TABLE 1
RESULTS OF STATISTICAL TESTING FOR MONOTONIC TRENDS (MANN-KENDALL TEST) IN LEAD CONCENTRATION
INDIVIDUAL QUADRANTS FOR SAMPLING ROUNDS 7 THROUGH 22
HERCULANEUM LEAD SMELTER SITE - HERCULANEUM, MISSOURI

Distance From Smelter[1]	House Number	Quadrant	Number of Sampling Events[2]	Number of Detected Samples	Sampling Event		Mann-Kendall Test Statistic[3] (S)	Probability > S	Trend Significant?[4] (Yes/No)	Direction of Trend
					First	Last				
0.10	76	Q1	9	9	10/30/2003	10/03/2005	24	0.006	**Yes**	**Increasing**
		Q2	9	9	10/30/2003	10/03/2005	18	0.038	**Yes**	**Increasing**
0.20	20	Q1	15	15	08/26/2002	10/04/2005	63	0.002	**Yes**	**Increasing**
		Q2	15	15	08/26/2002	10/04/2005	61	0.002	**Yes**	**Increasing**
		Q3	15	15	08/26/2002	10/04/2005	77	0.000	**Yes**	**Increasing**
		Q4	15	15	08/26/2002	10/04/2005	67	0.001	**Yes**	**Increasing**
	101	Q1	8	8	12/22/2003	10/04/2005	8	0.199	No	N/A
		Q2	8	7	12/22/2003	10/04/2005	12	0.089	No	N/A
		Q3	8	8	12/22/2003	10/04/2005	12	0.089	No	N/A
		Q4	8	8	12/22/2003	10/04/2005	16	0.031	**Yes**	**Increasing**
	102	Q1	8	8	12/22/2003	10/04/2005	14	0.054	No	N/A
		Q2	8	8	12/22/2003	10/04/2005	0	0.548	No	N/A
		Q3	8	8	12/22/2003	10/04/2005	18	0.016	**Yes**	**Increasing**
		Q4	8	8	12/22/2003	10/04/2005	18	0.016	**Yes**	**Increasing**
0.25	5	Q1	15	12	08/26/2002	10/03/2005	77	0.000	**Yes**	**Increasing**
		Q2	15	14	08/26/2002	10/03/2005	77	0.000	**Yes**	**Increasing**
		Q3	15	15	08/26/2002	10/03/2005	72	0.000	**Yes**	**Increasing**
		Q4	15	15	08/26/2002	10/03/2005	63	0.002	**Yes**	**Increasing**
	6	Q1	15	15	08/23/2002	10/04/2005	37	0.041	**Yes**	**Increasing**
		Q2	15	15	08/23/2002	10/04/2005	63	0.002	**Yes**	**Increasing**
		Q3	15	15	08/23/2002	10/04/2005	14	0.162	No	N/A
		Q4	15	15	08/23/2002	10/04/2005	31	0.066	No	N/A
	22	Q1	14	14	08/26/2002	10/04/2005	37	0.029	**Yes**	**Increasing**
		Q2	14	14	08/26/2002	10/04/2005	39	0.023	**Yes**	**Increasing**
		Q3	14	14	08/26/2002	10/04/2005	48	0.007	**Yes**	**Increasing**
		Q4	14	14	08/26/2002	10/04/2005	47	0.008	**Yes**	**Increasing**
	24	Q1	12	12	11/07/2002	10/04/2005	20	0.085	No	N/A
		Q2	12	12	11/07/2002	10/04/2005	44	0.003	**Yes**	**Increasing**
		Q3	12	12	11/07/2002	10/04/2005	30	0.028	**Yes**	**Increasing**
		Q4	12	11	11/07/2002	10/04/2005	43	0.003	**Yes**	**Increasing**
0.40	21	Q1	11	9	08/23/2002	10/03/2005	24	0.040	**Yes**	**Increasing**
		Q2	11	11	08/23/2002	10/03/2005	31	0.013	**Yes**	**Increasing**
		Q3	11	11	08/23/2002	10/03/2005	34	0.007	**Yes**	**Increasing**
		Q4	11	11	08/23/2002	10/03/2005	45	0.001	**Yes**	**Increasing**

