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論文名稱：花蓮石灰石礦區開發對水文環境影響之研究

英文論文名稱：A Study on Hydrological Influence of Limestone Mining Area In Hualien

【中文摘要】

本研究是以台灣花蓮地區開發中之結晶石灰石(大理石)礦區及其附近未開發區為試區，進行土壤試驗、水質檢測分析及泥砂生產量量測等試驗工作，以探討該礦區開發對當地水文環境之影響，經現場調查及試驗所得結果如下：1.土壤最終入滲率：雜林>未開發區>植生平台>碾壓採台>採台植生(客土植生帶)區。2.一般認為石灰石(水泥)礦區之岩層較破碎，裂隙發達，雨水應該很容易由裂隙排出，然經由現場入滲試驗得知，由於採礦作業所揚起之大量粉塵，填塞在地表裂隙中，阻塞雨水之滲入，而使碾壓採台部分地區之最終入滲率變得很低，且位在殘壁下方植生帶，因受上方掉落之岩石之夯實壓密作用，而降低土壤之入滲能力，此等現象對該地區之水源涵養具有負面之影響。3.由水質試驗分析可知：以採礦區正在排放水體之濁度為最高，表示該水體中有大量懸浮固體存在，而沉澱池內之水體濁度與雨水相近，可見沉澱池對該礦區確實能發揮沉淨土砂、淨化水質之功效，因此該礦區應將地表上之水體先導入沉澱池內，經沉

澱後再對外排放，以減少對其下游地區之自然生態環境造成負面影響。4.泥砂生產量量測結果：採礦場之廢棄土石原堆積在峽谷內，然隨著暴雨所產生之大量地表逕流，被挾帶至下游地區，沉積在沉澱池附近，經量測該地區之泥砂淤積量，竟高達 115,800 立方公尺，可知廢棄土石堆置位置為影響泥砂生產量之重要因子。

【英文摘要】

The objective of this research was to study the hydrological characteristics by the limestone mining operation. The method was carried out by water quality, infiltration rate, and sediment yield were surveyed. in Hualien. The results were shown as follow

: 1. The final infiltration rate of forest control is best and then the rate of the prior explosion area, explosion zone, operation platform and re-vegetation terrace decrease respectively. 2. Generally, the operation of limestone mining including explosion, transport, grind-cutting. etc. decrease the water infiltration process. 3. Also, soils of mining operation area drastically are disturbed can create horrendous problems in water body. Water quality of run off in turbidity and suspended solid reach frightening pollution stage, closed to 10 thousand m S/cm and thousand ppm respectively. 4.

Sedimentation treatment for the discharging water is necessary. 5. Surface mine spoils are responsible for erosion sediment estimate at 4000 times greater than erosion in fully stocked forest.