

Summary

In the defunct Górká heading there is both a waste disposal site with an area of 6.7 ha containing approximately 600 000 m³ of waste generated in the course of aluminum oxide production and a pond with an area of 3 ha and depth of up to 15 m containing about 400 000 m³ of effluent (leachate water). The reservoir is filled with infiltrates flowing in from the above-mentioned disposal site at a rate ~ 130 m³/day. The subsidence of the pond bottom and infiltration of solutions into the Triassic and Jurassic water resources, estimated at ~ 40 m³/day, is a cause of serious concern. The basic problem of the effluents in the Górká pond is their high alkalinity (pH 12–14) and variable pollutant content, the level of which increases with the pond's depth. The proposed solution involves pumping out and treating about 500 000 m³ of effluents retained in the Górká reservoir. The effluents would be treated in a reverse osmosis plant using a process which has so far been verified on a quarter-commercial scale. The treatment process by-product would be discharged into the Ropa stream. The brine solution (containing ~ 25% NaCl), would be solidified. The next stage after pumping would be the utilization of approximately 50 000 m³ of bottom slurry. Highly alkaline slurries would be utilized in the production of self-solidifying mixtures. These mixtures would be used to seal the bottom of the Górká reservoir and part of the edges of the defunct quarry, according to requirements. The next stage would involve outcropping the feed-water sources located in the northern section of the old heading to reconstruct the original flow system from the sources to the Ropa River. The excavated solid waste would be relocated into the remainder of the disposal site containing solid aluminium waste. The surface of the site would be sealed and then reclaimed. The final stage involves macrolevelling of the site into an amphitheatre system, outcropping the fertile soil layer, constructing a lake and streams, and finally land reclamation of the whole site.