US EPA RECORDS CENTER REGION 5
481642

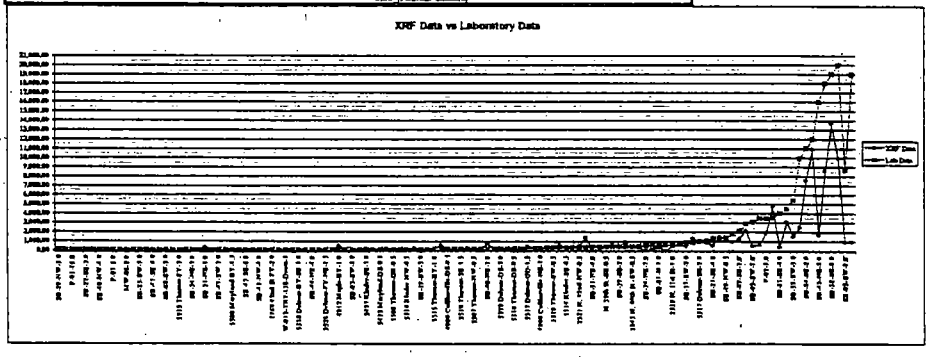
APPENDIX J

XRF CORRELATION EVALUATION TO LABORATORY DATA

Correlation of XRF Results and Laboratory Results for Lead
Old American Zinc Plant Site, Fairmont City, Illinois

