

The Study of sharp decline in groundwater in Kohgiluyeh and Boyer province with special attention to the Calacho plain- Dehdasht- iran

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Abstract

Kohgiluyeh and Boyer-Ahmad Province With an area of about 13699 square kilometers located in the South East of the iran country .Three-quarters of the province's area constituted of mountains and plains where only one-fourth of six (kalacho, Charam, Bordian Deddasht, Lishter, ImamZadeh Jafar) that have significant role in agriculture and animal husbandry industry of super play this deprived province .Due to the topography of the surface waters of this province is very difficult and costly, and in some areas almost impossible. The underground water source (sedimentation tanks and reservoirs karst) is the only source of fresh water for the people of the region. Kohgiluyeh and Boyer-Ahmad Province as well as some of the provinces in recent decades have suffered from drought .Risk of water resources crisis caused a sharp reduction in precipitation and wrong methods of irrigation and overexploitation of underground water source future ahead of us draws disturbing. As far as problems such as drying decline in groundwater levels in some water wells in all the fields, reducing the flow of large rivers and small rivers drying, water quality degradation, increased pumping costs and sat on the ground along with others. In this paper Is considered, the effects of drought in six decades on Groundwater Resource Major Plains Kohkiloueh with drawing and analysis unit hydrograph and rainfall plains ten years (with an emphasis on Kalacho plain) and offered strategies for Confronting with it.

Key words: groundwater, drought, Kohgiluyeh and Boyer-Ahmad Province

Introduction

Drought is among harmful effects ecological environment disasters that it will enter the event. Considering the different variables either directly or indirectly involved in the event, in comparison with many other natural disasters of a different opinion. First, set the start and end work is difficult, It is a creeping phenomenon and its effects may gradually accumulated over a long period and have continued for years after that. Secondly, the harmful effects of drought in areas that are broader than the damage caused by other natural disasters, and sporadic rather than to seem (scholar, Telvari, trust, Danayyan 2009).Scientific study of the natural disaster planners country Bashdta one of the basic requirements in order to optimize utilization of soil and water resources, particularly in arid climates used.it is the term used to describe the crisis. The water crisis is the imbalance between resources and expenditures and potential interaction (messengers 2007). Decline in groundwater levels in most parts of the world, especially North Africa, Central and South Asia, the Middle East, northern China, North America and Australia and in other parts of the world can be seen locally.Annual world underground water tank volume fraction between 750 to 800 billion cubic meters, and the total deficit of the underground water tank in India, China, United States, North Africa and Yemen, more than 160 billion cubic meters per year (Groundwater Studies Office 2009).The average decline in groundwater levels in 20 cm per year based on news published in 2001, groundwater levels in some alluvial aquifer has dropped in Iran to eight meters. Based on the country's water balance by Iran Water Resources Management Company have been

prepared in Blue 80-1379 fraction of the volume of underground water reservoirs in the country 009/7 billion cubic meters, equivalent to about one percent of the volume fraction of the world's underground water reservoirs and has become thinkable. in the south east of Tehran is to Varamin plain aquifer (water resource base studies office 2007). Kohgilouye mountainous province in southwestern Iran, is between 30 degrees and 31 degrees 32 minutes north width and 9 minutes and 49 degrees 57 minutes east longitude and 50 degrees 42 minutes is located (Figure 1) with respect to its location is not an exception and a severe decline in rainfall and severe drop in water levels in wells and dry wells and karst springs and some of the sediments to be deposited. Almost all of the fields in this province is dry and unusable And a sharp reduction in the flow of rivers large and small rivers also were without water. , Decline in groundwater levels and water quality changes this valuable resource.

