

Table B.4
Censored Probability Plot Correlation Coefficient
Arsenic Concentrations Detected in All Soils
Camp Stanley Storage Activity, Texas

Order(i)	Uniform Order Statistic Medians	Normal Order Statistic Medians	Mi-Mavg	(Mi-Mavg)^2	Lognormal			
					Ln of Ordered Concentrations (mg/kg)			
1	0.01	-2.37	-2.43	5.92	0.75	-1.11	1.24	2.71
2	0.02	-2.02	-2.08	4.35	0.96	-0.91	0.83	1.90
3	0.03	-1.82	-1.88	3.54	0.97	-0.90	0.80	1.69
4	0.05	-1.67	-1.73	3.01	0.99	-0.87	0.76	1.51
5	0.06	-1.55	-1.62	2.61	1.10	-0.77	0.59	1.24
6	0.07	-1.45	-1.52	2.30	1.16	-0.70	0.49	1.07
7	0.09	-1.36	-1.43	2.04	1.33	-0.53	0.28	0.76
8	0.10	-1.29	-1.35	1.83	1.34	-0.53	0.28	0.72
9	0.11	-1.21	-1.28	1.64	1.35	-0.51	0.26	0.66
10	0.13	-1.15	-1.22	1.48	1.39	-0.48	0.23	0.58
11	0.14	-1.09	-1.16	1.33	1.46	-0.41	0.17	0.47
12	0.15	-1.03	-1.10	1.21	1.46	-0.41	0.17	0.45
13	0.16	-0.98	-1.04	1.09	1.46	-0.41	0.16	0.42
14	0.18	-0.93	-0.99	0.99	1.47	-0.39	0.15	0.39
15	0.19	-0.88	-0.94	0.89	1.48	-0.38	0.15	0.36
								Censored
18	0.23	-0.74	-0.81	0.66	1.53	-0.34	0.12	0.28
								Censored
21	0.27	-0.62	-0.69	0.47	1.55	-0.32	0.10	0.22
22	0.28	-0.58	-0.65	0.42	1.55	-0.32	0.10	0.21
								Censored
								Censored
								Censored
27	0.34	-0.40	-0.47	0.22	1.59	-0.28	0.08	0.13
28	0.36	-0.36	-0.43	0.19	1.61	-0.26	0.07	0.11
								Censored
								Censored
								Censored
								Censored
33	0.42	-0.20	-0.26	0.07	1.62	-0.25	0.06	0.06
								Censored
								Censored
36	0.46	-0.10	-0.16	0.03	1.67	-0.20	0.04	0.03
37	0.47	-0.06	-0.13	0.02	1.68	-0.19	0.04	0.02
38	0.49	-0.03	-0.10	0.01	1.68	-0.18	0.03	0.02
39	0.50	0.00	-0.07	0.00	1.68	-0.18	0.03	0.01
40	0.51	0.03	-0.03	0.00	1.68	-0.18	0.03	0.01
								Censored
42	0.54	0.10	0.03	0.00	1.73	-0.13	0.02	0.00
43	0.55	0.13	0.06	0.00	1.75	-0.12	0.01	-0.01
44	0.56	0.16	0.10	0.01	1.75	-0.12	0.01	-0.01
45	0.58	0.20	0.13	0.02	1.77	-0.09	0.01	-0.01
46	0.59	0.23	0.16	0.03	1.82	-0.04	0.00	-0.01
47	0.60	0.26	0.20	0.04	1.82	-0.04	0.00	-0.01
48	0.62	0.30	0.23	0.05	1.83	-0.03	0.00	-0.01
49	0.63	0.33	0.26	0.07	1.89	0.02	0.00	0.01
50	0.64	0.36	0.30	0.09	1.92	0.06	0.00	0.02
51	0.66	0.40	0.33	0.11	1.92	0.06	0.00	0.02
52	0.67	0.43	0.37	0.14	1.93	0.06	0.00	0.02
53	0.68	0.47	0.40	0.16	1.94	0.07	0.01	0.03
54	0.69	0.51	0.44	0.19	1.95	0.08	0.01	0.04
55	0.71	0.54	0.48	0.23	1.96	0.09	0.01	0.04
56	0.72	0.58	0.52	0.27	1.96	0.10	0.01	0.05
57	0.73	0.62	0.55	0.31	1.97	0.10	0.01	0.06
58	0.75	0.66	0.59	0.35	1.97	0.10	0.01	0.06
59	0.76	0.70	0.64	0.40	2.01	0.14	0.02	0.09
60	0.77	0.74	0.68	0.46	2.05	0.19	0.04	0.13
61	0.78	0.79	0.72	0.52	2.25	0.39	0.15	0.28
62	0.80	0.83	0.77	0.59	2.29	0.42	0.18	0.33
63	0.81	0.88	0.81	0.66	2.29	0.43	0.18	0.35
64	0.82	0.93	0.86	0.74	2.30	0.43	0.19	0.37
65	0.84	0.98	0.91	0.83	2.31	0.44	0.19	0.40
								Censored
67	0.86	1.09	1.02	1.05	2.41	0.54	0.29	0.56
68	0.87	1.15	1.08	1.17	2.41	0.55	0.30	0.59
69	0.89	1.21	1.15	1.32	2.45	0.59	0.35	0.67

Order(i)	Uniform Order Statistic Medians	Normal Order Statistic Medians	Mi-Mavg	(Mi-Mavg)^2
71	0.91	1.36	1.30	1.68
72	0.93	1.45	1.38	1.92
73	0.94	1.55	1.48	2.20
74	0.95	1.67	1.60	2.57
75	0.97	1.82	1.75	3.06
76	0.98	2.02	1.95	3.81
77	0.99	2.37	2.30	5.30
66.664				
$M_{avg} =$		0.0661		

Lognormal			
Ln of Ordered Concentrations (mg/kg)			
2.53	0.66	0.44	0.86
2.76	0.89	0.80	1.24
3.00	1.13	1.28	1.68
3.00	1.13	1.28	1.81
3.04	1.18	1.39	2.06
3.22	1.35	1.83	2.64
3.26	1.39	1.94	3.20
Sum:		18.235	
$X_{avg} =$		1.8661	
$r =$		0.962986	

Censored

Censored

Probability Plot Correlation Coefficient^{a,b}

$$r = \frac{\sum_{i=1}^n (X_i - X_{avg})(M_i - M_{avg})}{\sqrt{\sum_{i=1}^n (X_i - X_{avg})^2 \sum_{i=1}^n (M_i - M_{avg})^2}}$$

$M_i = \Phi^{-1}(m_i) =$ ith Normal order statistic median
 where $\Phi^{-1} =$ inverse of standard Normal cumulative distribution
 $= f(z,0,1)^{-1} = \sqrt{2p} e^{z^2/2}$

$$m_i = \begin{cases} 1 - (.5)^{1/n} & \text{for } i = 1 \\ (i - .3175)/(n + .365) & \text{for } 1 < i < n \\ (.5)^{1/n} & \text{for } i = n \end{cases}$$

$M_{avg} =$ average of M_i
 $X_{avg} =$ average of X_i

^a The Probability Plot Correlation Coefficient Test for Normality, James J. Filliben, Technometrics, Vol. 17, No. 1, February 1975

^b Statistical Training Course for Ground-Water Monitoring Data Analysis-Draft Addendum to Interim Final Guidance, EPA /530-R-93-003, 1992