

**Red Dog Mine  
Total Suspended Particulates, Lead and Zinc Concentrations  
January 1, 2005 to December 31, 2005**

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**Red Dog Mine Site**

**March 2006**



Teck Cominco Alaska Incorporated  
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## **Background**

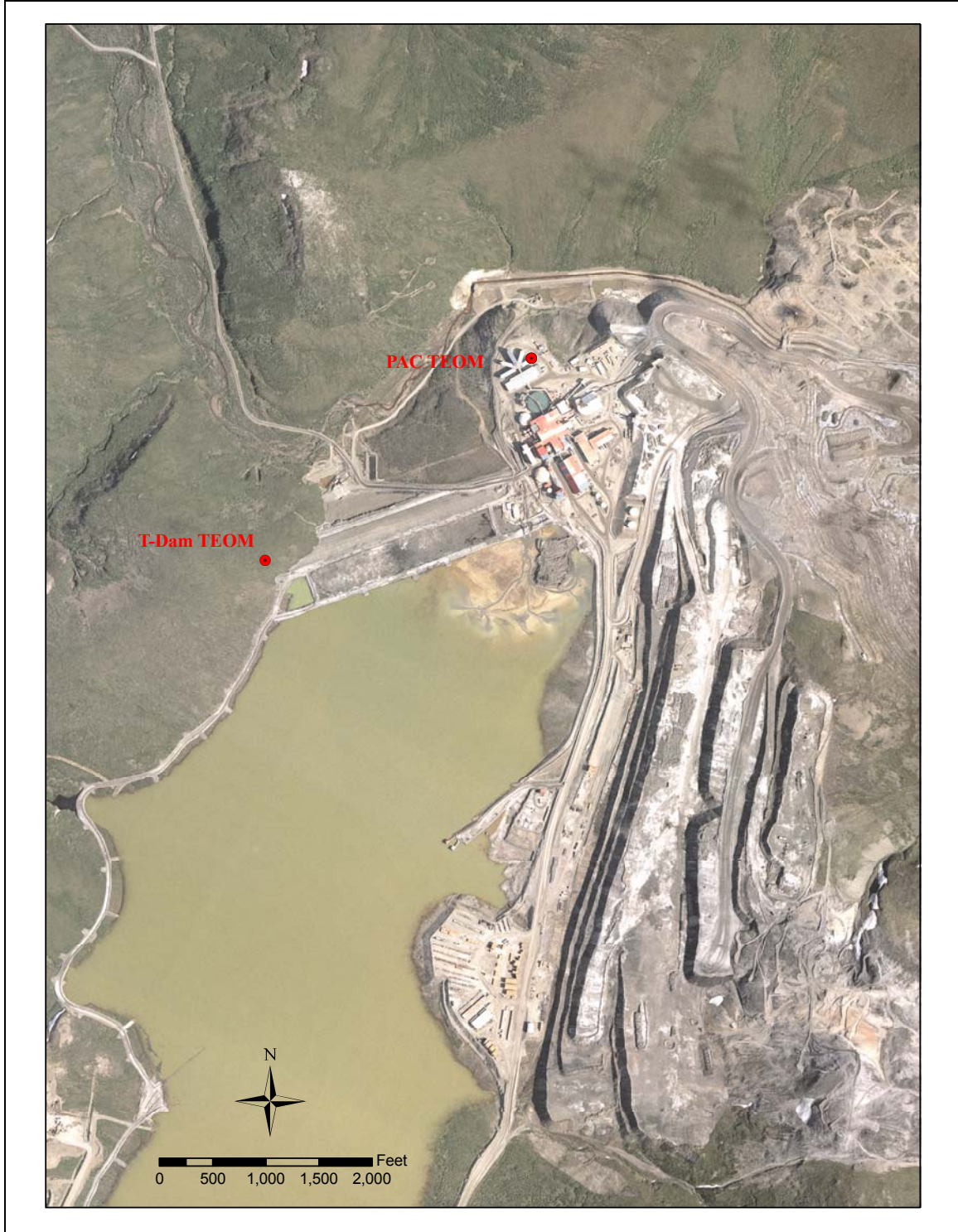
Teck Cominco Alaska, Incorporated (TCAK) operates the Red Dog Mine, which is located approximately 90 miles northeast of Kotzebue, Alaska and 47 miles inland of the Chukchi Sea.

On September 21, 2005 TCAK and the State of Alaska, Department of Environmental Conservation (DEC) entered into a Memorandum of Understanding (MOU) related to fugitive dust at the Red Dog mine. Section 2.1 of the MOU requires the reporting of the total suspended particulates, lead, and zinc sample results for 2005. This reporting requirement in Section 2.1 of the MOU is satisfied with this report.

## **Monitoring Program**

TCAK monitors Total Suspended Particulates (TSP), airborne lead, and airborne zinc using Rupprecht & Patashnick 1400 AB TEOM ambient particulate monitors (TEOM) equipped with TSP Inlets and Automatic Cartridge Collection Units (ACCU). The units measure TSP concentration every two seconds and record the hourly average TSP concentration. The ACCU collects a sample for airborne zinc and lead on a preset schedule, the collection schedule range from a 1 in 2 schedule to a 1 in 6 schedule. All monitoring is done within the ambient air boundary and is conducted to provide operation understanding and increased control of fugitive dust.

In 2005 the monitoring program consisted of two monitoring stations. The first monitor, PAC TEOM, is located on the roof of the southeast corner of the Personal Accommodation Complex. The second monitor, T-Dam TEOM, is located west of the tailing dam. See Figure 1 for the location of the sample stations. The T-Dam station collected data throughout 2005. The PAC TEOM station began collection data on January 16, 2005. The PAC TEOM collected a lead and zinc sample on a 1 in 2 day schedule during the monitoring period. From January 4 through September 19 the T-Dam TEOM collected a lead and zinc sample on a 1 in 6 day schedule. As a component of the MOU the lead and zinc sample collection schedule for the site was modified to a 1 in 2 day schedule, beginning on September 21.



