				Approximate f		1.237				Confidence Coefficient (CC) achieved by UTL		0.699
1528				95% UPL		4.283				95% USL		6.695
1529				95% KM Chebyshev UPL		7.152						
1530												
1531					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
1532					data set free of outliers and consists of observations collected from clean unimpacted locations.							
1533					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1534					represents a background data set and when many onsite observations need to be compared with the BTV.							
1535												
1536	Dieldrin											
1537												
1538					General Statistics							
1539				Total Number of Observations		47				Number of Missing Observations		1
1540				Number of Distinct Observations		37						
1541				Number of Detects		7				Number of Non-Detects		40
1542				Number of Distinct Detects		7				Number of Distinct Non-Detects		32
1543				Minimum Detect		0.106				Minimum Non-Detect		0.03
1544				Maximum Detect		0.39				Maximum Non-Detect		0.32
1545				Variance Detected		0.0119				Percent Non-Detects		85.11%
1546				Mean Detected		0.213				SD Detected		0.109
1547				Mean of Detected Logged Data		-1.659				SD of Detected Logged Data		0.51
1548												
1549					Critical Values for Background Threshold Values (BTVs)							
1550				Tolerance Factor K (For UTL)		2.074				d2max (for USL)		2.933
1551												
1552					Normal GOF Test on Detects Only							
1553				Shapiro Wilk Test Statistic		0.895	Shapiro Wilk GOF Test					
1554				5% Shapiro Wilk Critical Value		0.803	Detected Data appear Normal at 5% Significance Level					
1555				Lilliefors Test Statistic		0.221	Lilliefors GOF Test					
1556				5% Lilliefors Critical Value		0.335	Detected Data appear Normal at 5% Significance Level					
1557					Detected Data appear Normal at 5% Significance Level							
1558												
1559					Kaplan Meier (KM) Background Statistics Assuming Normal Distribution							
1560				Mean		0.0602				SD		0.0766

	A	B	C	D	E	F	G	H	I	J	K	L
1561				95% UTL95% Coverage		0.219				95% KM UPL (t)		0.19
1562				90% KM Percentile (z)		0.158				95% KM Percentile (z)		0.186
1563				99% KM Percentile (z)		0.238				95% KM USL		0.285
1564												
1565				DL/2 Substitution Background Statistics Assuming Normal Distribution								
1566				Mean		0.0751				SD		0.0772
1567				95% UTL95% Coverage		0.235				95% UPL (t)		0.206
1568				90% Percentile (z)		0.174				95% Percentile (z)		0.202
1569				99% Percentile (z)		0.255				95% USL		0.301
1570				DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons								
1571												
1572				Gamma GOF Tests on Detected Observations Only								
1573				A-D Test Statistic		0.36				Anderson-Darling GOF Test		
1574				5% A-D Critical Value		0.71				Detected data appear Gamma Distributed at 5% Significance Level		
1575				K-S Test Statistic		0.246				Kolmogrov-Smirnoff GOF		
1576				5% K-S Critical Value		0.313				Detected data appear Gamma Distributed at 5% Significance Level		
1577				Detected data appear Gamma Distributed at 5% Significance Level								
1578												
1579				Gamma Statistics on Detected Data Only								
1580				k hat (MLE)		4.634				k star (bias corrected MLE)		2.743
1581				Theta hat (MLE)		0.0459				Theta star (bias corrected MLE)		0.0776
1582				nu hat (MLE)		64.88				nu star (bias corrected)		38.41
1583				MLE Mean (bias corrected)		0.213						
1584				MLE Sd (bias corrected)		0.129				95% Percentile of Chisquare (2k)		11.82
1585												
1586				Gamma ROS Statistics using Imputed Non-Detects								
1587				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs								
1588				GROS may not be used when kstar of detected data is small such as < 0.1								
1589				For such situations, GROS method tends to yield inflated values of UCLs and BTVs								
1590				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates								
1591				Minimum		0.01				Mean		0.0402
1592				Maximum		0.39				Median		0.01
1593				SD		0.0829				CV		2.062
1594				k hat (MLE)		0.642				k star (bias corrected MLE)		0.615
1595				Theta hat (MLE)		0.0626				Theta star (bias corrected MLE)		0.0654
1596				nu hat (MLE)		60.36				nu star (bias corrected)		57.84
1597				MLE Mean (bias corrected)		0.0402				MLE Sd (bias corrected)		0.0513
1598				95% Percentile of Chisquare (2k)		4.388				90% Percentile		0.104
1599				95% Percentile		0.143				99% Percentile		0.238
1600				The following statistics are computed using Gamma ROS Statistics on Imputed Data								
1601				Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods								
1602					WH	HW					WH	HW
1603	95% Approx. Gamma UTL with 95% Coverage				0.17	0.164				95% Approx. Gamma UPL	0.127	0.119
1604				95% Gamma USL	0.303	0.312						
1605												
1606				The following statistics are computed using gamma distribution and KM estimates								
1607				Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods								
1608				k hat (KM)		0.617				nu hat (KM)		57.98
1609					WH	HW					WH	HW
1610	95% Approx. Gamma UTL with 95% Coverage				0.192	0.189				95% Approx. Gamma UPL	0.155	0.15
1611				95% Gamma USL	0.298	0.303						
1612												
1613				Lognormal GOF Test on Detected Observations Only								
1614				Shapiro Wilk Test Statistic		0.916				Shapiro Wilk GOF Test		
1615				5% Shapiro Wilk Critical Value		0.803				Detected Data appear Lognormal at 5% Significance Level		
1616				Lilliefors Test Statistic		0.228				Lilliefors GOF Test		
1617				5% Lilliefors Critical Value		0.335				Detected Data appear Lognormal at 5% Significance Level		
1618				Detected Data appear Lognormal at 5% Significance Level								
1619												
1620				Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects								
1621				Mean in Original Scale		0.0553				Mean in Log Scale		-3.336
1622				SD in Original Scale		0.0778				SD in Log Scale		0.786
1623				95% UTL95% Coverage		0.182				95% BCA UTL95% Coverage		0.342
1624				95% Bootstrap (%) UTL95% Coverage		0.369				95% UPL (t)		0.135
1625				90% Percentile (z)		0.0974				95% Percentile (z)		0.13

	A	B	C	D	E	F	G	H	I	J	K	L
1626					99% Percentile (z)	0.221					95% USL	0.357
1627												
1628					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
1629					KM Mean of Logged Data	-3.186					95% KM UTL (Lognormal)95% Coverage	0.18
1630					KM SD of Logged Data	0.708					95% KM UPL (Lognormal)	0.137
1631					95% KM Percentile Lognormal (z)	0.132					95% KM USL (Lognormal)	0.33
1632												
1633					Background DL/2 Statistics Assuming Lognormal Distribution							
1634					Mean in Original Scale	0.0751					Mean in Log Scale	-2.956
1635					SD in Original Scale	0.0772					SD in Log Scale	0.835
1636					95% UTL95% Coverage	0.294					95% UPL (t)	0.214
1637					90% Percentile (z)	0.152					95% Percentile (z)	0.205
1638					99% Percentile (z)	0.363					95% USL	0.602
1639					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
1640												
1641					Nonparametric Distribution Free Background Statistics							
1642					Data appear to follow a Discernible Distribution at 5% Significance Level							
1643												
1644					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
1645					Order of Statistic, r	46					95% UTL with95% Coverage	0.32
1646					Approximate f	1.211					Confidence Coefficient (CC) achieved by UTL	0.688
1647					95% UPL	0.32					95% USL	0.39
1648					95% KM Chebyshev UPL	0.398						
1649												
1650					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
1651					data set free of outliers and consists of observations collected from clean unimpacted locations.							
1652					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1653					represents a background data set and when many onsite observations need to be compared with the BTV.							
1654												
1655	Diesel Range Hydrocarbons											
1656												
1657	General Statistics											
1658					Total Number of Observations	28					Number of Distinct Observations	26
1659											Number of Missing Observations	18
1660					Minimum	2.6					First Quartile	27.5
1661					Second Largest	59.5					Median	33
1662					Maximum	69					Third Quartile	42
1663					Mean	34.68					SD	14.77
1664					Coefficient of Variation	0.426					Skewness	0.155
1665					Mean of logged Data	3.41					SD of logged Data	0.639
1666												
1667					Critical Values for Background Threshold Values (BTVs)							
1668					Tolerance Factor K (For UTL)	2.246					d2max (for USL)	2.714
1669												
1670					Normal GOF Test							
1671					Shapiro Wilk Test Statistic	0.987					Shapiro Wilk GOF Test	
1672					5% Shapiro Wilk Critical Value	0.924					Data appear Normal at 5% Significance Level	
1673					Lilliefors Test Statistic	0.0844					Lilliefors GOF Test	
1674					5% Lilliefors Critical Value	0.167					Data appear Normal at 5% Significance Level	
1675					Data appear Normal at 5% Significance Level							
1676												
1677					Background Statistics Assuming Normal Distribution							
1678					95% UTL with 95% Coverage	67.85					90% Percentile (z)	53.61
1679					95% UPL (t)	60.28					95% Percentile (z)	58.97
1680					95% USL	74.76					99% Percentile (z)	69.03
1681												
1682					Gamma GOF Test							
1683					A-D Test Statistic	0.77					Anderson-Darling Gamma GOF Test	
1684					5% A-D Critical Value	0.75					Data Not Gamma Distributed at 5% Significance Level	
1685					K-S Test Statistic	0.159					Kolmogrov-Smirnoff Gamma GOF Test	
1686					5% K-S Critical Value	0.166					Detected data appear Gamma Distributed at 5% Significance Level	
1687					Detected data follow Appr. Gamma Distribution at 5% Significance Level							
1688												
1689					Gamma Statistics							
1690					k hat (MLE)	3.836					k star (bias corrected MLE)	3.449

	A	B	C	D	E	F	G	H	I	J	K	L
1691					Theta hat (MLE)	9.041				Theta star (bias corrected MLE)		10.06
1692					nu hat (MLE)	214.8				nu star (bias corrected)		193.1
1693					MLE Mean (bias corrected)	34.68				MLE Sd (bias corrected)		18.68
1694												
1695					Background Statistics Assuming Gamma Distribution							
1696				95% Wilson Hilferty (WH) Approx. Gamma UPL		70.98				90% Percentile		59.73
1697				95% Hawkins Wixley (HW) Approx. Gamma UPL		74.2				95% Percentile		69.98
1698				95% WH Approx. Gamma UTL with 95% Coverage		86.67				99% Percentile		92.06
1699				95% HW Approx. Gamma UTL with 95% Coverage		92.54						
1700					95% WH USL	102.9				95% HW USL		112.1
1701												
1702					Lognormal GOF Test							
1703					Shapiro Wilk Test Statistic	0.794				Shapiro Wilk Lognormal GOF Test		
1704					5% Shapiro Wilk Critical Value	0.924				Data Not Lognormal at 5% Significance Level		
1705					Lilliefors Test Statistic	0.201				Lilliefors Lognormal GOF Test		
1706					5% Lilliefors Critical Value	0.167				Data Not Lognormal at 5% Significance Level		
1707					Data Not Lognormal at 5% Significance Level							
1708												
1709					Background Statistics assuming Lognormal Distribution							
1710					95% UTL with 95% Coverage	127.2				90% Percentile (z)		68.69
1711					95% UPL (t)	91.7				95% Percentile (z)		86.65
1712					95% USL	171.7				99% Percentile (z)		134
1713												
1714					Nonparametric Distribution Free Background Statistics							
1715					Data appear Normal at 5% Significance Level							
1716												
1717					Nonparametric Upper Limits for Background Threshold Values							
1718					Order of Statistic, r	28				95% UTL with 95% Coverage		69
1719					Approximate f	1.474				Confidence Coefficient (CC) achieved by UTL		0.762
1720				95% Percentile Bootstrap UTL with 95% Coverage		69				95% BCA Bootstrap UTL with 95% Coverage		69
1721					95% UPL	64.73				90% Percentile		53.9
1722					90% Chebyshev UPL	79.76				95% Percentile		58.28
1723					95% Chebyshev UPL	100.2				99% Percentile		66.44
1724					95% USL	69						
1725												
1726					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
1727					data set free of outliers and consists of observations collected from clean unimpacted locations.							
1728					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1729					represents a background data set and when many onsite observations need to be compared with the BTV.							
1730												
1731	Dioxin TEQ - Mammals 2006											
1732												
1733	General Statistics											
1734					Total Number of Observations	52				Number of Distinct Observations		52
1735										Number of Missing Observations		19
1736					Minimum	0.0333				First Quartile		0.0988
1737					Second Largest	3.788				Median		0.356
1738					Maximum	19.11				Third Quartile		1.295
1739					Mean	1.158				SD		2.706
1740					Coefficient of Variation	2.337				Skewness		5.96
1741					Mean of logged Data	-0.98				SD of logged Data		1.526
1742												
1743					Critical Values for Background Threshold Values (BTVs)							
1744					Tolerance Factor K (For UTL)	2.049				d2max (for USL)		2.972
1745												
1746					Normal GOF Test							
1747					Shapiro Wilk Test Statistic	0.394				Normal GOF Test		
1748					5% Shapiro Wilk P Value	0				Data Not Normal at 5% Significance Level		
1749					Lilliefors Test Statistic	0.339				Lilliefors GOF Test		
1750					5% Lilliefors Critical Value	0.123				Data Not Normal at 5% Significance Level		
1751					Data Not Normal at 5% Significance Level							
1752												
1753					Background Statistics Assuming Normal Distribution							
1754					95% UTL with 95% Coverage	6.703				90% Percentile (z)		4.626
1755					95% UPL (t)	5.735				95% Percentile (z)		5.61

	A	B	C	D	E	F	G	H	I	J	K	L
1756					95% USL	9.202				99% Percentile (z)		7.454
1757												
1758					Gamma GOF Test							
1759					A-D Test Statistic	1.598	Anderson-Darling Gamma GOF Test					
1760					5% A-D Critical Value	0.81	Data Not Gamma Distributed at 5% Significance Level					
1761					K-S Test Statistic	0.155	Kolmogrov-Smirnoff Gamma GOF Test					
1762					5% K-S Critical Value	0.13	Data Not Gamma Distributed at 5% Significance Level					
1763					Data Not Gamma Distributed at 5% Significance Level							
1764												
1765					Gamma Statistics							
1766					k hat (MLE)	0.555				k star (bias corrected MLE)		0.535
1767					Theta hat (MLE)	2.088				Theta star (bias corrected MLE)		2.163
1768					nu hat (MLE)	57.68				nu star (bias corrected)		55.68
1769					MLE Mean (bias corrected)	1.158				MLE Sd (bias corrected)		1.583
1770												
1771					Background Statistics Assuming Gamma Distribution							
1772				95% Wilson Hilferty (WH) Approx. Gamma UPL		3.885				90% Percentile		3.089
1773				95% Hawkins Wixley (HW) Approx. Gamma UPL		3.924				95% Percentile		4.342
1774				95% WH Approx. Gamma UTL with 95% Coverage		5.187				99% Percentile		7.404
1775				95% HW Approx. Gamma UTL with 95% Coverage		5.44						
1776					95% WH USL	9.819				95% HW USL		11.37
1777												
1778					Lognormal GOF Test							
1779					Shapiro Wilk Test Statistic	0.948	Shapiro Wilk Lognormal GOF Test					
1780					5% Shapiro Wilk P Value	0.0432	Data Not Lognormal at 5% Significance Level					
1781					Lilliefors Test Statistic	0.143	Lilliefors Lognormal GOF Test					
1782					5% Lilliefors Critical Value	0.123	Data Not Lognormal at 5% Significance Level					
1783					Data Not Lognormal at 5% Significance Level							
1784												
1785					Background Statistics assuming Lognormal Distribution							
1786				95% UTL with 95% Coverage		8.558				90% Percentile (z)		2.652
1787					95% UPL (t)	4.957				95% Percentile (z)		4.618
1788					95% USL	35.01				99% Percentile (z)		13.07
1789												
1790					Nonparametric Distribution Free Background Statistics							
1791					Data do not follow a Discernible Distribution (0.05)							
1792												
1793					Nonparametric Upper Limits for Background Threshold Values							
1794					Order of Statistic, r	51				95% UTL with 95% Coverage		3.788
1795					Approximate f	1.342				Confidence Coefficient (CC) achieved by UTL		0.741
1796				95% Percentile Bootstrap UTL with 95% Coverage		10.68				95% BCA Bootstrap UTL with 95% Coverage		10.36
1797					95% UPL	3.41				90% Percentile		2.357
1798					90% Chebyshev UPL	9.355				95% Percentile		2.942
1799					95% Chebyshev UPL	13.07				99% Percentile		11.3
1800					95% USL	19.11						
1801												
1802					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
1803					data set free of outliers and consists of observations collected from clean unimpacted locations.							
1804					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1805					represents a background data set and when many onsite observations need to be compared with the BTV.							
1806												
1807	gamma-Hexachlorocyclohexane											
1808												
1809					General Statistics							
1810					Total Number of Observations	45				Number of Missing Observations		3
1811					Number of Distinct Observations	29						
1812					Number of Detects	1				Number of Non-Detects		44
1813					Number of Distinct Detects	1				Number of Distinct Non-Detects		28
1814					Minimum Detect	0.32				Minimum Non-Detect		0.062
1815					Maximum Detect	0.32				Maximum Non-Detect		0.29
1816					Variance Detected	N/A				Percent Non-Detects		97.78%
1817					Mean Detected	0.32				SD Detected		N/A
1818					Mean of Detected Logged Data	-1.139				SD of Detected Logged Data		N/A
1819												
1820					Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!							

	A	B	C	D	E	F	G	H	I	J	K	L
1821	is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV											
1822												
1823	The data set for variable gamma-Hexachlorocyclohexane was not processed!											
1824												
1825												
1826	Hexachlorobenzene											
1827												
1828	General Statistics											
1829					Total Number of Observations	34			Number of Missing Observations			12
1830					Number of Distinct Observations	27						
1831					Number of Detects	24			Number of Non-Detects			10
1832					Number of Distinct Detects	21			Number of Distinct Non-Detects			9
1833					Minimum Detect	0.075			Minimum Non-Detect			0.068
1834					Maximum Detect	1.04			Maximum Non-Detect			0.43
1835					Variance Detected	0.093			Percent Non-Detects			29.41%
1836					Mean Detected	0.356			SD Detected			0.305
1837					Mean of Detected Logged Data	-1.349			SD of Detected Logged Data			0.797
1838												
1839	Critical Values for Background Threshold Values (BTVs)											
1840					Tolerance Factor K (For UTL)	2.166			d2max (for USL)			2.799
1841												
1842	Normal GOF Test on Detects Only											
1843					Shapiro Wilk Test Statistic	0.795			Shapiro Wilk GOF Test			
1844					5% Shapiro Wilk Critical Value	0.916			Data Not Normal at 5% Significance Level			
1845					Lilliefors Test Statistic	0.232			Lilliefors GOF Test			
1846					5% Lilliefors Critical Value	0.181			Data Not Normal at 5% Significance Level			
1847	Data Not Normal at 5% Significance Level											
1848												
1849	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
1850					Mean	0.287			SD			0.275
1851					95% UTL95% Coverage	0.882			95% KM UPL (t)			0.758
1852					90% KM Percentile (z)	0.639			95% KM Percentile (z)			0.739
1853					99% KM Percentile (z)	0.926			95% KM USL			1.056
1854												
1855	DL/2 Substitution Background Statistics Assuming Normal Distribution											
1856					Mean	0.284			SD			0.28
1857					95% UTL95% Coverage	0.891			95% UPL (t)			0.765
1858					90% Percentile (z)	0.643			95% Percentile (z)			0.745
1859					99% Percentile (z)	0.936			95% USL			1.069
1860	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
1861												
1862	Gamma GOF Tests on Detected Observations Only											
1863					A-D Test Statistic	1.022			Anderson-Darling GOF Test			
1864					5% A-D Critical Value	0.759			Data Not Gamma Distributed at 5% Significance Level			
1865					K-S Test Statistic	0.185			Kolmogrov-Smirnoff GOF			
1866					5% K-S Critical Value	0.181			Data Not Gamma Distributed at 5% Significance Level			
1867	Data Not Gamma Distributed at 5% Significance Level											
1868												
1869	Gamma Statistics on Detected Data Only											
1870					k hat (MLE)	1.724			k star (bias corrected MLE)			1.537
1871					Theta hat (MLE)	0.207			Theta star (bias corrected MLE)			0.232
1872					nu hat (MLE)	82.77			nu star (bias corrected)			73.76
1873					MLE Mean (bias corrected)	0.356						
1874					MLE Sd (bias corrected)	0.287			95% Percentile of Chisquare (2k)			7.941
1875												
1876	Gamma ROS Statistics using Imputed Non-Detects											
1877	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1878	GROS may not be used when kstar of detected data is small such as < 0.1											
1879	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1880	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1881					Minimum	0.01			Mean			0.274
1882					Maximum	1.04			Median			0.145
1883					SD	0.287			CV			1.047
1884					k hat (MLE)	1.077			k star (bias corrected MLE)			1.001
1885					Theta hat (MLE)	0.254			Theta star (bias corrected MLE)			0.274

	A	B	C	D	E	F	G	H	I	J	K	L
1886					nu hat (MLE)	73.21				nu star (bias corrected)		68.08
1887					MLE Mean (bias corrected)	0.274				MLE Sd (bias corrected)		0.274
1888					95% Percentile of Chisquare (2k)	5.996				90% Percentile		0.63
1889					95% Percentile	0.82				99% Percentile		1.261
1890					**The following statistics are computed using Gamma ROS Statistics on Imputed Data**							
1891					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
1892					WH	HW					WH	HW
1893	95% Approx. Gamma UTL with 95% Coverage				1.097	1.191				95% Approx. Gamma UPL	0.826	0.866
1894					95% Gamma USL	1.572	1.796					
1895												
1896					**The following statistics are computed using gamma distribution and KM estimates**							
1897					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
1898					k hat (KM)	1.093					nu hat (KM)	74.31
1899					WH	HW					WH	HW
1900	95% Approx. Gamma UTL with 95% Coverage				0.967	0.995				95% Approx. Gamma UPL	0.753	0.759
1901					95% Gamma USL	1.331	1.415					
1902												
1903					**Lognormal GOF Test on Detected Observations Only**							
1904					Shapiro Wilk Test Statistic	0.93	**Shapiro Wilk GOF Test**					
1905					5% Shapiro Wilk Critical Value	0.916	Detected Data appear Lognormal at 5% Significance Level					
1906					Lilliefors Test Statistic	0.152	**Lilliefors GOF Test**					
1907					5% Lilliefors Critical Value	0.181	Detected Data appear Lognormal at 5% Significance Level					
1908					**Detected Data appear Lognormal at 5% Significance Level**							
1909												
1910					**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**							
1911					Mean in Original Scale	0.284				Mean in Log Scale		-1.634
1912					SD in Original Scale	0.28				SD in Log Scale		0.846
1913					95% UTL95% Coverage	1.222				95% BCA UTL95% Coverage		1.04
1914					95% Bootstrap (%) UTL95% Coverage	1.04				95% UPL (t)		0.835
1915					90% Percentile (z)	0.578				95% Percentile (z)		0.786
1916					99% Percentile (z)	1.399				95% USL		2.087
1917												
1918					**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**							
1919					KM Mean of Logged Data	-1.603				95% KM UTL (Lognormal)95% Coverage		1.137
1920					KM SD of Logged Data	0.799				95% KM UPL (Lognormal)		0.794
1921					95% KM Percentile Lognormal (z)	0.75				95% KM USL (Lognormal)		1.886
1922												
1923					**Background DL/2 Statistics Assuming Lognormal Distribution**							
1924					Mean in Original Scale	0.284				Mean in Log Scale		-1.642
1925					SD in Original Scale	0.28				SD in Log Scale		0.872
1926					95% UTL95% Coverage	1.281				95% UPL (t)		0.865
1927					90% Percentile (z)	0.592				95% Percentile (z)		0.813
1928					99% Percentile (z)	1.472				95% USL		2.225
1929					**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**							
1930												
1931					**Nonparametric Distribution Free Background Statistics**							
1932					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
1933												
1934					**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**							
1935					Order of Statistic, r	34				95% UTL with95% Coverage		1.04
1936					Approximate f	1.789				Confidence Coefficient (CC) achieved by UTL		0.825
1937					95% UPL	1.018				95% USL		1.04
1938					95% KM Chebyshev UPL	1.501						
1939												
1940					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
1941					data set free of outliers and consists of observations collected from clean unimpacted locations.							
1942					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1943					represents a background data set and when many onsite observations need to be compared with the BTV.							
1944												
1945	**Total HPAHs (calc'd)**											
1946												
1947					**General Statistics**							
1948					Total Number of Observations	71				Number of Missing Observations		0
1949					Number of Distinct Observations	67						
1950					Number of Detects	59				Number of Non-Detects		12

	A	B	C	D	E	F	G	H	I	J	K	L
1951					Number of Distinct Detects	58				Number of Distinct Non-Detects		9
1952					Minimum Detect	4.73				Minimum Non-Detect		1
1953					Maximum Detect	450				Maximum Non-Detect		10
1954					Variance Detected	5792				Percent Non-Detects		16.9%
1955					Mean Detected	77.7				SD Detected		76.11
1956					Mean of Detected Logged Data	4				SD of Detected Logged Data		0.87
1957												
1958					**Critical Values for Background Threshold Values (BTVs)**							
1959					Tolerance Factor K (For UTL)	1.983				d2max (for USL)		3.089
1960												
1961					**Normal GOF Test on Detects Only**							
1962					Shapiro Wilk Test Statistic	0.726				**Normal GOF Test on Detected Observations Only**		
1963					5% Shapiro Wilk P Value	3.531E-14				Data Not Normal at 5% Significance Level		
1964					Lilliefors Test Statistic	0.188				**Lilliefors GOF Test**		
1965					5% Lilliefors Critical Value	0.115				Data Not Normal at 5% Significance Level		
1966					**Data Not Normal at 5% Significance Level**							
1967												
1968					**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**							
1969					Mean	64.76				SD		74.53
1970					95% UTL95% Coverage	212.5				95% KM UPL (t)		189.9
1971					90% KM Percentile (z)	160.3				95% KM Percentile (z)		187.3
1972					99% KM Percentile (z)	238.1				95% KM USL		295
1973												
1974					**DL/2 Substitution Background Statistics Assuming Normal Distribution**							
1975					Mean	64.89				SD		74.95
1976					95% UTL95% Coverage	213.5				95% UPL (t)		190.7
1977					90% Percentile (z)	160.9				95% Percentile (z)		188.2
1978					99% Percentile (z)	239.3				95% USL		296.4
1979					**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**							
1980												
1981					**Gamma GOF Tests on Detected Observations Only**							
1982					A-D Test Statistic	0.535				**Anderson-Darling GOF Test**		
1983					5% A-D Critical Value	0.768				Detected data appear Gamma Distributed at 5% Significance Level		
1984					K-S Test Statistic	0.078				**Kolmogrov-Smirnoff GOF**		
1985					5% K-S Critical Value	0.118				Detected data appear Gamma Distributed at 5% Significance Level		
1986					**Detected data appear Gamma Distributed at 5% Significance Level**							
1987												
1988					**Gamma Statistics on Detected Data Only**							
1989					k hat (MLE)	1.562				k star (bias corrected MLE)		1.494
1990					Theta hat (MLE)	49.74				Theta star (bias corrected MLE)		52.01
1991					nu hat (MLE)	184.3				nu star (bias corrected)		176.3
1992					MLE Mean (bias corrected)	77.7						
1993					MLE Sd (bias corrected)	63.57				95% Percentile of Chisquare (2k)		7.793
1994												
1995					**Gamma ROS Statistics using Imputed Non-Detects**							
1996					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1997					GROS may not be used when kstar of detected data is small such as < 0.1							
1998					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
1999					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
2000					Minimum	0.01				Mean		64.57
2001					Maximum	450				Median		45.25
2002					SD	75.23				CV		1.165
2003					k hat (MLE)	0.405				k star (bias corrected MLE)		0.397
2004					Theta hat (MLE)	159.5				Theta star (bias corrected MLE)		162.6
2005					nu hat (MLE)	57.49				nu star (bias corrected)		56.39
2006					MLE Mean (bias corrected)	64.57				MLE Sd (bias corrected)		102.5
2007					95% Percentile of Chisquare (2k)	3.308				90% Percentile		182.6
2008					95% Percentile	268.9				99% Percentile		486.2
2009					**The following statistics are computed using Gamma ROS Statistics on Imputed Data**							
2010					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
2011					WH	HW					WH	HW
2012			95% Approx. Gamma UTL with 95% Coverage		312.1	410.3				95% Approx. Gamma UPL	244.4	303.3
2013					95% Gamma USL	662.3	1050					
2014												
2015					**The following statistics are computed using gamma distribution and KM estimates**							

	A	B	C	D	E	F	G	H	I	J	K	L
2016	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2017					k hat (KM)	0.755					nu hat (KM)	107.2
2018					WH	HW					WH	HW
2019	95% Approx. Gamma UTL with 95% Coverage				266.2	304.1			95% Approx. Gamma UPL		213.5	235.3
2020				95% Gamma USL	530.3	687.6						
2021												
2022	Lognormal GOF Test on Detected Observations Only											
2023				Lilliefors Test Statistic		0.0687	Lilliefors GOF Test					
2024				5% Lilliefors Critical Value		0.115	Detected Data appear Lognormal at 5% Significance Level					
2025	Detected Data appear Lognormal at 5% Significance Level											
2026												
2027	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2028				Mean in Original Scale		66.01			Mean in Log Scale			3.684
2029				SD in Original Scale		74.03			SD in Log Scale			1.062
2030				95% UTL95% Coverage		327			95% BCA UTL95% Coverage			288.6
2031				95% Bootstrap (%) UTL95% Coverage		288.6			95% UPL (t)			236.8
2032				90% Percentile (z)		155.3			95% Percentile (z)			228.4
2033				99% Percentile (z)		471.1			95% USL			1059
2034												
2035	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
2036				KM Mean of Logged Data		3.334			95% KM UTL (Lognormal)95% Coverage			780.3
2037				KM SD of Logged Data		1.677			95% KM UPL (Lognormal)			468.6
2038				95% KM Percentile Lognormal (z)		442.8			95% KM USL (Lognormal)			4992
2039												
2040	Background DL/2 Statistics Assuming Lognormal Distribution											
2041				Mean in Original Scale		64.89			Mean in Log Scale			3.385
2042				SD in Original Scale		74.95			SD in Log Scale			1.613
2043				95% UTL95% Coverage		722.5			95% UPL (t)			442.5
2044				90% Percentile (z)		233.3			95% Percentile (z)			419.1
2045				99% Percentile (z)		1258			95% USL			4303
2046	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
2047												
2048	Nonparametric Distribution Free Background Statistics											
2049	Data appear to follow a Discernible Distribution at 5% Significance Level											
2050												
2051	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
2052				Order of Statistic, r		70			95% UTL with95% Coverage			310
2053				Approximate f		1.842			Confidence Coefficient (CC) achieved by UTL			0.876
2054				95% UPL		219.6			95% USL			450
2055				95% KM Chebyshev UPL		391.9						
2056												
2057	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2058	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2059	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2060	represents a background data set and when many onsite observations need to be compared with the BTV.											
2061												
2062	Lead											
2063												
2064	General Statistics											
2065				Total Number of Observations		67			Number of Distinct Observations			60
2066									Number of Missing Observations			4
2067				Minimum		3.96			First Quartile			6.535
2068				Second Largest		23.9			Median			7.4
2069				Maximum		31.6			Third Quartile			8.72
2070				Mean		8.398			SD			4.178
2071				Coefficient of Variation		0.497			Skewness			3.597
2072				Mean of logged Data		2.054			SD of logged Data			0.352
2073												
2074	Critical Values for Background Threshold Values (BTVs)											
2075				Tolerance Factor K (For UTL)		1.994			d2max (for USL)			3.068
2076												
2077	Normal GOF Test											
2078				Shapiro Wilk Test Statistic		0.653	Normal GOF Test					
2079				5% Shapiro Wilk P Value		0	Data Not Normal at 5% Significance Level					
2080				Lilliefors Test Statistic		0.244	Lilliefors GOF Test					

	A	B	C	D	E	F	G	H	I	J	K	L
2081					5% Lilliefors Critical Value	0.108	Data Not Normal at 5% Significance Level					
2082					**Data Not Normal at 5% Significance Level**							
2083												
2084					**Background Statistics Assuming Normal Distribution**							
2085				95% UTL with	95% Coverage	16.73				90% Percentile (z)		13.75
2086					95% UPL (t)	15.42				95% Percentile (z)		15.27
2087					95% USL	21.21				99% Percentile (z)		18.12
2088												
2089					**Gamma GOF Test**							
2090					A-D Test Statistic	3.134	**Anderson-Darling Gamma GOF Test**					
2091					5% A-D Critical Value	0.753	Data Not Gamma Distributed at 5% Significance Level					
2092					K-S Test Statistic	0.175	**Kolmogrov-Smirnoff Gamma GOF Test**					
2093					5% K-S Critical Value	0.109	Data Not Gamma Distributed at 5% Significance Level					
2094					**Data Not Gamma Distributed at 5% Significance Level**							
2095												
2096					**Gamma Statistics**							
2097					k hat (MLE)	6.951				k star (bias corrected MLE)		6.65
2098					Theta hat (MLE)	1.208				Theta star (bias corrected MLE)		1.263
2099					nu hat (MLE)	931.4				nu star (bias corrected)		891
2100					MLE Mean (bias corrected)	8.398				MLE Sd (bias corrected)		3.257
2101												
2102					**Background Statistics Assuming Gamma Distribution**							
2103				95% Wilson Hilferty (WH) Approx. Gamma UPL		14.35				90% Percentile		12.75
2104				95% Hawkins Wixley (HW) Approx. Gamma UPL		14.27				95% Percentile		14.37
2105				95% WH Approx. Gamma UTL with	95% Coverage	15.83				99% Percentile		17.76
2106				95% HW Approx. Gamma UTL with	95% Coverage	15.78						
2107					95% WH USL	21.66				95% HW USL		21.88
2108												
2109					**Lognormal GOF Test**							
2110					Shapiro Wilk Test Statistic	0.898	**Shapiro Wilk Lognormal GOF Test**					
2111					5% Shapiro Wilk P Value	7.6647E-6	Data Not Lognormal at 5% Significance Level					
2112					Lilliefors Test Statistic	0.139	**Lilliefors Lognormal GOF Test**					
2113					5% Lilliefors Critical Value	0.108	Data Not Lognormal at 5% Significance Level					
2114					**Data Not Lognormal at 5% Significance Level**							
2115												
2116					**Background Statistics assuming Lognormal Distribution**							
2117				95% UTL with	95% Coverage	15.73				90% Percentile (z)		12.25
2118					95% UPL (t)	14.09				95% Percentile (z)		13.92
2119					95% USL	22.96				99% Percentile (z)		17.69
2120												
2121					**Nonparametric Distribution Free Background Statistics**							
2122					**Data do not follow a Discernible Distribution (0.05)**							
2123												
2124					**Nonparametric Upper Limits for Background Threshold Values**							
2125					Order of Statistic, r	66				95% UTL with	95% Coverage	23.9
2126					Approximate f	1.737				Confidence Coefficient (CC) achieved by UTL		0.854
2127				95% Percentile Bootstrap UTL with	95% Coverage	23.9				95% BCA Bootstrap UTL with	95% Coverage	21.74
2128					95% UPL	15.74				90% Percentile		10.62
2129					90% Chebyshev UPL	21.02				95% Percentile		14.15
2130					95% Chebyshev UPL	26.74				99% Percentile		26.52
2131					95% USL	31.6						
2132												
2133					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
2134					data set free of outliers and consists of observations collected from clean unimpacted locations.							
2135					The use of USL tends to provide a balance between false positives and false negatives provided the data							
2136					represents a background data set and when many onsite observations need to be compared with the BTV.							
2137												
2138	**Total LPAHs (calc'd)**											
2139												
2140					**General Statistics**							
2141					Total Number of Observations	71				Number of Missing Observations		0
2142					Number of Distinct Observations	62						
2143					Number of Detects	48				Number of Non-Detects		23
2144					Number of Distinct Detects	48				Number of Distinct Non-Detects		14
2145					Minimum Detect	2.335				Minimum Non-Detect		1.5

	A	B	C	D	E	F	G	H	I	J	K	L
2146					Maximum Detect	96					Maximum Non-Detect	10
2147					Variance Detected	194					Percent Non-Detects	32.39%
2148					Mean Detected	15.58					SD Detected	13.93
2149					Mean of Detected Logged Data	2.5					SD of Detected Logged Data	0.715
2150												
2151					**Critical Values for Background Threshold Values (BTVs)**							
2152					Tolerance Factor K (For UTL)	1.983					d2max (for USL)	3.089
2153												
2154					**Normal GOF Test on Detects Only**							
2155					Shapiro Wilk Test Statistic	0.629			**Shapiro Wilk GOF Test**			
2156					5% Shapiro Wilk Critical Value	0.947			Data Not Normal at 5% Significance Level			
2157					Lilliefors Test Statistic	0.193			**Lilliefors GOF Test**			
2158					5% Lilliefors Critical Value	0.128			Data Not Normal at 5% Significance Level			
2159					**Data Not Normal at 5% Significance Level**							
2160												
2161					**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**							
2162					Mean	11.1					SD	13.06
2163					95% UTL95% Coverage	37					95% KM UPL (t)	33.03
2164					90% KM Percentile (z)	27.84					95% KM Percentile (z)	32.58
2165					99% KM Percentile (z)	41.49					95% KM USL	51.45
2166												
2167					**DL/2 Substitution Background Statistics Assuming Normal Distribution**							
2168					Mean	11.06					SD	13.19
2169					95% UTL95% Coverage	37.2					95% UPL (t)	33.2
2170					90% Percentile (z)	27.96					95% Percentile (z)	32.75
2171					99% Percentile (z)	41.74					95% USL	51.79
2172					**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**							
2173												
2174					**Gamma GOF Tests on Detected Observations Only**							
2175					A-D Test Statistic	0.855			**Anderson-Darling GOF Test**			
2176					5% A-D Critical Value	0.761			Data Not Gamma Distributed at 5% Significance Level			
2177					K-S Test Statistic	0.0964			**Kolmogrov-Smirnoff GOF**			
2178					5% K-S Critical Value	0.129			Detected data appear Gamma Distributed at 5% Significance Level			
2179					**Detected data follow Appr. Gamma Distribution at 5% Significance Level**							
2180												
2181					**Gamma Statistics on Detected Data Only**							
2182					k hat (MLE)	2.188					k star (bias corrected MLE)	2.065
2183					Theta hat (MLE)	7.12					Theta star (bias corrected MLE)	7.543
2184					nu hat (MLE)	210					nu star (bias corrected)	198.3
2185					MLE Mean (bias corrected)	15.58						
2186					MLE Sd (bias corrected)	10.84					95% Percentile of Chisquare (2k)	9.698
2187												
2188					**Gamma ROS Statistics using Imputed Non-Detects**							
2189					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
2190					GROS may not be used when kstar of detected data is small such as < 0.1							
2191					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
2192					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
2193					Minimum	0.01					Mean	10.57
2194					Maximum	96					Median	9.52
2195					SD	13.55					CV	1.282
2196					k hat (MLE)	0.326					k star (bias corrected MLE)	0.322
2197					Theta hat (MLE)	32.36					Theta star (bias corrected MLE)	32.8
2198					nu hat (MLE)	46.36					nu star (bias corrected)	45.74
2199					MLE Mean (bias corrected)	10.57					MLE Sd (bias corrected)	18.62
2200					95% Percentile of Chisquare (2k)	2.88					90% Percentile	30.88
2201					95% Percentile	47.23					99% Percentile	89.36
2202					**The following statistics are computed using Gamma ROS Statistics on Imputed Data**							
2203					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
2204						WH	HW				WH	HW
2205			95% Approx. Gamma UTL with 95% Coverage			57.71	76.01			95% Approx. Gamma UPL	43.99	54.28
2206					95% Gamma USL	131.2	213					
2207												
2208					**The following statistics are computed using gamma distribution and KM estimates**							
2209					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
2210					k hat (KM)	0.722					nu hat (KM)	102.6

