- "Subsurface Hydrogeology of the Twin Pines Project Area, Trail Ridge, Georgia" – This report will summarize the regional geology and hydrology of the Trail Ridge area, document drilling efforts (including boring logs), identify subsurface hydrogeologic units, present cross-sections and subsurface maps of hydrogeologic units, define the potentiometric surface of the surficial aquifer system, and develop a conceptual hydrogeological model of the study area.
- "Hydraulic Properties of Subsurface Soils in the Twin Pines Project Area, Trail Ridge, Georgia" – Measured hydraulic and other properties of the subsurface soils will be documented in this report.
- "Groundwater Models of the Twin Pines Project Area, Trail Ridge, Georgia" – This report will document the groundwater models produced to evaluate the pre-mining conditions, the impact of mining activities on groundwater flow, and the post-mining groundwater conditions.

## General Mining Information

Figure 4 provides an estimated mining production timeline for the proposed project. Mining will begin on the TIAA property initially followed by mining of the Keystone property and then the Adirondack property. Mining of the three properties will be performed utilizing doziers and track-hoes on the TIAA property and drag-line extraction on the Keystone and Adirondack properties. As shown in Figure 5, mining is estimated to be completed on the TIAA property within three years of the start of mining. Mining of the Adirondack property is estimated to be completed in approximately year eight from the start of mining on the TIAA property. Mining on Keystone is estimated to be completed within these mining timeframes. Figure 5 provides a layout of proposed facility structures. Figure 6 illustrates the progression of mining in cross section format.

## Mining/Reclamation Discussion

On the Keystone and Adirondack Properties (Figure XX), Twin Pines will use a mobile drag line to excavate mineralized sands from a small mine pit (maximum size: 500 ft long, 100 feet wide, and 25 – 70 feet deep). On the TIAA Property (Figure XX), the mineralized zone is much shallower (10 – 20 ft), and mining will be performed using dozers and tracked excavator (maximum pit size: 500 ft long, 100 ft wide [BH1], and 10 – 20 ft deep). On all properties, the excavated materials will be moved to an onsite processing facility using a mobile conveyor, where the heavy minerals will be removed from the other sand. 98% of the mined sand will then be returned as spoils to the inactive portion of the mine pit. The mine pits will advance approximately 100 feet per day. As the pit advances into unmined areas, the inactive portion of the pit will be filled with spoil at the same rate as the pit advances. The average time that a portion of the pit will remain open is approximately 5 days.

The mine pit will be continuously advancing, and reclamation of the pit will occur simultaneously. Following the return of spoils to the mine pit, piezometers will be installed to monitor the recovery of groundwater levels. If needed, soil amendments will be included with the spoils to reduce the vertical permeability of the spoils to maintain groundwater levels needed for wetlands. The topography of the reclaimed mine spoils will be returned as close to pre-project elevations as possible, with the final elevations determined from recovered groundwater levels. The post-project wetland area will be equivalent to the pre-project wetland area, and upland areas will be constructed for Long-Leaf Pine.