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HERCULANEUM LEAD SMELTER SITE - HERCULANEUM, MISSOURI

Distance From Smelter[1]	House Number	Quadrant	Number of Sampling Events[2]	Number of Detected Samples	Sampling Event		Mann-Kendall Test Statistic[3] (S)	Probability > S	Trend Significant?[4] (Yes/No)	Direction of Trend
					First	Last				
0.50	15	Q1	5	4	09/16/2002	10/04/2005	2	0.408	No	N/A
		Q2	5	5	09/16/2002	10/04/2005	5	0.180	No	N/A
		Q3	5	4	09/16/2002	10/04/2005	1	0.500	No	N/A
		Q4	5	4	09/16/2002	10/04/2005	6	0.117	No	N/A
	16	Q1	13	9	09/16/2002	10/04/2005	20	0.100	No	N/A
		Q2	13	7	09/16/2002	10/04/2005	57	0.000	**Yes**	**Increasing**
		Q3	13	7	09/16/2002	10/04/2005	35	0.018	**Yes**	**Increasing**
		Q4	13	9	09/16/2002	10/04/2005	56	0.001	**Yes**	**Increasing**
	19	Q1	15	14	08/22/2002	10/04/2005	46	0.017	**Yes**	**Increasing**
		Q2	15	12	08/22/2002	10/04/2005	38	0.037	**Yes**	**Increasing**
		Q3	15	12	08/22/2002	10/04/2005	40	0.030	**Yes**	**Increasing**
		Q4	15	14	08/22/2002	10/04/2005	55	0.006	**Yes**	**Increasing**
0.54	9	Q1	15	15	08/22/2002	10/04/2005	54	0.006	**Yes**	**Increasing**
		Q2	15	15	08/22/2002	10/04/2005	52	0.008	**Yes**	**Increasing**
		Q3	15	15	08/22/2002	10/04/2005	57	0.004	**Yes**	**Increasing**
		Q4	15	14	08/22/2002	10/04/2005	54	0.006	**Yes**	**Increasing**
0.60	18	Q1	16	16	08/23/2002	10/03/2005	54	0.012	**Yes**	**Increasing**
		Q2	16	15	08/23/2002	10/03/2005	44	0.031	**Yes**	**Increasing**
		Q3	16	16	08/23/2002	10/03/2005	57	0.008	**Yes**	**Increasing**
		Q4	16	16	08/23/2002	10/03/2005	60	0.006	**Yes**	**Increasing**
0.75	3	Q1	16	13	08/23/2002	10/03/2005	19	0.143	No	N/A
		Q2	16	14	08/23/2002	10/03/2005	61	0.005	**Yes**	**Increasing**
		Q3	16	15	08/23/2002	10/03/2005	26	0.106	No	N/A
		Q4	16	15	08/23/2002	10/03/2005	67	0.002	**Yes**	**Increasing**
0.80	7	Q1	16	16	08/23/2002	10/04/2005	37	0.053	No	N/A
		Q2	16	14	08/23/2002	10/04/2005	69	0.002	**Yes**	**Increasing**
		Q3	16	12	08/23/2002	10/04/2005	36	0.056	No	N/A
		Q4	16	12	08/23/2002	10/04/2005	72	0.001	**Yes**	**Increasing**

Notes:

[1] Properties are ordered as a function of increasing distance from the smelter.

[2] Trend tests were not conducted for properties with fewer than four rounds of sampling, or for properties that were not sampled during round 22.

[3] All censored (nondetect) measurements were set equal to a concentration slightly lower than the minimum detected value

[4] Monotonic trends are significant for probabilities less than or equal to 0.05; significant negative values for the Mann-Kendall test statistic indicate that trends are decreasing; and significant positive values for the Mann-Kendall test statistic indicate that trends are increasing.

NA No significant trend identified.