	A	B	C	D	E	F	G	H	I	J	K	L
2211					WH	HW					WH	HW
2212	95% Approx. Gamma UTL with 95% Coverage				39.72	42.13			95% Approx. Gamma UPL		32.55	33.74
2213				95% Gamma USL	74.57	86.34						
2214												
2215	**Lognormal GOF Test on Detected Observations Only**											
2216				Shapiro Wilk Test Statistic		0.945	**Shapiro Wilk GOF Test**					
2217				5% Shapiro Wilk Critical Value		0.947	Data Not Lognormal at 5% Significance Level					
2218				Lilliefors Test Statistic		0.121	**Lilliefors GOF Test**					
2219				5% Lilliefors Critical Value		0.128	Detected Data appear Lognormal at 5% Significance Level					
2220	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
2221												
2222	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
2223				Mean in Original Scale		11.44				Mean in Log Scale		2.015
2224				SD in Original Scale		12.91				SD in Log Scale		0.929
2225				95% UTL95% Coverage		47.34				95% BCA UTL95% Coverage		32.97
2226				95% Bootstrap (%) UTL95% Coverage		36				95% UPL (t)		35.69
2227				90% Percentile (z)		24.67				95% Percentile (z)		34.58
2228				99% Percentile (z)		65.16				95% USL		132.4
2229												
2230	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
2231				KM Mean of Logged Data		1.852				95% KM UTL (Lognormal)95% Coverage		58.14
2232				KM SD of Logged Data		1.115				95% KM UPL (Lognormal)		41.42
2233				95% KM Percentile Lognormal (z)		39.89				95% KM USL (Lognormal)		199.7
2234												
2235	**Background DL/2 Statistics Assuming Lognormal Distribution**											
2236				Mean in Original Scale		11.06				Mean in Log Scale		1.801
2237				SD in Original Scale		13.19				SD in Log Scale		1.207
2238				95% UTL95% Coverage		66.32				95% UPL (t)		45.95
2239				90% Percentile (z)		28.45				95% Percentile (z)		44.11
2240				99% Percentile (z)		100.4				95% USL		252.2
2241	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
2242												
2243	**Nonparametric Distribution Free Background Statistics**											
2244	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
2245												
2246	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
2247				Order of Statistic, r		70				95% UTL with95% Coverage		36
2248				Approximate f		1.842				Confidence Coefficient (CC) achieved by UTL		0.876
2249				95% UPL		27.34				95% USL		96
2250				95% KM Chebyshev UPL		68.43						
2251												
2252	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2253	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2254	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2255	represents a background data set and when many onsite observations need to be compared with the BTV.											
2256												
2257	**Mercury**											
2258												
2259	**General Statistics**											
2260				Total Number of Observations		61				Number of Missing Observations		10
2261				Number of Distinct Observations		34						
2262				Number of Detects		52				Number of Non-Detects		9
2263				Number of Distinct Detects		34				Number of Distinct Non-Detects		3
2264				Minimum Detect		0.009				Minimum Non-Detect		0.02
2265				Maximum Detect		0.061				Maximum Non-Detect		0.04
2266				Variance Detected		1.3958E-4				Percent Non-Detects		14.75%
2267				Mean Detected		0.0333				SD Detected		0.0118
2268				Mean of Detected Logged Data		-3.47				SD of Detected Logged Data		0.389
2269												
2270	**Critical Values for Background Threshold Values (BTVs)**											
2271				Tolerance Factor K (For UTL)		2.013				d2max (for USL)		3.033
2272												
2273	**Normal GOF Test on Detects Only**											
2274				Shapiro Wilk Test Statistic		0.976	**Normal GOF Test on Detected Observations Only**					
2275				5% Shapiro Wilk P Value		0.583	Detected Data appear Normal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
2276				Lilliefors Test Statistic		0.0657	**Lilliefors GOF Test**					
2277				5% Lilliefors Critical Value		0.123	Detected Data appear Normal at 5% Significance Level					
2278	**Detected Data appear Normal at 5% Significance Level**											
2279												
2280	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
2281				Mean		0.0312				SD		0.0123
2282				95% UTL95% Coverage		0.0559				95% KM UPL (t)		0.0519
2283				90% KM Percentile (z)		0.0469				95% KM Percentile (z)		0.0514
2284				99% KM Percentile (z)		0.0598				95% KM USL		0.0685
2285												
2286	**DL/2 Substitution Background Statistics Assuming Normal Distribution**											
2287				Mean		0.0304				SD		0.0131
2288				95% UTL95% Coverage		0.0568				95% UPL (t)		0.0525
2289				90% Percentile (z)		0.0472				95% Percentile (z)		0.052
2290				99% Percentile (z)		0.0609				95% USL		0.0702
2291	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
2292												
2293	**Gamma GOF Tests on Detected Observations Only**											
2294				A-D Test Statistic		0.233	**Anderson-Darling GOF Test**					
2295				5% A-D Critical Value		0.752	Detected data appear Gamma Distributed at 5% Significance Level					
2296				K-S Test Statistic		0.0893	**Kolmogrov-Smirnoff GOF**					
2297				5% K-S Critical Value		0.123	Detected data appear Gamma Distributed at 5% Significance Level					
2298	**Detected data appear Gamma Distributed at 5% Significance Level**											
2299												
2300	**Gamma Statistics on Detected Data Only**											
2301				k hat (MLE)		7.484				k star (bias corrected MLE)		7.065
2302				Theta hat (MLE)		0.00445				Theta star (bias corrected MLE)		0.00472
2303				nu hat (MLE)		778.3				nu star (bias corrected)		734.8
2304				MLE Mean (bias corrected)		0.0333						
2305				MLE Sd (bias corrected)		0.0125				95% Percentile of Chisquare (2k)		23.86
2306												
2307	**Gamma ROS Statistics using Imputed Non-Detects**											
2308	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2309	GROS may not be used when kstar of detected data is small such as < 0.1											
2310	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2311	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2312				Minimum		0.009				Mean		0.0312
2313				Maximum		0.061				Median		0.0305
2314				SD		0.0122				CV		0.39
2315				k hat (MLE)		6.367				k star (bias corrected MLE)		6.065
2316				Theta hat (MLE)		0.00491				Theta star (bias corrected MLE)		0.00515
2317				nu hat (MLE)		776.8				nu star (bias corrected)		739.9
2318				MLE Mean (bias corrected)		0.0312				MLE Sd (bias corrected)		0.0127
2319				95% Percentile of Chisquare (2k)		21.2				90% Percentile		0.0482
2320				95% Percentile		0.0546				99% Percentile		0.068
2321	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
2322	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
2323					WH	HW					WH	HW
2324	95% Approx. Gamma UTL with 95% Coverage				0.0611	0.0623	95% Approx. Gamma UPL				0.0549	0.0556
2325				95% Gamma USL	0.0833	0.0868						
2326												
2327	**The following statistics are computed using gamma distribution and KM estimates**											
2328	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
2329				k hat (KM)		6.423				nu hat (KM)		783.7
2330					WH	HW					WH	HW
2331	95% Approx. Gamma UTL with 95% Coverage				0.0619	0.0632	95% Approx. Gamma UPL				0.0555	0.0563
2332				95% Gamma USL	0.0849	0.0888						
2333												
2334	**Lognormal GOF Test on Detected Observations Only**											
2335				Lilliefors Test Statistic		0.109	**Lilliefors GOF Test**					
2336				5% Lilliefors Critical Value		0.123	Detected Data appear Lognormal at 5% Significance Level					
2337	**Detected Data appear Lognormal at 5% Significance Level**											
2338												
2339	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
2340				Mean in Original Scale		0.0312				Mean in Log Scale		-3.545

	A	B	C	D	E	F	G	H	I	J	K	L
2341					SD in Original Scale	0.0121					SD in Log Scale	0.413
2342					95% UTL95% Coverage	0.0663					95% BCA UTL95% Coverage	0.06
2343					95% Bootstrap (%) UTL95% Coverage	0.06					95% UPL (t)	0.0579
2344					90% Percentile (z)	0.049					95% Percentile (z)	0.057
2345					99% Percentile (z)	0.0755					95% USL	0.101
2346												
2347					**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**							
2348					KM Mean of Logged Data	-3.555					95% KM UTL (Lognormal)95% Coverage	0.0686
2349					KM SD of Logged Data	0.435					95% KM UPL (Lognormal)	0.0595
2350					95% KM Percentile Lognormal (z)	0.0585					95% KM USL (Lognormal)	0.107
2351												
2352					**Background DL/2 Statistics Assuming Lognormal Distribution**							
2353					Mean in Original Scale	0.0304					Mean in Log Scale	-3.601
2354					SD in Original Scale	0.0131					SD in Log Scale	0.493
2355					95% UTL95% Coverage	0.0736					95% UPL (t)	0.0626
2356					90% Percentile (z)	0.0513					95% Percentile (z)	0.0614
2357					99% Percentile (z)	0.0859					95% USL	0.122
2358					**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**							
2359												
2360					**Nonparametric Distribution Free Background Statistics**							
2361					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
2362												
2363					**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**							
2364					Order of Statistic, r	60					95% UTL with95% Coverage	0.06
2365					Approximate f	1.579					Confidence Coefficient (CC) achieved by UTL	0.816
2366					95% UPL	0.0549					95% USL	0.061
2367					95% KM Chebyshev UPL	0.0852						
2368												
2369					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
2370					data set free of outliers and consists of observations collected from clean unimpacted locations.							
2371					The use of USL tends to provide a balance between false positives and false negatives provided the data							
2372					represents a background data set and when many onsite observations need to be compared with the BTV.							
2373												
2374	**Naphthalene**											
2375												
2376					**General Statistics**							
2377					Total Number of Observations	65					Number of Missing Observations	6
2378					Number of Distinct Observations	44						
2379					Number of Detects	20					Number of Non-Detects	45
2380					Number of Distinct Detects	20					Number of Distinct Non-Detects	29
2381					Minimum Detect	1.1					Minimum Non-Detect	0.55
2382					Maximum Detect	9.9					Maximum Non-Detect	9.7
2383					Variance Detected	3.846					Percent Non-Detects	69.23%
2384					Mean Detected	5.078					SD Detected	1.961
2385					Mean of Detected Logged Data	1.539					SD of Detected Logged Data	0.462
2386												
2387					**Critical Values for Background Threshold Values (BTVs)**							
2388					Tolerance Factor K (For UTL)	2					d2max (for USL)	3.057
2389												
2390					**Normal GOF Test on Detects Only**							
2391					Shapiro Wilk Test Statistic	0.975					**Shapiro Wilk GOF Test**	
2392					5% Shapiro Wilk Critical Value	0.905					Detected Data appear Normal at 5% Significance Level	
2393					Lilliefors Test Statistic	0.105					**Lilliefors GOF Test**	
2394					5% Lilliefors Critical Value	0.198					Detected Data appear Normal at 5% Significance Level	
2395					**Detected Data appear Normal at 5% Significance Level**							
2396												
2397					**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**							
2398					Mean	2.142					SD	2.316
2399					95% UTL95% Coverage	6.774					95% KM UPL (t)	6.037
2400					90% KM Percentile (z)	5.11					95% KM Percentile (z)	5.951
2401					99% KM Percentile (z)	7.53					95% KM USL	9.221
2402												
2403					**DL/2 Substitution Background Statistics Assuming Normal Distribution**							
2404					Mean	2.549					SD	2.121
2405					95% UTL95% Coverage	6.791					95% UPL (t)	6.116

	A	B	C	D	E	F	G	H	I	J	K	L
2406				90% Percentile (z)		5.267				95% Percentile (z)		6.038
2407				99% Percentile (z)		7.483				95% USL		9.033
2408	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
2409												
2410	**Gamma GOF Tests on Detected Observations Only**											
2411				A-D Test Statistic		0.304	**Anderson-Darling GOF Test**					
2412				5% A-D Critical Value		0.745	Detected data appear Gamma Distributed at 5% Significance Level					
2413				K-S Test Statistic		0.106	**Kolmogrov-Smirnoff GOF**					
2414				5% K-S Critical Value		0.194	Detected data appear Gamma Distributed at 5% Significance Level					
2415	**Detected data appear Gamma Distributed at 5% Significance Level**											
2416												
2417	**Gamma Statistics on Detected Data Only**											
2418				k hat (MLE)		6.022				k star (bias corrected MLE)		5.152
2419				Theta hat (MLE)		0.843				Theta star (bias corrected MLE)		0.986
2420				nu hat (MLE)		240.9				nu star (bias corrected)		206.1
2421				MLE Mean (bias corrected)		5.078						
2422				MLE Sd (bias corrected)		2.237				95% Percentile of Chisquare (2k)		18.72
2423												
2424	**Gamma ROS Statistics using Imputed Non-Detects**											
2425	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2426	GROS may not be used when kstar of detected data is small such as < 0.1											
2427	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2428	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2429				Minimum		0.01				Mean		2.153
2430				Maximum		9.9				Median		1.328
2431				SD		2.296				CV		1.066
2432				k hat (MLE)		0.643				k star (bias corrected MLE)		0.623
2433				Theta hat (MLE)		3.349				Theta star (bias corrected MLE)		3.454
2434				nu hat (MLE)		83.58				nu star (bias corrected)		81.05
2435				MLE Mean (bias corrected)		2.153				MLE Sd (bias corrected)		2.727
2436				95% Percentile of Chisquare (2k)		4.425				90% Percentile		5.552
2437				95% Percentile		7.642				99% Percentile		12.68
2438	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
2439	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
2440					WH	HW					WH	HW
2441	95% Approx. Gamma UTL with 95% Coverage				9.423	11.05	95% Approx. Gamma UPL				7.427	8.353
2442				95% Gamma USL	18.54	24.83						
2443												
2444	**The following statistics are computed using gamma distribution and KM estimates**											
2445	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
2446				k hat (KM)		0.855				nu hat (KM)		111.1
2447					WH	HW					WH	HW
2448	95% Approx. Gamma UTL with 95% Coverage				7.625	7.88	95% Approx. Gamma UPL				6.201	6.279
2449				95% Gamma USL	13.88	15.45						
2450												
2451	**Lognormal GOF Test on Detected Observations Only**											
2452				Shapiro Wilk Test Statistic		0.896	**Shapiro Wilk GOF Test**					
2453				5% Shapiro Wilk Critical Value		0.905	Data Not Lognormal at 5% Significance Level					
2454				Lilliefors Test Statistic		0.14	**Lilliefors GOF Test**					
2455				5% Lilliefors Critical Value		0.198	Detected Data appear Lognormal at 5% Significance Level					
2456	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
2457												
2458	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
2459				Mean in Original Scale		2.637				Mean in Log Scale		0.758
2460				SD in Original Scale		1.981				SD in Log Scale		0.619
2461				95% UTL95% Coverage		7.353				95% BCA UTL95% Coverage		7.88
2462				95% Bootstrap (%) UTL95% Coverage		8.1				95% UPL (t)		6.039
2463				90% Percentile (z)		4.714				95% Percentile (z)		5.902
2464				99% Percentile (z)		8.998				95% USL		14.14
2465												
2466	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
2467				KM Mean of Logged Data		0.231				95% KM UTL (Lognormal)95% Coverage		9.153
2468				KM SD of Logged Data		0.991				95% KM UPL (Lognormal)		6.677
2469				95% KM Percentile Lognormal (z)		6.436				95% KM USL (Lognormal)		26.09
2470												

	A	B	C	D	E	F	G	H	I	J	K	L
2471					Background DL/2 Statistics Assuming Lognormal Distribution							
2472					Mean in Original Scale	2.549					Mean in Log Scale	0.618
2473					SD in Original Scale	2.121					SD in Log Scale	0.815
2474					95% UTL95% Coverage	9.46					95% UPL (t)	7.299
2475					90% Percentile (z)	5.268					95% Percentile (z)	7.083
2476					99% Percentile (z)	12.34					95% USL	22.38
2477					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
2478												
2479					Nonparametric Distribution Free Background Statistics							
2480					Data appear to follow a Discernible Distribution at 5% Significance Level							
2481												
2482					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
2483					Order of Statistic, r	64					95% UTL with95% Coverage	9.7
2484					Approximate f	1.684					Confidence Coefficient (CC) achieved by UTL	0.842
2485					95% UPL	7.77					95% USL	9.9
2486					95% KM Chebyshev UPL	12.31						
2487												
2488					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
2489					data set free of outliers and consists of observations collected from clean unimpacted locations.							
2490					The use of USL tends to provide a balance between false positives and false negatives provided the data							
2491					represents a background data set and when many onsite observations need to be compared with the BTV.							
2492												
2493	Nickel											
2494												
2495	General Statistics											
2496					Total Number of Observations	67					Number of Distinct Observations	51
2497											Number of Missing Observations	4
2498					Minimum	12.3					First Quartile	18.9
2499					Second Largest	26.9					Median	20.7
2500					Maximum	29					Third Quartile	22.5
2501					Mean	20.7					SD	3.264
2502					Coefficient of Variation	0.158					Skewness	-0.167
2503					Mean of logged Data	3.017					SD of logged Data	0.166
2504												
2505					Critical Values for Background Threshold Values (BTVs)							
2506					Tolerance Factor K (For UTL)	1.994					d2max (for USL)	3.068
2507												
2508					Normal GOF Test							
2509					Shapiro Wilk Test Statistic	0.983					Normal GOF Test	
2510					5% Shapiro Wilk P Value	0.753					Data appear Normal at 5% Significance Level	
2511					Lilliefors Test Statistic	0.0761					Lilliefors GOF Test	
2512					5% Lilliefors Critical Value	0.108					Data appear Normal at 5% Significance Level	
2513					Data appear Normal at 5% Significance Level							
2514												
2515					Background Statistics Assuming Normal Distribution							
2516					95% UTL with 95% Coverage	27.21					90% Percentile (z)	24.88
2517					95% UPL (t)	26.19					95% Percentile (z)	26.07
2518					95% USL	30.71					99% Percentile (z)	28.29
2519												
2520					Gamma GOF Test							
2521					A-D Test Statistic	0.59					Anderson-Darling Gamma GOF Test	
2522					5% A-D Critical Value	0.749					Detected data appear Gamma Distributed at 5% Significance Level	
2523					K-S Test Statistic	0.0917					Kolmogrov-Smirnoff Gamma GOF Test	
2524					5% K-S Critical Value	0.109					Detected data appear Gamma Distributed at 5% Significance Level	
2525					Detected data appear Gamma Distributed at 5% Significance Level							
2526												
2527					Gamma Statistics							
2528					k hat (MLE)	38.56					k star (bias corrected MLE)	36.84
2529					Theta hat (MLE)	0.537					Theta star (bias corrected MLE)	0.562
2530					nu hat (MLE)	5166					nu star (bias corrected)	4936
2531					MLE Mean (bias corrected)	20.7					MLE Sd (bias corrected)	3.41
2532												
2533					Background Statistics Assuming Gamma Distribution							
2534					95% Wilson Hilferty (WH) Approx. Gamma UPL	26.66					90% Percentile	25.17
2535					95% Hawkins Wixley (HW) Approx. Gamma UPL	26.74					95% Percentile	26.61

	A	B	C	D	E	F	G	H	I	J	K	L
2536					95% WH Approx. Gamma UTL with 95% Coverage	27.93					99% Percentile	29.45
2537					95% HW Approx. Gamma UTL with 95% Coverage	28.04						
2538					95% WH USL	32.56					95% HW USL	32.88
2539												
2540					**Lognormal GOF Test**							
2541					Shapiro Wilk Test Statistic	0.956			**Shapiro Wilk Lognormal GOF Test**			
2542					5% Shapiro Wilk P Value	0.0477			Data Not Lognormal at 5% Significance Level			
2543					Lilliefors Test Statistic	0.103			**Lilliefors Lognormal GOF Test**			
2544					5% Lilliefors Critical Value	0.108			Data appear Lognormal at 5% Significance Level			
2545					**Data appear Approximate Lognormal at 5% Significance Level**							
2546												
2547					**Background Statistics assuming Lognormal Distribution**							
2548					95% UTL with 95% Coverage	28.44					90% Percentile (z)	25.27
2549					95% UPL (t)	27					95% Percentile (z)	26.84
2550					95% USL	33.98					99% Percentile (z)	30.05
2551												
2552					**Nonparametric Distribution Free Background Statistics**							
2553					**Data appear Normal at 5% Significance Level**							
2554												
2555					**Nonparametric Upper Limits for Background Threshold Values**							
2556					Order of Statistic, r	66					95% UTL with 95% Coverage	26.9
2557					Approximate f	1.737					Confidence Coefficient (CC) achieved by UTL	0.854
2558					95% Percentile Bootstrap UTL with 95% Coverage	26.9					95% BCA Bootstrap UTL with 95% Coverage	26.69
2559					95% UPL	26.16					90% Percentile	24.66
2560					90% Chebyshev UPL	30.56					95% Percentile	26.04
2561					95% Chebyshev UPL	35.03					99% Percentile	27.61
2562					95% USL	29						
2563												
2564					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
2565					data set free of outliers and consists of observations collected from clean unimpacted locations.							
2566					The use of USL tends to provide a balance between false positives and false negatives provided the data							
2567					represents a background data set and when many onsite observations need to be compared with the BTV.							
2568												
2569	**PCB TEQ - Mammals 2006**											
2570												
2571	**General Statistics**											
2572					Total Number of Observations	32					Number of Distinct Observations	32
2573											Number of Missing Observations	39
2574					Minimum	0.0333					First Quartile	0.0967
2575					Second Largest	0.723					Median	0.102
2576					Maximum	1.27					Third Quartile	0.139
2577					Mean	0.196					SD	0.266
2578					Coefficient of Variation	1.353					Skewness	2.93
2579					Mean of logged Data	-2.06					SD of logged Data	0.799
2580												
2581					**Critical Values for Background Threshold Values (BTVs)**							
2582					Tolerance Factor K (For UTL)	2.186					d2max (for USL)	2.773
2583												
2584					**Normal GOF Test**							
2585					Shapiro Wilk Test Statistic	0.516			**Shapiro Wilk GOF Test**			
2586					5% Shapiro Wilk Critical Value	0.93			Data Not Normal at 5% Significance Level			
2587					Lilliefors Test Statistic	0.388			**Lilliefors GOF Test**			
2588					5% Lilliefors Critical Value	0.157			Data Not Normal at 5% Significance Level			
2589					**Data Not Normal at 5% Significance Level**							
2590												
2591					**Background Statistics Assuming Normal Distribution**							
2592					95% UTL with 95% Coverage	0.777					90% Percentile (z)	0.537
2593					95% UPL (t)	0.654					95% Percentile (z)	0.633
2594					95% USL	0.933					99% Percentile (z)	0.814
2595												
2596					**Gamma GOF Test**							
2597					A-D Test Statistic	4.665			**Anderson-Darling Gamma GOF Test**			
2598					5% A-D Critical Value	0.769			Data Not Gamma Distributed at 5% Significance Level			
2599					K-S Test Statistic	0.3			**Kolmogrov-Smirnoff Gamma GOF Test**			
2600					5% K-S Critical Value	0.159			Data Not Gamma Distributed at 5% Significance Level			

	A	B	C	D	E	F	G	H	I	J	K	L
2601	Data Not Gamma Distributed at 5% Significance Level											
2602												
2603	Gamma Statistics											
2604					k hat (MLE)	1.3			k star (bias corrected MLE)			1.199
2605					Theta hat (MLE)	0.151			Theta star (bias corrected MLE)			0.164
2606					nu hat (MLE)	83.21			nu star (bias corrected)			76.74
2607					MLE Mean (bias corrected)	0.196			MLE Sd (bias corrected)			0.179
2608												
2609	Background Statistics Assuming Gamma Distribution											
2610				95% Wilson Hilferty (WH) Approx. Gamma UPL		0.542			90% Percentile			0.432
2611				95% Hawkins Wixley (HW) Approx. Gamma UPL		0.53			95% Percentile			0.552
2612				95% WH Approx. Gamma UTL with 95% Coverage		0.714			99% Percentile			0.826
2613				95% HW Approx. Gamma UTL with 95% Coverage		0.712						
2614					95% WH USL	0.981			95% HW USL			1.006
2615												
2616	Lognormal GOF Test											
2617					Shapiro Wilk Test Statistic	0.785			Shapiro Wilk Lognormal GOF Test			
2618					5% Shapiro Wilk Critical Value	0.93			Data Not Lognormal at 5% Significance Level			
2619					Lilliefors Test Statistic	0.256			Lilliefors Lognormal GOF Test			
2620					5% Lilliefors Critical Value	0.157			Data Not Lognormal at 5% Significance Level			
2621	Data Not Lognormal at 5% Significance Level											
2622												
2623	Background Statistics assuming Lognormal Distribution											
2624					95% UTL with 95% Coverage	0.731			90% Percentile (z)			0.355
2625					95% UPL (t)	0.505			95% Percentile (z)			0.474
2626					95% USL	1.169			99% Percentile (z)			0.818
2627												
2628	Nonparametric Distribution Free Background Statistics											
2629	Data do not follow a Discernible Distribution (0.05)											
2630												
2631	Nonparametric Upper Limits for Background Threshold Values											
2632					Order of Statistic, r	32			95% UTL with 95% Coverage			1.27
2633					Approximate f	1.684			Confidence Coefficient (CC) achieved by UTL			0.806
2634				95% Percentile Bootstrap UTL with 95% Coverage		1.27			95% BCA Bootstrap UTL with 95% Coverage			1.27
2635					95% UPL	0.914			90% Percentile			0.607
2636					90% Chebyshev UPL	1.006			95% Percentile			0.723
2637					95% Chebyshev UPL	1.372			99% Percentile			1.101
2638					95% USL	1.27						
2639												
2640	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2641	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2642	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2643	represents a background data set and when many onsite observations need to be compared with the BTV.											
2644												
2645	Pentachlorophenol											
2646												
2647	General Statistics											
2648					Total Number of Observations	65			Number of Missing Observations			6
2649					Number of Distinct Observations	44						
2650					Number of Detects	9			Number of Non-Detects			56
2651					Number of Distinct Detects	9			Number of Distinct Non-Detects			37
2652					Minimum Detect	1.5			Minimum Non-Detect			0.25
2653					Maximum Detect	12			Maximum Non-Detect			8.8
2654					Variance Detected	11.98			Percent Non-Detects			86.15%
2655					Mean Detected	3.789			SD Detected			3.461
2656					Mean of Detected Logged Data	1.081			SD of Detected Logged Data			0.679
2657												
2658	Critical Values for Background Threshold Values (BTVs)											
2659					Tolerance Factor K (For UTL)	2			d2max (for USL)			3.057
2660												
2661	Normal GOF Test on Detects Only											
2662					Shapiro Wilk Test Statistic	0.671			Shapiro Wilk GOF Test			
2663					5% Shapiro Wilk Critical Value	0.829			Data Not Normal at 5% Significance Level			
2664					Lilliefors Test Statistic	0.379			Lilliefors GOF Test			
2665					5% Lilliefors Critical Value	0.295			Data Not Normal at 5% Significance Level			

	A	B	C	D	E	F	G	H	I	J	K	L
2666	Data Not Normal at 5% Significance Level											
2667												
2668	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
2669				Mean		0.863				SD		1.757
2670				95% UTL95% Coverage		4.377				95% KM UPL (t)		3.818
2671				90% KM Percentile (z)		3.115				95% KM Percentile (z)		3.753
2672				99% KM Percentile (z)		4.95				95% KM USL		6.234
2673												
2674	DL/2 Substitution Background Statistics Assuming Normal Distribution											
2675				Mean		1.452				SD		1.853
2676				95% UTL95% Coverage		5.158				95% UPL (t)		4.569
2677				90% Percentile (z)		3.827				95% Percentile (z)		4.5
2678				99% Percentile (z)		5.763				95% USL		7.116
2679	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
2680												
2681	Gamma GOF Tests on Detected Observations Only											
2682				A-D Test Statistic		1.015	Anderson-Darling GOF Test					
2683				5% A-D Critical Value		0.729	Data Not Gamma Distributed at 5% Significance Level					
2684				K-S Test Statistic		0.334	Kolmogrov-Smirnoff GOF					
2685				5% K-S Critical Value		0.282	Data Not Gamma Distributed at 5% Significance Level					
2686	Data Not Gamma Distributed at 5% Significance Level											
2687												
2688	Gamma Statistics on Detected Data Only											
2689				k hat (MLE)		2.141				k star (bias corrected MLE)		1.501
2690				Theta hat (MLE)		1.77				Theta star (bias corrected MLE)		2.524
2691				nu hat (MLE)		38.54				nu star (bias corrected)		27.02
2692				MLE Mean (bias corrected)		3.789						
2693				MLE Sd (bias corrected)		3.092				95% Percentile of Chisquare (2k)		7.819
2694												
2695	Gamma ROS Statistics using Imputed Non-Detects											
2696	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2697	GROS may not be used when kstar of detected data is small such as < 0.1											
2698	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2699	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2700				Minimum		0.01				Mean		0.533
2701				Maximum		12				Median		0.01
2702				SD		1.797				CV		3.369
2703				k hat (MLE)		0.226				k star (bias corrected MLE)		0.226
2704				Theta hat (MLE)		2.356				Theta star (bias corrected MLE)		2.358
2705				nu hat (MLE)		29.42				nu star (bias corrected)		29.4
2706				MLE Mean (bias corrected)		0.533				MLE Sd (bias corrected)		1.121
2707				95% Percentile of Chisquare (2k)		2.254				90% Percentile		1.609
2708				95% Percentile		2.657				99% Percentile		5.488
2709	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
2710	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2711					WH	HW					WH	HW
2712			95% Approx. Gamma UTL with 95% Coverage		2.206	1.954				95% Approx. Gamma UPL	1.547	1.295
2713			95% Gamma USL		5.676	6.01						
2714												
2715	The following statistics are computed using gamma distribution and KM estimates											
2716	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2717				k hat (KM)		0.241				nu hat (KM)		31.36
2718					WH	HW					WH	HW
2719			95% Approx. Gamma UTL with 95% Coverage		3.215	3.117				95% Approx. Gamma UPL	2.552	2.43
2720			95% Gamma USL		6.222	6.467						
2721												
2722	Lognormal GOF Test on Detected Observations Only											
2723				Shapiro Wilk Test Statistic		0.826	Shapiro Wilk GOF Test					
2724				5% Shapiro Wilk Critical Value		0.829	Data Not Lognormal at 5% Significance Level					
2725				Lilliefors Test Statistic		0.287	Lilliefors GOF Test					
2726				5% Lilliefors Critical Value		0.295	Detected Data appear Lognormal at 5% Significance Level					
2727	Detected Data appear Approximate Lognormal at 5% Significance Level											
2728												
2729	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2730				Mean in Original Scale		0.867				Mean in Log Scale		-0.735

	A	B	C	D	E	F	G	H	I	J	K	L
2731					SD in Original Scale	1.709					SD in Log Scale	0.884
2732					95% UTL95% Coverage	2.811					95% BCA UTL95% Coverage	6.02
2733				95% Bootstrap (%) UTL95% Coverage		6.02					95% UPL (t)	2.122
2734					90% Percentile (z)	1.489					95% Percentile (z)	2.053
2735					99% Percentile (z)	3.751					95% USL	7.155
2736												
2737					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
2738					KM Mean of Logged Data	-0.908					95% KM UTL (Lognormal)95% Coverage	2.88
2739					KM SD of Logged Data	0.983					95% KM UPL (Lognormal)	2.106
2740					95% KM Percentile Lognormal (z)	2.031					95% KM USL (Lognormal)	8.137
2741												
2742					Background DL/2 Statistics Assuming Lognormal Distribution							
2743					Mean in Original Scale	1.452					Mean in Log Scale	-0.359
2744					SD in Original Scale	1.853					SD in Log Scale	1.301
2745					95% UTL95% Coverage	9.42					95% UPL (t)	6.226
2746					90% Percentile (z)	3.699					95% Percentile (z)	5.934
2747					99% Percentile (z)	14.4					95% USL	37.25
2748					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
2749												
2750					Nonparametric Distribution Free Background Statistics							
2751					Data appear to follow a Discernible Distribution at 5% Significance Level							
2752												
2753					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
2754					Order of Statistic, r	64					95% UTL with95% Coverage	8.8
2755					Approximate f	1.684					Confidence Coefficient (CC) achieved by UTL	0.842
2756					95% UPL	6.68					95% USL	12
2757					95% KM Chebyshev UPL	8.58						
2758												
2759					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
2760					data set free of outliers and consists of observations collected from clean unimpacted locations.							
2761					The use of USL tends to provide a balance between false positives and false negatives provided the data							
2762					represents a background data set and when many onsite observations need to be compared with the BTV.							
2763												
2764	Phenanthrene											
2765												
2766					General Statistics							
2767					Total Number of Observations	69					Number of Missing Observations	2
2768					Number of Distinct Observations	48						
2769					Number of Detects	33					Number of Non-Detects	36
2770					Number of Distinct Detects	28					Number of Distinct Non-Detects	27
2771					Minimum Detect	0.91					Minimum Non-Detect	0.59
2772					Maximum Detect	71					Maximum Non-Detect	13
2773					Variance Detected	140.3					Percent Non-Detects	52.17%
2774					Mean Detected	8.273					SD Detected	11.85
2775					Mean of Detected Logged Data	1.72					SD of Detected Logged Data	0.837
2776												
2777					Critical Values for Background Threshold Values (BTVs)							
2778					Tolerance Factor K (For UTL)	1.988					d2max (for USL)	3.079
2779												
2780					Normal GOF Test on Detects Only							
2781					Shapiro Wilk Test Statistic	0.44					Shapiro Wilk GOF Test	
2782					5% Shapiro Wilk Critical Value	0.931					Data Not Normal at 5% Significance Level	
2783					Lilliefors Test Statistic	0.348					Lilliefors GOF Test	
2784					5% Lilliefors Critical Value	0.154					Data Not Normal at 5% Significance Level	
2785					Data Not Normal at 5% Significance Level							
2786												
2787					Kaplan Meier (KM) Background Statistics Assuming Normal Distribution							
2788					Mean	4.601					SD	8.854
2789					95% UTL95% Coverage	22.2					95% KM UPL (t)	19.47
2790					90% KM Percentile (z)	15.95					95% KM Percentile (z)	19.16
2791					99% KM Percentile (z)	25.2					95% KM USL	31.86
2792												
2793					DL/2 Substitution Background Statistics Assuming Normal Distribution							
2794					Mean	4.899					SD	8.812
2795					95% UTL95% Coverage	22.42					95% UPL (t)	19.7

	A	B	C	D	E	F	G	H	I	J	K	L
2796				90% Percentile (z)		16.19				95% Percentile (z)		19.39
2797				99% Percentile (z)		25.4				95% USL		32.03
2798	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
2799												
2800	**Gamma GOF Tests on Detected Observations Only**											
2801				A-D Test Statistic		1.434	**Anderson-Darling GOF Test**					
2802				5% A-D Critical Value		0.767	Data Not Gamma Distributed at 5% Significance Level					
2803				K-S Test Statistic		0.203	**Kolmogrov-Smirnoff GOF**					
2804				5% K-S Critical Value		0.156	Data Not Gamma Distributed at 5% Significance Level					
2805	**Data Not Gamma Distributed at 5% Significance Level**											
2806												
2807	**Gamma Statistics on Detected Data Only**											
2808				k hat (MLE)		1.415				k star (bias corrected MLE)		1.307
2809				Theta hat (MLE)		5.847				Theta star (bias corrected MLE)		6.332
2810				nu hat (MLE)		93.39				nu star (bias corrected)		86.23
2811				MLE Mean (bias corrected)		8.273						
2812				MLE Sd (bias corrected)		7.238				95% Percentile of Chisquare (2k)		7.132
2813												
2814	**Gamma ROS Statistics using Imputed Non-Detects**											
2815	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2816	GROS may not be used when kstar of detected data is small such as < 0.1											
2817	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2818	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2819				Minimum		0.01				Mean		3.988
2820				Maximum		71				Median		0.01
2821				SD		9.119				CV		2.287
2822				k hat (MLE)		0.246				k star (bias corrected MLE)		0.245
2823				Theta hat (MLE)		16.18				Theta star (bias corrected MLE)		16.25
2824				nu hat (MLE)		34.02				nu star (bias corrected)		33.87
2825				MLE Mean (bias corrected)		3.988				MLE Sd (bias corrected)		8.049
2826				95% Percentile of Chisquare (2k)		2.389				90% Percentile		11.98
2827				95% Percentile		19.41				99% Percentile		39.22
2828	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
2829	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
2830					WH	HW					WH	HW
2831	95% Approx. Gamma UTL with 95% Coverage				21.92	26.2	95% Approx. Gamma UPL				16.02	17.85
2832				95% Gamma USL	54.04	80.36						
2833												
2834	**The following statistics are computed using gamma distribution and KM estimates**											
2835	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
2836				k hat (KM)		0.27				nu hat (KM)		37.27
2837					WH	HW					WH	HW
2838	95% Approx. Gamma UTL with 95% Coverage				17.38	17.77	95% Approx. Gamma UPL				13.94	13.93
2839				95% Gamma USL	34.04	37.96						
2840												
2841	**Lognormal GOF Test on Detected Observations Only**											
2842				Shapiro Wilk Test Statistic		0.934	**Shapiro Wilk GOF Test**					
2843				5% Shapiro Wilk Critical Value		0.931	Detected Data appear Lognormal at 5% Significance Level					
2844				Lilliefors Test Statistic		0.148	**Lilliefors GOF Test**					
2845				5% Lilliefors Critical Value		0.154	Detected Data appear Lognormal at 5% Significance Level					
2846	**Detected Data appear Lognormal at 5% Significance Level**											
2847												
2848	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
2849				Mean in Original Scale		4.592				Mean in Log Scale		0.883
2850				SD in Original Scale		8.875				SD in Log Scale		1.033
2851				95% UTL95% Coverage		18.85				95% BCA UTL95% Coverage		15.8
2852				95% Bootstrap (%) UTL95% Coverage		19				95% UPL (t)		13.71
2853				90% Percentile (z)		9.085				95% Percentile (z)		13.22
2854				99% Percentile (z)		26.74				95% USL		58.17
2855												
2856	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
2857				KM Mean of Logged Data		0.787				95% KM UTL (Lognormal)95% Coverage		21.8
2858				KM SD of Logged Data		1.154				95% KM UPL (Lognormal)		15.27
2859				95% KM Percentile Lognormal (z)		14.67				95% KM USL (Lognormal)		76.77
2860												

	A	B	C	D	E	F	G	H	I	J	K	L
2861	**Background DL/2 Statistics Assuming Lognormal Distribution**											
2862					Mean in Original Scale	4.899					Mean in Log Scale	0.997
2863					SD in Original Scale	8.812					SD in Log Scale	1.043
2864					95% UTL95% Coverage	21.56					95% UPL (t)	15.63
2865					90% Percentile (z)	10.32					95% Percentile (z)	15.07
2866					99% Percentile (z)	30.68					95% USL	67.23
2867	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
2868												
2869	**Nonparametric Distribution Free Background Statistics**											
2870	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
2871												
2872	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
2873					Order of Statistic, r	68					95% UTL with95% Coverage	19
2874					Approximate f	1.789					Confidence Coefficient (CC) achieved by UTL	0.866
2875					95% UPL	12					95% USL	71
2876					95% KM Chebyshev UPL	43.47						
2877												
2878	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2879	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2880	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2881	represents a background data set and when many onsite observations need to be compared with the BTV.											
2882												
2883	**Residual Range Hydrocarbons**											
2884												
2885	**General Statistics**											
2886					Total Number of Observations	28					Number of Distinct Observations	21
2887											Number of Missing Observations	18
2888					Minimum	9.2					First Quartile	184.9
2889					Second Largest	390					Median	220
2890					Maximum	420					Third Quartile	272.5
2891					Mean	229.7					SD	98.08
2892					Coefficient of Variation	0.427					Skewness	0.0518
2893					Mean of logged Data	5.281					SD of logged Data	0.73
2894												
2895	**Critical Values for Background Threshold Values (BTVs)**											
2896					Tolerance Factor K (For UTL)	2.246					d2max (for USL)	2.714
2897												
2898	**Normal GOF Test**											
2899					Shapiro Wilk Test Statistic	0.957					**Shapiro Wilk GOF Test**	
2900					5% Shapiro Wilk Critical Value	0.924					Data appear Normal at 5% Significance Level	
2901					Lilliefors Test Statistic	0.177					**Lilliefors GOF Test**	
2902					5% Lilliefors Critical Value	0.167					Data Not Normal at 5% Significance Level	
2903	**Data appear Approximate Normal at 5% Significance Level**											
2904												
2905	**Background Statistics Assuming Normal Distribution**											
2906				95% UTL with	95% Coverage	450					90% Percentile (z)	355.4
2907					95% UPL (t)	399.7					95% Percentile (z)	391
2908					95% USL	495.9					99% Percentile (z)	457.8
2909												
2910	**Gamma GOF Test**											
2911					A-D Test Statistic	1.263					**Anderson-Darling Gamma GOF Test**	
2912					5% A-D Critical Value	0.752					Data Not Gamma Distributed at 5% Significance Level	
2913					K-S Test Statistic	0.19					**Kolmogrov-Smirnoff Gamma GOF Test**	
2914					5% K-S Critical Value	0.166					Data Not Gamma Distributed at 5% Significance Level	
2915	**Data Not Gamma Distributed at 5% Significance Level**											
2916												
2917	**Gamma Statistics**											
2918					k hat (MLE)	3.365					k star (bias corrected MLE)	3.028
2919					Theta hat (MLE)	68.25					Theta star (bias corrected MLE)	75.84
2920					nu hat (MLE)	188.4					nu star (bias corrected)	169.6
2921					MLE Mean (bias corrected)	229.7					MLE Sd (bias corrected)	132
2922												
2923	**Background Statistics Assuming Gamma Distribution**											
2924					95% Wilson Hilferty (WH) Approx. Gamma UPL	485.6					90% Percentile	406.6
2925					95% Hawkins Wixley (HW) Approx. Gamma UPL	514.7					95% Percentile	480.7