**Figure 1: Location of Monitoring Stations**

## Sample Results

### **Results Summary**

The annual and quarterly averages of the PAC TEOM and T-Dam TEOM for TSP, lead and zinc are provided in Table 1. During 2005 the PAC TEOM averaged  $65 \mu\text{g}/\text{m}^3$  TSP,  $0.5 \mu\text{g}/\text{m}^3$  lead, and  $1.2 \mu\text{g}/\text{m}^3$  zinc. The T-Dam TEOM averaged  $25 \mu\text{g}/\text{m}^3$  TSP,  $0.3 \mu\text{g}/\text{m}^3$  lead, and  $0.6 \mu\text{g}/\text{m}^3$  zinc.

The fugitive emissions follow a cyclical pattern, with the lowest emission during the nonfreezing portion of the year and higher emission during the freezing portion of the year (Figure 2). The highest monthly averages were observed in March, April, October, and November. The monthly minimum, maximum, and average sample results for TSP, lead and zinc are presented in Table 2. Comparing the TSP, lead and zinc to the average temperature and precipitation indicate that the fugitive emissions are related to periods of low temperature with little precipitation.

The daily TSP, lead and zinc samples are presented in Table 3: Daily Sample Results January 2005 Table 3 through Table 14. The daily average temperature and daily precipitation is included for comparison purposes. The data indicates that episodes of increased fugitive emissions are related to periods of subfreezing temperature with little precipitation.

A summary of invalid samples is provided in Table 15. Sources of invalid readings included water on the sample filter, system programming errors, missing data and maintenance on the sampling system.

Red Dog Mine  
 Total Suspended Particulates, Lead and Zinc Concentrations  
 January 1, 2005 to December 31, 2005

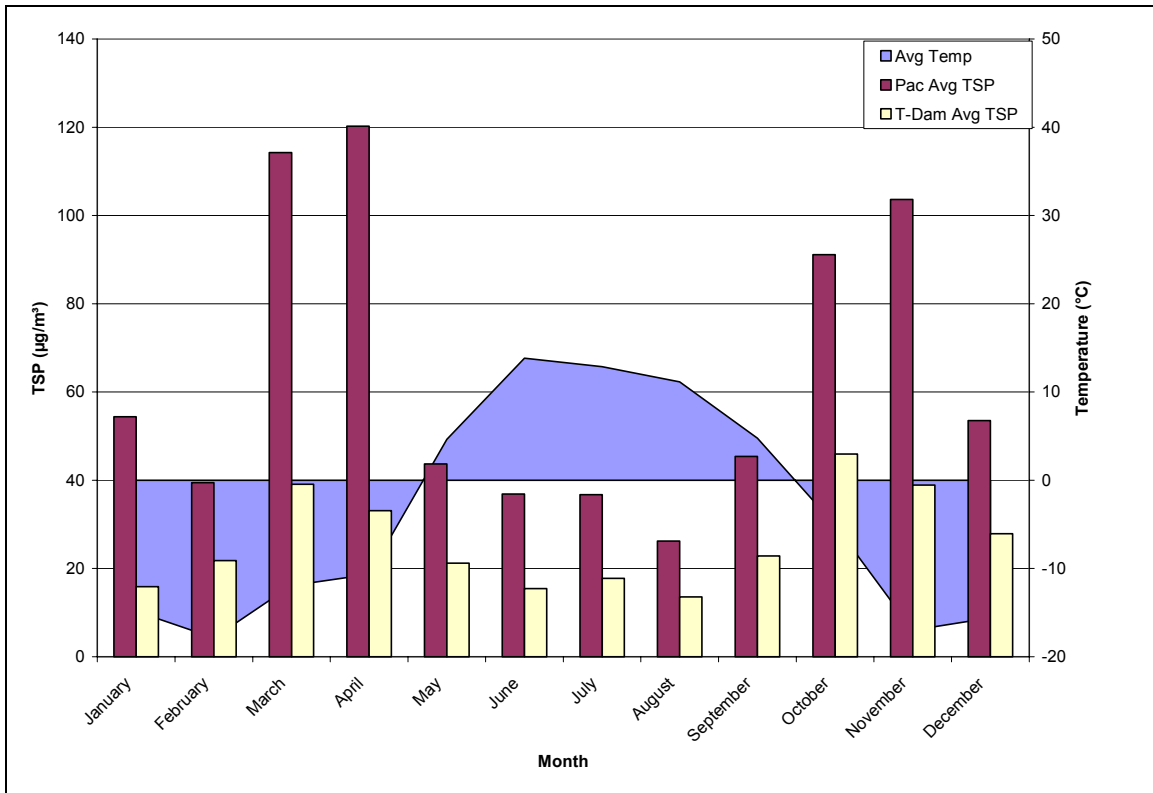


Figure 2: Monthly Average Temperature and TSP

Table 1: Quarterly and Annual Averages

Red Dog Mine 2005 Quarterly and Annual Temperature Precipitation TSP, Lead and Zinc Concentration								
	Avg Temp °C	Daily Precip mm	PAC TEOM			T-Dam TEOM		
			Lead µg/m³	Zinc µg/m³	TSP µg/m³	Lead µg/m³	Zinc µg/m³	TSP µg/m³
1 <sup>st</sup> Quarter Average	-15.2	0.6	0.7	1.8	78	0.3	0.9	26
2 <sup>nd</sup> Quarter Average	2.9	0.6	0.6	1.5	65	0.2	0.4	23
3 <sup>rd</sup> Quarter Average	9.6	3.0	0.3	0.6	36	0.1	0.2	18
4 <sup>th</sup> Quarter Average	-12.5	0.7	0.5	0.9	83	0.4	0.7	37
Annual Min	-31.0	0.0	0.0	0.0	3	0.0	0.0	2
Annual Max	22.9	22.9	2.7	7.3	575	1.5	3.4	247
Annual Average	-3.7	1.2	0.5	1.2	65	0.3	0.6	25

