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HYDROLOGICAL DESCRIPTION OF SOME SMALL MOUNTAIN RIVERS IN THE FERGANA VALLEY

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ABSTRACT:

In this article, the hydrographic descriptions and hydrological characteristics of small mountain rivers in the Ferghana valley is described.

KEYWORDS: small mountain rivers, river valley, river basin area, river feeding regime, average annual water consumption.

INTRODUCTION:

Many tributaries of the Syrdarya are located on the borders of the Fergana Valley. They are distributed in different proportions along the ridges. 43% of the rivers in the total basin are in the Alay ridge, and the smallest number of rivers (8%) are in the Qurama ridge [1].

According to I.A. Ilin (1959), there are more than 6,500 rivers in the Fergana Valley, with a total length of about 28,000 km. is formed. He noted that 16 of these rivers are 100-200 km long, 14 are 50-100 km long, and 434 are 10-50 km long. They total 464 and have a total length of 11,000 km. The remaining 6,000 rivers are 1–10 km long, with a total length of 17,000 km [1].

In the special hydro meteorological literature, the tributaries of the Syrdarya in the Fergana Valley are divided into the following three groups according to their hydrographic features and characteristics of the flow regime: 1) rivers flowing from the south-western slope of the Fergana ridge; 2) Rivers flowing from the south-eastern slope of the Chatkal ridge; 3) Rivers flowing from the northern slopes of the Alay and Turkestan ridges. From the south-western slopes of the Fergana ridge and the northern slopes of the Alay ridge, small mountain rivers enter the Karadarya basin. The Fergana ridge rises from northwest to southeast. From here flow its main streams with a length of 110-120 km, such as Tentaksoy (Qoraungur), Kogort, Yassi and Karakulja. The remaining rivers consist of much smaller streams.

The rivers on this mountain slope are much wetter than the rivers in other ridges of the Fergana Valley, pouring water into other bodies of water without drying up along the way. The water level of some rivers, such as Tentaksoy and Kogord, is significantly reduced due to over-irrigation of agricultural crops, sometimes leading to drought. However, the discharge recovers at the expense of waters and springs.

On the south-eastern slopes of the Chatkal and Qurama mountain ranges there are 16 streams and several ravines, the largest of which are the Govasay, Kosonsoy and Pochchaotasay. All these streams are right tributaries of the Syrdarya. However, due to the fact that most of the water is used for irrigation, Kosonsoy and Govasay run out in the foothills before reaching the Syrdarya.

They reach the Syrdarya only during floods and when temporary floods occur. Most of the streams that start from the Chatkal-Qurama

mountain ranges are saturated with snow and ice and seasonal snow. The average height of the catchment basins of these rivers is 1950-2800 m, and the flood period is observed later. Between July and September, 19% to 33% of the annual flow flows.

Several rivers and streams form on the northern slopes of the Alay and Turkestan ridges, which surround the valley from the south. These include the relatively large rivers Shohimardonsoy, Aksuv, Khojabakirgan, Isfara, Sokh, Isfayram, Aravan, Akbura and Kurshab. The Alay and Turkestan mountain ranges differ from the Chatkal, Qurama and Fergana ridges in that they are much higher and have steeper slopes and face north

That is why the rivers flowing from the northern slopes of the Alay and Turkestan ridges differ sharply from other rivers in the Fergana Valley in terms of saturation conditions and flow patterns.

The highest points of the Alay and Turkestan mountain ranges reach 4700-5900 meters. With the exception of the highest southern part, which is connected to the Alay ridge, the highest point of the Fergana ridge is 4940 meters. This means that, depending on the altitude, the rivers flowing from the Alay and Turkestan ridges should be wetter than the rivers in the Fergana and Chatkal mountain ranges. But in fact it is not, with the exception of the Sokh River alone, the relative water level (flow modulus) of the rivers in the Alay and Turkestan mountain ranges is much lower than that of the rivers in the Fergana ridge, and only 22% higher than that of the rivers in the Chatkal and Qurama mountain ranges. This is due to the fact that the Alay and Turkestan ridges, although high, are very inconvenient relative to the path of moist air masses, which makes it difficult for moist air masses to enter the mountain ridges. The rivers on the northern slopes of the Alay and Turkestan mountain ranges produce an average of 7.1 liters of water per second per 1 km2 of catchment area [4].

The height of the snow line on the northern slopes of the Alay and Turkestan mountain ranges is 3500-4000 meters, so it is covered with permanent snow and glaciers in these mountain ranges. There are about 500 glaciers on the northern slopes of the Alay and Turkestan mountain ranges. Most of these glaciers are located in the western part of the Alay Range, in the eastern part of the Turkestan Range (between the confluence of the Isfayram and Aksu rivers), as these parts of the mountain ranges are the highest.