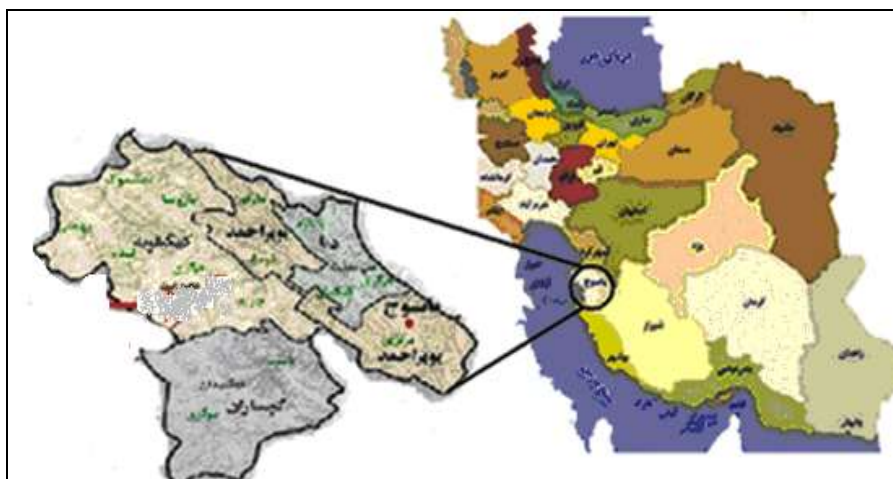


Figure 1 - Location of the study area

The effects of drought on groundwater resources Kohgiloyeh and Boyer

If in a given period of low water levels to below the critical level leading to the consequences of drought-the groundwater say (Hysdal and Talaksn 2000). In Iran, very few studies have been done on groundwater drought and the prevailing drought for studies of fundamental aspects of climate created only it is taken into consideration (Farajzadeh 2000). Frequent and prolonged droughts and water shortages, especially of high volatility in the weather of the main factors is that the pressure on the surface water into the groundwater resources (Shamsi Pour and Mohammadi 2004). By studying the groundwater level plains Dehdasht, Charam and clutch, Lysht, imam Zadeh jafar, Brady will be seen that a sharp drop in water level occurred during three years of drought, more than 3 meters per year (Figure 2). Considering the UH plains of the province, hydrograph general trend in all the plains of the province slope downward trend, although this trend is not uniform throughout the plains. Because of the sliding clutch of artificial recharge ponds in the position of Tang-e and the positive effect of these basins sloped downward trend is less than other deserts. Dehdasht has a downward sloping plain less than other Dshthast and it is because of the special situation of this plain, which is located downstream in Kouhdasht wells and sewage Dehdasht in the form Pkhshab feeds plain

and somewhat less affected by drought .there Brady plain because of the layers of clay - marl at the top of the aquifer has low permeability Astdadmky to use and more precipitation has been affected by drought escape.

Strategies to reduce losses drought crisis

The risk of uncontrolled exploitation of groundwater resources crisis, almost the only source of drinking water, agricultural and industrial province Future before us worrying Charts . According to these cases, measures optimal and sustainable utilization of water resources is needed to establish the current population and future of this region from at least relative prosperity that is they are in direct contact with the water requirement. Kohgilouye possessed so high in the plains of thick juicy layer thickness is small and there is no proportionality between the amount of stored water and agricultural land. And according to the geological and situational plains of the province, in the fight against droughts considering the current situation, both manner consistent with dehydration and prevent dehydration be selected. In general, the following strategies are recommended:

Credit allocation for the implementation of artificial recharge of roundwater

Artificial recharge may be human operations designed to transfer water from the ground into aquifers, can be defined. This is called the natural recharge from precipitation and surface runoff water in which no human intervention is to aquifers (Integrity, 1994) .brsry 6 Dasht Kohgiluyeh and Boyer show that every six plains are in critical condition. Clutch plains and Charam, Jafar Zadeh, Basht according to geological structure and exposure to elevated limestone formations along the plains have a high potential for artificial recharge. . Given the value and importance of this is plain to people in the region, planning and allocating funds for the construction of reservoirs feeding areas A1, A2, A3, A4, A5, A6, A7 seems necessary. Charam plains and plains Basht has a geological conditions are suitable for artificial recharge. Coarse recent alluvium in plain Basht very easy and efficient operation Pkhshab do. Also, in some plains, dry fields (such as canals and aqueducts ZARGHAM Abad Kalaye) can be used as artificial recharge channels.