Sample ID	XRF Pb Data (mg/Kg)	Laboratory Data (mg/Kg)	Relative Percent Difference (RPD) %	Data Set w/o Outliers(RPDs > 125%) XRF Pb Data (mg/Kg)	Laboratory Data (mg/Kg)	<1,000 mg/kg - XRF Higher	>1000 mg/kg - XRF Higher
[redacted]	8.49	3.7	78.58	8.49	3.7	Y	
[redacted]	10.18	7	37.02	10.18	7	Y	
P-01-16.0	9.86	8.2	18.35	9.86	8.2	Y	
[redacted]	14.00	8.9	44.54	14.00	8.9	Y	
[redacted]	85.90	10	161.80			Y	
[redacted]	21.30	11	63.78	21.30	11	Y	
[redacted]	17.78	12	38.82	17.78	12	Y	
[redacted]	17.74	13	30.84	17.74	13	Y	
P-01-8.0	17.23	13	27.99	17.23	13	Y	
MW-08-18.0	11.38	14	-20.85	11.38	14	s	
MW-08-8.0	13.56	14	-3.05	13.56	14	s	
[redacted]	12.00	14	-15.38	12.00	14	n	
[redacted]	17.00	14	19.35	17.00	14	Y	
[redacted]	29.50	14	71.26	29.50	14	Y	
[redacted]	14	14	-1.44	14	14	s	
[redacted]	19.00	15	23.53	19.00	15	Y	
[redacted]	17.00	15	13.50	17.00	15	Y	
[redacted]	16.00	16	0.00	16.00	16	s	
[redacted]	17.40	17	2.33	17.40	17	s	
[redacted]	8.74	17	-64.18	8.74	17	n	
[redacted]	36.85	17	73.72	36.85	17	Y	
[redacted]	16.00	18	-11.76	16.00	18	s	
[redacted]	39.80	20	180.19			Y	
[redacted]	88.10	21	121.57	88.10	21	Y	
[redacted]	20.00	22	-9.52	20.00	22	s	
[redacted]	32.48	30	7.87	32.48	30	s	
[redacted]	108.20	38	96.03	108.20	38	Y	
[redacted]	81.90	39	-73.23	81.90	39	Y	
[redacted]	162.80	39	122.89	162.80	39	Y	
[redacted]	87.77	39	85.84	87.77	39	Y	
[redacted]	22	42	-62.91	22	42	n	
[redacted]	82.40	42	72.03	82.40	42	s	
[redacted]	72.30	45	46.25	72.30	45	Y	
MW-012-TR2-138-Drum-1	4.65	80	-166.67			n	
MW-012-TR2-138-Drum-2	7.00	80	-156.58			n	
[redacted]	18.00	51	-96.65	18.00	51	n	
[redacted]	55.70	53	4.97	55.70	53	s	
[redacted]	78.50	54	38.88	78.50	54	s	
[redacted]	21	62	-98.00	21	62	n	
[redacted]	117.30	68	53.21	117.30	68	Y	
[redacted]	72.80	78	-4.58	72.80	78	s	
[redacted]	88.90	78	13.06	88.90	78	Y	
[redacted]	518.00	81	145.79			Y	
[redacted]	65.90	81	-20.86	65.90	81	n	
[redacted]	88.94	85	4.42	88.94	85	s	
[redacted]	88.00	91	-3.35	88.00	91	s	
[redacted]	239.90	93	87.32	239.90	93	Y	
[redacted]	137.00	100	31.22	137.00	100	Y	
[redacted]	93.20	100	-7.04	93.20	100	s	
[redacted]	270.00	100	91.89	270.00	100	Y	
[redacted]	88.98	100	-11.89	88.98	100	s	
[redacted]	92.00	110	-17.82	92.00	110	s	
[redacted]	184.20	110	34.71	184.20	110	Y	
[redacted]	289.80	110	89.99	289.80	110	Y	
[redacted]	33.20	110	-107.26	33.20	110	n	
[redacted]	176.80	110	46.88	176.80	110	Y	
[redacted]	291.80	120	50.84	291.80	120	Y	
[redacted]	516.40	120	134.92			Y	
[redacted]	137.00	130	5.24	137.00	130	Y	
[redacted]	141.80	140	1.14	141.80	140	s	
[redacted]	157.00	140	11.45	157.00	140	Y	
[redacted]	282.80	150	54.85	282.80	150	Y	
[redacted]	150.00	150	0.00	150.00	150	s	
[redacted]	118.08	150	-25.50	118.08	150	s	
[redacted]	817.50	150	137.98			Y	
[redacted]	210.00	160	27.03	210.00	160	Y	
[redacted]	157.40	160	-2.25	157.40	160	s	
[redacted]	159.70	160	-0.42	159.70	160	s	
[redacted]	62.00	200	-105.34	62.00	200	n	
[redacted]	62.80	200	-104.85	62.80	200	n	
[redacted]	508.30	220	78.84	508.30	220	Y	
[redacted]	251.00	220	13.18	251.00	220	Y	
[redacted]	158.00	240	-43.04	158.00	240	n	
[redacted]	358.00	280	24.46	358.00	280	Y	
[redacted]	292.00	280	4.29	292.00	280	Y	
[redacted]	587.00	280	90.22	587.00	280	Y	
[redacted]	358.50	300	17.17	358.50	300	Y	
[redacted]	408.87	310	26.88	408.87	310	Y	
[redacted]	509.00	330	42.47	509.00	330	Y	
[redacted]	1,452.00	350	122.31	1,452.00	350	Y	
[redacted]	110.80	400	-113.17	110.80	400	n	
[redacted]	288.00	430	-46.42	288.00	430	n	
[redacted]	382.00	440	-14.11	382.00	440	s	
[redacted]	702.84	480	41.74	702.84	480	Y	
[redacted]	420.80	470	-11.00	420.80	470	s	
[redacted]	999.21	470	72.24	999.21	470	Y	
[redacted]	528.00	510	3.58	528.00	510	Y	
[redacted]	417.80	530	-21.77	417.80	530	n	
[redacted]	15.80	550	-188.80			n	
MW-04-2.0	180.00	580	-102.70	180.00	580	n	
[redacted]	429.80	580	-30.35	429.80	580	n	
[redacted]	61.80	640	-170.09			n	
[redacted]	578.00	710	-21.01	578.00	710	n	
[redacted]	687.80	720	-4.80	687.80	720	n	
[redacted]	655.20	900	-47.38	655.20	900	n	
[redacted]	1,341.17	910	38.31	1,341.17	910	Y	
[redacted]	991.00	990	0.10	991.00	990	s	
[redacted]	927.00	1,100	-17.27	927.00	1,100	n	
[redacted]	986.00	1,200	-75.72	986.00	1,200	n	
[redacted]	1,555.00	1,200	17.96	1,555.00	1,200	Y	
[redacted]	1,302.55	1,400	-4.94	1,302.55	1,400	n	
[redacted]	3,019.50	1,800	-95.46	3,019.50	1,800	n	
[redacted]	3,302.41	2100	+44.73	3,302.41	2100	n	
[redacted]	2,271.86	2,900	-25.48	2,271.86	2,900	n	
[redacted]	569.60	2,900	-137.91			n	
[redacted]	680.00	3000	-137.38			n	
P-02-5.0	1,871.83	3000	-60.85	1,871.83	3000	n	
[redacted]	4,752.54	3800	27.80	4,752.54	3800	Y	
[redacted]	476.37	4,000	-162.29			n	
[redacted]	3174.37	4,500	-34.25	3174.37	4,500	n	
[redacted]	3,541.05	6,400	-111.19	3,541.05	6,400	n	
[redacted]	3,526.22	8,900	-118.88	3,526.22	8,900	n	
[redacted]	7,558.78	11,000	-37.11	7,558.78	11,000	n	
[redacted]	10,882.20	12000	-8.74	10,882.20	12000	n	
[redacted]	739.08	18,000	-160.91			n	
[redacted]	8,527.37	18,000	-70.40	8,527.37	18,000	n	
[redacted]	13,719.87	19,000	-32.29	13,719.87	19,000	n	
[redacted]	19,975.81	20,000	-46.88	19,975.81	20,000	n	
[redacted]	972.42	8700	-169.79			n	
[redacted]	871.20	16000	-180.83			n	