	A	B	C	D	E	F	G	H	I	J	K	L
2926				95% WH Approx. Gamma UTL with	95% Coverage	598					99% Percentile	641.1
2927				95% HW Approx. Gamma UTL with	95% Coverage	649.9						
2928					95% WH USL	714.7					95% HW USL	795.3
2929												
2930					Lognormal GOF Test							
2931					Shapiro Wilk Test Statistic	0.707		Shapiro Wilk Lognormal GOF Test				
2932					5% Shapiro Wilk Critical Value	0.924		Data Not Lognormal at 5% Significance Level				
2933					Lilliefors Test Statistic	0.243		Lilliefors Lognormal GOF Test				
2934					5% Lilliefors Critical Value	0.167		Data Not Lognormal at 5% Significance Level				
2935					Data Not Lognormal at 5% Significance Level							
2936												
2937					Background Statistics assuming Lognormal Distribution							
2938				95% UTL with	95% Coverage	1012					90% Percentile (z)	500.7
2939					95% UPL (t)	696.3					95% Percentile (z)	652.7
2940					95% USL	1425					99% Percentile (z)	1073
2941												
2942					Nonparametric Distribution Free Background Statistics							
2943					Data appear Approximate Normal at 5% Significance Level							
2944												
2945					Nonparametric Upper Limits for Background Threshold Values							
2946					Order of Statistic, r	28					95% UTL with 95% Coverage	420
2947					Approximate f	1.474					Confidence Coefficient (CC) achieved by UTL	0.762
2948				95% Percentile Bootstrap UTL with	95% Coverage	420					95% BCA Bootstrap UTL with 95% Coverage	409.5
2949					95% UPL	406.5					90% Percentile	380
2950					90% Chebyshev UPL	529.1					95% Percentile	386.5
2951					95% Chebyshev UPL	664.7					99% Percentile	411.9
2952					95% USL	420						
2953												
2954					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
2955					data set free of outliers and consists of observations collected from clean unimpacted locations.							
2956					The use of USL tends to provide a balance between false positives and false negatives provided the data							
2957					represents a background data set and when many onsite observations need to be compared with the BTV.							
2958												
2959	Total PAHs (calc'd)											
2960												
2961					General Statistics							
2962					Total Number of Observations	71					Number of Missing Observations	0
2963					Number of Distinct Observations	68						
2964					Number of Detects	60					Number of Non-Detects	11
2965					Number of Distinct Detects	60					Number of Distinct Non-Detects	8
2966					Minimum Detect	6.12					Minimum Non-Detect	1.5
2967					Maximum Detect	464.5					Maximum Non-Detect	10
2968					Variance Detected	7048					Percent Non-Detects	15.49%
2969					Mean Detected	90.37					SD Detected	83.96
2970					Mean of Detected Logged Data	4.165					SD of Detected Logged Data	0.869
2971												
2972					Critical Values for Background Threshold Values (BTVs)							
2973					Tolerance Factor K (For UTL)	1.983					d2max (for USL)	3.089
2974												
2975					Normal GOF Test on Detects Only							
2976					Shapiro Wilk Test Statistic	0.742		Normal GOF Test on Detected Observations Only				
2977					5% Shapiro Wilk P Value	1.122E-13		Data Not Normal at 5% Significance Level				
2978					Lilliefors Test Statistic	0.169		Lilliefors GOF Test				
2979					5% Lilliefors Critical Value	0.114		Data Not Normal at 5% Significance Level				
2980					Data Not Normal at 5% Significance Level							
2981												
2982					Kaplan Meier (KM) Background Statistics Assuming Normal Distribution							
2983					Mean	76.64					SD	82.98
2984					95% UTL95% Coverage	241.2					95% KM UPL (t)	215.9
2985					90% KM Percentile (z)	183					95% KM Percentile (z)	213.1
2986					99% KM Percentile (z)	269.7					95% KM USL	333
2987												
2988					DL/2 Substitution Background Statistics Assuming Normal Distribution							
2989					Mean	76.69					SD	83.53
2990					95% UTL95% Coverage	242.3					95% UPL (t)	216.9

	A	B	C	D	E	F	G	H	I	J	K	L
2991				90% Percentile (z)		183.7				95% Percentile (z)		214.1
2992				99% Percentile (z)		271				95% USL		334.7
2993	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
2994												
2995	Gamma GOF Tests on Detected Observations Only											
2996				A-D Test Statistic		0.458	Anderson-Darling GOF Test					
2997				5% A-D Critical Value		0.767	Detected data appear Gamma Distributed at 5% Significance Level					
2998				K-S Test Statistic		0.0733	Kolmogrov-Smirnoff GOF					
2999				5% K-S Critical Value		0.117	Detected data appear Gamma Distributed at 5% Significance Level					
3000	Detected data appear Gamma Distributed at 5% Significance Level											
3001												
3002	Gamma Statistics on Detected Data Only											
3003				k hat (MLE)		1.62				k star (bias corrected MLE)		1.551
3004				Theta hat (MLE)		55.77				Theta star (bias corrected MLE)		58.28
3005				nu hat (MLE)		194.5				nu star (bias corrected)		186.1
3006				MLE Mean (bias corrected)		90.37						
3007				MLE Sd (bias corrected)		72.58				95% Percentile of Chisquare (2k)		7.989
3008												
3009	Gamma ROS Statistics using Imputed Non-Detects											
3010	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
3011	GROS may not be used when kstar of detected data is small such as < 0.1											
3012	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
3013	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
3014				Minimum		0.01				Mean		76.37
3015				Maximum		464.5				Median		59
3016				SD		83.82				CV		1.097
3017				k hat (MLE)		0.426				k star (bias corrected MLE)		0.417
3018				Theta hat (MLE)		179.3				Theta star (bias corrected MLE)		183
3019				nu hat (MLE)		60.48				nu star (bias corrected)		59.25
3020				MLE Mean (bias corrected)		76.37				MLE Sd (bias corrected)		118.2
3021				95% Percentile of Chisquare (2k)		3.417				90% Percentile		214.1
3022				95% Percentile		312.7				99% Percentile		559.6
3023	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
3024	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3025					WH	HW					WH	HW
3026			95% Approx. Gamma UTL with 95% Coverage		361.4	475.2				95% Approx. Gamma UPL	284.4	353.4
3027				95% Gamma USL	756.8	1196						
3028												
3029	The following statistics are computed using gamma distribution and KM estimates											
3030	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3031				k hat (KM)		0.853				nu hat (KM)		121.1
3032					WH	HW					WH	HW
3033			95% Approx. Gamma UTL with 95% Coverage		304	344.2				95% Approx. Gamma UPL	245.5	268.8
3034				95% Gamma USL	594.4	757.9						
3035												
3036	Lognormal GOF Test on Detected Observations Only											
3037				Lilliefors Test Statistic		0.0869	Lilliefors GOF Test					
3038				5% Lilliefors Critical Value		0.114	Detected Data appear Lognormal at 5% Significance Level					
3039	Detected Data appear Lognormal at 5% Significance Level											
3040												
3041	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
3042				Mean in Original Scale		77.97				Mean in Log Scale		3.879
3043				SD in Original Scale		82.42				SD in Log Scale		1.045
3044				95% UTL95% Coverage		384.2				95% BCA UTL95% Coverage		346.1
3045				95% Bootstrap (%) UTL95% Coverage		375.3				95% UPL (t)		279.6
3046				90% Percentile (z)		184.6				95% Percentile (z)		269.9
3047				99% Percentile (z)		550.4				95% USL		1222
3048												
3049	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
3050				KM Mean of Logged Data		3.593				95% KM UTL (Lognormal)95% Coverage		796.6
3051				KM SD of Logged Data		1.557				95% KM UPL (Lognormal)		496.2
3052				95% KM Percentile Lognormal (z)		470.8				95% KM USL (Lognormal)		4461
3053												
3054	Background DL/2 Statistics Assuming Lognormal Distribution											
3055				Mean in Original Scale		76.69				Mean in Log Scale		3.6

	A	B	C	D	E	F	G	H	I	J	K	L
3056					SD in Original Scale	83.53					SD in Log Scale	1.567
3057					95% UTL95% Coverage	818.8					95% UPL (t)	508.4
3058					90% Percentile (z)	272.9					95% Percentile (z)	482.2
3059					99% Percentile (z)	1403					95% USL	4638
3060					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
3061												
3062					Nonparametric Distribution Free Background Statistics							
3063					Data appear to follow a Discernible Distribution at 5% Significance Level							
3064												
3065					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
3066					Order of Statistic, r	70					95% UTL with95% Coverage	406
3067					Approximate f	1.842					Confidence Coefficient (CC) achieved by UTL	0.876
3068					95% UPL	233.4					95% USL	464.5
3069					95% KM Chebyshev UPL	440.9						
3070												
3071					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
3072					data set free of outliers and consists of observations collected from clean unimpacted locations.							
3073					The use of USL tends to provide a balance between false positives and false negatives provided the data							
3074					represents a background data set and when many onsite observations need to be compared with the BTV.							
3075												
3076	Total PCB Congeners (calc'd)											
3077												
3078	General Statistics											
3079					Total Number of Observations	33					Number of Distinct Observations	33
3080											Number of Missing Observations	38
3081					Minimum	598.4					First Quartile	2323
3082					Second Largest	31010					Median	3372
3083					Maximum	47975					Third Quartile	5953
3084					Mean	6672					SD	9993
3085					Coefficient of Variation	1.498					Skewness	3.022
3086					Mean of logged Data	8.221					SD of logged Data	0.994
3087												
3088					Critical Values for Background Threshold Values (BTVs)							
3089					Tolerance Factor K (For UTL)	2.176					d2max (for USL)	2.787
3090												
3091					Normal GOF Test							
3092					Shapiro Wilk Test Statistic	0.562					Shapiro Wilk GOF Test	
3093					5% Shapiro Wilk Critical Value	0.931					Data Not Normal at 5% Significance Level	
3094					Lilliefors Test Statistic	0.341					Lilliefors GOF Test	
3095					5% Lilliefors Critical Value	0.154					Data Not Normal at 5% Significance Level	
3096					Data Not Normal at 5% Significance Level							
3097												
3098					Background Statistics Assuming Normal Distribution							
3099					95% UTL with 95% Coverage	28417					90% Percentile (z)	19479
3100					95% UPL (t)	23854					95% Percentile (z)	23109
3101					95% USL	34519					99% Percentile (z)	29919
3102												
3103					Gamma GOF Test							
3104					A-D Test Statistic	2.202					Anderson-Darling Gamma GOF Test	
3105					5% A-D Critical Value	0.776					Data Not Gamma Distributed at 5% Significance Level	
3106					K-S Test Statistic	0.22					Kolmogrov-Smirnoff Gamma GOF Test	
3107					5% K-S Critical Value	0.158					Data Not Gamma Distributed at 5% Significance Level	
3108					Data Not Gamma Distributed at 5% Significance Level							
3109												
3110					Gamma Statistics							
3111					k hat (MLE)	0.988					k star (bias corrected MLE)	0.919
3112					Theta hat (MLE)	6752					Theta star (bias corrected MLE)	7264
3113					nu hat (MLE)	65.22					nu star (bias corrected)	60.63
3114					MLE Mean (bias corrected)	6672					MLE Sd (bias corrected)	6962
3115												
3116					Background Statistics Assuming Gamma Distribution							
3117					95% Wilson Hilferty (WH) Approx. Gamma UPL	20066					90% Percentile	15688
3118					95% Hawkins Wixley (HW) Approx. Gamma UPL	19894					95% Percentile	20600
3119					95% WH Approx. Gamma UTL with 95% Coverage	27090					99% Percentile	32078
3120					95% HW Approx. Gamma UTL with 95% Coverage	27606						

	A	B	C	D	E	F	G	H	I	J	K	L
3121					95% WH USL	38808					95% HW USL	41177
3122												
3123						Lognormal GOF Test						
3124					Shapiro Wilk Test Statistic	0.938				Shapiro Wilk Lognormal GOF Test		
3125					5% Shapiro Wilk Critical Value	0.931				Data appear Lognormal at 5% Significance Level		
3126					Lilliefors Test Statistic	0.146				Lilliefors Lognormal GOF Test		
3127					5% Lilliefors Critical Value	0.154				Data appear Lognormal at 5% Significance Level		
3128						Data appear Lognormal at 5% Significance Level						
3129												
3130						Background Statistics assuming Lognormal Distribution						
3131				95% UTL with	95% Coverage	32308					90% Percentile (z)	13283
3132					95% UPL (t)	20523					95% Percentile (z)	19058
3133					95% USL	59267					99% Percentile (z)	37512
3134												
3135						Nonparametric Distribution Free Background Statistics						
3136						Data appear Lognormal at 5% Significance Level						
3137												
3138						Nonparametric Upper Limits for Background Threshold Values						
3139					Order of Statistic, r	33					95% UTL with 95% Coverage	47975
3140					Approximate f	1.737					Confidence Coefficient (CC) achieved by UTL	0.816
3141				95% Percentile Bootstrap UTL with	95% Coverage	47975					95% BCA Bootstrap UTL with 95% Coverage	47975
3142					95% UPL	36100					90% Percentile	16502
3143					90% Chebyshev UPL	37102					95% Percentile	27311
3144					95% Chebyshev UPL	50885					99% Percentile	42546
3145					95% USL	47975						
3146												
3147					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
3148					data set free of outliers and consists of observations collected from clean unimpacted locations.							
3149					The use of USL tends to provide a balance between false positives and false negatives provided the data							
3150					represents a background data set and when many onsite observations need to be compared with the BTV.							
3151												
3152	Total PCBs Aroclors (calc'd)											
3153												
3154						General Statistics						
3155					Total Number of Observations	48					Number of Missing Observations	0
3156					Number of Distinct Observations	41						
3157					Number of Detects	23					Number of Non-Detects	25
3158					Number of Distinct Detects	22					Number of Distinct Non-Detects	19
3159					Minimum Detect	4.95					Minimum Non-Detect	1.3
3160					Maximum Detect	53.45					Maximum Non-Detect	5.2
3161					Variance Detected	178.9					Percent Non-Detects	52.08%
3162					Mean Detected	14.67					SD Detected	13.38
3163					Mean of Detected Logged Data	2.401					SD of Detected Logged Data	0.711
3164												
3165						Critical Values for Background Threshold Values (BTVs)						
3166					Tolerance Factor K (For UTL)	2.069					d2max (for USL)	2.941
3167												
3168						Normal GOF Test on Detects Only						
3169					Shapiro Wilk Test Statistic	0.708				Shapiro Wilk GOF Test		
3170					5% Shapiro Wilk Critical Value	0.914				Data Not Normal at 5% Significance Level		
3171					Lilliefors Test Statistic	0.268				Lilliefors GOF Test		
3172					5% Lilliefors Critical Value	0.185				Data Not Normal at 5% Significance Level		
3173						Data Not Normal at 5% Significance Level						
3174												
3175						Kaplan Meier (KM) Background Statistics Assuming Normal Distribution						
3176					Mean	7.71					SD	11.25
3177					95% UTL95% Coverage	30.98					95% KM UPL (t)	26.78
3178					90% KM Percentile (z)	22.13					95% KM Percentile (z)	26.22
3179					99% KM Percentile (z)	33.88					95% KM USL	40.8
3180												
3181						DL/2 Substitution Background Statistics Assuming Normal Distribution						
3182					Mean	7.601					SD	11.44
3183					95% UTL95% Coverage	31.26					95% UPL (t)	26.99
3184					90% Percentile (z)	22.26					95% Percentile (z)	26.41
3185					99% Percentile (z)	34.21					95% USL	41.24

	A	B	C	D	E	F	G	H	I	J	K	L
3186	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
3187												
3188	Gamma GOF Tests on Detected Observations Only											
3189				A-D Test Statistic		1.769	Anderson-Darling GOF Test					
3190				5% A-D Critical Value		0.756	Data Not Gamma Distributed at 5% Significance Level					
3191				K-S Test Statistic		0.24	Kolmogrov-Smirnoff GOF					
3192				5% K-S Critical Value		0.184	Data Not Gamma Distributed at 5% Significance Level					
3193	Data Not Gamma Distributed at 5% Significance Level											
3194												
3195	Gamma Statistics on Detected Data Only											
3196				k hat (MLE)		1.904				k star (bias corrected MLE)		1.685
3197				Theta hat (MLE)		7.703				Theta star (bias corrected MLE)		8.706
3198				nu hat (MLE)		87.61				nu star (bias corrected)		77.51
3199				MLE Mean (bias corrected)		14.67						
3200				MLE Sd (bias corrected)		11.3				95% Percentile of Chisquare (2k)		8.447
3201												
3202	Gamma ROS Statistics using Imputed Non-Detects											
3203	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
3204	GROS may not be used when kstar of detected data is small such as < 0.1											
3205	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
3206	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
3207				Minimum		0.01				Mean		7.035
3208				Maximum		53.45				Median		0.01
3209				SD		11.77				CV		1.673
3210				k hat (MLE)		0.226				k star (bias corrected MLE)		0.225
3211				Theta hat (MLE)		31.17				Theta star (bias corrected MLE)		31.2
3212				nu hat (MLE)		21.67				nu star (bias corrected)		21.65
3213				MLE Mean (bias corrected)		7.035				MLE Sd (bias corrected)		14.81
3214				95% Percentile of Chisquare (2k)		2.249				90% Percentile		21.23
3215				95% Percentile		35.09				99% Percentile		72.51
3216	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
3217	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3218					WH	HW					WH	HW
3219			95% Approx. Gamma UTL with 95% Coverage		44.36	55.8				95% Approx. Gamma UPL	30.36	34.86
3220			95% Gamma USL		92.5	140.4						
3221												
3222	The following statistics are computed using gamma distribution and KM estimates											
3223	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3224				k hat (KM)		0.47				nu hat (KM)		45.07
3225					WH	HW					WH	HW
3226			95% Approx. Gamma UTL with 95% Coverage		31.76	32.92				95% Approx. Gamma UPL	24.29	24.45
3227			95% Gamma USL		54.84	61.17						
3228												
3229	Lognormal GOF Test on Detected Observations Only											
3230				Shapiro Wilk Test Statistic		0.861	Shapiro Wilk GOF Test					
3231				5% Shapiro Wilk Critical Value		0.914	Data Not Lognormal at 5% Significance Level					
3232				Lilliefors Test Statistic		0.216	Lilliefors GOF Test					
3233				5% Lilliefors Critical Value		0.185	Data Not Lognormal at 5% Significance Level					
3234	Data Not Lognormal at 5% Significance Level											
3235												
3236	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
3237				Mean in Original Scale		7.921				Mean in Log Scale		1.412
3238				SD in Original Scale		11.25				SD in Log Scale		1.094
3239				95% UTL95% Coverage		39.41				95% BCA UTL95% Coverage		47.82
3240				95% Bootstrap (%) UTL95% Coverage		49.03				95% UPL (t)		26.2
3241				90% Percentile (z)		16.67				95% Percentile (z)		24.8
3242				99% Percentile (z)		52.24				95% USL		102.3
3243												
3244	Background DL/2 Statistics Assuming Lognormal Distribution											
3245				Mean in Original Scale		7.601				Mean in Log Scale		1.167
3246				SD in Original Scale		11.44				SD in Log Scale		1.314
3247				95% UTL95% Coverage		48.7				95% UPL (t)		29.82
3248				90% Percentile (z)		17.31				95% Percentile (z)		27.91
3249				99% Percentile (z)		68.34				95% USL		153.3
3250	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											

	A	B	C	D	E	F	G	H	I	J	K	L
3251												
3252						Nonparametric Distribution Free Background Statistics						
3253						Data do not follow a Discernible Distribution (0.05)						
3254												
3255						Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)						
3256						Order of Statistic, r	47			95% UTL with95% Coverage		40.83
3257						Approximate f	1.237			Confidence Coefficient (CC) achieved by UTL		0.699
3258						95% UPL	39.26			95% USL		53.45
3259						95% KM Chebyshev UPL	57.26					
3260												
3261						Note: The use of USL to estimate a BTV is recommended only when the data set represents a background						
3262						data set free of outliers and consists of observations collected from clean unimpacted locations.						
3263						The use of USL tends to provide a balance between false positives and false negatives provided the data						
3264						represents a background data set and when many onsite observations need to be compared with the BTV.						
3265												
3266	Total PCDD/F (calc'd)											
3267												
3268	General Statistics											
3269						Total Number of Observations	33			Number of Distinct Observations		33
3270										Number of Missing Observations		13
3271						Minimum	5.628			First Quartile		16.53
3272						Second Largest	168.3			Median		39.1
3273						Maximum	307.5			Third Quartile		107.4
3274						Mean	67.47			SD		68.15
3275						Coefficient of Variation	1.01			Skewness		1.625
3276						Mean of logged Data	3.685			SD of logged Data		1.099
3277												
3278						Critical Values for Background Threshold Values (BTVs)						
3279						Tolerance Factor K (For UTL)	2.176			d2max (for USL)		2.787
3280												
3281						Normal GOF Test						
3282						Shapiro Wilk Test Statistic	0.817			Shapiro Wilk GOF Test		
3283						5% Shapiro Wilk Critical Value	0.931			Data Not Normal at 5% Significance Level		
3284						Lilliefors Test Statistic	0.182			Lilliefors GOF Test		
3285						5% Lilliefors Critical Value	0.154			Data Not Normal at 5% Significance Level		
3286						Data Not Normal at 5% Significance Level						
3287												
3288						Background Statistics Assuming Normal Distribution						
3289						95% UTL with 95% Coverage	215.8			90% Percentile (z)		154.8
3290						95% UPL (t)	184.6			95% Percentile (z)		179.6
3291						95% USL	257.4			99% Percentile (z)		226
3292												
3293						Gamma GOF Test						
3294						A-D Test Statistic	0.64			Anderson-Darling Gamma GOF Test		
3295						5% A-D Critical Value	0.774			Detected data appear Gamma Distributed at 5% Significance Level		
3296						K-S Test Statistic	0.12			Kolmogrov-Smirnoff Gamma GOF Test		
3297						5% K-S Critical Value	0.157			Detected data appear Gamma Distributed at 5% Significance Level		
3298						Detected data appear Gamma Distributed at 5% Significance Level						
3299												
3300						Gamma Statistics						
3301						k hat (MLE)	1.086			k star (bias corrected MLE)		1.008
3302						Theta hat (MLE)	62.11			Theta star (bias corrected MLE)		66.95
3303						nu hat (MLE)	71.69			nu star (bias corrected)		66.5
3304						MLE Mean (bias corrected)	67.47			MLE Sd (bias corrected)		67.21
3305												
3306						Background Statistics Assuming Gamma Distribution						
3307						95% Wilson Hilferty (WH) Approx. Gamma UPL	205.2			90% Percentile		155.1
3308						95% Hawkins Wixley (HW) Approx. Gamma UPL	213.7			95% Percentile		201.6
3309						95% WH Approx. Gamma UTL with 95% Coverage	274.3			99% Percentile		309.5
3310						95% HW Approx. Gamma UTL with 95% Coverage	295.8					
3311						95% WH USL	388.9			95% HW USL		439.9
3312												
3313						Lognormal GOF Test						
3314						Shapiro Wilk Test Statistic	0.951			Shapiro Wilk Lognormal GOF Test		
3315						5% Shapiro Wilk Critical Value	0.931			Data appear Lognormal at 5% Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
3316					Lilliefors Test Statistic	0.0956	**Lilliefors Lognormal GOF Test**					
3317					5% Lilliefors Critical Value	0.154	Data appear Lognormal at 5% Significance Level					
3318	**Data appear Lognormal at 5% Significance Level**											
3319												
3320	**Background Statistics assuming Lognormal Distribution**											
3321				95% UTL with	95% Coverage	435.2				90% Percentile (z)		162.9
3322					95% UPL (t)	263.5				95% Percentile (z)		242.8
3323					95% USL	851.1				99% Percentile (z)		513.3
3324												
3325	**Nonparametric Distribution Free Background Statistics**											
3326	**Data appear Gamma Distributed at 5% Significance Level**											
3327												
3328	**Nonparametric Upper Limits for Background Threshold Values**											
3329					Order of Statistic, r	33				95% UTL with	95% Coverage	307.5
3330					Approximate f	1.737				Confidence Coefficient (CC) achieved by UTL		0.816
3331				95% Percentile Bootstrap UTL with	95% Coverage	307.5				95% BCA Bootstrap UTL with	95% Coverage	307.5
3332					95% UPL	210.1				90% Percentile		155.6
3333					90% Chebyshev UPL	275				95% Percentile		163
3334					95% Chebyshev UPL	369				99% Percentile		263
3335					95% USL	307.5						
3336												
3337				Note: The use of USL to estimate a BTV is recommended only when the data set represents a background								
3338				data set free of outliers and consists of observations collected from clean unimpacted locations.								
3339				The use of USL tends to provide a balance between false positives and false negatives provided the data								
3340				represents a background data set and when many onsite observations need to be compared with the BTV.								
3341												
3342	**Total Petroleum Hydrocarbons (calc'd)**											
3343												
3344	**General Statistics**											
3345					Total Number of Observations	28				Number of Distinct Observations		28
3346										Number of Missing Observations		18
3347					Minimum	11.8				First Quartile		212.5
3348					Second Largest	446				Median		257.1
3349					Maximum	489				Third Quartile		311.5
3350					Mean	264.4				SD		112.2
3351					Coefficient of Variation	0.424				Skewness		0.0536
3352					Mean of logged Data	5.426				SD of logged Data		0.712
3353												
3354	**Critical Values for Background Threshold Values (BTVs)**											
3355					Tolerance Factor K (For UTL)	2.246				d2max (for USL)		2.714
3356												
3357	**Normal GOF Test**											
3358					Shapiro Wilk Test Statistic	0.962	**Shapiro Wilk GOF Test**					
3359					5% Shapiro Wilk Critical Value	0.924	Data appear Normal at 5% Significance Level					
3360					Lilliefors Test Statistic	0.169	**Lilliefors GOF Test**					
3361					5% Lilliefors Critical Value	0.167	Data Not Normal at 5% Significance Level					
3362	**Data appear Approximate Normal at 5% Significance Level**											
3363												
3364	**Background Statistics Assuming Normal Distribution**											
3365				95% UTL with	95% Coverage	516.4				90% Percentile (z)		408.2
3366					95% UPL (t)	458.9				95% Percentile (z)		448.9
3367					95% USL	569				99% Percentile (z)		525.4
3368												
3369	**Gamma GOF Test**											
3370					A-D Test Statistic	1.197	**Anderson-Darling Gamma GOF Test**					
3371					5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level					
3372					K-S Test Statistic	0.193	**Kolmogrov-Smirnoff Gamma GOF Test**					
3373					5% K-S Critical Value	0.166	Data Not Gamma Distributed at 5% Significance Level					
3374	**Data Not Gamma Distributed at 5% Significance Level**											
3375												
3376	**Gamma Statistics**											
3377					k hat (MLE)	3.459				k star (bias corrected MLE)		3.112
3378					Theta hat (MLE)	76.43				Theta star (bias corrected MLE)		84.95
3379					nu hat (MLE)	193.7				nu star (bias corrected)		174.3
3380					MLE Mean (bias corrected)	264.4				MLE Sd (bias corrected)		149.9

	A	B	C	D	E	F	G	H	I	J	K	L
3381												
3382						Background Statistics Assuming Gamma Distribution						
3383					95% Wilson Hilferty (WH) Approx. Gamma UPL	555					90% Percentile	465.3
3384					95% Hawkins Wixley (HW) Approx. Gamma UPL	586.9					95% Percentile	549
3385					95% WH Approx. Gamma UTL with 95% Coverage	682.2					99% Percentile	730.1
3386					95% HW Approx. Gamma UTL with 95% Coverage	739.2						
3387					95% WH USL	814.1					95% HW USL	902.6
3388												
3389						Lognormal GOF Test						
3390					Shapiro Wilk Test Statistic	0.719					Shapiro Wilk Lognormal GOF Test	
3391					5% Shapiro Wilk Critical Value	0.924					Data Not Lognormal at 5% Significance Level	
3392					Lilliefors Test Statistic	0.245					Lilliefors Lognormal GOF Test	
3393					5% Lilliefors Critical Value	0.167					Data Not Lognormal at 5% Significance Level	
3394						Data Not Lognormal at 5% Significance Level						
3395												
3396						Background Statistics assuming Lognormal Distribution						
3397					95% UTL with 95% Coverage	1125					90% Percentile (z)	566.1
3398					95% UPL (t)	781					95% Percentile (z)	733.3
3399					95% USL	1571					99% Percentile (z)	1192
3400												
3401						Nonparametric Distribution Free Background Statistics						
3402						Data appear Approximate Normal at 5% Significance Level						
3403												
3404						Nonparametric Upper Limits for Background Threshold Values						
3405					Order of Statistic, r	28					95% UTL with 95% Coverage	489
3406					Approximate f	1.474					Confidence Coefficient (CC) achieved by UTL	0.762
3407					95% Percentile Bootstrap UTL with 95% Coverage	489					95% BCA Bootstrap UTL with 95% Coverage	489
3408					95% UPL	469.7					90% Percentile	435
3409					90% Chebyshev UPL	607					95% Percentile	443.7
3410					95% Chebyshev UPL	762.1					99% Percentile	477.4
3411					95% USL	489						
3412												
3413						Note: The use of USL to estimate a BTV is recommended only when the data set represents a background						
3414						data set free of outliers and consists of observations collected from clean unimpacted locations.						
3415						The use of USL tends to provide a balance between false positives and false negatives provided the data						
3416						represents a background data set and when many onsite observations need to be compared with the BTV.						
3417												
3418	Tributyltin ion											
3419												
3420						General Statistics						
3421					Total Number of Observations	3					Number of Missing Observations	43
3422					Number of Distinct Observations	3						
3423					Number of Detects	2					Number of Non-Detects	1
3424					Number of Distinct Detects	2					Number of Distinct Non-Detects	1
3425					Minimum Detect	0.72					Minimum Non-Detect	0.087
3426					Maximum Detect	1.1					Maximum Non-Detect	0.087
3427					Variance Detected	0.0722					Percent Non-Detects	33.33%
3428					Mean Detected	0.91					SD Detected	0.269
3429					Mean of Detected Logged Data	-0.117					SD of Detected Logged Data	0.3
3430												
3431						Warning: Data set has only 2 Detected Values.						
3432						This is not enough to compute meaningful or reliable statistics and estimates.						
3433												
3434												
3435						Critical Values for Background Threshold Values (BTVs)						
3436					Tolerance Factor K (For UTL)	7.656					d2max (for USL)	1.153
3437												
3438						Normal GOF Test on Detects Only						
3439						Not Enough Data to Perform GOF Test						
3440												
3441						Kaplan Meier (KM) Background Statistics Assuming Normal Distribution						
3442					Mean	0.636					SD	0.418
3443					95% UTL95% Coverage	3.835					95% KM UPL (t)	2.044
3444					90% KM Percentile (z)	1.171					95% KM Percentile (z)	1.323
3445					99% KM Percentile (z)	1.608					95% KM USL	1.117

	A	B	C	D	E	F	G	H	I	J	K	L
3446												
3447	DL/2 Substitution Background Statistics Assuming Normal Distribution											
3448					Mean	0.621					SD	0.535
3449					95% UTL95% Coverage	4.718					95% UPL (t)	2.426
3450					90% Percentile (z)	1.307					95% Percentile (z)	1.501
3451					99% Percentile (z)	1.866					95% USL	1.238
3452	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
3453												
3454	Gamma GOF Tests on Detected Observations Only											
3455	Not Enough Data to Perform GOF Test											
3456												
3457	Gamma Statistics on Detected Data Only											
3458					k hat (MLE)	22.6					k star (bias corrected MLE)	N/A
3459					Theta hat (MLE)	0.0403					Theta star (bias corrected MLE)	N/A
3460					nu hat (MLE)	90.4					nu star (bias corrected)	N/A
3461					MLE Mean (bias corrected)	N/A						
3462					MLE Sd (bias corrected)	N/A					95% Percentile of Chisquare (2k)	N/A
3463												
3464	The following statistics are computed using gamma distribution and KM estimates											
3465	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3466					k hat (KM)	2.314					nu hat (KM)	13.89
3467					WH	HW					WH	HW
3468	95% Approx. Gamma UTL with 95% Coverage				20.1	33.89			95% Approx. Gamma UPL		4.41	5.433
3469				95% Gamma USL	1.263	1.301						
3470												
3471	Lognormal GOF Test on Detected Observations Only											
3472	Not Enough Data to Perform GOF Test											
3473												
3474	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
3475					Mean in Original Scale	0.72					Mean in Log Scale	-0.437
3476					SD in Original Scale	0.38					SD in Log Scale	0.595
3477					95% UTL95% Coverage	61.34					95% BCA UTL95% Coverage	N/A
3478					95% Bootstrap (%) UTL95% Coverage	N/A					95% UPL (t)	4.797
3479					90% Percentile (z)	1.384					95% Percentile (z)	1.718
3480					99% Percentile (z)	2.576					95% USL	1.282
3481												
3482	Background DL/2 Statistics Assuming Lognormal Distribution											
3483					Mean in Original Scale	0.621					Mean in Log Scale	-1.123
3484					SD in Original Scale	0.535					SD in Log Scale	1.756
3485					95% UTL95% Coverage	223563					95% UPL (t)	121.1
3486					90% Percentile (z)	3.087					95% Percentile (z)	5.841
3487					99% Percentile (z)	19.32					95% USL	2.463
3488	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
3489												
3490	Nonparametric Distribution Free Background Statistics											
3491	Data do not follow a Discernible Distribution (0.05)											
3492												
3493	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
3494					Order of Statistic, r	3			95% UTL with95% Coverage			1.1
3495					Approximate f	0.158			Confidence Coefficient (CC) achieved by UTL			0.143
3496					95% UPL	1.1			95% USL			1.1
3497					95% KM Chebyshev UPL	2.739						
3498												
3499	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
3500	data set free of outliers and consists of observations collected from clean unimpacted locations.											
3501	The use of USL tends to provide a balance between false positives and false negatives provided the data											
3502	represents a background data set and when many onsite observations need to be compared with the BTV.											
3503												
3504	Zinc											
3505												
3506	General Statistics											
3507					Total Number of Observations	67			Number of Distinct Observations			64
3508									Number of Missing Observations			4
3509					Minimum	40.4			First Quartile			59.2
3510					Second Largest	114			Median			73.4

	A	B	C	D	E	F	G	H	I	J	K	L
3511					Maximum	165					Third Quartile	88.83
3512					Mean	74.68					SD	21.3
3513					Coefficient of Variation	0.285					Skewness	1.117
3514					Mean of logged Data	4.275					SD of logged Data	0.278
3515												
3516					**Critical Values for Background Threshold Values (BTVs)**							
3517					Tolerance Factor K (For UTL)	1.994					d2max (for USL)	3.068
3518												
3519					**Normal GOF Test**							
3520					Shapiro Wilk Test Statistic	0.938	**Normal GOF Test**					
3521					5% Shapiro Wilk P Value	0.00337	Data Not Normal at 5% Significance Level					
3522					Lilliefors Test Statistic	0.0863	**Lilliefors GOF Test**					
3523					5% Lilliefors Critical Value	0.108	Data appear Normal at 5% Significance Level					
3524					**Data appear Approximate Normal at 5% Significance Level**							
3525												
3526					**Background Statistics Assuming Normal Distribution**							
3527				95% UTL with	95% Coverage	117.2					90% Percentile (z)	102
3528					95% UPL (t)	110.5					95% Percentile (z)	109.7
3529					95% USL	140					99% Percentile (z)	124.2
3530												
3531					**Gamma GOF Test**							
3532					A-D Test Statistic	0.314	**Anderson-Darling Gamma GOF Test**					
3533					5% A-D Critical Value	0.75	Detected data appear Gamma Distributed at 5% Significance Level					
3534					K-S Test Statistic	0.058	**Kolmogrov-Smirnoff Gamma GOF Test**					
3535					5% K-S Critical Value	0.109	Detected data appear Gamma Distributed at 5% Significance Level					
3536					**Detected data appear Gamma Distributed at 5% Significance Level**							
3537												
3538					**Gamma Statistics**							
3539					k hat (MLE)	13.3					k star (bias corrected MLE)	12.71
3540					Theta hat (MLE)	5.615					Theta star (bias corrected MLE)	5.874
3541					nu hat (MLE)	1782					nu star (bias corrected)	1704
3542					MLE Mean (bias corrected)	74.68					MLE Sd (bias corrected)	20.94
3543												
3544					**Background Statistics Assuming Gamma Distribution**							
3545				95% Wilson Hilferty (WH) Approx. Gamma UPL		112.5					90% Percentile	102.5
3546				95% Hawkins Wixley (HW) Approx. Gamma UPL		112.9					95% Percentile	112.1
3547				95% WH Approx. Gamma UTL with	95% Coverage	121.2					99% Percentile	131.8
3548				95% HW Approx. Gamma UTL with	95% Coverage	122						
3549					95% WH USL	154.4					95% HW USL	157.3
3550												
3551					**Lognormal GOF Test**							
3552					Shapiro Wilk Test Statistic	0.978	**Shapiro Wilk Lognormal GOF Test**					
3553					5% Shapiro Wilk P Value	0.546	Data appear Lognormal at 5% Significance Level					
3554					Lilliefors Test Statistic	0.0711	**Lilliefors Lognormal GOF Test**					
3555					5% Lilliefors Critical Value	0.108	Data appear Lognormal at 5% Significance Level					
3556					**Data appear Lognormal at 5% Significance Level**							
3557												
3558					**Background Statistics assuming Lognormal Distribution**							
3559				95% UTL with	95% Coverage	125.1					90% Percentile (z)	102.6
3560					95% UPL (t)	114.6					95% Percentile (z)	113.5
3561					95% USL	168.5					99% Percentile (z)	137.2
3562												
3563					**Nonparametric Distribution Free Background Statistics**							
3564					**Data appear Approximate Normal at 5% Significance Level**							
3565												
3566					**Nonparametric Upper Limits for Background Threshold Values**							
3567					Order of Statistic, r	66					95% UTL with 95% Coverage	114
3568					Approximate f	1.737					Confidence Coefficient (CC) achieved by UTL	0.854
3569				95% Percentile Bootstrap UTL with	95% Coverage	113.7					95% BCA Bootstrap UTL with 95% Coverage	114
3570					95% UPL	109.8					90% Percentile	96.2
3571					90% Chebyshev UPL	139.1					95% Percentile	103.8
3572					95% Chebyshev UPL	168.2					99% Percentile	131.3
3573					95% USL	165						
3574												
3575					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							

	A	B	C	D	E	F	G	H	I	J	K	L
3576	data set free of outliers and consists of observations collected from clean unimpacted locations.											
3577	The use of USL tends to provide a balance between false positives and false negatives provided the data											
3578	represents a background data set and when many onsite observations need to be compared with the BTV.											
3579												

	A	B	C	D	E	F	G	H	I	J	K	L
1				Background Statistics for Data Sets with Non-Detects								
2		User Selected Options										
3		Date/Time of Computation		5/8/2015 1:17:22 PM								
4		From File		20150505_ProUCL_Input_noOUTs_filtered_allICs.xls								
5		Full Precision		OFF								
6		Confidence Coefficient		95%								
7		Coverage		95%								
8		Different or Future K Observations		1								
9		Number of Bootstrap Operations		2000								
10	highlighted cell indicates method/value selected for given analyte in Tables 7.3-1 and AppH-2											
11	Aldrin											
12												
13					General Statistics							
14				Total Number of Observations		47		Number of Missing Observations				1
15				Number of Distinct Observations		37						
16				Number of Detects		5		Number of Non-Detects				42
17				Number of Distinct Detects		5		Number of Distinct Non-Detects				32
18				Minimum Detect		0.24		Minimum Non-Detect				0.0329
19				Maximum Detect		0.41		Maximum Non-Detect				0.49
20				Variance Detected		0.00392		Percent Non-Detects				89.36%
21				Mean Detected		0.324		SD Detected				0.0626
22				Mean of Detected Logged Data		-1.143		SD of Detected Logged Data				0.197
23												
24					Critical Values for Background Threshold Values (BTVs)							
25				Tolerance Factor K (For UTL)		2.074		d2max (for USL)				2.933
26												
27					Normal GOF Test on Detects Only							
28				Shapiro Wilk Test Statistic		0.994		Shapiro Wilk GOF Test				
29				5% Shapiro Wilk Critical Value		0.762		Detected Data appear Normal at 5% Significance Level				
30				Lilliefors Test Statistic		0.152		Lilliefors GOF Test				
31				5% Lilliefors Critical Value		0.396		Detected Data appear Normal at 5% Significance Level				
32					Detected Data appear Normal at 5% Significance Level							
33												
34					Kaplan Meier (KM) Background Statistics Assuming Normal Distribution							
35				Mean		0.0674		SD				0.0953
36				95% UTL95% Coverage		0.265		95% KM UPL (t)				0.229
37				90% KM Percentile (z)		0.19		95% KM Percentile (z)				0.224
38				99% KM Percentile (z)		0.289		95% KM USL				0.347
39												
40					DL/2 Substitution Background Statistics Assuming Normal Distribution							
41				Mean		0.104		SD				0.0987
42				95% UTL95% Coverage		0.309		95% UPL (t)				0.272
43				90% Percentile (z)		0.231		95% Percentile (z)				0.266
44				99% Percentile (z)		0.334		95% USL				0.394
45					DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons							
46												
47					Gamma GOF Tests on Detected Observations Only							
48				A-D Test Statistic		0.182		Anderson-Darling GOF Test				
49				5% A-D Critical Value		0.679		Detected data appear Gamma Distributed at 5% Significance Level				
50				K-S Test Statistic		0.155		Kolmogrov-Smirnoff GOF				
51				5% K-S Critical Value		0.357		Detected data appear Gamma Distributed at 5% Significance Level				
52					Detected data appear Gamma Distributed at 5% Significance Level							
53												
54					Gamma Statistics on Detected Data Only							
55				k hat (MLE)		32.78		k star (bias corrected MLE)				13.24
56				Theta hat (MLE)		0.00988		Theta star (bias corrected MLE)				0.0244
57				nu hat (MLE)		327.8		nu star (bias corrected)				132.4
58				MLE Mean (bias corrected)		0.324						
59				MLE Sd (bias corrected)		0.089		95% Percentile of Chisquare (2k)				39.49
60												
61					Gamma ROS Statistics using Imputed Non-Detects							
62					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
63					GROS may not be used when kstar of detected data is small such as < 0.1							
64					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
65					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							

