

## USGS Iraq Minerals Project – Minerals Component Anbar Geochemical Survey



Geosurv field crew sediment sampling, Anbar Province, June 2011.

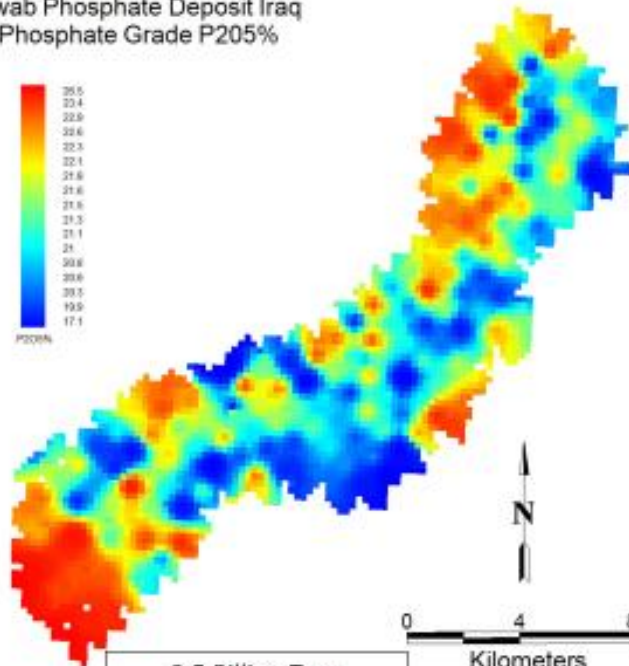


Iron and heavy mineral rich beds in the Ga'ara Sandstone, the likely source of the gold anomaly.



Gold grains in the Ga'ara Sandstone.  
Mustafa and Tobia (2010)

