

Field Inspection Report – Gullbridge Dam and South Brook Watershed

Wednesday December 19, 2012

On Dec 19th, work had commenced to remove the excavator from the area and construct a small berm to create a temporary settling basin to allow any tailings to settle out from the small amount of water that continued to trickle from the tailings area.

A measurement of the dam breach confirmed the width to be approximately 20m at the base. Due to overhangs it was not safe to measure the top width of the breach. However, the opening appeared to be approximately 30m wide at the top. The volume of water spilled from the breach is estimated to be in the order of 100,000m³, based on an assumed average water depth of 1m, length 1000m and average width of 100m. The tailings immediately upstream of the breach section looked to be consolidated with small channels eroded into the tailings due to the high water velocities at the breach location. The tailings at this location were estimated to be 2-2.5m high above the lowest breach elevation. Lower water velocities would occur further away from the breach area and as a result less erosion of the tailings likely occurred as you move further away from the breach area. It appears that any tailings which left the impoundment were either in small chunks from the area immediately upstream of the breach location, which likely would have settled out on the bog, or were suspended in the water at the higher velocity locations near the breach area. This would suggest that a very small fraction of tailings exited the tailings impoundment relative to the volume of water.

Thursday December 20, 2012

Officials from the Department of Environment and Conservation (ENVC) and the Town of South Brook conducted an aerial inspection using helicopter. They flew up South Brook from the mouth of the river looking for any changes in water appearance or markings of debris on ice/snow along the river shoreline. No debris markings, plumes or changes in water appearance were visible in South Brook or South Pond with the exception of the location on South Brook where the water entered from the Gullbridge breach. At this location there were small ice pans with dark grey debris which indicate that the tailings laden water spilled over the ice on South Brook or the ice pans came from the tailings impoundment area. Based on the thickness of the ice it appears that these ice pans came from the tailings facility during the breach. They flew over the bog toward the dam breach following the obvious markings on the bog. As they moved closer to the dam more debris was visible on the bog, with larger materials deposited just downstream of the breach area. It appears that a thin layer of gravel, sand and tailings are spread over the lower section of the bog, while close to the dam breach larger chunks of tailings and larger rocks and gravel from the dam were deposited over the bog.

They then flew up through the breach in the dam and over the tailings impoundment area. Along the upstream edge of the dam you could see an ice ledge indicating the water level prior to the dam breach. An inspection at the dam breach area showed a large wall of tailings remaining within the impoundment

area. It was noted that the tailings look like sedimentary rock as a result of the tailings consolidating over the past 30-40 years. They also inspected the nearly finished small berm which would help form a temporary settling basin for any drainage from the tailings area.

Pictures of Site Visit



Picture #1: Gullbridge Breach



Picture #2: Consolidated tailings at breach outlet



Picture #3: Breach water enters South Brook, with dam in background



Picture #4: Breach water enter South Brook, with debris markings on ice pans



Picture #5: Section of bog close to South Brook



Picture #6: Section of bog halfway to South Brook



Picture #7: Section of bog immediately downstream of breach



Picture #8: Construction of berm for temporary containment and settling pond