

**Censored Probability Plot Correlation Coefficient
Chromium Concentrations Detected in Glen Rose Formation Limestone
Camp Stanley Storage Activity, Texas**

Uniform Order Statistic					Normal				Lognormal			
Order(i)	Statistic Medians	Normal Order Statistic Medians	$M_i - M_{avg}$	$(M_i - M_{avg})^2$	Ordered Concentrations (mg/kg)	$X_i - X_{avg}$	$(X_i - X_{avg})^2$	$(X_i - X_{avg}) * (M_i - M_{avg})$	Ln of Ordered Concentrations (mg/kg)	$X_i - X_{avg}$	$(X_i - X_{avg})^2$	$(X_i - X_{avg}) * (M_i - M_{avg})$
i	m_i	M_i	$M_i - M_{avg}$	$(M_i - M_{avg})^2$	$x_{(i)}$	$X_i - X_{avg}$	$(X_i - X_{avg})^2$	$(X_i - X_{avg}) * (M_i - M_{avg})$	$\ln(x_{(i)})$	$X_i - X_{avg}$	$(X_i - X_{avg})^2$	$(X_i - X_{avg}) * (M_i - M_{avg})$
1	0.06697	-1.49877			1.0				0.00			
2	0.16233	-0.98495			1.0				0.00			
3	0.25880	-0.64704	-0.95859	0.919	2.0	-0.463	0.214	0.443347	0.69	-0.189	0.036	0.181098
4	0.35528	-0.37110	-0.68265	0.466	2.0	-0.463	0.214	0.315725	0.69	-0.189	0.036	0.128968
5	0.45176	-0.12121	-0.43276	0.187	2.2	-0.263	0.069	0.113601	0.79	-0.094	0.009	0.040512
6	0.54824	0.12121	-0.19034	0.036	2.2	-0.263	0.069	0.049963	0.79	-0.094	0.009	0.017818
7	0.64472	0.37110	0.05955	0.004	2.4	-0.063	0.004	-0.003722	0.88	-0.007	0.000	-0.000393
8	0.74120	0.64704	0.33549	0.113	2.5	0.038	0.001	0.012581	0.92	0.034	0.001	0.011481
9	0.83767	0.98495	0.67340	0.453	2.7	0.238	0.056	0.159931	0.99	0.111	0.012	0.074870
10	0.93415	1.50746	1.19591	1.430	3.7	1.238	1.531	1.479938	1.31	0.426	0.182	0.509773
			Total:	3.608	Totals:		2.159	2.571365	Sum:		0.284	0.964126
$M_{avg} =$		0.3116			$X_{avg} =$		2.4625			$X_{avg} =$		0.8821
					$r =$		0.921338			$r =$		0.952113

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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 Φ^{-1} = inverse of standard Normal cumulative distribution
 $= f(z,0,1)^{-1} = \sqrt{2\pi} e^{z^2/2}$

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

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