Pearson's Co-Efficient 0.81 [With Outliers]
0.95 [Without Outliers]

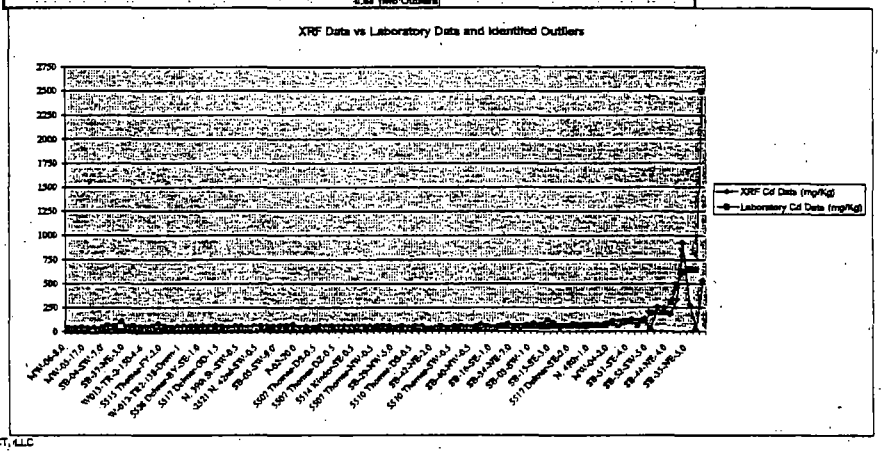


EX. 6

108 REDACTIONS

Correlation of XRF Results and Laboratory Results for Cadmium
Old American Zinc Plant Site, Fairmont City, Illinois

