AN EXPLANATION OF 'IS NANAIMO SAFE?'

I presented "Is Nanaimo Safe" last Monday. I have been advised to encapsulate what I wrote in a brief statement for those who may have had difficulty getting through thirty-five pages.

I believe that I have successfully challenged the "Estimate of Affected Population" figures used in the 2012 "Chase River Dam Breach Flood Inundation Study". For the permanent, as opposed to transitory population, my figures, from a number of separate sources, vary from a half of to two-thirds of theirs. Since the "Population At Risk" has a direct bearing on the number of potential fatalities, this should have an effect on lowering that number, and hence the dam failure consequence classification. If the engineer's report had provided any methodology as to how they arrived at those fatality numbers, I would have explored the differences, but they didn't and I couldn't. In the engineer's study, the number of fatalities was also affected by the lack of an effective warning and evacuation process. Since the residents are now fully aware of the risk, and such emergency preparations are in place, shouldn't the consequence classification be reviewed?

In the last few days, I have unearthed information about Nanaimo's dams from Ministry of the Environment files of 1993 and 1994. They show the two Colliery dams with a surface area of 1.42 and 1.43 hectares, and a volume of 78,800 and 80.100 cubic metres. Westwood Lake dam is shown as 63.7 hectares and a volume of 3,714,000 cubic metres. Jump Creek dam has a volume of 17,000,000 cubic metres and Fourth Lake dam has a surface area of 200 hectares and holds 38,000,000 cubic metres. It should be clear just how small the Colliery dams are in relation to their larger relatives.

Watersheds (in Square kilometers): Chase River – 20; Millstone River – 93.2 (5 times Chase River); Nanaimo River – 293 (15 times Chase River).

By volume, Westwood Lake is 46 times bigger than either of the Colliery dams.
By volume, South Forks dam is similar to Westwood Lake dam.
By volume, Jump Creek dam is 212 times bigger than either of the Colliery dams.
By volume, Fourth Lake is 475 times bigger than either of the Colliery dams.
By volume, the last three combined are 733 times either of the Colliery dams.

We should be worried about these other dams far more than Colliery dams.

In 2003, Dam Safety Reviews concluded that Westwood dam is vulnerable to liquefaction related failure at a much less than design earthquake level. Fixing that dam became the highest priority. The review also recommended a seismic hazard assessment for Colliery dams. Five years passed before either of these recommendations were tendered. In 2008, $500,000 was spent on a rock fill buttress downstream of Westwood Lake dam. Should a large magnitude earthquake occur, the dam is expected to slump. That was a fix?

An inundation study was conducted on Westwood Lake dam in 2004. It was recommended that Cat Stream and Chase River should be modeled in connection with this study. To date nothing has happened. I studied the Millstone River and the Cat Stream for flooding, and applying similar standards as were applied to the Chase River, came up with a comparable population at risk. The inundation study does not discuss fatalities but the consequence classification for the dam is “High” (under 10 people may die). I suggest it should be higher.

Throughout the 1990’s the Water Board was busy with major problems at the almost new Jump Creek Dam. There were issues with the spillway and low level outlet and the dam almost failed. It took nearly twelve years to sort out. It was critical to fix our water supply. How many of you knew that little secret? As a result of that priority, other dams in Nanaimo were neglected. But by the new millennium things were under control.

In 1990 a breach flood inundation study was performed on the South Fork and Jump Creek dams. The map is on the City website. The dam failure consequence classification for both dams is “Very High” (10 to 100 people may die). If a breach at Fourth Lake dam was added to the mix, three times more water would be coursing down the Nanaimo River. Cedar has over 250 inhabitants. How well will the populations at Indian Reserves #2, #3 and #4, or South Wellington, or Nanaimo Airport, or Chase River, or along Nanaimo River Road cope with such a flood? I suggest that you and Harmac and the RDN find out.

Remember, if a serious seismic event or a flood of biblical proportions, or a combination of both hits Nanaimo it will affect all the dams and water courses at the same time. Colliery dams might be the least of your problems.

The 2012 Colliery Dams breach flood inundation study was the first time two-dimensional computer modeling had been used on a Nanaimo dam. The results, when compared with the 2002 study of all the dams on the Chase River breaching, are dramatic, yet a similar amount of water was involved with a not dissimilar flood boundary. Is it real or just an interpretation of a hypothetical event?

I have pointed out that the dams in Nanaimo were ignored while the failure of Jump Creek dam was worked through and then while the conference centre was built. By my standards, this is neglect. It has lead to the present impasse on Colliery dams. These dams could have been fixed much more cheaply within the past ten years when the dam failure classifications were less stringent. The “Extreme” (more than a 100 people may die) category is unique, and very questionable.

It’s all very well talking about consequences but what about probabilities? The Colliery dams might stand for another hundred years. Nobody really knows what will actually happen. What is the probability of senior staff having to answer for the consequences of their actions or inactions in the past? Ultimately, this issue appears to be less about safety and more about redeveloping Harewood.