



# GEOMORPHOLOGY, RELIEF, GEOLOGICAL BUILDING IN THE DEVELOPMENT OF "PROJECT OF ENVIRONMENTAL STANDARDS"

**Domuladjanov Ibragimjon Khadjimukhamedovich<sup>1</sup>**

*<sup>1</sup>A candidate of technical sciences, associate professor of the Department "Life Safety", Fergana Polytechnic Institute, Uzbekistan, Fergana city*

**Latipova Mukhayo Ibragimjanovna<sup>2</sup>**

*<sup>2</sup>Assistant of the Department "Electro - Energy", Fergana Polytechnic Institute, Uzbekistan, Fergana city*

**Nasretdinova Feruza Nabiyevna<sup>3</sup>**

*<sup>3</sup>A senior teacher of the Department "Electro - Energy", Fergana Polytechnic Institute, Uzbekistan, Fergana city*

## ABSTRACT

*This article describes the problems of protecting the environment from pollution in the conditions of scientific and technological progress requiring the development of a set of measures aimed at improving the relationship between humans and the environment. Selected as an object Textile Complex DAEWOO Textile company is located in Kushtepa district of Ferghana region. The geological structure of the area is given, the thickness of the loamy underlying layer has been revealed and dissolved, the average long-term value of the depth of groundwater occurrence has been identified, research data from Uzbekhydrogeology and Ferghana Branch of DUK O'ZGASHKLITI has been collected.*

**KEY WORDS:** *pollution, environmental protection, environmental standards, emission sources, geological structure of the area, fine and soil debris, loams, soil cover, water pollution index value.*

## DISCUSSION

The problem of environmental protection from pollution in the conditions of scientific and technical progress requires the development of a set of measures aimed at improving human-environmental relations.

In order to preserve the environment and reduce the impact of industrial enterprises on it with their emissions, environmental regulations are developed for them, which are mandatory for all enterprises in Uzbekistan [1-12].

The DAEWOO Textile complex of the company is located in Kushtepa district of Fergana region at the land junction near Andijan - Tashkent railway. From the north, east and west of the site stretch agricultural land, 100 meters South-west of the complex comes the railway line.

In order to identify the impact of this facility on the environment, all components of the natural

environment, atmosphere, water, geological structure, hydrogeology, soil, groundwater and other similar issues are studied when selecting a construction site.

The draft environmental regulations define and substantiate environmental impact standards and include materials for the inventory of environmental pollution sources and standards for emissions, discharges, waste generation and disposal.

In case of the location of emission sources, pollutant discharges into the environment, waste generation and disposal at several industrial sites geographically remote from each other, the development of "Environmental Standards Project" is performed for each industrial site separately. The criterion of the sites' remoteness is the absence of mutual impact of the environmental pollution sources located at the sites.



The choice of a site for construction should take into account the location of the site and its impact on all components of the environment.

The investigated land plot is located on the surface of the middle part of the Marghilansay river discharge cone, closer to its northern border.

The surface of the discharge cone is an outcropping plain here with a general north-west gradient.

The geological structure of the area is represented by the following additions - in the upper part of the day surface lies the deposition of the Hungry steppe (golodnostepskiy) period of the Quaternary system (Upper Quaternary) of the proluvial genesis. Their total capacity here is about 125 m. The upper part of their section is represented by a cover fine-grained layer 11-17.7 m thick. It consists of inter layers and lenses of loams, dusty or fine sands that often replace each other in area and vertically. The revealed thickness of such geological bodies is from several tens of centimeters to 7 meters. Sometimes only clay soils can represent the entire layer section. Below are sandy, gravel and fine pebbles with sand accumulation. Their layers 2 to 6.5 m thick can be layers up to 8 to 10 m thick and are often separated by lenses and layers of clayey soils up to 5.5 m thick.

From a hydrogeological point of view, this stack is the first subpressurized aquifer from the surface.

From the hydrogeological point of view the described land plot is located in a weakly drained zone. This is the area of development of a single complex of underground sub-pressure and pressure waters of the middle part of the Margilansay river discharge cone, a sub-region with an excess of the piezometric level of groundwater flow over the groundwater mirror.

In groundwater flow mode there are two maximums and two minimums. The first maximum (small maximum) is observed in March-April (moisture charge irrigation of land). This is followed by the first minimum in May-June.

The second high (main) falls on July-August (often and September) months (vegetative irrigation). The main (second) minimum is in the winter months

(December, January, February). Amplitude of the flow fluctuation is 0.82 m.

Average annual value of groundwater depth in September was determined as 1.95 m. That is, the ground water level at a depth of less than 2 m is located during July-September, and in the rest of the year along the bottoms more than 2 m.

According to researches of subdivisions of PO "Uzbekhydrogeology" and Fergana Branch of DUK O'ZGASHKLITI filtration coefficient of thickness of cover fine ground waters in vertical direction is 0.05 - 0.02 m/day more permeable are water-bearing sediments of different granularity - sand, gravel and fine pebbles with lenses of clay soils forming a bundle with total capacity of 28-32 m. It lies under the cover of fine soils and represents the first underground sub-pressure horizon from the surface.

The loams are covered with light-brown hyped loams of solid or plastic consistency.

The revealed layer thickness of such loams is 0.42 - 0.9 m. Density of soils in dry state 1.35 - 1.39 t/m<sup>3</sup> in wet state 1.5 - 1.73 t/m<sup>3</sup>. Micro and fine gypsum. Contained in them in quantity from 166 to 51,4 % (data of soil researches).

