

## Natural Resource Damage Assessment & Ecosystem Services Accounting

Windward staff have been advising clients on natural resource damage assessment (NRDA)- and ecosystem services accounting-related issues for more than 20 years. The focus of this work has been on baseline determination, injury determination and quantification, establishment of causation, apportionment of injury, and compensatory restoration planning. In particular, our experience in working with the strengths and limitations of the NRDA process allows us to provide realistic assessments of the liability issues associated with each situation.

Windward has taken the lead in developing compensatory restoration options by using advanced Habitat Equivalency Analysis (HEA) modeling to identify optimal restoration projects based on restoration credits and cost efficiency. For these efforts, Windward staff have prepared pre-assessment screens, developed comprehensive damage assessment plans, prepared detailed injury assessment and quantification plans, performed field and laboratory injury determination studies, developed case strategies, and provided negotiation and settlement support. This range of experience has enabled Windward staff to become experts in applying the natural resource science, economic, and legal principles that, when combined, characterize the NRDA process.

### Tri-State Mining NRD

Windward was retained by US Steel to provide technical and strategic support in resolving a NRD claim for an historical mining and milling operation located in Jasper County, Missouri. Among the tasks undertaken by Windward were a thorough analysis of the Natural Resource Trustee Council (Trustees) claims against US Steel, additional soil sampling using X-ray fluorescence to better characterize soil conditions, and the development of alternative metrics to scale injury and service losses for an HEA model. The additional soil samples taken increased the sampling density, significantly reducing the size of the footprint of soils with high metals concentrations; the alternative metrics better scaled potential service losses used in the HEA model. The resulting information and analysis were provided to the Trustees, along with a revised assessment of liability markedly less than the original claim provided by the Trustees. The outcome of negotiations was a settlement for all NRD claims based on the analysis provided by Windward via US Steel.

### Woodard Bay NRCA Restoration

Windward was retained by the Washington State Department of Natural Resources (WDNR) to complete an assessment of wood waste impacts as defined by the Washington State Sediment Management Standards (SMS), and to conduct a feasibility study (FS) to evaluate restoration options for the nearshore area of the Woodard Bay Natural Resource Conservation Area (NRCA). The overall goal was to select an alternative for restoring or enhancing aquatic ecosystem structure, functions, and processes to protect native species and communities.

Windward developed a conceptual model for restoration based on species, habitats, and ecosystem processes; identified restoration targets; and filled data gaps for the assessment of wood waste impacts and restoration planning. In parallel with sediment quality characterization, Windward developed four restoration options for the site using HEA. These options were based on site-specific actions that could achieve the restoration goals for individual species, habitats, or ecosystem processes. The approach involved: 1) identifying a series of restoration actions that could achieve one or more objectives for one or more resources; 2) assigning ecosystem service values to each action; 3) compiling individual actions into four alternatives; 4) aggregating the overall change in ecosystem services for each alternative; 5) developing preliminary unit costs for those alternatives; and 6) examining the relative ecosystem benefit vs. financial and management costs.

### Mine NRDA, Southeast Missouri Lead Mining District

Windward was retained as an advisor to a confidential client in the Southeast Missouri Lead Mining District regarding a strategy to address potential NRD claims related to metals discharges from a tailing pond into a creek in the Ozark Mountains. No focused studies had been conducted for the creek, but Windward was able to locate regional environmental studies and other information to develop an analysis. Relevant information relating to impacts on and deviations from baseline conditions was compiled, as was a suite of comparable restoration projects and related implementation costs. Windward assembled a briefing for the client that laid out the assessment, the restoration strategy, and a range of dollar-denominated settlement options all based on available facts. This information was used to create a "generous settlement offer" that Windward presented to the Trustees on behalf of the client. The Trustees agreed to settle the claim within the range identified by Windward.