	A	B	C	D	E	F	G	H	I	J	K	L
66					Minimum	0.01					Mean	0.107
67					Maximum	0.41					Median	0.0775
68					SD	0.0843					CV	0.791
69					k hat (MLE)	2.215					k star (bias corrected MLE)	2.088
70					Theta hat (MLE)	0.0481					Theta star (bias corrected MLE)	0.0511
71					nu hat (MLE)	208.2					nu star (bias corrected)	196.2
72					MLE Mean (bias corrected)	0.107					MLE Sd (bias corrected)	0.0738
73					95% Percentile of Chisquare (2k)	9.77					90% Percentile	0.205
74					95% Percentile	0.249					99% Percentile	0.347
75	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
76	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
77					WH	HW					WH	HW
78	95% Approx. Gamma UTL with 95% Coverage				0.301	0.311			95% Approx. Gamma UPL		0.25	0.255
79				95% Gamma USL	0.441	0.475						
80												
81	**The following statistics are computed using gamma distribution and KM estimates**											
82	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
83					k hat (KM)	0.501					nu hat (KM)	47.11
84					WH	HW					WH	HW
85	95% Approx. Gamma UTL with 95% Coverage				0.226	0.22			95% Approx. Gamma UPL		0.18	0.173
86				95% Gamma USL	0.359	0.362						
87												
88	**Lognormal GOF Test on Detected Observations Only**											
89				Shapiro Wilk Test Statistic		0.988	**Shapiro Wilk GOF Test**					
90				5% Shapiro Wilk Critical Value		0.762	Detected Data appear Lognormal at 5% Significance Level					
91				Lilliefors Test Statistic		0.179	**Lilliefors GOF Test**					
92				5% Lilliefors Critical Value		0.396	Detected Data appear Lognormal at 5% Significance Level					
93	**Detected Data appear Lognormal at 5% Significance Level**											
94												
95	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
96				Mean in Original Scale		0.159			Mean in Log Scale			-1.892
97				SD in Original Scale		0.0631			SD in Log Scale			0.298
98				95% UTL95% Coverage		0.28			95% BCA UTL95% Coverage			0.392
99				95% Bootstrap (%) UTL95% Coverage		0.392			95% UPL (t)			0.25
100				90% Percentile (z)		0.221			95% Percentile (z)			0.246
101				99% Percentile (z)		0.302			95% USL			0.361
102												
103	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
104				KM Mean of Logged Data		-3.142			95% KM UTL (Lognormal)95% Coverage			0.199
105				KM SD of Logged Data		0.738			95% KM UPL (Lognormal)			0.151
106				95% KM Percentile Lognormal (z)		0.145			95% KM USL (Lognormal)			0.376
107												
108	**Background DL/2 Statistics Assuming Lognormal Distribution**											
109				Mean in Original Scale		0.104			Mean in Log Scale			-2.731
110				SD in Original Scale		0.0987			SD in Log Scale			1.025
111				95% UTL95% Coverage		0.546			95% UPL (t)			0.371
112				90% Percentile (z)		0.242			95% Percentile (z)			0.352
113				99% Percentile (z)		0.708			95% USL			1.318
114	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
115												
116	**Nonparametric Distribution Free Background Statistics**											
117	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
118												
119	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
120				Order of Statistic, r		46			95% UTL with95% Coverage			0.47
121				Approximate f		1.211			Confidence Coefficient (CC) achieved by UTL			0.688
122				95% UPL		0.446			95% USL			0.49
123				95% KM Chebyshev UPL		0.487						
124												
125	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
126	data set free of outliers and consists of observations collected from clean unimpacted locations.											
127	The use of USL tends to provide a balance between false positives and false negatives provided the data											
128	represents a background data set and when many onsite observations need to be compared with the BTV.											
129												
130	**Arsenic**											

	A	B	C	D	E	F	G	H	I	J	K	L
131												
132	**General Statistics**											
133					Total Number of Observations	68				Number of Distinct Observations		54
134										Number of Missing Observations		3
135					Minimum	1.9				First Quartile		2.44
136					Second Largest	3.7				Median		2.713
137					Maximum	3.75				Third Quartile		3.153
138					Mean	2.77				SD		0.47
139					Coefficient of Variation	0.17				Skewness		0.275
140					Mean of logged Data	1.005				SD of logged Data		0.17
141												
142					**Critical Values for Background Threshold Values (BTVs)**							
143					Tolerance Factor K (For UTL)	1.991				d2max (for USL)		3.073
144												
145					**Normal GOF Test**							
146					Shapiro Wilk Test Statistic	0.958				**Normal GOF Test**		
147					5% Shapiro Wilk P Value	0.0588				Data appear Normal at 5% Significance Level		
148					Lilliefors Test Statistic	0.112				**Lilliefors GOF Test**		
149					5% Lilliefors Critical Value	0.107				Data Not Normal at 5% Significance Level		
150					**Data appear Approximate Normal at 5% Significance Level**							
151												
152					**Background Statistics Assuming Normal Distribution**							
153					95% UTL with 95% Coverage	3.706				90% Percentile (z)		3.373
154					95% UPL (t)	3.56				95% Percentile (z)		3.543
155					95% USL	4.215				99% Percentile (z)		3.864
156												
157					**Gamma GOF Test**							
158					A-D Test Statistic	0.421				**Anderson-Darling Gamma GOF Test**		
159					5% A-D Critical Value	0.749				Detected data appear Gamma Distributed at 5% Significance Level		
160					K-S Test Statistic	0.0948				**Kolmogrov-Smirnoff Gamma GOF Test**		
161					5% K-S Critical Value	0.108				Detected data appear Gamma Distributed at 5% Significance Level		
162					**Detected data appear Gamma Distributed at 5% Significance Level**							
163												
164					**Gamma Statistics**							
165					k hat (MLE)	35.37				k star (bias corrected MLE)		33.82
166					Theta hat (MLE)	0.0783				Theta star (bias corrected MLE)		0.0819
167					nu hat (MLE)	4810				nu star (bias corrected)		4599
168					MLE Mean (bias corrected)	2.77				MLE Sd (bias corrected)		0.476
169												
170					**Background Statistics Assuming Gamma Distribution**							
171					95% Wilson Hilferty (WH) Approx. Gamma UPL	3.605				90% Percentile		3.395
172					95% Hawkins Wixley (HW) Approx. Gamma UPL	3.612				95% Percentile		3.597
173					95% WH Approx. Gamma UTL with 95% Coverage	3.781				99% Percentile		3.997
174					95% HW Approx. Gamma UTL with 95% Coverage	3.793						
175					95% WH USL	4.442				95% HW USL		4.479
176												
177					**Lognormal GOF Test**							
178					Shapiro Wilk Test Statistic	0.966				**Shapiro Wilk Lognormal GOF Test**		
179					5% Shapiro Wilk P Value	0.157				Data appear Lognormal at 5% Significance Level		
180					Lilliefors Test Statistic	0.0843				**Lilliefors Lognormal GOF Test**		
181					5% Lilliefors Critical Value	0.107				Data appear Lognormal at 5% Significance Level		
182					**Data appear Lognormal at 5% Significance Level**							
183												
184					**Background Statistics assuming Lognormal Distribution**							
185					95% UTL with 95% Coverage	3.832				90% Percentile (z)		3.396
186					95% UPL (t)	3.635				95% Percentile (z)		3.613
187					95% USL	4.607				99% Percentile (z)		4.057
188												
189					**Nonparametric Distribution Free Background Statistics**							
190					**Data appear Approximate Normal at 5% Significance Level**							
191												
192					**Nonparametric Upper Limits for Background Threshold Values**							
193					Order of Statistic, r	67				95% UTL with 95% Coverage		3.7
194					Approximate f	1.763				Confidence Coefficient (CC) achieved by UTL		0.86
195					95% Percentile Bootstrap UTL with 95% Coverage	3.7				95% BCA Bootstrap UTL with 95% Coverage		3.7

	A	B	C	D	E	F	G	H	I	J	K	L
196					95% UPL	3.676					90% Percentile	3.395
197					90% Chebyshev UPL	4.191					95% Percentile	3.618
198					95% Chebyshev UPL	4.834					99% Percentile	3.717
199					95% USL	3.75						
200												
201					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
202					data set free of outliers and consists of observations collected from clean unimpacted locations.							
203					The use of USL tends to provide a balance between false positives and false negatives provided the data							
204					represents a background data set and when many onsite observations need to be compared with the BTV.							
205												
206	**Benzo(a)pyrene**											
207												
208					**General Statistics**							
209					Total Number of Observations	66					Number of Missing Observations	5
210					Number of Distinct Observations	48						
211					Number of Detects	37					Number of Non-Detects	29
212					Number of Distinct Detects	34					Number of Distinct Non-Detects	19
213					Minimum Detect	0.53					Minimum Non-Detect	0.33
214					Maximum Detect	13					Maximum Non-Detect	21
215					Variance Detected	8.69					Percent Non-Detects	43.94%
216					Mean Detected	6.304					SD Detected	2.948
217					Mean of Detected Logged Data	1.695					SD of Detected Logged Data	0.626
218												
219					**Critical Values for Background Threshold Values (BTVs)**							
220					Tolerance Factor K (For UTL)	1.997					d2max (for USL)	3.062
221												
222					**Normal GOF Test on Detects Only**							
223					Shapiro Wilk Test Statistic	0.979					**Shapiro Wilk GOF Test**	
224					5% Shapiro Wilk Critical Value	0.936					Detected Data appear Normal at 5% Significance Level	
225					Lilliefors Test Statistic	0.0595					**Lilliefors GOF Test**	
226					5% Lilliefors Critical Value	0.146					Detected Data appear Normal at 5% Significance Level	
227					**Detected Data appear Normal at 5% Significance Level**							
228												
229					**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**							
230					Mean	3.952					SD	3.582
231					95% UTL95% Coverage	11.1					95% KM UPL (t)	9.974
232					90% KM Percentile (z)	8.542					95% KM Percentile (z)	9.843
233					99% KM Percentile (z)	12.28					95% KM USL	14.92
234												
235					**DL/2 Substitution Background Statistics Assuming Normal Distribution**							
236					Mean	4.282					SD	3.444
237					95% UTL95% Coverage	11.16					95% UPL (t)	10.07
238					90% Percentile (z)	8.696					95% Percentile (z)	9.948
239					99% Percentile (z)	12.29					95% USL	14.83
240					**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**							
241												
242					**Gamma GOF Tests on Detected Observations Only**							
243					A-D Test Statistic	0.447					**Anderson-Darling GOF Test**	
244					5% A-D Critical Value	0.753					Detected data appear Gamma Distributed at 5% Significance Level	
245					K-S Test Statistic	0.12					**Kolmogrov-Smirnoff GOF**	
246					5% K-S Critical Value	0.146					Detected data appear Gamma Distributed at 5% Significance Level	
247					**Detected data appear Gamma Distributed at 5% Significance Level**							
248												
249					**Gamma Statistics on Detected Data Only**							
250					k hat (MLE)	3.585					k star (bias corrected MLE)	3.312
251					Theta hat (MLE)	1.758					Theta star (bias corrected MLE)	1.903
252					nu hat (MLE)	265.3					nu star (bias corrected)	245.1
253					MLE Mean (bias corrected)	6.304						
254					MLE Sd (bias corrected)	3.463					95% Percentile of Chisquare (2k)	13.52
255												
256					**Gamma ROS Statistics using Imputed Non-Detects**							
257					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
258					GROS may not be used when kstar of detected data is small such as < 0.1							
259					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
260					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							

	A	B	C	D	E	F	G	H	I	J	K	L
261					Minimum	0.169					Mean	4.234
262					Maximum	13					Median	3.25
263					SD	3.282					CV	0.775
264					k hat (MLE)	1.452					k star (bias corrected MLE)	1.396
265					Theta hat (MLE)	2.917					Theta star (bias corrected MLE)	3.033
266					nu hat (MLE)	191.6					nu star (bias corrected)	184.3
267					MLE Mean (bias corrected)	4.234					MLE Sd (bias corrected)	3.584
268					95% Percentile of Chisquare (2k)	7.451					90% Percentile	8.98
269					95% Percentile	11.3					99% Percentile	16.56
270	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
271	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
272					WH	HW					WH	HW
273	95% Approx. Gamma UTL with 95% Coverage				13.65	14.62				95% Approx. Gamma UPL	11.37	11.93
274				95% Gamma USL	23.55	27.17						
275												
276	**The following statistics are computed using gamma distribution and KM estimates**											
277	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
278					k hat (KM)	1.217					nu hat (KM)	160.7
279					WH	HW					WH	HW
280	95% Approx. Gamma UTL with 95% Coverage				15.71	17.39				95% Approx. Gamma UPL	12.6	13.52
281				95% Gamma USL	29.86	36.74						
282												
283	**Lognormal GOF Test on Detected Observations Only**											
284				Shapiro Wilk Test Statistic		0.887	**Shapiro Wilk GOF Test**					
285				5% Shapiro Wilk Critical Value		0.936	Data Not Lognormal at 5% Significance Level					
286				Lilliefors Test Statistic		0.161	**Lilliefors GOF Test**					
287				5% Lilliefors Critical Value		0.146	Data Not Lognormal at 5% Significance Level					
288	**Data Not Lognormal at 5% Significance Level**											
289												
290	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
291				Mean in Original Scale		4.316				Mean in Log Scale		1.181
292				SD in Original Scale		3.18				SD in Log Scale		0.775
293				95% UTL95% Coverage		15.33				95% BCA UTL95% Coverage		12
294				95% Bootstrap (%) UTL95% Coverage		12				95% UPL (t)		12
295				90% Percentile (z)		8.802				95% Percentile (z)		11.67
296				99% Percentile (z)		19.79				95% USL		35.02
297												
298	**Background DL/2 Statistics Assuming Lognormal Distribution**											
299				Mean in Original Scale		4.282				Mean in Log Scale		1.012
300				SD in Original Scale		3.444				SD in Log Scale		1.08
301				95% UTL95% Coverage		23.78				95% UPL (t)		16.91
302				90% Percentile (z)		10.98				95% Percentile (z)		16.26
303				99% Percentile (z)		33.94				95% USL		75.17
304	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
305												
306	**Nonparametric Distribution Free Background Statistics**											
307	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
308												
309	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
310				Order of Statistic, r		65				95% UTL with95% Coverage		13
311				Approximate f		1.711				Confidence Coefficient (CC) achieved by UTL		0.848
312				95% UPL		12				95% USL		21
313				95% KM Chebyshev UPL		19.68						
314												
315	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
316	data set free of outliers and consists of observations collected from clean unimpacted locations.											
317	The use of USL tends to provide a balance between false positives and false negatives provided the data											
318	represents a background data set and when many onsite observations need to be compared with the BTV.											
319												
320	**Bis(2-ethylhexyl) phthalate**											
321												
322	**General Statistics**											
323				Total Number of Observations		63				Number of Missing Observations		8
324				Number of Distinct Observations		48						
325				Number of Detects		48				Number of Non-Detects		15

	A	B	C	D	E	F	G	H	I	J	K	L
326					Number of Distinct Detects	41				Number of Distinct Non-Detects		10
327					Minimum Detect	4.2				Minimum Non-Detect		3.2
328					Maximum Detect	120				Maximum Non-Detect		31
329					Variance Detected	876.4				Percent Non-Detects		23.81%
330					Mean Detected	39.8				SD Detected		29.6
331					Mean of Detected Logged Data	3.37				SD of Detected Logged Data		0.874
332												
333					**Critical Values for Background Threshold Values (BTVs)**							
334					Tolerance Factor K (For UTL)	2.007				d2max (for USL)		3.045
335												
336					**Normal GOF Test on Detects Only**							
337					Shapiro Wilk Test Statistic	0.893				**Shapiro Wilk GOF Test**		
338					5% Shapiro Wilk Critical Value	0.947				Data Not Normal at 5% Significance Level		
339					Lilliefors Test Statistic	0.143				**Lilliefors GOF Test**		
340					5% Lilliefors Critical Value	0.128				Data Not Normal at 5% Significance Level		
341					**Data Not Normal at 5% Significance Level**							
342												
343					**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**							
344					Mean	32.86				SD		28.63
345					95% UTL95% Coverage	90.3				95% KM UPL (t)		81.04
346					90% KM Percentile (z)	69.54				95% KM Percentile (z)		79.94
347					99% KM Percentile (z)	99.45				95% KM USL		120
348												
349					**DL/2 Substitution Background Statistics Assuming Normal Distribution**							
350					Mean	32.87				SD		28.7
351					95% UTL95% Coverage	90.46				95% UPL (t)		81.17
352					90% Percentile (z)	69.65				95% Percentile (z)		80.08
353					99% Percentile (z)	99.64				95% USL		120.3
354					**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**							
355												
356					**Gamma GOF Tests on Detected Observations Only**							
357					A-D Test Statistic	0.25				**Anderson-Darling GOF Test**		
358					5% A-D Critical Value	0.765				Detected data appear Gamma Distributed at 5% Significance Level		
359					K-S Test Statistic	0.0618				**Kolmogrov-Smirnoff GOF**		
360					5% K-S Critical Value	0.13				Detected data appear Gamma Distributed at 5% Significance Level		
361					**Detected data appear Gamma Distributed at 5% Significance Level**							
362												
363					**Gamma Statistics on Detected Data Only**							
364					k hat (MLE)	1.743				k star (bias corrected MLE)		1.648
365					Theta hat (MLE)	22.84				Theta star (bias corrected MLE)		24.16
366					nu hat (MLE)	167.3				nu star (bias corrected)		158.2
367					MLE Mean (bias corrected)	39.8						
368					MLE Sd (bias corrected)	31.01				95% Percentile of Chisquare (2k)		8.32
369												
370					**Gamma ROS Statistics using Imputed Non-Detects**							
371					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
372					GROS may not be used when kstar of detected data is small such as < 0.1							
373					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
374					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
375					Minimum	0.01				Mean		32.31
376					Maximum	120				Median		23
377					SD	29.23				CV		0.905
378					k hat (MLE)	1.031				k star (bias corrected MLE)		0.992
379					Theta hat (MLE)	31.35				Theta star (bias corrected MLE)		32.56
380					nu hat (MLE)	129.9				nu star (bias corrected)		125
381					MLE Mean (bias corrected)	32.31				MLE Sd (bias corrected)		32.44
382					95% Percentile of Chisquare (2k)	5.962				90% Percentile		74.54
383					95% Percentile	97.06				99% Percentile		149.4
384					**The following statistics are computed using Gamma ROS Statistics on Imputed Data**							
385					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
386					WH	HW					WH	HW
387			95% Approx. Gamma UTL with 95% Coverage		117.1	130.2				95% Approx. Gamma UPL	95.31	102.9
388					95% Gamma USL	209.3	255.5					
389												
390					**The following statistics are computed using gamma distribution and KM estimates**							

	A	B	C	D	E	F	G	H	I	J	K	L
391	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
392					k hat (KM)	1.317					nu hat (KM)	166
393					WH	HW					WH	HW
394	95% Approx. Gamma UTL with 95% Coverage				108.8	115.5			95% Approx. Gamma UPL		89.77	93.26
395				95% Gamma USL	187.8	214.1						
396												
397	Lognormal GOF Test on Detected Observations Only											
398				Shapiro Wilk Test Statistic		0.941	Shapiro Wilk GOF Test					
399				5% Shapiro Wilk Critical Value		0.947	Data Not Lognormal at 5% Significance Level					
400				Lilliefors Test Statistic		0.0991	Lilliefors GOF Test					
401				5% Lilliefors Critical Value		0.128	Detected Data appear Lognormal at 5% Significance Level					
402	Detected Data appear Approximate Lognormal at 5% Significance Level											
403												
404	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
405				Mean in Original Scale		32.76			Mean in Log Scale			3.1
406				SD in Original Scale		28.79			SD in Log Scale			0.932
407				95% UTL95% Coverage		144			95% BCA UTL95% Coverage			109.2
408				95% Bootstrap (%) UTL95% Coverage		110			95% UPL (t)			106.5
409				90% Percentile (z)		73.27			95% Percentile (z)			102.8
410				99% Percentile (z)		193.9			95% USL			378.9
411												
412	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
413				KM Mean of Logged Data		3.074			95% KM UTL (Lognormal)95% Coverage			156.1
414				KM SD of Logged Data		0.985			95% KM UPL (Lognormal)			113.5
415				95% KM Percentile Lognormal (z)		109.3			95% KM USL (Lognormal)			434.4
416												
417	Background DL/2 Statistics Assuming Lognormal Distribution											
418				Mean in Original Scale		32.87			Mean in Log Scale			3.106
419				SD in Original Scale		28.7			SD in Log Scale			0.938
420				95% UTL95% Coverage		146.8			95% UPL (t)			108.3
421				90% Percentile (z)		74.34			95% Percentile (z)			104.5
422				99% Percentile (z)		198.1			95% USL			388.9
423	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
424												
425	Nonparametric Distribution Free Background Statistics											
426	Data appear to follow a Discernible Distribution at 5% Significance Level											
427												
428	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
429				Order of Statistic, r		62			95% UTL with95% Coverage			110
430				Approximate f		1.632			Confidence Coefficient (CC) achieved by UTL			0.83
431				95% UPL		100.4			95% USL			120
432				95% KM Chebyshev UPL		158.6						
433												
434	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
435	data set free of outliers and consists of observations collected from clean unimpacted locations.											
436	The use of USL tends to provide a balance between false positives and false negatives provided the data											
437	represents a background data set and when many onsite observations need to be compared with the BTV.											
438												
439	Butylbenzyl phthalate											
440												
441	General Statistics											
442				Total Number of Observations		65			Number of Missing Observations			6
443				Number of Distinct Observations		33						
444				Number of Detects		14			Number of Non-Detects			51
445				Number of Distinct Detects		13			Number of Distinct Non-Detects			23
446				Minimum Detect		2.7			Minimum Non-Detect			2.2
447				Maximum Detect		17			Maximum Non-Detect			33
448				Variance Detected		21.38			Percent Non-Detects			78.46%
449				Mean Detected		7.393			SD Detected			4.624
450				Mean of Detected Logged Data		1.819			SD of Detected Logged Data			0.634
451												
452	Critical Values for Background Threshold Values (BTVs)											
453				Tolerance Factor K (For UTL)		2			d2max (for USL)			3.057
454												
455	Normal GOF Test on Detects Only											

	A	B	C	D	E	F	G	H	I	J	K	L
456				Shapiro Wilk Test Statistic		0.862	**Shapiro Wilk GOF Test**					
457				5% Shapiro Wilk Critical Value		0.874	Data Not Normal at 5% Significance Level					
458				Lilliefors Test Statistic		0.166	**Lilliefors GOF Test**					
459				5% Lilliefors Critical Value		0.237	Detected Data appear Normal at 5% Significance Level					
460	**Detected Data appear Approximate Normal at 5% Significance Level**											
461												
462	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
463				Mean		3.83				SD		3.372
464				95% UTL95% Coverage		10.57				95% KM UPL (t)		9.501
465				90% KM Percentile (z)		8.152				95% KM Percentile (z)		9.377
466				99% KM Percentile (z)		11.67				95% KM USL		14.14
467												
468	**DL/2 Substitution Background Statistics Assuming Normal Distribution**											
469				Mean		5.927				SD		5.259
470				95% UTL95% Coverage		16.44				95% UPL (t)		14.77
471				90% Percentile (z)		12.67				95% Percentile (z)		14.58
472				99% Percentile (z)		18.16				95% USL		22
473	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
474												
475	**Gamma GOF Tests on Detected Observations Only**											
476				A-D Test Statistic		0.52	**Anderson-Darling GOF Test**					
477				5% A-D Critical Value		0.743	Detected data appear Gamma Distributed at 5% Significance Level					
478				K-S Test Statistic		0.156	**Kolmogrov-Smirnoff GOF**					
479				5% K-S Critical Value		0.231	Detected data appear Gamma Distributed at 5% Significance Level					
480	**Detected data appear Gamma Distributed at 5% Significance Level**											
481												
482	**Gamma Statistics on Detected Data Only**											
483				k hat (MLE)		2.907				k star (bias corrected MLE)		2.332
484				Theta hat (MLE)		2.543				Theta star (bias corrected MLE)		3.17
485				nu hat (MLE)		81.4				nu star (bias corrected)		65.29
486				MLE Mean (bias corrected)		7.393						
487				MLE Sd (bias corrected)		4.841				95% Percentile of Chisquare (2k)		10.55
488												
489	**Gamma ROS Statistics using Imputed Non-Detects**											
490	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
491	GROS may not be used when kstar of detected data is small such as < 0.1											
492	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
493	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
494				Minimum		0.01				Mean		1.961
495				Maximum		17				Median		0.01
496				SD		3.71				CV		1.892
497				k hat (MLE)		0.225				k star (bias corrected MLE)		0.225
498				Theta hat (MLE)		8.723				Theta star (bias corrected MLE)		8.728
499				nu hat (MLE)		29.22				nu star (bias corrected)		29.21
500				MLE Mean (bias corrected)		1.961				MLE Sd (bias corrected)		4.137
501				95% Percentile of Chisquare (2k)		2.243				90% Percentile		5.92
502				95% Percentile		9.79				99% Percentile		20.25
503	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
504	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
505					WH	HW					WH	HW
506	95% Approx. Gamma UTL with 95% Coverage				10.78	12.01	95% Approx. Gamma UPL				7.663	7.933
507				95% Gamma USL	26.94	37.24						
508												
509	**The following statistics are computed using gamma distribution and KM estimates**											
510	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
511				k hat (KM)		1.29				nu hat (KM)		167.7
512					WH	HW					WH	HW
513	95% Approx. Gamma UTL with 95% Coverage				9.862	9.791	95% Approx. Gamma UPL				8.485	8.366
514				95% Gamma USL	15.49	15.86						
515												
516	**Lognormal GOF Test on Detected Observations Only**											
517				Shapiro Wilk Test Statistic		0.908	**Shapiro Wilk GOF Test**					
518				5% Shapiro Wilk Critical Value		0.874	Detected Data appear Lognormal at 5% Significance Level					
519				Lilliefors Test Statistic		0.168	**Lilliefors GOF Test**					
520				5% Lilliefors Critical Value		0.237	Detected Data appear Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
521	Detected Data appear Lognormal at 5% Significance Level											
522												
523	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
524					Mean in Original Scale	2.769				Mean in Log Scale		0.57
525					SD in Original Scale	3.325				SD in Log Scale		0.895
526					95% UTL95% Coverage	10.58				95% BCA UTL95% Coverage		14.8
527					95% Bootstrap (%) UTL95% Coverage	16				95% UPL (t)		7.962
528					90% Percentile (z)	5.565				95% Percentile (z)		7.703
529					99% Percentile (z)	14.17				95% USL		27.24
530												
531	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
532					KM Mean of Logged Data	1.127				95% KM UTL (Lognormal)95% Coverage		9.614
533					KM SD of Logged Data	0.568				95% KM UPL (Lognormal)		8.024
534					95% KM Percentile Lognormal (z)	7.857				95% KM USL (Lognormal)		17.52
535												
536	Background DL/2 Statistics Assuming Lognormal Distribution											
537					Mean in Original Scale	5.927				Mean in Log Scale		1.326
538					SD in Original Scale	5.259				SD in Log Scale		0.987
539					95% UTL95% Coverage	27.09				95% UPL (t)		19.79
540					90% Percentile (z)	13.33				95% Percentile (z)		19.08
541					99% Percentile (z)	37.38				95% USL		76.84
542	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
543												
544	Nonparametric Distribution Free Background Statistics											
545	Data appear to follow a Discernible Distribution at 5% Significance Level											
546												
547	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
548					Order of Statistic, r	64				95% UTL with95% Coverage		31
549					Approximate f	1.684				Confidence Coefficient (CC) achieved by UTL		0.842
550					95% UPL	30				95% USL		33
551					95% KM Chebyshev UPL	18.64						
552												
553	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
554	data set free of outliers and consists of observations collected from clean unimpacted locations.											
555	The use of USL tends to provide a balance between false positives and false negatives provided the data											
556	represents a background data set and when many onsite observations need to be compared with the BTV.											
557												
558	Cadmium											
559												
560	General Statistics											
561					Total Number of Observations	66				Number of Missing Observations		5
562					Number of Distinct Observations	46						
563					Number of Detects	57				Number of Non-Detects		9
564					Number of Distinct Detects	44				Number of Distinct Non-Detects		7
565					Minimum Detect	0.04				Minimum Non-Detect		0.04
566					Maximum Detect	0.214				Maximum Non-Detect		0.11
567					Variance Detected	0.00177				Percent Non-Detects		13.64%
568					Mean Detected	0.123				SD Detected		0.0421
569					Mean of Detected Logged Data	-2.161				SD of Detected Logged Data		0.377
570												
571	Critical Values for Background Threshold Values (BTVs)											
572					Tolerance Factor K (For UTL)	1.997				d2max (for USL)		3.062
573												
574	Normal GOF Test on Detects Only											
575					Shapiro Wilk Test Statistic	0.959				Normal GOF Test on Detected Observations Only		
576					5% Shapiro Wilk P Value	0.102				Detected Data appear Normal at 5% Significance Level		
577					Lilliefors Test Statistic	0.11				Lilliefors GOF Test		
578					5% Lilliefors Critical Value	0.117				Detected Data appear Normal at 5% Significance Level		
579	Detected Data appear Normal at 5% Significance Level											
580												
581	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
582					Mean	0.113				SD		0.0465
583					95% UTL95% Coverage	0.206				95% KM UPL (t)		0.191
584					90% KM Percentile (z)	0.173				95% KM Percentile (z)		0.19
585					99% KM Percentile (z)	0.221				95% KM USL		0.255

	A	B	C	D	E	F	G	H	I	J	K	L
586												
587	DL/2 Substitution Background Statistics Assuming Normal Distribution											
588					Mean	0.111					SD	0.0497
589				95% UTL95% Coverage		0.21					95% UPL (t)	0.194
590				90% Percentile (z)		0.175					95% Percentile (z)	0.193
591				99% Percentile (z)		0.227					95% USL	0.263
592	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
593												
594	Gamma GOF Tests on Detected Observations Only											
595				A-D Test Statistic		0.607	Anderson-Darling GOF Test					
596				5% A-D Critical Value		0.752	Detected data appear Gamma Distributed at 5% Significance Level					
597				K-S Test Statistic		0.113	Kolmogrov-Smirnoff GOF					
598				5% K-S Critical Value		0.118	Detected data appear Gamma Distributed at 5% Significance Level					
599	Detected data appear Gamma Distributed at 5% Significance Level											
600												
601	Gamma Statistics on Detected Data Only											
602				k hat (MLE)		7.951					k star (bias corrected MLE)	7.544
603				Theta hat (MLE)		0.0155					Theta star (bias corrected MLE)	0.0163
604				nu hat (MLE)		906.4					nu star (bias corrected)	860
605				MLE Mean (bias corrected)		0.123						
606				MLE Sd (bias corrected)		0.0447					95% Percentile of Chisquare (2k)	25.11
607												
608	Gamma ROS Statistics using Imputed Non-Detects											
609	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
610	GROS may not be used when kstar of detected data is small such as < 0.1											
611	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
612	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
613				Minimum		0.0366					Mean	0.114
614				Maximum		0.214					Median	0.116
615				SD		0.0456					CV	0.4
616				k hat (MLE)		5.818					k star (bias corrected MLE)	5.564
617				Theta hat (MLE)		0.0196					Theta star (bias corrected MLE)	0.0205
618				nu hat (MLE)		768					nu star (bias corrected)	734.4
619				MLE Mean (bias corrected)		0.114					MLE Sd (bias corrected)	0.0483
620				95% Percentile of Chisquare (2k)		19.85					90% Percentile	0.178
621				95% Percentile		0.203					99% Percentile	0.255
622	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
623	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
624					WH	HW					WH	HW
625				95% Approx. Gamma UTL with 95% Coverage	0.227	0.232				95% Approx. Gamma UPL	0.204	0.207
626				95% Gamma USL	0.318	0.333						
627												
628	The following statistics are computed using gamma distribution and KM estimates											
629	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
630				k hat (KM)		5.896					nu hat (KM)	778.3
631					WH	HW					WH	HW
632				95% Approx. Gamma UTL with 95% Coverage	0.232	0.238				95% Approx. Gamma UPL	0.208	0.211
633				95% Gamma USL	0.328	0.346						
634												
635	Lognormal GOF Test on Detected Observations Only											
636				Lilliefors Test Statistic		0.138	Lilliefors GOF Test					
637				5% Lilliefors Critical Value		0.117	Data Not Lognormal at 5% Significance Level					
638	Data Not Lognormal at 5% Significance Level											
639												
640	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
641				Mean in Original Scale		0.114					Mean in Log Scale	-2.255
642				SD in Original Scale		0.0451					SD in Log Scale	0.429
643				95% UTL95% Coverage		0.247					95% BCA UTL95% Coverage	0.21
644				95% Bootstrap (%) UTL95% Coverage		0.21					95% UPL (t)	0.216
645				90% Percentile (z)		0.182					95% Percentile (z)	0.212
646				99% Percentile (z)		0.285					95% USL	0.39
647												
648	Background DL/2 Statistics Assuming Lognormal Distribution											
649				Mean in Original Scale		0.111					Mean in Log Scale	-2.332
650				SD in Original Scale		0.0497					SD in Log Scale	0.573

	A	B	C	D	E	F	G	H	I	J	K	L
651					95% UTL95% Coverage	0.305					95% UPL (t)	0.255
652					90% Percentile (z)	0.203					95% Percentile (z)	0.249
653					99% Percentile (z)	0.369					95% USL	0.562
654					**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**							
655												
656					**Nonparametric Distribution Free Background Statistics**							
657					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
658												
659					**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**							
660					Order of Statistic, r	65					95% UTL with95% Coverage	0.21
661					Approximate f	1.711					Confidence Coefficient (CC) achieved by UTL	0.848
662					95% UPL	0.21					95% USL	0.214
663					95% KM Chebyshev UPL	0.317						
664												
665					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
666					data set free of outliers and consists of observations collected from clean unimpacted locations.							
667					The use of USL tends to provide a balance between false positives and false negatives provided the data							
668					represents a background data set and when many onsite observations need to be compared with the BTV.							
669												
670	**Total Chlordane (calc'd)**											
671												
672					**General Statistics**							
673					Total Number of Observations	47					Number of Missing Observations	1
674					Number of Distinct Observations	46						
675					Number of Detects	32					Number of Non-Detects	15
676					Number of Distinct Detects	32					Number of Distinct Non-Detects	14
677					Minimum Detect	0.117					Minimum Non-Detect	0.0438
678					Maximum Detect	0.825					Maximum Non-Detect	0.26
679					Variance Detected	0.0289					Percent Non-Detects	31.91%
680					Mean Detected	0.445					SD Detected	0.17
681					Mean of Detected Logged Data	-0.891					SD of Detected Logged Data	0.44
682												
683					**Critical Values for Background Threshold Values (BTVs)**							
684					Tolerance Factor K (For UTL)	2.074					d2max (for USL)	2.933
685												
686					**Normal GOF Test on Detects Only**							
687					Shapiro Wilk Test Statistic	0.956					**Shapiro Wilk GOF Test**	
688					5% Shapiro Wilk Critical Value	0.93					Detected Data appear Normal at 5% Significance Level	
689					Lilliefors Test Statistic	0.134					**Lilliefors GOF Test**	
690					5% Lilliefors Critical Value	0.157					Detected Data appear Normal at 5% Significance Level	
691					**Detected Data appear Normal at 5% Significance Level**							
692												
693					**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**							
694					Mean	0.32					SD	0.23
695					95% UTL95% Coverage	0.796					95% KM UPL (t)	0.71
696					90% KM Percentile (z)	0.615					95% KM Percentile (z)	0.698
697					99% KM Percentile (z)	0.854					95% KM USL	0.994
698												
699					**DL/2 Substitution Background Statistics Assuming Normal Distribution**							
700					Mean	0.323					SD	0.229
701					95% UTL95% Coverage	0.797					95% UPL (t)	0.711
702					90% Percentile (z)	0.616					95% Percentile (z)	0.699
703					99% Percentile (z)	0.855					95% USL	0.994
704					**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**							
705												
706					**Gamma GOF Tests on Detected Observations Only**							
707					A-D Test Statistic	0.659					**Anderson-Darling GOF Test**	
708					5% A-D Critical Value	0.747					Detected data appear Gamma Distributed at 5% Significance Level	
709					K-S Test Statistic	0.147					**Kolmogrov-Smirnoff GOF**	
710					5% K-S Critical Value	0.156					Detected data appear Gamma Distributed at 5% Significance Level	
711					**Detected data appear Gamma Distributed at 5% Significance Level**							
712												
713					**Gamma Statistics on Detected Data Only**							
714					k hat (MLE)	6.224					k star (bias corrected MLE)	5.661
715					Theta hat (MLE)	0.0716					Theta star (bias corrected MLE)	0.0787

	A	B	C	D	E	F	G	H	I	J	K	L
716					nu hat (MLE)	398.3				nu star (bias corrected)		362.3
717				MLE Mean (bias corrected)		0.445						
718				MLE Sd (bias corrected)		0.187				95% Percentile of Chisquare (2k)		20.11
719												
720					**Gamma ROS Statistics using Imputed Non-Detects**							
721					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
722					GROS may not be used when kstar of detected data is small such as < 0.1							
723					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
724					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
725					Minimum	0.108				Mean		0.347
726					Maximum	0.825				Median		0.362
727					SD	0.202				CV		0.581
728					k hat (MLE)	2.859				k star (bias corrected MLE)		2.691
729					Theta hat (MLE)	0.121				Theta star (bias corrected MLE)		0.129
730					nu hat (MLE)	268.7				nu star (bias corrected)		252.9
731				MLE Mean (bias corrected)		0.347				MLE Sd (bias corrected)		0.212
732				95% Percentile of Chisquare (2k)		11.66				90% Percentile		0.631
733				95% Percentile		0.752				99% Percentile		1.016
734					**The following statistics are computed using Gamma ROS Statistics on Imputed Data**							
735					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
736					WH	HW					WH	HW
737	95% Approx. Gamma UTL with 95% Coverage				0.902	0.935				95% Approx. Gamma UPL	0.762	0.779
738				95% Gamma USL	1.284	1.377						
739												
740					**The following statistics are computed using gamma distribution and KM estimates**							
741					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
742					k hat (KM)	1.946				nu hat (KM)		182.9
743					WH	HW					WH	HW
744	95% Approx. Gamma UTL with 95% Coverage				1.128	1.236				95% Approx. Gamma UPL	0.901	0.959
745				95% Gamma USL	1.779	2.084						
746												
747					**Lognormal GOF Test on Detected Observations Only**							
748				Shapiro Wilk Test Statistic		0.914	**Shapiro Wilk GOF Test**					
749				5% Shapiro Wilk Critical Value		0.93	Data Not Lognormal at 5% Significance Level					
750				Lilliefors Test Statistic		0.175	**Lilliefors GOF Test**					
751				5% Lilliefors Critical Value		0.157	Data Not Lognormal at 5% Significance Level					
752					**Data Not Lognormal at 5% Significance Level**							
753												
754					**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**							
755				Mean in Original Scale		0.356				Mean in Log Scale		-1.183
756				SD in Original Scale		0.192				SD in Log Scale		0.564
757				95% UTL95% Coverage		0.986				95% BCA UTL95% Coverage		0.788
758				95% Bootstrap (%) UTL95% Coverage		0.814				95% UPL (t)		0.797
759				90% Percentile (z)		0.631				95% Percentile (z)		0.774
760				99% Percentile (z)		1.137				95% USL		1.6
761												
762					**Background DL/2 Statistics Assuming Lognormal Distribution**							
763				Mean in Original Scale		0.323				Mean in Log Scale		-1.533
764				SD in Original Scale		0.229				SD in Log Scale		1.062
765				95% UTL95% Coverage		1.951				95% UPL (t)		1.307
766				90% Percentile (z)		0.841				95% Percentile (z)		1.237
767				99% Percentile (z)		2.551				95% USL		4.855
768					**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**							
769												
770					**Nonparametric Distribution Free Background Statistics**							
771					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
772												
773					**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**							
774				Order of Statistic, r		46				95% UTL with95% Coverage		0.788
775				Approximate f		1.211				Confidence Coefficient (CC) achieved by UTL		0.688
776				95% UPL		0.746				95% USL		0.825
777				95% KM Chebyshev UPL		1.332						
778												
779					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
780					data set free of outliers and consists of observations collected from clean unimpacted locations.							