Next come sulfate and carbonate compounds cement mineral particles. The revealed layer thickness of such deposits is 0.5 - 1.35 m.

There are lenses with thickness up to 0.75 m of solid solonchak type soils inside such sediments with a total thickness of 1.3 - 2.05 m.

On the main part of the site from a depth of 3.5 - 3.95 m there are thin (0.32 - 0.6 m) lenses of gray dusty, rarely fine sands, under which glazed lumpy loams are revealed.

The maintenance in soils of gypsum, carbonates, humus in %, is conducted in the table 1.

**The content of gypsum, carbonates, humus in soils**

Numbers of soil cuts	Range depth, cm	Gypsum	Carbonates	Humus
1	0-50	3,542	18,212	1,633
	50-100	36,482	15,234	
	100-150	36,720	30,461	
2	0-40	3,965	16,226	1,695
	40-100	39,312	19,535	
	100-150	47,968	32,118	
	150-180	23,594	25,163	
3	0-35	11,979	25,163	2,177
	35-100	16,745	23,842	
4	0-50	1,604	29,140	2,365
	50-100	16,653	16,886	
	100-150	11,859	22,185	
	150-200	7,969	23,177	
5	0-50	15,843	14,24	1,864
	50-100	51,366	14,237	
	100-150	32,704	24,834	
	150-200	52,395	18,544	
6	0-50	17,717	16,889	2,051
	50-100	29,156	18,541	
	100-150	37,425	21,522	
7	0-45	13,486	16,555	2,144
	50-100	28,67	16,926	
	100-150	35,691	23,840	

The soil cover at the site was formed from the transition semi-desert row, irrigated meadow type, with low influence of ground waters.

Architecturally - construction solutions have been developed on the basis of the design task.

Seismicity of the area under construction - 9 points, seismic resistance of the building - 9 points on Richter.

According to the engineering and geological report on the construction site the basis for the foundations is gravel with calculated indicators:

$P = 600 \text{ kPa.}; \nu = 39\%; P = 21 \text{ kN/m}^3, E = 57.5 \text{ MPa.}$

Soils are not aggressive to any concrete and reinforced concrete. Ground waters are found at the depth of more than 2.0 meters.

Soils are non-saddle, strongly aggressors to concrete are medium aggressors to reinforced concrete structures.

Human economic activity in these places is aimed at reducing the groundwater level by open horizontal drainage, stratification of soils and their cultivation.

The changes are expressed in the formation of cultivated cultural horizon and strengthening the illusion of easily soluble salts and gypsum. During irrigation, a washing type of water regime is established here with repeated soaking of the soil and ground water column to the level of deep ground water during the year. The morphologically

pronounced carbonate horizon is well preserved in this case. In terms of total humus reserves, irrigated serozems are close to non-irrigated ones.

The vegetation cover in the area of twisting and weaving production location is dominated by agrophytocenoses with cotton crops and other agricultural and horticultural crops.

Natural vegetation is found in small areas in the foothill plains and low adyrs and is represented by a bluegrass and sedge formation. The main plants are desert sedge and bulbous peppermint, which trap the soil surface tightly. In addition to them, there are representatives of cereals, cruciferous, poppy colour, buttercup and annual astragalus. Among them there are many endemic species: *Sisymbrium subspinescens*, *Saponaria sewerzowii*, *parvula*, *Zygophyllum ferganensis*, *Nepeta santoana* and others.

Plant communities of riparian type may develop along the channels. If the water level fluctuates greatly and there are conditions for frequent water logging, tree species such as turanga, loch, willow develop along the coast. If after a spill the water stagnates, then meadow and marsh vegetation (reeds) develop in these areas. On saline soils licorice, kermak (*Linonium sogdianum*), akbas (*Karelinia caspica*), ajrek (*Aeliropus litoralis*), amber (*Alhagi sparsifolia*) and others are common.

Sulfuric anhydride is easily absorbed by plants, soil and water. Chronic damage causes leaves



to turn yellowish or brownish red, sometimes with tumor-shaped areas. Often these lesions result in the rejection of the damaged leaf area.

The animal world in the anthropogenic landscapes of mammals is represented by a house mouse, red-tailed gerbil, blind spotted goose, nettle snake, ear-eared hedgehog, fox, dressing, jackal and weasel.

Among birds widely spread - field sparrow, Indian sparrow, Little Dove, killer whale, black shearer, Maina, clamshell finch, green prickle, clamshell goat, shaggy lark, common lentils. Common doves, roller, hoopoe, long-tailed magpie, house owl are less common.

The reptiles are represented by a grey gecko, a fast lizard, a steppe agama, a multicoloured lizard and a water lizard. In addition, there is a Central Asian turtle.

Insects - butterflies, locusts, grasshoppers, crickets, various crop pests (spider mite, aphid, tobacco tripse, winter and cotton scoops, etc.) are rather numerous and spread throughout the territory of irrigated agriculture.

In the end for decrease in influence of the given object on environment measures which should be carried out both during building, and during operation of the constructed object in this case a textile complex are studied.

The textile complex on influence on environment concerns SanPIN belongs to 4th class at which Sanitary-protective zone (SPZ) should have distance not less than 100 meters from settlement. This Sanitary Protection Zone (SPZ) tries not to disturb flora and fauna [13].

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