Due to its richness in persistent snow and glaciers, the largest rivers (except Kurshab) on the northern slopes of the Alay and Turkestan ridges are classified as glacial, and Shohimardonsoy is classified as glacial. They have a flow regime typical of this type of river. In these rivers the maximum flow is observed in July-August, and the minimum flow in March-April;

In July-September, more than 40% of the annual flow usually flows, and about 60% in the Sokh and Isfara rivers. In contrast to Shohimardonsoy, the Sokh and Isfara rivers flow 2.6-2.9 times more in July-September than in March-June, ie in the middle and lower part of the mountains. These two rivers are the largest sources of glacial water in Central Asia. 30-70% of the river basin areas on the northern slopes of the Alay and Turkestan mountain ranges, including the Shohimardonsoy basin, are located in the part of the mountain slopes below 3,000 meters. Due to low rainfall, there are almost no river networks in this part of the mountain slopes with a constant flow of water, but there are many streams and ravines where temporary water flows. In these streams and ravines, water flows only during the spring snowmelt and heavy rains, and at other times they lies dry. Heavy rains result in short-lived (often several hours) floods in these streams. Floods occur

almost every year, and in some years there are even multiple floods. Floods can occur from February to August-September, but they are most common in June-July. Thus, due to the constant melting of snow and glaciers, there is a lot of water flow in the summer months, as well as strong floods in the rivers of the Alay and Turkestan mountain ranges. Due to the high catchment area, constant saturation of snow and glacial waters, the amount of water flowing in the Shohimardonsoy and adjacent rivers varies little from year to year.

Water flows from the northern slopes of the Alay and Turkestan ridges in terms of the level of leaching of the surface of the catchment area the rivers that flow are different. The Sokh River is the first in this area, with an average of about 500 tons of sludge washed away per 1 km2 of catchment area. On average, more than 200 tons of runoff is generated per 1 km2 of the Isfara River catchment area. Shohimardonsoy and Kurshab rivers are about 100 tons, and Akbora river is about 50 tons takes a blurry mouth. The catchment areas of the Isfayram and Aravon rivers are the least washed out. For every 1 km2 of catchment area of the Isfayram River, 39 tons of wastewater is washed away per year, and from the Aravan River, only 16 tons. The Akbura River starts from the watershed of the Little Aloy ridge. The length is 70 km, the area of the catchment area is 2676 km2. Saturated with snow and ice. Average annual water consumption is 21.1 m3 / sec, flow modulus is 7.9 l / sec.km2. In June-July, 16.6-17.7% of the annual water flows.

The Isfara River flows in the upper reaches under the name of Aksu and in the middle reaches under the name of Karavshan. It starts from the Aksu Glacier on the northern slope of the Turkestan ridge. After joining Kishmishsay, it was renamed Isfara. There are about 60 tributaries starting from the glaciers. The length is 107 km, the catchment area is 3240 km2, the average height of the basin is 2260 m. There are 210 glaciers in the basin with a total area of 169.6 km2, the largest being Aksu (area 17.4 km2) and Jiptik (area 21.4 km2). The river is saturated with ice and snow. The upper reaches of the Isfayram River flow under the name of Tengizboy. There are such large and more than 60 small streams as Kichik Oloy (33 km long), Surmatosh (33 km long), Tegirmochsoy (26 km long), Kolsay (21 km long), Pomsoy (19 km long). It is 122 km long and covers an area of 2,220 km2. There are 72 glaciers with a total area of 134.6 km2 in the river basin. There are many small mountain lakes in the middle and upper reaches. The largest of them is Zorkol, located at an altitude of 3892 m. The river is mainly saturated with ice, snow and partly groundwater.

One of the main wetlands of the Fergana Valley is the Sokh River. It starts at an altitude of 5550 m from the northern slopes of the Alay and Turkestan ridges. Its length is 124 km, the area of the basin is 3510 km2. The Sokh River is formed by the confluence of the Dalbek, Shudmon and Khojaochkan rivers near the village of Zardoli. The upper part flows through a very deep and narrow (4-10 m wide) ravine. Upon reaching the hills, the river widens and flows in a basin up to 500 m wide.

After that, the river forms a cone spread of 70 km wide and 50 km long made of stone and gravel. The river is saturated with ice and snow. 71% of the rainfall in the basin falls on snow and 29% on rain. There are 364 glaciers with an area of 244 km2 in the basin. The average flow modulus is 17.0 l / sec.km2. The average turbidity is 0.99 kg / m3 [1]. The Shohimardon River is formed by the confluence of the Aksuv and Koksuv rivers in the village of Shohimardon, starting from the northern slopes of the Alay and Turkestan mountain ranges. It is 112 km long and covers an area of 1,300 km2. The river is joined by 32 small streams with a total length of 86 km. The river is saturated with snow and ice. The average perennial water consumption is

10.1 m3 / sec, 64 m3 / sec during floods and 319 million m3. Average annual water consumption is 10.5 m3 / sec. and 7.86 m3 / sec. varies from [1].

CONCLUSION:

We can say that the hydrological regime of the rivers in the Fergana Valley differs sharply from each other depending on the location. However, all of them are equally important in providing water to the Fergana Valley.

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