

COMMUNITY VIEW: LESSONS LEARNED & NEEDED STEPS FORWARD

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While I don't feel entirely comfortable standing here as a voice for all the diverse communities that are affected by mining, I have picked up on some key themes through my work with many of them...

I'm also not a geochemist or a Geotech, so in some ways my role on this panel is to put forward the questions that communities are asking.

WHAT HAVE WE LEARNED?

- SITE CHARACTERIZATIONS MISS THINGS. ENGINEERS MAKE MISTAKES. DAMS FAIL.
 - CLIMATE CHANGE EXACERBATES THESE RISKS.
- CHEMICAL RISKS ARE ALSO A MAJOR CONCERN.
- TAILINGS FACILITIES ARE FOREVER. THIS INTRODUCES HUGE UNCERTAINTY.
- INERTIA IS PREVALENT IN INDUSTRY AND REGULATORY CHANGE.

- some lessons learned from the last decade, and from the discussions so far during this workshop:

- though tailings dam failure may be considered an unlikely event, site characterizations miss things, engineers make mistakes, and dams do fail. this is a significant concern for those living downstream whose lives and livelihoods may be at risk.

- climate change introduces new risk factors that may increase the likelihood of tailings dam failures

- equally, the risk of chemical contamination to downstream water sources is a major concern for affected communities and something that they are faced with with nearly every mine

- we heard yesterday that neither geochemical nor geotechnical risks are more or less important to communities. They want both managed and minimized to the greatest extent possible

- we were also reminded yesterday that tailings facilities are forever. This introduces huge uncertainty for communities in terms of how long-term liabilities are being

factored into design decisions, and stirs understandable fears for the long-term about whether these facilities will perform as designed, continue to be governed appropriately, and who will take accountability for them.

- we've also learned that change is slow. Industry generally innovates only as needed to meet regulatory requirements, and these requirements may not always hit the mark (be stringent enough) for communities.

- despite Mount Polley independent panel recommendation to eliminate water from new and existing TSFs, and new BAT study requirements introduced by the province after the disaster, we continue to see larger and larger conventional facilities with higher and higher failure consequences being proposed.

WHAT DO WE NEED:

1. SAFETY IS PARAMOUNT

- PUBLIC SAFETY MUST BE THE STATED PRIMARY OBJECTIVE OF TAILINGS DESIGN
- DIALOGUE ON WHAT "SAFETY" MEANS IS NEEDED
- RISK REDUCTION MUST BE PRIORITIZED OVER ECONOMICS

- so, given all that, what do communities need?

- first, safety is paramount.

- regulations and design decision-making processes need to state public safety as the primary objective of tailings design, instead of being just one of many factors that are considered important

- reversing the trend of increasing volumes of wet tailings waste on the landscape should be a component of this, whether that's with backfilling/in-pit disposal, filtered, thickened, paste tailings, or just dry closure of conventional facilities

- there also needs to be dialogue on what public safety means, specific to each project and affected communities involved. It shouldn't be up to proponents or engineers to decide how various risk factors will be prioritized and risk analyses need to be based on the risk to the public, not to the mine operator.

- we also need to see risk reduction prioritized over economics.

- the inherent conflict between returning value to shareholders and protecting downstream communities needs to be resolved. We need to stop seeing alternative

approaches being foregone simply due to cost, which is something that happens particularly frequently with backfilling and in-pit disposal. And we need to see long-term uncertainties costed into decision-making, whether that's through changing how financial feasibility studies are performed, or by introducing bonding for unexpected events like dam failures. I wonder how changing either or both of these things could influence the outcome of tailings design decision-making.

WHAT DO WE NEED:

2. SAFE CLOSURE & CLEAN-UP

- CAN WE MOVE TOWARD MORE DRY CLOSURE?
- REDUCING THE INVENTORY OF CLOSED/LEGACY WET TSFs MUST BE A FOCUS.

- second, communities need safe closure and clean-up

- filtered tailings may not always be the way to go, but can we move toward TSF designs that begin with an assumption of dry closure to reduce long-term physical failure risk?