TABLE 2
RESULTS OF LINEAR REGRESSION ANALYSIS FOR ALL QUADRANTS SHOWING A SIGNIFICANT INCREASING MANN-KENDALL TREND TEST RESULT

Distance From Smelter (Miles)	House Number	Quadrant	Regression Coefficients for Days Versus Concentration			Monthly Increase (mg/kg-month)	95 Percent Confidence Limits for Monthly Increase in Lead Concentrations		Percentiles for the Distribution of Estimated UCLs within Each Distance Group		
			Intercept	Slope	S.E. (Slope)		LCL	UCL	50	75	90
Less than or Equal to 0.25	76	Q1	8.24	0.21	0.05	6.34	2.61	10.07	5.81	10.17	17.53
	76	Q2	72.95	0.12	0.12	3.61	-4.79	12.01			
	20	Q1	91.48	0.14	0.04	4.29	1.98	6.61			
	20	Q2	51.15	0.28	0.06	8.42	4.78	12.05			
	20	Q3	100.62	0.20	0.04	6.07	3.66	8.48			
	20	Q4	90.81	0.25	0.05	7.49	4.52	10.47			
	101	Q4	-10.73	0.14	0.05	4.24	0.74	7.73			
	102	Q3	32.30	0.36	0.13	10.92	1.46	20.37			
	102	Q4	50.16	0.36	0.12	10.91	1.95	19.88			
	5	Q1	26.79	0.12	0.02	3.70	2.36	5.05			
	5	Q2	40.71	0.09	0.01	2.79	1.86	3.72			
	5	Q3	64.02	0.12	0.02	3.47	2.02	4.92			
	5	Q4	70.22	0.15	0.04	4.53	2.19	6.86			
	6	Q1	119.86	0.05	0.04	1.64	-1.11	4.38			
	6	Q2	79.36	0.13	0.03	3.80	1.76	5.84			
	22	Q1	94.11	0.08	0.03	2.26	0.53	3.99			
	22	Q2	182.38	0.11	0.04	3.41	1.05	5.77			
	22	Q3	73.62	0.08	0.03	2.49	0.67	4.32			
	22	Q4	70.70	0.10	0.03	2.89	0.85	4.93			
	24	Q2	40.64	0.11	0.02	3.31	1.78	4.83			
	24	Q3	63.54	0.04	0.01	1.17	0.37	1.97			
	24	Q4	48.47	0.09	0.02	2.84	1.41	4.28			
0.25 to 0.50	21	Q1	55.78	0.23	0.10	6.75	-0.23	13.74	4.83	7.26	12.59
	21	Q2	78.56	0.20	0.03	5.98	3.98	7.98			
	21	Q3	49.81	0.13	0.03	4.04	2.22	5.86			
	21	Q4	49.27	0.14	0.01	4.15	3.46	4.83			
	16	Q2	14.50	0.19	0.02	5.70	4.51	6.89			
	16	Q3	60.09	0.05	0.02	1.38	0.08	2.69			
	16	Q4	42.43	0.18	0.03	5.53	3.80	7.26			
	19	Q1	52.98	0.05	0.02	1.47	0.48	2.46			
	19	Q2	47.82	0.05	0.01	1.46	0.54	2.38			
	19	Q3	38.80	0.05	0.02	1.43	-0.01	2.87			
	19	Q4	54.14	0.07	0.02	2.16	0.86	3.46			
0.50 to 0.75	9	Q1	67.59	0.04	0.02	1.34	0.29	2.39	2.86	3.94	14.27
	9	Q2	65.51	0.08	0.02	2.37	0.97	3.76			
	9	Q3	69.23	0.33	0.08	9.90	4.45	15.36			
	9	Q4	88.02	0.10	0.02	2.86	1.26	4.47			
	18	Q1	68.53	0.06	0.02	1.86	0.75	2.97			
	18	Q2	46.25	0.07	0.02	2.19	1.18	3.20			
	18	Q3	69.94	0.03	0.01	0.95	0.31	1.59			
	18	Q4	58.79	0.06	0.01	1.69	0.88	2.49			
	3	Q2	47.74	0.06	0.02	1.68	0.63	2.74			
	3	Q4	44.69	0.05	0.01	1.36	0.64	2.08			

Notes:

LCL Lower confidence limit
MLE Maximum likelihood estimation
ND Nondetect
OLS Ordinary least squares
S.E. Standard error of estimate
UCL Upper confidence limit

OLS regression was used for cases where all results were detected. Censored MLE regression was used in all cases where one or more measurements were reported as below the detection limit (that is, "ND") following Helsel (2005). All analyses were performed on the data in original units.