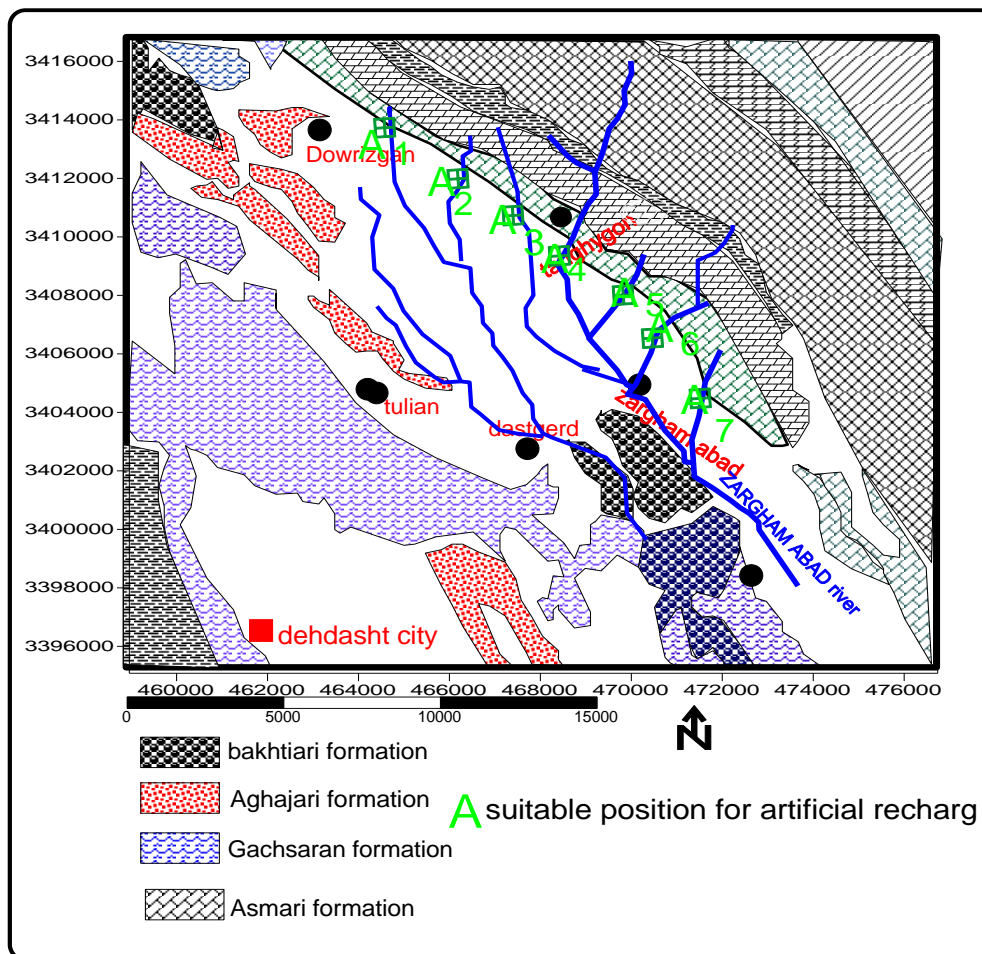


Figure 2. Geological map of Kalacho plain and appropriate situations of artificial recharge ponds.

Prevent unauthorized wells

Main depletion of aquifers by wells and aqueducts and fountains Kohgilouye done The author of this study, according to the latest inventory year and springs all fields in the arid plains of the province is Made me making farmers due to lack of water needed to gain unauthorized wells. And also due to the low thickness of aquifers in some desert plains like a pushing and sliding Brady and north-northwest margin of sliding clutch, dehydration and dehydration farmers have to dig wells unauthorized wells and the heavy damage to the aquifer has entered. Figure 3 ratio of extraction wells this year with wells exploiters show 10 years ago in plain clutch.

