US EPA ARCHIVE DOCUMENT

Appendix G

Soil Grain Size Comparison Study

JACOBS ENGINEERING
Engineers and Constructors
Jacobs Federal Operations
4400 College Boulevard, Suite 160
Overland Park, Kansas 66211 U.S.A.
1.913.663.2101 Fax 1.913.663.1668

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MAY 15 2000
SUPERFUND DIVISION

May 15, 2000

Don Bahnke
Environmental Protection Agency
Superfund Division
901 North 5th Street
Kansas City, KS 66101

Re: Grain Size Comparison Study
Omaha Lead Site Investigation
WA 25
Contract No. 68-W5-0014

Dear Mr. Bahnke:

Attached are the results from the grain size comparison study performed for the Omaha Lead Site Investigation. Soil samples passing a No. 10 and a No. 60 mesh sieve were analyzed separately for lead. The ratio of the lead results for the two sieve sizes was calculated. Both normal and log-normal data results have been calculated and are provided in the attached table. In addition, a linear regression was developed for the normal and log-normally transformed data comparing the No. 10 versus the No. 60 mesh lead concentrations in soil. The regression coefficient for both the normal and log-normally transformed data is extremely high (i.e, 96% and 98%, respectively).

Based on these results, it appears that very little error occurs when the No. 60 mesh sieve is not used during sample preparation prior to analyzing soil samples with the Niton 700 Series XRF analyzers. This information was used to modify the procedures specified in the Field Sampling Plan. Attachment 1 provides a description of the comparison study along with changes agreed upon between Jacobs Federal Operations (JFO) and EPA during a May 6, 1999 conference call.

JACOBS FEDERAL OPERATIONS

Todd Trometer, P.G.
Project Manager

enclosure

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Data Comparision Study
Lead Concentrations (mg/Kg) for Samples Passing #10 and #60 Sieves