	A	B	C	D	E	F	G	H	I	J	K	L
781	The use of USL tends to provide a balance between false positives and false negatives provided the data											
782	represents a background data set and when many onsite observations need to be compared with the BTV.											
783												
784	**Chromium**											
785												
786	**General Statistics**											
787					Total Number of Observations	65			Number of Distinct Observations			59
788									Number of Missing Observations			6
789					Minimum	11.9			First Quartile			17.9
790					Second Largest	36.2			Median			21.9
791					Maximum	38.1			Third Quartile			26.6
792					Mean	22.57			SD			5.733
793					Coefficient of Variation	0.254			Skewness			0.418
794					Mean of logged Data	3.084			SD of logged Data			0.258
795												
796					**Critical Values for Background Threshold Values (BTVs)**							
797					Tolerance Factor K (For UTL)	2			d2max (for USL)			3.057
798												
799					**Normal GOF Test**							
800					Shapiro Wilk Test Statistic	0.972			**Normal GOF Test**			
801					5% Shapiro Wilk P Value	0.339			Data appear Normal at 5% Significance Level			
802					Lilliefors Test Statistic	0.0631			**Lilliefors GOF Test**			
803					5% Lilliefors Critical Value	0.11			Data appear Normal at 5% Significance Level			
804					**Data appear Normal at 5% Significance Level**							
805												
806					**Background Statistics Assuming Normal Distribution**							
807				95% UTL with	95% Coverage	34.03			90% Percentile (z)			29.91
808					95% UPL (t)	32.21			95% Percentile (z)			32
809					95% USL	40.09			99% Percentile (z)			35.9
810												
811					**Gamma GOF Test**							
812					A-D Test Statistic	0.231			**Anderson-Darling Gamma GOF Test**			
813					5% A-D Critical Value	0.75			Detected data appear Gamma Distributed at 5% Significance Level			
814					K-S Test Statistic	0.0764			**Kolmogrov-Smirnoff Gamma GOF Test**			
815					5% K-S Critical Value	0.11			Detected data appear Gamma Distributed at 5% Significance Level			
816					**Detected data appear Gamma Distributed at 5% Significance Level**							
817												
818					**Gamma Statistics**							
819					k hat (MLE)	15.67			k star (bias corrected MLE)			14.96
820					Theta hat (MLE)	1.44			Theta star (bias corrected MLE)			1.508
821					nu hat (MLE)	2037			nu star (bias corrected)			1945
822					MLE Mean (bias corrected)	22.57			MLE Sd (bias corrected)			5.834
823												
824					**Background Statistics Assuming Gamma Distribution**							
825				95% Wilson Hilferty (WH) Approx. Gamma UPL		33.05			90% Percentile			30.29
826				95% Hawkins Wixley (HW) Approx. Gamma UPL		33.2			95% Percentile			32.94
827				95% WH Approx. Gamma UTL with	95% Coverage	35.46			99% Percentile			38.3
828				95% HW Approx. Gamma UTL with	95% Coverage	35.72						
829					95% WH USL	44.32			95% HW USL			45.12
830												
831					**Lognormal GOF Test**							
832					Shapiro Wilk Test Statistic	0.979			**Shapiro Wilk Lognormal GOF Test**			
833					5% Shapiro Wilk P Value	0.614			Data appear Lognormal at 5% Significance Level			
834					Lilliefors Test Statistic	0.0841			**Lilliefors Lognormal GOF Test**			
835					5% Lilliefors Critical Value	0.11			Data appear Lognormal at 5% Significance Level			
836					**Data appear Lognormal at 5% Significance Level**							
837												
838					**Background Statistics assuming Lognormal Distribution**							
839				95% UTL with	95% Coverage	36.63			90% Percentile (z)			30.42
840					95% UPL (t)	33.74			95% Percentile (z)			33.42
841					95% USL	48.13			99% Percentile (z)			39.85
842												
843					**Nonparametric Distribution Free Background Statistics**							
844					**Data appear Normal at 5% Significance Level**							
845												

	A	B	C	D	E	F	G	H	I	J	K	L
846						**Nonparametric Upper Limits for Background Threshold Values**						
847					Order of Statistic, r	64				95% UTL with 95% Coverage		36.2
848					Approximate f	1.684				Confidence Coefficient (CC) achieved by UTL		0.842
849				95% Percentile Bootstrap UTL with 95% Coverage		36.2				95% BCA Bootstrap UTL with 95% Coverage		36.2
850					95% UPL	33.19					90% Percentile	28.98
851					90% Chebyshev UPL	39.9					95% Percentile	32.46
852					95% Chebyshev UPL	47.75					99% Percentile	36.88
853					95% USL	38.1						
854												
855					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
856					data set free of outliers and consists of observations collected from clean unimpacted locations.							
857					The use of USL tends to provide a balance between false positives and false negatives provided the data							
858					represents a background data set and when many onsite observations need to be compared with the BTV.							
859												
860	**Copper**											
861												
862	**General Statistics**											
863					Total Number of Observations	67				Number of Distinct Observations		62
864										Number of Missing Observations		4
865					Minimum	10.5				First Quartile		17.3
866					Second Largest	44.4				Median		24.2
867					Maximum	47.2				Third Quartile		29.3
868					Mean	24.32				SD		7.783
869					Coefficient of Variation	0.32				Skewness		0.562
870					Mean of logged Data	3.14				SD of logged Data		0.327
871												
872					**Critical Values for Background Threshold Values (BTVs)**							
873					Tolerance Factor K (For UTL)	1.994				d2max (for USL)		3.068
874												
875						**Normal GOF Test**						
876					Shapiro Wilk Test Statistic	0.954				**Normal GOF Test**		
877					5% Shapiro Wilk P Value	0.0346				Data Not Normal at 5% Significance Level		
878					Lilliefors Test Statistic	0.0967				**Lilliefors GOF Test**		
879					5% Lilliefors Critical Value	0.108				Data appear Normal at 5% Significance Level		
880						**Data appear Approximate Normal at 5% Significance Level**						
881												
882						**Background Statistics Assuming Normal Distribution**						
883					95% UTL with 95% Coverage	39.84				90% Percentile (z)		34.3
884					95% UPL (t)	37.4				95% Percentile (z)		37.12
885					95% USL	48.2				99% Percentile (z)		42.43
886												
887						**Gamma GOF Test**						
888					A-D Test Statistic	0.635				**Anderson-Darling Gamma GOF Test**		
889					5% A-D Critical Value	0.751				Detected data appear Gamma Distributed at 5% Significance Level		
890					K-S Test Statistic	0.0969				**Kolmogrov-Smirnoff Gamma GOF Test**		
891					5% K-S Critical Value	0.109				Detected data appear Gamma Distributed at 5% Significance Level		
892						**Detected data appear Gamma Distributed at 5% Significance Level**						
893												
894						**Gamma Statistics**						
895					k hat (MLE)	9.916				k star (bias corrected MLE)		9.482
896					Theta hat (MLE)	2.453				Theta star (bias corrected MLE)		2.565
897					nu hat (MLE)	1329				nu star (bias corrected)		1271
898					MLE Mean (bias corrected)	24.32				MLE Sd (bias corrected)		7.899
899												
900						**Background Statistics Assuming Gamma Distribution**						
901				95% Wilson Hilferty (WH) Approx. Gamma UPL		38.76				90% Percentile		34.83
902				95% Hawkins Wixley (HW) Approx. Gamma UPL		39.03				95% Percentile		38.6
903				95% WH Approx. Gamma UTL with 95% Coverage		42.19				99% Percentile		46.35
904				95% HW Approx. Gamma UTL with 95% Coverage		42.64						
905					95% WH USL	55.44				95% HW USL		56.93
906												
907						**Lognormal GOF Test**						
908					Shapiro Wilk Test Statistic	0.968				**Shapiro Wilk Lognormal GOF Test**		
909					5% Shapiro Wilk P Value	0.205				Data appear Lognormal at 5% Significance Level		
910					Lilliefors Test Statistic	0.0909				**Lilliefors Lognormal GOF Test**		

	A	B	C	D	E	F	G	H	I	J	K	L
911					5% Lilliefors Critical Value	0.108	Data appear Lognormal at 5% Significance Level					
912	**Data appear Lognormal at 5% Significance Level**											
913												
914	**Background Statistics assuming Lognormal Distribution**											
915				95% UTL with	95% Coverage	44.33				90% Percentile (z)		35.12
916					95% UPL (t)	40.01				95% Percentile (z)		39.55
917					95% USL	62.96				99% Percentile (z)		49.41
918												
919	**Nonparametric Distribution Free Background Statistics**											
920	**Data appear Approximate Normal at 5% Significance Level**											
921												
922	**Nonparametric Upper Limits for Background Threshold Values**											
923					Order of Statistic, r	66				95% UTL with	95% Coverage	44.4
924					Approximate f	1.737				Confidence Coefficient (CC) achieved by UTL		0.854
925				95% Percentile Bootstrap UTL with	95% Coverage	44.4				95% BCA Bootstrap UTL with	95% Coverage	43.53
926					95% UPL	40.1				90% Percentile		32.6
927					90% Chebyshev UPL	47.84				95% Percentile		36.71
928					95% Chebyshev UPL	58.5				99% Percentile		45.35
929					95% USL	47.2						
930												
931	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
932	data set free of outliers and consists of observations collected from clean unimpacted locations.											
933	The use of USL tends to provide a balance between false positives and false negatives provided the data											
934	represents a background data set and when many onsite observations need to be compared with the BTV.											
935												
936	**CPAH**											
937												
938	**General Statistics**											
939					Total Number of Observations	66				Number of Missing Observations		5
940					Number of Distinct Observations	61						
941					Number of Detects	54				Number of Non-Detects		12
942					Number of Distinct Detects	54				Number of Distinct Non-Detects		7
943					Minimum Detect	0.659				Minimum Non-Detect		0.39
944					Maximum Detect	20.36				Maximum Non-Detect		10
945					Variance Detected	20.94				Percent Non-Detects		18.18%
946					Mean Detected	7.801				SD Detected		4.576
947					Mean of Detected Logged Data	1.842				SD of Detected Logged Data		0.73
948												
949	**Critical Values for Background Threshold Values (BTVs)**											
950					Tolerance Factor K (For UTL)	1.997				d2max (for USL)		3.062
951												
952	**Normal GOF Test on Detects Only**											
953					Shapiro Wilk Test Statistic	0.946	**Normal GOF Test on Detected Observations Only**					
954					5% Shapiro Wilk P Value	0.0297	Data Not Normal at 5% Significance Level					
955					Lilliefors Test Statistic	0.104	**Lilliefors GOF Test**					
956					5% Lilliefors Critical Value	0.121	Detected Data appear Normal at 5% Significance Level					
957	**Detected Data appear Approximate Normal at 5% Significance Level**											
958												
959	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
960					Mean	6.613				SD		4.875
961					95% UTL95% Coverage	16.35				95% KM UPL (t)		14.81
962					90% KM Percentile (z)	12.86				95% KM Percentile (z)		14.63
963					99% KM Percentile (z)	17.95				95% KM USL		21.54
964												
965	**DL/2 Substitution Background Statistics Assuming Normal Distribution**											
966					Mean	6.658				SD		4.848
967					95% UTL95% Coverage	16.34				95% UPL (t)		14.81
968					90% Percentile (z)	12.87				95% Percentile (z)		14.63
969					99% Percentile (z)	17.94				95% USL		21.51
970	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
971												
972	**Gamma GOF Tests on Detected Observations Only**											
973					A-D Test Statistic	0.402	**Anderson-Darling GOF Test**					
974					5% A-D Critical Value	0.76	Detected data appear Gamma Distributed at 5% Significance Level					
975					K-S Test Statistic	0.0807	**Kolmogrov-Smirnoff GOF**					

	A	B	C	D	E	F	G	H	I	J	K	L
976				5% K-S Critical Value		0.122	Detected data appear Gamma Distributed at 5% Significance Level					
977	**Detected data appear Gamma Distributed at 5% Significance Level**											
978												
979	**Gamma Statistics on Detected Data Only**											
980				k hat (MLE)		2.51				k star (bias corrected MLE)		2.383
981				Theta hat (MLE)		3.107				Theta star (bias corrected MLE)		3.273
982				nu hat (MLE)		271.1				nu star (bias corrected)		257.4
983				MLE Mean (bias corrected)		7.801						
984				MLE Sd (bias corrected)		5.053				95% Percentile of Chisquare (2k)		10.71
985												
986	**Gamma ROS Statistics using Imputed Non-Detects**											
987	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
988	GROS may not be used when kstar of detected data is small such as < 0.1											
989	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
990	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
991				Minimum		0.175				Mean		6.686
992				Maximum		20.36				Median		5.76
993				SD		4.805				CV		0.719
994				k hat (MLE)		1.561				k star (bias corrected MLE)		1.5
995				Theta hat (MLE)		4.284				Theta star (bias corrected MLE)		4.458
996				nu hat (MLE)		206				nu star (bias corrected)		198
997				MLE Mean (bias corrected)		6.686				MLE Sd (bias corrected)		5.459
998				95% Percentile of Chisquare (2k)		7.815				90% Percentile		13.93
999				95% Percentile		17.42				99% Percentile		25.28
1000	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
1001	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
1002					WH	HW					WH	HW
1003	95% Approx. Gamma UTL with 95% Coverage				20.96	22.56	95% Approx. Gamma UPL				17.55	18.5
1004				95% Gamma USL	35.66	41.29						
1005												
1006	**The following statistics are computed using gamma distribution and KM estimates**											
1007	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
1008				k hat (KM)		1.84					nu hat (KM)	242.9
1009					WH	HW					WH	HW
1010	95% Approx. Gamma UTL with 95% Coverage				22.18	24.32	95% Approx. Gamma UPL				18.37	19.64
1011				95% Gamma USL	38.88	46.4						
1012												
1013	**Lognormal GOF Test on Detected Observations Only**											
1014				Lilliefors Test Statistic		0.0955	**Lilliefors GOF Test**					
1015				5% Lilliefors Critical Value		0.121	Detected Data appear Lognormal at 5% Significance Level					
1016	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
1017												
1018	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
1019				Mean in Original Scale		6.726				Mean in Log Scale		1.606
1020				SD in Original Scale		4.746				SD in Log Scale		0.848
1021				95% UTL95% Coverage		27.09				95% BCA UTL95% Coverage		18.69
1022				95% Bootstrap (%) UTL95% Coverage		19.26				95% UPL (t)		20.73
1023				90% Percentile (z)		14.77				95% Percentile (z)		20.1
1024				99% Percentile (z)		35.82				95% USL		66.87
1025												
1026	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
1027				KM Mean of Logged Data		1.456				95% KM UTL (Lognormal)95% Coverage		39.5
1028				KM SD of Logged Data		1.112				95% KM UPL (Lognormal)		27.8
1029				95% KM Percentile Lognormal (z)		26.7				95% KM USL (Lognormal)		129.1
1030												
1031	**Background DL/2 Statistics Assuming Lognormal Distribution**											
1032				Mean in Original Scale		6.658				Mean in Log Scale		1.499
1033				SD in Original Scale		4.848				SD in Log Scale		1.07
1034				95% UTL95% Coverage		37.93				95% UPL (t)		27.05
1035				90% Percentile (z)		17.64				95% Percentile (z)		26.02
1036				99% Percentile (z)		53.95				95% USL		118.6
1037	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
1038												
1039	**Nonparametric Distribution Free Background Statistics**											
1040	**Data appear to follow a Discernible Distribution at 5% Significance Level**											

	A	B	C	D	E	F	G	H	I	J	K	L
1041												
1042						**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**						
1043						Order of Statistic, r	65				95% UTL with95% Coverage	19.26
1044						Approximate f	1.711				Confidence Coefficient (CC) achieved by UTL	0.848
1045						95% UPL	15.88				95% USL	20.36
1046						95% KM Chebyshev UPL	28.02					
1047												
1048						Note: The use of USL to estimate a BTV is recommended only when the data set represents a background						
1049						data set free of outliers and consists of observations collected from clean unimpacted locations.						
1050						The use of USL tends to provide a balance between false positives and false negatives provided the data						
1051						represents a background data set and when many onsite observations need to be compared with the BTV.						
1052												
1053	**Total DDD**											
1054												
1055						**General Statistics**						
1056						Total Number of Observations	48				Number of Missing Observations	0
1057						Number of Distinct Observations	45					
1058						Number of Detects	39				Number of Non-Detects	9
1059						Number of Distinct Detects	37				Number of Distinct Non-Detects	8
1060						Minimum Detect	0.137				Minimum Non-Detect	0.0507
1061						Maximum Detect	1.615				Maximum Non-Detect	0.54
1062						Variance Detected	0.201				Percent Non-Detects	18.75%
1063						Mean Detected	0.762				SD Detected	0.448
1064						Mean of Detected Logged Data	-0.462				SD of Detected Logged Data	0.658
1065												
1066						**Critical Values for Background Threshold Values (BTVs)**						
1067						Tolerance Factor K (For UTL)	2.069				d2max (for USL)	2.941
1068												
1069						**Normal GOF Test on Detects Only**						
1070						Shapiro Wilk Test Statistic	0.904				**Shapiro Wilk GOF Test**	
1071						5% Shapiro Wilk Critical Value	0.939				Data Not Normal at 5% Significance Level	
1072						Lilliefors Test Statistic	0.143				**Lilliefors GOF Test**	
1073						5% Lilliefors Critical Value	0.142				Data Not Normal at 5% Significance Level	
1074						**Data Not Normal at 5% Significance Level**						
1075												
1076						**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**						
1077						Mean	0.644				SD	0.471
1078						95% UTL95% Coverage	1.619				95% KM UPL (t)	1.443
1079						90% KM Percentile (z)	1.248				95% KM Percentile (z)	1.419
1080						99% KM Percentile (z)	1.74				95% KM USL	2.03
1081												
1082						**DL/2 Substitution Background Statistics Assuming Normal Distribution**						
1083						Mean	0.643				SD	0.476
1084						95% UTL95% Coverage	1.628				95% UPL (t)	1.45
1085						90% Percentile (z)	1.253				95% Percentile (z)	1.426
1086						99% Percentile (z)	1.751				95% USL	2.043
1087						**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**						
1088												
1089						**Gamma GOF Tests on Detected Observations Only**						
1090						A-D Test Statistic	0.421				**Anderson-Darling GOF Test**	
1091						5% A-D Critical Value	0.756				Detected data appear Gamma Distributed at 5% Significance Level	
1092						K-S Test Statistic	0.113				**Kolmogrov-Smirnoff GOF**	
1093						5% K-S Critical Value	0.142				Detected data appear Gamma Distributed at 5% Significance Level	
1094						**Detected data appear Gamma Distributed at 5% Significance Level**						
1095												
1096						**Gamma Statistics on Detected Data Only**						
1097						k hat (MLE)	2.783				k star (bias corrected MLE)	2.586
1098						Theta hat (MLE)	0.274				Theta star (bias corrected MLE)	0.295
1099						nu hat (MLE)	217.1				nu star (bias corrected)	201.7
1100						MLE Mean (bias corrected)	0.762					
1101						MLE Sd (bias corrected)	0.474				95% Percentile of Chisquare (2k)	11.34
1102												
1103						**Gamma ROS Statistics using Imputed Non-Detects**						
1104						GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs						
1105						GROS may not be used when kstar of detected data is small such as < 0.1						

	A	B	C	D	E	F	G	H	I	J	K	L
1106	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1107	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1108					Minimum	0.0278					Mean	0.645
1109					Maximum	1.615					Median	0.481
1110					SD	0.475					CV	0.737
1111					k hat (MLE)	1.493					k star (bias corrected MLE)	1.413
1112					Theta hat (MLE)	0.432					Theta star (bias corrected MLE)	0.456
1113					nu hat (MLE)	143.3					nu star (bias corrected)	135.7
1114					MLE Mean (bias corrected)	0.645					MLE Sd (bias corrected)	0.542
1115					95% Percentile of Chisquare (2k)	7.512					90% Percentile	1.363
1116					95% Percentile	1.713					99% Percentile	2.506
1117	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
1118	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
1119					WH	HW					WH	HW
1120	95% Approx. Gamma UTL with 95% Coverage				2.144	2.327				95% Approx. Gamma UPL	1.735	1.835
1121				95% Gamma USL	3.34	3.858						
1122												
1123	**The following statistics are computed using gamma distribution and KM estimates**											
1124	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
1125					k hat (KM)	1.867					nu hat (KM)	179.3
1126					WH	HW					WH	HW
1127	95% Approx. Gamma UTL with 95% Coverage				2.127	2.302				95% Approx. Gamma UPL	1.722	1.817
1128				95% Gamma USL	3.31	3.809						
1129												
1130	**Lognormal GOF Test on Detected Observations Only**											
1131				Shapiro Wilk Test Statistic		0.949	**Shapiro Wilk GOF Test**					
1132				5% Shapiro Wilk Critical Value		0.939	Detected Data appear Lognormal at 5% Significance Level					
1133				Lilliefors Test Statistic		0.103	**Lilliefors GOF Test**					
1134				5% Lilliefors Critical Value		0.142	Detected Data appear Lognormal at 5% Significance Level					
1135	**Detected Data appear Lognormal at 5% Significance Level**											
1136												
1137	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
1138				Mean in Original Scale		0.655				Mean in Log Scale		-0.693
1139				SD in Original Scale		0.462				SD in Log Scale		0.777
1140				95% UTL95% Coverage		2.496				95% BCA UTL95% Coverage		1.596
1141				95% Bootstrap (%) UTL95% Coverage		1.596				95% UPL (t)		1.868
1142				90% Percentile (z)		1.354				95% Percentile (z)		1.796
1143				99% Percentile (z)		3.05				95% USL		4.919
1144												
1145	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
1146				KM Mean of Logged Data		-0.814				95% KM UTL (Lognormal)95% Coverage		3.458
1147				KM SD of Logged Data		0.993				95% KM UPL (Lognormal)		2.387
1148				95% KM Percentile Lognormal (z)		2.27				95% KM USL (Lognormal)		8.223
1149												
1150	**Background DL/2 Statistics Assuming Lognormal Distribution**											
1151				Mean in Original Scale		0.643				Mean in Log Scale		-0.813
1152				SD in Original Scale		0.476				SD in Log Scale		1.01
1153				95% UTL95% Coverage		3.582				95% UPL (t)		2.457
1154				90% Percentile (z)		1.618				95% Percentile (z)		2.335
1155				99% Percentile (z)		4.648				95% USL		8.647
1156	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
1157												
1158	**Nonparametric Distribution Free Background Statistics**											
1159	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
1160												
1161	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
1162				Order of Statistic, r		47				95% UTL with95% Coverage		1.56
1163				Approximate f		1.237				Confidence Coefficient (CC) achieved by UTL		0.699
1164				95% UPL		1.56				95% USL		1.615
1165				95% KM Chebyshev UPL		2.72						
1166												
1167	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
1168	data set free of outliers and consists of observations collected from clean unimpacted locations.											
1169	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1170	represents a background data set and when many onsite observations need to be compared with the BTV.											

	A	B	C	D	E	F	G	H	I	J	K	L
1171												
1172	**Total DDE**											
1173												
1174						**General Statistics**						
1175					Total Number of Observations	48			Number of Missing Observations			0
1176					Number of Distinct Observations	46						
1177					Number of Detects	47			Number of Non-Detects			1
1178					Number of Distinct Detects	45			Number of Distinct Non-Detects			1
1179					Minimum Detect	0.105			Minimum Non-Detect			0.12
1180					Maximum Detect	2.451			Maximum Non-Detect			0.12
1181					Variance Detected	0.302			Percent Non-Detects			2.083%
1182					Mean Detected	0.973			SD Detected			0.549
1183					Mean of Detected Logged Data	-0.225			SD of Detected Logged Data			0.708
1184												
1185						**Critical Values for Background Threshold Values (BTVs)**						
1186					Tolerance Factor K (For UTL)	2.069			d2max (for USL)			2.941
1187												
1188						**Normal GOF Test on Detects Only**						
1189					Shapiro Wilk Test Statistic	0.942			**Shapiro Wilk GOF Test**			
1190					5% Shapiro Wilk Critical Value	0.946			Data Not Normal at 5% Significance Level			
1191					Lilliefors Test Statistic	0.0912			**Lilliefors GOF Test**			
1192					5% Lilliefors Critical Value	0.129			Detected Data appear Normal at 5% Significance Level			
1193						**Detected Data appear Approximate Normal at 5% Significance Level**						
1194												
1195						**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**						
1196					Mean	0.955			SD			0.552
1197					95% UTL95% Coverage	2.097			95% KM UPL (t)			1.891
1198					90% KM Percentile (z)	1.663			95% KM Percentile (z)			1.863
1199					99% KM Percentile (z)	2.239			95% KM USL			2.579
1200												
1201						**DL/2 Substitution Background Statistics Assuming Normal Distribution**						
1202					Mean	0.954			SD			0.559
1203					95% UTL95% Coverage	2.111			95% UPL (t)			1.903
1204					90% Percentile (z)	1.671			95% Percentile (z)			1.874
1205					99% Percentile (z)	2.255			95% USL			2.599
1206						**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**						
1207												
1208						**Gamma GOF Tests on Detected Observations Only**						
1209					A-D Test Statistic	0.541			**Anderson-Darling GOF Test**			
1210					5% A-D Critical Value	0.758			Detected data appear Gamma Distributed at 5% Significance Level			
1211					K-S Test Statistic	0.0925			**Kolmogrov-Smirnoff GOF**			
1212					5% K-S Critical Value	0.13			Detected data appear Gamma Distributed at 5% Significance Level			
1213						**Detected data appear Gamma Distributed at 5% Significance Level**						
1214												
1215						**Gamma Statistics on Detected Data Only**						
1216					k hat (MLE)	2.677			k star (bias corrected MLE)			2.52
1217					Theta hat (MLE)	0.364			Theta star (bias corrected MLE)			0.386
1218					nu hat (MLE)	251.6			nu star (bias corrected)			236.9
1219					MLE Mean (bias corrected)	0.973						
1220					MLE Sd (bias corrected)	0.613			95% Percentile of Chisquare (2k)			11.13
1221												
1222						**Gamma ROS Statistics using Imputed Non-Detects**						
1223						GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs						
1224						GROS may not be used when kstar of detected data is small such as < 0.1						
1225						For such situations, GROS method tends to yield inflated values of UCLs and BTVs						
1226						For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates						
1227					Minimum	0.105			Mean			0.957
1228					Maximum	2.451			Median			0.954
1229					SD	0.556			CV			0.581
1230					k hat (MLE)	2.493			k star (bias corrected MLE)			2.351
1231					Theta hat (MLE)	0.384			Theta star (bias corrected MLE)			0.407
1232					nu hat (MLE)	239.4			nu star (bias corrected)			225.7
1233					MLE Mean (bias corrected)	0.957			MLE Sd (bias corrected)			0.624
1234					95% Percentile of Chisquare (2k)	10.61			90% Percentile			1.792
1235					95% Percentile	2.157			99% Percentile			2.961

	A	B	C	D	E	F	G	H	I	J	K	L
1236	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
1237	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
1238					WH	HW					WH	HW
1239	95% Approx. Gamma UTL with 95% Coverage				2.604	2.751			95% Approx. Gamma UPL		2.185	2.269
1240			95% Gamma USL		3.784	4.174						
1241												
1242	The following statistics are computed using gamma distribution and KM estimates											
1243	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
1244					k hat (KM)	2.995					nu hat (KM)	287.5
1245					WH	HW					WH	HW
1246	95% Approx. Gamma UTL with 95% Coverage				2.608	2.762			95% Approx. Gamma UPL		2.187	2.275
1247			95% Gamma USL		3.796	4.204						
1248												
1249	Lognormal GOF Test on Detected Observations Only											
1250			Shapiro Wilk Test Statistic			0.923	Shapiro Wilk GOF Test					
1251			5% Shapiro Wilk Critical Value			0.946	Data Not Lognormal at 5% Significance Level					
1252			Lilliefors Test Statistic			0.124	Lilliefors GOF Test					
1253			5% Lilliefors Critical Value			0.129	Detected Data appear Lognormal at 5% Significance Level					
1254	Detected Data appear Approximate Lognormal at 5% Significance Level											
1255												
1256	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
1257			Mean in Original Scale			0.957			Mean in Log Scale			-0.257
1258			SD in Original Scale			0.556			SD in Log Scale			0.735
1259			95% UTL95% Coverage			3.534			95% BCA UTL95% Coverage			2.375
1260			95% Bootstrap (%) UTL95% Coverage			2.375			95% UPL (t)			2.687
1261			90% Percentile (z)			1.982			95% Percentile (z)			2.589
1262			99% Percentile (z)			4.272			95% USL			6.71
1263												
1264	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
1265			KM Mean of Logged Data			-0.268			95% KM UTL (Lognormal)95% Coverage			3.619
1266			KM SD of Logged Data			0.751			95% KM UPL (Lognormal)			2.734
1267			95% KM Percentile Lognormal (z)			2.632			95% KM USL (Lognormal)			6.968
1268												
1269	Background DL/2 Statistics Assuming Lognormal Distribution											
1270			Mean in Original Scale			0.954			Mean in Log Scale			-0.279
1271			SD in Original Scale			0.559			SD in Log Scale			0.794
1272			95% UTL95% Coverage			3.906			95% UPL (t)			2.905
1273			90% Percentile (z)			2.092			95% Percentile (z)			2.791
1274			99% Percentile (z)			4.793			95% USL			7.807
1275	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
1276												
1277	Nonparametric Distribution Free Background Statistics											
1278	Data appear to follow a Discernible Distribution at 5% Significance Level											
1279												
1280	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
1281			Order of Statistic, r			47			95% UTL with95% Coverage			2.347
1282			Approximate f			1.237			Confidence Coefficient (CC) achieved by UTL			0.699
1283			95% UPL			2.297			95% USL			2.451
1284			95% KM Chebyshev UPL			3.386						
1285												
1286	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
1287	data set free of outliers and consists of observations collected from clean unimpacted locations.											
1288	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1289	represents a background data set and when many onsite observations need to be compared with the BTV.											
1290												
1291	Total DDT											
1292												
1293	General Statistics											
1294			Total Number of Observations			46			Number of Missing Observations			2
1295			Number of Distinct Observations			41						
1296			Number of Detects			16			Number of Non-Detects			30
1297			Number of Distinct Detects			16			Number of Distinct Non-Detects			26
1298			Minimum Detect			0.318			Minimum Non-Detect			0.0486
1299			Maximum Detect			1			Maximum Non-Detect			0.51
1300			Variance Detected			0.0498			Percent Non-Detects			65.22%

	A	B	C	D	E	F	G	H	I	J	K	L
1301					Mean Detected	0.579					SD Detected	0.223
1302					Mean of Detected Logged Data	-0.615					SD of Detected Logged Data	0.378
1303												
1304					Critical Values for Background Threshold Values (BTVs)							
1305					Tolerance Factor K (For UTL)	2.079					d2max (for USL)	2.924
1306												
1307					Normal GOF Test on Detects Only							
1308					Shapiro Wilk Test Statistic	0.894			Shapiro Wilk GOF Test			
1309					5% Shapiro Wilk Critical Value	0.887			Detected Data appear Normal at 5% Significance Level			
1310					Lilliefors Test Statistic	0.208			Lilliefors GOF Test			
1311					5% Lilliefors Critical Value	0.222			Detected Data appear Normal at 5% Significance Level			
1312					Detected Data appear Normal at 5% Significance Level							
1313												
1314					Kaplan Meier (KM) Background Statistics Assuming Normal Distribution							
1315					Mean	0.242					SD	0.282
1316					95% UTL95% Coverage	0.828					95% KM UPL (t)	0.721
1317					90% KM Percentile (z)	0.603					95% KM Percentile (z)	0.706
1318					99% KM Percentile (z)	0.898					95% KM USL	1.067
1319												
1320					DL/2 Substitution Background Statistics Assuming Normal Distribution							
1321					Mean	0.268					SD	0.27
1322					95% UTL95% Coverage	0.83					95% UPL (t)	0.727
1323					90% Percentile (z)	0.614					95% Percentile (z)	0.712
1324					99% Percentile (z)	0.896					95% USL	1.058
1325					DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons							
1326												
1327					Gamma GOF Tests on Detected Observations Only							
1328					A-D Test Statistic	0.55			Anderson-Darling GOF Test			
1329					5% A-D Critical Value	0.74			Detected data appear Gamma Distributed at 5% Significance Level			
1330					K-S Test Statistic	0.178			Kolmogrov-Smirnoff GOF			
1331					5% K-S Critical Value	0.215			Detected data appear Gamma Distributed at 5% Significance Level			
1332					Detected data appear Gamma Distributed at 5% Significance Level							
1333												
1334					Gamma Statistics on Detected Data Only							
1335					k hat (MLE)	7.536					k star (bias corrected MLE)	6.165
1336					Theta hat (MLE)	0.0768					Theta star (bias corrected MLE)	0.0938
1337					nu hat (MLE)	241.2					nu star (bias corrected)	197.3
1338					MLE Mean (bias corrected)	0.579						
1339					MLE Sd (bias corrected)	0.233					95% Percentile of Chisquare (2k)	21.47
1340												
1341					Gamma ROS Statistics using Imputed Non-Detects							
1342					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1343					GROS may not be used when kstar of detected data is small such as < 0.1							
1344					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
1345					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
1346					Minimum	0.01					Mean	0.233
1347					Maximum	1					Median	0.0762
1348					SD	0.288					CV	1.233
1349					k hat (MLE)	0.672					k star (bias corrected MLE)	0.643
1350					Theta hat (MLE)	0.347					Theta star (bias corrected MLE)	0.363
1351					nu hat (MLE)	61.86					nu star (bias corrected)	59.16
1352					MLE Mean (bias corrected)	0.233					MLE Sd (bias corrected)	0.291
1353					95% Percentile of Chisquare (2k)	4.513					90% Percentile	0.597
1354					95% Percentile	0.818					99% Percentile	1.351
1355					The following statistics are computed using Gamma ROS Statistics on Imputed Data							
1356					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
1357						WH	HW				WH	HW
1358				95% Approx. Gamma UTL with 95% Coverage		1.077	1.171			95% Approx. Gamma UPL	0.805	0.841
1359					95% Gamma USL	1.88	2.236					
1360												
1361					The following statistics are computed using gamma distribution and KM estimates							
1362					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
1363					k hat (KM)	0.734					nu hat (KM)	67.5
1364						WH	HW				WH	HW
1365				95% Approx. Gamma UTL with 95% Coverage		1.007	1.063			95% Approx. Gamma UPL	0.769	0.786

	A	B	C	D	E	F	G	H	I	J	K	L
1366				95% Gamma USL	1.699	1.928						
1367												
1368					Lognormal GOF Test on Detected Observations Only							
1369				Shapiro Wilk Test Statistic		0.927	Shapiro Wilk GOF Test					
1370				5% Shapiro Wilk Critical Value		0.887	Detected Data appear Lognormal at 5% Significance Level					
1371				Lilliefors Test Statistic		0.155	Lilliefors GOF Test					
1372				5% Lilliefors Critical Value		0.222	Detected Data appear Lognormal at 5% Significance Level					
1373					Detected Data appear Lognormal at 5% Significance Level							
1374												
1375					Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects							
1376				Mean in Original Scale		0.321	Mean in Log Scale					-1.323
1377				SD in Original Scale		0.23	SD in Log Scale					0.578
1378				95% UTL95% Coverage		0.885	95% BCA UTL95% Coverage					0.973
1379				95% Bootstrap (%) UTL95% Coverage		0.973	95% UPL (t)					0.71
1380				90% Percentile (z)		0.558	95% Percentile (z)					0.689
1381				99% Percentile (z)		1.021	95% USL					1.442
1382												
1383					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
1384				KM Mean of Logged Data		-2.132	95% KM UTL (Lognormal)95% Coverage					1.364
1385				KM SD of Logged Data		1.175	95% KM UPL (Lognormal)					0.871
1386				95% KM Percentile Lognormal (z)		0.819	95% KM USL (Lognormal)					3.68
1387												
1388					Background DL/2 Statistics Assuming Lognormal Distribution							
1389				Mean in Original Scale		0.268	Mean in Log Scale					-1.909
1390				SD in Original Scale		0.27	SD in Log Scale					1.194
1391				95% UTL95% Coverage		1.776	95% UPL (t)					1.125
1392				90% Percentile (z)		0.685	95% Percentile (z)					1.057
1393				99% Percentile (z)		2.385	95% USL					4.869
1394					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
1395												
1396					Nonparametric Distribution Free Background Statistics							
1397					Data appear to follow a Discernible Distribution at 5% Significance Level							
1398												
1399					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
1400				Order of Statistic, r		45	95% UTL with95% Coverage					0.89
1401				Approximate f		1.184	Confidence Coefficient (CC) achieved by UTL					0.677
1402				95% UPL		0.876	95% USL					1
1403				95% KM Chebyshev UPL		1.485						
1404												
1405					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
1406					data set free of outliers and consists of observations collected from clean unimpacted locations.							
1407					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1408					represents a background data set and when many onsite observations need to be compared with the BTV.							
1409												
1410	Total DDTs (calc'd)											
1411												
1412					General Statistics							
1413				Total Number of Observations		46	Number of Missing Observations					2
1414				Number of Distinct Observations		46						
1415				Number of Detects		45	Number of Non-Detects					1
1416				Number of Distinct Detects		45	Number of Distinct Non-Detects					1
1417				Minimum Detect		0.2	Minimum Non-Detect					0.18
1418				Maximum Detect		3.41	Maximum Non-Detect					0.18
1419				Variance Detected		0.7	Percent Non-Detects					2.174%
1420				Mean Detected		1.852	SD Detected					0.837
1421				Mean of Detected Logged Data		0.46	SD of Detected Logged Data					0.654
1422												
1423					Critical Values for Background Threshold Values (BTVs)							
1424				Tolerance Factor K (For UTL)		2.079	d2max (for USL)					2.924
1425												
1426					Normal GOF Test on Detects Only							
1427				Shapiro Wilk Test Statistic		0.956	Shapiro Wilk GOF Test					
1428				5% Shapiro Wilk Critical Value		0.945	Detected Data appear Normal at 5% Significance Level					
1429				Lilliefors Test Statistic		0.106	Lilliefors GOF Test					
1430				5% Lilliefors Critical Value		0.132	Detected Data appear Normal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
1431	Detected Data appear Normal at 5% Significance Level											
1432												
1433	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
1434					Mean	1.816					SD	0.854
1435					95% UTL95% Coverage	3.591					95% KM UPL (t)	3.265
1436					90% KM Percentile (z)	2.91					95% KM Percentile (z)	3.22
1437					99% KM Percentile (z)	3.802					95% KM USL	4.312
1438												
1439	DL/2 Substitution Background Statistics Assuming Normal Distribution											
1440					Mean	1.814					SD	0.867
1441					95% UTL95% Coverage	3.617					95% UPL (t)	3.286
1442					90% Percentile (z)	2.925					95% Percentile (z)	3.24
1443					99% Percentile (z)	3.831					95% USL	4.349
1444	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
1445												
1446	Gamma GOF Tests on Detected Observations Only											
1447					A-D Test Statistic	1.403	Anderson-Darling GOF Test					
1448					5% A-D Critical Value	0.755	Data Not Gamma Distributed at 5% Significance Level					
1449					K-S Test Statistic	0.168	Kolmogrov-Smirnoff GOF					
1450					5% K-S Critical Value	0.133	Data Not Gamma Distributed at 5% Significance Level					
1451	Data Not Gamma Distributed at 5% Significance Level											
1452												
1453	Gamma Statistics on Detected Data Only											
1454					k hat (MLE)	3.351					k star (bias corrected MLE)	3.143
1455					Theta hat (MLE)	0.553					Theta star (bias corrected MLE)	0.589
1456					nu hat (MLE)	301.6					nu star (bias corrected)	282.9
1457					MLE Mean (bias corrected)	1.852						
1458					MLE Sd (bias corrected)	1.045					95% Percentile of Chisquare (2k)	13.02
1459												
1460	Gamma ROS Statistics using Imputed Non-Detects											
1461	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1462	GROS may not be used when kstar of detected data is small such as < 0.1											
1463	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1464	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1465					Minimum	0.2					Mean	1.823
1466					Maximum	3.41					Median	2.006
1467					SD	0.85					CV	0.466
1468					k hat (MLE)	3.19					k star (bias corrected MLE)	2.996
1469					Theta hat (MLE)	0.572					Theta star (bias corrected MLE)	0.609
1470					nu hat (MLE)	293.4					nu star (bias corrected)	275.6
1471					MLE Mean (bias corrected)	1.823					MLE Sd (bias corrected)	1.053
1472					95% Percentile of Chisquare (2k)	12.58					90% Percentile	3.236
1473					95% Percentile	3.828					99% Percentile	5.112
1474	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
1475	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
1476					WH	HW					WH	HW
1477				95% Approx. Gamma UTL with 95% Coverage	4.563	4.826				95% Approx. Gamma UPL	3.878	4.036
1478				95% Gamma USL	6.355	6.981						
1479												
1480	The following statistics are computed using gamma distribution and KM estimates											
1481	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
1482					k hat (KM)	4.525					nu hat (KM)	416.3
1483					WH	HW					WH	HW
1484				95% Approx. Gamma UTL with 95% Coverage	4.669	4.977				95% Approx. Gamma UPL	3.949	4.134
1485				95% Gamma USL	6.564	7.294						
1486												
1487	Lognormal GOF Test on Detected Observations Only											
1488					Shapiro Wilk Test Statistic	0.846	Shapiro Wilk GOF Test					
1489					5% Shapiro Wilk Critical Value	0.945	Data Not Lognormal at 5% Significance Level					
1490					Lilliefors Test Statistic	0.182	Lilliefors GOF Test					
1491					5% Lilliefors Critical Value	0.132	Data Not Lognormal at 5% Significance Level					
1492	Data Not Lognormal at 5% Significance Level											
1493												
1494	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
1495					Mean in Original Scale	1.819					Mean in Log Scale	0.426

