ND<0	ND<0	0	6	35
ND<0	ND<0	0	6	35
5	ND<0	5	7	35
3	4	-1	7	36
ND<0	4	-4	7	37
ND<0	4	-4	7	38
5	4	1	8	38
ND<0	3	-3	8	39
ND<0	3	-3	8	40
5	3	2	9	40
ND<0	ND<0	0	9	40
5	ND<0	5	10	40
5	ND<0	5	11	40

S Statistic = 11 - 40 = -29

Tied Group	Value	Members
1	3	2
2	0	3

Time Period	Observations
3/30/2006	1
6/19/2006	1
9/29/2006	1
12/12/2006	1
6/26/2007	1
12/19/2007	1
6/12/2008	1
12/17/2008	1
4/18/2011	1
10/11/2011	1
10/13/2012	1

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 2970
b = 8910
c = 220
Group Variance = 160.333
Z-Score = -2.21129
Comparison Level at 1.0 - (0.1 / 2) = 95% confidence level = 1.64485 (two-tailed)
|-2.21129| > 1.64485 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium
Location: A-1-CW07
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0	ND<0	0	0	0
ND<0	ND<0	0	0	0
5.83	ND<0	5.83	1	0
2	ND<0	2	2	0
3	ND<0	3	3	0
4	ND<0	4	4	0
3	ND<0	3	5	0
4	ND<0	4	6	0
7	ND<0	7	7	0
4.52	ND<0	4.52	8	0
5.12	ND<0	5.12	9	0
ND<0	ND<0	0	9	0
5	ND<0	5	10	0
8	ND<0	8	11	0
ND<0	ND<0	0	11	0
5.83	ND<0	5.83	12	0
2	ND<0	2	13	0
3	ND<0	3	14	0
4	ND<0	4	15	0
3	ND<0	3	16	0
4	ND<0	4	17	0
7	ND<0	7	18	0
4.52	ND<0	4.52	19	0
5.12	ND<0	5.12	20	0
ND<0	ND<0	0	20	0
5	ND<0	5	21	0
8	ND<0	8	22	0
5.83	ND<0	5.83	23	0
2	ND<0	2	24	0
3	ND<0	3	25	0
4	ND<0	4	26	0
3	ND<0	3	27	0
4	ND<0	4	28	0
7	ND<0	7	29	0
4.52	ND<0	4.52	30	0
5.12	ND<0	5.12	31	0
ND<0	ND<0	0	31	0
5	ND<0	5	32	0
8	ND<0	8	33	0
2	5.83	-3.83	33	1
3	5.83	-2.83	33	2
4	5.83	-1.83	33	3
3	5.83	-2.83	33	4
4	5.83	-1.83	33	5

7	5.83	1.17	34	5
4.52	5.83	-1.31	34	6
5.12	5.83	-0.71	34	7
ND<0	5.63	-5.83	34	8
5	5.83	-0.83	34	9
8	5.83	2.17	35	9
3	2	1	36	9
4	2	2	37	9
3	2	1	38	9
4	2	2	39	9
7	2	5	40	9
4.52	2	2.52	41	9
5.12	2	3.12	42	9
ND<0	2	-2	42	10
5	2	3	43	10
8	2	6	44	10
4	3	1	45	10
3	3	0	45	10
4	3	1	46	10
7	3	4	47	10
4.52	3	1.52	48	10
5.12	3	2.12	49	10
ND<0	3	-3	49	11
5	3	2	50	11
8	3	5	51	11
3	4	-1	51	12
4	4	0	51	12
7	4	3	52	12
4.52	4	0.52	53	12
5.12	4	1.12	54	12
ND<0	4	-4	54	13
5	4	1	55	13
8	4	4	56	13
4	3	1	57	13
7	3	4	58	13
4.52	3	1.52	59	13
5.12	3	2.12	60	13
ND<0	3	-3	60	14
5	3	2	61	14
8	3	5	62	14
7	4	3	63	14
4.52	4	0.52	64	14
5.12	4	1.12	65	14
ND<0	4	-4	65	15
5	4	1	66	15
8	4	4	67	15
4.52	7	-2.48	67	16
5.12	7	-1.88	67	17
ND<0	7	-7	67	18
5	7	-2	67	19
8	7	1	68	19

5.12	4.52	0.6	69	19
ND<0	4.52	-4.52	69	20
5	4.52	0.48	70	20
8	4.52	3.48	71	20
ND<0	5.12	-5.12	71	21
5	5.12	-0.12	71	22
8	5.12	2.88	72	22
5	ND<0	5	73	22
8	ND<0	8	74	22
8	5	3	75	22

S Statistic = 75 - 22 = 53

Tied Group	Value	Members
1	0	4
2	3	2
3	4	2

Time Period	Observations
1/31/2000	1
3/20/2002	1
1/28/2003	1
12/16/2005	1
6/22/2007	1
12/13/2007	1
6/3/2008	1
12/11/2008	1
7/1/2009	1
12/10/2009	1
12/23/2010	1
4/15/2011	1
10/14/2011	1
4/18/2012	1
10/15/2012	1

There are 0 time periods with multiple data

A = 192
B = 0
C = 24
D = 0
E = 16
F = 0
a = 7350
b = 24570
c = 420
Group Variance = 397.667
Z-Score = 2.60762
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|2.60762| > 1.97737 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium
Location: B-1-CW12
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
66.9	100	-33.1	0	1
20	100	-80	0	2
13.6	100	-86.4	0	3
26.6	100	-73.4	0	4
143	100	43	1	4
14.2	100	-85.8	1	5
32.9	100	-67.1	1	6
31.7	100	-68.3	1	7
29.5	100	-70.5	1	8
19	100	-81	1	9
22	100	-78	1	10
21	100	-79	1	11
14	100	-86	1	12
18	100	-82	1	13
13	100	-87	1	14
13.4	100	-86.6	1	15
19	100	-81	1	16
12.6	100	-87.4	1	17
15	100	-85	1	18
17	100	-83	1	19
20	66.9	-46.9	1	20
13.6	66.9	-53.3	1	21
26.6	66.9	-40.3	1	22
143	66.9	76.1	2	22
14.2	66.9	-52.7	2	23
32.9	66.9	-34	2	24
31.7	66.9	-35.2	2	25
29.5	66.9	-37.4	2	26
19	66.9	-47.9	2	27
22	66.9	-44.9	2	28
21	66.9	-45.9	2	29
14	66.9	-52.9	2	30
18	66.9	-48.9	2	31
13	66.9	-53.9	2	32
13.4	66.9	-53.5	2	33
19	66.9	-47.9	2	34
12.6	66.9	-54.3	2	35
15	66.9	-51.9	2	36
17	66.9	-49.9	2	37
13.6	20	-6.4	2	38
26.6	20	6.6	3	38
143	20	123	4	38
14.2	20	-5.8	4	39
32.9	20	12.9	5	39
31.7	20	11.7	6	39

29.5	20	9.5	7	39
19	20	-1	7	40
22	20	2	8	40
21	20	1	9	40
14	20	-6	9	41
18	20	-2	9	42
13	20	-7	9	43
13.4	20	-6.6	9	44
19	20	-1	9	45
12.6	20	-7.4	9	46
15	20	-5	9	47
17	20	-3	9	48
26.6	13.6	13	10	48
143	13.6	129.4	11	48
14.2	13.6	0.6	12	48
32.9	13.6	19.3	13	48
31.7	13.6	18.1	14	48
29.5	13.6	15.9	15	48
19	13.6	5.4	16	48
22	13.6	8.4	17	48
21	13.6	7.4	18	48
14	13.6	0.4	19	48
18	13.6	4.4	20	48
13	13.6	-0.6	20	49
13.4	13.6	-0.2	20	50
19	13.6	5.4	21	50
12.6	13.6	-1	21	51
15	13.6	1.4	22	51
17	13.6	3.4	23	51
143	26.6	116.4	24	51
14.2	26.6	-12.4	24	52
32.9	26.6	6.3	25	52
31.7	26.6	5.1	26	52
29.5	26.6	2.9	27	52
19	26.6	-7.6	27	53
22	26.6	-4.6	27	54
21	26.6	-5.6	27	55
14	26.6	-12.6	27	56
18	26.6	-8.6	27	57
13	26.6	-13.6	27	58
13.4	26.6	-13.2	27	59
19	26.6	-7.6	27	60
12.6	26.6	-14	27	61
15	26.6	-11.6	27	62
17	26.6	-9.6	27	63
14.2	143	-128.8	27	64
32.9	143	-110.1	27	65
31.7	143	-111.3	27	66
29.5	143	-113.5	27	67
19	143	-124	27	68
22	143	-121	27	69
21	143	-122	27	70
14	143	-129	27	71
18	143	-125	27	72

13	143	-130	27	73
13.4	143	-129.6	27	74
19	143	-124	27	75
12.6	143	-130.4	27	76
15	143	-128	27	77
17	143	-126	27	78
32.9	14.2	18.7	28	78
31.7	14.2	17.5	29	78
29.5	14.2	15.3	30	78
19	14.2	4.8	31	78
22	14.2	7.8	32	78
21	14.2	6.8	33	78
14	14.2	-0.2	33	79
18	14.2	3.8	34	79
13	14.2	-1.2	34	80
13.4	14.2	-0.8	34	81
19	14.2	4.8	35	81
12.6	14.2	-1.6	35	82
15	14.2	0.8	36	82
17	14.2	2.8	37	82
31.7	32.9	-1.2	37	83
29.5	32.9	-3.4	37	84
19	32.9	-13.9	37	85
22	32.9	-10.9	37	86
21	32.9	-11.9	37	87
14	32.9	-18.9	37	88
18	32.9	-14.9	37	89
13	32.9	-19.9	37	90
13.4	32.9	-19.5	37	91
19	32.9	-13.9	37	92
12.6	32.9	-20.3	37	93
15	32.9	-17.9	37	94
17	32.9	-15.9	37	95
29.5	31.7	-2.2	37	96
19	31.7	-12.7	37	97
22	31.7	-9.7	37	98
21	31.7	-10.7	37	99
14	31.7	-17.7	37	100
18	31.7	-13.7	37	101
13	31.7	-18.7	37	102
13.4	31.7	-18.3	37	103
19	31.7	-12.7	37	104
12.6	31.7	-19.1	37	105
15	31.7	-16.7	37	106
17	31.7	-14.7	37	107
19	29.5	-10.5	37	108
22	29.5	-7.5	37	109
21	29.5	-8.5	37	110
14	29.5	-15.5	37	111
18	29.5	-11.5	37	112
13	29.5	-16.5	37	113
13.4	29.5	-16.1	37	114
19	29.5	-10.5	37	115

12.6	29.5	-16.9	37	116
15	29.5	-14.5	37	117
17	29.5	-12.5	37	118
22	19	3	38	118
21	19	2	39	118
14	19	-5	39	119
18	19	-1	39	120
13	19	-6	39	121
13.4	19	-5.6	39	122
19	19	0	39	122
12.6	19	-6.4	39	123
15	19	-4	39	124
17	19	-2	39	125
21	22	-1	39	126
14	22	-8	39	127
18	22	-4	39	128
13	22	-9	39	129
13.4	22	-8.6	39	130
19	22	-3	39	131
12.6	22	-9.4	39	132
15	22	-7	39	133
17	22	-5	39	134
14	21	-7	39	135
18	21	-3	39	136
13	21	-8	39	137
13.4	21	-7.6	39	138
19	21	-2	39	139
12.6	21	-8.4	39	140
15	21	-6	39	141
17	21	-4	39	142
18	14	4	40	142
13	14	-1	40	143
13.4	14	-0.6	40	144
19	14	5	41	144
12.6	14	-1.4	41	145
15	14	1	42	145
17	14	3	43	145
13	18	-5	43	146
13.4	18	-4.6	43	147
19	18	1	44	147
12.6	18	-5.4	44	148
15	18	-3	44	149
17	18	-1	44	150
13.4	13	0.4	45	150
19	13	6	46	150
12.6	13	-0.4	46	151
15	13	2	47	151
17	13	4	48	151
19	13.4	5.6	49	151
12.6	13.4	-0.8	49	152

15	13.4	1.6	50	152
17	13.4	3.6	51	152
12.6	19	-6.4	51	153
15	19	-4	51	154
17	19	-2	51	155
15	12.6	2.4	52	155
17	12.6	4.4	53	155
17	15	2	54	155

S Statistic = 54 - 155 = -101

Tied Group	Value	Members
1	19	2

Time Period	Observations
8/30/2000	1
7/16/2002	1
1/27/2003	1
7/30/2003	1
3/22/2004	1
12/9/2004	1
6/15/2005	1
12/13/2005	1
6/13/2006	1
12/4/2006	1
6/25/2007	1
12/10/2007	1
6/4/2008	1
12/12/2008	1
6/30/2009	1
12/8/2009	1
12/17/2010	1
4/21/2011	1
10/11/2011	1
4/18/2012	1
10/12/2012	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1095.67
Z-Score = -3.02107
Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)
|-3.02107| > 2.32634 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium
Location: B-1-CW17
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
80	70	10	1	0
70	70	0	1	0
37.2	70	-32.8	1	1
39.5	70	-30.5	1	2
41.5	70	-28.5	1	3
35.9	70	-34.1	1	4
33.8	70	-36.2	1	5
40.2	70	-29.8	1	6
31.9	70	-38.1	1	7
29.4	70	-40.6	1	8
44.1	70	-25.9	1	9
34.8	70	-35.2	1	10
32	70	-38	1	11
32	70	-38	1	12
35	70	-35	1	13
41	70	-29	1	14
54	70	-16	1	15
32	70	-38	1	16
25.4	70	-44.6	1	17
26.3	70	-43.7	1	18
22.3	70	-47.7	1	19
21	70	-49	1	20
27	70	-43	1	21
70	80	-10	1	22
37.2	80	-42.8	1	23
39.5	80	-40.5	1	24
41.5	80	-38.5	1	25
35.9	80	-44.1	1	26
33.8	80	-46.2	1	27
40.2	80	-39.8	1	28
31.9	80	-48.1	1	29
29.4	80	-50.6	1	30
44.1	80	-35.9	1	31
34.8	80	-45.2	1	32
32	80	-48	1	33
32	80	-48	1	34
35	80	-45	1	35
41	80	-39	1	36
54	80	-26	1	37
32	80	-48	1	38
25.4	80	-54.6	1	39
26.3	80	-53.7	1	40
22.3	80	-57.7	1	41
21	80	-59	1	42
27	80	-53	1	43

37.2	70	-32.8	1	44
39.5	70	-30.5	1	45
41.5	70	-28.5	1	46
35.9	70	-34.1	1	47
33.8	70	-36.2	1	48
40.2	70	-29.8	1	49
31.9	70	-38.1	1	50
29.4	70	-40.6	1	51
44.1	70	-25.9	1	52
34.8	70	-35.2	1	53
32	70	-38	1	54
32	70	-38	1	55
35	70	-35	1	56
41	70	-29	1	57
54	70	-16	1	58
32	70	-38	1	59
25.4	70	-44.6	1	60
26.3	70	-43.7	1	61
22.3	70	-47.7	1	62
21	70	-49	1	63
27	70	-43	1	64
39.5	37.2	2.3	2	64
41.5	37.2	4.3	3	64
35.9	37.2	-1.3	3	65
33.8	37.2	-3.4	3	66
40.2	37.2	3	4	66
31.9	37.2	-5.3	4	67
29.4	37.2	-7.8	4	68
44.1	37.2	6.9	5	68
34.8	37.2	-2.4	5	69
32	37.2	-5.2	5	70
32	37.2	-5.2	5	71
35	37.2	-2.2	5	72
41	37.2	3.8	6	72
54	37.2	16.8	7	72
32	37.2	-5.2	7	73
25.4	37.2	-11.8	7	74
26.3	37.2	-10.9	7	75
22.3	37.2	-14.9	7	76
21	37.2	-16.2	7	77
27	37.2	-10.2	7	78
41.5	39.5	2	8	78
35.9	39.5	-3.6	8	79
33.8	39.5	-5.7	8	80
40.2	39.5	0.7	9	80
31.9	39.5	-7.6	9	81
29.4	39.5	-10.1	9	82
44.1	39.5	4.6	10	82
34.8	39.5	-4.7	10	83
32	39.5	-7.5	10	84
32	39.5	-7.5	10	85
35	39.5	-4.5	10	86
41	39.5	1.5	11	86
54	39.5	14.5	12	86
32	39.5	-7.5	12	87

25.4	39.5	-14.1	12	88
26.3	39.5	-13.2	12	89
22.3	39.5	-17.2	12	90
21	39.5	-18.5	12	91
27	39.5	-12.5	12	92
35.9	41.5	-5.6	12	93
33.8	41.5	-7.7	12	94
40.2	41.5	-1.3	12	95
31.9	41.5	-9.6	12	96
29.4	41.5	-12.1	12	97
44.1	41.5	2.6	13	97
34.8	41.5	-6.7	13	98
32	41.5	-9.5	13	99
32	41.5	-9.5	13	100
35	41.5	-6.5	13	101
41	41.5	-0.5	13	102
54	41.5	12.5	14	102
32	41.5	-9.5	14	103
25.4	41.5	-16.1	14	104
26.3	41.5	-15.2	14	105
22.3	41.5	-19.2	14	106
21	41.5	-20.5	14	107
27	41.5	-14.5	14	108
33.8	35.9	-2.1	14	109
40.2	35.9	4.3	15	109
31.9	35.9	-4	15	110
29.4	35.9	-6.5	15	111
44.1	35.9	8.2	16	111
34.8	35.9	-1.1	16	112
32	35.9	-3.9	16	113
32	35.9	-3.9	16	114
35	35.9	-0.9	16	115
41	35.9	5.1	17	115
54	35.9	18.1	18	115
32	35.9	-3.9	18	116
25.4	35.9	-10.5	18	117
26.3	35.9	-9.6	18	118
22.3	35.9	-13.6	18	119
21	35.9	-14.9	18	120
27	35.9	-8.9	18	121
40.2	33.8	6.4	19	121
31.9	33.8	-1.9	19	122
29.4	33.8	-4.4	19	123
44.1	33.8	10.3	20	123
34.8	33.8	1	21	123
32	33.8	-1.8	21	124
32	33.8	-1.8	21	125
35	33.8	1.2	22	125
41	33.8	7.2	23	125
54	33.8	20.2	24	125
32	33.8	-1.8	24	126
25.4	33.8	-8.4	24	127
26.3	33.8	-7.5	24	128
22.3	33.8	-11.5	24	129

21	33.8	-12.8	24	130
27	33.8	-6.8	24	131
31.9	40.2	-8.3	24	132
29.4	40.2	-10.8	24	133
44.1	40.2	3.9	25	133
34.8	40.2	-5.4	25	134
32	40.2	-8.2	25	135
32	40.2	-8.2	25	136
35	40.2	-5.2	25	137
41	40.2	0.8	26	137
54	40.2	13.8	27	137
32	40.2	-8.2	27	138
25.4	40.2	-14.8	27	139
26.3	40.2	-13.9	27	140
22.3	40.2	-17.9	27	141
21	40.2	-19.2	27	142
27	40.2	-13.2	27	143
29.4	31.9	-2.5	27	144
44.1	31.9	12.2	28	144
34.8	31.9	2.9	29	144
32	31.9	0.1	30	144
32	31.9	0.1	31	144
35	31.9	3.1	32	144
41	31.9	9.1	33	144
54	31.9	22.1	34	144
32	31.9	0.1	35	144
25.4	31.9	-6.5	35	145
26.3	31.9	-5.6	35	146
22.3	31.9	-9.6	35	147
21	31.9	-10.9	35	148
27	31.9	-4.9	35	149
44.1	29.4	14.7	36	149
34.8	29.4	5.4	37	149
32	29.4	2.6	38	149
32	29.4	2.6	39	149
35	29.4	5.6	40	149
41	29.4	11.6	41	149
54	29.4	24.6	42	149
32	29.4	2.6	43	149
25.4	29.4	-4	43	150
26.3	29.4	-3.1	43	151
22.3	29.4	-7.1	43	152
21	29.4	-8.4	43	153
27	29.4	-2.4	43	154
34.8	44.1	-9.3	43	155
32	44.1	-12.1	43	156
32	44.1	-12.1	43	157
35	44.1	-9.1	43	158
41	44.1	-3.1	43	159
54	44.1	9.9	44	159
32	44.1	-12.1	44	160
25.4	44.1	-18.7	44	161
26.3	44.1	-17.8	44	162

22.3	44.1	-21.8	44	163
21	44.1	-23.1	44	164
27	44.1	-17.1	44	165
32	34.8	-2.8	44	166
32	34.8	-2.8	44	167
35	34.8	0.2	45	167
41	34.8	6.2	46	167
54	34.8	19.2	47	167
32	34.8	-2.8	47	168
25.4	34.8	-9.4	47	169
26.3	34.8	-8.5	47	170
22.3	34.8	-12.5	47	171
21	34.8	-13.8	47	172
27	34.8	-7.8	47	173
32	32	0	47	173
35	32	3	48	173
41	32	9	49	173
54	32	22	50	173
32	32	0	50	173
25.4	32	-6.6	50	174
26.3	32	-5.7	50	175
22.3	32	-9.7	50	176
21	32	-11	50	177
27	32	-5	50	178
35	32	3	51	178
41	32	9	52	178
54	32	22	53	178
32	32	0	53	178
25.4	32	-6.6	53	179
26.3	32	-5.7	53	180
22.3	32	-9.7	53	181
21	32	-11	53	182
27	32	-5	53	183
41	35	6	54	183
54	35	19	55	183
32	35	-3	55	184
25.4	35	-9.6	55	185
26.3	35	-8.7	55	186
22.3	35	-12.7	55	187
21	35	-14	55	188
27	35	-8	55	189
54	41	13	56	189
32	41	-9	56	190
25.4	41	-15.6	56	191
26.3	41	-14.7	56	192
22.3	41	-18.7	56	193
21	41	-20	56	194
27	41	-14	56	195
32	54	-22	56	196
25.4	54	-28.6	56	197
26.3	54	-27.7	56	198

22.3	54	-31.7	56	199
21	54	-33	56	200
27	54	-27	56	201
25.4	32	-6.6	56	202
26.3	32	-5.7	56	203
22.3	32	-9.7	56	204
21	32	-11	56	205
27	32	-5	56	206
26.3	25.4	0.9	57	206
22.3	25.4	-3.1	57	207
21	25.4	-4.4	57	208
27	25.4	1.6	58	208
22.3	26.3	-4	58	209
21	26.3	-5.3	58	210
27	26.3	0.7	59	210
21	22.3	-1.3	59	211
27	22.3	4.7	60	211
27	21	6	61	211

S Statistic = 61 - 211 = -150

Tied Group	Value	Members
1	70	2
2	32	3

Time Period	Observations
1/26/2000	1
8/29/2000	1
2/5/2001	1
3/22/2002	1
7/16/2002	1
1/24/2003	1
7/30/2003	1
3/18/2004	1
12/10/2004	1
6/15/2005	1
12/21/2005	1
6/13/2006	1
12/5/2006	1
6/21/2007	1
12/11/2007	1
6/2/2008	1
12/11/2008	1
6/25/2009	1
12/8/2009	1
12/17/2010	1
4/21/2011	1
10/14/2011	1
4/18/2012	1
10/11/2012	1

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1620.67
Z-Score = -3.70117
Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)
|-3.70117| > 2.32634 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium
Location: B-6-CW17
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
4.35	12.4	-8.05	0	1
ND<0	12.4	-12.4	0	2
2	12.4	-10.4	0	3
2	12.4	-10.4	0	4
ND<0	12.4	-12.4	0	5
ND<0	12.4	-12.4	0	6
ND<0	12.4	-12.4	0	7
ND<0	4.35	-4.35	0	8
2	4.35	-2.35	0	9
2	4.35	-2.35	0	10
ND<0	4.35	-4.35	0	11
ND<0	4.35	-4.35	0	12
ND<0	4.35	-4.35	0	13
2	ND<0	2	1	13
2	ND<0	2	2	13
ND<0	ND<0	0	2	13
ND<0	ND<0	0	2	13
ND<0	ND<0	0	2	13
2	2	0	2	13
ND<0	2	-2	2	14
ND<0	2	-2	2	15
ND<0	2	-2	2	16
ND<0	2	-2	2	17
ND<0	2	-2	2	18
ND<0	2	-2	2	19
ND<0	ND<0	0	2	19
ND<0	ND<0	0	2	19
ND<0	ND<0	0	2	19

S Statistic = 2 - 19 = -17
Comparing at 1.0 - (0.1 / 2) = 95% confidence level (two-tailed)
Probability of obtaining S >= |-17| is 0.047
0.047 < 0.1 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium
Location: C-1-CW08
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0	42.3	-42.3	0	1
7.39	42.3	-34.91	0	2
4.63	42.3	-37.67	0	3
6.93	42.3	-35.37	0	4
ND<0	42.3	-42.3	0	5
ND<0	42.3	-42.3	0	6
ND<0	42.3	-42.3	0	7
2	42.3	-40.3	0	8
2	42.3	-40.3	0	9
3	42.3	-39.3	0	10
ND<0	42.3	-42.3	0	11
ND<0	42.3	-42.3	0	12
ND<0	42.3	-42.3	0	13
ND<0	42.3	-42.3	0	14
ND<0	42.3	-42.3	0	15
7.39	ND<0	7.39	1	15
4.63	ND<0	4.63	2	15
6.93	ND<0	6.93	3	15
ND<0	ND<0	0	3	15
ND<0	ND<0	0	3	15
ND<0	ND<0	0	3	15
2	ND<0	2	4	15
2	ND<0	2	5	15
3	ND<0	3	6	15
ND<0	ND<0	0	6	15
ND<0	ND<0	0	6	15
ND<0	ND<0	0	6	15
ND<0	ND<0	0	6	15
ND<0	ND<0	0	6	15
4.63	7.39	-2.76	6	16
6.93	7.39	-0.46	6	17
ND<0	7.39	-7.39	6	18
ND<0	7.39	-7.39	6	19
ND<0	7.39	-7.39	6	20
2	7.39	-5.39	6	21
2	7.39	-5.39	6	22
3	7.39	-4.39	6	23
ND<0	7.39	-7.39	6	24
ND<0	7.39	-7.39	6	25
ND<0	7.39	-7.39	6	26
ND<0	7.39	-7.39	6	27
ND<0	7.39	-7.39	6	28
6.93	4.63	2.3	7	28
ND<0	4.63	-4.63	7	29

