Composition modeling of pollution of groundwater by usage of geoelectrical and hydrogeochemical studies

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Now a day, the use of indirect methods of measurement and detection of groundwater contamination due to high speed and lower cost is interested. Among the geophysical methods are very important. in this project was trying, with sampling of groundwater resources and their chemical analysis and Select the appropriate method, and the effect of trace pollutants using the results in comparison to groundwater modeling with integrated studies and hydrogeochemical and geoelectical was acting.

Thirteen profiles with the schlumberger array with south to north in the direction have been picked in study area. General review of the main geoelectrical sections are shown four layers and in some places raise up to six layers. To achieve good picture of the situation in depth, plans are extracted in different depths. These maps are identified manner and distribution of lateral variations of electrical resistance of geological formations.

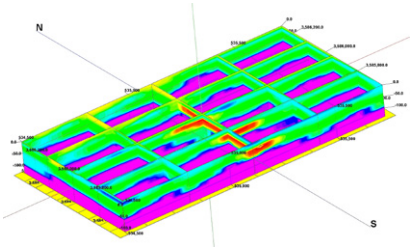

Figure 1: fence of 3d resistance modeling

10-meter depth Plan trend shows a noticeable decrease in the amount of resistivity is observed, especially in the south, it's the main zone of contamination, probably. These studies with samples from 69 water wells were investigated fully consolidated.

Discussion of Results

Results showed that the electrical resistance of contamination zone is lower than usual about the same sedimentary unit which is caused by the effect of pollutants. Based on field observations in the vicinity of this area there are water channel which converted this area to a washed zone that contaminations can penetrate into the soil with infiltrated water.

Geochemical zoning analysis based on 'Axes Level' innovative method

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Primary Geochemical halo and alteration zones around ore deposits with the phenomenon formation of ore deposits in a relationship are genetic. So that the diagnosis clear boundary between alteration regions and geochemical alteration halo not be always possible. Observations have shown that spatial distribution (longitudinal, lateral and vertical) halo is complicated and controlled by several variables, such as differences in the mobility of elements which can be function of temperature, pressure, physicochemical specificities enclosing rock, etc.

These zonings can be classification of the use geochemical zoning, with the mineral solutions to flow instruments are matched. This can be useful as a guide in determining the direction and mineralization activity center used to be. Numerical methods in analyzing series of zoning are used in the primary halo, are:

1- Grigorian Method: Based on put data normalized data in a certain interval and compare their changes in shapes. [1]

2- Solovov method (gravity center): gravity center of halo for a two-element ratio is obtained. [1] This more comprehensive than the Gregorian method but has two problems: Effect of torque and weakness in analyzing horizons with different distances. 'Axis level' method was developed to correct these problems by using integral of the halo surface in Perpendicular direction of geochemical profiles. The aim of this method is effecting of halo shape to obtain the center of gravity.

This is similar to the mean value theorem in integral and led to obtain a gravity axe for vertical halo, this axe is called 'Axe Level'. Geochemical element zoning is the result of sorting axes levels.