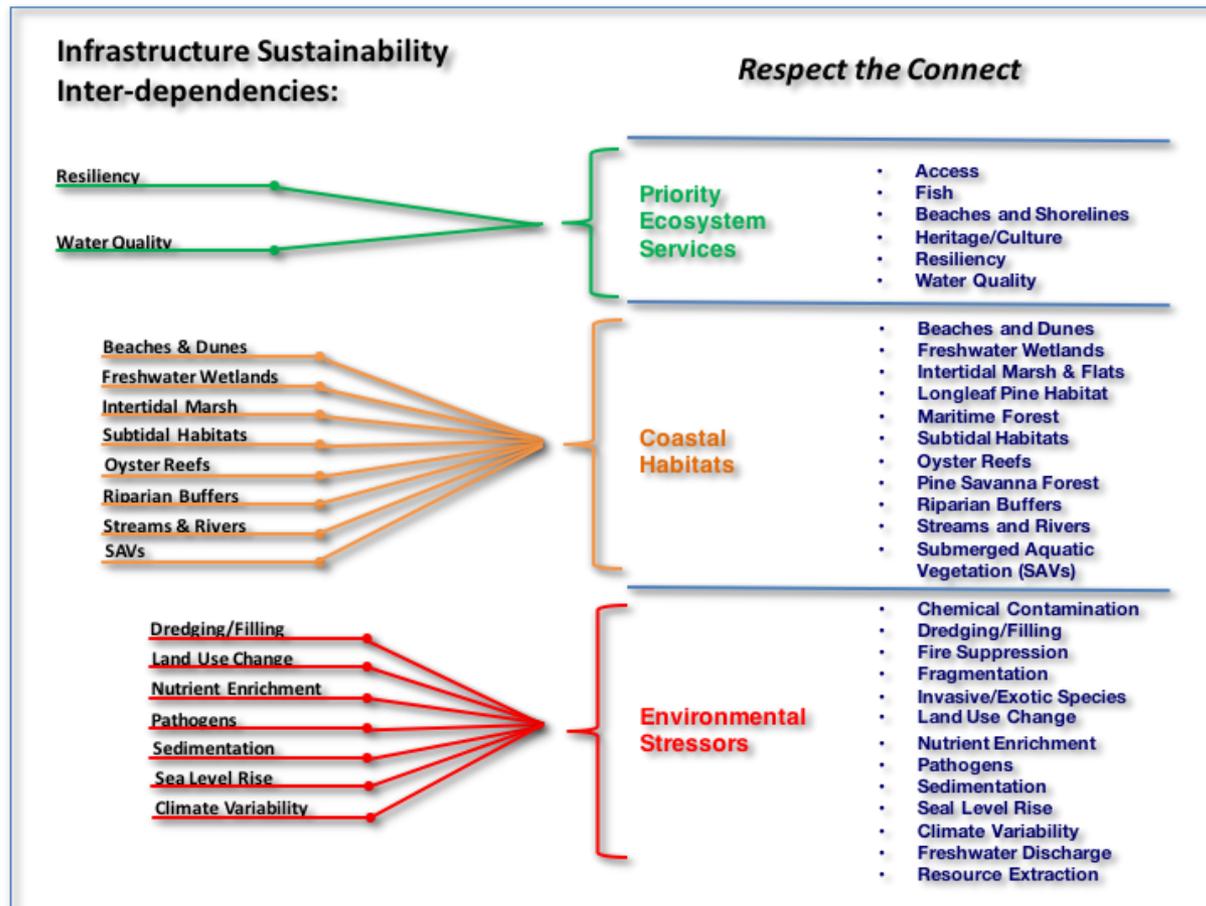


Anchoring “Respect” for the Connect in an Infrastructure-Centric Policy Environment

Presentation Profile

Presenters:	Mark Curran, Battelle Laurel McGinley, Dewberry – Battelle Sub-Consultant Bryon Griffith, CR ² – Dewberry Sub-Consultant
Background:	Battelle is the current Prime Mission Contractor to EPA's Office of Water/Office of Wetlands, Oceans, and Watersheds/Oceans and Coastal Protection Division (OCPD)
Relevance:	<ul style="list-style-type: none">• Contract serves the technical support needs of OCPD programs, including NEP National support. Dewberry is a sub-consultant to Battelle under this contract• Firms have extensive experience in developing specialized decision support frameworks for clients that span both natural systems and built environments• Perceive that these capabilities may be of high value to MBNEP as it navigates the impending shifts in Government support programs.• Seeking opportunity to demonstrate capabilities via potential pilot application

Stakeholder-driven CCMP



The MBNEP Program's Stakeholder-driven CCMP is ready-made to leverage the infrastructure support boom that is slated to soon take shape across Federal programs.