ND<0	4.63	-4.63	7	30
ND<0	4.63	-4.63	7	31
2	4.63	-2.63	7	32
2	4.63	-2.63	7	33
3	4.63	-1.63	7	34
ND<0	4.63	-4.63	7	35
ND<0	4.63	-4.63	7	36
ND<0	4.63	-4.63	7	37
ND<0	4.63	-4.63	7	38
ND<0	4.63	-4.63	7	39
ND<0	6.93	-6.93	7	40
ND<0	6.93	-6.93	7	41
ND<0	6.93	-6.93	7	42
2	6.93	-4.93	7	43
2	6.93	-4.93	7	44
3	6.93	-3.93	7	45
ND<0	6.93	-6.93	7	46
ND<0	6.93	-6.93	7	47
ND<0	6.93	-6.93	7	48
ND<0	6.93	-6.93	7	49
ND<0	6.93	-6.93	7	50
ND<0	ND<0	0	7	50
ND<0	ND<0	0	7	50
2	ND<0	2	8	50
2	ND<0	2	9	50
3	ND<0	3	10	50
ND<0	ND<0	0	10	50
ND<0	ND<0	0	10	50
ND<0	ND<0	0	10	50
ND<0	ND<0	0	10	50
ND<0	ND<0	0	10	50
ND<0	ND<0	0	10	50
2	ND<0	2	11	50
2	ND<0	2	12	50
3	ND<0	3	13	50
ND<0	ND<0	0	13	50
ND<0	ND<0	0	13	50
ND<0	ND<0	0	13	50
ND<0	ND<0	0	13	50
ND<0	ND<0	0	13	50
2	ND<0	2	14	50
2	ND<0	2	15	50
3	ND<0	3	16	50
ND<0	ND<0	0	16	50
ND<0	ND<0	0	16	50
ND<0	ND<0	0	16	50
ND<0	ND<0	0	16	50
ND<0	ND<0	0	16	50
2	2	0	16	50
3	2	1	17	50
ND<0	2	-2	17	51
ND<0	2	-2	17	52

ND<0	2	-2	17	53
ND<0	2	-2	17	54
ND<0	2	-2	17	55
3	2	1	18	55
ND<0	2	-2	18	56
ND<0	2	-2	18	57
ND<0	2	-2	18	58
ND<0	2	-2	18	59
ND<0	2	-2	18	60
ND<0	3	-3	18	61
ND<0	3	-3	18	62
ND<0	3	-3	18	63
ND<0	3	-3	18	64
ND<0	3	-3	18	65
ND<0	ND<0	0	18	65
ND<0	ND<0	0	18	65
ND<0	ND<0	0	18	65
ND<0	ND<0	0	18	65
ND<0	ND<0	0	18	65
ND<0	ND<0	0	18	65
ND<0	ND<0	0	18	65
ND<0	ND<0	0	18	65
ND<0	ND<0	0	18	65
ND<0	ND<0	0	18	65

S Statistic = 18 - 65 = -47

Tied Group	Value	Members
1	0	9
2	2	2

Time Period	Observations
12/9/2004	1
12/19/2005	1
3/27/2006	1
6/15/2006	1
9/26/2006	1
6/28/2007	1
12/13/2007	1
6/6/2008	1
12/10/2008	1
6/30/2009	1
12/11/2009	1
12/9/2010	1
4/7/2011	1
10/6/2011	1
4/17/2012	1
10/13/2012	1

There are 0 time periods with multiple data

A = 1674
B = 0
C = 504
D = 0
E = 74
F = 0
a = 8880
b = 30240
c = 480
Group Variance = 400.333
Z-Score = -2.29904
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-2.29904| > 1.97737 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium
Location: MW-06
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
7.93	10.2	-2.27	0	1
7.57	10.2	-2.63	0	2
3.98	10.2	-6.22	0	3
3	10.2	-7.2	0	4
ND<0	10.2	-10.2	0	5
4	10.2	-6.2	0	6
3	10.2	-7.2	0	7
ND<0	10.2	-10.2	0	8
ND<0	10.2	-10.2	0	9
5	10.2	-5.2	0	10
7.57	7.93	-0.36	0	11
3.98	7.93	-3.95	0	12
3	7.93	-4.93	0	13
ND<0	7.93	-7.93	0	14
4	7.93	-3.93	0	15
3	7.93	-4.93	0	16
ND<0	7.93	-7.93	0	17
ND<0	7.93	-7.93	0	18
5	7.93	-2.93	0	19
3.98	7.57	-3.59	0	20
3	7.57	-4.57	0	21
ND<0	7.57	-7.57	0	22
4	7.57	-3.57	0	23
3	7.57	-4.57	0	24
ND<0	7.57	-7.57	0	25
ND<0	7.57	-7.57	0	26
5	7.57	-2.57	0	27
3	3.98	-0.98	0	28
ND<0	3.98	-3.98	0	29
4	3.98	0.02	1	29
3	3.98	-0.98	1	30
ND<0	3.98	-3.98	1	31
ND<0	3.98	-3.98	1	32
5	3.98	1.02	2	32
ND<0	3	-3	2	33
4	3	1	3	33
3	3	0	3	33
ND<0	3	-3	3	34
ND<0	3	-3	3	35
5	3	2	4	35
4	ND<0	4	5	35
3	ND<0	3	6	35

ND<0	ND<0	0	6	35
ND<0	ND<0	0	6	35
5	ND<0	5	7	35
3	4	-1	7	36
ND<0	4	-4	7	37
ND<0	4	-4	7	38
5	4	1	8	38
ND<0	3	-3	8	39
ND<0	3	-3	8	40
5	3	2	9	40
ND<0	ND<0	0	9	40
5	ND<0	5	10	40
5	ND<0	5	11	40

S Statistic = 11 - 40 = -29

Tied Group	Value	Members
1	3	2
2	0	3

Time Period	Observations
3/30/2006	1
6/19/2006	1
9/29/2006	1
12/12/2006	1
6/26/2007	1
12/19/2007	1
6/12/2008	1
12/17/2008	1
4/18/2011	1
10/11/2011	1
10/13/2012	1

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 2970
b = 8910
c = 220
Group Variance = 160.333
Z-Score = -2.21129
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-2.21129| > 1.97737 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium
Location: 3850N
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
53	28	25	1	0
28	28	0	1	0
44	28	16	2	0
51	28	23	3	0
18.8	28	-9.2	3	1
13.8	28	-14.2	3	2
13	28	-15	3	3
9	28	-19	3	4
15	28	-13	3	5
28	53	-25	3	6
44	53	-9	3	7
51	53	-2	3	8
18.8	53	-34.2	3	9
13.8	53	-39.2	3	10
13	53	-40	3	11
9	53	-44	3	12
15	53	-38	3	13
44	28	16	4	13
51	28	23	5	13
18.8	28	-9.2	5	14
13.8	28	-14.2	5	15
13	28	-15	5	16
9	28	-19	5	17
15	28	-13	5	18
51	44	7	6	18
18.8	44	-25.2	6	19
13.8	44	-30.2	6	20
13	44	-31	6	21
9	44	-35	6	22
15	44	-29	6	23
18.8	51	-32.2	6	24
13.8	51	-37.2	6	25
13	51	-38	6	26
9	51	-42	6	27
15	51	-36	6	28
13.8	18.8	-5	6	29
13	18.8	-5.8	6	30
9	18.8	-9.8	6	31
15	18.8	-3.8	6	32
13	13.8	-0.8	6	33
9	13.8	-4.8	6	34

15	13.8	1.2	7	34
9	13	-4	7	35
15	13	2	8	35
15	9	6	9	35

S Statistic = 9 - 35 = -26
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-26| is 0.0223
0.0223 < 0.05 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium
Location: 3880
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
9	8	1	1	0
9.54	8	1.54	2	0
9.84	8	1.84	3	0
11	8	3	4	0
9.54	9	0.54	5	0
9.84	9	0.84	6	0
11	9	2	7	0
9.84	9.54	0.3	8	0
11	9.54	1.46	9	0
11	9.84	1.16	10	0

S Statistic = 10 - 0 = 10
Comparing at 1.0 - (0.1 / 2) = 95% confidence level (two-tailed)
Probability of obtaining S >= |10| is 0.0166
0.0166 < 0.1 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium VI
Location: 3830Q
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
0.24	0.51	-0.27	0	1
0.15	0.51	-0.36	0	2
0.23	0.51	-0.28	0	3
0.17	0.51	-0.34	0	4
ND<0	0.51	-0.51	0	5
ND<0	0.51	-0.51	0	6
ND<0	0.51	-0.51	0	7
ND<0	0.51	-0.51	0	8
ND<0	0.51	-0.51	0	9
ND<0	0.51	-0.51	0	10
ND<0	0.51	-0.51	0	11
ND<0	0.51	-0.51	0	12
ND<0	0.51	-0.51	0	13
ND<0	0.51	-0.51	0	14
0.15	0.24	-0.09	0	15
0.23	0.24	-0.01	0	16
0.17	0.24	-0.07	0	17
ND<0	0.24	-0.24	0	18
ND<0	0.24	-0.24	0	19
ND<0	0.24	-0.24	0	20
ND<0	0.24	-0.24	0	21
ND<0	0.24	-0.24	0	22
ND<0	0.24	-0.24	0	23
ND<0	0.24	-0.24	0	24
ND<0	0.24	-0.24	0	25
ND<0	0.24	-0.24	0	26
ND<0	0.24	-0.24	0	27
0.23	0.15	0.08	1	27
0.17	0.15	0.02	2	27
ND<0	0.15	-0.15	2	28
ND<0	0.15	-0.15	2	29
ND<0	0.15	-0.15	2	30
ND<0	0.15	-0.15	2	31
ND<0	0.15	-0.15	2	32
ND<0	0.15	-0.15	2	33
ND<0	0.15	-0.15	2	34
ND<0	0.15	-0.15	2	35
ND<0	0.15	-0.15	2	36
ND<0	0.15	-0.15	2	37
0.17	0.23	-0.06	2	38
ND<0	0.23	-0.23	2	39
ND<0	0.23	-0.23	2	40
ND<0	0.23	-0.23	2	41
ND<0	0.23	-0.23	2	42

ND<0	0.23	-0.23	2	43
ND<0	0.23	-0.23	2	44
ND<0	0.23	-0.23	2	45
ND<0	0.23	-0.23	2	46
ND<0	0.23	-0.23	2	47
ND<0	0.23	-0.23	2	48
ND<0	0.17	-0.17	2	49
ND<0	0.17	-0.17	2	50
ND<0	0.17	-0.17	2	51
ND<0	0.17	-0.17	2	52
ND<0	0.17	-0.17	2	53
ND<0	0.17	-0.17	2	54
ND<0	0.17	-0.17	2	55
ND<0	0.17	-0.17	2	56
ND<0	0.17	-0.17	2	57
ND<0	0.17	-0.17	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58

ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58
ND<0	ND<0	0	2	58

S Statistic = 2 - 58 = -56

Tied Group	Value	Members
1	0	10

Time Period	Observations
3/19/2004	1
3/23/2006	1
6/14/2006	1
9/26/2006	1
12/6/2006	1
6/27/2007	1
12/12/2007	1
6/4/2008	1
12/10/2008	1
6/26/2009	1
12/14/2009	1
11/29/2010	1
12/8/2010	1
4/11/2011	1
4/12/2012	1

There are 0 time periods with multiple data

A = 2250
B = 0
C = 720
D = 0
E = 90
F = 0
a = 7350
b = 24570
c = 420
Group Variance = 283.333
Z-Score = -3.26749
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-3.26749| > 1.97737 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium VI
Location: A-1-CW07
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
4.1	2.3	1.8	1	0
2	2.3	-0.3	1	1
1.36	2.3	-0.94	1	2
1.83	2.3	-0.47	1	3
1.42	2.3	-0.88	1	4
0.726	2.3	-1.574	1	5
0.23	2.3	-2.07	1	6
0.73	2.3	-1.57	1	7
0.72	2.3	-1.58	1	8
0.99	2.3	-1.31	1	9
ND<0	2.3	-2.3	1	10
0.7	2.3	-1.6	1	11
2	4.1	-2.1	1	12
1.36	4.1	-2.74	1	13
1.83	4.1	-2.27	1	14
1.42	4.1	-2.68	1	15
0.726	4.1	-3.374	1	16
0.23	4.1	-3.87	1	17
0.73	4.1	-3.37	1	18
0.72	4.1	-3.38	1	19
0.99	4.1	-3.11	1	20
ND<0	4.1	-4.1	1	21
0.7	4.1	-3.4	1	22
1.36	2	-0.64	1	23
1.83	2	-0.17	1	24
1.42	2	-0.58	1	25
0.726	2	-1.274	1	26
0.23	2	-1.77	1	27
0.73	2	-1.27	1	28
0.72	2	-1.28	1	29
0.99	2	-1.01	1	30
ND<0	2	-2	1	31
0.7	2	-1.3	1	32
1.83	1.36	0.47	2	32
1.42	1.36	0.06	3	32
0.726	1.36	-0.634	3	33
0.23	1.36	-1.13	3	34
0.73	1.36	-0.63	3	35
0.72	1.36	-0.64	3	36
0.99	1.36	-0.37	3	37
ND<0	1.36	-1.36	3	38
0.7	1.36	-0.66	3	39
1.42	1.83	-0.41	3	40

0.726	1.83	-1.104	3	41
0.23	1.83	-1.6	3	42
0.73	1.83	-1.1	3	43
0.72	1.83	-1.11	3	44
0.99	1.83	-0.84	3	45
ND<0	1.83	-1.83	3	46
0.7	1.83	-1.13	3	47
0.726	1.42	-0.694	3	48
0.23	1.42	-1.19	3	49
0.73	1.42	-0.69	3	50
0.72	1.42	-0.7	3	51
0.99	1.42	-0.43	3	52
ND<0	1.42	-1.42	3	53
0.7	1.42	-0.72	3	54
0.23	0.726	-0.496	3	55
0.73	0.726	0.004	4	55
0.72	0.726	-0.006	4	56
0.99	0.726	0.264	5	56
ND<0	0.726	-0.726	5	57
0.7	0.726	-0.026	5	58
0.73	0.23	0.5	6	58
0.72	0.23	0.49	7	58
0.99	0.23	0.76	8	58
ND<0	0.23	-0.23	8	59
0.7	0.23	0.47	9	59
0.72	0.73	-0.01	9	60
0.99	0.73	0.26	10	60
ND<0	0.73	-0.73	10	61
0.7	0.73	-0.03	10	62
0.99	0.72	0.27	11	62
ND<0	0.72	-0.72	11	63
0.7	0.72	-0.02	11	64
ND<0	0.99	-0.99	11	65
0.7	0.99	-0.29	11	66
0.7	ND<0	0.7	12	66

S Statistic = 12 - 66 = -54

Tied Group	Value	Members
Time Period		**Observations**
3/20/2002		1
12/16/2005		1
6/22/2007		1
12/13/2007		1
6/3/2008		1
12/11/2008		1
7/1/2009		1
12/10/2009		1

12/23/2010	1
4/15/2011	1
10/14/2011	1
4/18/2012	1
10/15/2012	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 4836
b = 15444
c = 312
Group Variance = 268.667
Z-Score = -3.23347
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-3.23347| > 1.97737 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium VI
Location: B-1-CW17
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
70	80	-10	0	1
50	80	-30	0	2
33	80	-47	0	3
33	80	-47	0	4
37	80	-43	0	5
33	80	-47	0	6
29	80	-51	0	7
27	80	-53	0	8
30	80	-50	0	9
29	80	-51	0	10
30	80	-50	0	11
36	80	-44	0	12
31.8	80	-48.2	0	13
34.2	80	-45.8	0	14
35.1	80	-44.9	0	15
44.1	80	-35.9	0	16
53.8	80	-26.2	0	17
28.4	80	-51.6	0	18
23	80	-57	0	19
25	80	-55	0	20
22	80	-58	0	21
17.5	80	-62.5	0	22
24.2	80	-55.8	0	23
50	70	-20	0	24
33	70	-37	0	25
33	70	-37	0	26
37	70	-33	0	27
33	70	-37	0	28
29	70	-41	0	29
27	70	-43	0	30
30	70	-40	0	31
29	70	-41	0	32
30	70	-40	0	33
36	70	-34	0	34
31.8	70	-38.2	0	35
34.2	70	-35.8	0	36
35.1	70	-34.9	0	37
44.1	70	-25.9	0	38
53.8	70	-16.2	0	39
28.4	70	-41.6	0	40
23	70	-47	0	41
25	70	-45	0	42
22	70	-48	0	43
17.5	70	-52.5	0	44
24.2	70	-45.8	0	45

33	50	-17	0	46
33	50	-17	0	47
37	50	-13	0	48
33	50	-17	0	49
29	50	-21	0	50
27	50	-23	0	51
30	50	-20	0	52
29	50	-21	0	53
30	50	-20	0	54
36	50	-14	0	55
31.8	50	-18.2	0	56
34.2	50	-15.8	0	57
35.1	50	-14.9	0	58
44.1	50	-5.9	0	59
53.8	50	3.8	1	59
28.4	50	-21.6	1	60
23	50	-27	1	61
25	50	-25	1	62
22	50	-28	1	63
17.5	50	-32.5	1	64
24.2	50	-25.8	1	65
33	33	0	1	65
37	33	4	2	65
33	33	0	2	65
29	33	-4	2	66
27	33	-6	2	67
30	33	-3	2	68
29	33	-4	2	69
30	33	-3	2	70
36	33	3	3	70
31.8	33	-1.2	3	71
34.2	33	1.2	4	71
35.1	33	2.1	5	71
44.1	33	11.1	6	71
53.8	33	20.8	7	71
28.4	33	-4.6	7	72
23	33	-10	7	73
25	33	-8	7	74
22	33	-11	7	75
17.5	33	-15.5	7	76
24.2	33	-8.8	7	77
37	33	4	8	77
33	33	0	8	77
29	33	-4	8	78
27	33	-6	8	79
30	33	-3	8	80
29	33	-4	8	81
30	33	-3	8	82
36	33	3	9	82
31.8	33	-1.2	9	83
34.2	33	1.2	10	83
35.1	33	2.1	11	83
44.1	33	11.1	12	83
53.8	33	20.8	13	83
28.4	33	-4.6	13	84

23	33	-10	13	85
25	33	-8	13	86
22	33	-11	13	87
17.5	33	-15.5	13	88
24.2	33	-8.8	13	89
33	37	-4	13	90
29	37	-8	13	91
27	37	-10	13	92
30	37	-7	13	93
29	37	-8	13	94
30	37	-7	13	95
36	37	-1	13	96
31.8	37	-5.2	13	97
34.2	37	-2.8	13	98
35.1	37	-1.9	13	99
44.1	37	7.1	14	99
53.8	37	16.8	15	99
28.4	37	-8.6	15	100
23	37	-14	15	101
25	37	-12	15	102
22	37	-15	15	103
17.5	37	-19.5	15	104
24.2	37	-12.8	15	105
29	33	-4	15	106
27	33	-6	15	107
30	33	-3	15	108
29	33	-4	15	109
30	33	-3	15	110
36	33	3	16	110
31.8	33	-1.2	16	111
34.2	33	1.2	17	111
35.1	33	2.1	18	111
44.1	33	11.1	19	111
53.8	33	20.8	20	111
28.4	33	-4.6	20	112
23	33	-10	20	113
25	33	-8	20	114
22	33	-11	20	115
17.5	33	-15.5	20	116
24.2	33	-8.8	20	117
27	29	-2	20	118
30	29	1	21	118
29	29	0	21	118
30	29	1	22	118
36	29	7	23	118
31.8	29	2.8	24	118
34.2	29	5.2	25	118
35.1	29	6.1	26	118
44.1	29	15.1	27	118
53.8	29	24.8	28	118
28.4	29	-0.6	28	119
23	29	-6	28	120
25	29	-4	28	121
22	29	-7	28	122

17.5	29	-11.5	28	123
24.2	29	-4.8	28	124
30	27	3	29	124
29	27	2	30	124
30	27	3	31	124
36	27	9	32	124
31.8	27	4.8	33	124
34.2	27	7.2	34	124
35.1	27	8.1	35	124
44.1	27	17.1	36	124
53.8	27	26.8	37	124
28.4	27	1.4	38	124
23	27	-4	38	125
25	27	-2	38	126
22	27	-5	38	127
17.5	27	-9.5	38	128
24.2	27	-2.8	38	129
29	30	-1	38	130
30	30	0	38	130
36	30	6	39	130
31.8	30	1.8	40	130
34.2	30	4.2	41	130
35.1	30	5.1	42	130
44.1	30	14.1	43	130
53.8	30	23.8	44	130
28.4	30	-1.6	44	131
23	30	-7	44	132
25	30	-5	44	133
22	30	-8	44	134
17.5	30	-12.5	44	135
24.2	30	-5.8	44	136
30	29	1	45	136
36	29	7	46	136
31.8	29	2.8	47	136
34.2	29	5.2	48	136
35.1	29	6.1	49	136
44.1	29	15.1	50	136
53.8	29	24.8	51	136
28.4	29	-0.6	51	137
23	29	-6	51	138
25	29	-4	51	139
22	29	-7	51	140
17.5	29	-11.5	51	141
24.2	29	-4.8	51	142
36	30	6	52	142
31.8	30	1.8	53	142
34.2	30	4.2	54	142
35.1	30	5.1	55	142
44.1	30	14.1	56	142
53.8	30	23.8	57	142
28.4	30	-1.6	57	143
23	30	-7	57	144
25	30	-5	57	145

22	30	-8	57	146
17.5	30	-12.5	57	147
24.2	30	-5.8	57	148
31.8	36	-4.2	57	149
34.2	36	-1.8	57	150
35.1	36	-0.9	57	151
44.1	36	8.1	58	151
53.8	36	17.8	59	151
28.4	36	-7.6	59	152
23	36	-13	59	153
25	36	-11	59	154
22	36	-14	59	155
17.5	36	-18.5	59	156
24.2	36	-11.8	59	157
34.2	31.8	2.4	60	157
35.1	31.8	3.3	61	157
44.1	31.8	12.3	62	157
53.8	31.8	22	63	157
28.4	31.8	-3.4	63	158
23	31.8	-8.8	63	159
25	31.8	-6.8	63	160
22	31.8	-9.8	63	161
17.5	31.8	-14.3	63	162
24.2	31.8	-7.6	63	163
35.1	34.2	0.9	64	163
44.1	34.2	9.9	65	163
53.8	34.2	19.6	66	163
28.4	34.2	-5.8	66	164
23	34.2	-11.2	66	165
25	34.2	-9.2	66	166
22	34.2	-12.2	66	167
17.5	34.2	-16.7	66	168
24.2	34.2	-10	66	169
44.1	35.1	9	67	169
53.8	35.1	18.7	68	169
28.4	35.1	-6.7	68	170
23	35.1	-12.1	68	171
25	35.1	-10.1	68	172
22	35.1	-13.1	68	173
17.5	35.1	-17.6	68	174
24.2	35.1	-10.9	68	175
53.8	44.1	9.7	69	175
28.4	44.1	-15.7	69	176
23	44.1	-21.1	69	177
25	44.1	-19.1	69	178
22	44.1	-22.1	69	179
17.5	44.1	-26.6	69	180
24.2	44.1	-19.9	69	181
28.4	53.8	-25.4	69	182
23	53.8	-30.8	69	183
25	53.8	-28.8	69	184

22	53.8	-31.8	69	185
17.5	53.8	-36.3	69	186
24.2	53.8	-29.6	69	187
23	28.4	-5.4	69	188
25	28.4	-3.4	69	189
22	28.4	-6.4	69	190
17.5	28.4	-10.9	69	191
24.2	28.4	-4.2	69	192
25	23	2	70	192
22	23	-1	70	193
17.5	23	-5.5	70	194
24.2	23	1.2	71	194
22	25	-3	71	195
17.5	25	-7.5	71	196
24.2	25	-0.8	71	197
17.5	22	-4.5	71	198
24.2	22	2.2	72	198
24.2	17.5	6.7	73	198

S Statistic = 73 - 198 = -125

Tied Group	Value	Members
1	33	3
2	29	2
3	30	2

Time Period	Observations
1/26/2000	1
8/29/2000	1
2/5/2001	1
3/22/2002	1
7/16/2002	1
1/24/2003	1
7/30/2003	1
3/18/2004	1
12/10/2004	1
6/15/2005	1
12/21/2005	1
6/13/2006	1
12/5/2006	1
6/21/2007	1
12/11/2007	1
6/2/2008	1
12/11/2008	1
6/25/2009	1
12/8/2009	1
12/17/2010	1
4/21/2011	1
10/14/2011	1
4/18/2012	1
10/11/2012	1

There are 0 time periods with multiple data

A = 102
B = 0
C = 6
D = 0
E = 10
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1619.67
Z-Score = -3.08112
Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)
|-3.08112| > 2.32634 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium VI
Location: B-5-CW02
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
0.42	0.61	-0.19	0	1
0.22	0.61	-0.39	0	2
0.35	0.61	-0.26	0	3
0.25	0.61	-0.36	0	4
ND<0	0.61	-0.61	0	5
ND<0	0.61	-0.61	0	6
ND<0	0.61	-0.61	0	7
ND<0	0.61	-0.61	0	8
ND<0	0.61	-0.61	0	9
ND<0	0.61	-0.61	0	10
0.089	0.61	-0.521	0	11
0.089	0.61	-0.521	0	12
0.15	0.61	-0.46	0	13
ND<0	0.61	-0.61	0	14
ND<0	0.61	-0.61	0	15
ND<0	0.61	-0.61	0	16
ND<0	0.61	-0.61	0	17
0.22	0.42	-0.2	0	18
0.35	0.42	-0.07	0	19
0.25	0.42	-0.17	0	20
ND<0	0.42	-0.42	0	21
ND<0	0.42	-0.42	0	22
ND<0	0.42	-0.42	0	23
ND<0	0.42	-0.42	0	24
ND<0	0.42	-0.42	0	25
ND<0	0.42	-0.42	0	26
0.089	0.42	-0.331	0	27
0.089	0.42	-0.331	0	28
0.15	0.42	-0.27	0	29
ND<0	0.42	-0.42	0	30
ND<0	0.42	-0.42	0	31
ND<0	0.42	-0.42	0	32
ND<0	0.42	-0.42	0	33
0.35	0.22	0.13	1	33
0.25	0.22	0.03	2	33
ND<0	0.22	-0.22	2	34
ND<0	0.22	-0.22	2	35
ND<0	0.22	-0.22	2	36
ND<0	0.22	-0.22	2	37
ND<0	0.22	-0.22	2	38
ND<0	0.22	-0.22	2	39
0.089	0.22	-0.131	2	40
0.089	0.22	-0.131	2	41
0.15	0.22	-0.07	2	42
ND<0	0.22	-0.22	2	43

