



**Red Dog Mine Dust Update
May 11, 2007**

Targets, Objectives, and EMPs



- A component of our environmental management system (EMS) is to establish targets and objectives (T&O) for our primary aspects.
- Environmental Management Plans (EMPs) are developed to meet the T&O.
- Three EMPs were developed for 2007 which specifically address the management of fugitive dust.
 1. Dust Control on the Coarse Ore Stockpile
 2. Mine Site CSB Fugitives Reduction
 3. Reduce release of metal-bearing fugitives from mine roads, dumps, tailings pond beaches and stockpile areas.

Background information about one of the EMP component of the Red Dog EMS.

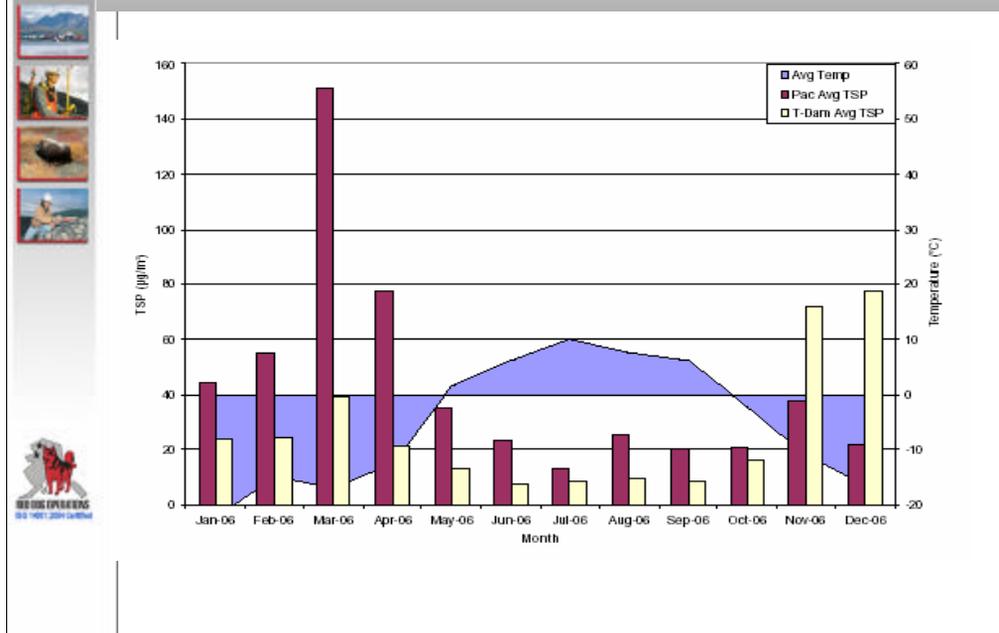
Ambient Air Annual Report



- Anemometer on to be mounted on TEOMs for site specific data.
- Dust levels communicated to operations daily.
- Working on real-time communications for instant access to operations personnel.
- Plan to have discussions next week with ADEC to define the scope for the TEOM and Hi-Vol comparison study.

Update on the mine ambient air monitoring. Plans on improvements to the system include anemometers, direct and increased communication of the dust levels to operational personnel.

2006 Annual TSP Summary



Graphical representation of the average total suspended particulate readings at the PAC and T-Dam TEOM locations. Also, average ambient temperature is also displayed for reference. Particulate matter is typically higher during the winter freezing months.