**Table 2: Monthly Minimum, Maximum, and Averages**

<b>Red Dog Mine 2005 Monthly Temperature Precipitation TSP, Lead and Zinc Concentration</b>									
		Avg Temp °C	Daily Precip mm	PAC TEOM			T-Dam TEOM		
				Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>	Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>
Jan	Min	-31.0	0.0	0.3	0.5	4	0.1	0.2	3
	Max	-1.6	7.0	1.6	5.2	128	0.5	1.2	42
	Avg	-14.8	0.7	0.7	2.2	54	0.2	0.6	16
Feb	Min	-26.6	0.0	0.1	0.3	7	0.1	0.2	4
	Max	-7.6	3.8	1.6	3.9	151	0.8	2.4	67
	Avg	-17.9	0.6	0.5	1.3	39	0.4	1.2	22
Mar	Min	-24.3	0.0	0.4	0.8	12	0.1	0.2	5
	Max	-1.9	6.0	2.4	7.3	486	0.8	2.5	148
	Avg	-11.9	0.7	0.8	2.0	114	0.3	1.0	39
April	Min	-25.3	0.0	0.1	0.3	11	0.1	0.4	6
	Max	6.0	8.4	2.4	5.9	575	0.5	1.5	146
	Avg	-10.7	0.5	1.0	2.4	120	0.3	0.7	33
May	Min	-3.5	0.0	0.1	0.1	3	0.1	0.2	3
	Max	14.6	9.4	2.2	5.9	162	0.2	0.4	74
	Avg	4.6	0.7	0.5	1.3	44	0.1	0.2	21
June	Min	6.9	0.0	0.0	0.1	7	0.0	0.1	4
	Max	22.9	11.3	1.1	2.1	181	0.1	0.1	68
	Avg	13.8	0.5	0.3	0.6	37	0.0	0.1	15
July	Min	5.6	0.0	0.0	0.1	4	0.0	0.0	3
	Max	19.6	17.4	1.0	2.1	117	0.2	0.4	74
	Avg	12.9	1.4	0.3	0.8	37	0.1	0.2	18
Aug	Min	2.2	0.0	0.0	0.0	3	0.0	0.0	3
	Max	18.7	22.9	0.7	1.7	79	0.1	0.2	43
	Avg	11.1	3.5	0.2	0.6	26	0.0	0.1	14
Sept	Min	-4.1	0.0	0.0	0.1	4	0.0	0.0	2
	Max	8.8	22.3	2.0	2.0	412	0.5	0.6	187
	Avg	4.8	4.1	0.3	0.5	45	0.1	0.2	23
Oct	Min	-17.1	0.0	0.1	0.3	5	0.0	0.0	3
	Max	2.8	11.9	2.7	3.1	421	1.1	1.4	247
	Avg	-5.1	1.1	0.7	1.1	91	0.3	0.5	46
Nov	Min	-20.2	0.0	0.2	0.4	35	0.1	0.1	12
	Max	-12.3	0.6	1.6	3.1	236	1.5	2.1	100
	Avg	-17.0	0.0	0.6	1.1	104	0.3	0.6	39
Dec	Min	-23.9	0.0	0.1	0.2	6	0.0	0.0	4
	Max	-3.4	9.3	1.2	2.5	182	1.5	3.4	89
	Avg	-15.6	1.0	0.3	0.6	53	0.5	1.0	28

**Table 3: Daily Sample Results January 2005**

<b>Red Dog Mine January 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	Average Temp °C	Daily Precip mm	PAC TEOM			T-Dam TEOM		
			Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>	Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>
1-Jan-05	-3.5	1.2	--	--	--	--	--	6
2-Jan-05	-1.6	7.0	--	--	--	--	--	6
3-Jan-05	-4.7	0.5	--	--	--	--	--	7
4-Jan-05	-9.7	0.2	--	--	--	0.2	0.5	8
5-Jan-05	-14.2	1.0	--	--	--	--	--	7
6-Jan-05	-4.7	5.5	--	--	--	--	--	9
7-Jan-05	-3.6	1.1	--	--	--	--	--	4
8-Jan-05	-10.7	5.2	--	--	--	--	--	3
9-Jan-05	-28.0	0.0	--	--	--	--	--	8
10-Jan-05	-30.4	0.0	--	--	--	0.1	0.3	23
11-Jan-05	-31.0	0.0	--	--	--	--	--	--
12-Jan-05	-27.8	0.0	--	--	--	--	--	--
13-Jan-05	-22.8	0.0	--	--	--	--	--	--
14-Jan-05	-23.1	0.0	--	--	--	--	--	--
15-Jan-05	-22.6	0.0	--	--	--	--	--	--
16-Jan-05	-19.0	0.0	1.6	5.2	128	0.3	1.0	42
17-Jan-05	-18.3	0.0	--	--	82	--	--	9
18-Jan-05	-14.8	0.0	0.7	2.1	53	--	--	15
19-Jan-05	-14.6	0.0	--	--	57	--	--	11
20-Jan-05	-12.7	0.0	1.5	5.2	95	--	--	19
21-Jan-05	-8.8	0.1	--	--	41	--	--	17
22-Jan-05	-7.9	0.3	0.7	2.1	66	0.1	0.2	6
23-Jan-05	-13.4	0.3	--	--	4	--	--	5
24-Jan-05	-17.2	0.0	0.3	0.9	22	--	--	14
25-Jan-05	-15.3	0.0	--	--	39	--	--	31
26-Jan-05	-8.4	0.3	0.3	0.7	47	--	--	35
27-Jan-05	-14.8	0.1	--	--	61	--	--	27
28-Jan-05	-14.3	0.0	0.3	0.5	63	0.5	1.2	34
29-Jan-05	-10.4	0.0	--	--	36	--	--	36
30-Jan-05	-15.4	0.0	0.4	0.9	34	--	--	14
31-Jan-05	-16.9	0.0	--	--	41	--	--	18