ND<0	0.22	-0.22	2	44
ND<0	0.22	-0.22	2	45
ND<0	0.22	-0.22	2	46
0.25	0.35	-0.1	2	47
ND<0	0.35	-0.35	2	48
ND<0	0.35	-0.35	2	49
ND<0	0.35	-0.35	2	50
ND<0	0.35	-0.35	2	51
ND<0	0.35	-0.35	2	52
ND<0	0.35	-0.35	2	53
0.089	0.35	-0.261	2	54
0.089	0.35	-0.261	2	55
0.15	0.35	-0.2	2	56
ND<0	0.35	-0.35	2	57
ND<0	0.35	-0.35	2	58
ND<0	0.35	-0.35	2	59
ND<0	0.35	-0.35	2	60
ND<0	0.25	-0.25	2	61
ND<0	0.25	-0.25	2	62
ND<0	0.25	-0.25	2	63
ND<0	0.25	-0.25	2	64
ND<0	0.25	-0.25	2	65
ND<0	0.25	-0.25	2	66
0.089	0.25	-0.161	2	67
0.089	0.25	-0.161	2	68
0.15	0.25	-0.1	2	69
ND<0	0.25	-0.25	2	70
ND<0	0.25	-0.25	2	71
ND<0	0.25	-0.25	2	72
ND<0	0.25	-0.25	2	73
ND<0	ND<0	0	2	73
ND<0	ND<0	0	2	73
ND<0	ND<0	0	2	73
ND<0	ND<0	0	2	73
ND<0	ND<0	0	2	73
0.089	ND<0	0.089	3	73
0.089	ND<0	0.089	4	73
0.15	ND<0	0.15	5	73
ND<0	ND<0	0	5	73
ND<0	ND<0	0	5	73
ND<0	ND<0	0	5	73
ND<0	ND<0	0	5	73
ND<0	ND<0	0	5	73
ND<0	ND<0	0	5	73
ND<0	ND<0	0	5	73
ND<0	ND<0	0	5	73
0.089	ND<0	0.089	6	73
0.089	ND<0	0.089	7	73
0.15	ND<0	0.15	8	73
ND<0	ND<0	0	8	73
ND<0	ND<0	0	8	73
ND<0	ND<0	0	8	73
ND<0	ND<0	0	8	73

ND<0	ND<0	0	8	73
ND<0	ND<0	0	8	73
ND<0	ND<0	0	8	73
0.089	ND<0	0.089	9	73
0.089	ND<0	0.089	10	73
0.15	ND<0	0.15	11	73
ND<0	ND<0	0	11	73
ND<0	ND<0	0	11	73
ND<0	ND<0	0	11	73
ND<0	ND<0	0	11	73
ND<0	ND<0	0	11	73
ND<0	ND<0	0	11	73
0.089	ND<0	0.089	12	73
0.089	ND<0	0.089	13	73
0.15	ND<0	0.15	14	73
ND<0	ND<0	0	14	73
ND<0	ND<0	0	14	73
ND<0	ND<0	0	14	73
ND<0	ND<0	0	14	73
ND<0	ND<0	0	14	73
0.089	ND<0	0.089	15	73
0.089	ND<0	0.089	16	73
0.15	ND<0	0.15	17	73
ND<0	ND<0	0	17	73
ND<0	ND<0	0	17	73
ND<0	ND<0	0	17	73
ND<0	ND<0	0	17	73
0.089	ND<0	0.089	18	73
0.089	ND<0	0.089	19	73
0.15	ND<0	0.15	20	73
ND<0	ND<0	0	20	73
ND<0	ND<0	0	20	73
ND<0	ND<0	0	20	73
ND<0	ND<0	0	20	73
0.089	0.089	0	20	73
0.15	0.089	0.061	21	73
ND<0	0.089	-0.089	21	74
ND<0	0.089	-0.089	21	75
ND<0	0.089	-0.089	21	76
ND<0	0.089	-0.089	21	77
0.15	0.089	0.061	22	77
ND<0	0.089	-0.089	22	78
ND<0	0.089	-0.089	22	79
ND<0	0.089	-0.089	22	80
ND<0	0.089	-0.089	22	81
ND<0	0.15	-0.15	22	82
ND<0	0.15	-0.15	22	83
ND<0	0.15	-0.15	22	84
ND<0	0.15	-0.15	22	85

ND<0	ND<0	0	22	85
ND<0	ND<0	0	22	85
ND<0	ND<0	0	22	85
ND<0	ND<0	0	22	85
ND<0	ND<0	0	22	85
ND<0	ND<0	0	22	85

S Statistic = 22 - 85 = -63

Tied Group	Value	Members
1	0	10
2	0.089	2

Time Period	Observations
12/9/2004	1
3/24/2006	1
6/13/2006	1
9/27/2006	1
12/6/2006	1
6/28/2007	1
12/14/2007	1
6/10/2008	1
12/9/2008	1
6/26/2009	1
12/11/2009	1
11/29/2010	1
12/8/2010	1
4/11/2011	1
10/13/2011	1
1/24/2012	1
4/18/2012	1
10/13/2012	1

There are 0 time periods with multiple data

A = 2268
B = 0
C = 720
D = 0
E = 92
F = 0
a = 12546
b = 44064
c = 612
Group Variance = 571
Z-Score = -2.59462
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-2.59462| > 1.97737 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium VI
Location: C-1-CW05
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
0.16	ND<0	0.16	1	0
0.033	ND<0	0.033	2	0
0.071	ND<0	0.071	3	0
0.13	ND<0	0.13	4	0
ND<0	ND<0	0	4	0
ND<0	ND<0	0	4	0
ND<0	ND<0	0	4	0
ND<0	ND<0	0	4	0
ND<0	ND<0	0	4	0
ND<0	ND<0	0	4	0
ND<0	ND<0	0	4	0
ND<0	ND<0	0	4	0
ND<0	ND<0	0	4	0
ND<0	ND<0	0	4	0
ND<0	ND<0	0	4	0
ND<0	ND<0	0	4	0
0.033	0.16	-0.127	4	1
0.071	0.16	-0.089	4	2
0.13	0.16	-0.03	4	3
ND<0	0.16	-0.16	4	4
ND<0	0.16	-0.16	4	5
ND<0	0.16	-0.16	4	6
ND<0	0.16	-0.16	4	7
ND<0	0.16	-0.16	4	8
ND<0	0.16	-0.16	4	9
ND<0	0.16	-0.16	4	10
ND<0	0.16	-0.16	4	11
ND<0	0.16	-0.16	4	12
ND<0	0.16	-0.16	4	13
ND<0	0.16	-0.16	4	14
ND<0	0.16	-0.16	4	15
0.071	0.033	0.038	5	15
0.13	0.033	0.097	6	15
ND<0	0.033	-0.033	6	16
ND<0	0.033	-0.033	6	17
ND<0	0.033	-0.033	6	18
ND<0	0.033	-0.033	6	19
ND<0	0.033	-0.033	6	20
ND<0	0.033	-0.033	6	21
ND<0	0.033	-0.033	6	22
ND<0	0.033	-0.033	6	23
ND<0	0.033	-0.033	6	24
ND<0	0.033	-0.033	6	25
ND<0	0.033	-0.033	6	26
ND<0	0.033	-0.033	6	27

0.13	0.071	0.059	7	27
ND<0	0.071	-0.071	7	28
ND<0	0.071	-0.071	7	29
ND<0	0.071	-0.071	7	30
ND<0	0.071	-0.071	7	31
ND<0	0.071	-0.071	7	32
ND<0	0.071	-0.071	7	33
ND<0	0.071	-0.071	7	34
ND<0	0.071	-0.071	7	35
ND<0	0.071	-0.071	7	36
ND<0	0.071	-0.071	7	37
ND<0	0.071	-0.071	7	38
ND<0	0.071	-0.071	7	39
ND<0	0.13	-0.13	7	40
ND<0	0.13	-0.13	7	41
ND<0	0.13	-0.13	7	42
ND<0	0.13	-0.13	7	43
ND<0	0.13	-0.13	7	44
ND<0	0.13	-0.13	7	45
ND<0	0.13	-0.13	7	46
ND<0	0.13	-0.13	7	47
ND<0	0.13	-0.13	7	48
ND<0	0.13	-0.13	7	49
ND<0	0.13	-0.13	7	50
ND<0	0.13	-0.13	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51

ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51
ND<0	ND<0	0	7	51

S Statistic = 7 - 51 = -44

Tied Group	Value	Members
1	0	13

Time Period	Observations
3/23/2004	1
3/24/2006	1

6/15/2006	1
9/26/2006	1
12/6/2006	1
6/28/2007	1
12/17/2007	1
6/6/2008	1
12/11/2008	1
6/26/2009	1
12/14/2009	1
11/29/2010	1
12/8/2010	1
4/14/2011	1
10/12/2011	1
4/16/2012	1
10/11/2012	1

There are 0 time periods with multiple data

A = 4836
B = 0
C = 1716
D = 0
E = 156
F = 0
a = 10608
b = 36720
c = 544
Group Variance = 320.667
Z-Score = -2.40127
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-2.40127| > 1.97737 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium VI
Location: C-1-CW08
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
0.88	0.96	-0.08	0	1
0.55	0.96	-0.41	0	2
0.4	0.96	-0.56	0	3
0.44	0.96	-0.52	0	4
0.33	0.96	-0.63	0	5
ND<0	0.96	-0.96	0	6
ND<0	0.96	-0.96	0	7
ND<0	0.96	-0.96	0	8
ND<0	0.96	-0.96	0	9
0.137	0.96	-0.823	0	10
ND<0	0.96	-0.96	0	11
0.058	0.96	-0.902	0	12
0.058	0.96	-0.902	0	13
0.59	0.96	-0.37	0	14
ND<0	0.96	-0.96	0	15
ND<0	0.96	-0.96	0	16
ND<0	0.96	-0.96	0	17
0.55	0.88	-0.33	0	18
0.4	0.88	-0.48	0	19
0.44	0.88	-0.44	0	20
0.33	0.88	-0.55	0	21
ND<0	0.88	-0.88	0	22
ND<0	0.88	-0.88	0	23
ND<0	0.88	-0.88	0	24
ND<0	0.88	-0.88	0	25
0.137	0.88	-0.743	0	26
ND<0	0.88	-0.88	0	27
0.058	0.88	-0.822	0	28
0.058	0.88	-0.822	0	29
0.59	0.88	-0.29	0	30
ND<0	0.88	-0.88	0	31
ND<0	0.88	-0.88	0	32
ND<0	0.88	-0.88	0	33
0.4	0.55	-0.15	0	34
0.44	0.55	-0.11	0	35
0.33	0.55	-0.22	0	36
ND<0	0.55	-0.55	0	37
ND<0	0.55	-0.55	0	38
ND<0	0.55	-0.55	0	39
ND<0	0.55	-0.55	0	40
0.137	0.55	-0.413	0	41
ND<0	0.55	-0.55	0	42
0.058	0.55	-0.492	0	43
0.058	0.55	-0.492	0	44
0.59	0.55	0.04	1	44

ND<0	0.55	-0.55	1	45
ND<0	0.55	-0.55	1	46
ND<0	0.55	-0.55	1	47
0.44	0.4	0.04	2	47
0.33	0.4	-0.07	2	48
ND<0	0.4	-0.4	2	49
ND<0	0.4	-0.4	2	50
ND<0	0.4	-0.4	2	51
ND<0	0.4	-0.4	2	52
0.137	0.4	-0.263	2	53
ND<0	0.4	-0.4	2	54
0.058	0.4	-0.342	2	55
0.058	0.4	-0.342	2	56
0.59	0.4	0.19	3	56
ND<0	0.4	-0.4	3	57
ND<0	0.4	-0.4	3	58
ND<0	0.4	-0.4	3	59
0.33	0.44	-0.11	3	60
ND<0	0.44	-0.44	3	61
ND<0	0.44	-0.44	3	62
ND<0	0.44	-0.44	3	63
ND<0	0.44	-0.44	3	64
0.137	0.44	-0.303	3	65
ND<0	0.44	-0.44	3	66
0.058	0.44	-0.382	3	67
0.058	0.44	-0.382	3	68
0.59	0.44	0.15	4	68
ND<0	0.44	-0.44	4	69
ND<0	0.44	-0.44	4	70
ND<0	0.44	-0.44	4	71
ND<0	0.33	-0.33	4	72
ND<0	0.33	-0.33	4	73
ND<0	0.33	-0.33	4	74
ND<0	0.33	-0.33	4	75
0.137	0.33	-0.193	4	76
ND<0	0.33	-0.33	4	77
0.058	0.33	-0.272	4	78
0.058	0.33	-0.272	4	79
0.59	0.33	0.26	5	79
ND<0	0.33	-0.33	5	80
ND<0	0.33	-0.33	5	81
ND<0	0.33	-0.33	5	82
ND<0	ND<0	0	5	82
ND<0	ND<0	0	5	82
ND<0	ND<0	0	5	82
0.137	ND<0	0.137	6	82
ND<0	ND<0	0	6	82
0.058	ND<0	0.058	7	82
0.058	ND<0	0.058	8	82
0.59	ND<0	0.59	9	82
ND<0	ND<0	0	9	82
ND<0	ND<0	0	9	82
ND<0	ND<0	0	9	82

ND<0	ND<0	0	9	82
ND<0	ND<0	0	9	82
0.137	ND<0	0.137	10	82
ND<0	ND<0	0	10	82
0.058	ND<0	0.058	11	82
0.058	ND<0	0.058	12	82
0.59	ND<0	0.59	13	82
ND<0	ND<0	0	13	82
ND<0	ND<0	0	13	82
ND<0	ND<0	0	13	82
ND<0	ND<0	0	13	82
0.137	ND<0	0.137	14	82
ND<0	ND<0	0	14	82
0.058	ND<0	0.058	15	82
0.058	ND<0	0.058	16	82
0.59	ND<0	0.59	17	82
ND<0	ND<0	0	17	82
ND<0	ND<0	0	17	82
ND<0	ND<0	0	17	82
0.137	ND<0	0.137	18	82
ND<0	ND<0	0	18	82
0.058	ND<0	0.058	19	82
0.058	ND<0	0.058	20	82
0.59	ND<0	0.59	21	82
ND<0	ND<0	0	21	82
ND<0	ND<0	0	21	82
ND<0	ND<0	0	21	82
ND<0	0.137	-0.137	21	83
0.058	0.137	-0.079	21	84
0.058	0.137	-0.079	21	85
0.59	0.137	0.453	22	85
ND<0	0.137	-0.137	22	86
ND<0	0.137	-0.137	22	87
ND<0	0.137	-0.137	22	88
0.058	ND<0	0.058	23	88
0.058	ND<0	0.058	24	88
0.59	ND<0	0.59	25	88
ND<0	ND<0	0	25	88
ND<0	ND<0	0	25	88
ND<0	ND<0	0	25	88
0.058	0.058	0	25	88
0.59	0.058	0.532	26	88
ND<0	0.058	-0.058	26	89
ND<0	0.058	-0.058	26	90
ND<0	0.058	-0.058	26	91
0.59	0.058	0.532	27	91
ND<0	0.058	-0.058	27	92
ND<0	0.058	-0.058	27	93
ND<0	0.058	-0.058	27	94

ND<0	0.59	-0.59	27	95
ND<0	0.59	-0.59	27	96
ND<0	0.59	-0.59	27	97
ND<0	ND<0	0	27	97
ND<0	ND<0	0	27	97
ND<0	ND<0	0	27	97

S Statistic = 27 - 97 = -70

Tied Group	Value	Members
1	0	8
2	0.058	2

Time Period	Observations
12/9/2004	1
12/19/2005	1
3/27/2006	1
6/15/2006	1
9/26/2006	1
12/13/2006	1
6/28/2007	1
12/13/2007	1
6/6/2008	1
12/10/2008	1
6/30/2009	1
12/11/2009	1
11/29/2010	1
12/9/2010	1
4/7/2011	1
10/6/2011	1
4/17/2012	1
10/13/2012	1

There are 0 time periods with multiple data

A = 1194
B = 0
C = 336
D = 0
E = 58
F = 0
a = 12546
b = 44064
c = 612
Group Variance = 630.667
Z-Score = -2.74757
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-2.74757| > 1.97737 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium VI
Location: 3850N
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
50.6	30.4	20.2	1	0
27.8	30.4	-2.6	1	1
42.2	30.4	11.8	2	1
52.3	30.4	21.9	3	1
17	30.4	-13.4	3	2
14	30.4	-16.4	3	3
3.4	30.4	-27	3	4
4.94	30.4	-25.46	3	5
1	30.4	-29.4	3	6
27.8	50.6	-22.8	3	7
42.2	50.6	-8.4	3	8
52.3	50.6	1.7	4	8
17	50.6	-33.6	4	9
14	50.6	-36.6	4	10
3.4	50.6	-47.2	4	11
4.94	50.6	-45.66	4	12
1	50.6	-49.6	4	13
42.2	27.8	14.4	5	13
52.3	27.8	24.5	6	13
17	27.8	-10.8	6	14
14	27.8	-13.8	6	15
3.4	27.8	-24.4	6	16
4.94	27.8	-22.86	6	17
1	27.8	-26.8	6	18
52.3	42.2	10.1	7	18
17	42.2	-25.2	7	19
14	42.2	-28.2	7	20
3.4	42.2	-38.8	7	21
4.94	42.2	-37.26	7	22
1	42.2	-41.2	7	23
17	52.3	-35.3	7	24
14	52.3	-38.3	7	25
3.4	52.3	-48.9	7	26
4.94	52.3	-47.36	7	27
1	52.3	-51.3	7	28
14	17	-3	7	29
3.4	17	-13.6	7	30
4.94	17	-12.06	7	31
1	17	-16	7	32
3.4	14	-10.6	7	33
4.94	14	-9.06	7	34

1	14	-13	7	35
4.94	3.4	1.54	8	35
1	3.4	-2.4	8	36
1	4.94	-3.94	8	37

S Statistic = 8 - 37 = -29
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-29| is 0.0092
0.0092 < 0.05 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium VI
Location: C-1-CW03
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
0.155	ND<0	0.155	1	0
ND<0	ND<0	0	1	0
ND<0	ND<0	0	1	0
ND<0	ND<0	0	1	0
0.12	ND<0	0.12	2	0
0.12	ND<0	0.12	3	0
0.61	ND<0	0.61	4	0
0.67	ND<0	0.67	5	0
0.2	ND<0	0.2	6	0
0.4	ND<0	0.4	7	0
ND<0	0.155	-0.155	7	1
ND<0	0.155	-0.155	7	2
ND<0	0.155	-0.155	7	3
0.12	0.155	-0.035	7	4
0.12	0.155	-0.035	7	5
0.61	0.155	0.455	8	5
0.67	0.155	0.515	9	5
0.2	0.155	0.045	10	5
0.4	0.155	0.245	11	5
ND<0	ND<0	0	11	5
ND<0	ND<0	0	11	5
0.12	ND<0	0.12	12	5
0.12	ND<0	0.12	13	5
0.61	ND<0	0.61	14	5
0.67	ND<0	0.67	15	5
0.2	ND<0	0.2	16	5
0.4	ND<0	0.4	17	5
ND<0	ND<0	0	17	5
0.12	ND<0	0.12	18	5
0.12	ND<0	0.12	19	5
0.61	ND<0	0.61	20	5
0.67	ND<0	0.67	21	5
0.2	ND<0	0.2	22	5
0.4	ND<0	0.4	23	5
0.12	ND<0	0.12	24	5
0.12	ND<0	0.12	25	5
0.61	ND<0	0.61	26	5
0.67	ND<0	0.67	27	5
0.2	ND<0	0.2	28	5
0.4	ND<0	0.4	29	5
0.12	0.12	0	29	5
0.61	0.12	0.49	30	5

0.67	0.12	0.55	31	5
0.2	0.12	0.08	32	5
0.4	0.12	0.28	33	5
0.61	0.12	0.49	34	5
0.67	0.12	0.55	35	5
0.2	0.12	0.08	36	5
0.4	0.12	0.28	37	5
0.67	0.61	0.06	38	5
0.2	0.61	-0.41	38	6
0.4	0.61	-0.21	38	7
0.2	0.67	-0.47	38	8
0.4	0.67	-0.27	38	9
0.4	0.2	0.2	39	9

S Statistic = 39 - 9 = 30

Tied Group	Value	Members
1	0	4
2	0.12	2

Time Period	Observations
12/14/2007	1
6/5/2008	1
12/10/2008	1
7/1/2009	1
12/11/2009	1
11/29/2010	1
12/3/2010	1
4/14/2011	1
10/12/2011	1
4/13/2012	1
10/12/2012	1

There are 0 time periods with multiple data

A = 174
B = 0
C = 24
D = 0
E = 14
F = 0
a = 2970
b = 8910
c = 220
Group Variance = 155.333
Z-Score = 2.32684
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|2.32684| > 1.97737 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chromium VI
Location: MW-08
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0	ND<0	0	0	0
1.2	ND<0	1.2	1	0
1.6	ND<0	1.6	2	0
1.6	ND<0	1.6	3	0
1.59	ND<0	1.59	4	0
1.96	ND<0	1.96	5	0
1.2	ND<0	1.2	6	0
1.6	ND<0	1.6	7	0
1.6	ND<0	1.6	8	0
1.59	ND<0	1.59	9	0
1.96	ND<0	1.96	10	0
1.6	1.2	0.4	11	0
1.6	1.2	0.4	12	0
1.59	1.2	0.39	13	0
1.96	1.2	0.76	14	0
1.6	1.6	0	14	0
1.59	1.6	-0.01	14	1
1.96	1.6	0.36	15	1
1.59	1.6	-0.01	15	2
1.96	1.6	0.36	16	2
1.96	1.59	0.37	17	2

S Statistic = 17 - 2 = 15
Comparing at 1.0 - (0.1 / 2) = 95% confidence level (two-tailed)
Probability of obtaining S >= |15| is 0.03
0.03 < 0.1 indicating a trend

Coefficient of Variation

Parameter: 1,2,3-Trichloropropane

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3880	2	0	0	Div 0
4948	1	0	Div 0	Div 0
3830Q	15	0.0934933	0.171024	**1.82927**
3830S	21	0.0739524	0.186395	**2.52047**
3831Q	4	0.27	0.315251	**1.1676**
3850M	10	0	0	Div 0
3850N	21	1.47562	2.55891	**1.73413**
3850P	2	0	0	Div 0
3850R	21	9.04762e-005	0.000414614	**4.58258**
3850T	1	0.17	Div 0	0
3850U	3	0.0163333	0.0282902	**1.73205**
3850V	12	0.057425	0.150405	**2.61915**
3850W	8	0	0	Div 0
3851M	14	0.0359286	0.0786682	**2.18957**
3851N	12	0.00591667	0.0157044	**2.65427**
3852F	9	0	0	Div 0
3852H	12	0.191667	0.290762	**1.51702**
3852K	1	0.58	Div 0	0
3852L	12	0.00341667	0.00914985	**2.678**
3852M	1	0.027	Div 0	0
3852N	1	0.018	Div 0	0
3860H	2	0	0	Div 0
3860J	11	0	0	Div 0
3860K	13	20.8269	22.6052	**1.08539**
3861D	9	0	0	Div 0
3861F	9	0.00744444	0.0147742	**1.9846**
3862C	10	0	0	Div 0
3862D	10	0.0046	0.0107827	**2.34407**
3862E	12	0.00358333	0.00929769	**2.5947**
3871G	10	0.017	0.0394546	**2.32086**
3871H	2	0.18	0.254558	**1.41421**
3871J	1	0	Div 0	Div 0
3872K	8	0.24	0.333338	**1.38891**
3872M	12	0.475	1.64545	**3.4641**
3872P	1	0	Div 0	Div 0
3872Q	9	0.296	0.220027	0.743335
3872R	1	0.15	Div 0	0
3872S	1	0.0083	Div 0	0
4949C	6	0	0	Div 0
4959E	1	0	Div 0	Div 0
4959G	1	0	Div 0	Div 0
4959H	7	0	0	Div 0
4959J	1	0	Div 0	Div 0
4959K	10	0	0	Div 0
A-1-CW05	10	0	0	Div 0
A-1-CW07	16	75.9063	50.1592	0.660804
A-1-CW08	8	52.05	30.4809	0.585607

A-1-CW09	22	2.43359	2.95512	**1.2143**
B-1-CW12	23	0.0231	0.0914309	**3.95805**
B-1-CW13	22	14.4023	16.7698	**1.16438**
B-1-CW16	16	0	0	Div 0
B-1-CW17	23	0.568883	2.70989	**4.76354**
B-1-CW20	23	0	0	Div 0
B-1-CW25	26	0.0610385	0.208547	**3.41665**
B-1-CW27	23	0.0137783	0.0562243	**4.08065**
B-1-CW28	24	0.000333333	0.00163299	**4.89898**
B-1-CW29	13	0	0	Div 0
B-5-CW02	20	0.0015	0.0067082	**4.47214**
B-5-CW03	15	33.8	19.2876	0.570639
B-6-CW01	11	0	0	Div 0
B-6-CW02	14	0.0472286	0.145384	**3.0783**
B-6-CW03R	9	0.000666667	0.00132382	**1.98573**
B-6-CW08	5	0.244	0.545601	**2.23607**
B-6-CW09	6	0.00158333	0.00177586	**1.12159**
B-6-CW14	9	0.327978	0.65996	**2.01221**
B-6-CW16	13	0.0435385	0.155186	**3.56435**
B-6-CW17	9	0.0886	0.263028	**2.96871**
C-1-CW02	20	0.089555	0.379591	**4.23864**
C-1-CW03	18	0.0307111	0.113326	**3.69006**
C-1-CW05	17	0.0034	0.0121004	**3.55895**
C-1-CW06	17	0.000117647	0.000485071	**4.12311**
C-1-CW08	18	0.00637778	0.0258723	**4.05663**
MW-01	2	4.75	3.04056	0.640118
MW-02	2	0.85	0.0707107	0.083189
MW-03	13	2.44192	2.22616	0.911641
MW-04	11	0.517273	0.480998	0.929872
MW-05	13	1.91308	2.13339	**1.11516**
MW-06	11	1.33891	2.12502	**1.58713**
MW-07	12	0.168417	0.195998	**1.16377**
MW-08	11	0.819818	0.861908	**1.05134**

