Demonstrating Environmental Stewardship and Sustainability (Newsletter)*

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Natural resource companies, particularly in extractive industries, are expected to comply with standards of environmental stewardship and sustainability. Financial institutions subscribing to the Equator Principle require evidence of such compliance when considering project funding. Mining companies constrained by low commodity prices and difficulties in obtaining financing benefit by demonstrating their adherence to these concepts.

Stewardship and sustainability concern the natural environments in which the project operates. Two inter-related ways of demonstrating the company's commitment are the appropriate analyses of their environmental data and the smooth operation of their environmental department.

Concepts such as sustainability and environmental stewardship are subjective. Definitions and measurements vary among groups and can be used to promote different agendas. Characterizing biotic and abiotic aspects of communities and ecosystems using mathematically robust statistical models, and using these models to assess change over space and time, provide results that are technically sound and legally defensible. While some might not agree with the results, they satisfy federal court standards for agencies taking a 'hard look' at operations. Meeting these standards go a long way to validating a company's statements that it is operating in a sustainable manner and being a good environmental steward.

Characterization of the environment should focus on inherent natural variability as the standard against which to assess anthropogenic effects. When presenting interpretation of the analytical results it is important to note that extreme events can be natural occurrences, not necessarily man-made. A flood with an expected frequency of once per hundred years can happen more often than that. Similarly, chemical concentrations in a water body might exceed a maximum concentration level (MCL) for several months and not be caused by the permitted project. This is why it is very important to collect data on potential explanatory variables that influence the response variables of statutory and regulatory interest.

Environmental data analyses using advanced statistical and spatial models should focus on community and ecosystem function rather than structure. The biotic structure of a community or ecosystem (the species living there) might change over time, but the functions (energy processing and nutrient cycling) will not. Post-wildland fire plant succession is a good example of community and ecosystem function provided by different biotic structure. Opportunistic grass species appear first, followed by forbs, then shrubs, and finally trees (depending on geographic location). Equivalent changes occur in shallow lakes, ponds, and bogs as they fill in and the plant communities change. Animal populations can also change as food, shelter, and water abundance change. Mining operations alter the topography, hydrology, and biotic communities so that reclaimed areas are not structured as the pre-mining areas. However, the community and ecosystem functions will be assumed by different species and both primary and secondary productivity will arrive at a stable equilibrium over time. The abiotic environment also changes at varying time scales and these changes are reflected in the biota present. Both biotic and abiotic environmental variables can be analyzed statistically.

A project's environmental department, following an appropriate environmental management system, provides the environmental data used to generate valuable knowledge and insights while the staff manage the interaction of operations and the natural environment. Corporate support of the department and the environmental management system reduces or eliminates unnecessary expenses such as regulatory fines and penalties as it strengthens the company's environmental stewardship and promotes sustainability.

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