



Contaminated Sediment Dredging A Parametric Model for Improved Estimations

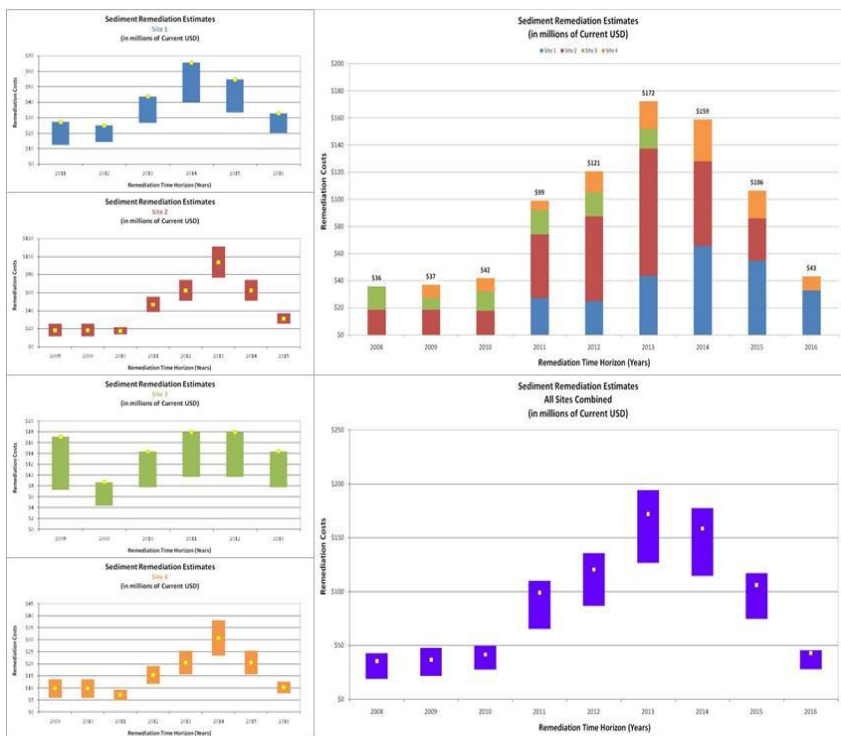
Contaminated sediments, whether in freshwater or marine systems, pose a significant environmental challenge both within the United States and across the globe. When it comes to cost estimating for sediment-related cleanup projects, headline after headline seems to read something like “Cost Estimates Increased for XYZ Project” or “Cost Estimate Rises to \$(fill in your own astronomical number way above original estimates)”. Why are these calculations such a persistent challenge to financial professionals charged with estimating such cleanup efforts? One predominant reason is that estimating the true costs of such projects is tremendously difficult and riddled with high degrees of uncertainty. Simply put, what professionals need is a “better mousetrap.” To develop a better “mousetrap”, ERCI assessed the current practices employed in developing such estimates. According to the U.S. Department of Defense and U.S. Department of the Army, generally speaking, there are three types of cost estimation techniques that are used either individually or in combination - Analogy, Build Up, and Parametric Modeling.

When thinking of the Analogy method, consider it the equivalent of a real estate agent or a home appraiser determining the value of your home. In order to do this, they will look at “comps” or comparables. Comps are data about properties recently sold, currently on the market, expired listings, and pending sales which are similar to the property whose value is being determined, your home in this example. Likewise, when planners need to estimate costs for a specific site/project, they draw appropriate comparisons to prior, completed projects of a similar nature. The biggest challenge of the Analogy method of estimating is that projects often have numerous unique, or site-specific, variables, making finding true comps rather difficult if not impossible.

To understand the Build-Up method, consider the childhood riddle “how do you eat an elephant?...one bite at a time!” In this approach, an overall project is broken down into various, more manageable tasks which are subsequently estimated on their own and summed to reach a total project cost estimate. Continuing the real estate analogy, this would involve determining how much it would cost to excavate a home site, how much to build a proper foundation, how much to complete framing, roughing in electrical and plumbing, etc. and then adding all costs together to obtain a final cost to build a home. This method requires a detailed analysis of each task of the project and often involves cost categorization and tracking. This method, while having some advantages over Analogy estimates, is both time and labor intensive and often data is not available to support an estimate.

Lastly, Parametric Modeling-based estimation is a computer-based technique utilizing complex statistical approaches, mathematical expressions, and/or historical cost databases to estimate the overall project costs. To once again compare this approach to the real estate market, the Parametric Model analogy would involve the use of square footage, lot size, site location, traffic patterns, features/quality of construction, etc., taking a very scientific approach to hit on target pricing. As might be intuitively expected, Parametric Models often utilize expanded Analogy methods and/or databases built with data from Analogy and Build-Up estimates. However, according to the DoD/DoA, there are currently no real-world examples of parametric models for estimation of sediment treatment project costs.

We’ve created a viable Parametric Model for assisting managers and decision-makers in developing appropriate cost estimates for the processing and disposal of dredged materials which can be used for planning and budgetary purposes, communicating with appropriate stakeholders, and providing guidance to senior management. This multi-variable financial model enables cost estimates for either a single site or a portfolio of sites [while still allowing for individual site specifications] by providing cumulative costs over the overall remediation time horizon. It allows for “what if” scenarios and provides both numerical and graphical depictions of these aforementioned cost estimates.



ERCI's domain knowledge can be instrumental for assisting clients with sediment dredging projects in reaching more accurate cost estimates using a proprietary parametric model. ERCI developed this model in conjunction with a industry experts by reviewing numerous completed sediment projects and other publicly available data. To ensure that your organization is utilizing the best available estimation techniques, please contact your ERCI consultant today and request a proposal for ERCI's Contaminated Sediment Dredging Estimation Services.