All Locations

Obs.	Mean	Std. Dev.	CV
855	3.45404	15.0557	**4.35887**

Coefficient of Variation

Parameter: 1,4-Dioxane

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3830Q	15	0	0	Div 0
3830S	16	1.03125	1.12114	**1.08717**
3831Q	3	0.78	0.069282	0.0888231
3850N	14	1.68571	2.34024	**1.38828**
3850R	2	0	0	Div 0
3850T	1	0.9	Div 0	0
3850U	1	1.3	Div 0	0
3850V	8	0.775	2.19203	**2.82843**
3851M	3	0	0	Div 0
3851N	2	0	0	Div 0
3852F	2	0	0	Div 0
3852H	2	0	0	Div 0
3852K	1	0.5	Div 0	0
3852L	1	0	Div 0	Div 0
3852M	1	0	Div 0	Div 0
3852N	1	0	Div 0	Div 0
3860H	1	2.4	Div 0	0
3860K	1	0	Div 0	Div 0
3861D	1	0	Div 0	Div 0
3861F	1	0	Div 0	Div 0
3862D	2	0	0	Div 0
3862E	2	0	0	Div 0
3871G	1	0	Div 0	Div 0
3871J	1	0	Div 0	Div 0
3872K	2	0	0	Div 0
3872M	2	0	0	Div 0
3872P	1	0	Div 0	Div 0
3872Q	9	0	0	Div 0
3872R	1	0	Div 0	Div 0
3872S	1	0	Div 0	Div 0
4949C	1	0	Div 0	Div 0
4959G	1	0	Div 0	Div 0
A-1-CW07	10	0.3	0.639444	**2.13148**
A-1-CW08	6	0.533333	0.864099	**1.62019**
A-1-CW09	3	0.466667	0.80829	**1.73205**
B-1-CW12	8	0.775	2.19203	**2.82843**
B-1-CW13	11	0.279091	0.481673	**1.72586**
B-1-CW16	1	0	Div 0	Div 0
B-1-CW17	7	0	0	Div 0
B-1-CW20	4	0	0	Div 0
B-1-CW25	1	0	Div 0	Div 0
B-1-CW27	14	0	0	Div 0
B-1-CW28	2	0	0	Div 0
B-5-CW02	16	0.71875	0.86195	**1.19924**
B-5-CW03	13	1.52308	2.17108	**1.42546**
B-6-CW01	2	0	0	Div 0
B-6-CW02	9	0	0	Div 0

B-6-CW03R	4	0	0	Div 0
B-6-CW08	5	0.11	0.245967	**2.23607**
B-6-CW09	5	0.128	0.286217	**2.23607**
B-6-CW14	8	0.4	0.552914	**1.38229**
B-6-CW16	7	0	0	Div 0
B-6-CW17	8	0.19375	0.363119	**1.87416**
C-1-CW02	15	0.22	0.457009	**2.07731**
C-1-CW03	14	1.30714	1.52238	**1.16466**
C-1-CW05	14	0.0292857	0.109577	**3.74166**
C-1-CW06	13	0.176923	0.432346	**2.44369**
C-1-CW08	16	0.75	1.10393	**1.47191**
MW-01	2	3	2.68701	0.895669
MW-02	2	0.325	0.459619	**1.41421**
MW-03	13	0.561538	0.921537	**1.64109**
MW-04	11	0.0654545	0.217088	**3.31662**
MW-05	13	0.108462	0.269625	**2.4859**
MW-06	12	0.333333	0.618405	**1.85521**
MW-07	12	0	0	Div 0
MW-08	12	1.51667	2.56651	**1.6922**

All Locations

Obs.	Mean	Std. Dev.	CV
394	0.463046	1.14041	**2.46285**

Coefficient of Variation

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3880	9	16.6856	22.5556	**1.3518**
3830Q	13	2.29385	2.67027	**1.1641**
3830S	16	4.88438	7.02063	**1.43736**
3831Q	2	4.75	6.71751	**1.41421**
3850M	6	4.68333	7.04285	**1.50381**
3850N	17	27.3312	14.1336	0.517123
3850R	7	0.571429	1.51186	**2.64575**
3850V	3	1.33333	2.3094	**1.73205**
3850W	4	3.185	1.88928	0.59318
3851M	12	1.225	1.95594	**1.59668**
3851N	4	0.75	1.5	**2**
3852F	3	1	1.73205	**1.73205**
3852H	4	0.75	1.5	**2**
3852L	4	20.1325	32.6274	**1.62063**
3852N	1	0	Div 0	Div 0
3860H	1	21.4	Div 0	0
3860J	3	6.7	0.282135	0.0421097
3860K	5	0	0	Div 0
3861D	3	7.78333	3.69519	0.474757
3861F	4	1	2	**2**
3862C	2	2	2.82843	**1.41421**
3862D	4	19.3	5.22111	0.270524
3862E	4	0	0	Div 0
3871G	10	11.042	11.8842	**1.07627**
3871H	1	12.8	Div 0	0
3871J	1	9.58	Div 0	0
3872K	4	9.505	4.47543	0.47085
3872M	4	2	4	**2**
3872Q	10	3.014	3.31754	**1.10071**
4949C	2	4.815	0.26163	0.0543363
4959E	8	1.14625	1.47347	**1.28547**
4959G	1	5.18	Div 0	0
4959H	9	2.44	2.36772	0.970375
4959J	7	2.39571	2.45346	**1.0241**
4959K	7	12.76	8.75931	0.686466
A-1-CW05	3	0	0	Div 0
A-1-CW07	15	3.43133	2.61893	0.763239
A-1-CW08	4	1.5	1.73205	**1.1547**
A-1-CW09	8	6.4625	16.3523	**2.53033**
B-1-CW12	21	31.5429	32.9171	**1.04357**
B-1-CW13	10	0.559	1.76771	**3.16228**
B-1-CW16	6	4.39167	3.92736	0.894276
B-1-CW17	24	39.0125	15.2118	0.389922
B-1-CW20	10	4.62	3.43936	0.744451
B-1-CW25	11	6.92727	6.30476	0.910136
B-1-CW27	9	3.52667	3.46171	0.981581
B-1-CW28	10	1.098	2.32628	**2.11866**

B-1-CW29	4	42.525	57.0237	**1.34095**
B-5-CW02	17	1.66471	2.81484	**1.69089**
B-5-CW03	13	3.39846	3.16034	0.929932
B-6-CW01	10	3.03	2.63226	0.868732
B-6-CW02	9	1	3	**3**
B-6-CW03R	7	0.184286	0.487574	**2.64575**
B-6-CW08	7	0.607143	1.0394	**1.71196**
B-6-CW09	5	2.448	2.33159	0.952448
B-6-CW14	8	1.6125	1.38757	0.860512
B-6-CW16	13	0.969231	1.57448	**1.62446**
B-6-CW17	8	2.59375	4.25713	**1.6413**
C-1-CW02	17	1.35588	2.15524	**1.58954**
C-1-CW03	17	2.22	2.68665	**1.2102**
C-1-CW05	15	1.27867	2.07184	**1.62031**
C-1-CW06	16	2.26187	2.82177	**1.24754**
C-1-CW07	1	0	Div 0	Div 0
C-1-CW08	16	4.26563	10.4538	**2.45071**
MW-01	2	2.5	3.53553	**1.41421**
MW-02	2	6	8.48528	**1.41421**
MW-03	13	2.93769	3.55529	**1.21023**
MW-04	11	2.69545	2.0922	0.776194
MW-05	13	3.64462	3.3384	0.915981
MW-06	11	4.06182	3.42911	0.844231
MW-07	12	3.31583	3.63248	**1.0955**
MW-08	12	3.6875	3.16489	0.858275

All Locations

Obs.	Mean	Std. Dev.	CV
585	6.99585	14.2831	**2.04165**

Coefficient of Variation

Parameter: Chromium VI

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3880	9	6.07111	3.33278	0.548958
3830Q	15	0.0866667	0.148645	**1.71513**
3830S	17	3.80888	4.90329	**1.28733**
3831Q	4	3.575	0.818026	0.228818
3850M	3	5.55233	8.19549	**1.47604**
3850N	17	24.4494	16.1464	0.660402
3850R	4	0.12575	0.194505	**1.54676**
3850T	1	2.2	Div 0	0
3850U	1	1.4	Div 0	0
3850V	1	1.5	Div 0	0
3850W	3	1.7	0.52915	0.311265
3851M	11	1.24909	0.695147	0.556522
3851N	3	0.403333	0.061101	0.15149
3852F	3	1.63333	0.057735	0.035348
3852H	3	0.95	0.043589	0.0458831
3852K	1	1.7	Div 0	0
3852L	3	1.34667	0.482217	0.358082
3852M	1	0.4	Div 0	0
3852N	1	1.8	Div 0	0
3860H	2	25	12.7279	0.509117
3860J	2	4.1	0.282843	0.068986
3860K	3	3.13333	0.650641	0.207651
3861D	2	4.95	1.20208	0.242845
3861F	3	2.13333	0.11547	0.0541266
3862C	1	0.5	Div 0	0
3862D	3	20.6667	3.78594	0.183191
3862E	3	1.66667	0.568624	0.341174
3871G	9	3.21667	2.67868	0.832749
3871H	1	7.8	Div 0	0
3871J	1	6.4	Div 0	0
3872K	3	4.1	0.964365	0.235211
3872M	2	3.2	0	0
3872P	1	3.2	Div 0	0
3872Q	10	2.5267	1.7873	0.707366
3872R	1	13	Div 0	0
3872S	1	7.4	Div 0	0
4949C	1	1.2	Div 0	0
4959E	8	1.37125	0.329304	0.240149
4959G	1	1.7	Div 0	0
4959H	9	179.007	532.872	**2.97682**
4959J	7	2	0.857982	0.428991
4959K	6	11.85	8.46658	0.714479
A-1-CW05	1	0.37	Div 0	0
A-1-CW07	13	1.31585	1.07655	0.81814
A-1-CW08	1	2.2	Div 0	0
A-1-CW09	5	31.38	47.2984	**1.50728**
B-1-CW12	21	15.7814	6.1892	0.392183

B-1-CW13	4	2.225	0.917878	0.412529
B-1-CW16	2	4.15	0.353553	0.0851936
B-1-CW17	24	35.6708	14.735	0.413084
B-1-CW20	5	4.38	0.571839	0.130557
B-1-CW25	4	10.32	7.15115	0.692941
B-1-CW27	3	3.96667	1.0116	0.255025
B-1-CW28	3	0.66	0.0916515	0.138866
B-1-CW29	1	8.9	Div 0	0
B-5-CW02	18	0.121	0.180962	**1.49555**
B-5-CW03	15	0.894533	0.622864	0.696301
B-6-CW01	7	3.29714	0.794181	0.24087
B-6-CW02	10	0.591	0.336019	0.56856
B-6-CW03R	6	0.0323333	0.0602716	**1.86407**
B-6-CW08	7	0	0	Div 0
B-6-CW09	6	0.03	0.0734847	**2.44949**
B-6-CW14	8	0.619375	0.650495	**1.05024**
B-6-CW16	10	0.8973	0.560317	0.624447
B-6-CW17	8	202.921	564.522	**2.78198**
C-1-CW02	19	0.0186842	0.0384622	**2.05854**
C-1-CW03	18	0.294167	0.307764	**1.04622**
C-1-CW05	17	0.0231765	0.0496856	**2.14379**
C-1-CW06	18	0.802778	0.307271	0.38276
C-1-CW07	1	0.61	Div 0	0
C-1-CW08	18	0.244611	0.321538	**1.31449**
MW-01	2	1.185	0.403051	0.340127
MW-02	2	4.71	2.98399	0.633544
MW-03	13	1.34	0.515606	0.384781
MW-04	11	1.30727	0.463424	0.354497
MW-05	13	1.86769	0.425346	0.227739
MW-06	12	2.79	0.930933	0.333668
MW-07	12	1.31083	0.451834	0.344692
MW-08	12	1.19583	0.742814	0.621168

All Locations

Obs.	Mean	Std. Dev.	CV
531	11.087	98.4042	**8.8756**

Coefficient of Variation

Parameter: cis-1,2-Dichloroethene

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3880	1	0	Div 0	Div 0
4948	1	0	Div 0	Div 0
3830Q	14	0	0	Div 0
3830S	19	0.38	0.480717	**1.26504**
3831Q	3	0.333333	0.288675	0.866025
3850M	10	0.791	0.822685	**1.04006**
3850N	23	0.991304	1.109	**1.11873**
3850P	1	0	Div 0	Div 0
3850R	21	0	0	Div 0
3850T	1	0	Div 0	Div 0
3850U	2	0	0	Div 0
3850V	12	0	0	Div 0
3850W	8	0	0	Div 0
3851M	11	0	0	Div 0
3851N	12	0	0	Div 0
3852F	9	0	0	Div 0
3852H	12	0	0	Div 0
3852K	1	0	Div 0	Div 0
3852L	12	0	0	Div 0
3852M	1	0	Div 0	Div 0
3860H	1	2.4	Div 0	0
3860J	11	0	0	Div 0
3860K	13	0.827692	1.1305	**1.36585**
3861D	9	0.532222	0.986329	**1.85323**
3861F	9	0	0	Div 0
3862C	10	0	0	Div 0
3862D	10	0.8	0.984367	**1.23046**
3862E	12	0.250833	0.868912	**3.4641**
3871G	8	0	0	Div 0
3871H	1	0	Div 0	Div 0
3872K	8	0	0	Div 0
3872M	12	0	0	Div 0
3872P	1	0	Div 0	Div 0
3872Q	1	0	Div 0	Div 0
3872R	1	0	Div 0	Div 0
3872S	1	0	Div 0	Div 0
4949C	6	0	0	Div 0
4959E	1	0	Div 0	Div 0
4959G	1	0	Div 0	Div 0
4959H	7	0	0	Div 0
4959J	1	0	Div 0	Div 0
4959K	10	0	0	Div 0
A-1-CW05	10	0	0	Div 0
A-1-CW07	17	0.09	0.269583	**2.99537**
A-1-CW08	9	0	0	Div 0
A-1-CW09	22	0.127273	0.596962	**4.69042**
B-1-CW12	22	6.17409	6.05227	0.980269

B-1-CW13	22	0.0895455	0.24958	**2.78719**
B-1-CW16	16	0	0	Div 0
B-1-CW17	23	12.1983	7.62765	0.625306
B-1-CW20	23	0	0	Div 0
B-1-CW25	26	0.0269231	0.137281	**5.09902**
B-1-CW27	22	0	0	Div 0
B-1-CW28	24	0	0	Div 0
B-1-CW29	13	0	0	Div 0
B-5-CW02	20	0	0	Div 0
B-5-CW03	14	0.976429	0.62961	0.64481
B-6-CW01	11	0	0	Div 0
B-6-CW02	13	0	0	Div 0
B-6-CW03R	7	0	0	Div 0
B-6-CW14	1	0	Div 0	Div 0
B-6-CW16	10	0	0	Div 0
B-6-CW17	2	0	0	Div 0
C-1-CW02	20	0.011	0.0491935	**4.47214**
C-1-CW03	18	0.116667	0.247339	**2.12005**
C-1-CW05	16	0	0	Div 0
C-1-CW06	16	0.335	0.478651	**1.42881**
C-1-CW08	16	0	0	Div 0
MW-01	2	0	0	Div 0
MW-02	2	0	0	Div 0
MW-03	13	0.0615385	0.22188	**3.60555**
MW-04	11	0	0	Div 0
MW-05	13	0	0	Div 0
MW-06	12	0	0	Div 0
MW-07	12	0	0	Div 0
MW-08	11	0	0	Div 0

All Locations

Obs.	Mean	Std. Dev.	CV
797	0.644203	2.77963	**4.31484**

Coefficient of Variation

Parameter: Perchlorate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3880	9	3.14778	0.742239	0.235798
3830Q	11	0.148182	0.491463	**3.31662**
3830S	12	0.155833	0.376381	**2.41528**
3831Q	4	113.138	224.577	**1.98499**
3850N	4	0.475	0.95	**2**
3850R	13	0.0346154	0.124808	**3.60555**
3850T	1	1.3	Div 0	0
3850U	1	1.1	Div 0	0
3850V	8	0.2195	0.412514	**1.87933**
3851M	3	0.533333	0.92376	**1.73205**
3851N	2	0	0	Div 0
3852F	2	7400	0	0
3852H	2	0	0	Div 0
3852K	1	0	Div 0	Div 0
3852L	2	0	0	Div 0
3852M	1	0	Div 0	Div 0
3852N	1	0	Div 0	Div 0
3860H	1	2.3	Div 0	0
3860J	8	1.09738	0.613641	0.55919
3860K	9	0.723889	0.612126	0.845608
3861D	1	0	Div 0	Div 0
3861F	2	0	0	Div 0
3862D	2	0	0	Div 0
3862E	2	0	0	Div 0
3871G	2	2.81	1.25865	0.447918
3871H	1	0	Div 0	Div 0
3871J	1	0	Div 0	Div 0
3872K	2	0	0	Div 0
3872M	2	0	0	Div 0
3872P	1	0	Div 0	Div 0
3872Q	9	1.59	1.84809	**1.16232**
3872R	1	1.2	Div 0	0
3872S	1	1	Div 0	0
4949C	1	0.63	Div 0	0
4959G	1	0.47	Div 0	0
A-1-CW07	10	0.5118	0.465853	0.910225
A-1-CW08	7	0.466571	0.651405	**1.39615**
A-1-CW09	3	0.21	0.363731	**1.73205**
B-1-CW12	15	2.21947	0.772028	0.347844
B-1-CW13	11	0.490909	0.479843	0.977458
B-1-CW17	12	2.86083	0.500481	0.174942
B-1-CW20	4	2.1	1.43062	0.681246
B-1-CW25	1	4.2	Div 0	0
B-1-CW27	14	0.852214	0.563659	0.661405
B-1-CW28	2	0.305	0.431335	**1.41421**
B-5-CW02	13	0.314615	0.996382	**3.16698**
B-5-CW03	9	189.765	566.339	**2.98442**

B-6-CW01	1	0	Div 0	Div 0
B-6-CW02	9	0.850444	1.24889	**1.46852**
B-6-CW03R	4	0.7175	1.09934	**1.53219**
B-6-CW08	5	0.2452	0.342688	**1.39759**
B-6-CW09	5	0.644	1.08337	**1.68224**
B-6-CW14	8	0.0475	0.13435	**2.82843**
B-6-CW16	7	1.17729	0.48312	0.410368
B-6-CW17	8	113.86	321.689	**2.82531**
C-1-CW02	11	0.163636	0.54272	**3.31662**
C-1-CW03	12	0.154167	0.417361	**2.70721**
C-1-CW05	12	0	0	Div 0
C-1-CW06	10	50.5149	157.934	**3.12648**
C-1-CW08	13	0.273231	0.458991	**1.67986**
MW-03	6	0.287833	0.45165	**1.56914**
MW-04	4	0.3315	0.388736	**1.17266**
MW-05	5	0.469	0.451503	0.962693
MW-06	5	0.316	0.462255	**1.46283**
MW-07	6	0.187167	0.290517	**1.55218**
MW-08	6	0.218333	0.344698	**1.57877**

All Locations

Obs.	Mean	Std. Dev.	CV
362	51.4052	558.824	**10.871**

Coefficient of Variation

Parameter: Tetrachloroethene

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3880	1	0.67	Div 0	0
4948	1	25	Div 0	0
3830Q	14	1.75357	0.581809	0.331785
3830S	19	13.1895	3.78387	0.286885
3831Q	3	6.26667	1.32791	0.2119
3850M	10	2817	1648.87	0.585327
3850N	23	386.739	264.772	0.684627
3850P	1	450	Div 0	0
3850R	21	146.905	32.2194	0.219322
3850T	1	160	Div 0	0
3850U	2	1295	855.599	0.660694
3850V	12	519.792	704.146	**1.35467**
3850W	8	455.875	541.51	**1.18785**
3851M	11	21.0282	12.4213	0.590697
3851N	12	27.1467	32.5416	**1.19873**
3852F	9	1.59778	0.651552	0.407786
3852H	12	19.725	3.84167	0.194761
3852K	1	24	Div 0	0
3852L	12	0.339167	0.378717	**1.11661**
3852M	1	25	Div 0	0
3860H	1	750	Div 0	0
3860J	11	39.6936	32.2064	0.811374
3860K	13	4210	1698.69	0.403488
3861D	9	123.844	195.637	**1.5797**
3861F	9	31.1222	14.1177	0.453621
3862C	10	10.039	31.6093	**3.14865**
3862D	10	272.1	133.37	0.490152
3862E	12	86.1083	32.3297	0.375453
3871G	8	270.125	180.571	0.668472
3871H	1	35	Div 0	0
3872K	8	646.25	381.686	0.590616
3872M	12	12.6775	3.81057	0.300577
3872P	1	19	Div 0	0
3872Q	1	990	Div 0	0
3872R	1	740	Div 0	0
3872S	1	0	Div 0	Div 0
4949C	6	17.17	39.1158	**2.27815**
4959E	1	300	Div 0	0
4959G	1	13	Div 0	0
4959H	7	138.571	206.162	**1.48777**
4959J	1	1100	Div 0	0
4959K	10	228.63	233.56	**1.02156**
A-1-CW05	10	92.08	55.8813	0.606877
A-1-CW07	17	487.059	269.629	0.553587
A-1-CW08	10	189.2	88.7866	0.469274
A-1-CW09	22	131.491	119.32	0.907442
B-1-CW12	22	20.8136	11.4039	0.547905

B-1-CW13	20	799.45	547.737	0.685142
B-1-CW16	16	68.8563	95.1081	**1.38126**
B-1-CW17	23	95.3174	33.61	0.352612
B-1-CW20	23	1.75826	2.62261	**1.4916**
B-1-CW25	26	465.988	550.229	**1.18078**
B-1-CW27	22	42.4341	167.017	**3.93591**
B-1-CW28	24	20.8042	10.7056	0.514589
B-1-CW29	12	193.333	173.676	0.898324
B-5-CW02	20	42.91	34.4212	0.802172
B-5-CW03	15	41.1133	15.1019	0.367324
B-6-CW01	11	0	0	Div 0
B-6-CW02	13	0	0	Div 0
B-6-CW03R	7	186.143	367.749	**1.97563**
B-6-CW14	1	130	Div 0	0
B-6-CW16	10	105.72	124.667	**1.17922**
B-6-CW17	2	104.75	7.42462	0.0708794
C-1-CW02	20	2.924	1.30598	0.446643
C-1-CW03	19	12.4489	7.79562	0.626207
C-1-CW05	16	1.13562	0.397475	0.350005
C-1-CW06	17	57.4059	27.4808	0.47871
C-1-CW07	1	180	Div 0	0
C-1-CW08	16	70.6125	42.192	0.597515
MW-01	2	93.5	23.3345	0.249567
MW-02	2	80	16.9706	0.212132
MW-03	13	76.8308	36.0007	0.468572
MW-04	11	53.0909	25.7644	0.485288
MW-05	13	83.0769	32.8094	0.394928
MW-06	12	91.9083	28.898	0.314422
MW-07	12	39.925	9.32583	0.233584
MW-08	12	109.5	47.7008	0.435623

All Locations

Obs.	Mean	Std. Dev.	CV
800	239.919	706.402	**2.94433**

Coefficient of Variation

Parameter: Trichloroethene

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3880	1	0	Div 0	Div 0
4948	1	2.1	Div 0	0
3830Q	14	0.09	0.229615	**2.55128**
3830S	19	66.0421	107	**1.62018**
3831Q	3	121.333	50.8068	0.418738
3850M	10	725	462.631	0.638112
3850N	23	459	353.246	0.769599
3850P	1	42	Div 0	0
3850R	21	10.0776	1.73102	0.171769
3850T	1	75	Div 0	0
3850U	2	180	56.5685	0.31427
3850V	12	42.7	42.6135	0.997975
3850W	8	93.7125	62.6208	0.668223
3851M	11	15.7582	8.22444	0.521916
3851N	12	9.81583	13.0419	**1.32866**
3852F	9	1.34111	1.18367	0.882608
3852H	12	19.6417	2.85162	0.145182
3852K	1	22	Div 0	0
3852L	12	2.29917	1.95177	0.848901
3852M	1	16	Div 0	0
3860H	1	550	Div 0	0
3860J	11	22.1318	23.1311	**1.04515**
3860K	13	798.769	172.481	0.215933
3861D	9	315.408	441.863	**1.40093**
3861F	9	12.0444	4.27759	0.35515
3862C	10	12	37.9473	**3.16228**
3862D	10	679.8	339.53	0.499455
3862E	12	58.725	33.1517	0.564524
3871G	8	117.738	90.5968	0.769481
3871H	1	15	Div 0	0
3872K	8	204.5	107.893	0.527593
3872M	12	4.07917	1.09644	0.268791
3872P	1	4.8	Div 0	0
3872Q	1	310	Div 0	0
3872R	1	330	Div 0	0
3872S	1	0	Div 0	Div 0
4949C	6	9.67333	11.834	**1.22336**
4959E	1	110	Div 0	0
4959G	1	20	Div 0	0
4959H	7	39.8429	37.4126	0.939003
4959J	1	210	Div 0	0
4959K	10	89.83	107.369	**1.19525**
A-1-CW05	10	7.498	2.8562	0.380929
A-1-CW07	17	698.824	321.574	0.460165
A-1-CW08	10	291	154.123	0.529633
A-1-CW09	22	51.2136	34.7893	0.679298
B-1-CW12	22	170	104.059	0.612109

B-1-CW13	20	579.3	317.514	0.5481
B-1-CW16	16	31.9563	46.0789	**1.44194**
B-1-CW17	23	160.435	59.3318	0.369819
B-1-CW20	23	0.278696	0.983964	**3.5306**
B-1-CW25	26	179.442	203.624	**1.13476**
B-1-CW27	22	22.8327	86.4836	**3.7877**
B-1-CW28	24	4.80333	1.33062	0.27702
B-1-CW29	13	18.2538	18.326	**1.00395**
B-5-CW02	20	4.302	5.18473	**1.20519**
B-5-CW03	15	51.5467	17.3205	0.336015
B-6-CW01	11	0	0	Div 0
B-6-CW02	13	0	0	Div 0
B-6-CW03R	7	12.9857	15.828	**1.21888**
B-6-CW14	1	8	Div 0	0
B-6-CW16	10	26.71	23.9885	0.898109
B-6-CW17	2	6.7	0.848528	0.126646
C-1-CW02	19	0.0357895	0.133762	**3.73748**
C-1-CW03	19	0.884737	0.732631	0.828078
C-1-CW05	16	0	0	Div 0
C-1-CW06	17	853.706	378.594	0.443471
C-1-CW07	1	26	Div 0	0
C-1-CW08	16	8.66563	6.51566	0.751897
MW-01	2	47.5	10.6066	0.223297
MW-02	2	61	24.0416	0.394125
MW-03	13	21.5538	10.5446	0.489219
MW-04	11	16.0091	11.7825	0.735987
MW-05	13	35.4385	24.3319	0.686596
MW-06	12	43.8167	19.634	0.448093
MW-07	12	10.2608	3.69921	0.360518
MW-08	12	44.5667	16.7429	0.375683

