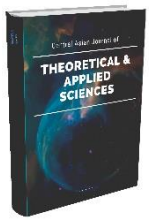

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Analysis of Agricultural Soils Designation of Different Linear Protected Zones using GIS Technology

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Abstract: *In the modern biosphere, the main habitat of the biota, both in terms of the number of species and biomass, is soil, which plays a key role in the transformation of all terrestrial ecosystems. Therefore, the loss or irreversible degradation of soil can be considered as the death of a given ecosystem. In this article, the soil of several farm agricultural lands of the Fergana region of the Fergana region was studied under various lines of the linear protection zones of the region.*

Keywords: *soil, linear buffer zones, transformations, ecosystems, biology, soil agro chemistry, agricultural lands, GIS technology, mapping.*

Introduction

Soil, as a unique polyenzymatic system, has a reserve of biological capabilities, the implementation of which is characterized by the level of enzymatic activity [1]. The work analyzes in detail the domestic and foreign literature on the influence of natural and anthropogenic factors on the enzymatic activity of the soil.

Possible soil disturbances during pipe laying and functioning. The danger is represented by errors in construction and installation work, in particular, the mismatch of the profile of the pipeline and the trench, which causes significant bending stresses. Together with other factors, stresses contribute to the emergence and development of stress-corrosion defects in the transverse direction [2].

The main task in the operation of pipelines and gas pipelines is to identify natural environments that contribute to stress corrosion of main pipelines. One of the unresolved problems of corrosion cracking is the prediction of the behavior of metals and alloys in new corrosive environments [3]. Laboratory tests can reproduce the cases of destruction that occur in practice, but they are not able to predict whether the destruction will actually occur. The only step towards solving this problem is to conduct tests in natural conditions of the pipeline operation. Stress corrosion of main pipelines is mainly associated with the presence of carbonate-bicarbonate ions in the soil, but it was possible to find out that these anode

corrosion inhibitors of carbon steel are simultaneously promoters of intercrystalline cracking only when testing with a constant deformation rate of samples [3].

It is assumed that any change in the test conditions that increases the resistance to corrosion cracking in a more active environment will significantly prevent destruction in less active working environments, provided that in both cases there is a common chemical mechanism of destruction.

Objectives

The object of the study is the agricultural lands of the Fergana region of the Republic of Uzbekistan, which are under various anthropogenic zones, such as linear protected zones. For example, high-voltage power transmission lines, security zones of gas pipelines both aboveground and underground. According to these studies, changes in soils with the point of view of agrochemistry and fertility of soil composition under linear conservation zones were studied [4,5].

The contribution of bacteria to corrosion is explained by one or more of the following mechanisms: 1. Direct impact on the rate of the anode or cathode reaction of the corrosion process. 2. Creation of a corrosive environment due to the formation of metabolic products that are aggressive towards the metal. 3. Establishment of growth and reproduction conditions under which concentration galvano-pairs or pairs of differentiated aeration are created. 4. Sulfide cracking of steels in media containing H_2S as an agent that promotes flooding, as a special case of embrittlement of loaded metal structures. [6]

Other soil parameters: pH (phosphorus), humidity, as well as peroxide-destroying activity of the abiotic component of the soil, indicating the presence of metals with variable valence in the soils, are also due to the processes associated with the relief.

The comparative analysis of soil pollution indicators of the "Fergana district" carried out according to the results of physico - chemical studies with the literature data showed differences in the concentrations of copper and lead in the subhorizons of the litter and the upper horizon of the soil [3].

When analyzing the soils of some farm lands, then the samples are transferred to the laboratory for analytical work (Fig. 1). As a result of the preparatory stage, with the clarification of the field stage, an electronic soil map was created (Fig. 2).

Fig. 1. Soil samples under laboratory conditions.

Using GIS technologies, it was revealed that linear protected zones have a large amount of employment in the area of all categories of land in the Ferghana region.[7,8] In order to conduct cadastral records on these lands, innovative monitoring methods have been introduced.

