5.0 Site Development

5.1. Construction Survey, Measurements and Layouts

Kudlik Construction employs one surveyor for the Clyde River lagoon project. With the use of a Trimble R8 GPS base and Rover unit, the layouts for the lagoon berms and stockpile volumes were computed.

The GPS was referenced to the local control network in the Hamlet, coordinates can be found on the Geodetic Survey of Canada website. Reference to the control network allowed the surveyor to correspond to the original survey completed in 2007 by Trow, and allowed for easy layout computations from the original drawings. Berm layouts were started in Phase I when the stockpiling of material began. These layouts were preliminary and a check to be sure the reference frame and survey tools were corresponding with one another. The surveyor was also responsible for the measurement of the stockpile volumes which began in Phase I and carried over to Phase II. The stockpile volumes were measured for progress purposes to determine the volume quarried, and the additional volumes needed. Final volumes were measured by the surveyor at the end of each Phase and for the Progress Payment Certificates issued at the end of each month.

Berm layouts were completed numerous times over the course of the project. The surveyor was held responsible to keep construction on grade and orientated throughout the project. Side slopes were checked, and berm dimensions were held to plan specifications by the surveyor.

Final volumes of the berms were measured by the surveyor when complete to check the consequent stockpile volumes measured prior.

Layouts for the sewage shutes and decanting inlet and outlet piping where the responsible of the surveyor once the berms were completed.

5.2. Berm Construction

Construction of the new cell began in 2009 as part of the Phase II developments. Trow's field staff inspected the entire process to ensure quality control of the operations and make informed decisions on-site to move the project forward in an efficient method. Kudlik followed specifications for quantities and placement of granulars to form the berms. Proper compaction was completed using the 8 ton Vibratory Highway Type Roller in lifts of 300mm and tested by Trow's staff. Kudliks surveyor made continuous measurements as the berms developed to keep grade and alignment true.

The end of Phase II developments establish the new cell complete with proper berm slopes at 3H:1V along the entire structure as well as re-establishing the proper slope along the outer portion of the existing cell.

Decanting structures were installed, including the inlet and outlet pipes, mounts, and connections for the portable pumping system. Driving surfaces for the sewage trucks were completed and

barrier stones set in place. Shutes were installed to prevent structural erosion to the berms when the sewage trucks discharge.

Image 5.2.1 Berm Construction

5.3. Liner Installation

Upon completion of the main core of the berms, a polyethylene impenetrable liner was installed around the inside circumference of the cell, keyed into both the top and toe of the berm structure. This liner will provide the primary containment for the lagoon with the berm permafrost core providing backup.

Image 5.3.1 Liner Installation

5.4. Interim Inspection

Following the end of the Phase II construction season, Trow made final reviews of the 2009 developments to ensure the design was followed through and installations properly constructed.

The Clyde River sewage lagoon project is on target for completion in 2010. The lagoon cells will be operational following the project completion at the projected time and should be capable of meet the storage requirements of the Hamlet for the next 20 years.

5.4. Interim Inspection

Following the end of the Phase II construction season, Trow made final reviews of the 2009 developments to ensure the design was followed through and installations properly constructed.

The Clyde River sewage lagoon project is on target for completion in 2010. The lagoon cells will be operational following the project completion at the projected time and should be capable of meet the storage requirements of the Hamlet for the next 20 years.