Helsel, D. 2005. *Nondetects and Data Analysis: Statistics for Censored Environmental Data*. John Wiley & Sons, Inc., New York, NY. 250 p.

FIGURE 1. Lead Concentration Trends From Round 7 Through 22

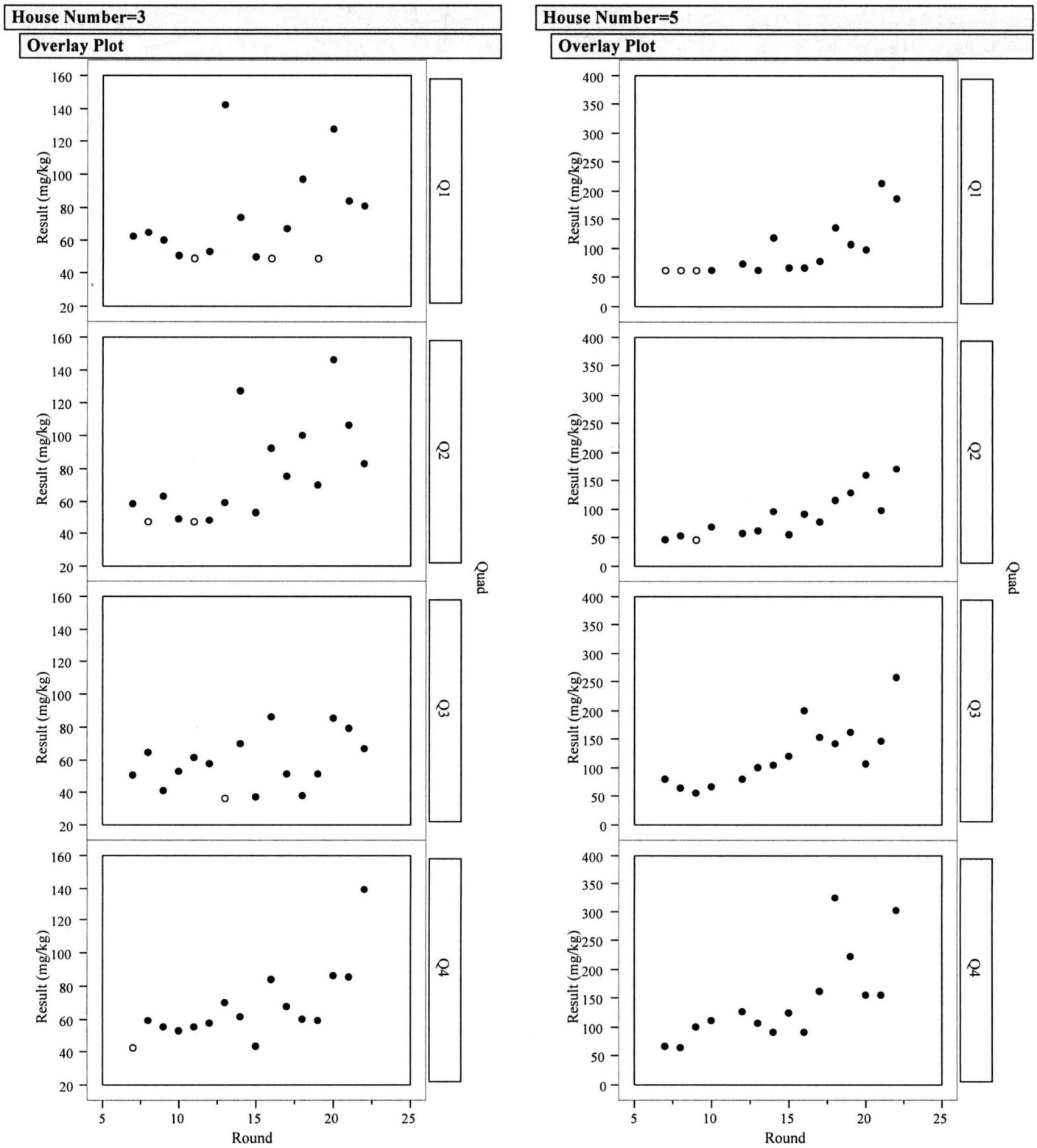

FIGURE 1. Lead Concentration Trends From Round 7 Through 22 (Cont)

