

GROUNDWATER EXPLORATION ON THE TEKNAF PENINSULA FOR THE ROHINGYA REFUGEE CRISIS

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The Rohingya people are a stateless Muslim minority from Rakhine State, Myanmar. They have been fleeing Myanmar to countries like Bangladesh, Saudi Arabia, Pakistan and Malaysia for over 30 years. In August of 2017, Myanmar security forces began clearance operations which have resulted in the fastest developing refugee emergency in the world. Since August 25 of 2017, over 650,000 Rohingya have fled Myanmar to the southeastern region of Bangladesh. This is in addition to the 200,000-300,000 Rohingya that were already living in Bangladesh, the majority as unregistered refugees. The enormous migration of people began during the monsoon season, where the average rainfall is nearly four metres between June and October. By contrast, the dry season, beginning in November and ending in March, has almost no rainfall. The extreme contrast between these two seasons causes surface water reservoirs to dry up before the end of the dry season and, at present, there are no properly developed aquifers from which the camps can extract groundwater. With the impending dry season and the massive influx of refugees to the Teknaf Peninsula, water resources will be stressed beyond their limits. In October and November of 2017, our team of geophysicists undertook geophysical surveys for groundwater exploration in the vicinity of the Nayapara, Leda and Kutupalong Refugee Camp, on the Teknaf Peninsula. An unmanned aerial vehicle (UAV) was used to obtain high-resolution photography of the refugee camps. This enabled potential survey lines to be distinguished from the chaotic, rolling landscape of shelters and rice fields. Electrical resistivity tomography (ERT) profiles were used to explore for potential sandstone aquifers to a depth of approximately 120 metres. We combined this data with extremely limited borehole logs from poorly completed water wells to help develop a geologic model for the region.