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RECLAMATION OF ABANDONED MINES

Reclamation of abandoned mines holds a significant place in sustainable development of the country, as well as in national security and economic development. It was found out that deterioration and further destruction of abandoned mines is a threat to secure vital activity and sustainable development of the country. This implies the search for new solutions of the problems of abandoned mines reclamation. It is necessary to develop safe, reliable and cost-effective projects for reclamation of abandoned mines; it is established in the Code of Ukraine on mineral resources, Article 54 "Liquidation and conservation of mining facilities".

The most common variants of mining waste reclamation are the following: backfill with the rocks from dumps and fill with water.

Filling mine with waste rock poses no technical difficulties. At the same time, not only dumps are eliminated and withdraw from their sites to be used for agricultural purposes, but the depth of mines also reduces. However, such reclamation is justified only for shallow mines if there is sufficient amount of waste rock and fertile soil. Reclamation of deep workings requires more complex solutions. Despite the huge dumps (up to 100 m), their number is not enough for filling deep workings (depth to 500 m) and for terrain levelling. Thus, the process will require additional volumes of waste rock and fertile soil for covering the surface area.

Mines can be almost completely filled with water, therefore artificial reservoirs can be created. But for this purpose only mines with a small depth can be used. To fill openings, such as at the mine "Progress" (m. Torez) (1340 m) or the mine named after V.M. Bazhanov (Makeevka) (1200 m), is not possible because of insufficient water supply. Also, mine flooding has no economic feasibility, because such conditions are not appropriate for fishing.

Mine reclamation can be made for:

- construction of buildings and structures;
- construction of sanitary facilities (parks, recreation areas, sports grounds);
- construction of reservoir.

The most difficult case among listed above is the construction of buildings and structures on anthropogenic relief when special measures for strengthening and consolidation of the foundation is necessary.

In settlements it is possible to organize production which requires special conditions on microclimate; the alternative construction of buildings for such production followed by dump formation for reduction of heat loss during the cold season is also feasible.

Some production spheres, such as nuclear power, need specific storage facilities. Spent nuclear fuel is rendered harmless or enriched, after which it can be reprocessed. Many states conserve waste in order to enrich them. German storage facility in a worked salt mine in Morsleben provides safe storage for wastes for three decades.

The mines "Artemsoli" (located near the town of Soledar) and Artemovskaya (near the village Bryantsevka), where the first well with a depth of 292 meters in the years 1877-1878 was drilled, were offered to use for tourism purposes. That's when it became known that this place is the bottom of the shallow bay of the ancient Perm Sea, which is about 250 million. Years ago this sea created large salt deposits.

Health centre "Salt Symphony» was opened in the salt mines recently. Due to its properties the resort is a good place for treatment allergic diseases.

To develop such reclamation measures, further study of potassium mines in Kalush, Ivano-Frankivsk and Stebnyk (Lviv region) is required.

After working some mines have continuous hollows. Liquid is not accumulated in such mines, thus it meets the parameters of gas and oil storage inside them.

Mines can be used for creating bomb shelters in case of war. In the era of nuclear weapon just mines can be used as shelters.

Thus, recreation of mines can be economically profitable. It can be done to ensure the protection of life, life safety and health improvement.

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