Swab Phosphate Deposit Iraq  
Phosphate Grade P2O5%

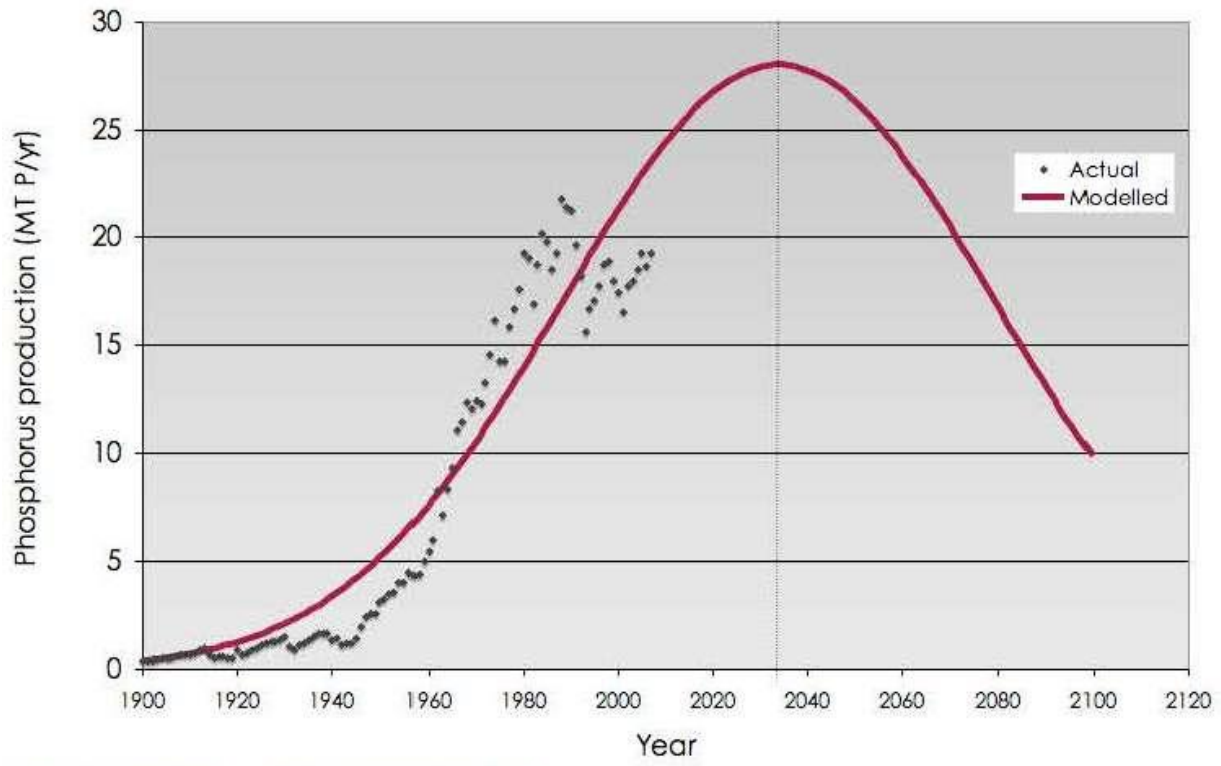


3.5 Billion Tons  
Average grade 21% P<sub>2</sub>O<sub>5</sub>

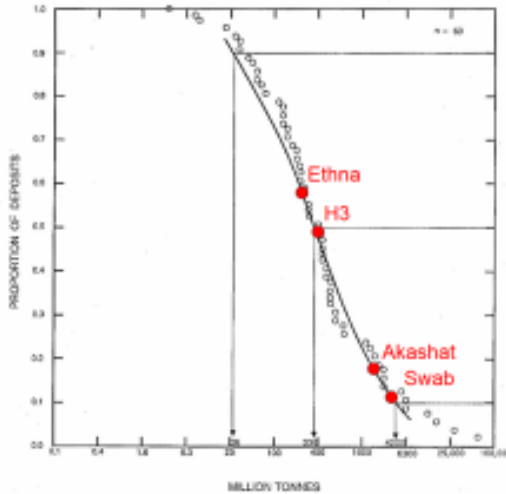
Note that there is potential to add tonnage at higher grades (>25%).

In addition the hanging wall of the deposit includes 4,268 million metric tons of limestone averaging 19 m thick 54% CaO, 0.24% MgO and 0.13% Fe<sub>2</sub>O<sub>3</sub> which is suitable for cement raw material and other industrial uses.

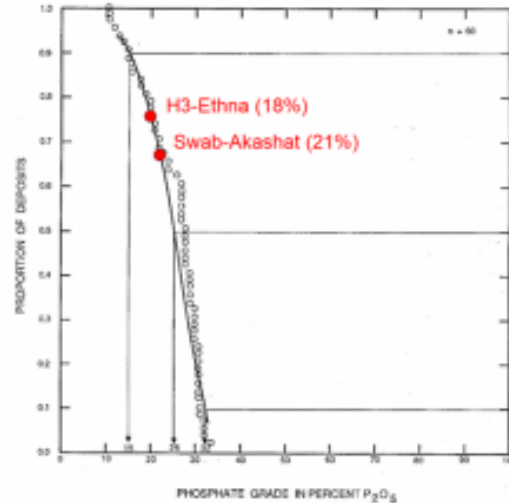
Peak Phosphorus curve



## Iraq Phosphate Deposits – World Context



Grade-Tonnage Curves for Upwelling Type Phosphate Deposits (Cox and Singer, 1986)



Deposit Name	Metric Tons	Grade P2O5%
Akashat	1,764,700,000	21.0
H3	332,100,000	17.9
Ethna	218,780,000	18.1
Swab	3,502,900,000	21.7

## Some Commodities Attractive for Investment in Iraq

- Sand and gravel, brick clay, cement** – abundant and well documented by Geosurv. As these commodities are developed for local markets export demand may arise, especially for cement. Attractive to local and regional investors.
- Barite, bentonite and high purity silica sand** to support the petroleum industry. Can be attractive to oil and gas companies already operating in Iraq, particularly regional companies.
- Phosphate.** Iraq has very large deposits which could attract foreign investment.