



## **Using an EVSI-based approach for planning spatially distributed cost-effective reactive barriers: results and limitations.**

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In recent times, the EVSI (expected value sampling information) has become a widely used approach in cost management strategies. This approach tries to quantify the value added to the information already present by, for example, a new sampling. Ground-water contamination is not an exception and some work has been done on this topic, such as James and Gorelick 1994. The search of the "optimal" locations is performed in an iterative incremental fashion, so that a new borehole is excavated where the largest saving in remediation cost is guaranteed. Starting from the work of James and Gorelick, we have considered an extension to the case of reactive barriers, considering the possibility of using the new boreholes to introduce oxygen-releasing matter to promote biodegradation of the contaminant. This creates a kind of pointwise distributed reactive barrier on the contaminated site. We have tried to compare our approach and previous work in terms of both cost performance and number and locations of new wells/boreholes to investigate. The features of our approach are presented on a basis of a rather simple test case to which the method is applied. Results are discussed in terms of their limitations of the work done so far and possible developments are illustrated. Further some comments are added regarding the method to propagate in space the results of new measures. The SIK (Simple Indicator Kriging) used to condition contamination probability as long as new measures are considered have shown some problems and in some cases have provided weird results.