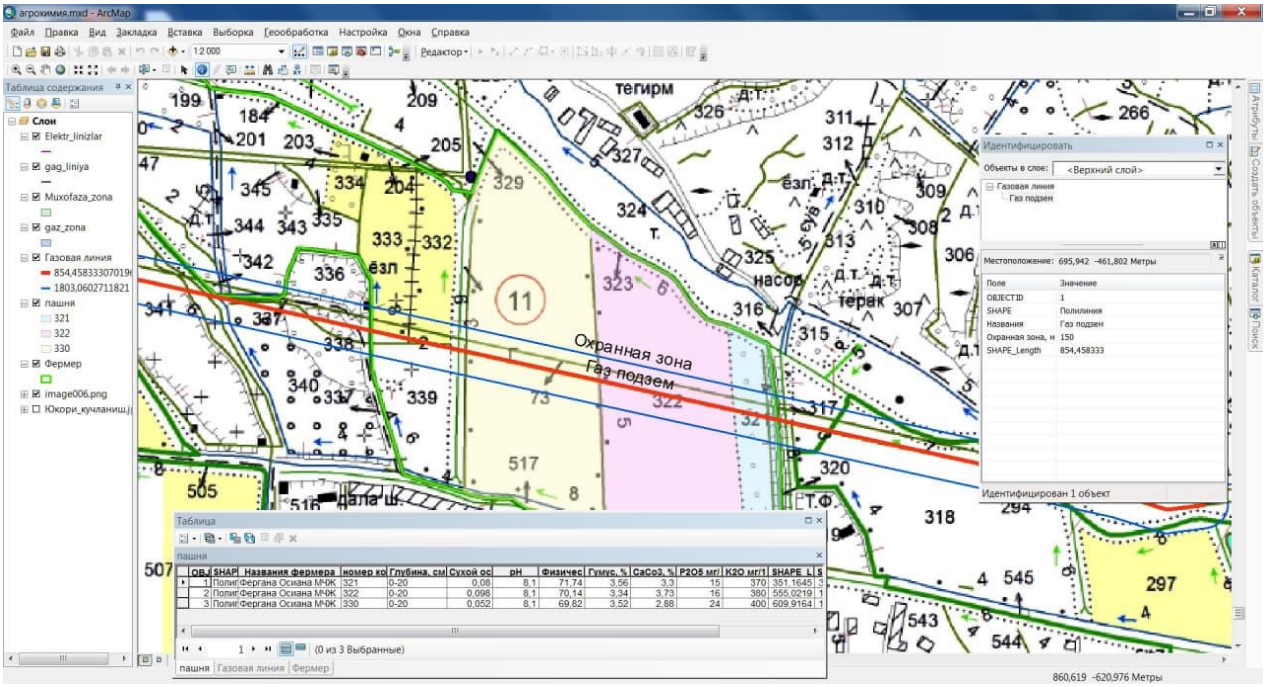

Fig. 2. Soil contour map created using GIS.

All the data taken were displayed in GIS technologies as attributes of the layers of this section (Table-1).

Statistical design

Table 1. Indicators of the composition of humus and nutrients in the soil.

Indicators composition of humus and nutrients in the soil				
Section no.	**Depth, cm**	**Soil humus, %**	**P_2O_5 mg/kg**	**K_2O mg/kg**
Honkiz Yangihayat Array				
R-20 useful subtropical lands	0-20	0,865	22,1	180,6
	20-36	0,506	14,1	-
Honkiz Yangihayat Array				
R-10 useful subtropical lands	0-25	0,886	8,0	180,6
Chekshura Babur Array				
R-110 useful subtropical lands	0-25	2,001	14,4	50,6
	25-45	1,688	12,8	48,6

Geographical area

Figure-3 shows the work in the ArcGIS GIS program, where layers are created for power lines and for security zones that have 15-meter linear security zones on both sides [9]. With this program, you can select information on the area of the most protected linear zones in this area of the city. With the help of this system, it is possible to design the total area of the security linear power transmission zones of the Fergana region. In this area of the city of soma, the security zone consists of a total of 342150 m2, which for each electric line consists of an average of 68430 m2 [10].