Sustainable Return on Investment

The financial stress that most communities have witnessed for the past quarter century has dramatically reduced the rate of implementation of environmental projects and/or policy improvements.

Sustainable Return on Investment (SROI)



Economic Development & Mitigation, Adaptation

Social Responsibility & Response

Ecosystem Services & Recovery

- Projects compete poorly with infrastructure priorities due to the absence of defensible cost benefit profiles.
- Environmental marketing structures speak a different and less effective language than their infrastructure competitors.
- MBNEP is in a unique position to take a lead role in bridging this language barrier by re-tooling its decision support framework to support a Sustainable Return on Investment (SROI) platform.

How? By establishing comparably competitive metrics to bridge this language barrier.

- a) *the assessed economic impact of the impaired ecosystem service(s) of focus;*
- b) *the modeled future economic impact of taking “no increased action to remedy” over time; and,*
- c) *the modeled economic impact vs. cost of taking recommended action – Sustainable Return on Investment (SROI).*

Proposal: Two-phased Pilot

- Phase I: Scoping / Requirements Design
- Phase II: Trial Pilot of Decision Support Framework – (Initial Focus on “Sediments Stressor” in a Target Sub-Watershed)

Phase I: Scoping/Requirements Design

a) *the assessed economic impact of the impaired ecosystem service(s) of focus;*

Leading Assumptions:

- NEP has conducted at least two temporal characterizations (CCMP1 & 2) that will be leveraged with other relevant reports stemming from the areas economic development authorities to form the data foundation to this task

Phase I: Scoping/Requirements Design

b) *the modeled future economic impact of taking “no increased action to remedy” over time; and,*

Leading Assumptions:

- NEP has invested in numerous assessments that will be leveraged to form the data foundation to this task
- Undoubtedly many data gaps, however, this is a pilot and the bias will be to exercise the existing data as far as possible for pilot illustration
- Improved accuracy could be later improved with future investments as and where needed

Phase I: Scoping/Requirements Design

c) *the modeled economic impact vs. cost of taking recommended action – Sustainable Return on Investment (SROI);*

Leading Assumptions:

- CCMP, and current project workplans, provide a vetted and actionable collection of desired project tasks that could/should be undertaken to initiate improvement in this area

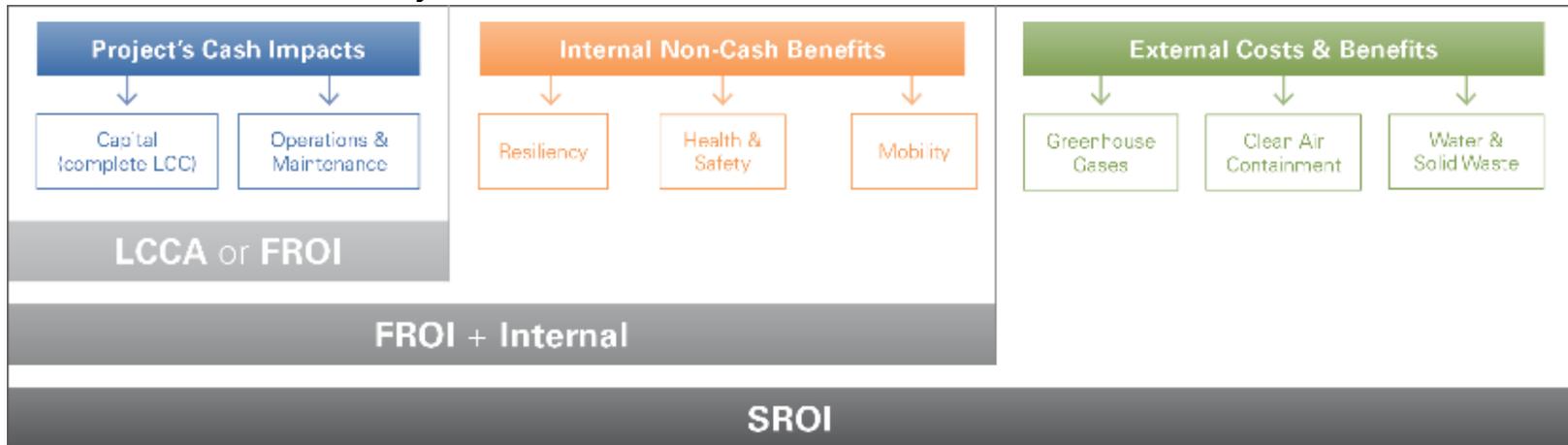
Advantages to SROI

- Proven cost-benefit analysis-based approach
- Doesn't "green-wash" a project, technology, strategy, or policy
- Helps generate consensus among stakeholders
- Helps projects justify and secure funding beyond traditional financiers