All Locations

Obs.	Mean	Std. Dev.	CV
800	134.863	267.565	**1.98397**

Coefficient of Variation

Parameter: 1,2,3-Trichloropropane

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3830Q	9	0.155556	0.20088	**1.29137**
3830S	11	0.140909	0.243165	**1.72569**
3831Q	2	0.065	0	0
3850M	6	0	0	Div 0
3850N	8	0.45475	0.75891	**1.66885**
3850R	9	0	0	Div 0
3850V	6	0.108717	0.208033	**1.91354**
3850W	6	0	0	Div 0
3851M	6	0	0	Div 0
3851N	6	0	0	Div 0
3852F	6	0	0	Div 0
3852H	6	0.253333	0.393734	**1.55421**
3852L	6	0	0	Div 0
3860J	6	0	0	Div 0
3860K	6	41.4167	16.1102	0.388978
3861D	4	0	0	Div 0
3861F	3	0	0	Div 0
3862C	6	0	0	Div 0
3862D	4	0	0	Div 0
3862E	6	0	0	Div 0
3871G	6	0	0	Div 0
3872K	3	0	0	Div 0
3872M	6	0	0	Div 0
3872Q	6	0.172333	0.133227	0.773078
4949C	4	0	0	Div 0
4959H	4	0	0	Div 0
4959K	6	0	0	Div 0
A-1-CW05	6	0	0	Div 0
A-1-CW07	8	75.5625	36.3549	0.481124
A-1-CW08	3	83.8667	14.9484	0.17824
A-1-CW09	10	2.957	3.62804	**1.22693**
B-1-CW12	10	0.04419	0.139075	**3.1472**
B-1-CW13	7	25.3671	17.0407	0.671763
B-1-CW16	6	0	0	Div 0
B-1-CW17	10	0.00333	0.0062304	**1.87099**
B-1-CW20	10	0	0	Div 0
B-1-CW25	10	0	0	Div 0
B-1-CW27	10	0.003	0.00948683	**3.16228**
B-1-CW28	10	0	0	Div 0
B-1-CW29	9	0	0	Div 0
B-5-CW02	12	0.0025	0.00866025	**3.4641**
B-5-CW03	10	43.52	14.9521	0.343567
B-6-CW01	5	0	0	Div 0
B-6-CW02	8	0.08265	0.189493	**2.29272**
B-6-CW03R	5	0.00062	0.00138636	**2.23607**
B-6-CW08	5	0.244	0.545601	**2.23607**
B-6-CW09	3	0.0019	0.00166433	0.875964

B-6-CW14	6	0.491967	0.774637	**1.57457**
B-6-CW16	8	0	0	Div 0
B-6-CW17	6	0.132517	0.322102	**2.43066**
C-1-CW02	11	0.162827	0.510535	**3.13544**
C-1-CW03	10	0.055	0.150941	**2.74439**
C-1-CW05	10	0	0	Div 0
C-1-CW06	9	0	0	Div 0
C-1-CW08	11	0.01	0.0331662	**3.31662**
MW-01	2	4.75	3.04056	0.640118
MW-02	2	0.85	0.0707107	0.083189
MW-03	8	3.6725	1.91037	0.520182
MW-04	7	0.781429	0.399643	0.511426
MW-05	8	2.8875	2.20561	0.763847
MW-06	6	2.256	2.5933	**1.14951**
MW-07	7	0.256143	0.213661	0.834146
MW-08	6	1.41333	0.742069	0.525049

All Locations

Obs.	Mean	Std. Dev.	CV
431	4.31194	15.8372	**3.67288**

Coefficient of Variation

Parameter: 1,4-Dioxane

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3830Q	9	0	0	Div 0
3830S	9	1.01111	1.20358	**1.19036**
3831Q	2	0.82	0	0
3850N	8	0.525	0.749762	**1.42812**
3850V	6	0	0	Div 0
3852F	2	0	0	Div 0
3852H	1	0	Div 0	Div 0
3872Q	6	0	0	Div 0
A-1-CW07	8	0.375	0.702546	**1.87346**
A-1-CW08	5	0.64	0.920869	**1.43886**
A-1-CW09	1	1.4	Div 0	0
B-1-CW12	5	0	0	Div 0
B-1-CW13	6	0.328333	0.513826	**1.56495**
B-1-CW17	4	0	0	Div 0
B-1-CW27	8	0	0	Div 0
B-5-CW02	10	0.58	0.750999	**1.29483**
B-5-CW03	8	0.5625	1.59099	**2.82843**
B-6-CW01	1	0	Div 0	Div 0
B-6-CW02	6	0	0	Div 0
B-6-CW03R	3	0	0	Div 0
B-6-CW08	5	0.11	0.245967	**2.23607**
B-6-CW09	3	0.213333	0.369504	**1.73205**
B-6-CW14	6	0.533333	0.585377	**1.09758**
B-6-CW16	6	0	0	Div 0
B-6-CW17	6	0.258333	0.40568	**1.57038**
C-1-CW02	9	0.366667	0.552268	**1.50619**
C-1-CW03	8	0.325	0.638637	**1.96504**
C-1-CW05	8	0.05125	0.144957	**2.82843**
C-1-CW06	8	0.2875	0.533017	**1.85397**
C-1-CW08	9	1.08889	1.33083	**1.22219**
MW-01	2	3	2.68701	0.895669
MW-02	2	0.325	0.459619	**1.41421**
MW-03	8	0.7375	1.06762	**1.44763**
MW-04	7	0.102857	0.272134	**2.64575**
MW-05	8	0.17625	0.333121	**1.89005**
MW-06	7	0.571429	0.736465	**1.28881**
MW-07	7	0	0	Div 0
MW-08	7	2.24286	3.12509	**1.39335**

All Locations

Obs.	Mean	Std. Dev.	CV
224	0.417589	0.972907	**2.32982**

Coefficient of Variation

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3880	5	9.476	1.10276	0.116374
3830Q	8	1.375	1.40789	**1.02392**
3830S	8	2.875	3.97986	**1.3843**
3831Q	1	0	Div 0	Div 0
3850M	3	3.33333	3.05505	0.916515
3850N	10	27.36	16.4897	0.602693
3850R	3	1.33333	2.3094	**1.73205**
3850V	1	4	Div 0	0
3850W	2	4	2.82843	0.707107
3851M	5	2	2.12132	**1.06066**
3851N	1	3	Div 0	0
3852F	2	1.5	2.12132	**1.41421**
3852H	1	3	Div 0	0
3852L	1	6	Div 0	0
3860J	1	7	Div 0	0
3860K	1	0	Div 0	Div 0
3861D	1	12	Div 0	0
3861F	1	4	Div 0	0
3862C	1	4	Div 0	0
3862D	1	13	Div 0	0
3862E	1	0	Div 0	Div 0
3871G	5	5.006	3.2404	0.647303
3872K	1	5	Div 0	0
3872M	1	8	Div 0	0
3872Q	6	1.66667	2.65832	**1.59499**
4949C	1	5	Div 0	0
4959E	6	1.16667	1.60208	**1.37321**
4959H	6	1.5	2.07364	**1.38243**
4959J	5	2.2	2.16795	0.985431
4959K	5	13.176	10.3156	0.782906
A-1-CW05	1	0	Div 0	Div 0
A-1-CW07	10	4.364	2.2161	0.507814
A-1-CW08	2	3	0	0
A-1-CW09	3	1.66667	2.88675	**1.73205**
B-1-CW12	10	16.5	3.41272	0.206832
B-1-CW13	3	0	0	Div 0
B-1-CW16	1	3	Div 0	0
B-1-CW17	10	31.6	9.93613	0.314434
B-1-CW20	3	5.07	0.498698	0.0983626
B-1-CW25	3	9.44	3.99291	0.422977
B-1-CW27	3	6.36667	1.41878	0.222845
B-1-CW28	3	1.66667	2.88675	**1.73205**
B-1-CW29	3	52.3333	65.5769	**1.25306**
B-5-CW02	11	0.636364	1.12006	**1.7601**
B-5-CW03	8	2.125	2.3566	**1.10899**
B-6-CW01	3	3.23333	2.80416	0.867267
B-6-CW02	3	3	5.19615	**1.73205**

B-6-CW03R	3	0	0	Div 0
B-6-CW08	5	0.4	0.894427	**2.23607**
B-6-CW09	3	1	1.73205	**1.73205**
B-6-CW14	6	1.33333	1.50555	**1.12916**
B-6-CW16	8	1.125	1.64208	**1.45963**
B-6-CW17	6	0.666667	1.0328	**1.54919**
C-1-CW02	10	0.7	1.1595	**1.65643**
C-1-CW03	10	1.2	1.75119	**1.45933**
C-1-CW05	10	0.6	1.07497	**1.79161**
C-1-CW06	10	1.5	1.64992	**1.09994**
C-1-CW08	10	0.7	1.1595	**1.65643**
MW-01	2	2.5	3.53553	**1.41421**
MW-02	2	6	8.48528	**1.41421**
MW-03	8	1.25	1.38873	**1.11098**
MW-04	7	2.43	1.90463	0.7838
MW-05	8	2	1.92725	0.963624
MW-06	6	2	2.28035	**1.14018**
MW-07	7	1.71429	1.70434	0.994196
MW-08	7	2.57143	2.76026	**1.07344**

All Locations

Obs.	Mean	Std. Dev.	CV
302	5.20818	11.0876	**2.12889**

Coefficient of Variation

Parameter: Chromium VI

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3880	5	8.288	1.22783	0.148146
3830Q	9	0	0	Div 0
3830S	9	2.68567	3.46993	**1.29202**
3831Q	2	3.2	0	0
3850M	1	0.357	Div 0	0
3850N	10	24.364	19.3201	0.792979
3850W	1	1.1	Div 0	0
3851M	4	1.585	0.549515	0.346697
3852F	2	1.6	0	0
3871G	4	1.6575	1.30707	0.788578
3872Q	6	1.97783	1.21006	0.61181
4959E	6	1.245	0.272599	0.218955
4959H	6	267.694	652.694	**2.43821**
4959J	5	1.58	0.480833	0.304324
4959K	4	12.6	10.1394	0.804711
A-1-CW07	10	0.8706	0.551446	0.633409
B-1-CW12	10	14.371	5.12555	0.356659
B-1-CW17	10	30.73	11.2251	0.365281
B-5-CW02	12	0.0273333	0.0516779	**1.89066**
B-5-CW03	9	0.874222	0.240886	0.275544
B-6-CW01	3	3.49333	0.71143	0.203654
B-6-CW02	6	0.693333	0.394112	0.568431
B-6-CW03R	3	0.0146667	0.0254034	**1.73205**
B-6-CW08	5	0	0	Div 0
B-6-CW09	3	0	0	Div 0
B-6-CW14	6	0.424167	0.46506	**1.09641**
B-6-CW16	8	0.721625	0.426133	0.590518
B-6-CW17	6	267.744	652.669	**2.43766**
C-1-CW02	11	0.00372727	0.012362	**3.31662**
C-1-CW03	11	0.206818	0.245624	**1.18763**
C-1-CW05	11	0	0	Div 0
C-1-CW06	11	0.73	0.206617	0.283037
C-1-CW08	11	0.0766364	0.175782	**2.29371**
MW-01	2	1.185	0.403051	0.340127
MW-02	2	4.71	2.98399	0.633544
MW-03	8	1.34	0.362176	0.270281
MW-04	7	1.39714	0.192416	0.137721
MW-05	8	1.84	0.531333	0.288768
MW-06	7	2.65714	1.18469	0.445851
MW-07	7	1.37571	0.202884	0.147475
MW-08	7	1.13571	0.806306	0.709955

All Locations

Obs.	Mean	Std. Dev.	CV
268	15.7046	137.907	**8.78132**

Coefficient of Variation

Parameter: cis-1,2-Dichloroethene

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3830Q	9	0	0	Div 0
3830S	9	0.55	0.519591	0.944711
3831Q	2	0.5	0	0
3850M	6	1.00167	0.737304	0.736077
3850N	10	1.392	0.922073	0.662408
3850R	9	0	0	Div 0
3850V	6	0	0	Div 0
3850W	6	0	0	Div 0
3851M	6	0	0	Div 0
3851N	6	0	0	Div 0
3852F	6	0	0	Div 0
3852H	6	0	0	Div 0
3852L	6	0	0	Div 0
3860J	6	0	0	Div 0
3860K	6	1.79333	0.994599	0.554609
3861D	4	0.0975	0.195	**2**
3861F	3	0	0	Div 0
3862C	6	0	0	Div 0
3862D	4	0.775	1.09366	**1.41118**
3862E	6	0.501667	1.22883	**2.44949**
3871G	6	0	0	Div 0
3872K	3	0	0	Div 0
3872M	6	0	0	Div 0
4949C	4	0	0	Div 0
4959H	4	0	0	Div 0
4959K	6	0	0	Div 0
A-1-CW05	6	0	0	Div 0
A-1-CW07	9	0.17	0.360624	**2.12132**
A-1-CW08	5	0	0	Div 0
A-1-CW09	10	0	0	Div 0
B-1-CW12	9	7.03667	4.26312	0.605844
B-1-CW13	8	0	0	Div 0
B-1-CW16	6	0	0	Div 0
B-1-CW17	10	8.306	3.33832	0.401916
B-1-CW20	10	0	0	Div 0
B-1-CW25	10	0	0	Div 0
B-1-CW27	10	0	0	Div 0
B-1-CW28	10	0	0	Div 0
B-1-CW29	9	0	0	Div 0
B-5-CW02	12	0	0	Div 0
B-5-CW03	9	0.807778	0.425523	0.526782
B-6-CW01	5	0	0	Div 0
B-6-CW02	7	0	0	Div 0
B-6-CW03R	5	0	0	Div 0
B-6-CW16	6	0	0	Div 0
B-6-CW17	1	0	Div 0	Div 0
C-1-CW02	11	0.02	0.0663325	**3.31662**

C-1-CW03	10	0.017	0.0537587	**3.16228**
C-1-CW05	10	0	0	Div 0
C-1-CW06	9	0.317778	0.386225	**1.21539**
C-1-CW08	11	0	0	Div 0
MW-01	2	0	0	Div 0
MW-02	2	0	0	Div 0
MW-03	8	0.1	0.282843	**2.82843**
MW-04	7	0	0	Div 0
MW-05	8	0	0	Div 0
MW-06	7	0	0	Div 0
MW-07	7	0	0	Div 0
MW-08	6	0	0	Div 0

All Locations

Obs.	Mean	Std. Dev.	CV
406	0.498473	1.84081	**3.6929**

Coefficient of Variation

Parameter: Perchlorate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3880	5	3.066	0.458835	0.149653
3830Q	6	0.271667	0.665445	**2.44949**
3830S	6	0.193333	0.473568	**2.44949**
3831Q	2	225.225	317.88	**1.41139**
3850R	7	0	0	Div 0
3850V	6	0.292667	0.461019	**1.57524**
3852F	2	7400	0	0
3860J	6	1.1365	0.692004	0.60889
3860K	6	0.7025	0.642291	0.914293
3871G	1	1.92	Div 0	0
3872Q	6	1.97833	2.16611	**1.09491**
A-1-CW07	8	0.52725	0.468832	0.889202
A-1-CW08	6	0.277667	0.457647	**1.64819**
B-1-CW12	8	2.03125	0.288664	0.142111
B-1-CW13	5	0.558	0.511195	0.916119
B-1-CW17	5	3.126	0.50949	0.162985
B-1-CW27	8	0.908875	0.468369	0.515328
B-5-CW02	8	0	0	Div 0
B-5-CW03	5	341.169	759.61	**2.22649**
B-6-CW02	6	0.792333	1.16708	**1.47297**
B-6-CW03R	3	0.773333	1.33945	**1.73205**
B-6-CW08	5	0.2452	0.342688	**1.39759**
B-6-CW09	3	0.833333	1.44338	**1.73205**
B-6-CW14	6	0.0633333	0.155134	**2.44949**
B-6-CW16	6	1.15683	0.525901	0.454604
B-6-CW17	6	151.667	371.506	**2.44949**
C-1-CW02	6	0.3	0.734847	**2.44949**
C-1-CW03	7	0.202857	0.53671	**2.64575**
C-1-CW05	6	0	0	Div 0
C-1-CW06	6	83.8532	203.87	**2.43127**
C-1-CW08	7	0.117429	0.310687	**2.64575**
MW-03	1	0.977	Div 0	0
MW-04	1	0.746	Div 0	0
MW-05	1	0.585	Div 0	0
MW-06	1	1.02	Div 0	0
MW-07	1	0.533	Div 0	0
MW-08	1	0.55	Div 0	0

All Locations

Obs.	Mean	Std. Dev.	CV
179	103.288	792.455	**7.6723**

Coefficient of Variation

Parameter: Tetrachloroethene

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3830Q	9	1.85	0.666915	0.360494
3830S	9	14.9222	1.80193	0.120755
3831Q	2	5.5	0	0
3850M	6	2045	1503.43	0.735175
3850N	10	228	109.582	0.480623
3850R	9	160.333	37.4299	0.233451
3850V	6	67.9167	49.1309	0.723399
3850W	6	381.167	593.613	**1.55736**
3851M	6	19.1183	9.12892	0.477496
3851N	6	3.62667	1.33311	0.367586
3852F	6	1.19667	0.296693	0.247933
3852H	6	19.2833	4.40836	0.22861
3852L	6	0.495	0.409378	0.827025
3860J	6	17.9383	8.07757	0.450297
3860K	6	3271.67	1670.14	0.510487
3861D	4	34.7	56.9221	**1.6404**
3861F	3	13.3667	4.46132	0.333764
3862C	6	0	0	Div 0
3862D	4	175.25	62.7767	0.358212
3862E	6	62.55	12.7749	0.204236
3871G	6	201.833	34.2369	0.16963
3872K	3	336.667	85.049	0.252621
3872M	6	10.0383	1.39528	0.138996
4949C	4	1.23	0.970189	0.788772
4959H	4	13.5	11.641	0.862298
4959K	6	117.717	57.1405	0.485407
A-1-CW05	6	59.1333	12.2898	0.207832
A-1-CW07	9	449.667	315.764	0.702218
A-1-CW08	6	167	70.5408	0.4224
A-1-CW09	10	72.31	24.5256	0.339173
B-1-CW12	9	25.8222	9.88063	0.382641
B-1-CW13	6	399.833	157.354	0.393548
B-1-CW16	6	94.1667	44.4991	0.472556
B-1-CW17	10	105.43	24.6248	0.233566
B-1-CW20	10	1.644	1.08337	0.658985
B-1-CW25	10	355.67	346.107	0.973112
B-1-CW27	10	6.595	3.25059	0.492887
B-1-CW28	10	29.19	11.1864	0.383229
B-1-CW29	8	214.625	168.491	0.785047
B-5-CW02	12	21.1917	16.7057	0.788313
B-5-CW03	9	33.5667	10.0493	0.299382
B-6-CW01	5	0	0	Div 0
B-6-CW02	7	0	0	Div 0
B-6-CW03R	5	14.6	1.94936	0.133518
B-6-CW16	6	24.5333	18.6125	0.758663
B-6-CW17	1	99.5	Div 0	0
C-1-CW02	11	2.43455	1.24799	0.512615

C-1-CW03	10	7.663	1.90832	0.24903
C-1-CW05	10	0.947	0.350557	0.370176
C-1-CW06	9	42.9778	28.6354	0.666283
C-1-CW08	11	55.2545	36.9416	0.668571
MW-01	2	93.5	23.3345	0.249567
MW-02	2	80	16.9706	0.212132
MW-03	8	79.1	31.7147	0.400944
MW-04	7	43.2143	6.10394	0.141248
MW-05	8	63.5	12.4245	0.195662
MW-06	7	73.9857	12.9713	0.175322
MW-07	7	39.4857	5.95831	0.150898
MW-08	7	91.4286	42.5866	0.465791

All Locations

Obs.	Mean	Std. Dev.	CV
405	158.975	536.31	**3.37355**

Coefficient of Variation

Parameter: Trichloroethene

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

CV < 1 indicates normal data

Compliance Locations

Location	Obs.	Mean	Std. Dev.	CV
3830Q	9	0.0755556	0.226667	**3**
3830S	9	97.5444	135.771	**1.39188**
3831Q	2	92	0	0
3850M	6	815	533.919	0.655116
3850N	10	178.5	130.126	0.728996
3850R	9	10.3267	1.7607	0.170501
3850V	6	18.0667	12.7129	0.703668
3850W	6	75.6167	48.7905	0.645235
3851M	6	12.3233	5.88542	0.477583
3851N	6	0.998333	0.355382	0.355976
3852F	6	0.678333	0.771373	**1.13716**
3852H	6	17.95	2.3569	0.131304
3852L	6	3.18167	2.24006	0.704052
3860J	6	7.74167	5.05686	0.653201
3860K	6	757.333	212.364	0.280411
3861D	4	131.167	232.672	**1.77385**
3861F	3	6.46667	1.33167	0.205928
3862C	6	0	0	Div 0
3862D	4	424.5	144.456	0.340298
3862E	6	36.6167	8.68572	0.237207
3871G	6	81.9833	8.04771	0.0981628
3872K	3	112.667	21.9393	0.194728
3872M	6	3.625	0.700792	0.193322
4949C	4	3.01	1.34328	0.446272
4959H	4	14.225	10.4398	0.733904
4959K	6	59.8833	26.0303	0.434684
A-1-CW05	6	5.53	1.52943	0.27657
A-1-CW07	9	695.556	413.038	0.593825
A-1-CW08	6	318.333	174.459	0.548038
A-1-CW09	10	27.54	8.27475	0.300463
B-1-CW12	9	182.889	119.323	0.652432
B-1-CW13	6	392.333	55.7913	0.142204
B-1-CW16	6	34.8833	15.5124	0.444693
B-1-CW17	10	131.9	23.4589	0.177854
B-1-CW20	10	0.171	0.2797	**1.63567**
B-1-CW25	10	92.79	43.9717	0.473884
B-1-CW27	10	4.018	1.1635	0.289572
B-1-CW28	10	4.674	0.869268	0.185979
B-1-CW29	9	19.3889	20.3756	**1.05089**
B-5-CW02	12	1.02833	1.24433	**1.21005**
B-5-CW03	9	54.2111	19.0531	0.351461
B-6-CW01	5	0	0	Div 0
B-6-CW02	7	0	0	Div 0
B-6-CW03R	5	3.78	0.725948	0.19205
B-6-CW16	6	10.6833	6.05753	0.567007
B-6-CW17	1	6.1	Div 0	0
C-1-CW02	10	0.01	0.0316228	**3.16228**

C-1-CW03	10	0.441	0.264384	0.59951
C-1-CW05	10	0	0	Div 0
C-1-CW06	9	688.111	385.243	0.559856
C-1-CW08	11	5.78636	5.04969	0.872689
MW-01	2	47.5	10.6066	0.223297
MW-02	2	61	24.0416	0.394125
MW-03	8	21.3375	10.3799	0.486464
MW-04	7	10.7571	2.01731	0.187532
MW-05	8	19.675	7.5768	0.385098
MW-06	7	31.6286	12.1579	0.384398
MW-07	7	8.63286	1.94117	0.224859
MW-08	7	40.0143	17.0135	0.425185

All Locations

Obs.	Mean	Std. Dev.	CV
405	99.176	226.138	**2.28017**

Exhibit 6
Plant A-1 NFA Materials

California Regional Water Quality Control Board

Los Angeles Region

(50 Years Serving Coastal Los Angeles and Ventura Counties)

Winston H. Hickox
Secretary for Environmental Protection

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Gray Davis
Governor

August 30, 2001

Mr. Gene Matsushita
Lockheed Martin Corporation
Burbank Program Office
2550 North Hollywood Way, 3rd Floor
Burbank, CA 91505-1055

PARTIAL SITE-WIDE NO FURTHER REQUIREMENTS (SOIL ONLY), LOCKHEED MARTIN PLANT A-1 NORTH, 2555 NORTH HOLLYWOOD WAY, BURBANK, CALIFORNIA (FILE NO. 04.5152)(CLEANUP & ABATEMENT ORDER NO. 87-161)

Dear Mr. Matsushita:

We have reviewed your August 16, 2001 letter concerning Plant A-1 North and Lockheed Martin's intent to remediate heavy metal and volatile organic compound (VOC) contaminated soils associated with Feature Nos. 28, 29 and 30 and Feature Nos. 33, 38 and 48, respectively. You also requested a site-wide *no further requirements* letter for the subject site contingent on Lockheed Martin's satisfactorily remediating the heavy metal and VOC-contaminated soils beneath these features. Based on our review of the information in our files, we have the following findings:

FINDINGS:

1. The Plant A-1 North site, which occupies approximately 32 acres, is located southeast of the Burbank-Glendale-Pasadena Airport in the City of Burbank. Plant A-1 North was constructed in 1940 on a former farmland. Operations at Plant A-1 North consisted primarily of manufacturing and assembly of aircraft and components from approximately 1941 to early 1990s. In addition, aerospace research and development activities were conducted at this facility.

2. Plant A-1 North consisted of three functional areas designated as Area "A" (administrative and offices), Area "B" (high bay assembly area) and Area "C" (fabrication and painting operations).

3. In 1998, Lockheed Martin conducted a site-wide investigation to document the presence or absence of contaminants beneath chemical use and storage features. At least one soil boring was drilled at each feature and multiple borings were completed in features that covered a large area. In addition, soil borings were drilled on a 200-foot grid to provide a general assessment of the site. Based on the chemicals used in a given area, soil samples were analyzed for Total Petroleum Hydrocarbons (TPH), VOCs, polychlorinated biphenyls (PCBs), pH, semi-VOCs and heavy metals. Soil vapor samples were collected adjacent to

each feature and also on a 100-foot grid throughout the site to determine VOC concentrations in the vapor phase. More soil matrix and soil vapor investigations were performed to delineate the lateral and vertical extent at contaminated areas.

4. Contaminant concentrations detected in 24 areas were either above the Total Threshold Limit Concentration [TTLC] or the Soluble Threshold Limit Concentration [STLC] based on the California Code of Regulations, Title 22 [CCR, Title 22]; this Regional Board's VOC soil screening guidelines; and/or the U. S. Environmental Protection Agency's Preliminary Remediation Goals. The soils in these areas were excavated to a maximum depth of 15 feet below ground surface (bgs) between July 1999 and January 2000. Upon review of the soil removal reports, the Regional Board issued *no further requirement* letters for each feature remediated through excavation, except Feature Nos. 28, 29 and 30, where additional heavy metal soil cleanup was required.

   No further requirement letters were also issued for the three functional Areas: i) Area "A" (September 29, 2000 and June 26, 2001); ii) Area "B" (June 26, 2001 and August 27, 2001); and iii) Area "C" (July 3, 2001 and August 27, 2001) based on multiple phases of assessment, excluding Feature Nos. 33 and 38 in Area "B" and Feature No. 48 in Area "C". These features were identified as the main VOC source areas at Plant A-1 North. The VOC plumes from these sources are commingled, laterally and vertically widespread and have impacted the groundwater beneath the subject site. The high VOC concentrations detected in soil vapor beneath Feature Nos. 33, 38, 48 and its vicinity exceed the Regional Board's soil screening concentrations for protection of the groundwater and must be remediated using the proposed soil vapor extraction (SVE) system being designed for the subject site.

