



Freeing Up Assets by Eliminating Overstated Environmental Liabilities

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THE ACCURATE STATEMENT OF ENVIRONMENTAL liabilities on an organization's balance sheet presents some unique challenges. Overstatement ties up assets and impacts the efficiency of capital usage, while understatement can misrepresent the financial condition of the company.

The challenges associated with accurately assessing environmental liability presents challenges similar to those involved in valuing options, such as stock options. The actual values of future liabilities are not fully known and depend on how various possible outcomes actually play out. Using an options approach and statistically modeling outcomes

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can better reflect reality and provide a better methodology to assess liability than traditional approaches.

This technique, applied to a recent project, resulted in a reduction in liability estimates of almost 90 percent and the freeing up of over \$4 million in assets. The reductions were a result of two factors. The first factor was time-dependent and resulted from the reassessment of the liabilities based on more certainty regarding the actual liabilities. For example, a landfill had been characterized in the interim since the previous valuation allowing remedial outcomes to be better defined and lowered. The second factor in the reduction resulted from the modeling of potential outcomes and was responsible for more than an \$800,000 reduction in liabilities. This contrasts well with a total project cost of \$30,000.

Applying the technique starts with a review of open environmental issues. This involves interaction with regulatory agencies, plant or facility personnel and local officials, and often requires Freedom of Information Act (FOIA) requests and file reviews. The accuracy of information obtained from these file reviews is critical, and because the FOIA process can be lengthy, can introduce time constraints.

Once information regarding liabilities is updated, equa-

tions that characterize potential outcomes and their associated likelihood for each outstanding environmental issue are developed separately. Assumptions regarding likelihood and outcomes are based on knowledge of environmental compliance, federal and state requirements with regard to site investigation and remediation, and the potential costs associated with those requirements, as well as the specific information gathered on each issue. A Monte Carlo simulation is then run to generate a large number of potential outcomes and create a distribution of potential outcomes for total environmental liability. In the project discussed above, 200,000 potential outcomes were generated.

Traditional liability methods estimate each issue individually and then a sum of the mean or mean plus safety factor for each issue is often used to develop a total reserve number. However, this traditional method does not simulate real-world outcomes. The traditional approach assumes each issue is the only event. In actuality, events overlap, with varying combinations of outcomes generating different dollar liabilities. For example, in any one simulation of an outcome, lower costs for one issue may offset higher costs for another issue. Traditional methods ignore this reality. By simulating an overall total, these offsets are taken into account and the result is a distribution of outcomes that better represents real-world outcomes and thus provides better data to set a reserve number. Results for the example project are illustrated in the box.

Understanding the Model

In understanding the model, certain considerations should be kept in mind. The model distribution simulates the real world distribution of all possible outcomes. For all possible outcomes, the upper limit for liability is infinity. This means that as the number of trials run in a simulation is increased, it can be expected that the upper bound will also increase. Therefore, it is not possible or desirable to establish an upper bound for liability that is 100 percent certain. There is a tradeoff of error that occurs as the percentage of outcomes that are covered by the reserve increases. As this percentage increases, the error associated with over-

estimating the reserves increases at a geometric rate.

In the example, 95 percent of outcomes were included in the reserve number. This level of set-aside takes into account most outcomes and eliminates the unlikely outliers. Further, in statistical analysis, the 95 percent level is generally considered an acceptable standard. However, each organization should set this percentage based on its own risk profile. In doing this, a good place to start is to consider the percentage of certainty that underlies the current reserve level.

Another characteristic of the model is that greater benefit is gained as the number of liability issues increase. This can be understood if one considers a single issue. In this case, modeling would present no benefit over traditional approaches. The model would simply produce outcomes that reflected the inputs. However, if the number of issues is increased to two, it can be anticipated that the outcome distribution will reflect both sets of input characteristics.

Another consideration with regard to the model is the time value of money. The example project assumed current costs because the client did not want effort spent on forecasting potential timing of liabilities. Further reductions would have resulted if time had been considered. Failing to use present value, however, is not considered material as it results in a more conservative model than would otherwise

be the case. The approach does, however, lend itself to the introduction of time so as to take advantage of the time value of money. This can become a more significant factor the longer the time span expected before expenditures occur, particularly if a major expenditure is expected several years out.

The approach also requires updating on a routine basis so as to ensure that the present level of knowledge is reflected in the set-asides on the balance sheet. However, once the initial model is set up, updating requires much less effort. Updating on an annual basis to take into account any changes that may impact potential liabilities is recommended.

While this technique is useful for ongoing calculations of set-asides, it can also be useful in valuations for acquisition purposes. The development of a single distribution of total liability that better reflects reality can assist greatly in "sharpening of the pencil." New Jersey specific applications for this approach may include demonstrating financial guarantees and self-insurances necessary to demonstrate compliance with New Jersey Regulations, such as ISRA. ■

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