Beyond Bathtub: Modeling and Responding to Sea Level Rise and Shoreline Change

December 19, 2012

Sea Level Rise Guidance Resources
Tom Kendall, USACE
Three estimates of future SLC must be calculated for all Civil Works Projects within the extent of estimated tidal influence:

- Low – Extrapolated
- Intermediate-Modified NRC I Curve
- High - Modified NRC III Curve

Current guidance does not assign a probability to each curve. Scenario-based approach required

The USACE sea-level change curve calculator (3 scenarios) can be reached at [http://corpsclimate.us/ccaceslcurves.cfm](http://corpsclimate.us/ccaceslcurves.cfm)
Comparison of Peer-Reviewed Research Estimates: GLOBAL Sea Level Rise by 2100

Sea Level Rise (meters)

reasonable upper limit = 2 m

SLC TL team member: Steve Gill, NOAA
Confidence in the projections is high for 2030 and perhaps 2050, but by 2100 we are confident only that the value will fall within the uncertainty bounds.
US National Climate Assessment 2012
Global Mean Sea Level Rise Scenarios

The Corps’ Overall Strategy

- Scope work according to sensitivity of conditions (decision metrics) to SLC; what are the consequences of “wrong” assumptions;
- Think in terms of life-cycle; when are best times to act; what are the appropriate signals
- Formulate array of alternatives with consideration of timing of actions
- Seek robust plans that perform well under all scenarios
- Display cost-risk trade-offs
- Communicate residual risks
Possible Planning Approach: Phased Investment Strategy

Figure 4.2 The precautionary and managed adaptive approach

- **Scenarios:**
  - Precautionary approach
  - Managed adaptive approach
  - Level of acceptable risk that is tolerated.

- **Managed adaptive approach:** several interventions over time to manage risk

- **Precautionary approach:** single intervention point at start, to manage risk over the whole life.
Alternatives Development & Selection

• Good scenario-based planning should consider:
  – Adaptive Management
  – Facilitating Future Modifications
  – Designing for the Future

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Example of Least Regrets Approach