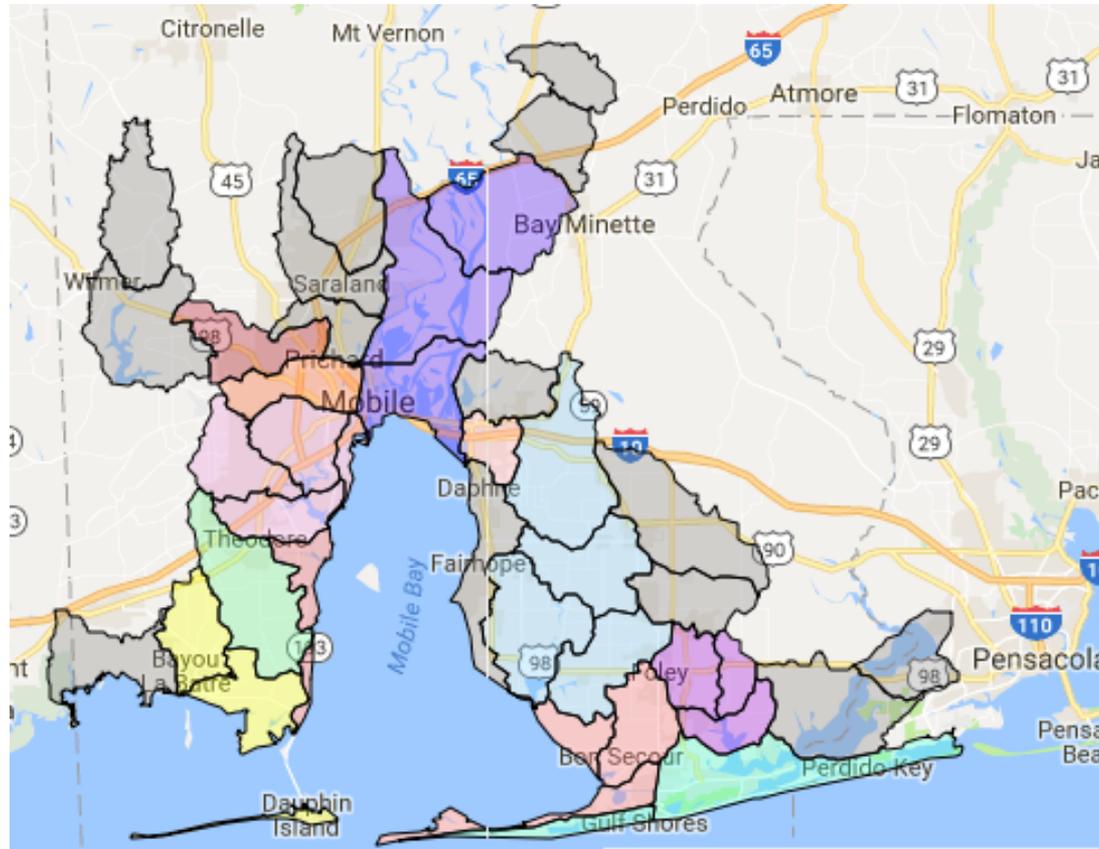
Calculating the Triple Bottom Line

Creation of Risk-Adjust Business Cases for Sustainable Investment



- Aids decision-making for projects or portfolio of assets
- Formulates Strategies for Risk Avoidance
- Helps to justify and obtain funding
- Demonstrate due diligence

Phase II: Trial Pilot of Decision Support Framework

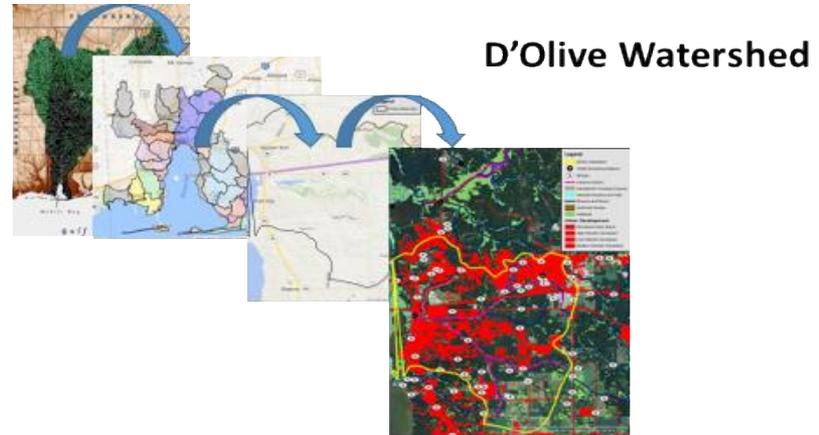


Initial Focus on “Sediments Stressor” in a Target Sub-Watershed

D'Olive Watershed

Recommend focus on a sub-watershed area that is currently under active implementation of an approved watershed management plan (WMP).

The D'Olive Watershed enjoys wide-scale community support and has a diverse suite of sediment issues and innovative recommendations featured in its WMP.



