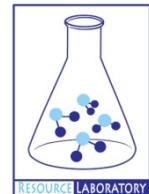




GROUNDWATER QUALITY ANALYSIS REPORT

Kandal - Kandal Stueng - Preæk Roka (86F)



Preæk Roka is located in the district of Kandal Stueng. The population of this commune is approximately 3505 (2004). Groundwater sample collection occurred in November 2005 and consisted of the sampling of 14 tube wells throughout the commune. The attached figure presents the location of Preæk Roka within Kandal as well as groundwater sample locations and exceedances of health-impacting contaminants (when applicable).

Groundwater Quality Rating

The groundwater quality rating for Preæk Roka is 86F. Therefore, the general safety of deep aquifer groundwater is very good and the aesthetic quality of the water is poor, according to the contaminants measured and samples collected. The following two sections describe all major health and aesthetic contaminants that exceeded drinking water standards in at least one sample within the commune.

Contaminants of Potential Concern – Health

Manganese - Elevated concentrations of Manganese were observed within the commune. The estimated probability of encountering unacceptable concentrations of Manganese ($>0.4 \text{ mg/L}$) in tube wells is 13%, based on the observed data. Exposure to elevated concentrations of Manganese can cause neurological disorders. Aeration allows oxygen to enter the water and react with Manganese to form a compound which is insoluble in water. The newly formed solids will slowly settle to the bottom or can be removed more rapidly by filtration. Performing these procedures may reduce the concentration of Manganese in water but follow-up testing is recommended to ensure water quality standards are met.

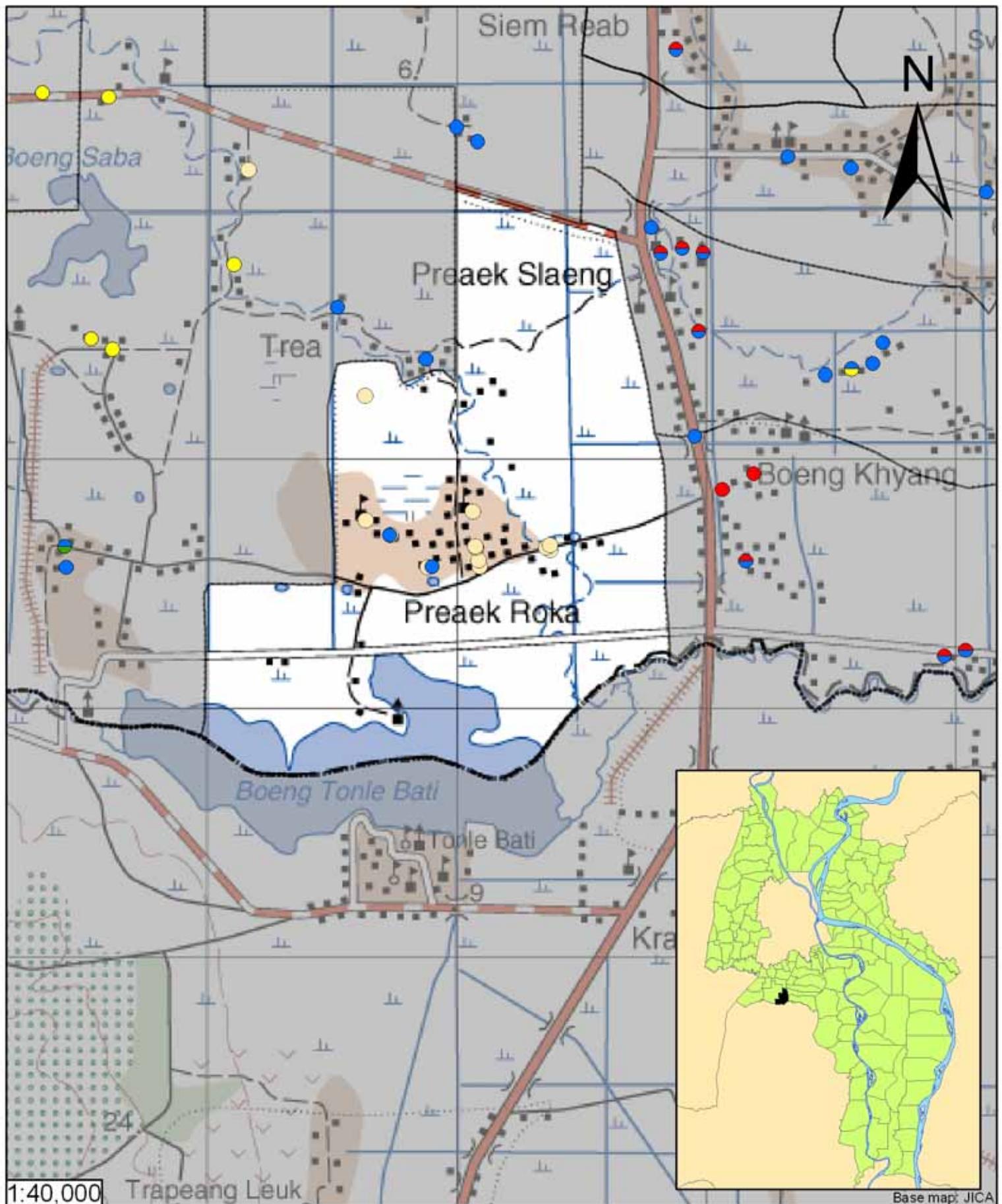
Contaminants of Potential Concern – Aesthetic

Iron - Elevated concentrations of Iron were observed within the commune. The estimated probability of encountering potentially unacceptable concentrations of Iron ($>1 \text{ mg/L}$) in tube wells is 85%, based on the observed data. At elevated concentrations, Iron causes water to be cloudy and unpleasant to drink. An odor may also be encountered at high concentrations. Iron can also stain laundry, food (can cause discoloration of cooked rice), and leave deposits. Aeration allows oxygen to enter the water and react with Iron to form

a compound which is insoluble in water. The newly formed solids will slowly settle to the bottom or can be removed more rapidly by filtration. Performing these procedures may reduce the concentration of Iron in water but follow-up testing is recommended to ensure water quality standards are met.

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Manganese can also stain laundry, food (can cause discoloration of cooked rice), and leave deposits. Aeration allows oxygen to enter the water and react with Manganese to form a compound which is insoluble in water. The newly formed solids will slowly settle to the bottom or can be removed more rapidly by filtration. Performing these procedures may reduce the concentration of Manganese in water but follow-up testing is recommended to ensure water quality standards are met.



- Arsenic
 - Provincial Boundary
 - Manganese
 - Commune Boundary
 - Fluoride
 - Nitrate
 - No Exceedance
- Locations exceeding the Cambodian water quality standards for major health-impacting contaminants have been colour-coded and arranged such that they do not overlap.

Tube Well Sample Locations and Health-Based Exceedances

Preah Roka- Kandal Stueng -Kandal - Cambodia

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