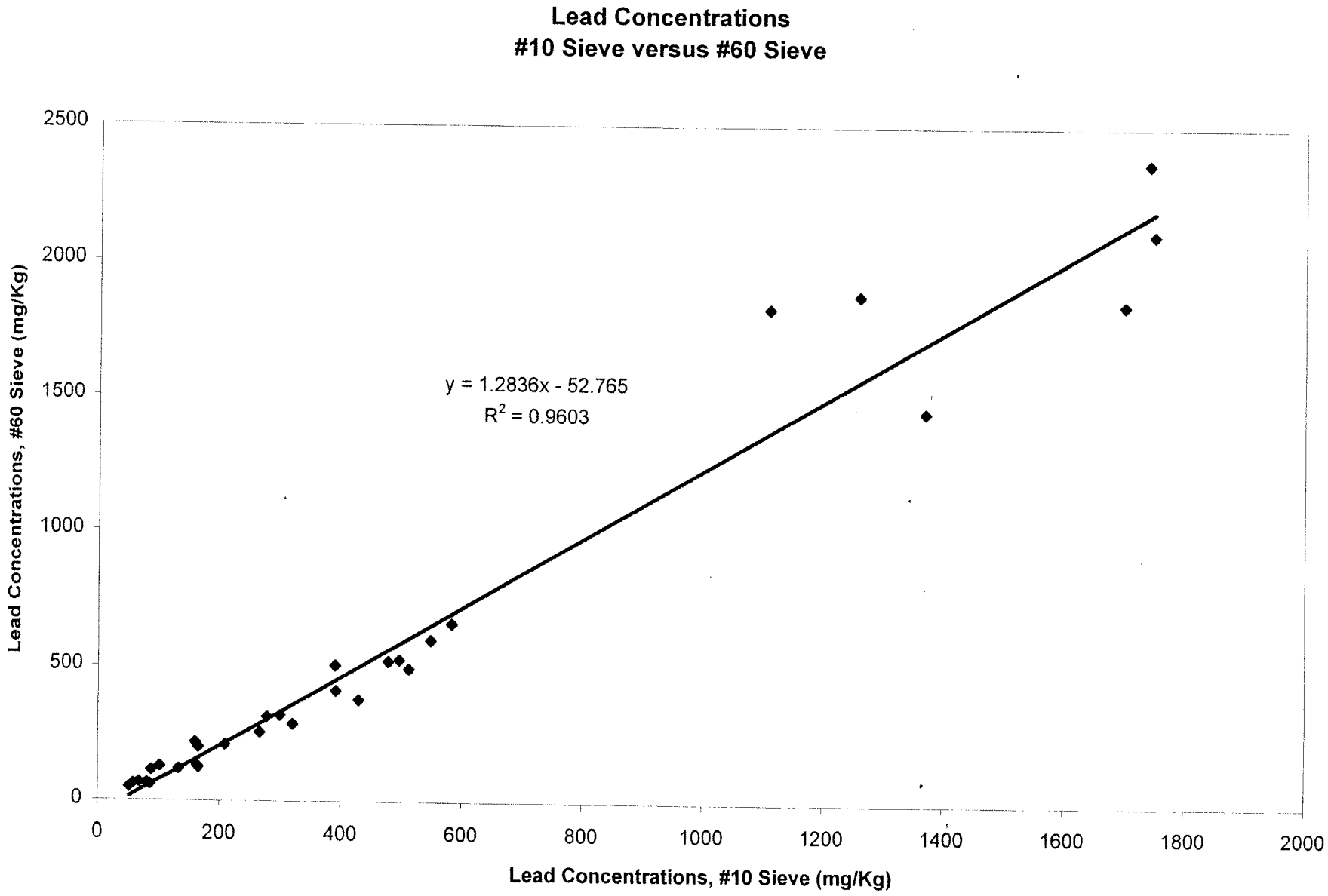
Sample Number	#10 Sieve	#60 Sieve	Ratio	log #10 Sieve	log #60 Sieve	Ratio
1511	133	119	1.12	2.12	2.08	1.02
1517	1370	1450	0.94	3.14	3.16	0.99
1528	496	526	0.94	2.70	2.72	0.99
1535	429	378	1.13	2.63	2.58	1.02
1543	102	128	0.80	2.01	2.11	0.95
1545	391	411	0.95	2.59	2.61	0.99
1548	278	315	0.88	2.44	2.50	0.98
1553	1700	1850	0.92	3.23	3.27	0.99
1616	1749	2109	0.83	3.24	3.32	0.98
1625	58	62	0.94	1.76	1.79	0.99
1627	583	660	0.88	2.77	2.82	0.98
1635	266	257	1.04	2.42	2.41	1.01
1673	512	493	1.04	2.71	2.69	1.01
1591	478	519	0.92	2.68	2.72	0.99
1597	160	218	0.73	2.20	2.34	0.94
1599	548	599	0.91	2.74	2.78	0.99
1600	512	493	1.04	2.71	2.69	1.01
1642	390	504	0.77	2.59	2.70	0.96
1683	1740	2370	0.73	3.24	3.37	0.96
1664	1260	1880	0.67	3.10	3.27	0.95
1666	81	65	1.25	1.91	1.81	1.05
1650	299	320	0.93	2.48	2.51	0.99
1656	1110	1830	0.61	3.05	3.26	0.93
1685	165	200	0.83	2.22	2.30	0.96
1731	68	68	1.00	1.83	1.83	1.00
1725	163	132	1.23	2.21	2.12	1.04
1713	320	288	1.11	2.51	2.46	1.02
1720	165	124	1.33	2.22	2.09	1.06
1702	209	209	1.00	2.32	2.32	1.00
1722	52	50	1.04	1.72	1.70	1.01
1739	86	59	1.45	1.93	1.77	1.09
1747	88	114	0.77	1.94	2.06	0.94
		Average Ratio:	0.96		Average Ratio:	0.99

Regression Output for #10 Sieve vs. #60 Sieve:

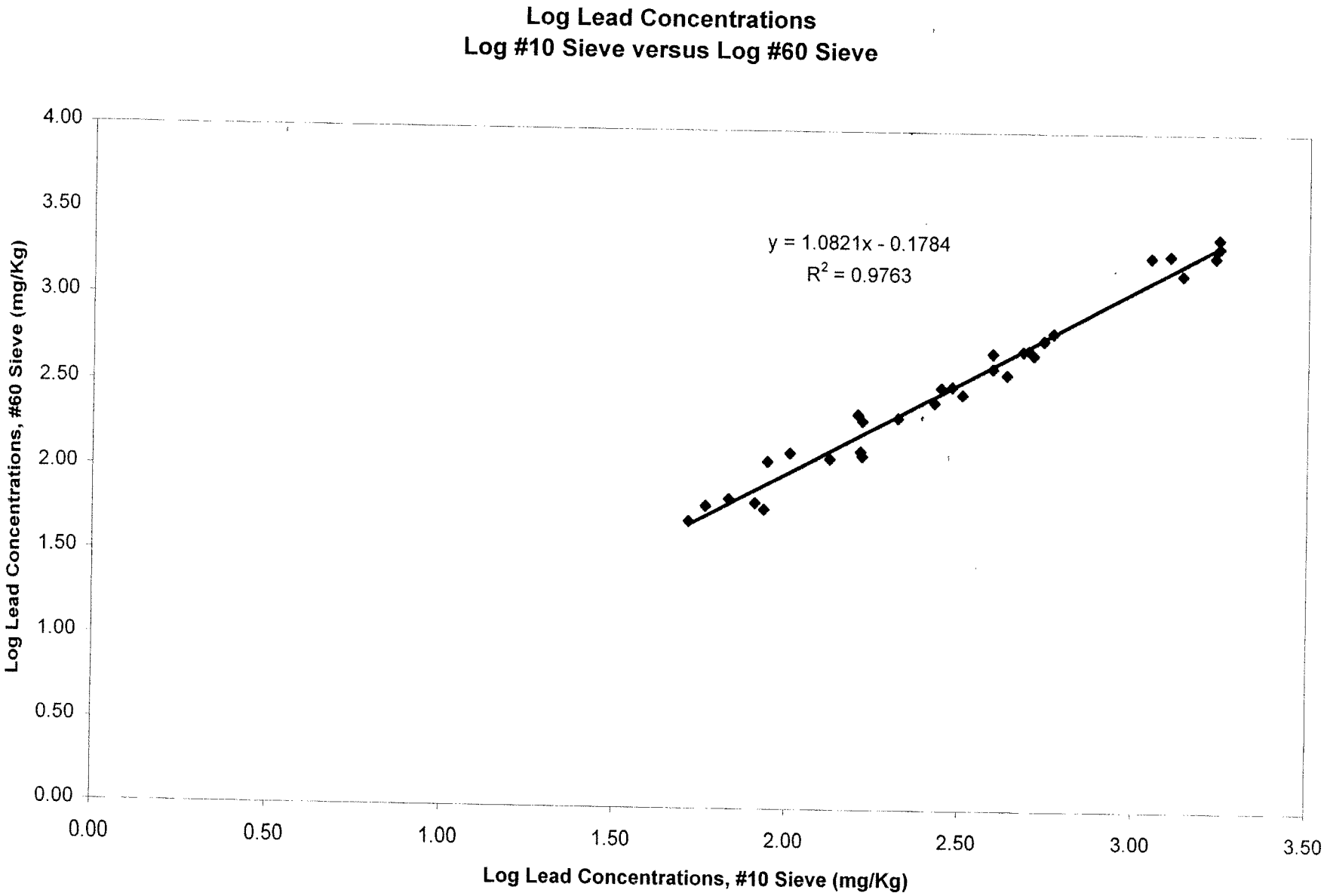
Constant		-52.7653
Std Err of Y Est		138.0648
R Squared		0.960282
No. of Observations		32
Degrees of Freedom		30
X Coefficient(s)	1.28364	
Std Err of Coef.	0.047662	

Regression Output for Log #10 Sieve vs. Log #60 Sieve:

Constant		-0.17841
Std Err of Y Est		0.077507
R Squared		0.976301
No. of Observations		32
Degrees of Freedom		30
X Coefficient(s)	1.082066	
Std Err of Coef.	0.03078	



Data Comparision Study


Log Lead Concentrations
Log #10 Sieve versus Log #60 Sieve
y = 1.0821x - 0.1784
R2 = 0.9763
Log Lead Concentrations, #60 Sieve (mg/Kg)
Log Lead Concentrations, #10 Sieve (mg/Kg)
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50