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FINDINGS OF RESEARCH INTO PHYSICAL-MECHANICAL PROPERTIES OF MIXTURES OF SEWAGE SLUDGE, SOIL AND PHOSPHOGYPSUM TO BE USED AS LAND RECLAMATION AGENTS

The authors argue that intensive construction and development operations generate a large number of idle quarries. Now Moscow Metropolitan area has about 2,000 abandoned quarries and in excess of 150 quarries in operation. Most of them were used to develop various minerals, namely, sand, crushed stone, gravel, peat and other materials.

Recovery of abandoned quarries and assurance of their safe condition requires a set of actions to be taken. However, mere reclamation cannot resolve all environmental problems arising after the completion of mining operations. Obviously, the use of undisturbed land areas as household waste landfills is not the best idea from the viewpoint of the environment. Therefore, filling idle quarries with specific types of products is an improved method of reclamation of mines and quarries.

This method may solve two problems at once: they are land reclamation and safe waste disposal. Sewage sludge generated by households, as well as industrial enterprises, may serve as the solution.

In this paper, the authors study the dependence between the permeability ratio, the carrying capacity of different soil mixtures containing sewage sludge to be used as the reclamation agent in the course of restoration of disturbed territories. The authors also consider dependence of concentration of biogases and the phosphogypsum content in biogases.

Key words: sewage sludge, mining, carrying capacity, filtration, density, biogas reclamation.

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