Truck Dump Pocket Dust Control and Monitoring



- Truck Dump Video



EPA Method 22 Evaluations

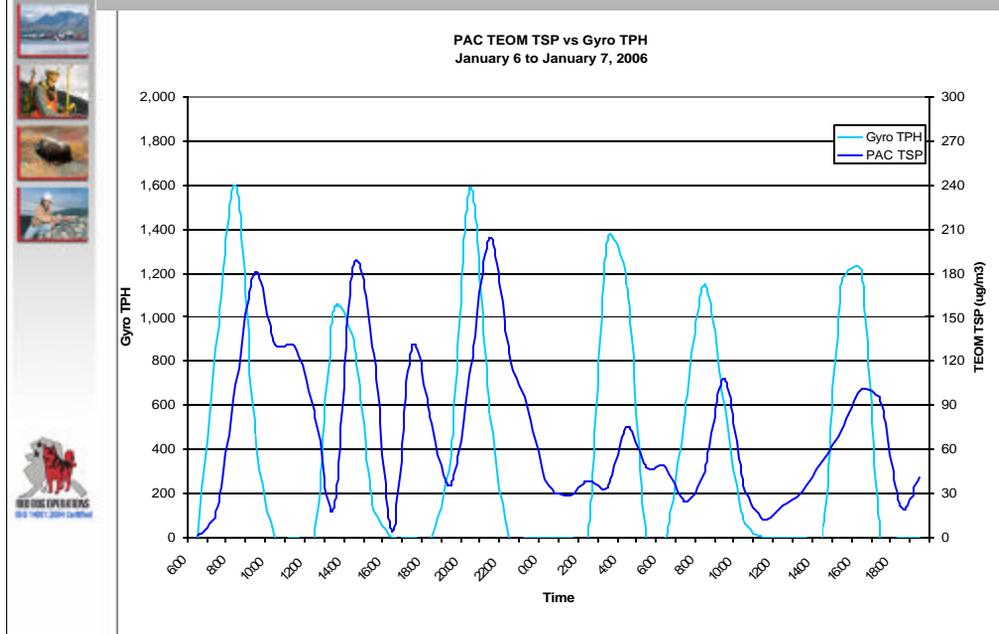


Gyrator Crusher Dump Pocket		
Visible Dust Duration During Truck Dumping Operations (Seconds)		
Haul Truck Dumping Event #	Before Baghouse Controls	After Baghouse Controls
1	23	2
2	15	1
3	31	3
4	26	12
5	20	2
6	36	5
7	35	1
8	37	1
9	40	6
10	42	0
Average	30.5	3.3
Median	33	2
Std Dev	9.1	3.6
Date	12/01/2005	02/10/2007
Temperature (C)	-16	-17
Wind Speed (mph)	2	10
Wind Direction	NE	North
Sky Conditions	Clear	Clear
Precipitation	None	None

Jaw Crusher Dump Pocket			
Visible Dust Duration During Dumping Operations (Seconds)			
Haul Truck Dumping Event	Before Baghouse Controls	Loader Dumping Event	After Baghouse Controls
1	49	1	0
2	45	2	0
3	33	3	1
4	30	4	1
5	32	5	0
6	34	6	0
7	22	7	3
8	35	8	6
9	29	9	0
10	35	10	5
Average	34.4		1.6
Median	33.5		0.5
Std Dev	7.7		2.3
Date	12/17/2005		02/25/2007
Temperature (C)	-9		-19
Wind Speed	10		15
Wind Direction	South		SW
Sky Conditions	Cloudy		Cloudy
Precipitation	Snow		Snow

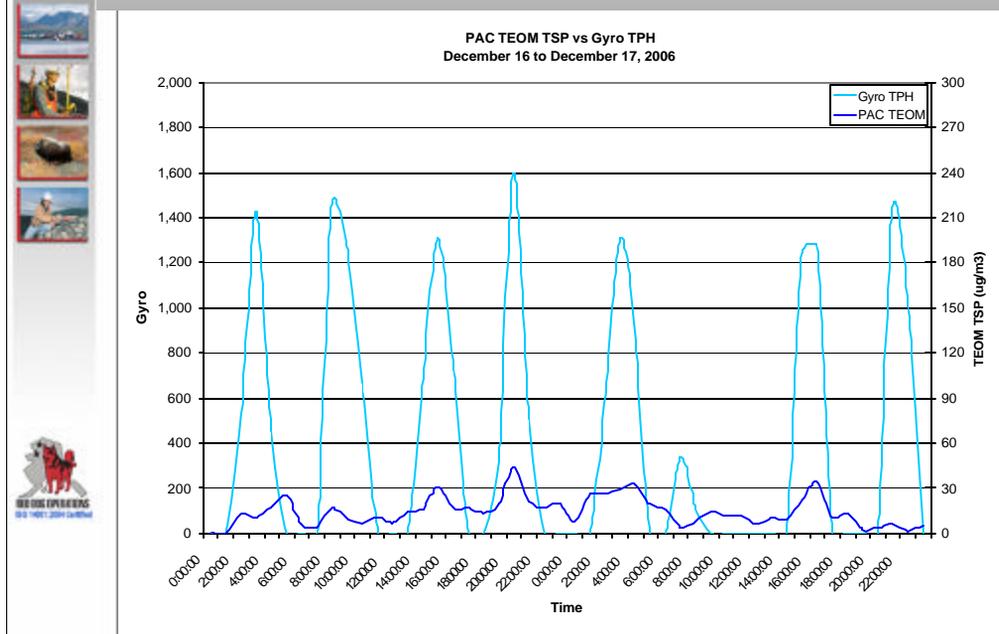
EPA method 22 evaluations on the jaw and gyro crusher before and after baghouse installations. Note Jaw crusher comparison is with haul trucks and front end loaders.

Crusher Related Dust Pre-Baghouse Controls



Graphical representation of gyratory crusher operation in tons/hour and associated TSP concentrations as measured at the PAC TEOM prior to installation of the dump pocket baghouse. Peaks in dust levels correspond to crusher operation.

