Development of a method for prioritizing the interventions of Seine-Normandie Water Agency for the restoration and preservation of water quality of drinking water wells Abstract n°1807

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Diffuse pollution by nitrates and pesticides is the main cause of groundwater quality degradation in France. To orient its assistance for the restoration of groundwater used for drinking water, Oise Delegation of Seine-Normandie Water Agency wanted a methodology for evaluating the capacity of a degraded resource to regain a satisfactory quality in a reasonable time. Using information from the 781 water wells of the Oise basin, a consortium of four engineering firms (Calligee, Hydriad, Agristem, Ecodecision) has developed a practical methodology to analyse the potential of qualitative recoverability of drinking water wells taking into account hydrogeological, agronomic and socio-economic considerations. This methodology is based on a decision tree comprising a sequence of analysis steps- - Characterization of the degradation level of the resource using nitrate and pesticide concentrations+ - Delineation of the preferential water catchment area of the drinking water well taking into account the type of aquifer (continuous, fractured or karstic)+ - Evaluation of the global vulnerability of the preferential catchment area+ - Estimation of agricultural pressures+ - Test of consistency between observed degradation, vulnerability and agricultural pressures+ if required, changes in initial assumptions and parameters+ - Analysis of the socio-economic acceptability of the changes that can be recommended to regain the water quality (agricultural context, local political context, market channels)+ - Evaluation of the resource renewal rate (resilience)+ - Quantitative and strategic importance of the water well. This methodology has been developed on a sample of 60 water wells and tested and refined on two additional samples of 20 water wells each. This original method is fast and applicable to all types of groundwater resource (automated processing from easily accessible data+ requested additional expertise in a targeted way only). The goal of the Seine-Normandie Water Agency is to extend its use to all 4215 water wells of the Agency's territory.