Image 5.4.1 Completed Berms of New Cell

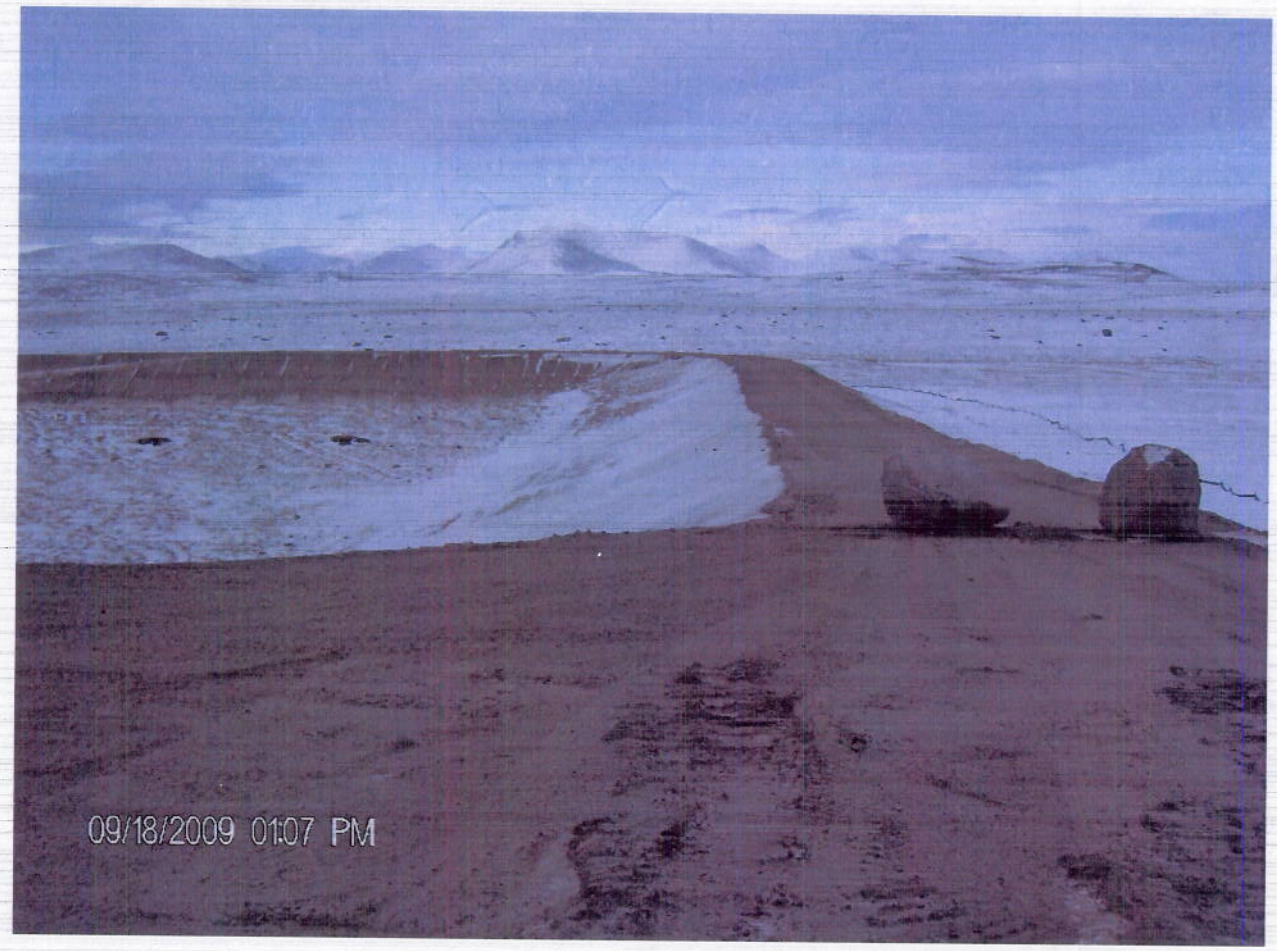

Image 5.4.2 Completed Decanting Inlet Structure

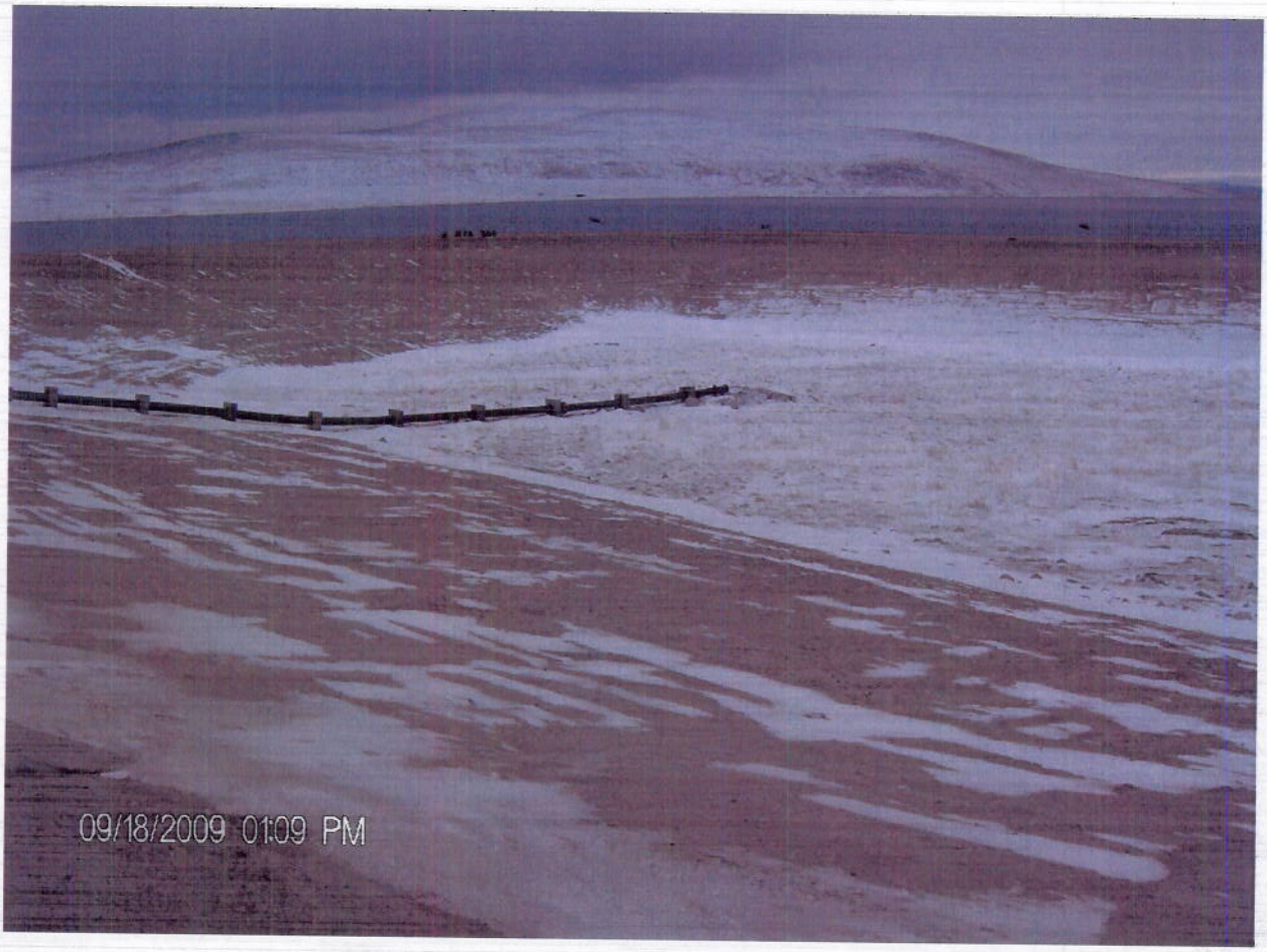

Image 5.4.3 Completed Shute Structure

Image 5.4.4 Completed Diversion Berm with Lagoon in Background