	A	B	C	D	E	F	G	H	I	J	K	L
1496					SD in Original Scale	0.857					SD in Log Scale	0.686
1497					95% UTL95% Coverage	6.376					95% BCA UTL95% Coverage	3.291
1498					95% Bootstrap (%) UTL95% Coverage	3.318					95% UPL (t)	4.907
1499					90% Percentile (z)	3.689					95% Percentile (z)	4.733
1500					99% Percentile (z)	7.553					95% USL	11.38
1501												
1502					**Background DL/2 Statistics Assuming Lognormal Distribution**							
1503					Mean in Original Scale	1.814					Mean in Log Scale	0.398
1504					SD in Original Scale	0.867					SD in Log Scale	0.773
1505					95% UTL95% Coverage	7.424					95% UPL (t)	5.527
1506					90% Percentile (z)	4.007					95% Percentile (z)	5.306
1507					99% Percentile (z)	8.985					95% USL	14.26
1508					**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**							
1509												
1510					**Nonparametric Distribution Free Background Statistics**							
1511					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
1512												
1513					**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**							
1514					Order of Statistic, r	45					95% UTL with95% Coverage	3.043
1515					Approximate f	1.184					Confidence Coefficient (CC) achieved by UTL	0.677
1516					95% UPL	3.018					95% USL	3.41
1517					95% KM Chebyshev UPL	5.577						
1518												
1519					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
1520					data set free of outliers and consists of observations collected from clean unimpacted locations.							
1521					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1522					represents a background data set and when many onsite observations need to be compared with the BTV.							
1523												
1524	**Dieldrin**											
1525												
1526					**General Statistics**							
1527					Total Number of Observations	43					Number of Missing Observations	5
1528					Number of Distinct Observations	35						
1529					Number of Detects	3					Number of Non-Detects	40
1530					Number of Distinct Detects	3					Number of Distinct Non-Detects	32
1531					Minimum Detect	0.106					Minimum Non-Detect	0.03
1532					Maximum Detect	0.124					Maximum Non-Detect	0.32
1533					Variance Detected	8.9333E-5					Percent Non-Detects	93.02%
1534					Mean Detected	0.117					SD Detected	0.00945
1535					Mean of Detected Logged Data	-2.151					SD of Detected Logged Data	0.0827
1536												
1537					**Warning: Data set has only 3 Detected Values.**							
1538					**This is not enough to compute meaningful or reliable statistics and estimates.**							
1539												
1540												
1541					**Critical Values for Background Threshold Values (BTVs)**							
1542					Tolerance Factor K (For UTL)	2.097					d2max (for USL)	2.897
1543												
1544					**Normal GOF Test on Detects Only**							
1545					Shapiro Wilk Test Statistic	0.907					**Shapiro Wilk GOF Test**	
1546					5% Shapiro Wilk Critical Value	0.767					Detected Data appear Normal at 5% Significance Level	
1547					Lilliefors Test Statistic	0.304					**Lilliefors GOF Test**	
1548					5% Lilliefors Critical Value	0.512					Detected Data appear Normal at 5% Significance Level	
1549					**Detected Data appear Normal at 5% Significance Level**							
1550												
1551					**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**							
1552					Mean	0.0389					SD	0.0263
1553					95% UTL95% Coverage	0.0941					95% KM UPL (t)	0.0837
1554					90% KM Percentile (z)	0.0726					95% KM Percentile (z)	0.0822
1555					99% KM Percentile (z)	0.1					95% KM USL	0.115
1556												
1557					**DL/2 Substitution Background Statistics Assuming Normal Distribution**							
1558					Mean	0.0556					SD	0.0374
1559					95% UTL95% Coverage	0.134					95% UPL (t)	0.119
1560					90% Percentile (z)	0.104					95% Percentile (z)	0.117

	A	B	C	D	E	F	G	H	I	J	K	L
1561				99% Percentile (z)		0.143					95% USL	0.164
1562	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
1563												
1564	Gamma GOF Tests on Detected Observations Only											
1565	Not Enough Data to Perform GOF Test											
1566												
1567	Gamma Statistics on Detected Data Only											
1568				k hat (MLE)		222.4					k star (bias corrected MLE)	N/A
1569				Theta hat (MLE)		5.2462E-4					Theta star (bias corrected MLE)	N/A
1570				nu hat (MLE)		1334					nu star (bias corrected)	N/A
1571				MLE Mean (bias corrected)		N/A						
1572				MLE Sd (bias corrected)		N/A					95% Percentile of Chisquare (2k)	N/A
1573												
1574	Gamma ROS Statistics using Imputed Non-Detects											
1575	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1576	GROS may not be used when kstar of detected data is small such as < 0.1											
1577	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1578	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1579				Minimum		0.0469					Mean	0.0715
1580				Maximum		0.124					Median	0.067
1581				SD		0.0146					CV	0.204
1582				k hat (MLE)		30.04					k star (bias corrected MLE)	27.96
1583				Theta hat (MLE)		0.00238					Theta star (bias corrected MLE)	0.00256
1584				nu hat (MLE)		2583					nu star (bias corrected)	2404
1585				MLE Mean (bias corrected)		0.0715					MLE Sd (bias corrected)	0.0135
1586				95% Percentile of Chisquare (2k)		74.37					90% Percentile	0.0893
1587				95% Percentile		0.0951					99% Percentile	0.107
1588	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
1589	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
1590					WH	HW					WH	HW
1591	95% Approx. Gamma UTL with 95% Coverage				0.102	0.102			95% Approx. Gamma UPL		0.0954	0.0953
1592				95% Gamma USL	0.116	0.116						
1593												
1594	The following statistics are computed using gamma distribution and KM estimates											
1595	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
1596				k hat (KM)		2.186					nu hat (KM)	188
1597					WH	HW					WH	HW
1598	95% Approx. Gamma UTL with 95% Coverage				0.0864	0.0853			95% Approx. Gamma UPL		0.0745	0.0733
1599				95% Gamma USL	0.114	0.114						
1600												
1601	Lognormal GOF Test on Detected Observations Only											
1602				Shapiro Wilk Test Statistic		0.899	Shapiro Wilk GOF Test					
1603				5% Shapiro Wilk Critical Value		0.767	Detected Data appear Lognormal at 5% Significance Level					
1604				Lilliefors Test Statistic		0.31	Lilliefors GOF Test					
1605				5% Lilliefors Critical Value		0.512	Detected Data appear Lognormal at 5% Significance Level					
1606	Detected Data appear Lognormal at 5% Significance Level											
1607												
1608	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
1609				Mean in Original Scale		0.078					Mean in Log Scale	-2.56
1610				SD in Original Scale		0.012					SD in Log Scale	0.133
1611				95% UTL95% Coverage		0.102					95% BCA UTL95% Coverage	0.122
1612				95% Bootstrap (%) UTL95% Coverage		0.124					95% UPL (t)	0.097
1613				90% Percentile (z)		0.0917					95% Percentile (z)	0.0962
1614				99% Percentile (z)		0.105					95% USL	0.114
1615												
1616	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
1617				KM Mean of Logged Data		-3.367					95% KM UTL (Lognormal)95% Coverage	0.0818
1618				KM SD of Logged Data		0.412					95% KM UPL (Lognormal)	0.0695
1619				95% KM Percentile Lognormal (z)		0.0679					95% KM USL (Lognormal)	0.114
1620												
1621	Background DL/2 Statistics Assuming Lognormal Distribution											
1622				Mean in Original Scale		0.0556					Mean in Log Scale	-3.111
1623				SD in Original Scale		0.0374					SD in Log Scale	0.684
1624				95% UTL95% Coverage		0.187					95% UPL (t)	0.143
1625				90% Percentile (z)		0.107					95% Percentile (z)	0.137

	A	B	C	D	E	F	G	H	I	J	K	L
1626					99% Percentile (z)	0.219					95% USL	0.323
1627					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
1628												
1629					Nonparametric Distribution Free Background Statistics							
1630					Data appear to follow a Discernible Distribution at 5% Significance Level							
1631												
1632					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
1633					Order of Statistic, r	43					95% UTL with95% Coverage	0.32
1634					Approximate f	2.263					Confidence Coefficient (CC) achieved by UTL	0.89
1635					95% UPL	0.264					95% USL	0.32
1636					95% KM Chebyshev UPL	0.155						
1637												
1638					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
1639					data set free of outliers and consists of observations collected from clean unimpacted locations.							
1640					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1641					represents a background data set and when many onsite observations need to be compared with the BTV.							
1642												
1643	Diesel Range Hydrocarbons											
1644												
1645	General Statistics											
1646					Total Number of Observations	28					Number of Distinct Observations	26
1647											Number of Missing Observations	18
1648					Minimum	2.6					First Quartile	27.5
1649					Second Largest	59.5					Median	33
1650					Maximum	69					Third Quartile	42
1651					Mean	34.68					SD	14.77
1652					Coefficient of Variation	0.426					Skewness	0.155
1653					Mean of logged Data	3.41					SD of logged Data	0.639
1654												
1655					Critical Values for Background Threshold Values (BTVs)							
1656					Tolerance Factor K (For UTL)	2.246					d2max (for USL)	2.714
1657												
1658					Normal GOF Test							
1659					Shapiro Wilk Test Statistic	0.987					Shapiro Wilk GOF Test	
1660					5% Shapiro Wilk Critical Value	0.924					Data appear Normal at 5% Significance Level	
1661					Lilliefors Test Statistic	0.0844					Lilliefors GOF Test	
1662					5% Lilliefors Critical Value	0.167					Data appear Normal at 5% Significance Level	
1663					Data appear Normal at 5% Significance Level							
1664												
1665					Background Statistics Assuming Normal Distribution							
1666					95% UTL with 95% Coverage	67.85					90% Percentile (z)	53.61
1667					95% UPL (t)	60.28					95% Percentile (z)	58.97
1668					95% USL	74.76					99% Percentile (z)	69.03
1669												
1670					Gamma GOF Test							
1671					A-D Test Statistic	0.77					Anderson-Darling Gamma GOF Test	
1672					5% A-D Critical Value	0.75					Data Not Gamma Distributed at 5% Significance Level	
1673					K-S Test Statistic	0.159					Kolmogrov-Smirnoff Gamma GOF Test	
1674					5% K-S Critical Value	0.166					Detected data appear Gamma Distributed at 5% Significance Level	
1675					Detected data follow Appr. Gamma Distribution at 5% Significance Level							
1676												
1677					Gamma Statistics							
1678					k hat (MLE)	3.836					k star (bias corrected MLE)	3.449
1679					Theta hat (MLE)	9.041					Theta star (bias corrected MLE)	10.06
1680					nu hat (MLE)	214.8					nu star (bias corrected)	193.1
1681					MLE Mean (bias corrected)	34.68					MLE Sd (bias corrected)	18.68
1682												
1683					Background Statistics Assuming Gamma Distribution							
1684					95% Wilson Hilferty (WH) Approx. Gamma UPL	70.98					90% Percentile	59.73
1685					95% Hawkins Wixley (HW) Approx. Gamma UPL	74.2					95% Percentile	69.98
1686					95% WH Approx. Gamma UTL with 95% Coverage	86.67					99% Percentile	92.06
1687					95% HW Approx. Gamma UTL with 95% Coverage	92.54						
1688					95% WH USL	102.9					95% HW USL	112.1
1689												
1690					Lognormal GOF Test							

	A	B	C	D	E	F	G	H	I	J	K	L
1691					Shapiro Wilk Test Statistic	0.794		**Shapiro Wilk Lognormal GOF Test**				
1692					5% Shapiro Wilk Critical Value	0.924		Data Not Lognormal at 5% Significance Level				
1693					Lilliefors Test Statistic	0.201		**Lilliefors Lognormal GOF Test**				
1694					5% Lilliefors Critical Value	0.167		Data Not Lognormal at 5% Significance Level				
1695					**Data Not Lognormal at 5% Significance Level**							
1696												
1697					**Background Statistics assuming Lognormal Distribution**							
1698				95% UTL with	95% Coverage	127.2				90% Percentile (z)		68.69
1699					95% UPL (t)	91.7				95% Percentile (z)		86.65
1700					95% USL	171.7				99% Percentile (z)		134
1701												
1702					**Nonparametric Distribution Free Background Statistics**							
1703					**Data appear Normal at 5% Significance Level**							
1704												
1705					**Nonparametric Upper Limits for Background Threshold Values**							
1706					Order of Statistic, r	28				95% UTL with	95% Coverage	69
1707					Approximate f	1.474				Confidence Coefficient (CC) achieved by UTL		0.762
1708				95% Percentile Bootstrap UTL with	95% Coverage	69				95% BCA Bootstrap UTL with	95% Coverage	69
1709					95% UPL	64.73				90% Percentile		53.9
1710					90% Chebyshev UPL	79.76				95% Percentile		58.28
1711					95% Chebyshev UPL	100.2				99% Percentile		66.44
1712					95% USL	69						
1713												
1714					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
1715					data set free of outliers and consists of observations collected from clean unimpacted locations.							
1716					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1717					represents a background data set and when many onsite observations need to be compared with the BTV.							
1718												
1719	**Dioxin TEQ - Mammals 2006**											
1720												
1721	**General Statistics**											
1722					Total Number of Observations	50				Number of Distinct Observations		50
1723										Number of Missing Observations		21
1724					Minimum	0.0333				First Quartile		0.0974
1725					Second Largest	2.725				Median		0.341
1726					Maximum	3.207				Third Quartile		1.265
1727					Mean	0.747				SD		0.856
1728					Coefficient of Variation	1.146				Skewness		1.266
1729					Mean of logged Data	-1.105				SD of logged Data		1.409
1730												
1731					**Critical Values for Background Threshold Values (BTVs)**							
1732					Tolerance Factor K (For UTL)	2.058				d2max (for USL)		2.957
1733												
1734					**Normal GOF Test**							
1735					Shapiro Wilk Test Statistic	0.786		**Shapiro Wilk GOF Test**				
1736					5% Shapiro Wilk Critical Value	0.947		Data Not Normal at 5% Significance Level				
1737					Lilliefors Test Statistic	0.256		**Lilliefors GOF Test**				
1738					5% Lilliefors Critical Value	0.125		Data Not Normal at 5% Significance Level				
1739					**Data Not Normal at 5% Significance Level**							
1740												
1741					**Background Statistics Assuming Normal Distribution**							
1742				95% UTL with	95% Coverage	2.508				90% Percentile (z)		1.843
1743					95% UPL (t)	2.195				95% Percentile (z)		2.154
1744					95% USL	3.277				99% Percentile (z)		2.737
1745												
1746					**Gamma GOF Test**							
1747					A-D Test Statistic	1.384		**Anderson-Darling Gamma GOF Test**				
1748					5% A-D Critical Value	0.794		Data Not Gamma Distributed at 5% Significance Level				
1749					K-S Test Statistic	0.136		**Kolmogrov-Smirnoff Gamma GOF Test**				
1750					5% K-S Critical Value	0.13		Data Not Gamma Distributed at 5% Significance Level				
1751					**Data Not Gamma Distributed at 5% Significance Level**							
1752												
1753					**Gamma Statistics**							
1754					k hat (MLE)	0.738				k star (bias corrected MLE)		0.707
1755					Theta hat (MLE)	1.012				Theta star (bias corrected MLE)		1.056

	A	B	C	D	E	F	G	H	I	J	K	L
1756					nu hat (MLE)	73.8				nu star (bias corrected)		70.7
1757					MLE Mean (bias corrected)	0.747				MLE Sd (bias corrected)		0.888
1758												
1759					Background Statistics Assuming Gamma Distribution							
1760				95% Wilson Hilferty (WH) Approx. Gamma UPL		2.51				90% Percentile		1.87
1761				95% Hawkins Wixley (HW) Approx. Gamma UPL		2.648				95% Percentile		2.532
1762				95% WH Approx. Gamma UTL with 95% Coverage		3.284				99% Percentile		4.112
1763				95% HW Approx. Gamma UTL with 95% Coverage		3.596						
1764					95% WH USL	5.83				95% HW USL		7.001
1765												
1766					Lognormal GOF Test							
1767				Shapiro Wilk Test Statistic		0.92		Shapiro Wilk Lognormal GOF Test				
1768				5% Shapiro Wilk Critical Value		0.947		Data Not Lognormal at 5% Significance Level				
1769				Lilliefors Test Statistic		0.161		Lilliefors Lognormal GOF Test				
1770				5% Lilliefors Critical Value		0.125		Data Not Lognormal at 5% Significance Level				
1771					Data Not Lognormal at 5% Significance Level							
1772												
1773					Background Statistics assuming Lognormal Distribution							
1774				95% UTL with 95% Coverage		6.015				90% Percentile (z)		2.013
1775					95% UPL (t)	3.596				95% Percentile (z)		3.359
1776					95% USL	21.32				99% Percentile (z)		8.771
1777												
1778					Nonparametric Distribution Free Background Statistics							
1779					Data do not follow a Discernible Distribution (0.05)							
1780												
1781					Nonparametric Upper Limits for Background Threshold Values							
1782					Order of Statistic, r	49				95% UTL with 95% Coverage		2.725
1783					Approximate f	1.289				Confidence Coefficient (CC) achieved by UTL		0.721
1784				95% Percentile Bootstrap UTL with 95% Coverage		2.99				95% BCA Bootstrap UTL with 95% Coverage		2.933
1785					95% UPL	2.655				90% Percentile		2.17
1786					90% Chebyshev UPL	3.339				95% Percentile		2.49
1787					95% Chebyshev UPL	4.513				99% Percentile		2.971
1788					95% USL	3.207						
1789												
1790					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
1791					data set free of outliers and consists of observations collected from clean unimpacted locations.							
1792					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1793					represents a background data set and when many onsite observations need to be compared with the BTV.							
1794												
1795	gamma-Hexachlorocyclohexane											
1796												
1797					General Statistics							
1798				Total Number of Observations		44				Number of Missing Observations		4
1799				Number of Distinct Observations		28						
1800				Number of Detects		0				Number of Non-Detects		44
1801				Number of Distinct Detects		0				Number of Distinct Non-Detects		28
1802				Minimum Detect		N/A				Minimum Non-Detect		0.062
1803				Maximum Detect		N/A				Maximum Non-Detect		0.29
1804				Variance Detected		N/A				Percent Non-Detects		100%
1805				Mean Detected		N/A				SD Detected		N/A
1806				Mean of Detected Logged Data		N/A				SD of Detected Logged Data		N/A
1807												
1808					Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!							
1809					Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!							
1810					The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).							
1811												
1812					The data set for variable gamma-Hexachlorocyclohexane was not processed!							
1813												
1814												
1815	Hexachlorobenzene											
1816												
1817					General Statistics							
1818				Total Number of Observations		27				Number of Missing Observations		19
1819				Number of Distinct Observations		20						
1820				Number of Detects		17				Number of Non-Detects		10

	A	B	C	D	E	F	G	H	I	J	K	L
1821					Number of Distinct Detects	14				Number of Distinct Non-Detects		9
1822					Minimum Detect	0.075				Minimum Non-Detect		0.068
1823					Maximum Detect	0.369				Maximum Non-Detect		0.43
1824					Variance Detected	0.00655				Percent Non-Detects		37.04%
1825					Mean Detected	0.183				SD Detected		0.0809
1826					Mean of Detected Logged Data	-1.785				SD of Detected Logged Data		0.431
1827												
1828					**Critical Values for Background Threshold Values (BTVs)**							
1829					Tolerance Factor K (For UTL)	2.26				d2max (for USL)		2.698
1830												
1831					**Normal GOF Test on Detects Only**							
1832					Shapiro Wilk Test Statistic	0.924				**Shapiro Wilk GOF Test**		
1833					5% Shapiro Wilk Critical Value	0.892				Detected Data appear Normal at 5% Significance Level		
1834					Lilliefors Test Statistic	0.172				**Lilliefors GOF Test**		
1835					5% Lilliefors Critical Value	0.215				Detected Data appear Normal at 5% Significance Level		
1836					**Detected Data appear Normal at 5% Significance Level**							
1837												
1838					**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**							
1839					Mean	0.16				SD		0.0772
1840					95% UTL95% Coverage	0.334				95% KM UPL (t)		0.294
1841					90% KM Percentile (z)	0.259				95% KM Percentile (z)		0.287
1842					99% KM Percentile (z)	0.34				95% KM USL		0.368
1843												
1844					**DL/2 Substitution Background Statistics Assuming Normal Distribution**							
1845					Mean	0.157				SD		0.08
1846					95% UTL95% Coverage	0.337				95% UPL (t)		0.295
1847					90% Percentile (z)	0.259				95% Percentile (z)		0.288
1848					99% Percentile (z)	0.343				95% USL		0.372
1849					**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**							
1850												
1851					**Gamma GOF Tests on Detected Observations Only**							
1852					A-D Test Statistic	0.227				**Anderson-Darling GOF Test**		
1853					5% A-D Critical Value	0.741				Detected data appear Gamma Distributed at 5% Significance Level		
1854					K-S Test Statistic	0.116				**Kolmogrov-Smirnoff GOF**		
1855					5% K-S Critical Value	0.21				Detected data appear Gamma Distributed at 5% Significance Level		
1856					**Detected data appear Gamma Distributed at 5% Significance Level**							
1857												
1858					**Gamma Statistics on Detected Data Only**							
1859					k hat (MLE)	5.868				k star (bias corrected MLE)		4.872
1860					Theta hat (MLE)	0.0312				Theta star (bias corrected MLE)		0.0376
1861					nu hat (MLE)	199.5				nu star (bias corrected)		165.6
1862					MLE Mean (bias corrected)	0.183						
1863					MLE Sd (bias corrected)	0.083				95% Percentile of Chisquare (2k)		17.95
1864												
1865					**Gamma ROS Statistics using Imputed Non-Detects**							
1866					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1867					GROS may not be used when kstar of detected data is small such as < 0.1							
1868					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
1869					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
1870					Minimum	0.0359				Mean		0.157
1871					Maximum	0.369				Median		0.14
1872					SD	0.0762				CV		0.487
1873					k hat (MLE)	4.555				k star (bias corrected MLE)		4.074
1874					Theta hat (MLE)	0.0344				Theta star (bias corrected MLE)		0.0384
1875					nu hat (MLE)	246				nu star (bias corrected)		220
1876					MLE Mean (bias corrected)	0.157				MLE Sd (bias corrected)		0.0776
1877					95% Percentile of Chisquare (2k)	15.72				90% Percentile		0.26
1878					95% Percentile	0.302				99% Percentile		0.391
1879					**The following statistics are computed using Gamma ROS Statistics on Imputed Data**							
1880					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
1881					WH	HW					WH	HW
1882			95% Approx. Gamma UTL with 95% Coverage		0.372	0.383				95% Approx. Gamma UPL	0.307	0.312
1883					95% Gamma USL	0.433	0.452					
1884												
1885					**The following statistics are computed using gamma distribution and KM estimates**							

	A	B	C	D	E	F	G	H	I	J	K	L
1886	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
1887					k hat (KM)	4.304					nu hat (KM)	232.4
1888					WH	HW					WH	HW
1889	95% Approx. Gamma UTL with 95% Coverage				0.371	0.38			95% Approx. Gamma UPL		0.308	0.311
1890				95% Gamma USL	0.431	0.446						
1891												
1892	**Lognormal GOF Test on Detected Observations Only**											
1893				Shapiro Wilk Test Statistic		0.984	**Shapiro Wilk GOF Test**					
1894				5% Shapiro Wilk Critical Value		0.892	Detected Data appear Lognormal at 5% Significance Level					
1895				Lilliefors Test Statistic		0.1	**Lilliefors GOF Test**					
1896				5% Lilliefors Critical Value		0.215	Detected Data appear Lognormal at 5% Significance Level					
1897	**Detected Data appear Lognormal at 5% Significance Level**											
1898												
1899	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
1900				Mean in Original Scale		0.158			Mean in Log Scale			-1.941
1901				SD in Original Scale		0.074			SD in Log Scale			0.436
1902				95% UTL95% Coverage		0.384			95% BCA UTL95% Coverage			0.354
1903				95% Bootstrap (%) UTL95% Coverage		0.369			95% UPL (t)			0.306
1904				90% Percentile (z)		0.251			95% Percentile (z)			0.294
1905				99% Percentile (z)		0.396			95% USL			0.465
1906												
1907	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
1908				KM Mean of Logged Data		-1.942			95% KM UTL (Lognormal)95% Coverage			0.415
1909				KM SD of Logged Data		0.471			95% KM UPL (Lognormal)			0.325
1910				95% KM Percentile Lognormal (z)		0.311			95% KM USL (Lognormal)			0.511
1911												
1912	**Background DL/2 Statistics Assuming Lognormal Distribution**											
1913				Mean in Original Scale		0.157			Mean in Log Scale			-1.992
1914				SD in Original Scale		0.08			SD in Log Scale			0.57
1915				95% UTL95% Coverage		0.495			95% UPL (t)			0.367
1916				90% Percentile (z)		0.283			95% Percentile (z)			0.348
1917				99% Percentile (z)		0.514			95% USL			0.635
1918	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
1919												
1920	**Nonparametric Distribution Free Background Statistics**											
1921	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
1922												
1923	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
1924				Order of Statistic, r		27			95% UTL with95% Coverage			0.43
1925				Approximate f		1.421			Confidence Coefficient (CC) achieved by UTL			0.75
1926				95% UPL		0.406			95% USL			0.43
1927				95% KM Chebyshev UPL		0.503						
1928												
1929	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
1930	data set free of outliers and consists of observations collected from clean unimpacted locations.											
1931	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1932	represents a background data set and when many onsite observations need to be compared with the BTV.											
1933												
1934	**Total HPAHs (calc'd)**											
1935												
1936	**General Statistics**											
1937				Total Number of Observations		68			Number of Missing Observations			3
1938				Number of Distinct Observations		64						
1939				Number of Detects		56			Number of Non-Detects			12
1940				Number of Distinct Detects		55			Number of Distinct Non-Detects			9
1941				Minimum Detect		4.73			Minimum Non-Detect			1
1942				Maximum Detect		188			Maximum Non-Detect			10
1943				Variance Detected		1750			Percent Non-Detects			17.65%
1944				Mean Detected		63.52			SD Detected			41.83
1945				Mean of Detected Logged Data		3.903			SD of Detected Logged Data			0.78
1946												
1947	**Critical Values for Background Threshold Values (BTVs)**											
1948				Tolerance Factor K (For UTL)		1.991			d2max (for USL)			3.073
1949												
1950	**Normal GOF Test on Detects Only**											

	A	B	C	D	E	F	G	H	I	J	K	L
1951				Shapiro Wilk Test Statistic		0.923	Normal GOF Test on Detected Observations Only					
1952				5% Shapiro Wilk P Value		0.00157	Data Not Normal at 5% Significance Level					
1953				Lilliefors Test Statistic		0.11	Lilliefors GOF Test					
1954				5% Lilliefors Critical Value		0.118	Detected Data appear Normal at 5% Significance Level					
1955	Detected Data appear Approximate Normal at 5% Significance Level											
1956												
1957	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
1958				Mean		52.51				SD		44.5
1959				95% UTL95% Coverage		141.1				95% KM UPL (t)		127.3
1960				90% KM Percentile (z)		109.5				95% KM Percentile (z)		125.7
1961				99% KM Percentile (z)		156				95% KM USL		189.3
1962												
1963	DL/2 Substitution Background Statistics Assuming Normal Distribution											
1964				Mean		52.64				SD		44.69
1965				95% UTL95% Coverage		141.6				95% UPL (t)		127.7
1966				90% Percentile (z)		109.9				95% Percentile (z)		126.1
1967				99% Percentile (z)		156.6				95% USL		190
1968	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
1969												
1970	Gamma GOF Tests on Detected Observations Only											
1971				A-D Test Statistic		0.175	Anderson-Darling GOF Test					
1972				5% A-D Critical Value		0.762	Detected data appear Gamma Distributed at 5% Significance Level					
1973				K-S Test Statistic		0.0632	Kolmogrov-Smirnoff GOF					
1974				5% K-S Critical Value		0.12	Detected data appear Gamma Distributed at 5% Significance Level					
1975	Detected data appear Gamma Distributed at 5% Significance Level											
1976												
1977	Gamma Statistics on Detected Data Only											
1978				k hat (MLE)		2.163				k star (bias corrected MLE)		2.059
1979				Theta hat (MLE)		29.37				Theta star (bias corrected MLE)		30.85
1980				nu hat (MLE)		242.2				nu star (bias corrected)		230.6
1981				MLE Mean (bias corrected)		63.52						
1982				MLE Sd (bias corrected)		44.27				95% Percentile of Chisquare (2k)		9.678
1983												
1984	Gamma ROS Statistics using Imputed Non-Detects											
1985	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1986	GROS may not be used when kstar of detected data is small such as < 0.1											
1987	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1988	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1989				Minimum		0.01				Mean		52.7
1990				Maximum		188				Median		44.78
1991				SD		44.62				CV		0.847
1992				k hat (MLE)		0.72				k star (bias corrected MLE)		0.699
1993				Theta hat (MLE)		73.15				Theta star (bias corrected MLE)		75.45
1994				nu hat (MLE)		97.99				nu star (bias corrected)		95
1995				MLE Mean (bias corrected)		52.7				MLE Sd (bias corrected)		63.06
1996				95% Percentile of Chisquare (2k)		4.759				90% Percentile		132.4
1997				95% Percentile		179.5				99% Percentile		292.1
1998	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
1999	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2000					WH	HW					WH	HW
2001				95% Approx. Gamma UTL with 95% Coverage	215	258.2				95% Approx. Gamma UPL	173	199.5
2002				95% Gamma USL	413	567.1						
2003												
2004	The following statistics are computed using gamma distribution and KM estimates											
2005	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2006				k hat (KM)		1.392				nu hat (KM)		189.4
2007					WH	HW					WH	HW
2008				95% Approx. Gamma UTL with 95% Coverage	211.3	245.5				95% Approx. Gamma UPL	170.2	190.6
2009				95% Gamma USL	405.1	532.4						
2010												
2011	Lognormal GOF Test on Detected Observations Only											
2012				Lilliefors Test Statistic		0.09	Lilliefors GOF Test					
2013				5% Lilliefors Critical Value		0.118	Detected Data appear Lognormal at 5% Significance Level					
2014	Detected Data appear Lognormal at 5% Significance Level											
2015												

	A	B	C	D	E	F	G	H	I	J	K	L
2016	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2017					Mean in Original Scale	54.04					Mean in Log Scale	3.615
2018					SD in Original Scale	43.16					SD in Log Scale	0.946
2019					95% UTL95% Coverage	244.2					95% BCA UTL95% Coverage	166.6
2020					95% Bootstrap (%) UTL95% Coverage	173					95% UPL (t)	182
2021					90% Percentile (z)	124.8					95% Percentile (z)	176
2022					99% Percentile (z)	335.3					95% USL	679.7
2023												
2024	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
2025					KM Mean of Logged Data	3.225					95% KM UTL (Lognormal)95% Coverage	644
2026					KM SD of Logged Data	1.629					95% KM UPL (Lognormal)	388.1
2027					95% KM Percentile Lognormal (z)	366.5					95% KM USL (Lognormal)	3754
2028												
2029	Background DL/2 Statistics Assuming Lognormal Distribution											
2030					Mean in Original Scale	52.64					Mean in Log Scale	3.278
2031					SD in Original Scale	44.69					SD in Log Scale	1.562
2032					95% UTL95% Coverage	594.9					95% UPL (t)	366.1
2033					90% Percentile (z)	196.4					95% Percentile (z)	346.4
2034					99% Percentile (z)	1004					95% USL	3226
2035	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
2036												
2037	Nonparametric Distribution Free Background Statistics											
2038	Data appear to follow a Discernible Distribution at 5% Significance Level											
2039												
2040	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
2041					Order of Statistic, r	67					95% UTL with95% Coverage	173
2042					Approximate f	1.763					Confidence Coefficient (CC) achieved by UTL	0.86
2043					95% UPL	146.4					95% USL	188
2044					95% KM Chebyshev UPL	247.9						
2045												
2046	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2047	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2048	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2049	represents a background data set and when many onsite observations need to be compared with the BTV.											
2050												
2051	Lead											
2052												
2053	General Statistics											
2054					Total Number of Observations	61					Number of Distinct Observations	54
2055											Number of Missing Observations	10
2056					Minimum	3.96					First Quartile	6.4
2057					Second Largest	10.5					Median	7.2
2058					Maximum	10.8					Third Quartile	8.48
2059					Mean	7.355					SD	1.558
2060					Coefficient of Variation	0.212					Skewness	0.0676
2061					Mean of logged Data	1.972					SD of logged Data	0.222
2062												
2063	Critical Values for Background Threshold Values (BTVs)											
2064					Tolerance Factor K (For UTL)	2.013					d2max (for USL)	3.033
2065												
2066	Normal GOF Test											
2067					Shapiro Wilk Test Statistic	0.978					Normal GOF Test	
2068					5% Shapiro Wilk P Value	0.589					Data appear Normal at 5% Significance Level	
2069					Lilliefors Test Statistic	0.0641					Lilliefors GOF Test	
2070					5% Lilliefors Critical Value	0.113					Data appear Normal at 5% Significance Level	
2071	Data appear Normal at 5% Significance Level											
2072												
2073	Background Statistics Assuming Normal Distribution											
2074					95% UTL with 95% Coverage	10.49					90% Percentile (z)	9.352
2075					95% UPL (t)	9.98					95% Percentile (z)	9.918
2076					95% USL	12.08					99% Percentile (z)	10.98
2077												
2078	Gamma GOF Test											
2079					A-D Test Statistic	0.282					Anderson-Darling Gamma GOF Test	
2080					5% A-D Critical Value	0.749					Detected data appear Gamma Distributed at 5% Significance Level	

	A	B	C	D	E	F	G	H	I	J	K	L
2081					K-S Test Statistic	0.0631	**Kolmogrov-Smirnoff Gamma GOF Test**					
2082					5% K-S Critical Value	0.114	Detected data appear Gamma Distributed at 5% Significance Level					
2083	**Detected data appear Gamma Distributed at 5% Significance Level**											
2084												
2085	**Gamma Statistics**											
2086					k hat (MLE)	21.59				k star (bias corrected MLE)		20.54
2087					Theta hat (MLE)	0.341				Theta star (bias corrected MLE)		0.358
2088					nu hat (MLE)	2634				nu star (bias corrected)		2506
2089					MLE Mean (bias corrected)	7.355				MLE Sd (bias corrected)		1.623
2090												
2091	**Background Statistics Assuming Gamma Distribution**											
2092				95% Wilson Hilferty (WH) Approx. Gamma UPL		10.24				90% Percentile		9.496
2093				95% Hawkins Wixley (HW) Approx. Gamma UPL		10.29				95% Percentile		10.21
2094				95% WH Approx. Gamma UTL with	95% Coverage	10.91				99% Percentile		11.65
2095				95% HW Approx. Gamma UTL with	95% Coverage	10.98						
2096					95% WH USL	13.17				95% HW USL		13.36
2097												
2098	**Lognormal GOF Test**											
2099					Shapiro Wilk Test Statistic	0.963	**Shapiro Wilk Lognormal GOF Test**					
2100					5% Shapiro Wilk P Value	0.143	Data appear Lognormal at 5% Significance Level					
2101					Lilliefors Test Statistic	0.0723	**Lilliefors Lognormal GOF Test**					
2102					5% Lilliefors Critical Value	0.113	Data appear Lognormal at 5% Significance Level					
2103	**Data appear Lognormal at 5% Significance Level**											
2104												
2105	**Background Statistics assuming Lognormal Distribution**											
2106				95% UTL with	95% Coverage	11.24				90% Percentile (z)		9.55
2107					95% UPL (t)	10.44				95% Percentile (z)		10.35
2108					95% USL	14.09				99% Percentile (z)		12.04
2109												
2110	**Nonparametric Distribution Free Background Statistics**											
2111	**Data appear Normal at 5% Significance Level**											
2112												
2113	**Nonparametric Upper Limits for Background Threshold Values**											
2114					Order of Statistic, r	60				95% UTL with	95% Coverage	10.5
2115					Approximate f	1.579				Confidence Coefficient (CC) achieved by UTL		0.816
2116				95% Percentile Bootstrap UTL with	95% Coverage	10.5				95% BCA Bootstrap UTL with	95% Coverage	10.5
2117					95% UPL	10.09				90% Percentile		9.21
2118					90% Chebyshev UPL	12.07				95% Percentile		10
2119					95% Chebyshev UPL	14.2				99% Percentile		10.62
2120					95% USL	10.8						
2121												
2122	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2123	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2124	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2125	represents a background data set and when many onsite observations need to be compared with the BTV.											
2126												
2127	**Total LPAHs (calc'd)**											
2128												
2129	**General Statistics**											
2130					Total Number of Observations	70				Number of Missing Observations		1
2131					Number of Distinct Observations	61						
2132					Number of Detects	47				Number of Non-Detects		23
2133					Number of Distinct Detects	47				Number of Distinct Non-Detects		14
2134					Minimum Detect	2.335				Minimum Non-Detect		1.5
2135					Maximum Detect	36				Maximum Non-Detect		10
2136					Variance Detected	54.64				Percent Non-Detects		32.86%
2137					Mean Detected	13.87				SD Detected		7.392
2138					Mean of Detected Logged Data	2.456				SD of Detected Logged Data		0.654
2139												
2140	**Critical Values for Background Threshold Values (BTVs)**											
2141					Tolerance Factor K (For UTL)	1.985				d2max (for USL)		3.084
2142												
2143	**Normal GOF Test on Detects Only**											
2144					Shapiro Wilk Test Statistic	0.959	**Shapiro Wilk GOF Test**					
2145					5% Shapiro Wilk Critical Value	0.946	Detected Data appear Normal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
2146				Lilliefors Test Statistic		0.117	**Lilliefors GOF Test**					
2147				5% Lilliefors Critical Value		0.129	Detected Data appear Normal at 5% Significance Level					
2148	**Detected Data appear Normal at 5% Significance Level**											
2149												
2150	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
2151				Mean		9.888				SD		8.282
2152				95% UTL95% Coverage		26.33				95% KM UPL (t)		23.79
2153				90% KM Percentile (z)		20.5				95% KM Percentile (z)		23.51
2154				99% KM Percentile (z)		29.15				95% KM USL		35.43
2155												
2156	**DL/2 Substitution Background Statistics Assuming Normal Distribution**											
2157				Mean		9.849				SD		8.386
2158				95% UTL95% Coverage		26.5				95% UPL (t)		23.93
2159				90% Percentile (z)		20.6				95% Percentile (z)		23.64
2160				99% Percentile (z)		29.36				95% USL		35.71
2161	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
2162												
2163	**Gamma GOF Tests on Detected Observations Only**											
2164				A-D Test Statistic		0.571	**Anderson-Darling GOF Test**					
2165				5% A-D Critical Value		0.756	Detected data appear Gamma Distributed at 5% Significance Level					
2166				K-S Test Statistic		0.101	**Kolmogrov-Smirnoff GOF**					
2167				5% K-S Critical Value		0.13	Detected data appear Gamma Distributed at 5% Significance Level					
2168	**Detected data appear Gamma Distributed at 5% Significance Level**											
2169												
2170	**Gamma Statistics on Detected Data Only**											
2171				k hat (MLE)		3.044				k star (bias corrected MLE)		2.864
2172				Theta hat (MLE)		4.555				Theta star (bias corrected MLE)		4.842
2173				nu hat (MLE)		286.1				nu star (bias corrected)		269.2
2174				MLE Mean (bias corrected)		13.87						
2175				MLE Sd (bias corrected)		8.194				95% Percentile of Chisquare (2k)		12.18
2176												
2177	**Gamma ROS Statistics using Imputed Non-Detects**											
2178	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2179	GROS may not be used when kstar of detected data is small such as < 0.1											
2180	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2181	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2182				Minimum		0.01				Mean		9.902
2183				Maximum		36				Median		9.26
2184				SD		8.339				CV		0.842
2185				k hat (MLE)		0.885				k star (bias corrected MLE)		0.856
2186				Theta hat (MLE)		11.19				Theta star (bias corrected MLE)		11.56
2187				nu hat (MLE)		123.9				nu star (bias corrected)		119.9
2188				MLE Mean (bias corrected)		9.902				MLE Sd (bias corrected)		10.7
2189				95% Percentile of Chisquare (2k)		5.422				90% Percentile		23.68
2190				95% Percentile		31.35				99% Percentile		49.35
2191	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
2192	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
2193					WH	HW					WH	HW
2194	95% Approx. Gamma UTL with 95% Coverage				37.89	43.51				95% Approx. Gamma UPL	30.86	34.27
2195				95% Gamma USL	71.79	92.58						
2196												
2197	**The following statistics are computed using gamma distribution and KM estimates**											
2198	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
2199				k hat (KM)		1.426					nu hat (KM)	199.6
2200					WH	HW					WH	HW
2201	95% Approx. Gamma UTL with 95% Coverage				34.22	36.76				95% Approx. Gamma UPL	28.26	29.67
2202				95% Gamma USL	62.38	73						
2203												
2204	**Lognormal GOF Test on Detected Observations Only**											
2205				Shapiro Wilk Test Statistic		0.916	**Shapiro Wilk GOF Test**					
2206				5% Shapiro Wilk Critical Value		0.946	Data Not Lognormal at 5% Significance Level					
2207				Lilliefors Test Statistic		0.139	**Lilliefors GOF Test**					
2208				5% Lilliefors Critical Value		0.129	Data Not Lognormal at 5% Significance Level					
2209	**Data Not Lognormal at 5% Significance Level**											
2210												

