Study on Utilization and Pollution of Water Resources in Guanqiao Village of Guangxi Province

Ruqiong Qin
Guangxi Polytechnic of Construction, Nanning 530003, China
qinruqiong@163.com

Abstract. This paper summarizes the present situation of drinking water (groundwater) and agricultural irrigation water in Guanqiao village, existing problems and solutions. And study on utilization and pollution of water resources in Guanqiao village of Guangxi Province. Highlight the seriousness of water shortage and pollution.

Key words: Water resources, Groundwater irrigation pollution, Utilization and pollution.

1. Introduction
With the continuous improvement of people's living standard and the need of new rural construction, the utilization and protection of water resources will become an important aspect of the construction of new rural areas. It will be an important issue to guide farmers' awareness of environmental protection and protect their rights from being damaged.

2. Introduction of geographical location
Guigang city is located in the southeast of guangxi zhuang autonomous region, between the northern latitude 22° 52'- 23° 48' and east longitude 109° 41'- 110° 22', between the tropic of cancer crosses the central city land, is located in the low latitude areas. Dayao Mountain stretches in the northwest as a natural barrier. Xunjiang River is the starting point of Xunjiang River. Xunjiang River joins Xijiang River via wuzhou (the backbone of Pearl River). Along the Banks of yujiang and xunjiang rivers, it is the largest alluvial plain of guangxi and an important base of sugar and grain. The total population of the city is about 1.75 million, including the urban population of 200,000 [1].

Climate resources, guiping city is a subtropical monsoon climate, tropic of cancer traversing the central city, light, temperature and rain resources are very rich. The annual average sunshine hours for 1639 hours, the sun total radiation of 107000 CARDS/cm 2, annual average temperature above 21 ℃, is greater than or equal to 10 ℃ accumulated temperature of 7379.7 ℃, annual average frost-free period 354 days or more; The annual rainfall ranges from 1300 to 2400 mm, with an average rainfall of 1715mm.

Water resources, guiping city rivers, the city has more than 80 rivers and streams qianjiang, yujiang, xunjiang three rivers merged in the length of the guiping river line 168.5 kilometers, the city waters area of more than 330,000 acres, including rivers area of 190,000 acres, 96,000 acres of reservoir area, ponds, ponds area of 36,000 acres, rich in hydraulic resources.City river is the pearl river basin xishan river system. The xijiang river's main streams, qian, xunjiang and its tributaries, yu jiang, run through 13 towns and villages in the city, and 40 of the 1st grade tributaries and 24 of the 2nd grade tributaries flow.
into qian, xun and yu jiang, covering 30 towns and villages in the city. There are 30 tributaries with a catchment area of more than 50 square kilometers. The liutan hydropower station with an installed capacity of 46,500 kw has been built in yujiang, and the datenxia hydropower station with an installed capacity of 1.2 million kw is planned to be built in qianjiang. The city's 18 small hydropower stations, installed capacity of 89 million kilowatts. In addition, the average annual runoff of tributaries in the city is 1,726,800 cubic meters per second, and the total exploitable resources are 25,300 kilowatts. At present, the city has built 140 reservoirs of various types, including 1 large reservoir, 9 medium-sized reservoirs, 26 small (1) type reservoirs, 105 small (2) type reservoirs, and 11,426 small tangba reservoirs, with a total storage capacity of 778,319,800 cubic meters and an effective storage capacity of 486,351 cubic meters. Completed 1730 water diversion projects, the normal flow of 16.56 cubic meters/second; It has built 1,020 diesel pumping stations with an installed capacity of 13,323 kilowatts, 644 electric motor pumping stations with an installed capacity of 16,094 kilowatts and 258 water wheel pumps. A total of 282 floodgates were built, the dyke was 184 kilometers long, the cultivated land was 407,200 mu, and the population was 467,400. There are 4 population rain gun sites and 4 anti-aircraft guns. The city's effective irrigation area of 810,000 mu [2].

3. Water status

Mengwei town is located in the west of guiping city, along the yujiang river. Rich in water resources, but also drought disaster is more serious region. The town's main water use is agricultural irrigation, followed by domestic water, industrial water is almost zero.

3.1. Domestic water status

The penetration rate of tap water in the town is quite low, less than 20%. Except the town, other villages generally rely on groundwater extraction for drinking. In our village, there are 25 production teams in guanqiao village with a population of nearly 10,000. So the village appeared almost every well spectacular. Due to economic backwardness and lack of technology, the depth of well excavation is generally about 10 meters and is in the diving layer. The groundwater of this village belongs to the type of rainwater recharge. Because it is located in monsoon climate, there is abundant rainfall in summer and scarce rainfall in autumn and winter, so the groundwater also increases or decreases accordingly. Every autumn and winter, every family is short of water, which brings great inconvenience to the villagers. In addition, the water quality of the villagers' drinking water has not been tested or filtered. The water quality of 1/3 of villagers' Wells in the village is not optimistic, for example, the pot of boiled water will turn black and scale, and even the water will taste astringingly, which has led to the phenomenon that villagers in the mountain sell the spring water with big POTS.