- and can we address the many closed and legacy TSFs on the landscape still containing water and posing downstream risk, some of which were built with failure-prone upstream dams and many of which were not designed to withstand climate change-related shifts in precipitation

WHAT DO WE NEED:

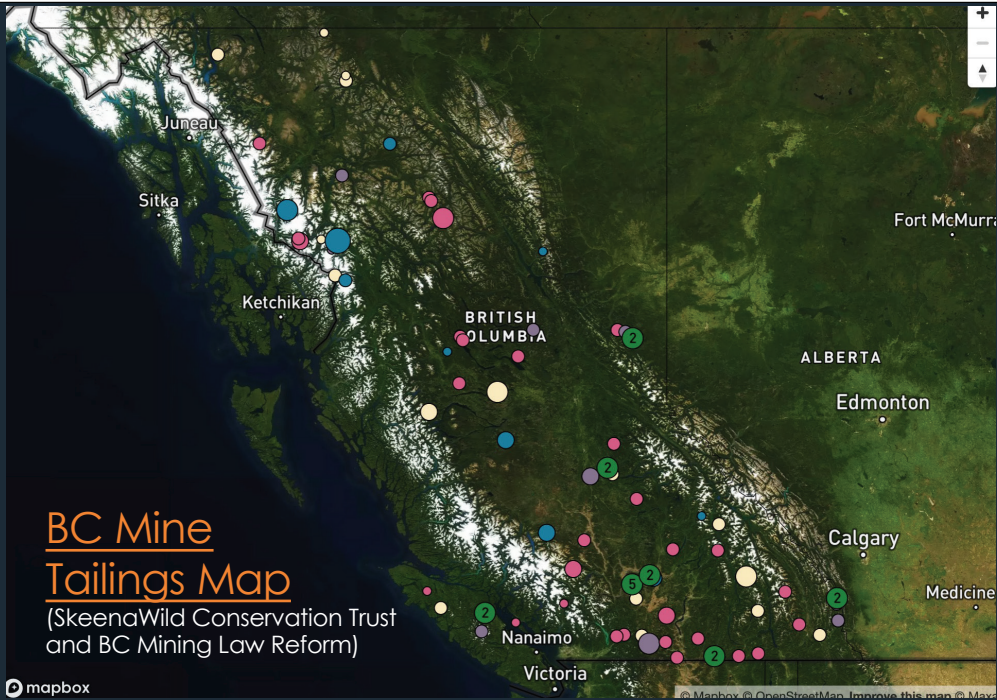
3. TRANSPARENCY

- WHAT IS THE STATE OF THE INVENTORY AND RISK LANDSCAPE?
- WHAT IS BEING DONE/NOT DONE, AND WHY?

- lastly, we need transparency.

- communities often don't know where TSFs are, how big they are, what volume they're storing (water and waste), what their failure modes and consequences could be, what is being done to minimize their risk during operations and post-closure (are they being dewatered?), etc.

- bits and pieces of this information can be found in technical documents or global databases, but there's no comprehensive source that lays out the landscape of risk.



- I was involved in the development of an interactive map and database of tailings facilities in BC to fill this gap in public information – but the onus shouldn't be on communities to do this for ourselves.

WHAT DO WE NEED:

3. TRANSPARENCY

- WHAT IS THE STATE OF THE INVENTORY AND RISK LANDSCAPE?
- WHAT IS BEING DONE/NOT DONE, AND WHY?

- and finally, there's a lot more room for clarity from government and proponents on what is being done or not done and why.
- communities want to know how government and proponents in BC have responded to decade old recommendations to eliminate water from TSFs to reduce failure risk post-Mount Polley
- many communities would benefit from better awareness of risk trade-offs between managing physical and chemical risks, or of the uncertainties associated with alternative tailings technologies
- if there are reasons that particular approaches (e.g., filtered tailings, dry closures, backfilling/in-pit disposal, etc.) are not being more aggressively pursued or mandated, what are they?