

## Alistair MacDonald

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**From:** Wilson, Anne [Yel] [Anne.Wilson@EC.GC.CA]  
**Sent:** Tuesday, July 25, 2006 4:21 PM  
**To:** David Swisher; Michael Palmer; shane\_lebouthillier@gov.nt.ca; rhoos@eba.ca; jdemarco@centurymining.com; joel\_holder@gov.nt.ca; katharine\_corriveau@gov.nt.ca; colleen\_roche@gov.nt.ca; Karin\_clark@gov.nt.ca; Lionel Marcinkoski; ewchukl@inac.gc.ca; Malcolm Robb; Alistair MacDonald  
**Subject:** Meeting notes from July 12th Regulators meeting

Hi all,

Here are the meeting notes, thanks very much to Lindsay for taking them and others for adding/clarifying. Alistair, if you would like to place these on the public record that would be fine.

Thanks,  
Anne

<<Tamerlane Meeting Notes July 12.doc>>

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Tamerlane Ventures Inc. & Regulators Meeting Notes  
July 12, 2006 9:00 am – 11:30 am  
Bellanca Building 4<sup>th</sup> Floor Boardroom, Yellowknife

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**Present:**

David Swisher, Tamerlane Ventures  
Anne Wilson, Environment Canada  
Mike Palmer, INAC-Water Resources  
Shane Lebouthillier, GNWT-DOT  
Rick Hoos, EBA  
Jerry DeMarco, Tamerlane Ventures  
Joel Holder, GNWT-ENR

Katharine Corriveau, GNWT-ENR, EP  
Colleen Roche, GNWT-ENR, EP  
Karin Clark, GNWT-ENR, Wildlife  
Lionel Marcinkoski, INAC-EC  
Malcolm Robb, INAC-Minerals  
Lindsay Ewchuk, INAC-EC

**Agenda Items**

David Swisher of Tamerlane Ventures Inc. (TVI) first gave an overview of the proposed project, noting that at the high grade of ore, following dense media separation (DMS) concentrate would be shipped directly to smelters. There are 70 million tonnes of lower grade reserves, which would need a milling upgrade if taken to production. Ferrosilicon used in the DMS process will be recovered magnetically, and water (excess to process recirculation needs) will be run through a centrifuge and filter before being sent to the exfiltration pit (which is an existing abandoned quarry). Makeup water may be taken from the exfiltration pit.

Please refer to the PowerPoint presentation provided by Tamerlane Ventures Inc., titled "Stakeholder Presentation of Technical Concerns" for further details on the questions and concerns below.

1. Freeze Wall Technology

Questions and Concerns Raised:

- Is freezing a proven technology?
  - Yes - Layne Christianson Corp ([www.groundfreezing.com](http://www.groundfreezing.com))
  - Thyssen Mining in N. SK.
  - TVI is working with Layne Christianson (LC) on designs, and have involved Don Hayley, EBA Edmonton.
- This is a new approach in NWT
  - Used at Pine Point in 1985
- No groundwater measurements have been done
  - TVI recently acquired a 1983 Stephenson International Groundwater Consultants Ltd. report on groundwater in the project area; copies will be made available. EC made request for groundwater testing to be done this

summer. EBA will include groundwater testing into their existing summer work program for the R-190 deposit area.

- LC will rework the hole spacing with '83 flow data.
- Potential for blasting to disrupt the frozen perimeter wall
  - Purpose of Pilot Project is to test different stope sizes to achieve a safe, economic extraction rate that can be applied to larger low grade deposits.
  - Minimum 50' frozen wall
  - Blasting techniques to minimize fracturing
  - Using narrow, stable stopes
  - Monitoring of rock mechanics
  - Ore body has wide bottom so will drift and fill.
- How will the frozen perimeter wall be decommissioned?
  - Complete removal of surface infrastructure and disposal of brine
  - Fill and plug freeze holes

It was noted that the brine will be at -15C; the lines between holes are all interconnected and the line will be monitored for pressure loss. A break would shut down the whole circuit. Pipes will be pressure tested and may be in concrete trenches. There will be one freeze plant cooling all holes.

It will take 6 months of freezing for the frozen ground to be 10-15' radius; it will be twice as strong as concrete and relatively impervious.