3.2. Current situation of agricultural water use

The village to grow rice, corn, sugar cane, sesame and other crops, irrigation area distribution. The source of irrigation water comes from reservoir. The village is at the end of the irrigation water of reservoir and is far away along the canal route. The backward economy kept the village's original farming methods, which were dominated by flood irrigation. Agricultural water use varies greatly with seasons and time periods. The irrigation canal flows into the village to regulate irrigation through a small reservoir next to a middle school and a primary school. The sewage and toilet flushing from the two schools are discharged directly into the irrigation reservoir without any treatment, forming the cause of agricultural sewage irrigation in the village. The introduction of long irrigation channels into the field caused serious leakage, causing field crops close to the water source to drown and crops at the end of the irrigation water to dry out. There is no irrigation canal for the crops on the five ridges. All the harvest depends on the rain water.

4. Existing problems

Excessive concentration of groundwater exploitation. In autumn, the peak season is in the dry period of groundwater, and the excessive exploitation of partial groundwater leads to the serious decline of partial
groundwater in local areas or sections, resulting in the decrease of water output and increase of energy consumption of some Wells with opposite pumping. [3]

Villagers get what they need from each other and lack of unified management. At present, the water supply of guanqiao village takes groundwater as the water supply source.

There is no running water in our daily life. The government has no special department for monitoring the quality of groundwater. There is a vicious cycle of irregular groundwater exploitation and excessive groundwater exploitation.

Serious pollution of water resources. Domestic sewage, such as sewage from slaughterhouses, manure from pig farms and market sewage, is directly discharged into irrigation water, causing soil pollution in farmland and crop residue of harmful substances. The water table was contaminated, most notably by a 1.5-meter diameter well below the small reservoir, which was then stained yellow, and the walls of the well were yellow with a very foul and fishy smell. The villagers were afraid to use the water from the well.

Leakage, serious waste. The waste of irrigation process, flood irrigation makes the channel long evaporation area is large, so that most of the water is evaporated, can not be used. Irrigation channels are in disrepair and seepage is a serious problem.

Water cannot meet the demand in the dry season. Autumn is the season of little rain, the water that autumn cropland place needs is short of, reservoir stores water to be in much rainy season again do not have abstaining to release, cause crop drought to die or cannot cultivate. Villagers have difficulty drinking water, groundwater mining shallow, a winter there is no water available.

The vast majority of the residents surveyed believe that water falls from the sky and is inexhaustible. In addition, in recent years, there is abundant rainfall, so the idea of not using it in vain is quite serious [5]. The contradiction between the supply and demand of water resources and the problem of water pollution are becoming more and more serious. Due to the influence of traditional consciousness, the phenomenon of unreasonable water use is also common, and the problem of water resources has not attracted the attention of all sectors of society.

5. Solve the problem of water shortage
With the development of social economy and the improvement of people's living standards, the water consumption of guanqiao will further increase, and the contradiction between water supply and demand will further intensify. In order to alleviate the shortage of water and the shortage of water resources in the village in autumn, it is necessary to adopt the policy of paying equal attention to water saving and source, and combining protection and management. From the development and utilization, protection and management of all aspects, research and adopt comprehensive and effective measures, on the basis of comprehensive water-saving, actively open up new water sources, and vigorously improve the effective utilization rate of water. Only by accelerating the transformation to a water-saving economy can the increasing demand for water be met.[6]

6. Suggestions for rational development and utilization of water resources
Water authorities should strengthen the publicity of water resources and water conservation, and enhance the national awareness of water crisis and water-saving. In view of the deviation of some residents' understanding of water resources, they should highlight that China's water resources are limited and the regional water resources are different. It is pointed out that the uneven distribution of water resources in time and space leads to the water shortage in most regions of China. It also means that water development will become more difficult and more costly. We will also vigorously publicize guidelines, policies, laws and regulations on water conservation and scientific knowledge on water conservation, so as to increase the people's awareness of water stress and water conservation. Vigorously publicize the importance of water conservation, water conservation and water conservation, fully understand the harmfulness of waste water and polluted water, establish a sense of water crisis, and fundamentally change the concept of water use [4].
It is suggested that governments at all levels and water administrative departments should strengthen unified management, strengthen the concept of legal system and resolutely implement the water intake permit system. To alleviate the contradiction between supply and demand, we should carry out limited exploitation, apply for approval for newly built Wells, strictly control newly built Wells, and implement unified management for connected Wells in villages.

Save water. Water-saving irrigation technology should be adopted in agricultural water use. In order to reduce seepage, we rebuilt channels, replaced clay channels with brick plastered canal bodies to reduce seepage, and implemented long check to become short check, big check to become small check, and wide check to become narrow check.

Protect water resources and prevent water pollution. We will strengthen the purification and treatment of domestic sewage, implement standard discharges, strictly enforce the water law and the environmental protection law, and protect and manage groundwater sources for surface irrigation. In particular, the school and market sewage treatment, efforts to build a small sewage station to treat sewage.

The environmental protection department will visit each institution regularly. We should not turn a blind eye to the issue of sewage discharge in schools and hold them accountable. We should also ensure that villagers have a safe water environment.

Publicize environmental awareness and instill legal awareness. We will guide villagers to use legal weapons to defend their rights, and use the law to hold individuals and collectives responsible for polluting irrigation water sources accountable.

7. Conclusion
It is urgent to change the current situation of rural water use, which is also a difficult problem in the new rural construction. In the coming decades, improving the drinking water and agricultural water in Guanqiao village will be an inevitable problem for the leaders. The solution to the current water pollution problem can no longer be delayed. Solve the people's livelihood, pay attention to people's livelihood, pay attention to water resources.

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