The City of Annapolis Flood Mitigation Trade-Off Study

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Abstract: Annapolis, the Capital City of Maryland, is routinely experiencing significant flooding events with nearly 40 floods a year and projections showing an increase. To minimize the probability of flooding and high cost in damages, the gap between the needed protection for high water elevations must be filled. By obtaining a protective barrier, the risk of flooding and its effects can be mitigated. Our analysis includes research on climate change models, a stochastic flood model to determine future water elevations conditions, and a decision analysis between protective alternatives. Dates and times of precipitation, storms, and high wind events were matched to assess the influence of each of the components for the total water elevation and their correlation to flood events. Following the probabilistic model, a utility analysis was performed on the value versus cost hierarchy to identify the long-term benefits and the return on investment for each of the alternatives.

Keywords: Annapolis, Floods, Climate Change, Stochastic