

MULTICRITERIA GENETIC ALGORITHM FOR WASTEWATER RECLAMATION AND REUSE DECISION

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Summary. Wastewater reclamation and reuse is being viewed increasingly as a sustainable approach to integrated water resources management, in order to achieve the European Water Framework Directive (WFD) goals. The current state-of-the art of reclamation technologies can produce water of any desired quality (including drinking quality). However, the increasing number of efficient treatment processes has made the selection of an optimum treatment a difficult task for planners and decision-makers. Mathematical programming methods, such as integer programming, non linear programming, dynamic programming have been used to solve the multi criteria problem for regional wastewater reclamation and reuse systems. In this study a Multi-Criteria Decision Support Management in Watershed Restoration (MCDSMWR) was developed through the integration of a multi objective genetic algorithm and a water quality model (QUAL2K). This Decision Support System was developed and applied to the inner Catalonia watersheds and in this paper we present some results for the Llobregat watersheds. This study showed that multi objective genetic algorithm can be particularly useful in wastewater reclamation and reuse problems as it can provide assistance in the evaluation and selection of water treatment alternatives. The multicriteria approach also has the advantage of giving the stakeholders a clear idea of the trade-off between water quality and the cost to achieve this quality.