**Table 4: Daily Sample Results February 2005**

<b>Red Dog Mine February 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	Average Temp °C	Daily Precip mm	PAC TEOM			T-Dam TEOM		
			Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>	Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>
1-Feb-05	-21.0	0.3	0.3	0.7	32	--	--	25
2-Feb-05	-24.0	0.0	--	--	--	--	--	18
3-Feb-05	-26.3	0.0	1.6	3.9	151	0.8	2.3	57
4-Feb-05	-26.6	0.0	--	--	--	--	--	47
5-Feb-05	-23.4	0.0	--	--	--	--	--	67
6-Feb-05	-24.5	0.0	--	--	--	--	--	20
7-Feb-05	-24.4	0.5	--	--	--	--	--	--
8-Feb-05	-12.5	1.8	--	--	--	--	--	20
9-Feb-05	-24.5	0.8	--	--	--	0.7	2.4	10
10-Feb-05	-25.3	3.8	--	--	15	--	--	10
11-Feb-05	-26.3	1.3	0.3	0.7	30	--	--	13
12-Feb-05	-20.5	0.6	--	--	58	--	--	37
13-Feb-05	-11.4	0.3	0.5	1.0	74	--	--	56
14-Feb-05	-7.6	0.2	--	--	--	--	--	25
15-Feb-05	-7.6	1.5	0.2	0.7	16	0.2	0.5	7
16-Feb-05	-18.0	0.4	--	--	9	--	--	7
17-Feb-05	-16.0	0.4	0.2	0.7	24	--	--	11
18-Feb-05	-14.4	0.5	--	--	--	--	--	17
19-Feb-05	-10.1	0.0	0.2	0.5	35	--	--	28
20-Feb-05	-16.2	0.0	--	--	7	--	--	4
21-Feb-05	-16.1	0.0	0.1	0.3	9	0.1	0.2	4
22-Feb-05	-16.2	0.0	--	--	55	--	--	18
23-Feb-05	-17.9	0.0	1.1	3.9	109	--	--	33
24-Feb-05	-12.9	0.0	--	--	25	--	--	5
25-Feb-05	-8.7	2.3	0.2	0.8	24	--	--	5
26-Feb-05	-13.4	1.3	--	--	26	--	--	7
27-Feb-05	-18.7	0.6	0.2	0.7	21	0.1	0.5	9
28-Feb-05	-16.0	0.5	--	--	29	--	--	27

**Table 5: Daily Sample Results March 2005**

<b>Red Dog Mine March 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	Average Temp °C	Daily Precip mm	PAC TEOM			T-Dam TEOM		
			Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>	Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>
1-Mar-05	-15.1	0.4	0.6	1.4	88	--	--	87
2-Mar-05	-18.7	0.0	--	--	123	--	--	38
3-Mar-05	-17.8	0.0	0.5	1.3	67	--	--	30
4-Mar-05	-19.2	0.0	--	--	177	--	--	59
5-Mar-05	-18.4	0.0	2.4	7.3	185	0.8	2.5	57
6-Mar-05	-15.4	0.0	--	--	47	--	--	--
7-Mar-05	-12.6	0.0	0.7	1.6	125	--	--	69
8-Mar-05	-17.5	0.0	--	--	204	--	--	104
9-Mar-05	-13.1	0.8	0.8	2.1	102	--	--	66
10-Mar-05	-3.6	0.0	--	--	42	--	--	17
11-Mar-05	-7.1	0.2	1.3	3.6	65	0.4	1.0	25
12-Mar-05	-7.2	1.7	--	--	13	--	--	7
13-Mar-05	-4.0	6.0	0.4	1.4	12	--	--	5
14-Mar-05	-6.2	1.5	--	--	24	--	--	11
15-Mar-05	-1.9	3.9	0.5	1.6	13	--	--	9
16-Mar-05	-4.0	4.5	--	--	15	--	--	8
17-Mar-05	-4.5	1.3	0.6	1.8	13	0.1	0.2	7
18-Mar-05	-7.6	0.0	--	--	38	--	--	15
19-Mar-05	-7.6	0.0	0.4	0.9	89	--	--	36
20-Mar-05	-11.1	0.0	--	--	89	--	--	27
21-Mar-05	-11.5	0.0	0.5	1.1	102	--	--	41
22-Mar-05	-8.5	0.0	--	--	65	--	--	32
23-Mar-05	-9.2	0.0	0.4	1.0	98	0.2	0.4	31
24-Mar-05	-9.2	0.0	--	--	61	--	--	13
25-Mar-05	-7.9	0.0	0.7	0.8	212	--	--	31
26-Mar-05	-7.4	0.0	--	--	486	--	--	116
27-Mar-05	-13.5	0.0	2.3	2.8	462	--	--	148
28-Mar-05	-21.2	0.1	--	--	28	--	--	10
29-Mar-05	-22.1	0.4	0.4	1.0	80	0.3	0.6	14
30-Mar-05	-24.3	0.0	--	--	255	--	--	26
31-Mar-05	-22.9	0.0	0.9	2.2	161	--	--	35

**Table 6: Daily Sample Results April 2005**

<b>Red Dog Mine April 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	Average Temp °C	Daily Precip mm	PAC TEOM			T-Dam TEOM		
			Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>	Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>
1-Apr-05	-20.1	0.0	--	--	285	--	--	71
2-Apr-05	-20.6	0.0	1.9	3.8	324	--	--	77
3-Apr-05	-21.0	0.0	--	--	80	--	--	29
4-Apr-05	-21.7	0.0	0.7	2.1	111	0.5	1.5	41
5-Apr-05	-21.7	0.1	--	--	170	--	--	29
6-Apr-05	-16.3	0.0	0.5	0.9	85	--	--	12
7-Apr-05	-6.9	0.0	--	--	14	--	--	7
8-Apr-05	-7.6	0.0	0.2	0.8	27	--	--	12
9-Apr-05	-7.5	0.0	--	--	33	--	--	6
10-Apr-05	-12.9	0.0	0.1	0.5	33	0.2	0.5	10
11-Apr-05	-14.9	0.2	--	--	141	--	--	19
12-Apr-05	-14.9	0.0	2.4	3.7	575	--	--	95
13-Apr-05	-10.5	0.0	--	--	194	--	--	50
14-Apr-05	-9.9	0.0	0.8	2.7	101	--	--	26
15-Apr-05	-15.3	2.2	--	--	52	--	--	25
16-Apr-05	-25.3	0.4	0.3	0.6	29	0.2	0.6	10
17-Apr-05	-15.3	0.7	--	--	155	--	--	28
18-Apr-05	-11.3	0.0	0.7	1.2	174	--	--	51
19-Apr-05	-15.7	0.0	--	--	296	--	--	146
20-Apr-05	-16.0	0.0	0.1	0.3	22	--	--	19
21-Apr-05	-11.7	0.0	--	--	288	--	--	56
22-Apr-05	-2.4	8.4	1.2	2.6	156	0.3	0.7	64
23-Apr-05	-8.0	3.4	--	--	--	--	--	8
24-Apr-05	-8.2	0.0	1.5	3.9	13	--	--	12
25-Apr-05	-1.2	0.0	--	--	40	--	--	16
26-Apr-05	1.8	0.0	1.5	3.9	17	--	--	8
27-Apr-05	4.1	0.0	--	--	11	--	--	13
28-Apr-05	6.0	0.0	2.2	5.9	24	0.1	0.4	11
29-Apr-05	2.4	0.0	--	--	20	--	--	10
30-Apr-05	2.9	0.0	1.3	3.4	16	--	--	--