The question was raised whether freezing would affect (increase) porewater pressure; TVI advised no effect on aquifer status. Have high water table and continuous aquifer.

## 2. Water Inflow Contingency Plans

Questions and Concerns Raised:

- If there considerable seepage through the freeze ring, how will inflows be disposed of?

- A pumping system is being designed in the shaft bottom to control any major inflows
- Contingency plan – source additional pumps

The deposit is underlain by a sedimentary dolomite layer, which is less porous, so small inflows are expected from below.

TVI felt no capacity issue for exfiltration pit to hold large flow amounts based on estimated calculations. Will test water before discharging to basin.

## 3. Potential Groundwater Contamination

Questions and Concerns Raised:

- Acid Rock Drainage (ARD)

- No known historical ARD issues, but an independent contractor is hired to conduct an evaluation.
  - Waste water quality effects from backfilling and blasting residues
    - u/g water will be monitored at the infiltration basin
    - ANFO or emulsion used – still evaluating cost & impact
  - Sewage Constituents
    - Sewage – RBC package or Portolets
  - Mill Additives
    - Only additive is Ferrosilicon
    - DMS supernatant – testing now for dissolved Pb and Zn
  - Hydrocarbon Spills
    - Contain all stored fuels and lubricants in separate catchments
    - Piping of fuels u/g for use rather than batch resupply.
    - Weekly re-supply to minimize on-site quantities.
  - Groundwater Monitoring
    - Awaiting archived information
    - G/W baseline – can use some existing wells
4. Details on Hazardous Waste & Disposal  
 Questions and Concerns Raised:
- What are the types of hazardous wastes which may be on site and their disposal methods.
    - Diesel fuel and additives, motor oils, hydraulic oils, batteries
    - Waste oil heaters will be used
    - Will adhere to spill plan as outlined in appendix D, Project Description Report
5. Backfill & DMS Waste  
 Questions and Concerns Raised:
- What waste volumes will be generated and can we reasonably expect all volumes be returned u/g?
    - Expect of 1,000,000 metric tonnes to be extracted there will be waste tonnage of 50,000 tonnes plus 400,000 tonnes of DMS rejects, plus 600,000 tonnes of DMS recovery (concentrate).
    - If the 450,000 tonnes going back u/g double (in fact expect swell factor of 35% not 100%) would have 901,000 tonnes and need ~100,000 tonnes more
    - Primary stopes – cemented backfill
    - Secondary stopes – waste rock
    - Will require additional rock as fill

Rock will be blasted and crushed underground to 4" minus, and hoisted via vertical conveyor to surface where additional crushing to 5/8" minus for the DMS. All waste will be used underground for backfill.

## 6. Disposal of Waste from Workforce

### Questions and Concerns Raised:

- Uncertain about the disposal of waste from workforce, noting that there will be close to 150 people employed.
  - May use sewage treatment facility, u/g mini-sewage treatment toilets, or port-a-potties.
  - Food waste will have to be effectively managed.

## 7. Effects on the Environment and Wildlife

### Questions and Concerns Raised:

- What mitigating and monitoring measures will be put in place on the surrounding wildlife species?
  - Concluded that there would be no significant effects on wildlife.
  - **Whooping Cranes:** know of all nests sites; nearest nest 60 km away; non-breeders documented in area; will minimize effects
  - Peregrine Falcon:** migrants of this area; nest in park; don't know about nests in existing pits.
  - Wood Bison:** in "Bison-Free Management Area"; saw tracks last summer.
  - Short-eared Owl:** not seen; nearest suitable habitat is 3km south of hwy.
  - N. Leopard Frogs:** conducting surveys
  - Woodland Caribou:** saw signs; not the best habitat
  - No registered traplines in the area.

### Additional Comments/Concerns:

- Discussion about depth of gravel pits and infiltration capabilities
  - No standing water ever seen
  - May create a dyke across part of quarry for containment.
- How many trucks will be travelling daily?
  - ~ 35-40 trips/day
- Location of next ore body?
  - 9 other adjacent deposits u/g
  - Would go under water table; freeze each zone individually
  - Closest is ~4000 ft, then they cluster to the west.