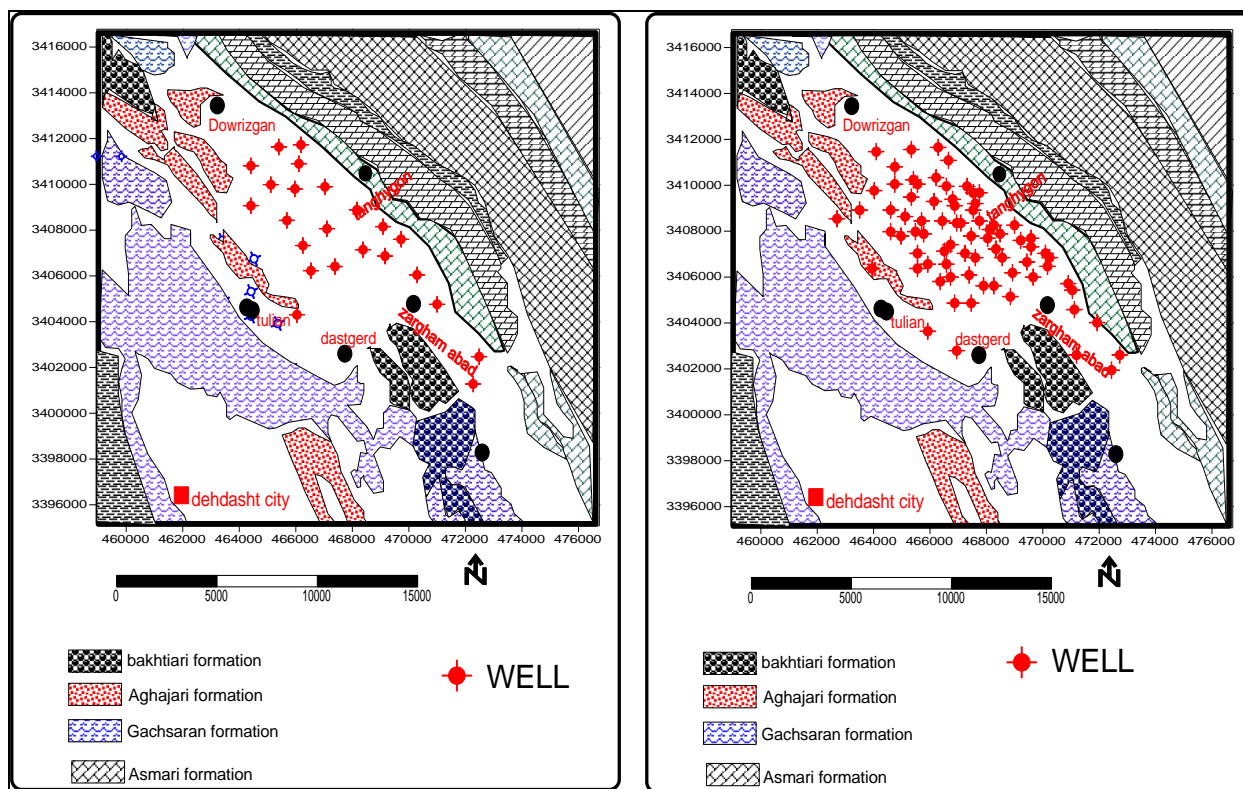


Figure 3 ratio of extraction wells this year (right) with wells exploiters 10 years (left) before Kalacho plain

Changes in cropping pattern

For varieties with lower water requirements Cultures with high water consumption patterns of traditional culture makes a lot of water is used (messengers 2004). Find the products or figures to coincide with drought and need less water but more financial income compared to water consumption, agriculture is one of the important tasks of research centers. Rice (*Oryza sativa*) has an important role in feeding half the world's population, most of whom live developing countries (see Assadi et al., 1384). Rice plant that irrigated plants than any other, has the largest area under cultivation. More than 80% of fresh water is used for agricultural purposes in Asia that half of all the water used to produce rice (Dawe et al, 1998). In Iran, agriculture is the largest water demand, so that about 93 percent of the water annually used in this ection. Conventional methods of rice irrigation in rice fields, flooded with water at all during the growing season is the proper height (SD et al., 2004). Growth of the product continues to be used for deep penetration (Glecik, 1993). Using this method causes excessive consumption of water and irrigation water use efficiency is low. Therefore, proper irrigation management is necessary for its cultivation, because the lack of water in the current situation and future water crisis in Iran is an indisputable fact that only by adopting measures that will be controlled on the basis of scientific findings (Abdi, 2008). Low income and low living standards in Kohgilouye causes farmers to feed their families planting rice in the

province. Since the decline in groundwater levels in the plains of the province are desperate to continue planting this crop can cause damages to aquifers province. The temperature as well as other factors affecting the amount of water that the air temperature is further increased rate of evaporation from the farm, will increase the amount of water (fraternities and lawyer, 2001). Since its tropical lowlands in the province of Kohgiluyeh and Boyer-Ahmad, the intensity of evaporation and irrigation methods for rice is that water loss is very high.

Identifying the potentials of Karst resources the province to provide drinking water for towns and villages in the years of crisis

According to geological map at a scale of 1: 250,000 provided by the National Company drilled nearly 70 percent of Kohgiluyeh and Boyer-Ahmad area covered by by irregularities that may indicate the potential of karst limestone. Considering the high percentage of annual rainfall in the province is in the form of snow, the karst phenomena (karstification) have well-developed formed karst aquifers enriched. The emergence of large karst springs such as Korsa - Mogarmon- Sarasiab- Cheshme Mishi- Cheshme Belghais- Cheshme Tasooj- Cheshme Miantangan springs show is to go duck this reality . So planning for the proper management the exploration and exploitation of karst waters of largely can reduce the stress on alluvial aquifers.

Conclusion:

Because groundwater water source is needed Kohgiluyeh and Boyer-Ahmad Province Therefore, we must have a proper management of these resources according to study how to use ground water level was observed in the plains province By continuing the recent drought in the tropical province will lead to the crisis and even tragedy Since the agricultural plains of the province are very important And sustainable development of deprived province could have a major role It should be more careful in the use of groundwater resources plains and offered the following suggestions. 1. The change in cropping pattern in the plains of the province and funding for completion of unfinished construction works of water supply. 2. The allocation of credits for the creation of modern irrigation networks. 3. Kohgilouye must study all the plains of the province and for each area based on weather conditions, soil, crops and farming culture of proper irrigation and promoted. -4 Plains of the mathematical model and completed all required data and information plains of the province's water resource management is essential for optimal management. , introduced. 6. Use of water which is the measurement of the volume control lever to remove water and reduce water rights due to the depleted storage as well as special patrols to prevent the digging of wells seems necessary unauthorized of plains.

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