Sampl ID	XRF Cd Data (mg/Kg)	Laboratory Cd Data (mg/Kg)	Relative Percent Difference (RPD) %	Data Set w/o Outliers (RPD>= 129%) XRF Cd Data (mg/Kg)	Laboratory Cd Data (mg/Kg)	<100 mg/Kg XRF higher	>100 mg/Kg XRF higher
MW-06-8.0	40	0.12	198.91	40	0.12	y	
[redacted]	40	0.2	198.01	40	0.2	y	
MW-06-16.0	42	0.26	197.64	42	0.26	y	
MW-05-17.0	39	0.36	196.34	39	0.36	y	
MW-04-9.0	39	0.37	196.19	38	0.37	y	
[redacted]	38	1.1	188.77	38	1.1	y	
[redacted]	68	1.3	192.44	68	1.3	y	
[redacted]	56	1.9	186.87	56	1.9	y	
[redacted]	108	2.1	192.38	108	2.1	y	
[redacted]	44	2.7	177.08	44	2.7	y	
[redacted]	65	3	182.36	65	3	y	
[redacted]	55	3.5	176.12	55	3.5	y	
[redacted]	47.63	3.9	169.73	47.63	3.9	y	
[redacted]	58	4	174.88	58	4	y	
[redacted]	78.90	4.5	178.42	78.90	4.5	y	
[redacted]	57	5.6	164.94	57	5.6	y	
[redacted]	40	6	148.84	40	6	y	
[redacted]	54	6.7	155.88	54	6.7	y	
[redacted]	57.32	6.7	158.14	57.32	6.7	y	
[redacted]	50.68	6.7	153.29	50.68	6.7	y	
[redacted]	57	8.8	147.39	57	8.8	y	
[redacted]	61	8.6	150.40	61	8.6	y	
[redacted]	59	8.7	148.60	59	8.7	y	
[redacted]	66	9.3	150.28	66	9.3	y	
[redacted]	57	9.9	148.46	57	9.9	y	
[redacted]	40	10	119.20	40	10	y	
[redacted]	56	10	141.28	56	10	y	
[redacted]	57	10	148.36	57	10	y	
[redacted]	41	11	116.69	41	11	y	
[redacted]	58	11	138.17	58	11	y	
[redacted]	58	12	131.43	58	12	y	
[redacted]	57	12	130.88	57	12	y	
[redacted]	56	12	128.08	56	12	y	
[redacted]	60	12	133.78	60	12	y	
[redacted]	60	12	133.33	60	12	y	
[redacted]	74.49	13	140.57	74.49	13	y	
P-02-20.0	41	13	103.47	41	13	y	
[redacted]	55	14	119.22	55	14	y	
[redacted]	42	14	99.55	42	14	y	
[redacted]	59	14	123.29	59	14	y	
[redacted]	57	14	121.13	57	14	y	
[redacted]	59	15	118.92	59	15	y	
[redacted]	58	16	111.11	58	16	y	
[redacted]	58	17	106.85	58	17	y	
[redacted]	59	17	110.53	59	17	y	
[redacted]	59	17	110.75	59	17	y	
[redacted]	59	18	106.49	59	18	y	
[redacted]	55	18	101.37	55	18	y	
[redacted]	57	19	100.31	57	19	y	
[redacted]	61	20	101.30	61	20	y	
[redacted]	59	20	98.73	59	20	y	
[redacted]	40	20	67.33	40	20	y	
[redacted]	61	21	97.56	61	21	y	
[redacted]	41	21	64.52	41	21	y	
[redacted]	60	21	96.30	60	21	y	
[redacted]	57	21	92.28	57	21	y	
[redacted]	25	23	7.93	25	23	y	
[redacted]	42	28	58.64	42	28	y	
[redacted]	81	24	87.08	81	24	y	
[redacted]	40	24	49.30	40	24	y	
[redacted]	56	24	80.00	56	24	y	
[redacted]	58	30	63.64	58	30	y	
[redacted]	44.41	30	38.73	44.41	30	y	
[redacted]	43	30	36.51	43	30	y	
[redacted]	75.99	30	86.78	75.99	30	y	
[redacted]	36	34	52.94	36	34	y	
[redacted]	34	38	-10.09	34	38	n	
[redacted]	81	41	39.37	81	41	y	
[redacted]	79.12	41	63.47	79.12	41	y	
[redacted]	37	44	-16.24	37	44	n	
[redacted]	41.00	44	-7.06	41.00	44	n	
[redacted]	64.92	45	36.24	64.92	45	y	
[redacted]	79.73	47	51.85	79.73	47	y	
[redacted]	68	50	26.02	68	50	y	
[redacted]	125	50	85.68	125	50	y	
[redacted]	94	52	57.77	94	52	y	
[redacted]	43	52	-20.06	43	52	n	
P-01-10.0	54.65	53	3.43	54.65	53	y	
[redacted]	81.84	55	39.23	81.84	55	y	
P-01-18.0	51.83	57	-9.50	51.83	57	n	
[redacted]	47.59	60	-23.07	47.59	60	n	
[redacted]	81	81	0.00	81	81	n	
[redacted]	82.63	81	2.64	82.63	81	n	
[redacted]	82	83	26.21	82	83	y	
MW-04-2.0	108.88	87	22.34	108.88	87	y	
[redacted]	55	94	-52.32	55	94	n	
[redacted]	90.00	100	-10.53	90.00	100		n
[redacted]	127	100	23.75	127	100		y
[redacted]	54	310	-68.53	54	310		n
[redacted]	128.43	110	15.48	128.43	110		y
[redacted]	22.12	190	-158.29	[redacted]	[redacted]		n
[redacted]	258.75	200	25.81	258.75	200		y
[redacted]	247.97	200	21.42	247.97	200		y
[redacted]	176.00	300	-52.10	176.00	300		n
[redacted]	338.50	490	-36.29	338.50	490		n
P-01-5.0	928.53	620	39.64	928.53	620		y
[redacted]	276.20	850	-79.81	276.20	850		n
[redacted]	25	850	-188.33	[redacted]	[redacted]		n
P-02-5.0	533.72	2900	-129.63	533.72	2500		n
	Pearson's Co-Efficient			8.65 (With Outliers) 8.93 (w/o Outliers)			