**Table 7: Daily Sample Results May 2005**

<b>Red Dog Mine May 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	Average Temp °C	Daily Precip mm	PAC TEOM			T-Dam TEOM		
			Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>	Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>
1-May-05	4.3	0.0	--	--	6	--	--	11
2-May-05	4.0	0.0	2.2	5.9	13	--	--	10
3-May-05	-1.4	0.0	--	--	32	--	--	14
4-May-05	-3.5	0.0	1.6	3.5	137	0.1	0.2	38
5-May-05	-1.5	1.4	--	--	162	--	--	47
6-May-05	3.3	9.4	1.2	3.1	7	--	--	5
7-May-05	4.2	1.1	--	--	11	--	--	5
8-May-05	2.5	3.0	1.2	3.0	7	--	--	3
9-May-05	1.9	0.3	--	--	3	--	--	3
10-May-05	4.8	0.0	0.1	0.2	40	0.1	0.2	13
11-May-05	7.8	0.0	--	--	68	--	--	25
12-May-05	6.5	0.0	0.2	0.6	58	--	--	19
13-May-05	4.5	0.8	--	--	6	--	--	4
14-May-05	-0.5	1.0	0.1	0.1	8	--	--	4
15-May-05	-2.7	0.0	--	--	104	--	--	54
16-May-05	-2.2	0.0	0.2	0.3	92	0.2	0.4	74
17-May-05	3.1	0.0	--	--	47	--	--	32
18-May-05	-2.4	4.3	0.1	0.3	14	--	--	9
19-May-05	-2.0	0.4	--	--	--	--	--	4
20-May-05	4.6	0.0	0.1	0.2	15	--	--	13
21-May-05	3.1	0.0	--	--	--	--	--	51
22-May-05	0.5	0.3	0.1	0.2	16	0.1	0.2	38
23-May-05	4.2	0.0	--	--	43	--	--	22
24-May-05	6.9	0.0	0.2	0.6	32	--	--	13
25-May-05	11.1	0.0	--	--	44	--	--	21
26-May-05	14.5	0.0	0.3	0.6	72	--	--	24
27-May-05	14.1	0.0	--	--	76	--	--	21
28-May-05	14.2	0.0	0.1	0.3	25	0.1	0.2	12
29-May-05	14.6	0.0	--	--	48	--	--	28
30-May-05	14.1	0.0	0.2	0.5	41	--	--	12
31-May-05	11.2	0.0	--	--	42	--	--	28

**Table 8: Daily Sample Results June 2005**

<b>Red Dog Mine June 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	<b>Average Temp °C</b>	<b>Daily Precip mm</b>	<b>PAC TEOM</b>			<b>T-Dam TEOM</b>		
			<b>Lead µg/m<sup>3</sup></b>	<b>Zinc µg/m<sup>3</sup></b>	<b>TSP µg/m<sup>3</sup></b>	<b>Lead µg/m<sup>3</sup></b>	<b>Zinc µg/m<sup>3</sup></b>	<b>TSP µg/m<sup>3</sup></b>
1-Jun-05	10.8	0.0	0.4	0.9	82	--	--	27
2-Jun-05	11.7	0.0	--	--	57	--	--	23
3-Jun-05	6.9	0.0	0.3	1.0	26	0.1	0.1	7
4-Jun-05	13.4	0.3	--	--	7	--	--	4
5-Jun-05	17.6	0.0	0.1	0.2	10	--	--	9
6-Jun-05	18.9	0.0	--	--	7	--	--	8
7-Jun-05	20.4	0.0	0.0	0.1	12	--	--	8
8-Jun-05	19.3	0.0	--	--	22	--	--	15
9-Jun-05	14.3	0.0	--	--	--	0.0	0.1	11
10-Jun-05	16.6	0.0	--	--	--	--	--	7
11-Jun-05	16.8	0.0	--	--	--	--	--	13
12-Jun-05	12.4	0.0	--	--	34	--	--	24
13-Jun-05	13.8	0.0	0.1	0.2	16	--	--	11
14-Jun-05	16.0	0.0	--	--	11	--	--	8
15-Jun-05	15.1	0.0	0.1	0.4	22	0.0	0.1	9
16-Jun-05	15.0	0.0	--	--	12	--	--	9
17-Jun-05	11.0	0.0	1.1	2.1	141	--	--	38
18-Jun-05	9.7	11.3	--	--	181	--	--	68
19-Jun-05	12.9	3.2	0.1	0.2	15	--	--	7
20-Jun-05	11.4	0.0	--	--	21	--	--	5
21-Jun-05	12.5	0.0	0.1	0.4	17	--	--	17
22-Jun-05	11.7	0.0	--	--	35	--	--	13
23-Jun-05	10.9	0.0	0.2	0.8	36	--	--	18
24-Jun-05	8.0	0.0	--	--	38	--	--	19
25-Jun-05	8.8	0.0	0.3	0.7	61	--	--	27
26-Jun-05	8.5	0.0	--	--	39	--	--	19
27-Jun-05	12.1	0.0	--	--	37	--	--	12
28-Jun-05	15.0	0.1	--	--	22	--	--	12
29-Jun-05	20.9	0.0	--	--	25	--	--	10
30-Jun-05	22.9	0.6	--	--	12	--	--	6