5. Groundwater beneath the site occurs at approximately 193 feet bgs. Based on the groundwater monitoring data from the early 1990's to the present, some heavy metals have been detected in wells A-1-CW04, A-1-CW05, A-1-CW06 and A-1-CW9 located immediately downgradient from Plant A-1 North. These heavy metals include barium, chromium (total), lead, nickel, selenium, thallium and zinc. We note that chromium (total), nickel and selenium were detected only once in monitoring well A-1-CW9 at concentrations of 11 µg/L, 57 µg/L and 24 µg/L, respectively. Thallium was also found once at a concentration of 103 µg/L in monitoring well A-1-CW05. In upgradient monitoring well LBC6-CW10 and cross-gradient monitoring wells A-1-CW03R, A-1-CW03, A-1-CW02, and A-1-CW01, barium, chromium (total), lead and zinc were also detected. Based on the current concentrations, groundwater remediation for heavy metals is not warranted in this area.

   Elevated concentrations of VOCs (primarily tetrachloroethene [PCE] and trichloroethene [TCE]) have been detected in groundwater monitoring wells located in the vicinity of Plant A-1 North. For example, PCE and TCE were detected at maximum concentrations of 2,900 µg/L

and 810 µg/L, respectively in monitoring well A-1-CW04. Under a Consent Decree with the U.S. Environmental Protection Agency, Lockheed Martin is extracting and treating VOC-polluted groundwater within the Burbank Operable Unit including the Plant A-1 North area.

CONCLUSIONS:

Based on the information in our files, we have no further soil requirements with respect to the San Fernando Valley Cleanup Program. The concentrations of PCBs and heavy metals, including chromium (total) and hexavalent chromium, detected in soil matrix samples did not exceed the Regional Board's screening levels and were below the TTLC and the STLC criteria based on the CCR, Title 22. In view of the above, the contaminants remaining in the soil do not pose a significant threat to groundwater quality. Therefore, further soil assessment or cleanup is not required. Water quality data obtained to date from downgradient monitoring wells indicates that some heavy metals have been detected in the groundwater at low concentrations, such as barium, chromium (total), lead, nickel, selenium, thallium and zinc. However, these contaminants were either found only once during 9 years of groundwater monitoring (from 1992 to present) or were also found in upgradient and cross-gradient wells. This suggests a source(s) other than the subject features are responsible. Based on historical and the current low concentrations of heavy metals in the groundwater, which are 0.1 mg/L of barium (MCL is 1 mg/L) and 0.34 mg/L of zinc (secondary MCL is 5 mg/L) as detected in monitoring well A-1-CW9 located immediately downgradient from this site, groundwater cleanup will not be required. However, the Regional Board may require groundwater cleanup for heavy metals in the future if new information is obtained, such as concentrations that are approaching or which exceed drinking water standards or conditions arise that threaten drinking water wells or the water quality of lower aquifers. Note that this *no further requirement* letter does not include Feature Nos. 28, 29 and 30 where additional heavy metal soil cleanup was required.

In the case of VOCs in soil, PCE and TCE distribution patterns indicate three main VOC sources at the subject site: 1) Feature No. 33, 2) Feature No. 38 both in Area "B" and 3) Feature No. 48 in Area "C". The VOC plumes originating from these sources are commingled, laterally and vertically widespread and have impacted the groundwater beneath the subject site. The VOC plumes appear to have migrated beneath some of the individual features at Plant A-1 North. While these individual features do not appear to be major VOC sources, elevated VOC concentrations detected in their vicinity appear to be associated with the VOC plumes migrating from either Features 33, 38 or 48. The elevated VOC concentrations detected beneath some of these features and Features 33, 38 and 48 exceed the Regional Board's VOC screening level of 127 µg/L and must be remediated by the proposed SVE system being designed for the subject site.

Based on the information obtained during the site-wide assessments, additional VOC assessment and cleanup is not required, except Features 33, 38 and 48. Currently, Lockheed Martin is

extracting and treating VOC-polluted groundwater within the Burbank Operable Unit under a Superfund Consent Decree with the U.S. Environmental Protection Agency.

We recommend Lockheed Martin evaluate the potential health risk posed to construction workers and future site occupants from contaminants, such as PCBs.

This soil only "no further requirements" determination for these features does not affect the requirements for either assessment or cleanup of adjacent features at the subject site, or the current or future requirements related to cleanup of polluted groundwater underlying the subject site. Also, additional assessment or cleanup may be needed in the event that new information is obtained, such as: a) previously undiscovered subsurface features; b) signs of soil contamination discovered during future site redevelopment activities; and c) Regional Board staff's review of the subsurface demolition and debris material investigation reports. This Regional Board's "no further requirements" decision does not affect the jurisdictional requirements of other agencies, such as the U.S. Environmental Protection Agency. Such agencies may choose to make their own determinations regarding the site.

If you have any questions, please call Alex Carlos at (213) 576-6726.

Sincerely,

Dennis A. Dickerson
Executive Officer

cc: Jorge Leon, SWRCB, Office of the Chief Counsel
Michael Lauffer, Office of the Chief Counsel
Diane Strassmaier, U.S. EPA, Region IX
Hamid Saebfar, CALEPA, DTSC, Region 3
Paul Lisak, L. A. County Fire Dept., Health Hazmat
Mel Blevins, ULARA Watermaster
Dan Batrack, Tetra Tech (Pasadena)
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Gray Davis
Governor

August 27, 2001

Mr. Gene Matsushita
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PARTIAL NO FURTHER REQUIREMENTS (SOIL ONLY), LOCKHEED MARTIN PLANT A-1 NORTH, AREA "C", BURBANK, CALIFORNIA (FILE NO. 104.5152)(CLEANUP & ABATEMENT ORDER NO. 87-161)

Dear Mr. Matsushita:

We have reviewed the *Data Report, Additional LA-CRWQCB Requirements for Area "C" at Plant A-1 North: Burbank, California* dated April 13, 2001. The report documents the results of a supplementary investigation, which was conducted at the subject facility in response to a Regional Board staff letter to Lockheed Martin dated January 31, 2000. The purpose of this assessment was to delineate the extent of soil contamination detected during the February 1998 preliminary site assessment. This investigation was conducted in compliance with Cleanup and Abatement Order No. 87-161, issued by the Regional Board on December 17, 1987.

The purpose of the preliminary site investigation in Area "C" was to document the presence or absence of contaminants beneath chemical use and storage features. These features were identified based on site inspections and review of previous investigation reports. At least one soil boring was drilled at each feature. Multiple soil borings were completed in features that covered a large area. In addition, soil borings were drilled on a 200-foot grid to provide a general assessment of Area "C". Soil borings were drilled to a maximum depth of 40 feet below ground surface (bgs) and soil samples were collected at 1 foot bgs and every 5 feet to 40 feet bgs. All samples were analyzed for Total Petroleum Hydrocarbons (TPH) using EPA Method 8015 Modified. Based on the chemicals used in a given area, samples were analyzed for volatile organic compounds (VOCs) using EPA Method 8260A, polychlorinated biphenyls (PCBs) using EPA Method 8081, pH using EPA Method 9045, semi-VOCs using EPA Method 8270B, and heavy metals using EPA Method 6010/7000 series. Soil vapor samples were also collected at 5 feet bgs adjacent to the target features and on a 100-foot grid throughout Area "C" to determine VOC concentrations in the vapor phase.

This letter will focus on the areas of concern within Plant A-1 North, Area "C" that were not covered in the Regional Board's *partial no further requirements* letter dated July 3, 2001 that was issued for Area "C" based on the February 1998 assessment results. This letter will not cover the assessment that was performed to delineate the extent of the debris materials (trash, glass and metal) discovered in Area "C". Specific comments on this area will be provided in a separate letter.

near the edge of the PCE soil vapor plume associated with Feature No. 33 (Former sump A-1-X). Feature No. 33 was formerly located in Building 69 northeast of Feature No. 5. This PCE plume will be remediated by a future soil vapor extraction (SVE) system being designed for Feature No. 33.

3. **Feature No. 7 (Southernmost Spar Mill Utility Trench)**
A utility trench was located in the central part of Building 70. The trench was suspected to have received oil and debris from the adjacent spar mill. During the February 1998 investigation, two soil borings (C70-SB9 and C70-SB10) were drilled to a total depth of 20 feet bgs. TPH and PCBs were not detected in any of the soil samples collected from borings C70-SB9 and C70-SB10. PCE was the primary VOC reported at a peak concentration of 26 µg/kg (1 foot bgs) in boring C70-SB10. Heavy metals, including chromium (total) were not found above their TTLC or STLC based on the CCR, Title 22. Chromium (total) was detected at a maximum concentration of 6.8 mg/kg (1 feet bgs) in soil boring C70-SB9. In addition to the soil borings, two soil vapor samples (C70-SG174 and C70-SG176) were collected at 5 feet bgs at Feature No. 7. PCE was detected at a maximum concentration of 230 µg/L in vapor sample C70-SG174.

In March 2001, multi-depth soil gas probes were installed at 20, 40 and 60 feet bgs beneath Feature No. 7. PCE and TCE were detected at maximum concentrations of 125.9 µg/L and 30.2 µg/L in the 40 feet bgs sample, respectively.

4. **Feature No. 8 (Former Spar Mill Sump, east end of the Southernmost Utility Trench)**
A former spar mill sump was located in the east end of the southern most utility trench in Building 70. Reportedly, the sump collected liquids from the adjacent spar mills. One soil boring (C70-SB11) was drilled to a total depth of 40 feet at Feature No. 8. TPH in the motor oil and diesel carbon ranges were reported at peak concentrations of 2,283 mg/kg and 223 mg/kg at 1 foot bgs, respectively. PCE was the primary VOC detected at a maximum concentration of 727 µg/kg (1 foot bgs). VOCs were not reported in any of the samples taken below 5 feet bgs in boring C70-SB11. In soil vapor sample C70-SG175, PCE was the primary VOC identified at a concentration of 119 µg/L. PCBs were not found in any of the soil samples from boring C70-SB11. Heavy metals, including chromium (total) were not reported above their TTLC or STLC based on the CCR, Title 22. Chromium (total) was detected at concentrations of 9.4 mg/kg (1 foot bgs), 3.1 mg/kg (5 feet bgs) and 2.7 mg/kg (10 feet bgs).

On July 12, 1999, PCE-contaminated soil beneath Feature No. 8 was removed to a depth of 10 feet bgs. The Regional Board issued a *no further requirements* letter for Feature No. 8 on February 28, 2001 based on confirmation soil sample results. However, multi-depth soil vapor samples were required at 20, 40 and 60 feet bgs to determine the vertical extent of PCE impact. In September and October 2000, multi-depth soil gas probes (C70-SG175A) were installed at 20, 40 and 60 feet bgs beneath Feature No. 8. PCE was the primary VOC detected at a maximum concentration of 103.5 µg/L (60 feet bgs).

5. **Feature No. 15 (Former Sump between Former Invomill and Spar Mill)**
A sump, which was used to collect waste oil from the spar mill area, was formerly located between the Invomill and Spar Mill in the northwestern corner of Building 70. In February 1998, one soil boring (C70-SB18) and one soil vapor probe (C70-SG161) were drilled adjacent to the sump. Heavy metals, including chromium (total) were not reported above their TTLC or STLC based on the CCR,

concentration of 152.1 µg/L (60 feet bgs). Based on the distribution pattern of PCE in soil vapor, it appears that soil gas probes C70-SG187 and C70-SG201 are located near the margin of the PCE soil vapor plume associated with Feature No. 33 (Former sump A-1-X) and Feature No. 15 (Former Sump between Former Invomill and Spar Mill). This PCE plume will be remediated by the proposed SVE system being designed for Feature No. 33.

B. BUILDING 71

Building 71 was located in the southern section of Plant A-1 North. The building was a one-story structure used to house the plant's boilers, chillers, air compressors and a water treatment and softening area (WTSA). Eight features were identified in Building 71 where chemicals were reportedly used or stored.

Feature No. 27 (Former Dry Well)

A dry well, which was connected to a sand trap and sump within Building 71, was formerly located outside the southwest corner of Building 71. Based on the *Environmental Assessment Report, Lockheed Plant A-1 North, Burbank, California (May 1995),* the sand trap received drainage from an expansion tank and the sump received drainage from the boilers, heat exchangers and sand trap. Reportedly, steam cleaning operations (using kerosene) were performed in this area. In February 1998, one soil boring (C71-SB35) was drilled to a depth of 40 feet bgs adjacent to Feature No. 27. TPH and PCBs were not detected in any of the soil samples collected from boring C71-SB35. Heavy metals, including chromium (total) were not reported above their TTLC or STLC based on the CCR, Title 22. Chromium (total) was detected at a maximum concentration of 87.3 mg/kg (10 feet bgs). Dichlorodifluoromethane was the only VOC reported at a peak concentration of 33 µg/kg (10 feet bgs). In soil vapor sample (C70-SG194), which was collected adjacent to the former dry well, PCE was the only VOC detected at a concentration of 1.30 µg/L.

In July 2000, boring C71-27-SB35A was drilled to a depth of 40 feet bgs adjacent to the former dry well to determine hexavalent chromium concentrations. Chromium (total) concentrations ranged from 3.14 mg/kg (15 feet bgs) to 9.48 mg/kg (10 feet bgs), which are below the TTLC and STLC criteria for chromium (total) based on the CCR, Title 22. No hexavalent chromium was detected in any of the samples analyzed from C71-27-SB35A.

C. BUILDING 73

Building 73 was formerly located in the southern section of Plant A-1 North, south of Building 70. This building was a two-story structure constructed in 1941 to house acetylene generators and a paint room. In 1988, the aboveground section of the building was demolished as part of the expansion of the Building 70 loading dock, and the sub-grade portion was sealed. Two target features, where chemicals were reportedly used or stored, were identified at Building 73.

Feature No. 33 (Former Cesspool)

A former cesspool was located southeast of former Building 73. In February 1998, one soil boring (C73-SB42) was drilled adjacent to the former cesspool. Heavy metals, including chromium (total) were not detected above their TTLC or STLC based on the CCR, Title 22. Chromium was reported at

E. BUILDING 93

Building 93 was previously located in the east area of Plant A-1 North, between Building 74 and Hollywood Way. Building 93 contained large fabrication equipment, which was used mainly to produce large aluminum structural parts for various aircraft. Twelve target features were identified in Building 93.

1. **Feature No. 51 (Floor Drain at Former Aluminum Treat Refrigerator)**
   A floor drain for the aluminum treat refrigerator was located at the west central area of Building 93. The floor drain reportedly collected condensate from the refrigerator compressor. During the February 1998 assessment, one soil boring (C93-SB61) was drilled adjacent to the floor drain. Heavy metals, including chromium (total) were not reported above their TTLC or STLC based on the CCR, Title 22. Chromium (total) was detected at a maximum concentration of 7.7 mg/kg (5 feet bgs). TPH and PCBs were not detected in any of the soil samples from boring C93-SB61. PCE and TCE were reported at concentrations of 165 µg/kg and 7 µg/kg, respectively, at 5 feet bgs. VOCs were not detected in any of the remaining samples analyzed from boring C93-SB61. PCE was also found at a concentration of 114 µg/L in soil gas sample C93-SG114 (5 feet bgs), which was taken in the vicinity of Feature No. 51.

   In July 1999, Feature No. 51 was also excavated to a depth of 10 feet bgs to remove PCE and selenium contaminated soil. Based on confirmation sampling results, the Regional Board issued a *no further requirements* letter for Feature No. 51 on March 30, 2001.

   In March 2001, additional soil gas samples were collected at 20, 40 and 60 feet bgs adjacent to the floor drain. PCE was detected at a maximum concentration of 565 µg/L (60 feet bgs). Based on the distribution pattern for PCE in soil vapor, it appears that the elevated PCE concentrations detected beneath Feature No. 51 is associated with the PCE plume migrating from Feature No. 48, a solvent basin formerly located in the southwest corner of Building 93. This PCE plume must be remediated by the proposed SVE system being designed for Feature No. 48.

2. **Feature No. 53 (Former Hufford Stretch Press Containment Basin)**
   The former Hufford stretch press containment basin, which collected oils from the press, was located at the east central part of Building 93. In February 1998, three soil borings (C93-SB63, C93-SB64, and C93-SB65) and one soil gas probe (C93-SG115) were drilled at Feature No. 53. TPH and PCBs were not detected in any of the soil samples from these borings. PCE was the primary VOC detected at a peak concentration of 75 µg/kg (5 feet bgs), but VOCs were not found in any of the samples collected below 5 feet bgs. In soil vapor sample C93-SG115, PCE was also detected at a concentration of 237 µg/L. Heavy metals, including chromium (total) were not reported above their TTLC or STLC based on the CCR, Title 22. Chromium was detected in all three borings at a maximum concentration of 10.5 mg/kg (10 feet bgs) in soil boring C93-SB63.

   In March 2001, multi-depth soil gas samples were collected to a depth of 60 feet bgs at the location of former soil gas probe C93-SG115. PCE was the primary VOC detected at a maximum concentration of 214 µg/L (60 feet bgs). Based on the distribution pattern for PCE in soil vapor, it appears that the PCE plume in the Feature No. 53 area is associated with the PCE plume migrating from Feature No. 48

historical and the current low concentrations of heavy metals in the groundwater, which are 0.1 mg/L of barium (MCL is 1 mg/L) and 0.34 mg/L of zinc (secondary MCL is 5 mg/L) as detected in monitoring well A-1-CW9 (first quarter 2001 sampling) located immediately downgradient from the subject features, groundwater cleanup will not be required. However, the Regional Board may require groundwater cleanup for heavy metals in the future if new information is obtained, such as concentrations that are approaching or which exceed drinking water standards or conditions arise that threaten drinking water wells or the water quality of lower aquifers.

In the case of VOCs, distribution patterns for PCE and TCE indicate three main VOC sources at the subject site: 1) Feature Nos. 33 and 38 in Area "B" and 2) Feature No. 48 in Area "C". The VOC plumes originating from these sources are commingled, laterally and vertically widespread and have impacted the groundwater beneath the subject site. This VOC plume(s) appear to have migrated beneath some of the individual features discussed above. While these individual features do not appear to be major VOC sources, elevated VOC concentrations detected in their vicinity appear to be associated with the VOC plume(s) migrating from either Feature Nos. 33, 38 or 48. The elevated VOC concentrations beneath some of these features exceed the Regional Board's VOC screening level of 127 µg/L for Plant A-1 North and must be remediated by the proposed SVE system being designed for the subject site. Based on the information obtained during the subject assessment in Area "C", we have no further requirements for the features discussed above, except Feature Nos. 33, 38 and 48.

We recommend Lockheed Martin evaluate the potential health risk posed by contaminant concentrations for construction workers and future site occupants as some of the contaminants exceed the U.S. Environmental Protection Agency's (Region 9) Preliminary Remediation Goal.

The soil only *no further requirements* determination for these features does not affect the requirements for either assessment or cleanup of adjacent features at the subject site, or the current or future requirements related to cleanup of polluted groundwater underlying the subject site. Also, additional assessment or cleanup may be needed in the event that new information is obtained, such as previously undiscovered subsurface features or signs of soil contamination discovered during future site redevelopment activities. This Regional Board's *no further requirements* decision does not affect the jurisdictional requirements of other agencies, such as the U.S. Environmental Protection Agency. Such agencies may choose to make their own determinations regarding the site.

If you have any questions, please call Alex Carlos at (213) 576-6726.

Sincerely,

Dennis A. Dickerson
Executive Officer

California Regional Water Quality Control Board

Los Angeles Region

(50 Years Serving Coastal Los Angeles and Ventura Counties)

Winston H. Hickox
Secretary for Environmental Protection

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Gray Davis
Governor

August 27, 2001

Mr. Gene Matsushita
Lockheed Martin Corporation
Burbank Program Office
2550 North Hollywood Way, 3rd Floor
Burbank, CA 91505-1055

PARTIAL NO FURTHER REQUIREMENTS (SOIL ONLY), LOCKHEED MARTIN PLANT A-1 NORTH, AREA "C", BURBANK, CALIFORNIA (FILE NO. 104.5152) (CLEANUP & ABATEMENT ORDER NO. 87-161)

Dear Mr. Matsushita:

On July 3, 2001 and August 27, 2001, the Regional Board issued *partial no further requirements* (NFRs) letters for Lockheed Martin's Plant A-1 North, Area "C". These NFRs were based on the *Preliminary Site Investigation Report, Plant A-1 North, Area "C": Burbank, California* (June 16, 1998) and *Data Report, Additional LA-CRWQCB Requirements for Area "C" at Plant A-1 North: Burbank, California* (April 13, 2001). This letter will focus on the areas of concern within Plant A-1 North, Area "C" that were not discussed in the above NFR letters.

The preliminary site investigation report documents the results of the soil matrix and soil gas investigation, which was conducted in Area "C" in February 1998. The purpose of this investigation was to document the presence or absence of contaminants beneath chemical use and storage features. These features were identified based on site inspections and review of previous investigation reports. At least one soil boring was drilled at each feature. Multiple soil borings were completed in features that covered a large area. In addition, soil borings were drilled on a 200-foot grid to provide a general assessment of Area "C". Soil borings were drilled to a maximum depth of 40 feet below ground surface (bgs) and soil samples were collected at 1 foot bgs and every 5 feet to 40 feet bgs. All samples were analyzed for Total Petroleum Hydrocarbons (TPH) using EPA Method 8015 Modified. Based on the chemicals used in a given area, samples were analyzed for volatile organic compounds (VOCs) using EPA Method 8260A, polychlorinated biphenyls (PCBs) using EPA Method 8081, pH using EPA Method 9045, semi-VOCs (SVOCs) using EPA Method 8270B, and heavy metals using EPA Method 6010/7000 series. Soil vapor samples were also collected at 5 feet bgs adjacent to the target features and on a 100-foot grid throughout Area "C" to determine VOC concentrations in the vapor phase.

A supplementary investigation was conducted in Area "C" in February and March 2001 in response to a Regional Board staff letter to Lockheed Martin dated January 31, 2000. The purpose of this assessment was to delineate the extent of soil contamination detected during the February 1998 preliminary site assessment. These investigations were conducted in compliance with Cleanup and Abatement Order No. 87-161, issued by the Regional Board on December 17, 1987.

3. **Feature No. 12 (Former Process Tank Area)**
A former process tank area was located in the northwest section of Building 70. The process area contained three aboveground tanks that consisted of a soap tank, a rinse tank and an anodizing tank. In February 1998, one soil boring (C70-SB15) was drilled to a total depth of 20 feet bgs. Soil samples were collected at 1 foot and every 5-foot depth interval to 20 feet bgs. TPH (diesel and motor oil carbon ranges) was detected at a concentration of 153 mg/kg (1 foot bgs), but was not reported in any of the remaining soil samples collected from boring C70-SB15. PCE was the primary VOC detected from boring C70-SB15 at a concentration of 98 µg/kg (1 feet bgs). Heavy metals, including chromium (total) were not found above their TTLC or STLC based on the CCR, Title 22. Chromium (total) was detected at concentrations of 182 mg/kg (1 foot bgs), 78.9 mg/kg (5 feet bgs) and 4.8 mg/kg (10 feet bgs). Cadmium was also reported at a maximum concentration of 10.1 mg/kg (5 feet bgs). No soluble cadmium was detected.

Based on the elevated concentrations of chromium (total), Regional Board staff required additional sampling to determine the presence of hexavalent chromium beneath Feature No. 12. In June 2001, one soil boring was drilled and samples were collected from 5 feet and 10 feet bgs. Chromium (total) was detected at concentrations of 453 mg/kg (5 feet bgs) and 9.08 mg/kg (10 feet bgs). Hexavalent chromium was also reported at concentrations of 93 mg/kg (5 feet bgs) and 0.69 mg/kg (10 feet bgs). Due to the elevated concentration of hexavalent chromium at 5 feet bgs, a soil excavation was performed to a maximum depth of 10 feet bgs. Four confirmation samples contained chromium (total) and hexavalent chromium at peak concentrations of 74.3 mg/kg and 38 mg/kg in sample C70-12-E-5, respectively. Sample C70-12-E-5 contained hexavalent chromium concentration below ten times the STLC of 50 mg/kg.

B. BUILDING 92

Building 92 was located adjacent to Hollywood Way, between Buildings 80 and 93. Building 92 was used mainly as a holding area for the disposal of aluminum scrap or chips generated from machining operations throughout the plant. A semi-enclosed structure located west of Building 92 was used for material/chemical storage and parts cleaning. Three chemical use areas were identified at Building 92.

1. **Feature No. 44 (Former Collection Sump)**
A collection sump was formerly located in the chemical storage area west of Building 92. Flammable materials and metal chips were reportedly stored in this area. In February 1998, one soil boring (C92-SB54) and one soil vapor probe (C92-SG177) were drilled adjacent to Feature No. 44. TPH, PCBs and SVOCs were not detected in the any of the samples from the boring C92-SB54. PCE was the primary VOC reported in soil and soil vapor samples at peak concentrations of 96 µg/kg (5 feet bgs) and 590 µg/L (5 feet bgs), respectively. Heavy metals, including chromium (total) were not detected above their TTLC or STLC based on the CCR, Title 22. Chromium (total) was detected at a peak concentration of 7.4 mg/kg (5 feet bgs).

SG158 and C93-SG159) were drilled in the vicinity of Feature No. 47. TPH were not detected in the any of the samples from boring C93-SB57. PCE was the only VOC reported at a peak concentration of 59 µg/kg (5 feet bgs) in boring C93-SB57. In soil vapor sample C93-SG158, PCE was the primary VOC identified at a maximum concentration of 858 µg/L.

In March and May 1999, soil gas probes were installed to a maximum depth of 180 feet bgs at 14 locations in the vicinity of Feature Nos. 47 and 48. It appears that the PCE contamination detected beneath Feature No. 47 is primarily associated with Feature No. 48 (Former Solvent Basin), which was formerly located in Building 93 northwest of Feature No. 47. The PCE plume in the Feature No. 47 area must be remediated by the proposed SVE system being designed for Feature No. 48.

2. **Feature No. 52 (Birdsboro Press Containment Basin)**
The Birdsboro press containment basin, which reportedly collected hydraulic oil used by the press, was located in the southeast corner of Building 93. In February 1998, one soil boring (C93-SB62) was drilled to a total depth of 70 feet bgs. Soil samples were collected at 1 foot and 5-foot depth intervals to 70 feet bgs. TPH and PCBs were not detected in any of the soil samples from boring C93-SB62. PCE was the only VOC reported at a peak concentration of 17 µg/kg 1 foot bgs. VOCs were not detected in any of the remaining samples analyzed from boring C93-SB62. Heavy metals, including chromium (total) were not found above their TTLC or STLC based on the CCR, Title 22. Chromium (total) was detected at a maximum concentration of 8 mg/kg (1 foot bgs).

