Review of Human Health impacts from proposed Grassy Mountain project.

This review led inexorably to a review of air and water aspects of the project. That review also, unfortunately, shows that much of the human health impact assessment (HHIA) rests of faulty and suspect assumptions.

The most obvious relates to wind speeds and thus to the dispersion of pollutants and other materials from the mine site. The chart submitted by Benga shows almost no time with wind speeds greater than 60 km per hour (KPH) at any of their monitoring sites. To accept that as an accurate representation of winds in this area requires that Benga staff have spent almost all their time in Blairmore securely sequestered in the office.

For much of the time between November and April, the Environment Canada forecast for this area will include a wind warning. Those warnings are only issued when winds are expected to exceed about 80 KPH. Speeds over 100 KPH are not uncommon. Last winter had an exceptional news photo, showing a local wind warning sign blown over with a wind speed of 184 KPH showing on the broken information screen.

When the wind related information is derived from a basis that is so obviously flawed, it is necessary to take all other conclusions that were derived from that point as suspect. Specifically, it must be assumed that the amounts of material being carried off-site and the distances they are carried were grossly underestimated.

This is especially so when it is noted that the energy of any moving material increases as a square of the speed. Thus, doubling the speed increases the energy available for material transport by a factor of four. In the case noted above, the energy available for material dispersion would have been nine times that derived from the maximum wind speed used in the Benga modeling.

When a key factor in modeling is underestimated by about an order of magnitude, the resultant conclusions cannot be anything close to accurate.

There are further assumptions relating to dust and coal dispersion that are suspect when reality is factored into the equation. Benga writes about 80% efficacy in dust suppression using watering techniques. A closer look suggests that is not likely to be possible. As an example, many local residents had an opportunity to watch large numbers of gravel trucks drive down Airport Road north of Cowley through most of a summer not long ago. Watering was done assiduously, but the dust was rising within minutes of its application. It is difficult to believe that Benga can have enough water available to keep roads wet 24/7 through hot summer periods. This is especially so when it is noted that water availability is one of the major concerns with this project.

Similarly, Benga suggests that roads will be kept snow covered in winter, with the proviso that this only applies if it is safe to leave snow on the roads. Again, local knowledge will show that most gravel roads here make a quick transition from snow covered to slippery ice fairly quickly. It is likely to be very hazardous to human health to be the driver in a truck loaded with 300 tonnes of material sliding down an icy slope, no matter how gentle that slope might be.

In short, Benga's suggested method of limiting dust fails the 'sniff test'. What it most resembles is an attempt to mask an implausible postulate in a seemingly plausible veneer of obfuscation.

When Benga discusses the potential hazardous materials in the mine area, their deficiencies are again obfuscated with a large amount of seemingly factual verbiage. Unfortunately, much of the time they are using apples to a try and convince the audience that the oranges are not oranges.

Several examples are quite obvious. When they are asked about the amount of coal dust that might escape the mine they discuss the situation relating to a coal mine in Germany. German coal mines are almost all for lignite coal, which has quite different properties to the metallurgical coal here. The German mining areas are rarely subject to winds that are almost commonplace in this area, particularly when you are working on a ridge top.

In another instance, they were asked about the amount of potentially concerning chemicals that might be found in their mine and the released dust. They cited data from three prairie mines, again using data from a very different type of coal. It would be interesting to see what the data from the BC mines in this area showed.

It is also interesting that they reported data from distant mines, and apparently have not even had a sample from their own mine area analyzed. While that might have been expensive, it would not come near to the cost of building a golf course, which they are currently doing.

Even if the data from distant mines with different types of coal were relevant to the current proposal, it should be noted that the reported concentrations of various chemicals showed enormous variation within individual mines. In short, it would be very difficult to make reliable predictions about impacts when the concentration of a single material might vary by orders of magnitude.

Another area where the modeling may be suspect is that it seemed to treat coal dust as if it had similar properties to rock dust. However, coal is much less dense than other rock, so it can be expected to require less energy to get it airborne and to keep it there. Considering that it is not uncommon for windows in this area to be broken by windblown rock, it is not a stretch to believe that relatively low density material like coal could be taken great distances.

Another aspect of the look at coal dust dispersal relates to the rail line. A considerable amount of writing was devoted to describing how the coal dust and an anti-dust agent were tested to see what material might be blown off the train cars. In that test, the coal was dried to a level of 9% water. However, elsewhere the coal that will be shipped from the mine is supposed to be dried to 2% water. This represents almost a five fold difference in the amount of water influencing coal behavior. That difference probably results in a considerable difference in how the coal behaves in a train car. As a consequence, it is difficult to be sure that the data presented are representative of what will happen in 'real world' conditions.

It should also be noted that the difference in water content has a dramatic impact on the amount of water that will be shipped out of the watershed each and every years. In previous comments I have noted that the 2% level represents a loss of over 80,000 tons of water every year. The higher level raises the amount of water lost from the Crowsnest/Oldman River basin to over 350,000 tons each year.

A further area of concern regards the assessment of the potential negative impacts of various chemicals that are known to occur in coal. A review of the material presented suggests that adverse effects were assessed only for single element exposures. However, no human is likely to be exposed to a single element. Rather they will be exposed to all the material both acutely and chronically. There is a good chance that at least some of the combinations would be negatively synergistic. That is the combination would be more toxic than any of the individual elements involved would suggest. I could not see any evidence that this possibility had even been considered.

A further consideration relates to the view that as you move away from the source, the potential for adverse impacts declines. That assumption may be valid in a setting where there is no opportunity for a deleterious substance to accumulate.

Unfortunately, in this area, there is an opportunity for toxins to accumulate. It is the upper reaches of the Crowsnest River arm of the Oldman reservoir. While that area was once a deep valley, it is now a deep collection of silt and mud. Much of the mine waste that escapes the site will settle here, when the flowing water of the Crowsnest River slows.

If the sediment simply sat at the bottom of the reservoir, it would probably not be available to humans. However, those sediment deposits are regularly disturbed as the water level of the reservoir rises and falls in spring and fall respectively. Over the winter, much of the sediment sits exposed to the Chinook winds. Those winds very commonly exceed 100 KPH, and clouds of potentially contaminated dust can be seen blowing over surrounding fields, farm homes, and subdivisions.

There did not seem to be any consideration given to the potential exposure of residents to deleterious substances. Nor did Benga appear to look into the potential

for such material to enter the food chain by being incorporated into forage or grain crops.

In short, Benga's attempts to portray their mine as offering minimal potential for negative impacts on human health rest of questionable assumptions. The conclusions that come from that work are therefore of little to no value in assessing the potential impacts of this mine.

Two additional points not directly related to Human Health impacts.

1. A chart in the wildlife section lists river otters as extirpated in the area. That information will be news to residents of the River Bottom area, who have for several years been able to watch otters swimming, hunting, and playing along a stretch of the Crowsnest River near the Hillcrest Bridge.
2. Several local residents have informed me that Benga is hiring crane operators on multi-year contracts, and is asking for bids on large scale earth moving work related to building a mine. Considering that, despite literally years of trying, Benga has not even reached the point of having prepared an acceptable Impact Assessment, this seems at least premature. It suggests that Benga feels the Panel and Hearing, when it finally happens, will be simply a rubberstamp exercise before approval.