Crusher Related Dust Post-Baghouse Controls



Graphical representation same as prior slide. However, in this case it is post dump pocket baghouse installation. Note significant reduction in crusher operation related particulate matter concentrations.

2005 vs. 2006 TSP Concentrations

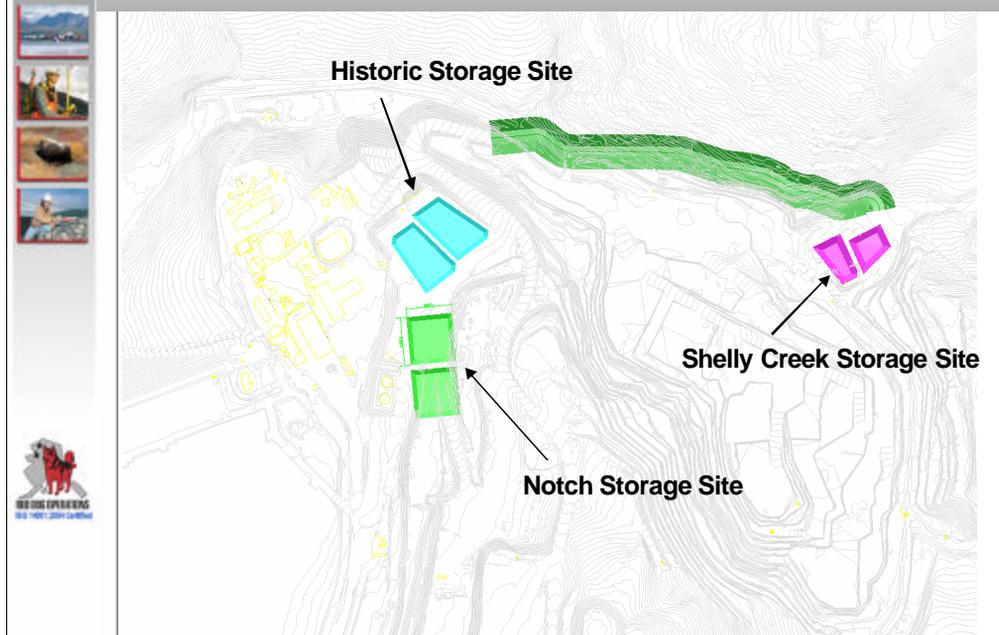


Red Dog Mine PAC TEOM Daily 24-hour Average TSP				
		Min	Max	Average
January	2005	4	128	54
	2006	3	134	44
February	2005	7	151	39
	2006	7	289	55
March	2005	12	486	114
	2006	19	518	151
April	2005	11	575	120
	2006	12	266	78
May	2005	3	162	44
	2006	7	190	35
June	2005	7	181	37
	2006	5	190	23
July	2005	4	117	37
	2006	6	24	13
August	2005	3	79	26
	2006	8	40	25
September	2005	4	412	45
	2006	3	78	20
October	2005	5	421	91
	2006	5	86	21
November	2005	35	236	104
	2006	5	221	38
December	2005	6	182	53
	2006	5	72	21



Baghouse came online in May. Many other factors contribute to dust but downward trend is promising. Recognize need to conduct statistical analysis on the data for thorough review.

Ore Stockpile Alternatives

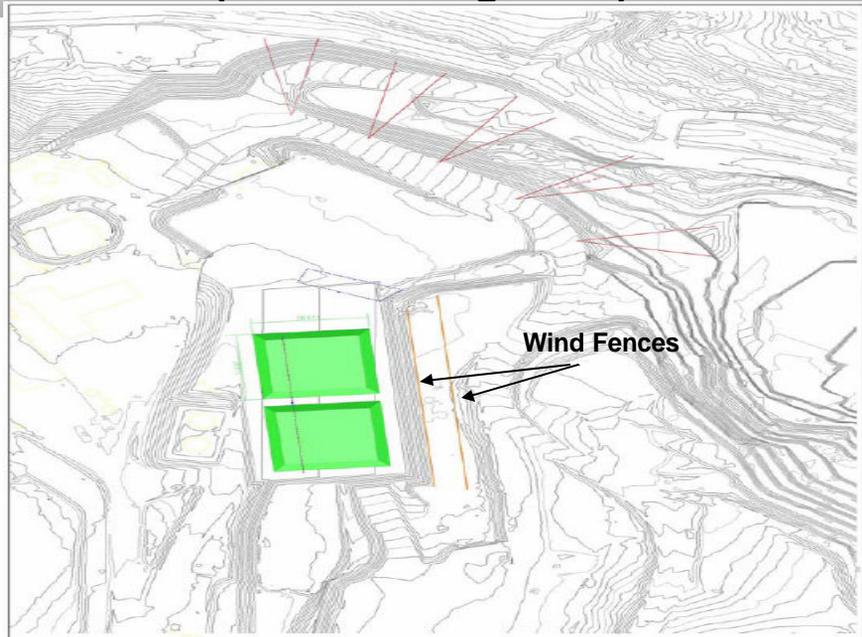


Each proposed site has potential benefits and liabilities that will be evaluated by physical model test in a boundary-layer wind tunnel.

