



GEO-FOUNDATIONS Contractors Inc.

Millville Quarry



Date: 1997

Technology: Hot Bitumen Grouting

In December of 1998, Geo-Foundations concluded the seventh phase of hot bitumen grouting at a very challenging inflow reduction project at a limestone aggregate quarry in West Virginia. Before commencement of grouting work in late 1997, the underground water flow from a nearby river into the quarry was estimated to be as great as 2,800 L/sec (45,000 USGPM). Upon conclusion of the project, the quarry inflow from the river source was completely eliminated.

The greatest challenge to the eventual success of the project was the very poor quality of the karst limestone bedrock formation through which the water was flowing. Though it was consistently proven during the first six phases of this project that hot bitumen grouting could greatly reduce or eliminate the inflow, the high presence of clay-filled voids and seams in the bedrock made it relatively easy for the water to erode new and gradually larger holes across the grout curtain. This frustrating problem was eventually overcome when enough of the troublesome clay had been eroded away and replaced with hot bitumen and cement grout to form a continuous, impermeable curtain.

Geo-Foundations' scope of work included downhole piping installation, fabrication and commissioning of all hot bitumen suction and discharge piping, hot bitumen delivery logistics, and production grouting. For the



Caravan of hot bitumen tanker trucks delivering grout to site

duration of the project, Geo-Foundations employed a mobile hot bitumen grouting injection plant to deliver the grout and accurately monitor and control all grouting work. A total exceeding 3500m³ of hot bitumen grout was injected over the course of all seven phases of the project.



Inflow reduction project site – hot bitumen injection wells in foreground



Portable hot bitumen pumping plant in action