	A	B	C	D	E	F	G	H	I	J	K	L
2211	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2212					Mean in Original Scale	10.34					Mean in Log Scale	2.015
2213					SD in Original Scale	7.902					SD in Log Scale	0.841
2214					95% UTL95% Coverage	39.82					95% BCA UTL95% Coverage	27.99
2215					95% Bootstrap (%) UTL95% Coverage	29.94					95% UPL (t)	30.78
2216					90% Percentile (z)	22.03					95% Percentile (z)	29.91
2217					99% Percentile (z)	53.05					95% USL	100.3
2218												
2219	Background DL/2 Statistics Assuming Lognormal Distribution											
2220					Mean in Original Scale	9.849					Mean in Log Scale	1.762
2221					SD in Original Scale	8.386					SD in Log Scale	1.169
2222					95% UTL95% Coverage	59.27					95% UPL (t)	41.44
2223					90% Percentile (z)	26.04					95% Percentile (z)	39.81
2224					99% Percentile (z)	88.3					95% USL	214
2225	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
2226												
2227	Nonparametric Distribution Free Background Statistics											
2228	Data appear to follow a Discernible Distribution at 5% Significance Level											
2229												
2230	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
2231					Order of Statistic, r	69					95% UTL with95% Coverage	29.94
2232					Approximate f	1.816					Confidence Coefficient (CC) achieved by UTL	0.871
2233					95% UPL	25.39					95% USL	36
2234					95% KM Chebyshev UPL	46.24						
2235												
2236	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2237	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2238	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2239	represents a background data set and when many onsite observations need to be compared with the BTV.											
2240												
2241	Mercury											
2242												
2243	General Statistics											
2244					Total Number of Observations	61					Number of Missing Observations	10
2245					Number of Distinct Observations	34						
2246					Number of Detects	52					Number of Non-Detects	9
2247					Number of Distinct Detects	34					Number of Distinct Non-Detects	3
2248					Minimum Detect	0.009					Minimum Non-Detect	0.02
2249					Maximum Detect	0.061					Maximum Non-Detect	0.04
2250					Variance Detected	1.3958E-4					Percent Non-Detects	14.75%
2251					Mean Detected	0.0333					SD Detected	0.0118
2252					Mean of Detected Logged Data	-3.47					SD of Detected Logged Data	0.389
2253												
2254	Critical Values for Background Threshold Values (BTVs)											
2255					Tolerance Factor K (For UTL)	2.013					d2max (for USL)	3.033
2256												
2257	Normal GOF Test on Detects Only											
2258					Shapiro Wilk Test Statistic	0.976					Normal GOF Test on Detected Observations Only	
2259					5% Shapiro Wilk P Value	0.583					Detected Data appear Normal at 5% Significance Level	
2260					Lilliefors Test Statistic	0.0657					Lilliefors GOF Test	
2261					5% Lilliefors Critical Value	0.123					Detected Data appear Normal at 5% Significance Level	
2262	Detected Data appear Normal at 5% Significance Level											
2263												
2264	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
2265					Mean	0.0312					SD	0.0123
2266					95% UTL95% Coverage	0.0559					95% KM UPL (t)	0.0519
2267					90% KM Percentile (z)	0.0469					95% KM Percentile (z)	0.0514
2268					99% KM Percentile (z)	0.0598					95% KM USL	0.0685
2269												
2270	DL/2 Substitution Background Statistics Assuming Normal Distribution											
2271					Mean	0.0304					SD	0.0131
2272					95% UTL95% Coverage	0.0568					95% UPL (t)	0.0525
2273					90% Percentile (z)	0.0472					95% Percentile (z)	0.052
2274					99% Percentile (z)	0.0609					95% USL	0.0702
2275	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											

	A	B	C	D	E	F	G	H	I	J	K	L
2276												
2277						Gamma GOF Tests on Detected Observations Only						
2278					A-D Test Statistic	0.233	Anderson-Darling GOF Test					
2279					5% A-D Critical Value	0.752	Detected data appear Gamma Distributed at 5% Significance Level					
2280					K-S Test Statistic	0.0893	Kolmogrov-Smirnoff GOF					
2281					5% K-S Critical Value	0.123	Detected data appear Gamma Distributed at 5% Significance Level					
2282					Detected data appear Gamma Distributed at 5% Significance Level							
2283												
2284					Gamma Statistics on Detected Data Only							
2285					k hat (MLE)	7.484	k star (bias corrected MLE)					7.065
2286					Theta hat (MLE)	0.00445	Theta star (bias corrected MLE)					0.00472
2287					nu hat (MLE)	778.3	nu star (bias corrected)					734.8
2288					MLE Mean (bias corrected)	0.0333						
2289					MLE Sd (bias corrected)	0.0125	95% Percentile of Chisquare (2k)					23.86
2290												
2291					Gamma ROS Statistics using Imputed Non-Detects							
2292					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
2293					GROS may not be used when kstar of detected data is small such as < 0.1							
2294					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
2295					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
2296					Minimum	0.009	Mean					0.0312
2297					Maximum	0.061	Median					0.0305
2298					SD	0.0122	CV					0.39
2299					k hat (MLE)	6.367	k star (bias corrected MLE)					6.065
2300					Theta hat (MLE)	0.00491	Theta star (bias corrected MLE)					0.00515
2301					nu hat (MLE)	776.8	nu star (bias corrected)					739.9
2302					MLE Mean (bias corrected)	0.0312	MLE Sd (bias corrected)					0.0127
2303					95% Percentile of Chisquare (2k)	21.2	90% Percentile					0.0482
2304					95% Percentile	0.0546	99% Percentile					0.068
2305					The following statistics are computed using Gamma ROS Statistics on Imputed Data							
2306					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
2307						WH	HW				WH	HW
2308				95% Approx. Gamma UTL with 95% Coverage		0.0611	0.0623	95% Approx. Gamma UPL			0.0549	0.0556
2309				95% Gamma USL		0.0833	0.0868					
2310												
2311					The following statistics are computed using gamma distribution and KM estimates							
2312					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
2313					k hat (KM)	6.423	nu hat (KM)					783.7
2314						WH	HW				WH	HW
2315				95% Approx. Gamma UTL with 95% Coverage		0.0619	0.0632	95% Approx. Gamma UPL			0.0555	0.0563
2316				95% Gamma USL		0.0849	0.0888					
2317												
2318					Lognormal GOF Test on Detected Observations Only							
2319					Lilliefors Test Statistic	0.109	Lilliefors GOF Test					
2320					5% Lilliefors Critical Value	0.123	Detected Data appear Lognormal at 5% Significance Level					
2321					Detected Data appear Lognormal at 5% Significance Level							
2322												
2323					Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects							
2324					Mean in Original Scale	0.0312	Mean in Log Scale					-3.545
2325					SD in Original Scale	0.0121	SD in Log Scale					0.413
2326					95% UTL95% Coverage	0.0663	95% BCA UTL95% Coverage					0.06
2327					95% Bootstrap (%) UTL95% Coverage	0.06	95% UPL (t)					0.0579
2328					90% Percentile (z)	0.049	95% Percentile (z)					0.057
2329					99% Percentile (z)	0.0755	95% USL					0.101
2330												
2331					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
2332					KM Mean of Logged Data	-3.555	95% KM UTL (Lognormal)95% Coverage					0.0686
2333					KM SD of Logged Data	0.435	95% KM UPL (Lognormal)					0.0595
2334					95% KM Percentile Lognormal (z)	0.0585	95% KM USL (Lognormal)					0.107
2335												
2336					Background DL/2 Statistics Assuming Lognormal Distribution							
2337					Mean in Original Scale	0.0304	Mean in Log Scale					-3.601
2338					SD in Original Scale	0.0131	SD in Log Scale					0.493
2339					95% UTL95% Coverage	0.0736	95% UPL (t)					0.0626
2340					90% Percentile (z)	0.0513	95% Percentile (z)					0.0614

	A	B	C	D	E	F	G	H	I	J	K	L
2341					99% Percentile (z)	0.0859					95% USL	0.122
2342					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
2343												
2344					Nonparametric Distribution Free Background Statistics							
2345					Data appear to follow a Discernible Distribution at 5% Significance Level							
2346												
2347					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
2348					Order of Statistic, r	60					95% UTL with95% Coverage	0.06
2349					Approximate f	1.579					Confidence Coefficient (CC) achieved by UTL	0.816
2350					95% UPL	0.0549					95% USL	0.061
2351					95% KM Chebyshev UPL	0.0852						
2352												
2353					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
2354					data set free of outliers and consists of observations collected from clean unimpacted locations.							
2355					The use of USL tends to provide a balance between false positives and false negatives provided the data							
2356					represents a background data set and when many onsite observations need to be compared with the BTV.							
2357												
2358	Naphthalene											
2359												
2360					General Statistics							
2361					Total Number of Observations	64					Number of Missing Observations	7
2362					Number of Distinct Observations	43						
2363					Number of Detects	19					Number of Non-Detects	45
2364					Number of Distinct Detects	19					Number of Distinct Non-Detects	29
2365					Minimum Detect	1.1					Minimum Non-Detect	0.55
2366					Maximum Detect	8.1					Maximum Non-Detect	9.7
2367					Variance Detected	2.7					Percent Non-Detects	70.31%
2368					Mean Detected	4.824					SD Detected	1.643
2369					Mean of Detected Logged Data	1.5					SD of Detected Logged Data	0.438
2370												
2371					Critical Values for Background Threshold Values (BTVs)							
2372					Tolerance Factor K (For UTL)	2.003					d2max (for USL)	3.051
2373												
2374					Normal GOF Test on Detects Only							
2375					Shapiro Wilk Test Statistic	0.99					Shapiro Wilk GOF Test	
2376					5% Shapiro Wilk Critical Value	0.901					Detected Data appear Normal at 5% Significance Level	
2377					Lilliefors Test Statistic	0.0809					Lilliefors GOF Test	
2378					5% Lilliefors Critical Value	0.203					Detected Data appear Normal at 5% Significance Level	
2379					Detected Data appear Normal at 5% Significance Level							
2380												
2381					Kaplan Meier (KM) Background Statistics Assuming Normal Distribution							
2382					Mean	2.02					SD	2.12
2383					95% UTL95% Coverage	6.266					95% KM UPL (t)	5.586
2384					90% KM Percentile (z)	4.737					95% KM Percentile (z)	5.507
2385					99% KM Percentile (z)	6.951					95% KM USL	8.487
2386												
2387					DL/2 Substitution Background Statistics Assuming Normal Distribution							
2388					Mean	2.434					SD	1.923
2389					95% UTL95% Coverage	6.287					95% UPL (t)	5.67
2390					90% Percentile (z)	4.899					95% Percentile (z)	5.598
2391					99% Percentile (z)	6.909					95% USL	8.302
2392					DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons							
2393												
2394					Gamma GOF Tests on Detected Observations Only							
2395					A-D Test Statistic	0.401					Anderson-Darling GOF Test	
2396					5% A-D Critical Value	0.742					Detected data appear Gamma Distributed at 5% Significance Level	
2397					K-S Test Statistic	0.123					Kolmogrov-Smirnoff GOF	
2398					5% K-S Critical Value	0.199					Detected data appear Gamma Distributed at 5% Significance Level	
2399					Detected data appear Gamma Distributed at 5% Significance Level							
2400												
2401					Gamma Statistics on Detected Data Only							
2402					k hat (MLE)	6.948					k star (bias corrected MLE)	5.886
2403					Theta hat (MLE)	0.694					Theta star (bias corrected MLE)	0.819
2404					nu hat (MLE)	264					nu star (bias corrected)	223.7
2405					MLE Mean (bias corrected)	4.824						

	A	B	C	D	E	F	G	H	I	J	K	L
2406					MLE Sd (bias corrected)	1.988				95% Percentile of Chisquare (2k)		20.72
2407												
2408					Gamma ROS Statistics using Imputed Non-Detects							
2409					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
2410					GROS may not be used when kstar of detected data is small such as < 0.1							
2411					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
2412					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
2413					Minimum	0.01					Mean	2.187
2414					Maximum	8.1					Median	1.45
2415					SD	2.007					CV	0.917
2416					k hat (MLE)	0.939					k star (bias corrected MLE)	0.906
2417					Theta hat (MLE)	2.329					Theta star (bias corrected MLE)	2.415
2418					nu hat (MLE)	120.2					nu star (bias corrected)	115.9
2419					MLE Mean (bias corrected)	2.187					MLE Sd (bias corrected)	2.298
2420					95% Percentile of Chisquare (2k)	5.621					90% Percentile	5.161
2421					95% Percentile	6.787					99% Percentile	10.59
2422					The following statistics are computed using Gamma ROS Statistics on Imputed Data							
2423					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
2424					WH	HW					WH	HW
2425	95% Approx. Gamma UTL with 95% Coverage				8.23	9.333				95% Approx. Gamma UPL	6.665	7.317
2426					95% Gamma USL	15.01	18.89					
2427												
2428					The following statistics are computed using gamma distribution and KM estimates							
2429					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
2430					k hat (KM)	0.909					nu hat (KM)	116.3
2431					WH	HW					WH	HW
2432	95% Approx. Gamma UTL with 95% Coverage				7.087	7.316				95% Approx. Gamma UPL	5.774	5.844
2433					95% Gamma USL	12.73	14.11					
2434												
2435					Lognormal GOF Test on Detected Observations Only							
2436					Shapiro Wilk Test Statistic	0.855				Shapiro Wilk GOF Test		
2437					5% Shapiro Wilk Critical Value	0.901				Data Not Lognormal at 5% Significance Level		
2438					Lilliefors Test Statistic	0.156				Lilliefors GOF Test		
2439					5% Lilliefors Critical Value	0.203				Detected Data appear Lognormal at 5% Significance Level		
2440					Detected Data appear Approximate Lognormal at 5% Significance Level							
2441												
2442					Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects							
2443					Mean in Original Scale	2.525					Mean in Log Scale	0.736
2444					SD in Original Scale	1.768					SD in Log Scale	0.589
2445					95% UTL95% Coverage	6.795					95% BCA UTL95% Coverage	6.955
2446					95% Bootstrap (%) UTL95% Coverage	7					95% UPL (t)	5.624
2447					90% Percentile (z)	4.441					95% Percentile (z)	5.501
2448					99% Percentile (z)	8.22					95% USL	12.6
2449												
2450					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
2451					KM Mean of Logged Data	0.199					95% KM UTL (Lognormal)95% Coverage	8.429
2452					KM SD of Logged Data	0.965					95% KM UPL (Lognormal)	6.186
2453					95% KM Percentile Lognormal (z)	5.966					95% KM USL (Lognormal)	23.16
2454												
2455					Background DL/2 Statistics Assuming Lognormal Distribution							
2456					Mean in Original Scale	2.434					Mean in Log Scale	0.591
2457					SD in Original Scale	1.923					SD in Log Scale	0.793
2458					95% UTL95% Coverage	8.849					95% UPL (t)	6.861
2459					90% Percentile (z)	4.992					95% Percentile (z)	6.659
2460					99% Percentile (z)	11.43					95% USL	20.31
2461					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
2462												
2463					Nonparametric Distribution Free Background Statistics							
2464					Data appear to follow a Discernible Distribution at 5% Significance Level							
2465												
2466					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
2467					Order of Statistic, r	63					95% UTL with95% Coverage	8.1
2468					Approximate f	1.658					Confidence Coefficient (CC) achieved by UTL	0.836
2469					95% UPL	6.925					95% USL	9.7
2470					95% KM Chebyshev UPL	11.33						

	A	B	C	D	E	F	G	H	I	J	K	L
2471												
2472	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2473	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2474	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2475	represents a background data set and when many onsite observations need to be compared with the BTV.											
2476												
2477	**Nickel**											
2478												
2479	**General Statistics**											
2480					Total Number of Observations	67			Number of Distinct Observations			51
2481									Number of Missing Observations			4
2482					Minimum	12.3			First Quartile			18.9
2483					Second Largest	26.9			Median			20.7
2484					Maximum	29			Third Quartile			22.5
2485					Mean	20.7			SD			3.264
2486					Coefficient of Variation	0.158			Skewness			-0.167
2487					Mean of logged Data	3.017			SD of logged Data			0.166
2488												
2489	**Critical Values for Background Threshold Values (BTVs)**											
2490					Tolerance Factor K (For UTL)	1.994			d2max (for USL)			3.068
2491												
2492	**Normal GOF Test**											
2493					Shapiro Wilk Test Statistic	0.983			**Normal GOF Test**			
2494					5% Shapiro Wilk P Value	0.753			Data appear Normal at 5% Significance Level			
2495					Lilliefors Test Statistic	0.0761			**Lilliefors GOF Test**			
2496					5% Lilliefors Critical Value	0.108			Data appear Normal at 5% Significance Level			
2497	**Data appear Normal at 5% Significance Level**											
2498												
2499	**Background Statistics Assuming Normal Distribution**											
2500					95% UTL with 95% Coverage	27.21			90% Percentile (z)			24.88
2501					95% UPL (t)	26.19			95% Percentile (z)			26.07
2502					95% USL	30.71			99% Percentile (z)			28.29
2503												
2504	**Gamma GOF Test**											
2505					A-D Test Statistic	0.59			**Anderson-Darling Gamma GOF Test**			
2506					5% A-D Critical Value	0.749			Detected data appear Gamma Distributed at 5% Significance Level			
2507					K-S Test Statistic	0.0917			**Kolmogrov-Smirnoff Gamma GOF Test**			
2508					5% K-S Critical Value	0.109			Detected data appear Gamma Distributed at 5% Significance Level			
2509	**Detected data appear Gamma Distributed at 5% Significance Level**											
2510												
2511	**Gamma Statistics**											
2512					k hat (MLE)	38.56			k star (bias corrected MLE)			36.84
2513					Theta hat (MLE)	0.537			Theta star (bias corrected MLE)			0.562
2514					nu hat (MLE)	5166			nu star (bias corrected)			4936
2515					MLE Mean (bias corrected)	20.7			MLE Sd (bias corrected)			3.41
2516												
2517	**Background Statistics Assuming Gamma Distribution**											
2518					95% Wilson Hilferty (WH) Approx. Gamma UPL	26.66			90% Percentile			25.17
2519					95% Hawkins Wixley (HW) Approx. Gamma UPL	26.74			95% Percentile			26.61
2520					95% WH Approx. Gamma UTL with 95% Coverage	27.93			99% Percentile			29.45
2521					95% HW Approx. Gamma UTL with 95% Coverage	28.04						
2522					95% WH USL	32.56			95% HW USL			32.88
2523												
2524	**Lognormal GOF Test**											
2525					Shapiro Wilk Test Statistic	0.956			**Shapiro Wilk Lognormal GOF Test**			
2526					5% Shapiro Wilk P Value	0.0477			Data Not Lognormal at 5% Significance Level			
2527					Lilliefors Test Statistic	0.103			**Lilliefors Lognormal GOF Test**			
2528					5% Lilliefors Critical Value	0.108			Data appear Lognormal at 5% Significance Level			
2529	**Data appear Approximate Lognormal at 5% Significance Level**											
2530												
2531	**Background Statistics assuming Lognormal Distribution**											
2532					95% UTL with 95% Coverage	28.44			90% Percentile (z)			25.27
2533					95% UPL (t)	27			95% Percentile (z)			26.84
2534					95% USL	33.98			99% Percentile (z)			30.05
2535												

	A	B	C	D	E	F	G	H	I	J	K	L
2536	Nonparametric Distribution Free Background Statistics											
2537	Data appear Normal at 5% Significance Level											
2538												
2539	Nonparametric Upper Limits for Background Threshold Values											
2540					Order of Statistic, r	66			95% UTL with 95% Coverage			26.9
2541					Approximate f	1.737			Confidence Coefficient (CC) achieved by UTL			0.854
2542			95% Percentile Bootstrap UTL with		95% Coverage	26.9			95% BCA Bootstrap UTL with 95% Coverage			26.69
2543					95% UPL	26.16			90% Percentile			24.66
2544					90% Chebyshev UPL	30.56			95% Percentile			26.04
2545					95% Chebyshev UPL	35.03			99% Percentile			27.61
2546					95% USL	29						
2547												
2548	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2549	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2550	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2551	represents a background data set and when many onsite observations need to be compared with the BTV.											
2552												
2553	PCB TEQ - Mammals 2006											
2554												
2555	General Statistics											
2556					Total Number of Observations	28			Number of Distinct Observations			28
2557									Number of Missing Observations			42
2558					Minimum	0.0333			First Quartile			0.0932
2559					Second Largest	0.177			Median			0.1
2560					Maximum	0.188			Third Quartile			0.107
2561					Mean	0.104			SD			0.0343
2562					Coefficient of Variation	0.33			Skewness			0.415
2563					Mean of logged Data	-2.324			SD of logged Data			0.378
2564												
2565	Critical Values for Background Threshold Values (BTVs)											
2566					Tolerance Factor K (For UTL)	2.246			d2max (for USL)			2.714
2567												
2568	Normal GOF Test											
2569					Shapiro Wilk Test Statistic	0.895			Shapiro Wilk GOF Test			
2570					5% Shapiro Wilk Critical Value	0.924			Data Not Normal at 5% Significance Level			
2571					Lilliefors Test Statistic	0.229			Lilliefors GOF Test			
2572					5% Lilliefors Critical Value	0.167			Data Not Normal at 5% Significance Level			
2573	Data Not Normal at 5% Significance Level											
2574												
2575	Background Statistics Assuming Normal Distribution											
2576				95% UTL with	95% Coverage	0.181			90% Percentile (z)			0.148
2577					95% UPL (t)	0.163			95% Percentile (z)			0.16
2578					95% USL	0.197			99% Percentile (z)			0.184
2579												
2580	Gamma GOF Test											
2581					A-D Test Statistic	1.64			Anderson-Darling Gamma GOF Test			
2582					5% A-D Critical Value	0.746			Data Not Gamma Distributed at 5% Significance Level			
2583					K-S Test Statistic	0.228			Kolmogrov-Smirnoff Gamma GOF Test			
2584					5% K-S Critical Value	0.165			Data Not Gamma Distributed at 5% Significance Level			
2585	Data Not Gamma Distributed at 5% Significance Level											
2586												
2587	Gamma Statistics											
2588					k hat (MLE)	8.407			k star (bias corrected MLE)			7.53
2589					Theta hat (MLE)	0.0124			Theta star (bias corrected MLE)			0.0138
2590					nu hat (MLE)	470.8			nu star (bias corrected)			421.7
2591					MLE Mean (bias corrected)	0.104			MLE Sd (bias corrected)			0.0379
2592												
2593	Background Statistics Assuming Gamma Distribution											
2594			95% Wilson Hilferty (WH) Approx. Gamma UPL			0.175			90% Percentile			0.155
2595			95% Hawkins Wixley (HW) Approx. Gamma UPL			0.178			95% Percentile			0.173
2596			95% WH Approx. Gamma UTL with		95% Coverage	0.203			99% Percentile			0.212
2597			95% HW Approx. Gamma UTL with		95% Coverage	0.208						
2598					95% WH USL	0.231			95% HW USL			0.238
2599												
2600	Lognormal GOF Test											

	A	B	C	D	E	F	G	H	I	J	K	L
2601					Shapiro Wilk Test Statistic	0.843	**Shapiro Wilk Lognormal GOF Test**					
2602					5% Shapiro Wilk Critical Value	0.924	Data Not Lognormal at 5% Significance Level					
2603					Lilliefors Test Statistic	0.255	**Lilliefors Lognormal GOF Test**					
2604					5% Lilliefors Critical Value	0.167	Data Not Lognormal at 5% Significance Level					
2605	**Data Not Lognormal at 5% Significance Level**											
2606												
2607	**Background Statistics assuming Lognormal Distribution**											
2608				95% UTL with	95% Coverage	0.229				90% Percentile (z)		0.159
2609					95% UPL (t)	0.188				95% Percentile (z)		0.182
2610					95% USL	0.273				99% Percentile (z)		0.236
2611												
2612	**Nonparametric Distribution Free Background Statistics**											
2613	**Data do not follow a Discernible Distribution (0.05)**											
2614												
2615	**Nonparametric Upper Limits for Background Threshold Values**											
2616					Order of Statistic, r	28				95% UTL with	95% Coverage	0.188
2617					Approximate f	1.474				Confidence Coefficient (CC) achieved by UTL		0.762
2618				95% Percentile Bootstrap UTL with	95% Coverage	0.188				95% BCA Bootstrap UTL with	95% Coverage	0.188
2619					95% UPL	0.183				90% Percentile		0.149
2620					90% Chebyshev UPL	0.209				95% Percentile		0.169
2621					95% Chebyshev UPL	0.256				99% Percentile		0.185
2622					95% USL	0.188						
2623												
2624	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2625	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2626	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2627	represents a background data set and when many onsite observations need to be compared with the BTV.											
2628												
2629	**Pentachlorophenol**											
2630												
2631	**General Statistics**											
2632					Total Number of Observations	63				Number of Missing Observations		8
2633					Number of Distinct Observations	42						
2634					Number of Detects	7				Number of Non-Detects		56
2635					Number of Distinct Detects	7				Number of Distinct Non-Detects		37
2636					Minimum Detect	1.5				Minimum Non-Detect		0.25
2637					Maximum Detect	2.9				Maximum Non-Detect		8.8
2638					Variance Detected	0.228				Percent Non-Detects		88.89%
2639					Mean Detected	2.186				SD Detected		0.478
2640					Mean of Detected Logged Data	0.761				SD of Detected Logged Data		0.226
2641												
2642	**Critical Values for Background Threshold Values (BTVs)**											
2643					Tolerance Factor K (For UTL)	2.007				d2max (for USL)		3.045
2644												
2645	**Normal GOF Test on Detects Only**											
2646					Shapiro Wilk Test Statistic	0.974	**Shapiro Wilk GOF Test**					
2647					5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level					
2648					Lilliefors Test Statistic	0.166	**Lilliefors GOF Test**					
2649					5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level					
2650	**Detected Data appear Normal at 5% Significance Level**											
2651												
2652	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
2653					Mean	0.59				SD		0.758
2654					95% UTL95% Coverage	2.11				95% KM UPL (t)		1.865
2655					90% KM Percentile (z)	1.561				95% KM Percentile (z)		1.836
2656					99% KM Percentile (z)	2.353				95% KM USL		2.897
2657												
2658	**DL/2 Substitution Background Statistics Assuming Normal Distribution**											
2659					Mean	1.2				SD		1.106
2660					95% UTL95% Coverage	3.42				95% UPL (t)		3.062
2661					90% Percentile (z)	2.618				95% Percentile (z)		3.02
2662					99% Percentile (z)	3.774				95% USL		4.569
2663	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
2664												
2665	**Gamma GOF Tests on Detected Observations Only**											

	A	B	C	D	E	F	G	H	I	J	K	L
2666				A-D Test Statistic		0.226	Anderson-Darling GOF Test					
2667				5% A-D Critical Value		0.707	Detected data appear Gamma Distributed at 5% Significance Level					
2668				K-S Test Statistic		0.196	Kolmogrov-Smirnoff GOF					
2669				5% K-S Critical Value		0.311	Detected data appear Gamma Distributed at 5% Significance Level					
2670	Detected data appear Gamma Distributed at 5% Significance Level											
2671												
2672	Gamma Statistics on Detected Data Only											
2673				k hat (MLE)		23.64	k star (bias corrected MLE)					13.6
2674				Theta hat (MLE)		0.0925	Theta star (bias corrected MLE)					0.161
2675				nu hat (MLE)		330.9	nu star (bias corrected)					190.4
2676				MLE Mean (bias corrected)		2.186						
2677				MLE Sd (bias corrected)		0.593	95% Percentile of Chisquare (2k)					40.36
2678												
2679	Gamma ROS Statistics using Imputed Non-Detects											
2680	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2681	GROS may not be used when kstar of detected data is small such as < 0.1											
2682	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
2683	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2684				Minimum		0.01	Mean					0.896
2685				Maximum		2.9	Median					0.779
2686				SD		0.558	CV					0.623
2687				k hat (MLE)		2.595	k star (bias corrected MLE)					2.482
2688				Theta hat (MLE)		0.345	Theta star (bias corrected MLE)					0.361
2689				nu hat (MLE)		327	nu star (bias corrected)					312.7
2690				MLE Mean (bias corrected)		0.896	MLE Sd (bias corrected)					0.569
2691				95% Percentile of Chisquare (2k)		11.01	90% Percentile					1.657
2692				95% Percentile		1.988	99% Percentile					2.711
2693	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
2694	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2695					WH	HW					WH	HW
2696	95% Approx. Gamma UTL with 95% Coverage				2.29	2.418	95% Approx. Gamma UPL				1.975	2.056
2697				95% Gamma USL	3.52	3.912						
2698												
2699	The following statistics are computed using gamma distribution and KM estimates											
2700	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2701				k hat (KM)		0.608	nu hat (KM)					76.55
2702					WH	HW					WH	HW
2703	95% Approx. Gamma UTL with 95% Coverage				1.987	1.967	95% Approx. Gamma UPL				1.622	1.583
2704				95% Gamma USL	3.522	3.683						
2705												
2706	Lognormal GOF Test on Detected Observations Only											
2707				Shapiro Wilk Test Statistic		0.967	Shapiro Wilk GOF Test					
2708				5% Shapiro Wilk Critical Value		0.803	Detected Data appear Lognormal at 5% Significance Level					
2709				Lilliefors Test Statistic		0.197	Lilliefors GOF Test					
2710				5% Lilliefors Critical Value		0.335	Detected Data appear Lognormal at 5% Significance Level					
2711	Detected Data appear Lognormal at 5% Significance Level											
2712												
2713	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2714				Mean in Original Scale		1.154	Mean in Log Scale					0.093
2715				SD in Original Scale		0.43	SD in Log Scale					0.297
2716				95% UTL95% Coverage		1.993	95% BCA UTL95% Coverage					2.49
2717				95% Bootstrap (%) UTL95% Coverage		2.5	95% UPL (t)					1.81
2718				90% Percentile (z)		1.606	95% Percentile (z)					1.79
2719				99% Percentile (z)		2.192	95% USL					2.714
2720												
2721	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
2722				KM Mean of Logged Data		-1.008	95% KM UTL (Lognormal)95% Coverage					1.9
2723				KM SD of Logged Data		0.822	95% KM UPL (Lognormal)					1.456
2724				95% KM Percentile Lognormal (z)		1.411	95% KM USL (Lognormal)					4.462
2725												
2726	Background DL/2 Statistics Assuming Lognormal Distribution											
2727				Mean in Original Scale		1.2	Mean in Log Scale					-0.441
2728				SD in Original Scale		1.106	SD in Log Scale					1.236
2729				95% UTL95% Coverage		7.679	95% UPL (t)					5.149
2730				90% Percentile (z)		3.135	95% Percentile (z)					4.912

	A	B	C	D	E	F	G	H	I	J	K	L
2731					99% Percentile (z)	11.4					95% USL	27.71
2732	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
2733												
2734	Nonparametric Distribution Free Background Statistics											
2735	Data appear to follow a Discernible Distribution at 5% Significance Level											
2736												
2737	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
2738					Order of Statistic, r	62					95% UTL with95% Coverage	6.4
2739					Approximate f	1.632					Confidence Coefficient (CC) achieved by UTL	0.83
2740					95% UPL	6.06					95% USL	8.8
2741					95% KM Chebyshev UPL	3.919						
2742												
2743	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2744	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2745	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2746	represents a background data set and when many onsite observations need to be compared with the BTV.											
2747												
2748	Phenanthrene											
2749												
2750	General Statistics											
2751					Total Number of Observations	67					Number of Missing Observations	4
2752					Number of Distinct Observations	46						
2753					Number of Detects	31					Number of Non-Detects	36
2754					Number of Distinct Detects	26					Number of Distinct Non-Detects	27
2755					Minimum Detect	0.91					Minimum Non-Detect	0.59
2756					Maximum Detect	11					Maximum Non-Detect	13
2757					Variance Detected	8.866					Percent Non-Detects	53.73%
2758					Mean Detected	5.904					SD Detected	2.978
2759					Mean of Detected Logged Data	1.598					SD of Detected Logged Data	0.683
2760												
2761	Critical Values for Background Threshold Values (BTVs)											
2762					Tolerance Factor K (For UTL)	1.994					d2max (for USL)	3.068
2763												
2764	Normal GOF Test on Detects Only											
2765					Shapiro Wilk Test Statistic	0.959					Shapiro Wilk GOF Test	
2766					5% Shapiro Wilk Critical Value	0.929					Detected Data appear Normal at 5% Significance Level	
2767					Lilliefors Test Statistic	0.0739					Lilliefors GOF Test	
2768					5% Lilliefors Critical Value	0.159					Detected Data appear Normal at 5% Significance Level	
2769	Detected Data appear Normal at 5% Significance Level											
2770												
2771	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
2772					Mean	3.395					SD	3.221
2773					95% UTL95% Coverage	9.817					95% KM UPL (t)	8.808
2774					90% KM Percentile (z)	7.523					95% KM Percentile (z)	8.693
2775					99% KM Percentile (z)	10.89					95% KM USL	13.28
2776												
2777	DL/2 Substitution Background Statistics Assuming Normal Distribution											
2778					Mean	3.702					SD	3.056
2779					95% UTL95% Coverage	9.795					95% UPL (t)	8.838
2780					90% Percentile (z)	7.618					95% Percentile (z)	8.729
2781					99% Percentile (z)	10.81					95% USL	13.08
2782	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
2783												
2784	Gamma GOF Tests on Detected Observations Only											
2785					A-D Test Statistic	0.664					Anderson-Darling GOF Test	
2786					5% A-D Critical Value	0.753					Detected data appear Gamma Distributed at 5% Significance Level	
2787					K-S Test Statistic	0.125					Kolmogrov-Smirnoff GOF	
2788					5% K-S Critical Value	0.159					Detected data appear Gamma Distributed at 5% Significance Level	
2789	Detected data appear Gamma Distributed at 5% Significance Level											
2790												
2791	Gamma Statistics on Detected Data Only											
2792					k hat (MLE)	2.976					k star (bias corrected MLE)	2.709
2793					Theta hat (MLE)	1.984					Theta star (bias corrected MLE)	2.179
2794					nu hat (MLE)	184.5					nu star (bias corrected)	168
2795					MLE Mean (bias corrected)	5.904						

	A	B	C	D	E	F	G	H	I	J	K	L
2796				MLE Sd (bias corrected)		3.587			95% Percentile of Chisquare (2k)			11.71
2797												
2798				Gamma ROS Statistics using Imputed Non-Detects								
2799				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs								
2800				GROS may not be used when kstar of detected data is small such as < 0.1								
2801				For such situations, GROS method tends to yield inflated values of UCLs and BTVs								
2802				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates								
2803				Minimum		0.0851			Mean			3.438
2804				Maximum		11			Median			2.079
2805				SD		3.121			CV			0.908
2806				k hat (MLE)		1.035			k star (bias corrected MLE)			0.999
2807				Theta hat (MLE)		3.321			Theta star (bias corrected MLE)			3.442
2808				nu hat (MLE)		138.7			nu star (bias corrected)			133.9
2809				MLE Mean (bias corrected)		3.438			MLE Sd (bias corrected)			3.44
2810				95% Percentile of Chisquare (2k)		5.988			90% Percentile			7.919
2811				95% Percentile		10.3			99% Percentile			15.84
2812				The following statistics are computed using Gamma ROS Statistics on Imputed Data								
2813				Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods								
2814					WH	HW					WH	HW
2815	95% Approx. Gamma UTL with 95% Coverage				12.6	13.84			95% Approx. Gamma UPL		10.28	10.98
2816				95% Gamma USL	23.17	27.99						
2817												
2818				The following statistics are computed using gamma distribution and KM estimates								
2819				Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods								
2820				k hat (KM)		1.111			nu hat (KM)			148.9
2821					WH	HW					WH	HW
2822	95% Approx. Gamma UTL with 95% Coverage				12.09	12.79			95% Approx. Gamma UPL		9.885	10.22
2823				95% Gamma USL	22.12	25.38						
2824												
2825				Lognormal GOF Test on Detected Observations Only								
2826				Shapiro Wilk Test Statistic		0.882			Shapiro Wilk GOF Test			
2827				5% Shapiro Wilk Critical Value		0.929			Data Not Lognormal at 5% Significance Level			
2828				Lilliefors Test Statistic		0.151			Lilliefors GOF Test			
2829				5% Lilliefors Critical Value		0.159			Detected Data appear Lognormal at 5% Significance Level			
2830				Detected Data appear Approximate Lognormal at 5% Significance Level								
2831												
2832				Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects								
2833				Mean in Original Scale		3.522			Mean in Log Scale			0.918
2834				SD in Original Scale		3.02			SD in Log Scale			0.821
2835				95% UTL95% Coverage		12.87			95% BCA UTL95% Coverage			11
2836				95% Bootstrap (%) UTL95% Coverage		11			95% UPL (t)			9.955
2837				90% Percentile (z)		7.174			95% Percentile (z)			9.666
2838				99% Percentile (z)		16.91			95% USL			31.09
2839												
2840				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution								
2841				KM Mean of Logged Data		0.703			95% KM UTL (Lognormal)95% Coverage			16.59
2842				KM SD of Logged Data		1.056			95% KM UPL (Lognormal)			11.91
2843				95% KM Percentile Lognormal (z)		11.47			95% KM USL (Lognormal)			51.57
2844												
2845				Background DL/2 Statistics Assuming Lognormal Distribution								
2846				Mean in Original Scale		3.702			Mean in Log Scale			0.919
2847				SD in Original Scale		3.056			SD in Log Scale			0.946
2848				95% UTL95% Coverage		16.55			95% UPL (t)			12.3
2849				90% Percentile (z)		8.432			95% Percentile (z)			11.89
2850				99% Percentile (z)		22.67			95% USL			45.73
2851				DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.								
2852												
2853				Nonparametric Distribution Free Background Statistics								
2854				Data appear to follow a Discernible Distribution at 5% Significance Level								
2855												
2856				Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)								
2857				Order of Statistic, r		66			95% UTL with95% Coverage			11
2858				Approximate f		1.737			Confidence Coefficient (CC) achieved by UTL			0.854
2859				95% UPL		11			95% USL			13
2860				95% KM Chebyshev UPL		17.54						