3. **Feature No. 58 (Skin Mill Chip Collection Sump)**
A skin mill chip collection sump was previously located outside the northeast corner of Building 93. Reportedly, runoff from the collection area discharged into this subsurface sump. During the February 1998 assessment, one soil boring (C93-SB72) was drilled to a total depth of 20 feet bgs. TPH was reported at a concentration of 494 mg/kg in the 5-foot sample from boring C93-SB72. The detected TPH compounds were in the motor oil (176 mg/kg) and diesel (318 mg/kg) carbon ranges. PCE was the only VOC detected at a concentration of 10 µg/kg (5 feet bgs), but VOCs were not reported in any of the remaining samples analyzed from boring C93-SB72. Heavy metals, including chromium (total) were not found above their TTLC or STLC based on the CCR, Title 22. Chromium (total) was detected at a maximum concentration of 4.4 mg/kg (5 feet bgs).

D. Groundwater

Groundwater beneath the site is at approximately 193 feet bgs. Based on water quality data from the early 1990's to the present, some heavy metals have been detected in groundwater monitoring wells (A-1-CW04, A-1-CW05, A-1-CW06 and A-1-CW9) located immediately downgradient from Plant A-1 North, including barium, chromium (total), lead, nickel, selenium, thallium and zinc. Note that chromium (total), nickel and selenium were detected only once in monitoring well A-1-CW9 at concentrations of 11 µg/L, 57 µg/L and 24 µg/L, respectively. Thallium was also found once at a concentration of 103 µg/L in monitoring well A-1-CW05. In upgradient monitoring well (LBC6-CW10) and cross-gradient monitoring wells (A-1-CW03R, A-1-CW03, A-1-CW02, A-1-CW01)

Currently, Lockheed Martin is extracting and treating VOC-polluted groundwater within the Burbank Operable Unit under a Consent Decree with the U.S. Environmental Protection Agency.

We recommend Lockheed Martin evaluate the potential health risk posed by contaminant concentrations for construction workers and future site occupants as some of the contaminants, such as PCBs, exceed the U.S. Environmental Protection Agency's (Region 9) Preliminary Remediation Goal or site screening level.

The soil only "no further requirements" determination for these features does not affect the requirements for either assessment or cleanup of adjacent features at the subject site, or the current or future requirements related to cleanup of polluted groundwater underlying the subject site. Also, additional assessment or cleanup may be needed in the event that new information is obtained, such as previously undiscovered subsurface features or signs of soil contamination discovered during future site redevelopment activities. This Regional Board's "no further requirements" decision does not affect the jurisdictional requirements of other agencies, such as the U.S. Environmental Protection Agency. Such agencies may choose to make their own determinations regarding the site.

If you have any questions, please call Alex Carlos at (213) 576-6726.

Sincerely,

Dennis A. Dickerson
Executive Officer

cc: Jorge Leon, SWRCB, Office of the Chief Counsel
Michael Lauffer, Office of the Chief Counsel
Diane Strassmaier, U.S. EPA, Region IX
Hamid Saebfar, CALEPA, DTSC, Region 3
Paul Lisak, L. A. County Fire Dept., Health Hazmat
Mel Blevins, ULARA Watermaster
Dan Batrack, Tetra Tech (Pasadena)
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Gray Davis
Governor

September 29, 2000

Ms. Carol Yuge
Lockheed Martin Corporation
Burbank Program Office
2550 North Hollywood Way, 3rd Floor
Burbank, CA 91505-1055

Dear Ms. Yuge:

PARTIAL NO FURTHER REQUIREMENTS (SOIL ONLY), LOCKHEED MARTIN PLANT A-1 NORTH, AREA "A", BURBANK, CALIFORNIA (FILE NO. 104.5152) (CLEANUP & ABATEMENT ORDER NO. 87-161)

On October 14, 1999, Regional Board staff provided Lockheed Martin the comments on the *Preliminary Site Investigation Report, Plant A-1 North, Area "A": Burbank, California* dated April 24, 1998, prepared by Tetra Tech, Inc. This report summarizes the soil matrix and soil gas investigations in Plant A-1 North, Area "A". These investigations were conducted in February 1998, in compliance with Cleanup and Abatement Order No. 87-161. Based on our review of the report, additional site assessment was required in some potential contaminant source areas. However, supplementary assessment was not required in areas where contaminant concentrations detected were below soil screening levels. This letter will focus on these latter areas within Area "A".

The purpose of the preliminary site investigation in Area "A" was to document the presence or absence of contaminants beneath chemical use and storage features. These features were identified based on review of previous investigation reports and visual site inspections. At least one soil boring was drilled adjacent to each feature. Multiple soil borings were completed in features that covered a large area. In addition, soil borings were drilled on a 200-foot grid to provide a general assessment of Area "A". Soil borings were drilled to a maximum depth of 40 feet below ground surface (bgs). All samples were analyzed for Total Petroleum Hydrocarbons (TPH) using EPA Method 8015. Based on the chemicals used in a given area, samples were analyzed for volatile organic compounds (VOCs) using EPA Method 8260A, polychlorinated biphenyls (PCBs) using EPA Method 8081, pH using EPA Method 9045, semi-VOCs using EPA Method 8270B, and heavy metals using EPA Method 6010/7000 series. Soil vapor samples were also collected at 5 feet bgs adjacent to the features and on a 100-foot grid throughout Area "A".

FINDINGS:

BUILDING 60
Building 60 is located in the southwest corner of Plant A-1 North. Three target features were identified in Building 60 where chemicals were reportedly used or stored.

1. **Feature No. 1 (Former Drum Storage Area)**
   A drum storage area was formerly located outside the southern wall of Building 60. Based on the limited size of the storage area, one soil boring (A60-SB1) and one soil vapor probe (A60-SG192) were installed. The sample collected at 1-foot bgs contained 424 mg/kg of TPH (motor oil carbon range), but TPH was not present in the remaining samples. The 1-foot sample also contained PCBs,

identified as Aroclor-1260, at a concentration of 605 µg/kg. Heavy metals were not detected above their Total Threshold Limit Concentration (TTLC). VOCs and semi-VOCs were not detected in any of the samples analyzed.

2. **Feature No. 2 (Former Two-Stage Clarifier)**
A two-stage clarifier was previously located just south of the southern wall of Building 60. The clarifier reportedly received wastewater from the floor drains in Building 60. In 1994, the clarifier was removed and a soil sample collected beneath the clarifier contained detectable concentrations of PCBs, and TPH. In February 1998, one soil boring (A60-SB2) and one soil vapor probe (A60-SG192) were installed. PCBs (Aroclor-1260) were detected at a concentration of 795 µg/kg (2 feet bgs). PCBs were not detected in the remaining soil samples. TPH and VOCs were not detected in any of the samples analyzed. Metals were not detected above their TTLC.

3. **Feature No. 3 (Former Trench Drain at Paint Stripping Area)**
A former trench drain was previously located in the southwest section of Building 60. Four aboveground tanks associated with a paint stripping operation were located adjacent to the drain. One soil boring (A60-SB3) and one soil vapor probe (A60-SG179) were installed adjacent to the former drain. The maximum TPH concentration detected in the sample was 40 mg/kg (motor oil carbon range) at 1-foot bgs. Metals were not detected above their TTLC. VOCs were not detected in any of the samples analyzed.

BULIDNG 65

Building 65 is located in the northwest part of Plant A-1 North. It was originally used for assembly of tool, template, and die prototypes from 1943 until 1965. During the late 1960s to 1980, Building 65 was used for electrical wiring work. From 1980 until the early 1990s, the building was primarily used for office space. Six potential sources were identified in Building 65.

1. **Feature No. 4 (Former Ozalid Room Pit-west)**
This pit was located outside the west wall of Building 65 along the alleyway between Buildings 65 and 62. The pit collected runoff and condensate from the Ozalid Room that was used for reproduction work conducted in Building 65. Solvents, oils and metals were reportedly used in the reproduction process.

   One soil boring (A65-SB7) and one soil vapor probe (A62-SG66) were installed near this feature. TPH and VOCs were not detected in any of the soil samples analyzed. Metals were not detected above their TTLC. PCE and TCE were detected in the soil vapor sample at concentrations of 12 µg/L and 38 µg/L, respectively.

2. **Feature No. 6 (Former Ozalid Room Pit-east)**
A second Ozalid Room pit was located east of Building 65 between Buildings 65 and 68. This pit received condensate from the Ozalid Room that was used for reproduction work in Building 65. One soil boring (A65-SB9) was installed at this pit. No TPH or VOCs were detected in any of the soil samples analyzed from boring A65-SB9. Metals were not detected above their TTLC.

3. **Feature No. 7 (Former Heat Treat Furnace Pit)**
A heat treat furnace pit was previously located at the northwest corner of Building 65. The pit was used to collect runoff from the quench tanks associated with the heat treating process. Metal parts were treated with solvents, oils, and acids during the heat treating process.

One soil boring (A65-SB10) was drilled and samples were collected at 1 foot bgs and every 5 feet to the total depth of 40 feet bgs. TPH and VOCs were not detected in any of the soil samples analyzed. Metals were not detected above ten times their TTLC. In addition, one soil gas probe (A62-SG49) was sampled adjacent to this feature. TCE and PCE were detected in the soil vapor sample at concentrations of 8.4 µg/L and 5.5 µg/L, respectively. No other VOCs were detected in the soil gas sample.

4. **Feature No. 8 (Former Process Tank Pit)**
A process tank pit was previously located in the northwest corner of Building 65. The pit contained eight tanks, including an electrolytic tank, a hydrofluoric acid tank, a chromic acid tank, a bichromate tank, and four rinse tanks used to clean and coat aluminum parts. Overflow from the aluminum coating process drained into the pit.

Two soil borings (A65-SB11 and A65-SB12) were drilled to a depth of 40 feet bgs and sampled at 1 foot and at 5-foot intervals to the total depth. TPH was not detected in any of the soil samples analyzed. Dichlorodifluoromethane was detected at a maximum concentration of 57 µg/kg (5 feet bgs) from boring A65-SB11. VOCs were not detected in any of the other samples analyzed from borings A65-SB11 and A65-SB12. Metals were not detected above their TTLC.

Two soil vapor probes (A65-SG50 and A65-SG43) were also sampled for VOCs. The soil vapor samples contained TCE and PCE at maximum concentrations of 18 µg/L (A65-SG50) and 11 µg/L (A65-SG50), respectively. No other VOCs were detected in soil vapor samples A65-SG43 and A65-SG50.

BUILDING 65A

Building 65A and is located in the northwest portion of Plant A-1 North. This building was constructed in 1945 and was originally used for aircraft parts overhaul and repair. In 1985, Building 65A was converted into a storage area. Prior to the construction of Building 65A, the area was used for materials storage. Four potential sources were identified in Building 65A.

1. **Feature No. 11 (Former Etching Tanks)**
An etching tank pit, containing six tanks, was previously located in the west central portion of Building 65A. The tanks were used for etch cleaning and for sulfuric acid anodizing and coating.

Two soil borings (A65A-SB16 and A65A-SB17) were drilled to a depth of 40 feet bgs and soil samples were collected at 1 foot and at 5-foot intervals to total depth of the boring. TPH and VOCs were not detected in any of the soil samples analyzed. Metals were not detected above their TTLC.

2. **Feature No. 12 (Former Two-Stage Clarifier)**
A two-stage clarifier was previously located in the west central area of Building 65A. The clarifier received runoff from a sink used to clean parts. One soil boring (A65A-SB18) and one soil vapor probe (A65A-SG31) were completed at this feature. Soil boring A65A-SB18 was drilled to a depth of 40 feet bgs and soil samples were collected at 1 foot and at 5-foot intervals to the total depth of the boring. TPH (motor oil carbon range) was detected at a concentration of 22 mg/kg (5 feet bgs). TPH was not detected in any of the remaining samples analyzed. Methylene chloride (63 µg/kg) was detected in the soil sample collected at 10 feet bgs. VOCs were not reported in any of the remaining soil samples analyzed from boring A65A-SB18. PCBs were not detected in any of the samples analyzed and metal concentrations were below their TTLC.

Analysis of soil vapor sample found TCE (1.9 µg/L) and PCE (1.7 µg/L). No other VOCs were detected in soil vapor sample A65A-SG31.

3. **Feature No. 13 (Former Paint Booth)**
A paint booth was previously located in the northwest corner of Building 65A. One soil boring (A65A-SB19) and one soil gas probe (A65A-SG16) was completed at this feature. TPH (motor oil carbon range) was detected at a concentration of 23 mg/kg (5 feet bgs). The remaining samples analyzed did not contain TPH. VOCs were not detected in any of the soil samples analyzed from boring A65A-SB19. Metals were not detected above their TTLC. In soil vapor sample, PCE and TCE were reported at less than 3 µg/L.

Building 67
Building 67 is located in the southwest portion of Plant A-1 North. It was originally used for tooling, woodblock framing, and a functional testing area. In 1966, Building 67 was converted into office space. Seven target features were identified in Building 67.

1. **Feature No. 14 (Former Drum Storage Area)**
A former drum storage area was located in the alleyway between Buildings 67 and 68. The contents of the drums were reportedly unknown. Based on the limited size of this area, one soil boring (A67-SB21) was drilled and samples were collected at 1 foot and every 5 feet to the termination of the boring. TPH (motor oil carbon range) was detected at a concentration of 28 mg/kg (1 foot bgs). TPH was not detected in any of the remaining soil samples analyzed from boring A67-SB21. VOCs, semi-VOCs and PCBs were not detected in the samples. Metals were not detected above their TTLC. PCE (1.5 µg/L) was the only VOC detected in soil vapor sample A67-SG151.

2. **Feature No. 16 (Three-Stage Clarifier)**
A former three-stage clarifier was located in the northwest of Building 67. This clarifier collected runoff from the diazo reproduction area in Building 67. One soil boring (A67-SB24) was drilled to a total depth of 40 feet bgs and samples were collected at 1 foot and at 5-foot intervals to the total depth of the boring. TPH, VOCs and PCBs were not detected in any of the samples collected from boring A67-SB24. Metals were not detected above their TTLC.

In addition to the soil boring, one soil vapor sample (A67-SG99) was collected and analyzed. TCE and PCE were detected at a concentration of 3.2 µg/L and 1.4 µg/L, respectively. No other VOCs were detected in soil vapor sample A67-SG99.

3. **Feature No. 17 (Former Diazo Reproduction Trench)**
A diazo reproduction trench was previously located in the northwest corner of Building 67. Chemicals used in the diazo process were ammonia and water. Two soil borings (A67-SB25 and A67-SB26) were drilled to a total depth of 40 feet bgs. Soil samples were collected at 1 foot and at 5-foot intervals to the total depth of the boring. TPH, VOCs and PCBs were not detected in any of the samples analyzed. Metals were not detected above their TTLC.

4. **Feature No. 19 (Trenches for Horizontal Boring Mills)**
Four trenches associated with the horizontal boring mills were previously located at the northeast corner of Building 67. Two soil borings (A67-SB31 and A67-SB32) were drilled to a total depth of 40 feet bgs. Soil samples were collected at 1 foot and at 5-foot intervals to the total depth of the boring. TPH was not detected in the soil samples collected from borings A67-SB31 and A67-SB32. VOCs were not detected in any of the soil samples analyzed from borings A67-SB31 and A67-SB32, except 6 µg/kg of PCE (30 feet) in one sample from soil boring A67-SB31. Metals were not detected above their TTLC.

Two soil vapor samples (A67-SG117 and A67-SG126) were also collected. TCE and PCE were detected at maximum concentrations of 7.4 µg/L (A67-SG117 and A67-SG126) and 3.8 µg/L (A67-SG126), respectively. No other VOCs were detected in either soil vapor samples.

5. **Feature No. 20 (Former Equipment Pit)**
A former equipment pit was previously located in the south central part of Building 67. One soil boring (A67-SB33) was drilled to a total depth of 40 feet bgs and samples were collected at 1 foot and at 5-foot intervals to the total depth of the boring. TPH, VOCs and PCBs were not detected in the soil samples. Metals were not detected above their TTLC.

In addition to the soil boring, one soil vapor sample (A67-SG150) was collected. The soil vapor sample contained TCE and PCE concentrations of 3.7 µg/L and 2.2 µg/L, respectively.

6. **Feature No. 21 (Metal Plate Covered Pit)**
Two metal covered pits were located in the western portion of Building 67. Two soil borings (A67-SB34 and A67-SB35) were drilled adjacent to each of the pits. Both borings were drilled to a total depth of 40 feet bgs and samples were collected at 1 foot and at 5-foot intervals to the total depth. TPH, VOCs and PCBs were not detected in any of the soil samples analyzed from A67-SB34 and A67-SB35. Metals were not detected above their TTLC or STLC.

Two soil vapor samples (A67-SG171 and A67-SG116) were also collected adjacent to the pits. The soil vapor samples contained maximum concentrations of PCE and TCE at concentrations of 4.9 µg/L (A67-SG116) and 13 µg/L (A67-SG116), respectively. No other VOCs were detected in either of the soil vapor samples.

CONCLUSIONS:

Based on the subject submittal and other information in our files, we have no further requirements with respect to the San Fernando Valley Cleanup Program. The concentrations of contaminants detected in soil matrix and soil gas samples collected beneath the features described above are below the soil screening concentrations and appear not to pose a significant threat to groundwater quality. Groundwater beneath the site is at approximately 193 feet bgs. Therefore, further soil assessment or cleanup is not required. However, additional assessment or cleanup may be needed in the event that signs of soil contamination are discovered during future subsurface demolition and site redevelopment activities.

The "no further requirements" determination for these features does not affect the requirements for either assessment or cleanup of adjacent features at the subject site. This Regional Board's "no further requirements" decision does not affect the jurisdictional requirements of other agencies, such as the U.S. Environmental Protection Agency. Such agencies may choose to make their own determinations regarding the site.

If you have any questions, please call Alex Carlos at (213) 576-6726.

Sincerely,

Dennis A. Dickerson
Executive Officer

cc: Jorge Leon, SWRCB, Office of the Chief Counsel
Diane Strassmaier, U.S. EPA, Region IX
Hamid Saebfar, CALEPA, DTSC, Region 3
Paul Lisak, L. A. County Fire Dept., Health Hazmat
Mel Blevins, ULARA Watermaster
Dan Batrack, Tetra Tech (Pasadena)
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Gray Davis
Governor

October 19, 2000

Ms. Carol Yuge
Lockheed Martin Corporation
Burbank Program Office
2550 North Hollywood Way, 3rd Floor
Burbank, CA 91505-1055

Dear Ms. Yuge:

NO FURTHER REQUIREMENTS, FEATURE NO. 10 (TANK A-1-F)(SOIL ONLY), LOCKHEED MARTIN PLANT A-1 NORTH, AREA "A" (FILE NO. 104.5152) (CLEANUP & ABATEMENT ORDER NO. 87-161)

We have reviewed the *Delineation Excavation Report, Feature No. 10: Plant A-1 North, Area "A" Burbank, California* dated June 28, 2000. This report summarizes the results of a soil excavation program performed at Feature No. 10 (Tank A-1-F), formerly located at the southeast corner of Building 65A, Plant A-1 North Area "A". The objective of the soil excavation was to delineate and then remove volatile organic compound (VOC) contaminated soil beneath the tank. This soil excavation was conducted based on the *Delineation Work Plan, Plant A-1 North, Area "A", Burbank, California* dated August 12, 1998 and approved by Regional Board staff in a letter to Lockheed Martin dated August 27, 1998. This remediation effort was conducted in compliance with Cleanup and Abatement Order No. 87-161.

Based on our review of the subject report, we have the following comments:

1. Underground storage tank (UST) A-1-F (5,000-gallon capacity) was originally used to store diesel fuel and later used to store waste hydraulic oil. Tetrachloroethene (PCE), trichloroethene (TCE) and ketones were detected in a sample of the tank's contents collected in 1985. In 1989, Tank A-1-F was closed in-place under the oversight of the City of Burbank Fire Department.

2. During the 1998 facility-wide preliminary site investigation, two soil borings (A65A-SB14 and A65A-SB15) were drilled to a depth of 40 feet below ground surface (bgs) in the tank area. Soil boring A65A-SB15 was drilled adjacent to the tank and boring A65A-SB14 was drilled adjacent to the tank's remote fill pipe. Soil samples were collected at 1 foot and then every 5 feet, from 5 to 40 feet bgs. Petroleum hydrocarbons, which consisted of 2,860 mg/kg of heavy oil and 449 mg/kg of diesel fuel, were only detected in one sample at a concentration of 3,309 mg/kg (A65A-SB13, 1-foot bgs). The only significant VOC detected was PCE at a concentration of 307 µg/kg (boring A65A-SB14, 1 foot bgs), which was above the site's soil screening concentration. Heavy metal concentrations were all below the Total Threshold Limit Concentration (TTLC) as specified in the California Administrative Code (CAC) Title 22.

3. Further delineation of the PCE contamination was conducted in July 1999 during closure procedures for Tank A-1-F. The City of Burbank Fire Department provided oversight for the tank removal. Ten confirmation soil samples were collected from the excavation's bottom and sidewalls and analyzed for VOCs. PCE and TCE were the only VOCs detected with maximum concentrations of 70 µg/kg and 6.6 µg/kg, respectively.

   In addition, one soil sample was collected beneath the tank and another below the tank's piping. The samples were tested for petroleum hydrocarbons, Total Recoverable Petroleum Hydrocarbons (TRPH), and methyl tert-butyl ether (MTBE). Petroleum hydrocarbons in the motor oil carbon range and TRPH were detected in one sample at concentrations of 41 mg/kg and 115 mg/kg, respectively. No VOCs or MTBE were present in the two samples analyzed.

4. Approximately 35 cubic yards of soil was removed to a maximum depth of 12 feet bgs and placed in two stockpiles (*affected soil* and *clean soil).* The *affected soil* was recycled at American Remedial Technologies, a thermal treatment and disposal facility in Lynwood, California. VOCs and TPH were not detected in the *clean soil* samples.

5. The excavation was backfilled with gravel and clean imported soil. Petroleum hydrocarbons, VOCs, polychlorinated biphenyls (PCBs), semi-VOCs and pesticides were not detected in the imported soil. Heavy metal concentrations detected in the fill samples were below the CAC Title 22 soil screening criteria and were reportedly typical of background concentrations in Southern California.

6. One soil gas sample (A65A-SG33) was collected 5 feet bgs at the east end of Tank A-1-F. Total VOC and PCE concentrations detected were 25 µg/L and 13 µg/L, respectively. Supplementary soil gas samples were also collected at 20 feet, 40 feet and 60 feet bgs beneath the tank area. These samples contained PCE and TCE at maximum concentrations (60 feet bgs) of 69 µg/L and 61 µg/L, respectively. VOC concentrations detected beneath the tank are below the Regional Board's VOC screening criteria and are not considered a threat to groundwater. In general, VOC concentration trends in soil gas increase with distance away from Feature No. 10.

7. Groundwater beneath the site is at approximately 193 feet bgs (February 1999).

Based on the subject submittal and other information in our files, we have no further requirements with respect to the San Fernando Valley Cleanup Program. The concentrations of soil contaminants detected in final confirmation soil samples beneath Feature No. 10 are below the soil screening concentrations and appear not to pose a threat to groundwater quality. Therefore, further soil assessment or cleanup is not required.

The "no further requirements" determination for Feature No. 10 does not affect the requirements for either assessment or cleanup of adjacent features at the subject site, or the requirements related to cleanup of polluted groundwater underlying Feature No. 10. This Regional Board's "no further requirements" decision does not affect the jurisdictional requirements of other agencies, such as the U.S. Environmental Protection Agency. Such agencies may choose to make their own determinations regarding the site.

If you have any questions, please call Alex Carlos at (213) 576-6726.

Sincerely,

Dennis A. Dickerson
Executive Officer

cc: Jorge Leon, SWRCB, Office of the Chief Counsel
Diane Strassmaier, U.S. EPA, Region IX
Hamid Saebfar, CALEPA, DTSC, Region 3
Paul Lisak, L. A. County Fire Dept., Health Hazmat
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Gray Davis
Governor

March 5, 2001

Mr. Gene Matsushita
Lockheed Martin Corporation
Burbank Program Office
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Burbank, CA 91505-1055

NO FURTHER REQUIREMENTS, FEATURE NO. 9 (FORMER DEGREASER PIT) (SOIL ONLY), LOCKHEED MARTIN PLANT A-1 NORTH, AREA "A" (FILE NO. 104.5152)(CLEANUP & ABATEMENT ORDER NO. 87-161)

Dear Mr. Matsushita:

We have reviewed the *Remedial Excavation Report, Feature No. 9: Plant A-1 North, Area "A" Burbank, California* dated February 28, 2000. This report summarizes the results of a shallow soil excavation performed at Feature No. 9 (former degreaser pit), formerly located at the northwest part of Building 65, Plant A-1 North Area "A". The objective of the excavation was to remove soil contaminated with cadmium and lead beneath Feature No. 9. This remediation activity was conducted in compliance with Cleanup and Abatement Order No. 87-161, issued by the Regional Board on December 17, 1987.

Based on our review of the subject report, we have the following comments:

1. Reportedly, the degreaser pit was used to collect condensate from the degreasers associated with cleaning and treating aircraft parts. During the February 1998 preliminary site investigation, soil boring A65-SB13 was drilled to a depth of 40 feet below ground surface (bgs) at the center of Feature No. 9. Eight soil samples were collected every 5 feet, from 5 to 40 feet bgs. The samples were analyzed for total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs) and heavy metals (upper 10 feet of samples). Based on the California Code of Regulations Title 22 (CCR, Title 22), samples containing metal concentrations above the Total Threshold Limit Concentration (TTLC) or the Soluble Threshold Limit Concentration (STLC) are considered hazardous. If the metal concentration is below the TTLC, but above ten times the STLC value, the sample is tested for soluble metals using the California Waste Extraction Test (WET). All samples containing soluble metals above its STLC were further analyzed for soluble metals using U.S. EPA's Toxic Characteristic Leaching Procedure (TCLP) method. Chromium screening was performed using the same procedure described above for heavy metals. Hexavalent chromium analysis is also performed for samples containing chromium (total) concentrations above the ten times STLC threshold of 50 mg/kg.

TPH and VOCs were not detected in the samples analyzed. However, cadmium and lead were detected at maximum concentrations of 185 mg/kg (10 feet bgs) and 291 mg/kg (5 feet bgs). Maximum concentrations of soluble cadmium and lead were 22.1 mg/L (10 feet bgs) and 50.7 mg/L (5 feet bgs), respectively. The concentrations of cadmium are above TTLC of 100 mg/kg and the STLC of 1 mg/L and are considered hazardous based on CCR Title 22. The maximum concentration of soluble lead is also above the STLC of 5 mg/L. Chromium (total) was detected at concentrations of 25.8 mg/kg (5 feet bgs) and 7.2 mg/kg (10 feet bgs), which are below the TTLC. Except for cadmium and lead, heavy metals were not detected above the CCR Title 22 criteria for hazardous waste associated with heavy metals.