**Table 9: Daily Sample Results July 2005**

<b>Red Dog Mine July 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	Average Temp °C	Daily Precip mm	PAC TEOM			T-Dam TEOM		
			Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>	Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>
1-Jul-05	11.9	0.0	0.0	0.1	4	--	--	3
2-Jul-05	10.5	0.0	--	--	39	--	--	15
3-Jul-05	11.1	0.0	0.2	0.3	89	0.1	0.2	37
4-Jul-05	10.8	0.0	--	--	29	--	--	8
5-Jul-05	11.8	0.0	0.1	0.1	15	--	--	6
6-Jul-05	11.0	0.0	--	--	7	--	--	7
7-Jul-05	11.9	1.6	0.4	0.9	37	--	--	22
8-Jul-05	8.0	2.6	--	--	7	--	--	4
9-Jul-05	5.7	7.9	0.2	0.6	13	0.0	0.0	7
10-Jul-05	6.0	0.0	--	--	12	--	--	4
11-Jul-05	5.6	0.0	0.0	0.1	6	--	--	6
12-Jul-05	8.3	0.0	--	--	20	--	--	6
13-Jul-05	9.0	3.6	0.5	1.3	21	--	--	5
14-Jul-05	8.0	17.4	--	--	11	--	--	4
15-Jul-05	11.6	1.3	0.4	0.6	17	0.0	0.1	6
16-Jul-05	17.0	0.0	--	--	19	--	--	11
17-Jul-05	14.6	7.6	0.5	1.1	26	--	--	15
18-Jul-05	13.3	0.4	--	--	14	--	--	6
19-Jul-05	9.9	0.3	1.0	2.1	10	--	--	7
20-Jul-05	13.3	0.0	--	--	42	--	--	20
21-Jul-05	18.2	0.0	0.1	0.4	81	0.0	0.1	15
22-Jul-05	16.5	0.0	--	--	64	--	--	21
23-Jul-05	19.1	0.0	0.1	0.3	46	--	--	10
24-Jul-05	18.4	0.0	--	--	94	--	--	58
25-Jul-05	19.6	0.2	0.4	1.3	69	--	--	71
26-Jul-05	16.9	0.0	--	--	80	--	--	40
27-Jul-05	17.0	0.0	0.8	2.0	117	0.2	0.4	74
28-Jul-05	16.8	0.0	--	--	31	--	--	23
29-Jul-05	16.6	0.2	0.2	0.6	28	--	--	15
30-Jul-05	16.3	0.0	--	--	29	--	--	10
31-Jul-05	14.6	0.0	--	--	62	--	--	18

**Table 10: Daily Sample Results August 2005**

<b>Red Dog Mine August 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	<b>Average Temp °C</b>	<b>Daily Precip mm</b>	<b>PAC TEOM</b>			<b>T-Dam TEOM</b>		
			<b>Lead µg/m<sup>3</sup></b>	<b>Zinc µg/m<sup>3</sup></b>	<b>TSP µg/m<sup>3</sup></b>	<b>Lead µg/m<sup>3</sup></b>	<b>Zinc µg/m<sup>3</sup></b>	<b>TSP µg/m<sup>3</sup></b>
1-Aug-05	15.5	0.0	--	--	79	--	--	31
2-Aug-05	14.3	0.0	0.2	0.5	53	0.1	0.2	31
3-Aug-05	13.9	0.0	--	--	73	--	--	43
4-Aug-05	9.4	0.0	0.1	0.3	37	--	--	12
5-Aug-05	10.1	22.9	--	--	16	--	--	5
6-Aug-05	11.1	14.8	0.4	1.2	18	--	--	6
7-Aug-05	9.4	2.1	--	--	12	--	--	5
8-Aug-05	11.2	22.1	0.3	1.0	17	0.0	0.2	6
9-Aug-05	15.8	0.0	--	--	35	--	--	18
10-Aug-05	13.6	10.6	0.4	1.3	40	--	--	18
11-Aug-05	12.1	2.3	--	--	12	--	--	4
12-Aug-05	13.6	5.1	0.7	1.7	20	--	--	4
13-Aug-05	16.5	0.1	--	--	50	--	--	43
14-Aug-05	18.7	0.0	0.1	0.4	37	0.0	0.1	30
15-Aug-05	17.9	0.0	--	--	18	--	--	11
16-Aug-05	15.8	0.0	0.0	0.1	21	--	--	11
17-Aug-05	14.7	0.0	--	--	40	--	--	19
18-Aug-05	13.2	0.0	0.2	0.6	50	--	--	16
19-Aug-05	9.6	0.0	--	--	53	--	--	24
20-Aug-05	7.8	0.9	0.2	0.5	15	0.0	0.0	5
21-Aug-05	10.2	1.4	--	--	8	--	--	6
22-Aug-05	8.9	4.9	0.2	0.6	12	--	--	4
23-Aug-05	9.3	5.8	--	--	7	--	--	7
24-Aug-05	7.1	9.4	0.0	0.0	3	--	--	3
25-Aug-05	6.8	0.0	--	--	16	--	--	4
26-Aug-05	6.9	0.0	0.2	0.4	11	0.0	0.0	10
27-Aug-05	6.0	0.0	--	--	24	--	--	8
28-Aug-05	8.1	6.4	0.1	0.3	7	--	--	9
29-Aug-05	10.6	0.0	--	--	6	--	--	6
30-Aug-05	5.4	0.0	0.0	0.2	6	--	--	3
31-Aug-05	2.2	0.1	--	--	16	--	--	16