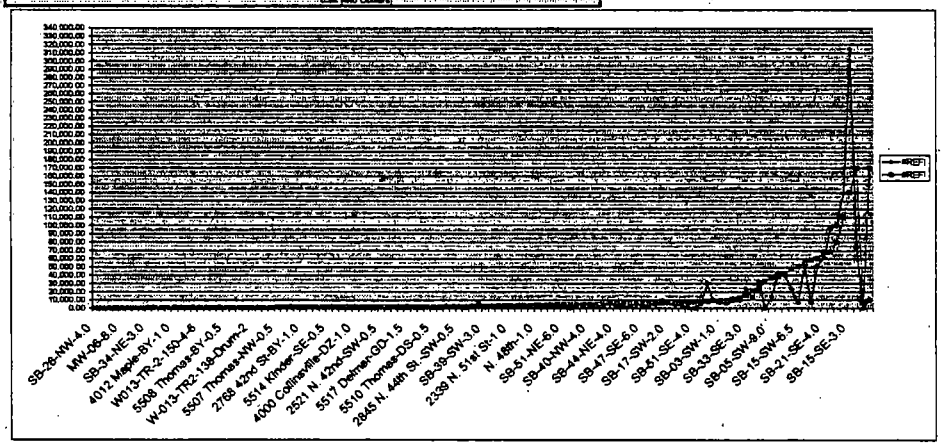


EX. 6
89 REDACTIONS

Correlation of XRF Results and Laboratory Results for Zinc
Old American Zinc Plant Site, Fairmont City, Illinois