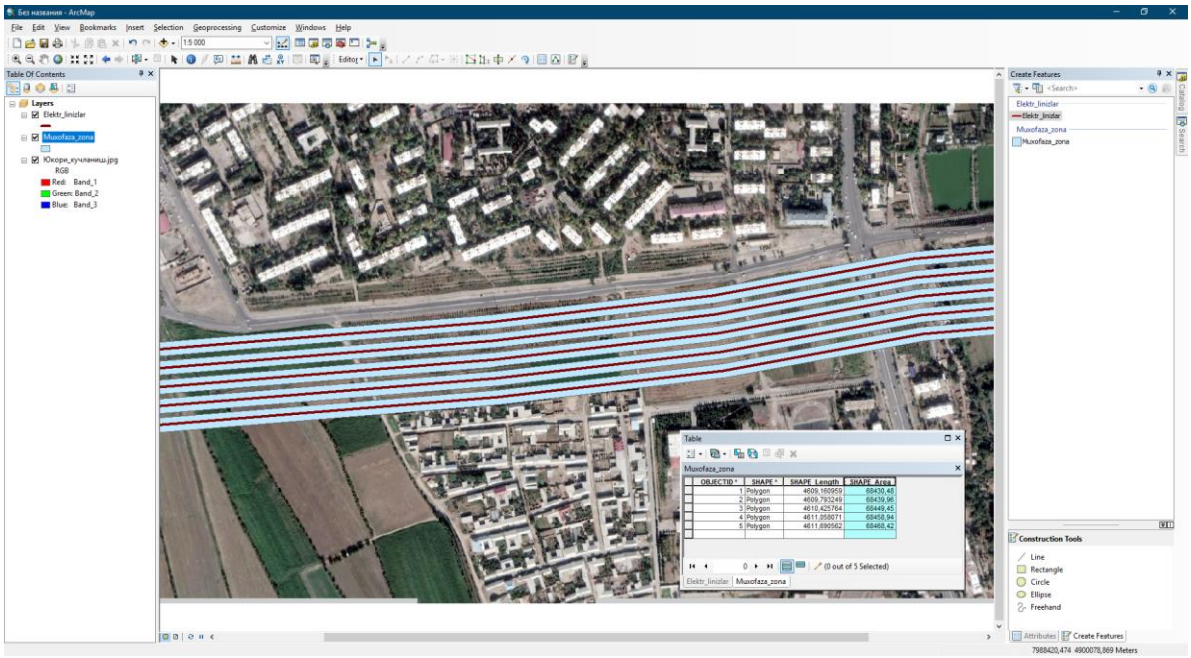

Figure-3. Fergana city, Kirguli distric, street of Sh.Rashidova.

Results

It can be concluded that it is possible to foresee the development of stress corrosion in soils that activate local corrosion processes and contribute to the flooding of the pipeline metal, and the most dangerous components are such promoters of flooding as hydrogen sulfide and other reduced sulfur compounds, then cyanides, arsenic and selenium compounds, carbon dioxide, carbonates and bicarbonates, as well as oxygen. The possible synergistic effect of ions (chlorides, nitrates, ammonium ions), activating local processes, as well as organic soil compounds (organic and humic acids), contributing to complex formation and localization of corrosion, is also not excluded.

With the help of the ArcGIS GIS programs, information on the area of common linear security zones in this area is selected, the exact geolocation of various linear security zones and the exact areas with the coordinates of the terrain of the security zone are determined.

Using GIS technologies, monitoring of soils and agro chemistry of farm lands of the Fergana district of the Fergana region is carried out, for processing agrochemical data, in order to save costs for monitoring and qualitative examination of soils.

The soil bonus score calculated for soil differences within the site (field) depended on the complexity of the soil cover. The more homogeneous or contrasting the soil cover within the field, the higher the proportion of fields with changes in the direction of decreasing the bonus score of 64 -85%. For fields with two soil differences, the share of fields with changes in the direction of decreasing the bonus score is - 58 score.

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