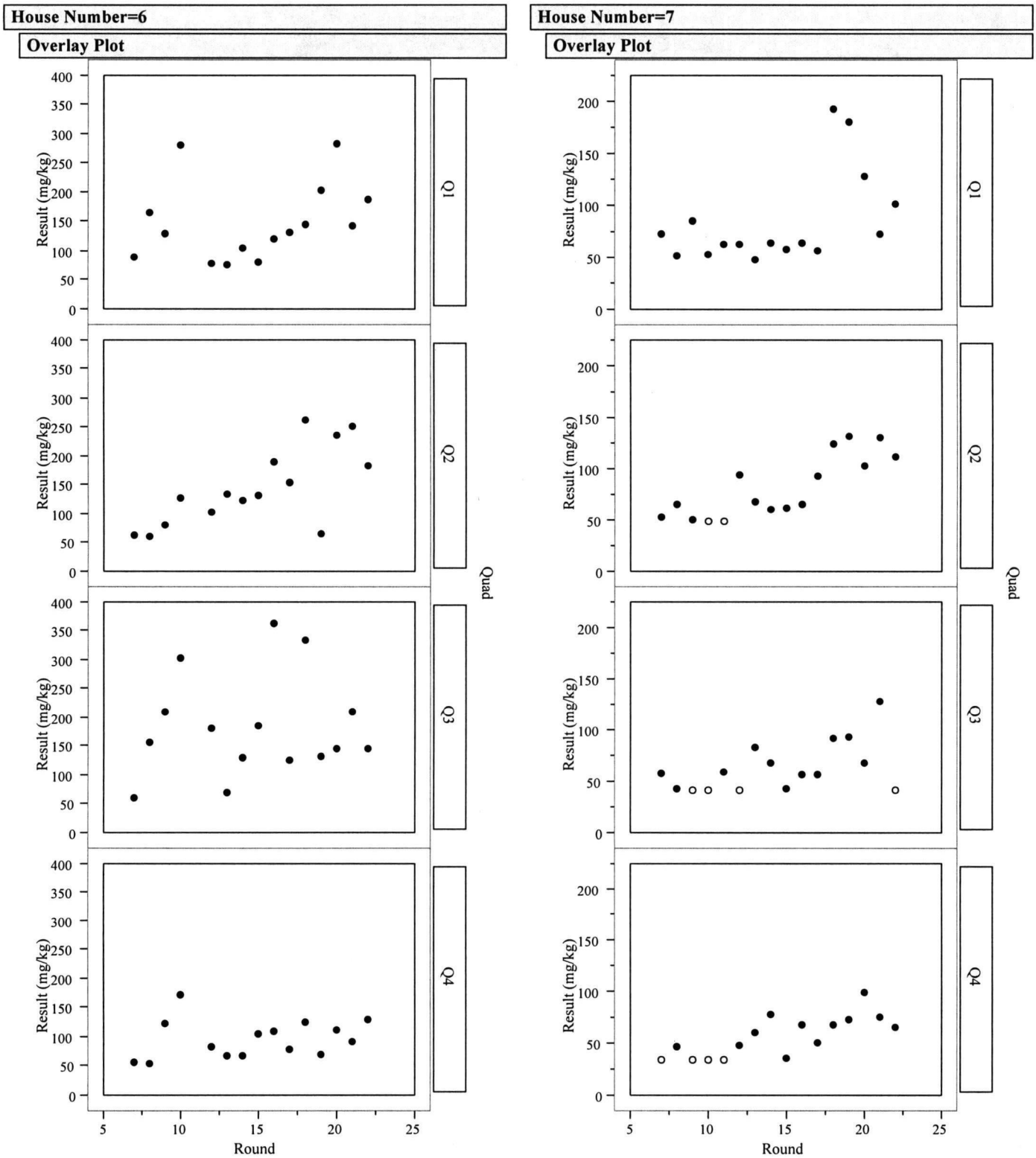

FIGURE 1. Lead Concentration Trends From Round 7 Through 22 (Cont)