Sample ID	XRF Zn Data (mg/Kg)	Laboratory Zn Data (mg/Kg)	Relative Percent Difference (RPD) %	Data Set w/o Outliers (RPD=%) XRF Zn Data (mg/Kg)	Laboratory Zn Data (mg/Kg)	<LRPD mg/Kg - XRF higher	>LRPD mg/Kg - XRF higher
[redacted]	111.00	51	74.07	111.00	51	y	
[redacted]	107.30	67	46.15	107.30	67	s	
MW-06-18.0	47.87	68	-35.15	47.87	68	s	
MW-06-17.0	66.90	73	-10.22	66.90	73	s	
MW-06-6.0	72.75	90	-20.98	72.75	90	s	
[redacted]	259.00	210	4.18	259.00	210	y	
[redacted]	489.92	310	40.74	489.92	310	y	
[redacted]	307.63	310	-39.55	307.63	310	n	
[redacted]	783.91	390	84.77	783.91	390	y	
[redacted]	519.15	400	25.93	519.15	400	y	
[redacted]	487.03	400	19.62	487.03	400	y	
[redacted]	470.15	410	13.67	470.15	410	y	
[redacted]	1,803.00	440	113.85	1,803.00	440	y	
[redacted]	493.77	440	11.52	493.77	440	y	
[redacted]	431.33	440	-1.99	431.33	440	s	
[redacted]	1,475.80	440	108.13	1,475.80	440	y	
[redacted]	482.98	480	0.62	482.98	480	s	
[redacted]	458.73	470	-2.54	458.73	470	s	
[redacted]	864.00	480	32.17	864.00	480	y	
[redacted]	1,483.38	480	88.61	1,483.38	480	y	
[redacted]	549.08	490	11.37	549.08	490	y	
[redacted]	666.80	500	28.56	666.80	500	y	
[redacted]	479.52	500	-4.18	479.52	500	s	
[redacted]	200.58	510	-87.08	200.58	510	n	
[redacted]	91.00	510	-138.42			n	
MW-04-8.0	436.80	580	-24.72	436.80	580	s	
[redacted]	668.00	585	14.10	668.00	585	y	
[redacted]	743.35	610	19.71	743.35	610	y	
[redacted]	702.37	620	12.46	702.37	620	y	
[redacted]	843.50	630	28.98	843.50	630	y	
[redacted]	1,131.00	630	82.27	1,131.00	630	y	
[redacted]	787.00	660	16.57	787.00	660	y	
[redacted]	605.11	700	-14.54	605.11	700	n	
[redacted]	674.81	700	-3.67	674.81	700	n	
[redacted]	865.90	720	7.85	865.90	720	n	
[redacted]	1,409.60	730	63.53	1,409.60	730	y	
[redacted]	1,026.98	740	32.67	1,026.98	740	y	
[redacted]	1,268.71	750	51.34	1,268.71	750	y	
[redacted]	1,373.27	760	57.63	1,373.27	760	y	
[redacted]	860.00	770	21.97	860.00	770	y	
[redacted]	802.00	780	14.51	802.00	780	y	
[redacted]	638.00	780	-20.03	638.00	780	n	
[redacted]	757.37	780	-4.22	757.37	780	s	
[redacted]	595.00	810	-32.06	595.00	810	n	
[redacted]	1,022.00	830	21.85	1,022.00	830	y	
[redacted]	858.00	840	1.89	858.00	840	y	
[redacted]	970.00	900	7.49	970.00	900	y	
[redacted]	1,130.00	940	20.10	1,130.00	940	y	
[redacted]	2,613.91	950	101.85	2,613.91	950	y	
[redacted]	872.54	980	-11.60	872.54	980	n	
[redacted]	1,238.00	1000	21.27	1,238.00	1000		n
[redacted]	1,160.00	1200	-3.39	1,160.00	1200		n
[redacted]	964.00	1200	-22.84	964.00	1200		n
3-02-20.0	799.71	1500	-47.05	799.71	1500		n
[redacted]	3,200.73	1500	84.09	3,200.73	1500		y
[redacted]	1,917.00	1600	-19.40	1,917.00	1600		y
[redacted]	2,337.00	1700	40.26	2,337.00	1700		y
[redacted]	1,725.30	1700	-18.98	1,725.30	1700		y
[redacted]	2,604.72	1800	36.34	2,604.72	1800		y
[redacted]	3,457.91	1900	108.85	3,457.91	1900		y
[redacted]	1,400.00	1900	-48.37	1,400.00	1900		n
[redacted]	2,201.00	2000	-28.55	2,201.00	2000		n
[redacted]	1,339.40	2000	-41.56	1,339.40	2000		n
