PT. Agro City Kaltim (ACK) is planning a coal mining activities with the open pit system. Relative to the current hydrogeological studies have been conducted to support the mining plan. Hydrogeological research objective was to determine the hydrogeological parameters in sediment coal mining activities in the area of research. Studies were conducted on the hydrology, topography, surface water, aquifer characteristics and groundwater quality. In accordance with the purpose of research and mining time seven years (first year), then the discussion will put emphasis on the sources and discharge of mine water at that location.

There are three sources of water that will be entered into the study site is rainwater, runoff, and groundwater seepage. Rainwater that enters the study site with rain intensity is equal to 18.78 mm/h so that the intensity of rainfall in the study area included in the classification of heavy rain.

There are four catchment in the study area is the first DTH, DTH II, DTH III and IV which have respectively discharge 1,861 m$^3$/sec, 1,265 m$^3$/sec, 1,624 m$^3$/sec and 1,321 m$^3$/sec. So that rainwater will flow directly into the study site is at 6.071 m$^3$/sec or 21855.6 m$^3$/hour.

To obtain the parameters of the aquifer aquifer testing with slug test method on 4 drill holes. Based on the test results of the aquifer in the field with Slug Test method known value of permeability (k) with the value of each 2,645x10^-6 m/sec, 3,225x10^-7 m/sec, 1,345x10^-5 m/sec and 2,769x10^-6 m/sec. Then a layer of the aquifer in the study area locations including the type of aquifer with moderate productivity.

Water testing was conducted to determine the water quality in the study area. 8 Tests were conducted on laboratory Balai Pengujian, Informasi Permukiman dan Bangunan dan Pengembangan Jasa Kontruksi (Balai PIPBPJK) Yogyakarta. From the test results of water samples in North Lisa Zone area of ground water quality is generally relatively well.