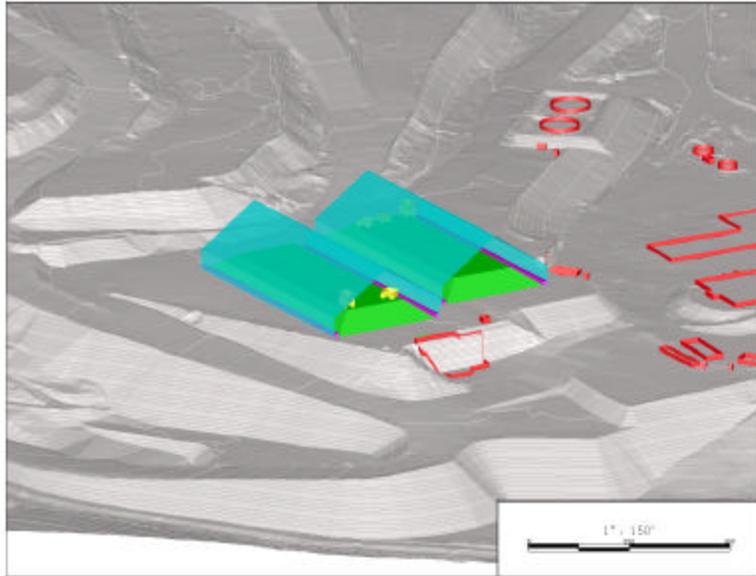
Ore Stockpile Alternatives (Shelly Creek Storage Site)



Ore Stockpile Alternatives (Notch Storage Site)



Ore Stockpile Alternatives (Tent Option)



Other Planed Dust Control Activities



- Testing of a vegetable oil based dust control agent on haul road to port.
- Purchase of an additional water truck.



Additional dust control activities.

Additional Mine Water Truck



Vegetation Update



- Final reports eminent. Report indicates lichens and mosses are more sensitive to dust than evergreens, which are more sensitive than deciduous shrubs. Some elevated levels of metals found in plant tissues. Iron and zinc potentially inhibiting plant growth in impacted areas.
- Ongoing program. 2007 work to include:
 - Plant community density and diversity surveys along the nine transects radiating from the mine.
 - Evaluation of last years ameliorative treatments plots and additional treatments to be conducted.
 - Vegetation impact area mapping

Emission Estimate / Source Apportionment



- Second revised draft currently under third party review.
- Also, comparing to onsite monitoring data to try and “calibrate” the inputs from the emission estimate (control factors applied etc.)
- Preliminary findings indicate under the current period:
 - Pit and associated haul roads appear to be a significant contributor.
 - Mine CSB appears to be a significant source of lead but not significant source of TSP

Risk Assessment Status Update



- **May 2007 – Last of Comment Response Documents**
 - Submit last few revised comment response documents (10 total: most have been submitted, revised per DEC comment, resubmitted)
- **May-June 2007 – Comment Resolution**
 - Complete comment resolution discussions (including any revisions to comment responses and to the RA) before E&E contract expires
- **June 2007 – Final RA Document Submittals**
 - Submit revised RA document and layman's summary
 - Submit final comment response documents
- **Summer-Fall 2007 – Risk Management Plan**
 - Begin discussion of risk management plan approach and priorities with DEC and stakeholders
 - Prepare draft risk management plan

Solid Waste Permit



- Efforts focus on the completion of the 28 written documents to be submitted in support of Red Dog's request to receive the permit. 23 of the documents are in draft or final form. The written Reclamation and Closure plan, is in progress.
- A revised cost estimate for site restoration and post-closure water treatment has been prepared and is in review by the Red Dog Engineering group.
- We have started progressive reclamation. We are building the south end of the Main Waste dump to final design and plan to stockpile clean waste rock for cover material as we encounter it during the completion of the Main Pit.
- Process requires the submission of 2 types of monitoring plans - one for operations and one for post-closure.

Solid Waste Permit



- Fugitive dust related programs/monitoring being considered for inclusion in the SWP
 - Ambient Air Monitoring
 - Moss Sampling
 - Willow/Birch/Shrubs sampling
 - Vegetation species diversity & density surveys
 - Ameliorative treatment studies
 - Dust Control Effectiveness program