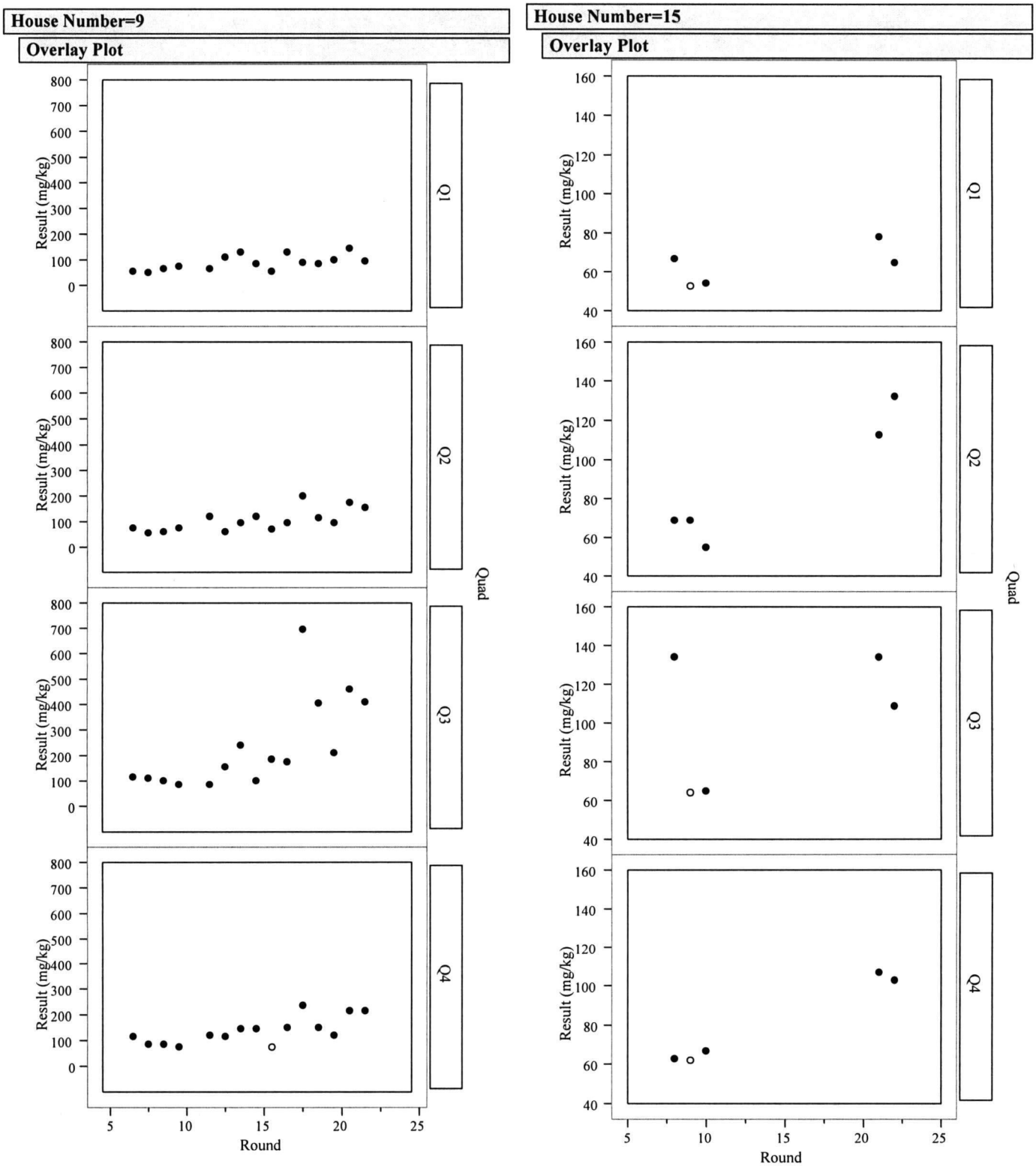
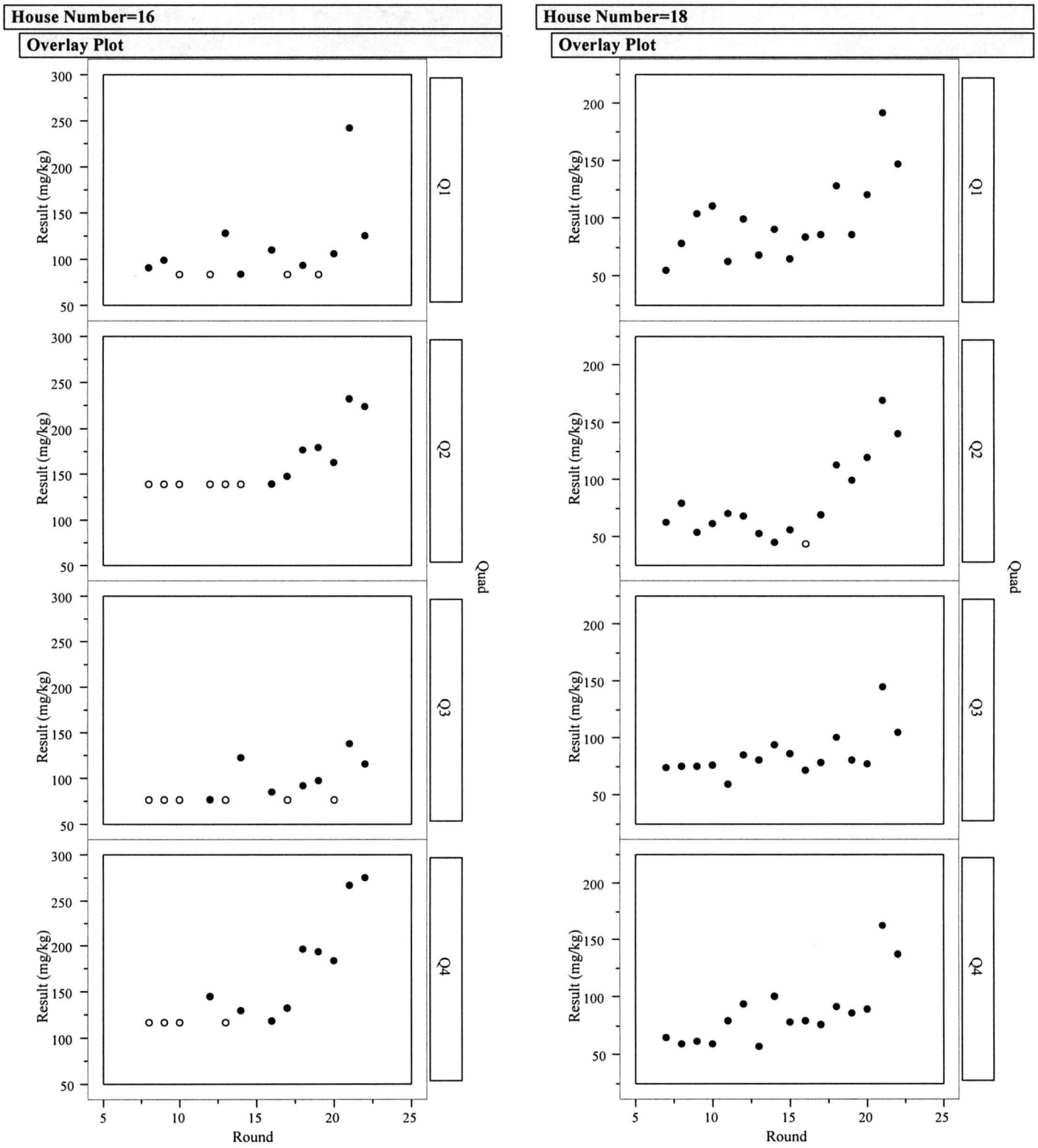
FIGURE 1. Lead Concentration Trends From Round 7 Through 22 (Cont)