



*Project Summary*  
**A Multi-Scale Screening Assessment  
 Of Recovery Potential In Maryland Watersheds**

**Note:** This Maryland recovery potential screening study was used as the detailed, step-by-step screening example in EPA's recovery potential web site. The project summary below is a brief overview. For detailed description of the project, see the downloadable [screening example](#) online.

This screening assessment was undertaken collaboratively by Maryland Department of Environment (MDE), the EPA Office of Water and Office of Research and Development, to determine which of the impaired watersheds from the State's 303(d) list were the strongest candidates for restoration and re-attainment of water quality standards. The purpose was to help inform strategies for targeting restoration efforts where they would be more likely to result in successful restoration progress and eventual removal of currently impaired waters from impaired waters lists. As a demonstration study, the methods and products are technical information that does not constitute EPA or state policy or decisions.

The project workgroup assessed a statewide set of 94 nontidal watersheds across three ecoregions using workgroup-selected recovery potential indicators. Primary data sources included common GIS datasets such as land cover, soils, hydrography, census, and watershed boundaries, and state and EPA water quality monitoring and other environmental data. Although the primary interest was to score and compare the recovery potential of impaired watersheds, the healthy watersheds were also assessed using the same metrics in order to evaluate the performance of the indicators against reference sites of known condition as well as to enable comparison of healthy and impaired watersheds. Previous assessments had identified 'borderline' watersheds that

might be more restorable than most; thus, an additional purpose of the screening was to compare its findings with previous efforts that had selected good candidates for restoration in other ways.

A total of 60 indicators in ecological, stressor, and social context classes were identified and measured, 23 of which were selected initially as 'preferred' metrics for the screening analysis. The workgroup ran three screening runs with different combinations of these indicators, calculating ecological, stressor, and social context indices and an overall integrated score (RPI SCORE) for each watershed. Data were assembled in spreadsheets and also plotted as 3D bubble plots that showed the relative differences in the three sub-scores for each watershed. Data were compiled and plotted for each ecoregion separately, and statewide. The screening results consistently displayed higher scores for the healthy watersheds, as expected, but also showed that a few impaired watersheds approached or even exceeded the recovery potential scores of their healthy counterparts. These watersheds were identified, and many compared well with the names of 'on the cusp' watersheds independently identified by MDE earlier.

A second stage of recovery potential assessment was then carried out in order to better inform highly localized consideration of where specific restoration activities might be most successful. This stage again utilized several GIS data sources and many parameters extracted from MDE's MBSS monitoring data, encompassing over 1300 small-scale watersheds across the state. These recovery potential assessments were performed at the single, larger watershed scale on selected watersheds whose earlier assessment scored well. The indicator selection was revisited to adjust for the more localized restoration purpose and differences in data availability, and ten watersheds were screened. Again, bioassessment data were available to discern healthy from impaired subwatersheds and identify impaired, but promising sites in each watershed for further consideration.

The recovery potential screening data and analyses at both scales are currently providing additional input to a variety of State impaired waters planning activities.

### Reference

Norton, D.J., J. Wickham, T. Wade, K. Kunert, J. Thomas and P. Zeph. 2009. A method for comparative analysis of recovery potential in impaired waters restoration planning. *Environmental Management* 44:356–368. DOI 10.1007/s00267-009-9304-x. <http://www.springerlink.com/content/d51523tq8784643k/>