**Table 11: Daily Sample Results September 2005**

<b>Red Dog Mine September 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	<b>Average Temp °C</b>	<b>Daily Precip mm</b>	<b>PAC TEOM</b>			<b>T-Dam TEOM</b>		
			<b>Lead µg/m<sup>3</sup></b>	<b>Zinc µg/m<sup>3</sup></b>	<b>TSP µg/m<sup>3</sup></b>	<b>Lead µg/m<sup>3</sup></b>	<b>Zinc µg/m<sup>3</sup></b>	<b>TSP µg/m<sup>3</sup></b>
1-Sep-05	3.0	9.7	0.6	1.6	32	0.0	0.0	10
2-Sep-05	5.9	8.7	--	--	5	--	--	2
3-Sep-05	3.6	0.6	0.0	0.1	5	--	--	4
4-Sep-05	2.6	0.3	--	--	4	--	--	3
5-Sep-05	1.7	0.0	0.2	0.4	36	--	--	11
6-Sep-05	4.2	0.0	--	--	66	--	--	36
7-Sep-05	3.6	0.1	0.3	0.8	61	0.1	0.2	13
8-Sep-05	3.8	0.0	--	--	20	--	--	17
9-Sep-05	5.5	1.8	0.1	0.2	33	--	--	53
10-Sep-05	8.8	1.6	--	--	9	--	--	12
11-Sep-05	8.5	3.4	0.2	0.6	9	--	--	11
12-Sep-05	7.8	8.2	--	--	13	--	--	8
13-Sep-05	6.2	2.7	0.1	0.1	7	0.1	0.2	8
14-Sep-05	6.4	6.7	--	--	9	--	--	7
15-Sep-05	8.5	11.2	0.0	0.2	5	--	--	7
16-Sep-05	8.3	7.9	--	--	10	--	--	7
17-Sep-05	8.0	1.6	0.0	0.1	9	--	--	7
18-Sep-05	7.7	0.7	--	--	7	--	--	3
19-Sep-05	3.1	0.0	0.0	0.1	6	0.0	0.1	3
20-Sep-05	2.3	2.6	--	--	7	--	--	5
21-Sep-05	3.9	15.8	0.1	0.2	5	0.1	0.4	10
22-Sep-05	6.9	22.3	--	--	6	--	--	7
23-Sep-05	6.9	6.9	0.3	0.7	17	0.0	0.1	7
24-Sep-05	5.4	4.7	--	--	13	--	--	10
25-Sep-05	5.5	0.6	0.0	0.2	7	0.1	0.2	11
26-Sep-05	5.1	5.4	--	--	8	--	--	6
27-Sep-05	4.7	0.4	0.0	0.2	6	--	--	6
28-Sep-05	0.0	0.1	--	--	275	--	--	138
29-Sep-05	-1.1	0.0	2.0	2.0	412	0.5	0.6	187
30-Sep-05	-4.1	0.0	--	--	259	--	--	77



**Table 12: Daily Sample Results October 2005**

<b>Red Dog Mine October 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	<b>Average Temp °C</b>	<b>Daily Precip mm</b>	<b>PAC TEOM</b>			<b>T-Dam TEOM</b>		
			<b>Lead µg/m<sup>3</sup></b>	<b>Zinc µg/m<sup>3</sup></b>	<b>TSP µg/m<sup>3</sup></b>	<b>Lead µg/m<sup>3</sup></b>	<b>Zinc µg/m<sup>3</sup></b>	<b>TSP µg/m<sup>3</sup></b>
1-Oct-05	-1.8	0.0	0.4	0.8	421	1.1	1.4	247
2-Oct-05	0.5	0.1	--	--	60	--	--	25
3-Oct-05	-0.8	0.0	0.5	1.8	58	0.3	0.6	24
4-Oct-05	0.0	0.0	--	--	58	--	--	37
5-Oct-05	0.9	0.0	2.7	3.1	68	0.3	0.4	33
6-Oct-05	2.8	0.0	--	--	117	--	--	70
7-Oct-05	0.5	0.1	0.7	1.4	151	0.4	0.6	89
8-Oct-05	-0.7	0.0	--	--	201	--	--	119
9-Oct-05	-5.5	0.0	0.9	1.3	160	--	--	100
10-Oct-05	-7.0	0.0	--	--	134	--	--	50
11-Oct-05	-5.1	0.0	1.4	2.0	337	--	--	--
12-Oct-05	-3.5	0.0	--	--	122	--	--	--
13-Oct-05	-5.0	2.0	0.4	0.9	33	0.2	0.2	--
14-Oct-05	-4.5	0.9	--	--	12	--	--	--
15-Oct-05	-6.5	0.3	0.2	0.6	11	0.6	0.8	6
16-Oct-05	-6.2	0.8	--	--	78	--	--	110
17-Oct-05	-2.7	0.6	0.1	0.3	23	0.2	0.3	35
18-Oct-05	-0.6	2.3	--	--	24	--	--	43
19-Oct-05	-0.5	6.2	0.2	0.5	16	0.1	0.1	18
20-Oct-05	0.3	11.9	--	--	9	--	--	7
21-Oct-05	-1.3	1.9	0.2	0.5	36	0.1	0.2	3
22-Oct-05	-2.8	6.0	--	--	9	--	--	8
23-Oct-05	-4.4	0.5	0.1	0.3	5	0.0	0.0	4
24-Oct-05	-5.8	0.0	--	--	6	--	--	4
25-Oct-05	-9.7	0.1	0.2	0.3	44	0.1	0.2	13
26-Oct-05	-14.2	0.0	--	--	127	--	--	36
27-Oct-05	-12.3	0.1	1.1	1.7	81	0.7	0.9	22
28-Oct-05	-13.7	0.0	--	--	75	--	--	26
29-Oct-05	-14.6	0.0	0.4	0.6	82	0.1	0.2	23
30-Oct-05	-16.0	0.0	--	--	92	--	--	30
31-Oct-05	-17.1	0.0	1.1	1.7	176	0.4	0.5	59

