

Hydrogeological Study in the Construction of Water Abstraction Systems for Subsistence in the Baía Formosa Quilombo (Armacao dos Buzios): Applied Hydrogeoethics to the Development of Family Agriculture

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SUMMARY

Social communities such as the Quilombo Baía Formosa (small rural communities in Brazil with an African cultural heritage), in the municipality of Armação dos Búzios, Rio de Janeiro State, Brazil, have been suffering, among other difficulties, from the chronic lack of resources for their well-being and social and economic development. Thus, a water supply that allows for subsistence farming is essential for the community's progress. This work addresses the application of geological and hydrogeological knowledge in the search for water autonomy in vulnerable communities, through an approach that takes into account the principles of Hydrogeoethics. This is a new transdisciplinary scientific discipline whose central concept is to apply concepts from human sciences, arts, and culture in situations where water, and groundwater in particular, plays a relevant role. The main objective of the dissertation in this context is to implement self-sufficient technologies for water collection, supporting family farming and cultural tourism. The study area, marked by natural beauty and rich cultural history, faces water vulnerability. Two springs were identified, with water of medium-low salinity and neutral pH, but these are insufficient for the entire quilombola area. The methodology included geological mapping of surface and underground water resources, socioeconomic assessment, and water demand assessment, with a view to installing a groundwater collection system whose energy supply for pumping is provided by solar panels. The studies identified viable flows in local water bodies, using accessible methods such as floatation to estimate flow. In the underground collection, a well was evaluated, with results indicating limited water potential. Based on the analyses, a new well was located and drilled in the Zebina community, and the collection was registered with INEA, and its operation began. Another collection point is being located in the Original community. The project reinforces the importance of applying Hydrogeoethics, especially for marginalized communities. Despite financial challenges, the results indicate the possibility of water autonomy and improved quality of life, highlighting the historical and environmental relevance of the quilombo as a model for future similar initiatives.

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