2. In January 1999, further delineation of the cadmium and lead contamination was conducted by drilling five soil borings to a depth of 40 feet bgs. One boring was drilled adjacent to the previous boring (A65-SB13) and four borings were completed around Feature No. 9. Soil samples were collected at 1 foot, 5 feet and every 5 feet bgs to the termination depth of the boring. Maximum concentrations of lead and cadmium were 105 mg/kg (1 foot bgs) and 34.9 mg/kg (1 foot bgs), respectively. Soluble lead and cadmium were also detected at maximum concentrations of 4.55 mg/L (A65-SB1, 5 feet bgs) and 1.18 mg/L (A65-SB1, 5 feet bgs), respectively.

   Based on the assessment data, cadmium and lead concentrations that exceed the CCR Title 22 screening criteria were detected in the samples collected at 5 feet, 10 feet and 20 feet bgs. Cadmium and lead contaminated soil appear to be limited to the footprint of the degreaser pit.

3. A shallow soil removal action was performed from November 9 through December 10, 1999 to remove lead and cadmium-contaminated soil beneath the Feature No. 9. Approximately 480 cubic yards of soil was removed to a depth of 25 feet bgs, including the chromium (total)-contaminated soils detected at 5 feet and 10 feet bgs. This soil removal action was conducted based on Tetra Tech's *Final Remedial Action Plan, Feature No. 9, Plant A-1 North Area "A": Burbank, California* dated October 26, 1999 and approved by Regional Board staff in a letter to Lockheed Martin dated November 1, 1999.

   A total of 19 confirmation soil samples were collected from the base and sidewalls of the excavation. The purpose was to verify that the soil cleanup goal had been achieved. In the final confirmation samples, cadmium and lead concentrations ranged from non-detect (0.5 mg/kg) to 1.06 mg/kg and non-detect (0.5 mg/kg) to 8.18 mg/kg, respectively.

   Soil excavated from the immediate vicinity of Feature No. 9 was placed in a stockpile designated *affected soil* and soil from the perimeter of the excavation was designated *clean soil*. The excavation was backfilled with imported fill material and *clean soil* from this

excavation. TPH, VOCs, polychlorinated biphenyls (PCBs) and semi-VOCs were not detected in the samples collected from the imported material. Heavy metal concentrations detected in the imported material and *clean soil* stockpile were below the CCR Title 22 screening criteria. The maximum concentration of chromium (total) detected in the imported material was 3.56 mg/kg. Approximately 125 cubic yards of affected soil was disposed of as California-designated hazardous waste at Safety Kleen's facility in Buttonwillow, California.

4. Soil gas samples collected at 5 feet bgs at Feature No. 9 and its vicinity contained total VOC concentrations ranging from 24 µg/L (A65-SG43) to 49 µg/L (A65-SG44). Supplementary soil gas samples were collected at 20 feet and 40 feet bgs in three locations around Feature No. 9. These samples contained relatively low concentrations (less than 40 µg/L) of trichloroethene (TCE) and tetrachloroethene (PCE). These concentrations are below the Regional Board's VOC screening criteria and are not considered a threat to groundwater quality.

5. Groundwater beneath the site is at approximately 193 feet bgs.

Based on the subject submittal and other information in our files, we have no further requirements with respect to the San Fernando Valley Cleanup Program. The concentrations of cadmium and lead detected in final confirmation soil samples and other heavy metals detected during the preliminary assessment at Feature No. 9 are below the soil screening concentrations and appear not to pose a threat to groundwater quality. Therefore, further soil assessment or cleanup is not required.

The "no further requirements" determination for Feature No. 9 (soil only) does not affect the requirements for either assessment or cleanup of adjacent features at the subject site, or the requirements related to cleanup of polluted groundwater underlying Feature No. 9. This Regional Board's "no further requirements" decision does not affect the jurisdictional requirements of other agencies, such as the U.S. Environmental Protection Agency. Such agencies may choose to make their own determinations regarding the site.

If you have any questions, please call Alex Carlos at (213) 576-6726.

Sincerely,

Dennis A. Dickerson
Executive Officer

cc: Jorge Leon, SWRCB, Office of the Chief Counsel
Diane Strassmaier, U.S. EPA, Region IX
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Gray Davis
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June 26, 2001

Mr. Gene Matsushita
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PARTIAL NO FURTHER REQUIREMENTS (SOIL ONLY), LOCKHEED MARTIN PLANT A-1 NORTH, AREA "A", BURBANK, CALIFORNIA (FILE NO. 104.5152)(CLEANUP & ABATEMENT ORDER NO. 87-161)

Dear Mr. Matsushita:

We have reviewed the *Data Report, Additional LA-CRWQCB Requirements for Area "A" at Plant A-1 North: Burbank, California* dated February 2, 2001. The report documents the results of a supplementary investigation, which was conducted in Plant A-1 North, Area "A" in response to a Regional Board staff letter to Lockheed Martin dated October 14, 1999. The purpose of this investigation was to delineate the extent of soil contamination detected during the February 1998 preliminary site assessment. The report also summarizes the results of soil sampling in areas of concern, such as the transformer vaults, which were not previously assessed due to access limitations. These investigations were conducted in compliance with Cleanup and Abatement Order No. 87-161, issued by the Regional Board on December 17, 1987.

This letter will focus on the areas of concern within Plant A-1 North, Area "A" that were discussed in the subject report. Note that these areas were not covered in the Regional Board's *partial no further requirements* letter dated September 29, 2000 that was issued for Area "A" based on the February 1998 preliminary site assessment results. General requirements for areas that need further assessment are also covered. Specific comments on these areas will be provided in a separate letter.

Based on our review, we make the following comments:

FINDINGS:

A. Feature No. 15 (Former Heat Treating Area)

A heat treating area was previously located in the northeast area of Building 67. During the 1998 preliminary site assessment, soil borings A67-SB22 and A67-SB23 were drilled to a depth of 40 feet below ground surface (bgs) in this area. Soil samples were collected at 1 foot, 5 feet and every 5-foot interval to 40 feet bgs. Samples were analyzed for total petroleum hydrocarbons

hexavalent chromium was not detected in the deepest samples (10 feet bgs). The concentrations of heavy metals detected beneath this feature were below the TTLC and STLC criteria based on the CCR, Title 22. Based on the assessment data, it appears that the elevated chromium (total) detected during the February 1998 assessment is localized and should not pose a significant threat to groundwater quality.

During the February 1998 site investigation, PCE and TCE were detected in soil gas sample A65-SG67 (5 feet bgs) at concentrations of 5.1 µg/L and 4.4 µg/L, respectively. PCE was also detected at a concentration of 10 µg/kg (1 foot bgs) in one soil sample. No other VOCs were detected in the samples.

D. Areal Coverage Borings

During the February 1998 preliminary site assessment, soil borings A60-SB4, A62-SB5 and A65A-SB20 were part of a series of borings drilled to a depth of 20 feet bgs near sewer and storm drain lines. Soil samples were collected at 1 foot, 5 feet and every 5-foot interval to 20 feet bgs. Samples were analyzed for TPH and VOCs, but not for heavy metals. In December 1999, soil borings were drilled adjacent to former borings A60-SB4, A62-SB5 and A65A-SB20. Soil samples were collected at 1, 5, 10, 15 and 20 feet bgs and analyzed for heavy metals. The concentrations of heavy metals detected, including chromium (total), were below the TTLC and the STLC criteria based on the CCR, Title 22. Chromium (total) was detected at maximum concentration of 7.1 mg/kg (20 feet bgs) at boring A62-SB5.

E. Areal Coverage Soil Vapor Points

1. Building 61

During the 1998 preliminary site assessment, soil vapor sample points A61-SG2 and A61-SG3 encountered refusal due to the thick concrete slab on the north side of Building 61. On January 2, 2000 and July 27, 2000, this area was resampled by collecting soil vapor samples A61-SG3-7 (7 feet bgs) and A61-SG2-5 (5 feet bgs). PCE and TCE were the only VOCs present in the samples at maximum concentrations of 8.2 µg/L and 10 µg/L, respectively.

2. Building 62

- On January 2, 2000, soil vapor samples were collected at 20, 40 and 60 feet bgs from soil vapor probe A62-SG5, located adjacent to soil boring A62-SB5. PCE and TCE were the only VOCs detected in the samples at maximum concentrations of 30.9 µg/L (60 feet bgs)

U. S. Environmental Protection Agency Region IX residential preliminary remediation goal (PRG) of 220 µg/kg and industrial PRG of 1,000 µg/kg (year 2000 update).

3. Building 66A

A transformer vault was previously located in the southeast corner of former Building 66A. Based on the *Environmental Assessment Report, Lockheed Plant A-1 North Burbank, California (May 1995)*, six oil-cooled transformers were formerly located in the vault. On August 11, 2000, sample A65XFMR was collected beneath the transformer vault. No PCBs were detected in the sample.

4. Building 67

Soil samples for PCB analysis were required in the following areas as former transformers in these areas contained oil with PCBs, according to the *Environmental Assessment Report, Lockheed Plant A-1 North Burbank, California (May 1995)*:

- former transformer vault near columns 28 and 32
- transformer pads located south of the building and adjacent to the boundary fence
- transformer pads near columns 23 and 53

PCBs were not detected in the samples collected beneath these areas in August 2000.

G. Former Drum Storage Area, Building 63

A drum storage area was formerly located in the central part of Building 63 based on Figure 5-19, *Aerial Remote Sensing of Ground Water Contamination Sources, Eastern San Fernando Valley: 1937-1964, Lockheed (December 1986)*. In July 2000, boring A63-SB37 was drilled to a depth of 20 feet bgs in the former drum storage area. Soil samples were collected at 1, 5, 10, 15 and 20 feet bgs. Samples were analyzed for the presence of TPH, VOCs and heavy metals. TPH and VOCs were not detected in the samples. The concentrations of heavy metals, including chromium (total), were below the TTLC and STLC criteria based on the CCR, Title 22. Chromium (total) was detected at a maximum concentration of 5.05 mg/kg (at 5 feet bgs).

H. Additional Requirements

Based on the results of the subject investigation, multi-depth soil gas probes are required to a maximum depth of 180 feet bgs in the vicinity of soil gas probes A63-SG20 and A95-SG24 and near the northern property boundary. The purpose of this additional assessment is to determine the extent of the VOC plume in the area north of Buildings 68, 69 and 74. Relatively high concentrations of PCE and TCE that exceed the soil screening level of 127 µg/kg based on the

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Gray Davis
Governor

April 4, 2000

Ms. Carol Yuge
Lockheed Martin Corporation
Burbank Program Office
2550 North Hollywood Way, 3rd Floor
Burbank, CA 91505-1055

Dear Ms. Yuge:

NO FURTHER REQUIREMENTS, FEATURE 48 (FORMER CLARIFIER A-1-S), BUILDING 69, LOCKHEED MARTIN PLANT A-1 NORTH, AREA "B", BURBANK, CALIFORNIA (FILE NO. 104.5152)(CLEANUP & ABATEMENT ORDER NO. 87-161)

We have reviewed the *Delineation Excavation Report Feature 48: Plant A-1 North, Area "B" Burbank, California* dated November 3, 1999, prepared by your consultant, Tetra Tech. This report documents the removal of VOC-impacted soil at Feature 48 (former Clarifier A-1-S) located outside the northwestern corner of Building 69, Plant A-1 North Area "B".

Based on our review of the subject report, we have the following comments with respect to the Regional Board's San Fernando Valley Cleanup Program:

1. Prior to the preliminary site investigation performed by Tetra Tech, Gregg & Associates drilled one soil boring (A-1-S-B1) to a depth of 40 feet below ground surface (bgs) north of the clarifier. Five soil samples were collected from depths of 5, 10, 22, 32 and 40 feet bgs and were analyzed for volatile organic compounds (VOCs) and Title 22 metals. VOCs and metals were not detected above the detection limits or were present at levels comparable to background concentrations at the subject site.

2. Based on the Environmental Assessment report (McLaren Hart, May 1995), clarifier A-1-S was removed in the mid-1980s.

3. During the preliminary site investigation, a total of four soil samples were collected from one soil boring (B69-SB55) drilled to a maximum depth of 20 feet bgs adjacent to Feature 48. The samples were analyzed for Total Petroleum Hydrocarbons (TPH) and VOCs. Concentrations of VOCs ranged from 526 ug/kg (identified as PCE at 1 foot bgs) to non-detect. Motor oil and diesel related hydrocarbons were also detected at 1 foot bgs at concentrations of 2,880 mg/kg and 198 mg/kg, respectively. Gasoline related hydrocarbons were not detected.

4. A limited excavation was performed from July 8, 1999 through July 30, 1999 in the area of soil boring B69-SB55, where the highest PCE concentration (526 ug/kg at 1 foot bgs) was

previously detected. A total of 46 cubic yards of VOC-impacted soil was removed from the Feature 48 area to a depth of 5 feet bgs.

5. A total of nine confirmation soil samples were collected from the base and sidewalls of the excavation. The purpose was to verify that the removal action has achieved the cleanup goal of removing VOC-impacted soil that exceed the soil screening criteria for groundwater protection based on the Regional Board's Interim Site Assessment & Cleanup Guidebook (May, 1996). PCE concentrations in the confirmation samples ranged from non-detect to 36 ug/kg. No other VOCs were detected in the confirmation samples.

6. In soil gas samples, TCE (17 ug/L) and PCE (101 ug/L) were detected at 5 feet bgs from soil gas probe A63-SG37 located adjacent to Feature 48. These concentrations are relatively lower compared to VOC concentrations detected in the surrounding soil gas probes. Multi-depth soil gas sampling (at 20, 40 and 60 feet bgs) was required in three areas located approximately 100 feet from Feature 48.

7. Groundwater beneath the site is at approximately 193 feet bgs.

Based on the subject submittal and other information in our files, we have no further requirements with respect to the San Fernando Cleanup Program. The concentrations of soil contaminants detected beneath Feature 48 are below the soil screening concentrations and appear not to pose a threat to groundwater quality. Therefore, further soil assessment or cleanup is not necessary. However, additional assessment or cleanup may be needed in the event that previously unknown potential sources or signs of soil impact are discovered during future subsurface demolition activities.

The "no further requirements" determination for Feature 48 does not affect the requirements for either assessment or cleanup of adjacent features at the subject site. This Regional Board's "no further requirements" decision does not affect the jurisdictional requirements of other agencies, such as the U.S. Environmental Protection Agency. Such agencies may choose to make their own determinations regarding the site.

If you have any questions, please call Alex Carlos at (213) 576-6726.

Sincerely,

Dennis A. Dickerson
Executive Officer

c: Jorge Leon, SWRCB, Office of the Chief Counsel
Diane Strassmaier, U.S. EPA, Region IX
Hamid Saebfar, CALEPA, DTSC, Region 3
Paul Lisak, L. A. County Fire Dept., Health Hazmat
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Gray Davis
Governor

March 30, 2001

Mr. Gene Matsushita
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2550 North Hollywood Way, 3rd Floor
Burbank, CA 91505-1055

NO FURTHER REQUIREMENTS (SOIL ONLY), FEATURE NO. 34 (FORMER SUMP A-1-ZE), LOCKHEED MARTIN PLANT A-1 NORTH, AREA "B", 2555 N. HOLLYWOOD WAY, BURBANK, CALIFORNIA (FILE NO. 104.5152)(CLEANUP & ABATEMENT ORDER NO. 87-161)

Dear Mr. Matsushita:

We have reviewed the *Delineation Excavation Report, Feature No. 34: Plant A-1 North, Area "B" Burbank, California* dated October 11, 1999. This report summarizes the results of a shallow soil excavation performed at Feature No. 34 (former sump A1-ZE), previously located in the south central part of Building 69, Lockheed Martin Plant A-1 North Area "B". The objective of the excavation was to delineate and remove shallow soils impacted with tetrachloroethene (PCE) that exceed the soil screening level of 127 µg/kg based on the Regional Board's *Interim Site Assessment and Cleanup Guidebook* (May 1996). This remediation activity was conducted in compliance with Cleanup and Abatement Order No. 87-161, issued by the Regional Board on December 17, 1987.

Based on our review of the subject report, we make the following findings:

1. In 1988, soil boring S3-B1 was drilled to 40 feet below ground surface (bgs) at Feature No. 34. The highest PCE concentration was detected at 250 µg/kg (5 feet bgs). In 1994, this feature was removed and soil samples were collected in the underlying soil. Total extractable hydrocarbons, polychlorinated biphenyls (PCBs) and PCE were detected at 75 mg/kg, 37 µg/kg and 83 µg/kg, respectively.

2. During the February 1998 preliminary site investigation, soil boring B69-SB47 was drilled to a depth of 40 feet bgs at Feature No. 34. Soil samples were collected at 1 foot, 5 feet and every 5-foot interval to 40 feet bgs. Samples were analyzed for total petroleum hydrocarbons (TPH), PCBs, volatile organic compounds (VOCs) and heavy metals. Only PCE was detected at a concentration of 167 µg/kg (1 foot bgs), which exceeded the soil screening level of 127 µg/kg for the site. The concentrations of heavy metals, including chromium (total), were below the Total Threshold Limit Concentration (TTLC) and the Soluble Threshold Limit Concentration (STLC) based on the California Code of Regulations Title 22 (CCR, Title 22). Chromium (total) was detected at a maximum concentration of 9.7 mg/kg (5 feet bgs).

3. During the 1998 preliminary soil gas investigation, sample B69-SG109 (5 feet bgs) was taken adjacent to Feature No. 34. PCE was the primary VOC detected at a concentration of 457 µg/L. Multi-depth vapor probes were also installed to a maximum depth of 180 feet bgs in boring B69-38-

SB6, located adjacent to Feature No. 34. These multi-depth probes were primarily installed to delineate the PCE vapor plume migrating from Feature No. 38 (former skin mill) and Feature No. 33 (former sump A-1-X), which are located approximately 80 feet north and 80 feet southeast of Feature No. 34, respectively. PCE and TCE were the primary VOCs detected at B69-38-SB6 at maximum concentrations of 3,909 µg/L (140 feet bgs) and 731 µg/L (180 feet bgs), respectively. Based on the spatial distribution of PCE vapors, it appears that Feature No. 33 and Feature No. 38 are the main sources of PCE vapors present beneath Feature No. 34. This PCE plume will be remediated by a future soil vapor extraction system being designed for Feature No. 33 and Feature No. 38.

4. A shallow soil excavation was performed from July 19, 1999 to July 27, 1999 to remove VOC contaminated soil beneath Feature No. 34. Approximately 62.5 cubic yards of soil was removed to a depth of 8 feet bgs. This soil removal action was in accordance with Tetra Tech's *Delineation Work Plan, Plant A-1 North Area "B": Burbank, California* dated September 4, 1998 and approved by Regional Board staff in a letter to Lockheed Martin dated January 26, 1999.

5. A total of 9 confirmation soil samples were collected from the base and sidewalls of the excavation. The purpose of this activity was to verify that the soil cleanup goal had been achieved. PCE was detected in the eastern sidewall at a maximum concentration of 220 µg/kg (3 feet bgs). This concentration exceeds the VOC screening level of 127 µg/kg and was attributed to the PCE contamination at Feature No. 33. Additional excavation to the east will be addressed during the delineation at Feature No. 33.

   The Feature No. 34 excavation was backfilled with imported clean soil. Reportedly, the concentrations of residual heavy metals, including that of total chromium (maximum of 3.56 mg/kg), in the imported soil were below the CCR, Title 22 screening criteria.

6. Soil excavated from the immediate vicinity of soil boring B69-SB47 (an area with elevated PCE concentration) was placed in a stockpile designated *affected soil.* Approximately 3.5 cubic yards of *affected soil* was disposed of off-site at American Remedial Technologies, a soil treatment and recycling facility in Lynwood, California. Soil from the perimeter of the excavation was designated *suspect clean* stockpile. TPH and PCE were detected in the *suspect clean* soil at maximum concentrations of 99 mg/kg (carbon range $>C_{23}$) and 81 µg/kg, respectively.

7. Groundwater beneath the site is at approximately 193 feet bgs.

Based on the subject submittal and other information in our files, we have no further requirements with respect to the San Fernando Valley Cleanup Program. Except for elevated PCE concentrations detected in the eastern perimeter of the excavation, confirmation samples taken at the Feature No. 34 excavation were below the VOC screening level of 127 µg/kg and do not pose a threat to groundwater quality. Therefore, further soil assessment or cleanup is not required at Feature No. 34. The elevated PCE concentrations detected in the eastern part of the excavation and multi-depth vapor probe B69-38-SB6 appear to be associated with the PCE release at Feature No. 33 (former sump A-1-X) and Feature No. 38 (former skin mill). The PCE plume beneath Feature No. 34 will be remediated by a future soil vapor extraction system being designed for Feature No. 33 and 38.

The "no further requirements" determination for Feature No. 34 (soil only) does not affect the requirements for either assessment or cleanup of adjacent features at the subject site, or the requirements related to cleanup of polluted groundwater underlying the subject site. This Regional Board's "no further requirements" decision does not affect the jurisdictional requirements of other agencies, such as the U.S. Environmental Protection Agency. Such agencies may choose to make their own determinations regarding the site.

If you have any questions, please call Alex Carlos at (213) 576-6726.

Sincerely,

Dennis A. Dickerson
Executive Officer

cc: Jorge Leon, SWRCB, Office of the Chief Counsel
Diane Strassmaier, U.S. EPA, Region IX
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June 26, 2001

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PARTIAL NO FURTHER REQUIREMENTS (SOIL ONLY), LOCKHEED MARTIN PLANT A-1 NORTH, AREA "B", BURBANK, CALIFORNIA (FILE NO. 104.5152) (CLEANUP & ABATEMENT ORDER NO. 87-161)

Dear Mr. Matsushita:

On December 21, 1999, Regional Board staff provided Lockheed Martin the comments on the *Preliminary Site Investigation Report, Plant A-1 North, Area "B": Burbank, California* dated May 22, 1998. This report summarizes the February 1998 soil matrix and soil gas investigations in Plant A-1 North, Area "B", which consists of Buildings 68, 69 and 74. These investigations were conducted in compliance with Cleanup and Abatement Order No. 87-161, issued by the Regional Board on December 17, 1987. Based on our review of the report, additional site assessment was required in some contaminant source areas. However, supplementary assessment was not required in areas where contaminant concentrations detected were below soil screening levels. This letter will focus on the latter areas within Area "B".

The purpose of the preliminary site investigation in Area "B" was to document the presence or absence of contaminants beneath chemical use and storage features. These features were identified based on site inspections and review of previous investigation reports. At least one soil boring was drilled at each feature. Multiple soil borings were completed in features that covered a large area. In addition, soil borings were drilled on a 200-foot grid to provide a general assessment of Area "B". Soil borings were drilled to a maximum depth of 40 feet below ground surface (bgs) and soil samples were collected at 1 foot bgs and every 5 feet to 40 feet bgs. All samples were analyzed for Total Petroleum Hydrocarbons (TPH) using EPA Method 8015 Modified. Based on the chemicals used in a given area, samples were analyzed for volatile organic compounds (VOCs) using EPA Method 8260A, polychlorinated biphenyls (PCBs) using EPA Method 8081, pH using EPA Method 9045, semi-VOCs using EPA Method 8270B, and heavy metals using EPA Method 6010/7000 series. Soil vapor samples were also collected at 5 feet bgs adjacent to the features and on a 100-foot grid throughout Area "B".

FINDINGS:

BUILDING 68

Building 68 was located in the west central part of Plant A-1 North. The primary function performed in Building 68 was fabrication and assembly of aircraft parts and subassemblies for various aircraft. Based on the site inspection and review of the *Environmental Assessment Report, Lockheed Plant A-1 North (May 1995)*, 21 suspected chemical use and storage areas were identified in Building 68.

1. **Feature No. 1 (Former Oil Quench Tank Area)**
An oil quench tank, which was used to cool machined parts, was previously located in the southeast corner of Building 68. Reportedly, the oil quench tank contained oils, solvents, and metal shavings from the machined parts. One soil boring (B68-SB1) was drilled at Feature No. 1. TPH, VOCs and PCBs were not detected in any of the samples analyzed from boring B68-SB1. Heavy metals, including chromium (total) were not reported above their Total Threshold Limit Concentration (TTLC) or Soluble Threshold Limit Concentration (STLC) based on the California Code of Regulations, Title 22 (CCR, Title 22). Chromium (total) was found at a maximum concentration of 6 mg/kg (5 feet bgs).

2. **Feature No. 13 (Former Paint Shop Dip Tanks)**
A total of six paint dip tanks were previously located in the southwest part of Building 68. One soil boring (B68-SB21) and one soil vapor probe (B68-SG119) were installed at Feature No. 13. TPH compounds were not detected in any of the soil samples analyzed from boring B68-SB21. Tetrachloroethene (PCE) was the only VOC detected at a maximum concentration of 14 µg/kg (5 feet bgs). VOCs were not identified in any of the remaining soil samples from B68-SB21. In soil vapor, PCE and trichloroethene (TCE) were also detected at concentrations of 2.28 µg/L and 2.34 µg/L, respectively. Heavy metals, including chromium (total) were not reported above their TTLC or STLC based on the CCR, Title 22. Chromium (total) was identified at a peak concentration of 10.2 mg/kg (10 feet bgs).

3. **Feature No. 14 (Floor Drain in Machine Shop/Storage Area)**
A floor drain in the machine shop was previously located in the southwest corner of Building 68. One soil boring (B68-SB22) and one soil vapor probe (B68-SG127) were installed at the location of the floor drain. TPH and PCBs were not detected in any of the soil samples analyzed from boring B68-SB22. Dichlorodifluoromethane was detected at a maximum concentration of 33 µg/kg (20 feet bgs). Heavy metals, including chromium (total) were not present above their TTLC or STLC based on the CCR, Title 22. Chromium (total) was reported at a maximum concentration of 4.2 mg/kg (1 foot bgs). In soil vapor, PCE and TCE were detected at concentrations of 5.0 µg/L and 7.7 µg/L, respectively.

4. **Feature No. 16 (Paint Mixing Room and Former Clarifier A-1-T)**
A paint mixing room and clarifier A-1-T were located in the west central part of Building 68. The clarifier located outside the west wall of the paint mixing room was suspected to have received effluent from the floor drains in the hull paint booth (located west of the paint mixing room). In 1994, the clarifier was removed and soil samples were collected beneath the clarifier. No chemicals of concern were detected in the soil samples (AES, January 1995).

   One soil boring (B68-SB25) and one soil vapor probe (B68-SG83) were installed at Feature No. 16. In soil matrix, TPH (motor oil carbon range) was detected at a concentration of 115 mg/kg (1 foot bgs), but no TPH was present in the remaining samples analyzed. PCE was the only VOC identified at a concentration of 9 µg/kg (5 feet bgs). PCE and TCE were also detected in soil vapor sample B68-SG83 at a concentration of 8.3 µg/L and 4.9 µg/L, respectively. PCBs were not detected in any of the soil samples collected from boring B68-SB25. Heavy metals, including chromium (total) were not reported above their TTLC or STLC based on the CCR, Title 22. Chromium (total) was identified at a maximum concentration of 11.6 mg/kg (5 feet bgs).