	A	B	C	D	E	F	G	H	I	J	K	L
2861												
2862	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2863	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2864	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2865	represents a background data set and when many onsite observations need to be compared with the BTV.											
2866												
2867	**Residual Range Hydrocarbons**											
2868												
2869	**General Statistics**											
2870					Total Number of Observations	28			Number of Distinct Observations			21
2871									Number of Missing Observations			18
2872					Minimum	9.2			First Quartile			184.9
2873					Second Largest	390			Median			220
2874					Maximum	420			Third Quartile			272.5
2875					Mean	229.7			SD			98.08
2876					Coefficient of Variation	0.427			Skewness			0.0518
2877					Mean of logged Data	5.281			SD of logged Data			0.73
2878												
2879	**Critical Values for Background Threshold Values (BTVs)**											
2880					Tolerance Factor K (For UTL)	2.246			d2max (for USL)			2.714
2881												
2882	**Normal GOF Test**											
2883					Shapiro Wilk Test Statistic	0.957			**Shapiro Wilk GOF Test**			
2884					5% Shapiro Wilk Critical Value	0.924			Data appear Normal at 5% Significance Level			
2885					Lilliefors Test Statistic	0.177			**Lilliefors GOF Test**			
2886					5% Lilliefors Critical Value	0.167			Data Not Normal at 5% Significance Level			
2887	**Data appear Approximate Normal at 5% Significance Level**											
2888												
2889	**Background Statistics Assuming Normal Distribution**											
2890					95% UTL with 95% Coverage	450			90% Percentile (z)			355.4
2891					95% UPL (t)	399.7			95% Percentile (z)			391
2892					95% USL	495.9			99% Percentile (z)			457.8
2893												
2894	**Gamma GOF Test**											
2895					A-D Test Statistic	1.263			**Anderson-Darling Gamma GOF Test**			
2896					5% A-D Critical Value	0.752			Data Not Gamma Distributed at 5% Significance Level			
2897					K-S Test Statistic	0.19			**Kolmogrov-Smirnoff Gamma GOF Test**			
2898					5% K-S Critical Value	0.166			Data Not Gamma Distributed at 5% Significance Level			
2899	**Data Not Gamma Distributed at 5% Significance Level**											
2900												
2901	**Gamma Statistics**											
2902					k hat (MLE)	3.365			k star (bias corrected MLE)			3.028
2903					Theta hat (MLE)	68.25			Theta star (bias corrected MLE)			75.84
2904					nu hat (MLE)	188.4			nu star (bias corrected)			169.6
2905					MLE Mean (bias corrected)	229.7			MLE Sd (bias corrected)			132
2906												
2907	**Background Statistics Assuming Gamma Distribution**											
2908					95% Wilson Hilferty (WH) Approx. Gamma UPL	485.6			90% Percentile			406.6
2909					95% Hawkins Wixley (HW) Approx. Gamma UPL	514.7			95% Percentile			480.7
2910					95% WH Approx. Gamma UTL with 95% Coverage	598			99% Percentile			641.1
2911					95% HW Approx. Gamma UTL with 95% Coverage	649.9						
2912					95% WH USL	714.7			95% HW USL			795.3
2913												
2914	**Lognormal GOF Test**											
2915					Shapiro Wilk Test Statistic	0.707			**Shapiro Wilk Lognormal GOF Test**			
2916					5% Shapiro Wilk Critical Value	0.924			Data Not Lognormal at 5% Significance Level			
2917					Lilliefors Test Statistic	0.243			**Lilliefors Lognormal GOF Test**			
2918					5% Lilliefors Critical Value	0.167			Data Not Lognormal at 5% Significance Level			
2919	**Data Not Lognormal at 5% Significance Level**											
2920												
2921	**Background Statistics assuming Lognormal Distribution**											
2922					95% UTL with 95% Coverage	1012			90% Percentile (z)			500.7
2923					95% UPL (t)	696.3			95% Percentile (z)			652.7
2924					95% USL	1425			99% Percentile (z)			1073
2925												

	A	B	C	D	E	F	G	H	I	J	K	L
2926	Nonparametric Distribution Free Background Statistics											
2927	Data appear Approximate Normal at 5% Significance Level											
2928												
2929	Nonparametric Upper Limits for Background Threshold Values											
2930					Order of Statistic, r	28			95% UTL with 95% Coverage			420
2931					Approximate f	1.474			Confidence Coefficient (CC) achieved by UTL			0.762
2932			95% Percentile Bootstrap UTL with 95% Coverage			420			95% BCA Bootstrap UTL with 95% Coverage			409.5
2933					95% UPL	406.5			90% Percentile			380
2934					90% Chebyshev UPL	529.1			95% Percentile			386.5
2935					95% Chebyshev UPL	664.7			99% Percentile			411.9
2936					95% USL	420						
2937												
2938	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
2939	data set free of outliers and consists of observations collected from clean unimpacted locations.											
2940	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2941	represents a background data set and when many onsite observations need to be compared with the BTV.											
2942												
2943	Total PAHs (calc'd)											
2944												
2945	General Statistics											
2946					Total Number of Observations	68			Number of Missing Observations			3
2947					Number of Distinct Observations	65						
2948					Number of Detects	57			Number of Non-Detects			11
2949					Number of Distinct Detects	57			Number of Distinct Non-Detects			8
2950					Minimum Detect	6.12			Minimum Non-Detect			1.5
2951					Maximum Detect	198.2			Maximum Non-Detect			10
2952					Variance Detected	2217			Percent Non-Detects			16.18%
2953					Mean Detected	74.84			SD Detected			47.09
2954					Mean of Detected Logged Data	4.072			SD of Detected Logged Data			0.785
2955												
2956	Critical Values for Background Threshold Values (BTVs)											
2957					Tolerance Factor K (For UTL)	1.991			d2max (for USL)			3.073
2958												
2959	Normal GOF Test on Detects Only											
2960					Shapiro Wilk Test Statistic	0.937			Normal GOF Test on Detected Observations Only			
2961					5% Shapiro Wilk P Value	0.00741			Data Not Normal at 5% Significance Level			
2962					Lilliefors Test Statistic	0.0912			Lilliefors GOF Test			
2963					5% Lilliefors Critical Value	0.117			Detected Data appear Normal at 5% Significance Level			
2964	Detected Data appear Approximate Normal at 5% Significance Level											
2965												
2966	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
2967					Mean	63.01			SD			50.5
2968					95% UTL95% Coverage	163.6			95% KM UPL (t)			147.9
2969					90% KM Percentile (z)	127.7			95% KM Percentile (z)			146.1
2970					99% KM Percentile (z)	180.5			95% KM USL			218.2
2971												
2972	DL/2 Substitution Background Statistics Assuming Normal Distribution											
2973					Mean	63.07			SD			50.82
2974					95% UTL95% Coverage	164.2			95% UPL (t)			148.4
2975					90% Percentile (z)	128.2			95% Percentile (z)			146.7
2976					99% Percentile (z)	181.3			95% USL			219.2
2977	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
2978												
2979	Gamma GOF Tests on Detected Observations Only											
2980					A-D Test Statistic	0.244			Anderson-Darling GOF Test			
2981					5% A-D Critical Value	0.762			Detected data appear Gamma Distributed at 5% Significance Level			
2982					K-S Test Statistic	0.0571			Kolmogrov-Smirnoff GOF			
2983					5% K-S Critical Value	0.119			Detected data appear Gamma Distributed at 5% Significance Level			
2984	Detected data appear Gamma Distributed at 5% Significance Level											
2985												
2986	Gamma Statistics on Detected Data Only											
2987					k hat (MLE)	2.203			k star (bias corrected MLE)			2.099
2988					Theta hat (MLE)	33.96			Theta star (bias corrected MLE)			35.65
2989					nu hat (MLE)	251.2			nu star (bias corrected)			239.3
2990					MLE Mean (bias corrected)	74.84						

	A	B	C	D	E	F	G	H	I	J	K	L
2991					MLE Sd (bias corrected)	51.65				95% Percentile of Chisquare (2k)		9.807
2992												
2993					Gamma ROS Statistics using Imputed Non-Detects							
2994					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
2995					GROS may not be used when kstar of detected data is small such as < 0.1							
2996					For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
2997					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
2998					Minimum	1.469					Mean	63.68
2999					Maximum	198.2					Median	54.96
3000					SD	50.1					CV	0.787
3001					k hat (MLE)	1.172					k star (bias corrected MLE)	1.13
3002					Theta hat (MLE)	54.32					Theta star (bias corrected MLE)	56.34
3003					nu hat (MLE)	159.4					nu star (bias corrected)	153.7
3004					MLE Mean (bias corrected)	63.68					MLE Sd (bias corrected)	59.9
3005					95% Percentile of Chisquare (2k)	6.487					90% Percentile	142.3
3006					95% Percentile	182.7					99% Percentile	275.9
3007					The following statistics are computed using Gamma ROS Statistics on Imputed Data							
3008					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
3009					WH	HW					WH	HW
3010	95% Approx. Gamma UTL with 95% Coverage				223.1	246.1			95% Approx. Gamma UPL		183.9	197.6
3011				95% Gamma USL	402.5	487.1						
3012												
3013					The following statistics are computed using gamma distribution and KM estimates							
3014					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
3015					k hat (KM)	1.557					nu hat (KM)	211.7
3016					WH	HW					WH	HW
3017	95% Approx. Gamma UTL with 95% Coverage				243.5	280			95% Approx. Gamma UPL		197.5	219.5
3018				95% Gamma USL	458.1	591.2						
3019												
3020					Lognormal GOF Test on Detected Observations Only							
3021					Lilliefors Test Statistic	0.105			Lilliefors GOF Test			
3022					5% Lilliefors Critical Value	0.117			Detected Data appear Lognormal at 5% Significance Level			
3023					Detected Data appear Approximate Lognormal at 5% Significance Level							
3024												
3025					Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects							
3026					Mean in Original Scale	64.62					Mean in Log Scale	3.809
3027					SD in Original Scale	49.01					SD in Log Scale	0.938
3028					95% UTL95% Coverage	292.1					95% BCA UTL95% Coverage	183.7
3029					95% Bootstrap (%) UTL95% Coverage	187.1					95% UPL (t)	218.2
3030					90% Percentile (z)	150.1					95% Percentile (z)	211.1
3031					99% Percentile (z)	400.1					95% USL	806.4
3032												
3033					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
3034					KM Mean of Logged Data	3.49					95% KM UTL (Lognormal)95% Coverage	661.4
3035					KM SD of Logged Data	1.509					95% KM UPL (Lognormal)	413.8
3036					95% KM Percentile Lognormal (z)	392.3					95% KM USL (Lognormal)	3387
3037												
3038					Background DL/2 Statistics Assuming Lognormal Distribution							
3039					Mean in Original Scale	63.07					Mean in Log Scale	3.497
3040					SD in Original Scale	50.82					SD in Log Scale	1.52
3041					95% UTL95% Coverage	680.9					95% UPL (t)	424.5
3042					90% Percentile (z)	231.6					95% Percentile (z)	402.4
3043					99% Percentile (z)	1134					95% USL	3528
3044					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
3045												
3046					Nonparametric Distribution Free Background Statistics							
3047					Data appear to follow a Discernible Distribution at 5% Significance Level							
3048												
3049					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
3050					Order of Statistic, r	67			95% UTL with95% Coverage			187.1
3051					Approximate f	1.763			Confidence Coefficient (CC) achieved by UTL			0.86
3052					95% UPL	167.5					95% USL	198.2
3053					95% KM Chebyshev UPL	284.8						
3054												
3055					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							

	A	B	C	D	E	F	G	H	I	J	K	L
3056	data set free of outliers and consists of observations collected from clean unimpacted locations.											
3057	The use of USL tends to provide a balance between false positives and false negatives provided the data											
3058	represents a background data set and when many onsite observations need to be compared with the BTV.											
3059												
3060	**Total PCB Congeners (calc'd)**											
3061												
3062	**General Statistics**											
3063					Total Number of Observations	29				Number of Distinct Observations		29
3064										Number of Missing Observations		42
3065					Minimum	598.4				First Quartile		2243
3066					Second Largest	6865				Median		3079
3067					Maximum	7811				Third Quartile		3922
3068					Mean	3368				SD		1949
3069					Coefficient of Variation	0.578				Skewness		0.691
3070					Mean of logged Data	7.938				SD of logged Data		0.655
3071												
3072					**Critical Values for Background Threshold Values (BTVs)**							
3073					Tolerance Factor K (For UTL)	2.232				d2max (for USL)		2.73
3074												
3075					**Normal GOF Test**							
3076					Shapiro Wilk Test Statistic	0.921				**Shapiro Wilk GOF Test**		
3077					5% Shapiro Wilk Critical Value	0.926				Data Not Normal at 5% Significance Level		
3078					Lilliefors Test Statistic	0.171				**Lilliefors GOF Test**		
3079					5% Lilliefors Critical Value	0.165				Data Not Normal at 5% Significance Level		
3080					**Data Not Normal at 5% Significance Level**							
3081												
3082					**Background Statistics Assuming Normal Distribution**							
3083				95% UTL with	95% Coverage	7718				90% Percentile (z)		5866
3084					95% UPL (t)	6740				95% Percentile (z)		6573
3085					95% USL	8688				99% Percentile (z)		7901
3086												
3087					**Gamma GOF Test**							
3088					A-D Test Statistic	0.424				**Anderson-Darling Gamma GOF Test**		
3089					5% A-D Critical Value	0.753				Detected data appear Gamma Distributed at 5% Significance Level		
3090					K-S Test Statistic	0.102				**Kolmogrov-Smirnoff Gamma GOF Test**		
3091					5% K-S Critical Value	0.164				Detected data appear Gamma Distributed at 5% Significance Level		
3092					**Detected data appear Gamma Distributed at 5% Significance Level**							
3093												
3094					**Gamma Statistics**							
3095					k hat (MLE)	2.875				k star (bias corrected MLE)		2.601
3096					Theta hat (MLE)	1172				Theta star (bias corrected MLE)		1295
3097					nu hat (MLE)	166.8				nu star (bias corrected)		150.8
3098					MLE Mean (bias corrected)	3368				MLE Sd (bias corrected)		2089
3099												
3100					**Background Statistics Assuming Gamma Distribution**							
3101				95% Wilson Hilferty (WH) Approx. Gamma UPL		7527				90% Percentile		6167
3102				95% Hawkins Wixley (HW) Approx. Gamma UPL		7736				95% Percentile		7370
3103				95% WH Approx. Gamma UTL with	95% Coverage	9396				99% Percentile		9998
3104				95% HW Approx. Gamma UTL with	95% Coverage	9847						
3105					95% WH USL	11533				95% HW USL		12342
3106												
3107					**Lognormal GOF Test**							
3108					Shapiro Wilk Test Statistic	0.948				**Shapiro Wilk Lognormal GOF Test**		
3109					5% Shapiro Wilk Critical Value	0.926				Data appear Lognormal at 5% Significance Level		
3110					Lilliefors Test Statistic	0.126				**Lilliefors Lognormal GOF Test**		
3111					5% Lilliefors Critical Value	0.165				Data appear Lognormal at 5% Significance Level		
3112					**Data appear Lognormal at 5% Significance Level**							
3113												
3114					**Background Statistics assuming Lognormal Distribution**							
3115				95% UTL with	95% Coverage	12102				90% Percentile (z)		6491
3116					95% UPL (t)	8710				95% Percentile (z)		8236
3117					95% USL	16774				99% Percentile (z)		12874
3118												
3119					**Nonparametric Distribution Free Background Statistics**							
3120					**Data appear Gamma Distributed at 5% Significance Level**							

	A	B	C	D	E	F	G	H	I	J	K	L
3121												
3122						Nonparametric Upper Limits for Background Threshold Values						
3123					Order of Statistic, r	29				95% UTL with 95% Coverage		7811
3124					Approximate f	1.526				Confidence Coefficient (CC) achieved by UTL		0.774
3125				95% Percentile Bootstrap UTL with 95% Coverage		7811				95% BCA Bootstrap UTL with 95% Coverage		7811
3126					95% UPL	7338				90% Percentile		6185
3127					90% Chebyshev UPL	9314				95% Percentile		6624
3128					95% Chebyshev UPL	12007				99% Percentile		7546
3129					95% USL	7811						
3130												
3131					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
3132					data set free of outliers and consists of observations collected from clean unimpacted locations.							
3133					The use of USL tends to provide a balance between false positives and false negatives provided the data							
3134					represents a background data set and when many onsite observations need to be compared with the BTV.							
3135												
3136	Total PCBs Aroclors (calc'd)											
3137												
3138						General Statistics						
3139					Total Number of Observations	43				Number of Missing Observations		5
3140					Number of Distinct Observations	36						
3141					Number of Detects	18				Number of Non-Detects		25
3142					Number of Distinct Detects	17				Number of Distinct Non-Detects		19
3143					Minimum Detect	4.95				Minimum Non-Detect		1.3
3144					Maximum Detect	16.18				Maximum Non-Detect		5.2
3145					Variance Detected	10.21				Percent Non-Detects		58.14%
3146					Mean Detected	8.466				SD Detected		3.195
3147					Mean of Detected Logged Data	2.078				SD of Detected Logged Data		0.34
3148												
3149						Critical Values for Background Threshold Values (BTVs)						
3150					Tolerance Factor K (For UTL)	2.097				d2max (for USL)		2.897
3151												
3152						Normal GOF Test on Detects Only						
3153					Shapiro Wilk Test Statistic	0.857				Shapiro Wilk GOF Test		
3154					5% Shapiro Wilk Critical Value	0.897				Data Not Normal at 5% Significance Level		
3155					Lilliefors Test Statistic	0.233				Lilliefors GOF Test		
3156					5% Lilliefors Critical Value	0.209				Data Not Normal at 5% Significance Level		
3157						Data Not Normal at 5% Significance Level						
3158												
3159						Kaplan Meier (KM) Background Statistics Assuming Normal Distribution						
3160					Mean	4.303				SD		4.065
3161					95% UTL95% Coverage	12.83				95% KM UPL (t)		11.22
3162					90% KM Percentile (z)	9.513				95% KM Percentile (z)		10.99
3163					99% KM Percentile (z)	13.76				95% KM USL		16.08
3164												
3165						DL/2 Substitution Background Statistics Assuming Normal Distribution						
3166					Mean	4.182				SD		4.215
3167					95% UTL95% Coverage	13.02				95% UPL (t)		11.35
3168					90% Percentile (z)	9.583				95% Percentile (z)		11.11
3169					99% Percentile (z)	13.99				95% USL		16.39
3170						DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons						
3171												
3172						Gamma GOF Tests on Detected Observations Only						
3173					A-D Test Statistic	0.687				Anderson-Darling GOF Test		
3174					5% A-D Critical Value	0.74				Detected data appear Gamma Distributed at 5% Significance Level		
3175					K-S Test Statistic	0.189				Kolmogrov-Smirnoff GOF		
3176					5% K-S Critical Value	0.204				Detected data appear Gamma Distributed at 5% Significance Level		
3177						Detected data appear Gamma Distributed at 5% Significance Level						
3178												
3179						Gamma Statistics on Detected Data Only						
3180					k hat (MLE)	8.733				k star (bias corrected MLE)		7.314
3181					Theta hat (MLE)	0.969				Theta star (bias corrected MLE)		1.157
3182					nu hat (MLE)	314.4				nu star (bias corrected)		263.3
3183					MLE Mean (bias corrected)	8.466						
3184					MLE Sd (bias corrected)	3.13				95% Percentile of Chisquare (2k)		24.51
3185												

	A	B	C	D	E	F	G	H	I	J	K	L
3186	**Gamma ROS Statistics using Imputed Non-Detects**											
3187	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
3188	GROS may not be used when kstar of detected data is small such as < 0.1											
3189	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
3190	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
3191					Minimum	0.01					Mean	4.055
3192					Maximum	16.18					Median	1.484
3193					SD	4.33					CV	1.068
3194					k hat (MLE)	0.62					k star (bias corrected MLE)	0.592
3195					Theta hat (MLE)	6.54					Theta star (bias corrected MLE)	6.847
3196					nu hat (MLE)	53.32					nu star (bias corrected)	50.94
3197					MLE Mean (bias corrected)	4.055					MLE Sd (bias corrected)	5.269
3198					95% Percentile of Chisquare (2k)	4.282					90% Percentile	10.58
3199					95% Percentile	14.66					99% Percentile	24.55
3200	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
3201	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
3202					WH	HW					WH	HW
3203	95% Approx. Gamma UTL with 95% Coverage				19.42	22.88				95% Approx. Gamma UPL	14.43	16.14
3204				95% Gamma USL	32.79	42.71						
3205												
3206	**The following statistics are computed using gamma distribution and KM estimates**											
3207	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
3208					k hat (KM)	1.121					nu hat (KM)	96.37
3209					WH	HW					WH	HW
3210	95% Approx. Gamma UTL with 95% Coverage				15.22	15.89				95% Approx. Gamma UPL	12	12.24
3211				95% Gamma USL	23.4	25.72						
3212												
3213	**Lognormal GOF Test on Detected Observations Only**											
3214				Shapiro Wilk Test Statistic		0.927	**Shapiro Wilk GOF Test**					
3215				5% Shapiro Wilk Critical Value		0.897	Detected Data appear Lognormal at 5% Significance Level					
3216				Lilliefors Test Statistic		0.166	**Lilliefors GOF Test**					
3217				5% Lilliefors Critical Value		0.209	Detected Data appear Lognormal at 5% Significance Level					
3218	**Detected Data appear Lognormal at 5% Significance Level**											
3219												
3220	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
3221				Mean in Original Scale		5.292				Mean in Log Scale		1.504
3222				SD in Original Scale		3.416				SD in Log Scale		0.551
3223				95% UTL95% Coverage		14.28				95% BCA UTL95% Coverage		15.91
3224				95% Bootstrap (%) UTL95% Coverage		15.93				95% UPL (t)		11.48
3225				90% Percentile (z)		9.111				95% Percentile (z)		11.13
3226				99% Percentile (z)		16.2				95% USL		22.18
3227												
3228	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
3229				KM Mean of Logged Data		1.024				95% KM UTL (Lognormal)95% Coverage		19.19
3230				KM SD of Logged Data		0.921				95% KM UPL (Lognormal)		13.33
3231				95% KM Percentile Lognormal (z)		12.65				95% KM USL (Lognormal)		40.07
3232												
3233	**Background DL/2 Statistics Assuming Lognormal Distribution**											
3234				Mean in Original Scale		4.182				Mean in Log Scale		0.889
3235				SD in Original Scale		4.215				SD in Log Scale		1.076
3236				95% UTL95% Coverage		23.21				95% UPL (t)		15.16
3237				90% Percentile (z)		9.653				95% Percentile (z)		14.27
3238				99% Percentile (z)		29.7				95% USL		54.88
3239	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
3240												
3241	**Nonparametric Distribution Free Background Statistics**											
3242	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
3243												
3244	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
3245				Order of Statistic, r		43				95% UTL with95% Coverage		16.18
3246				Approximate f		2.263				Confidence Coefficient (CC) achieved by UTL		0.89
3247				95% UPL		13.66				95% USL		16.18
3248				95% KM Chebyshev UPL		22.23						
3249												
3250	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											

	A	B	C	D	E	F	G	H	I	J	K	L
3251	data set free of outliers and consists of observations collected from clean unimpacted locations.											
3252	The use of USL tends to provide a balance between false positives and false negatives provided the data											
3253	represents a background data set and when many onsite observations need to be compared with the BTV.											
3254												
3255	**Total PCDD/F (calc'd)**											
3256												
3257	**General Statistics**											
3258					Total Number of Observations	32				Number of Distinct Observations		32
3259										Number of Missing Observations		14
3260					Minimum	5.628				First Quartile		16.09
3261					Second Largest	159.5				Median		35.96
3262					Maximum	168.3				Third Quartile		100.1
3263					Mean	59.96				SD		53.64
3264					Coefficient of Variation	0.895				Skewness		0.814
3265					Mean of logged Data	3.621				SD of logged Data		1.052
3266												
3267					**Critical Values for Background Threshold Values (BTVs)**							
3268					Tolerance Factor K (For UTL)	2.186				d2max (for USL)		2.773
3269												
3270					**Normal GOF Test**							
3271					Shapiro Wilk Test Statistic	0.842				**Shapiro Wilk GOF Test**		
3272					5% Shapiro Wilk Critical Value	0.93				Data Not Normal at 5% Significance Level		
3273					Lilliefors Test Statistic	0.194				**Lilliefors GOF Test**		
3274					5% Lilliefors Critical Value	0.157				Data Not Normal at 5% Significance Level		
3275					**Data Not Normal at 5% Significance Level**							
3276												
3277					**Background Statistics Assuming Normal Distribution**							
3278				95% UTL with	95% Coverage	177.2				90% Percentile (z)		128.7
3279					95% UPL (t)	152.3				95% Percentile (z)		148.2
3280					95% USL	208.7				99% Percentile (z)		184.8
3281												
3282					**Gamma GOF Test**							
3283					A-D Test Statistic	0.755				**Anderson-Darling Gamma GOF Test**		
3284					5% A-D Critical Value	0.771				Detected data appear Gamma Distributed at 5% Significance Level		
3285					K-S Test Statistic	0.124				**Kolmogrov-Smirnoff Gamma GOF Test**		
3286					5% K-S Critical Value	0.159				Detected data appear Gamma Distributed at 5% Significance Level		
3287					**Detected data appear Gamma Distributed at 5% Significance Level**							
3288												
3289					**Gamma Statistics**							
3290					k hat (MLE)	1.198				k star (bias corrected MLE)		1.106
3291					Theta hat (MLE)	50.07				Theta star (bias corrected MLE)		54.21
3292					nu hat (MLE)	76.65				nu star (bias corrected)		70.8
3293					MLE Mean (bias corrected)	59.96				MLE Sd (bias corrected)		57.01
3294												
3295					**Background Statistics Assuming Gamma Distribution**							
3296				95% Wilson Hilferty (WH) Approx. Gamma UPL		177.8				90% Percentile		134.7
3297				95% Hawkins Wixley (HW) Approx. Gamma UPL		185.7				95% Percentile		173.4
3298				95% WH Approx. Gamma UTL with	95% Coverage	236.4				99% Percentile		262.6
3299				95% HW Approx. Gamma UTL with	95% Coverage	255.4						
3300					95% WH USL	327.4				95% HW USL		369.6
3301												
3302					**Lognormal GOF Test**							
3303					Shapiro Wilk Test Statistic	0.932				**Shapiro Wilk Lognormal GOF Test**		
3304					5% Shapiro Wilk Critical Value	0.93				Data appear Lognormal at 5% Significance Level		
3305					Lilliefors Test Statistic	0.1				**Lilliefors Lognormal GOF Test**		
3306					5% Lilliefors Critical Value	0.157				Data appear Lognormal at 5% Significance Level		
3307					**Data appear Lognormal at 5% Significance Level**							
3308												
3309					**Background Statistics assuming Lognormal Distribution**							
3310				95% UTL with	95% Coverage	373				90% Percentile (z)		144
3311					95% UPL (t)	228.8				95% Percentile (z)		211
3312					95% USL	691.7				99% Percentile (z)		432.2
3313												
3314					**Nonparametric Distribution Free Background Statistics**							
3315					**Data appear Gamma Distributed at 5% Significance Level**							

	A	B	C	D	E	F	G	H	I	J	K	L
3316												
3317						**Nonparametric Upper Limits for Background Threshold Values**						
3318					Order of Statistic, r	32			95% UTL with	95% Coverage		168.3
3319					Approximate f	1.684			Confidence Coefficient (CC) achieved by UTL			0.806
3320			95% Percentile Bootstrap UTL with	95% Coverage		168.3			95% BCA Bootstrap UTL with	95% Coverage		168.3
3321					95% UPL	162.6				90% Percentile		147.9
3322					90% Chebyshev UPL	223.4				95% Percentile		158.2
3323					95% Chebyshev UPL	297.4				99% Percentile		165.6
3324					95% USL	168.3						
3325												
3326					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
3327					data set free of outliers and consists of observations collected from clean unimpacted locations.							
3328					The use of USL tends to provide a balance between false positives and false negatives provided the data							
3329					represents a background data set and when many onsite observations need to be compared with the BTV.							
3330												
3331	**Total Petroleum Hydrocarbons (calc'd)**											
3332												
3333	**General Statistics**											
3334					Total Number of Observations	28			Number of Distinct Observations			28
3335									Number of Missing Observations			18
3336					Minimum	11.8			First Quartile			212.5
3337					Second Largest	446			Median			257.1
3338					Maximum	489			Third Quartile			311.5
3339					Mean	264.4			SD			112.2
3340					Coefficient of Variation	0.424			Skewness			0.0536
3341					Mean of logged Data	5.426			SD of logged Data			0.712
3342												
3343						**Critical Values for Background Threshold Values (BTVs)**						
3344					Tolerance Factor K (For UTL)	2.246			d2max (for USL)			2.714
3345												
3346						**Normal GOF Test**						
3347					Shapiro Wilk Test Statistic	0.962			**Shapiro Wilk GOF Test**			
3348					5% Shapiro Wilk Critical Value	0.924			Data appear Normal at 5% Significance Level			
3349					Lilliefors Test Statistic	0.169			**Lilliefors GOF Test**			
3350					5% Lilliefors Critical Value	0.167			Data Not Normal at 5% Significance Level			
3351						**Data appear Approximate Normal at 5% Significance Level**						
3352												
3353						**Background Statistics Assuming Normal Distribution**						
3354				95% UTL with	95% Coverage	516.4			90% Percentile (z)			408.2
3355					95% UPL (t)	458.9			95% Percentile (z)			448.9
3356					95% USL	569			99% Percentile (z)			525.4
3357												
3358						**Gamma GOF Test**						
3359					A-D Test Statistic	1.197			**Anderson-Darling Gamma GOF Test**			
3360					5% A-D Critical Value	0.752			Data Not Gamma Distributed at 5% Significance Level			
3361					K-S Test Statistic	0.193			**Kolmogrov-Smirnoff Gamma GOF Test**			
3362					5% K-S Critical Value	0.166			Data Not Gamma Distributed at 5% Significance Level			
3363						**Data Not Gamma Distributed at 5% Significance Level**						
3364												
3365						**Gamma Statistics**						
3366					k hat (MLE)	3.459			k star (bias corrected MLE)			3.112
3367					Theta hat (MLE)	76.43			Theta star (bias corrected MLE)			84.95
3368					nu hat (MLE)	193.7			nu star (bias corrected)			174.3
3369					MLE Mean (bias corrected)	264.4			MLE Sd (bias corrected)			149.9
3370												
3371						**Background Statistics Assuming Gamma Distribution**						
3372			95% Wilson Hilferty (WH) Approx. Gamma UPL			555			90% Percentile			465.3
3373			95% Hawkins Wixley (HW) Approx. Gamma UPL			586.9			95% Percentile			549
3374			95% WH Approx. Gamma UTL with	95% Coverage		682.2			99% Percentile			730.1
3375			95% HW Approx. Gamma UTL with	95% Coverage		739.2						
3376					95% WH USL	814.1			95% HW USL			902.6
3377												
3378						**Lognormal GOF Test**						
3379					Shapiro Wilk Test Statistic	0.719			**Shapiro Wilk Lognormal GOF Test**			
3380					5% Shapiro Wilk Critical Value	0.924			Data Not Lognormal at 5% Significance Level			

	A	B	C	D	E	F	G	H	I	J	K	L
3381					Lilliefors Test Statistic	0.245			Lilliefors Lognormal GOF Test			
3382					5% Lilliefors Critical Value	0.167			Data Not Lognormal at 5% Significance Level			
3383					Data Not Lognormal at 5% Significance Level							
3384												
3385					Background Statistics assuming Lognormal Distribution							
3386				95% UTL with	95% Coverage	1125					90% Percentile (z)	566.1
3387					95% UPL (t)	781					95% Percentile (z)	733.3
3388					95% USL	1571					99% Percentile (z)	1192
3389												
3390					Nonparametric Distribution Free Background Statistics							
3391					Data appear Approximate Normal at 5% Significance Level							
3392												
3393					Nonparametric Upper Limits for Background Threshold Values							
3394					Order of Statistic, r	28					95% UTL with 95% Coverage	489
3395					Approximate f	1.474					Confidence Coefficient (CC) achieved by UTL	0.762
3396				95% Percentile Bootstrap UTL with	95% Coverage	489					95% BCA Bootstrap UTL with 95% Coverage	489
3397					95% UPL	469.7					90% Percentile	435
3398					90% Chebyshev UPL	607					95% Percentile	443.7
3399					95% Chebyshev UPL	762.1					99% Percentile	477.4
3400					95% USL	489						
3401												
3402					Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
3403					data set free of outliers and consists of observations collected from clean unimpacted locations.							
3404					The use of USL tends to provide a balance between false positives and false negatives provided the data							
3405					represents a background data set and when many onsite observations need to be compared with the BTV.							
3406												
3407	Tributyltin ion											
3408												
3409					General Statistics							
3410					Total Number of Observations	3					Number of Missing Observations	43
3411					Number of Distinct Observations	3						
3412					Number of Detects	2					Number of Non-Detects	1
3413					Number of Distinct Detects	2					Number of Distinct Non-Detects	1
3414					Minimum Detect	0.72					Minimum Non-Detect	0.087
3415					Maximum Detect	1.1					Maximum Non-Detect	0.087
3416					Variance Detected	0.0722					Percent Non-Detects	33.33%
3417					Mean Detected	0.91					SD Detected	0.269
3418					Mean of Detected Logged Data	-0.117					SD of Detected Logged Data	0.3
3419												
3420					Warning: Data set has only 2 Detected Values.							
3421					This is not enough to compute meaningful or reliable statistics and estimates.							
3422												
3423												
3424					Critical Values for Background Threshold Values (BTVs)							
3425					Tolerance Factor K (For UTL)	7.656					d2max (for USL)	1.153
3426												
3427					Normal GOF Test on Detects Only							
3428					Not Enough Data to Perform GOF Test							
3429												
3430					Kaplan Meier (KM) Background Statistics Assuming Normal Distribution							
3431					Mean	0.636					SD	0.418
3432					95% UTL95% Coverage	3.835					95% KM UPL (t)	2.044
3433					90% KM Percentile (z)	1.171					95% KM Percentile (z)	1.323
3434					99% KM Percentile (z)	1.608					95% KM USL	1.117
3435												
3436					DL/2 Substitution Background Statistics Assuming Normal Distribution							
3437					Mean	0.621					SD	0.535
3438					95% UTL95% Coverage	4.718					95% UPL (t)	2.426
3439					90% Percentile (z)	1.307					95% Percentile (z)	1.501
3440					99% Percentile (z)	1.866					95% USL	1.238
3441					DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons							
3442												
3443					Gamma GOF Tests on Detected Observations Only							
3444					Not Enough Data to Perform GOF Test							
3445												

	A	B	C	D	E	F	G	H	I	J	K	L
3446	Gamma Statistics on Detected Data Only											
3447					k hat (MLE)	22.6					k star (bias corrected MLE)	N/A
3448					Theta hat (MLE)	0.0403					Theta star (bias corrected MLE)	N/A
3449					nu hat (MLE)	90.4					nu star (bias corrected)	N/A
3450				MLE Mean (bias corrected)		N/A						
3451				MLE Sd (bias corrected)		N/A					95% Percentile of Chisquare (2k)	N/A
3452												
3453	The following statistics are computed using gamma distribution and KM estimates											
3454	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3455					k hat (KM)	2.314					nu hat (KM)	13.89
3456					WH	HW					WH	HW
3457	95% Approx. Gamma UTL with 95% Coverage				20.1	33.89				95% Approx. Gamma UPL	4.41	5.433
3458				95% Gamma USL	1.263	1.301						
3459												
3460	Lognormal GOF Test on Detected Observations Only											
3461	Not Enough Data to Perform GOF Test											
3462												
3463	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
3464				Mean in Original Scale		0.72					Mean in Log Scale	-0.437
3465				SD in Original Scale		0.38					SD in Log Scale	0.595
3466				95% UTL95% Coverage		61.34					95% BCA UTL95% Coverage	N/A
3467				95% Bootstrap (%) UTL95% Coverage		N/A					95% UPL (t)	4.797
3468				90% Percentile (z)		1.384					95% Percentile (z)	1.718
3469				99% Percentile (z)		2.576					95% USL	1.282
3470												
3471	Background DL/2 Statistics Assuming Lognormal Distribution											
3472				Mean in Original Scale		0.621					Mean in Log Scale	-1.123
3473				SD in Original Scale		0.535					SD in Log Scale	1.756
3474				95% UTL95% Coverage		223563					95% UPL (t)	121.1
3475				90% Percentile (z)		3.087					95% Percentile (z)	5.841
3476				99% Percentile (z)		19.32					95% USL	2.463
3477	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
3478												
3479	Nonparametric Distribution Free Background Statistics											
3480	Data do not follow a Discernible Distribution (0.05)											
3481												
3482	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
3483				Order of Statistic, r		3					95% UTL with95% Coverage	1.1
3484				Approximate f		0.158					Confidence Coefficient (CC) achieved by UTL	0.143
3485				95% UPL		1.1					95% USL	1.1
3486				95% KM Chebyshev UPL		2.739						
3487												
3488	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
3489	data set free of outliers and consists of observations collected from clean unimpacted locations.											
3490	The use of USL tends to provide a balance between false positives and false negatives provided the data											
3491	represents a background data set and when many onsite observations need to be compared with the BTV.											
3492												
3493	Zinc											
3494												
3495	General Statistics											
3496				Total Number of Observations		66					Number of Distinct Observations	63
3497											Number of Missing Observations	5
3498				Minimum		40.4					First Quartile	58.7
3499				Second Largest		113					Median	72.7
3500				Maximum		114					Third Quartile	88.54
3501				Mean		73.31					SD	18.26
3502				Coefficient of Variation		0.249					Skewness	0.114
3503				Mean of logged Data		4.263					SD of logged Data	0.26
3504												
3505	Critical Values for Background Threshold Values (BTVs)											
3506				Tolerance Factor K (For UTL)		1.997					d2max (for USL)	3.062
3507												
3508	Normal GOF Test											
3509				Shapiro Wilk Test Statistic		0.966					Normal GOF Test	
3510				5% Shapiro Wilk P Value		0.171					Data appear Normal at 5% Significance Level	

	A	B	C	D	E	F	G	H	I	J	K	L
3511					Lilliefors Test Statistic	0.0824	**Lilliefors GOF Test**					
3512					5% Lilliefors Critical Value	0.109	Data appear Normal at 5% Significance Level					
3513	**Data appear Normal at 5% Significance Level**											
3514												
3515	**Background Statistics Assuming Normal Distribution**											
3516				95% UTL with	95% Coverage	109.8				90% Percentile (z)		96.71
3517					95% UPL (t)	104				95% Percentile (z)		103.3
3518					95% USL	129.2				99% Percentile (z)		115.8
3519												
3520	**Gamma GOF Test**											
3521					A-D Test Statistic	0.45	**Anderson-Darling Gamma GOF Test**					
3522					5% A-D Critical Value	0.75	Detected data appear Gamma Distributed at 5% Significance Level					
3523					K-S Test Statistic	0.081	**Kolmogrov-Smirnoff Gamma GOF Test**					
3524					5% K-S Critical Value	0.11	Detected data appear Gamma Distributed at 5% Significance Level					
3525	**Detected data appear Gamma Distributed at 5% Significance Level**											
3526												
3527	**Gamma Statistics**											
3528					k hat (MLE)	15.71				k star (bias corrected MLE)		15.01
3529					Theta hat (MLE)	4.666				Theta star (bias corrected MLE)		4.884
3530					nu hat (MLE)	2074				nu star (bias corrected)		1981
3531					MLE Mean (bias corrected)	73.31				MLE Sd (bias corrected)		18.92
3532												
3533	**Background Statistics Assuming Gamma Distribution**											
3534				95% Wilson Hilferty (WH) Approx. Gamma UPL		107.3				90% Percentile		98.36
3535				95% Hawkins Wixley (HW) Approx. Gamma UPL		107.9				95% Percentile		107
3536				95% WH Approx. Gamma UTL with	95% Coverage	115.1				99% Percentile		124.3
3537				95% HW Approx. Gamma UTL with	95% Coverage	116						
3538					95% WH USL	144.1				95% HW USL		146.8
3539												
3540	**Lognormal GOF Test**											
3541					Shapiro Wilk Test Statistic	0.958	**Shapiro Wilk Lognormal GOF Test**					
3542					5% Shapiro Wilk P Value	0.0617	Data appear Lognormal at 5% Significance Level					
3543					Lilliefors Test Statistic	0.0897	**Lilliefors Lognormal GOF Test**					
3544					5% Lilliefors Critical Value	0.109	Data appear Lognormal at 5% Significance Level					
3545	**Data appear Lognormal at 5% Significance Level**											
3546												
3547	**Background Statistics assuming Lognormal Distribution**											
3548				95% UTL with	95% Coverage	119.3				90% Percentile (z)		99.04
3549					95% UPL (t)	109.9				95% Percentile (z)		108.8
3550					95% USL	157.3				99% Percentile (z)		129.9
3551												
3552	**Nonparametric Distribution Free Background Statistics**											
3553	**Data appear Normal at 5% Significance Level**											
3554												
3555	**Nonparametric Upper Limits for Background Threshold Values**											
3556					Order of Statistic, r	65				95% UTL with	95% Coverage	113
3557					Approximate f	1.711				Confidence Coefficient (CC) achieved by UTL		0.848
3558				95% Percentile Bootstrap UTL with	95% Coverage	111.8				95% BCA Bootstrap UTL with	95% Coverage	111
3559					95% UPL	103.6				90% Percentile		95.65
3560					90% Chebyshev UPL	128.5				95% Percentile		100.3
3561					95% Chebyshev UPL	153.5				99% Percentile		113.4
3562					95% USL	114						
3563												
3564	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
3565	data set free of outliers and consists of observations collected from clean unimpacted locations.											
3566	The use of USL tends to provide a balance between false positives and false negatives provided the data											
3567	represents a background data set and when many onsite observations need to be compared with the BTV.											
3568												