**Table 13: Daily Sample Results November 2005**

<b>Red Dog Mine November 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	Average Temp °C	Daily Precip mm	PAC TEOM			T-Dam TEOM		
			Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>	Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>
1-Nov-05	-16.3	0.0	--	--	89	--	--	24
2-Nov-05	-15.7	0.0	0.4	0.5	79	0.1	0.2	24
3-Nov-05	-18.4	0.1	--	--	236	--	--	70
4-Nov-05	-19.9	0.0	1.3	3.1	163	0.6	1.3	57
5-Nov-05	-18.1	0.0	--	--	137	--	--	39
6-Nov-05	-17.5	0.0	0.3	0.5	35	0.1	0.2	12
7-Nov-05	-19.0	0.0	--	--	127	--	--	43
8-Nov-05	-13.8	0.0	0.5	0.8	130	0.2	0.4	71
9-Nov-05	-12.9	0.0	--	--	71	--	--	34
10-Nov-05	-12.3	0.0	0.2	0.4	60	0.1	0.1	14
11-Nov-05	-13.7	0.0	--	--	37	--	--	12
12-Nov-05	-17.1	0.0	1.6	2.8	223	1.5	2.1	100
13-Nov-05	-15.1	0.0	--	--	140	--	--	67
14-Nov-05	-16.6	0.0	0.2	0.5	77	0.2	0.4	23
15-Nov-05	-12.8	0.2	--	--	48	--	--	19
16-Nov-05	-18.3	0.0	0.3	0.4	60	0.1	0.2	15
17-Nov-05	-17.0	0.0	--	--	97	--	--	--
18-Nov-05	-19.2	0.2	--	--	63	0.1	0.1	--
19-Nov-05	-18.8	0.0	--	--	167	--	--	--
20-Nov-05	-18.8	0.0	0.4	0.6	90	0.2	0.3	--
21-Nov-05	-19.4	0.0	--	--	206	--	--	--
22-Nov-05	-20.2	0.0	0.7	0.9	161	0.2	0.4	--
23-Nov-05	-18.0	0.0	--	--	114	--	--	--
24-Nov-05	-17.3	0.1	0.5	0.7	43	0.5	1.2	--
25-Nov-05	-18.3	0.0	--	--	42	--	--	--
26-Nov-05	-19.1	0.0	0.5	0.9	66	0.2	0.4	--
27-Nov-05	-17.2	0.2	--	--	82	--	--	--
28-Nov-05	-16.5	0.1	1.4	2.9	113	0.2	0.6	--
29-Nov-05	-13.5	0.0	--	--	74	--	--	--
30-Nov-05	-19.4	0.6	0.5	1.1	78	0.4	0.9	--

**Table 14: Daily Sample Results December 2005**

<b>Red Dog Mine December 2005 Temperature Precipitation TSP, Lead and Zinc Concentration</b>								
	Average Temp °C	Daily Precip mm	PAC TEOM			T-Dam TEOM		
			Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>	Lead µg/m <sup>3</sup>	Zinc µg/m <sup>3</sup>	TSP µg/m <sup>3</sup>
1-Dec-05	-16.8	0.6	--	--	101	--	--	--
2-Dec-05	-17.5	0.0	0.2	0.2	20	0.1	0.2	--
3-Dec-05	-20.4	0.0	--	--	42	--	--	--
4-Dec-05	-23.9	0.0	--	--	182	1.5	2.8	72
5-Dec-05	-22.5	0.0	--	--	79	--	--	62
6-Dec-05	-15.5	0.0	0.1	0.2	39	0.2	0.5	6
7-Dec-05	-11.5	1.7	--	--	6	--	--	5
8-Dec-05	-10.9	3.4	0.1	0.2	37	0.1	0.3	11
9-Dec-05	-3.4	9.3	--	--	23	--	--	22
10-Dec-05	-16.4	0.6	0.2	0.4	83	1.5	3.4	26
11-Dec-05	-15.5	1.1	--	--	28	--	--	12
12-Dec-05	-16.2	6.6	0.2	0.4	23	0.3	0.7	10
13-Dec-05	-21.5	0.1	--	--	72	--	--	40
14-Dec-05	-22.5	0.1	0.2	0.5	34	0.2	0.4	19
15-Dec-05	-14.3	0.5	--	--	99	--	--	79
16-Dec-05	-16.5	1.0	0.3	0.5	72	0.8	1.5	89
17-Dec-05	-8.3	5.0	--	--	26	--	--	16
18-Dec-05	-13.3	0.3	0.2	0.3	15	0.2	0.5	10
19-Dec-05	-19.7	0.1	--	--	7	--	--	4
20-Dec-05	-13.9	0.4	0.2	0.3	61	0.9	1.7	53
21-Dec-05	-14.3	0.0	--	--	97	--	--	77
22-Dec-05	-15.2	0.1	0.4	0.6	44	0.4	0.7	30
23-Dec-05	-20.6	0.0	--	--	102	--	--	10
24-Dec-05	-16.9	0.0	0.3	0.5	32	0.2	0.4	11
25-Dec-05	-13.9	0.2	--	--	10	--	--	4
26-Dec-05	-14.4	0.0	0.2	0.3	14	0.0	0.0	4
27-Dec-05	-15.5	0.0	--	--	63	--	--	12
28-Dec-05	-16.5	0.0	0.5	1.0	78	0.1	0.2	16
29-Dec-05	-12.1	0.0	--	--	81	--	--	25
30-Dec-05	-10.3	0.1	1.2	2.5	70	0.7	1.7	43
31-Dec-05	-13.1	0.0	--	--	20	--	--	15

**Table 15: 2005 Invalid Data**

<b>Red Dog Mine 2005 TSP Lead Zinc Invalid Data</b>			
Dates	Station	Parameter	Comment
1/11 to 1/15	T-Dam	TSP	Invalid hourly readings from water on sample filter.
2/04 to 2/10	PAC	TSP, Lead, Zinc	Unit mistakenly turned off.
2/07	T-Dam	TSP	Missing 10 hourly averages for the day
2/14	PAC	TSP	Invalid hourly readings from water on sample filter.
2/18	PAC	TSP	Invalid hourly reading due to maintenance.
3/06	T-Dam	TSP	Invalid hourly reading due to maintenance.
4/23	PAC	TSP	Invalid hourly readings from water on sample filter.
4/30	T-Dam	TSP	Invalid hourly reading due to maintenance.
5/19	PAC	TSP	Invalid hourly reading due to maintenance.
5/21	PAC	TSP	Invalid hourly reading due to maintenance.
6/09 to 6/12	PAC	TSP, Lead, Zinc	Vacuum motor failed
6/21	T-Dam	Lead, Zinc	No filter available
6/27	T-Dam	Lead, Zinc	No filter available
6/27	PAC	Lead, Zinc	System programming error
6/29	PAC	Lead, Zinc	System programming error
7/31	PAC	Lead, Zinc	System programming error
9/27	T-Dam	Lead, Zinc	System programming error
10/09	T-Dam	Lead, Zinc	System programming error
10/11	T-Dam	Lead, Zinc	System programming error
10/11 to 10/14	T-Dam	TSP	Missing hourly averages. No data available.
11/18	PAC	Lead, Zinc	System programming error
11/17 to 12/03	T-Dam	TSP	Invalid data collection. The source of the error is unknown
12/04	PAC	Lead, Zinc	System programming error