[redacted]	2,548.81	2000	-9.39	2,548.81	2000		n
[redacted]	2,457.00	3100	-23.14	2,457.00	3100		n
3-01-10.0	1,980.33	3100	-44.08	1,980.33	3100		n
3-01-16.0	2,908.83	3400	-15.57	2,908.83	3400		n
[redacted]	2,723.84	3400	-22.08	2,723.84	3400		n
[redacted]	2,281.00	3600	-17.76	2,281.00	3600		n
[redacted]	1,912.30	3700	-58.15	1,912.30	3700		n
[redacted]	3,226.00	3900	-18.63	3,226.00	3900		n
[redacted]	2,468.20	3900	-43.78	2,468.20	3900		n
[redacted]	3,729.80	3900	-21.92	3,729.80	3900		n
[redacted]	433	4200	-187.74	433	4200		n
[redacted]	3,488.00	4300	-20.85	3,488.00	4300		n
[redacted]	5,394.53	4400	3.01	5,394.53	4400		n
[redacted]	2,340.75	4400	-61.10	2,340.75	4400		n
[redacted]	1,647.25	4600	-66.33	1,647.25	4600		n
MW-04-3.0	8,829.21	5100	-26.08	8,829.21	5100		n
[redacted]	4,942.73	5600	-12.07	4,942.73	5600		n
[redacted]	2,720.00	5600	-68.73	2,720.00	5600		n
[redacted]	3,138.80	5700	-59.02	3,138.80	5700		n
[redacted]	1,720.82	6000	-74.53	1,720.82	6000		n
[redacted]	7,703.73	6000	-24.22	7,703.73	6000		n
[redacted]	3,258.20	6000	-56.20	3,258.20	6000		n
[redacted]	5,698.46	6100	-30.56	5,698.46	6100		n
3-01-3.0	8,500.67	6200	-35.72	8,500.67	6200		n
[redacted]	9,908.46	6800	-34.74	9,908.46	6800		n
[redacted]	27,494.46	6800	9.73	27,494.46	6800		y
[redacted]	14,189.00	6800	-47.96	14,189.00	6800		n
[redacted]	4,268.46	7100	-47.83	4,268.46	7100		n
[redacted]	1,540.00	7200	-145.32	[illegible]	[illegible]		n
[redacted]	1,136	7300	-182.57	[illegible]	[illegible]		n
[redacted]	5,779.20	7300	-25.92	5,779.20	7300		n
[redacted]	20,017.86	8300	119.39	20,017.86	8300		y
[redacted]	8,138.46	8700	4.87	8,138.46	8700		y
[redacted]	7,208.26	9000	-22.51	7,208.26	9000		n
[redacted]	5,970.00	9400	-47.43	5,970.00	9400		n
[redacted]	11,101.00	9800	18.49	11,101.00	9800		y
[redacted]	9,337.80	10,000	-24.96	9,337.80	10,000		n
[redacted]	23,903.84	18,000	39.82	23,903.84	18,000		y
[redacted]	13,192.01	21,000	-44.67	13,192.01	21,000		n
[redacted]	33,177.60	24000	32.10	33,177.60	24000		y
[redacted]	82,000	27000	-195.68	[illegible]	[illegible]		y
[redacted]	5,985.00	37000	-80.76	5,985.00	37000		n
[redacted]	42,606.42	38000	9.53	42,606.42	38000		y
[redacted]	40,980.30	42,000	-3.41	40,980.30	42,000		n
[redacted]	23,886.18	48,000	-69.63	23,886.18	48,000		n
[redacted]	61,000	48,000	-162.96	[illegible]	[illegible]		y
[redacted]	52,561.92	66,000	-3.74	52,561.92	66,000		n
[redacted]	38,000	70,000	-156.94	[illegible]	[illegible]		n
[redacted]	32,378.11	83000	-15.71	32,378.11	83000		n
[redacted]	91,696.00	88,000	4.22	91,696.00	88,000		y
[redacted]	89,000	90,000	34.81	89,000.13	90,000		y
[redacted]	80,000.00	80,000	22.72	80,000.00	80,000		y
[redacted]	110,000	110,000	25.36	110,000.70	110,000		y
3-02-3.0	140,000.38	140,000	76.84	140,000.38	140,000		y
[redacted]	75,187.45	420,000	-76.93	75,187.45	420,000		n
[redacted]	420.00	1000	-175.84	[illegible]	[illegible]		n
[redacted]	870.00	1000	-178.32	[illegible]	[illegible]		n

Pearson's Correlation: 0.71 (With Outliers); 0.84 (w/o Outliers)



Ex. 6
110 Redactions