Coastal Habitats

- Beaches and Dunes
- **Freshwater Wetlands**
- **Intertidal Marsh & Flats**
- Mangrove Forest
- Subtidal Habitats
- Other Bays
- **Riparian Buffers**
- **Streams and Rivers**
- Submersed Aquatic Vegetation

Most Valued Ecosystem Services

- **Access**
- **Fish**
- **Beaches and Shorelines**
- **Resiliency**
- **Water Quality**

Environmental Stressors

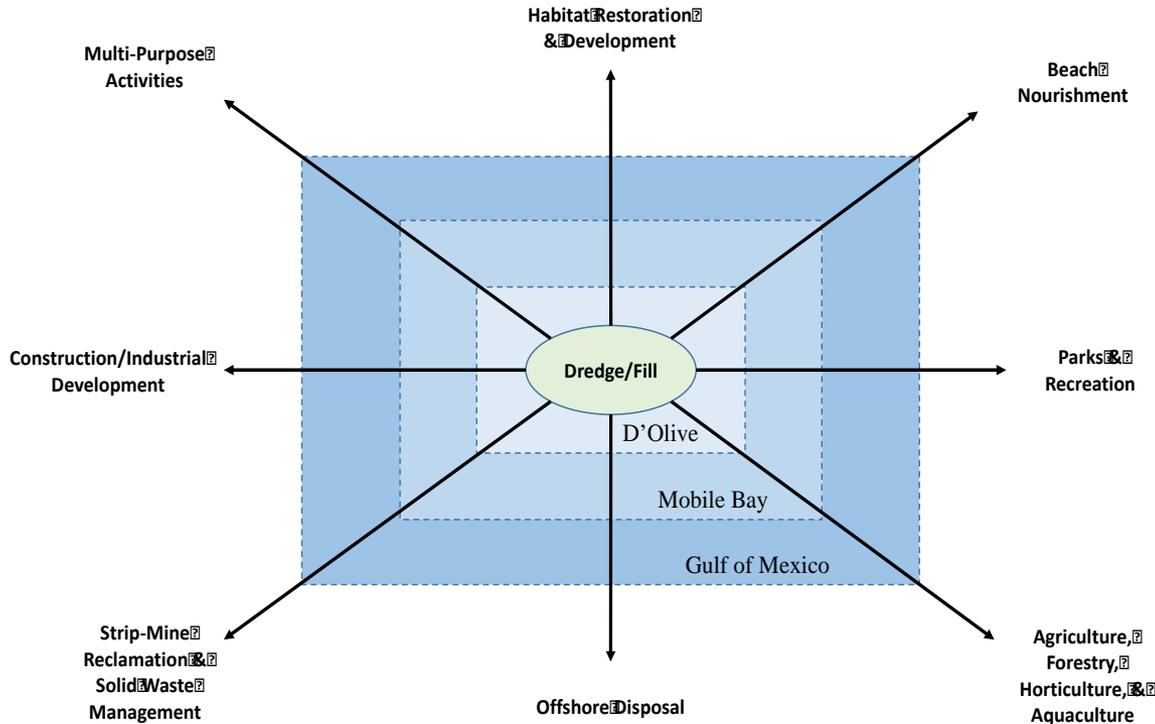
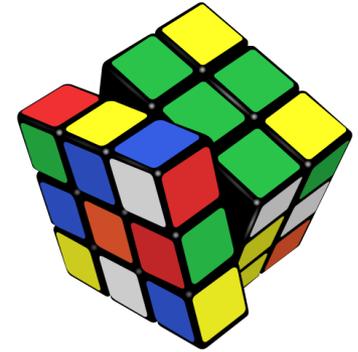
- Chemical Contamination
- **Dredging/Filling**
- Fire Suppression
- Fragmentation
- **Sedimentation**

Proposed Action: Two-phased Pilot

- **Phase I: Scoping / Requirements Design**

- **Phase II: Trial Pilot of Decision Support Framework – (initially “sediments stressor” focused)**

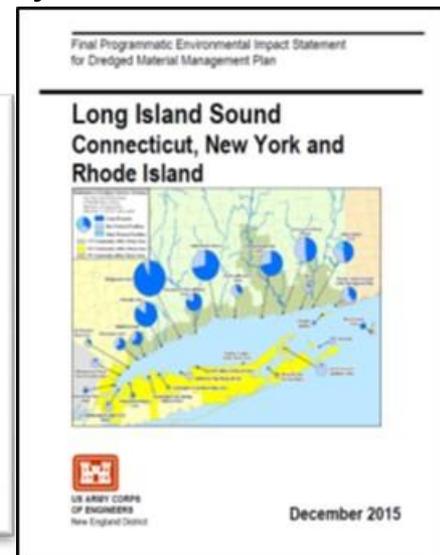
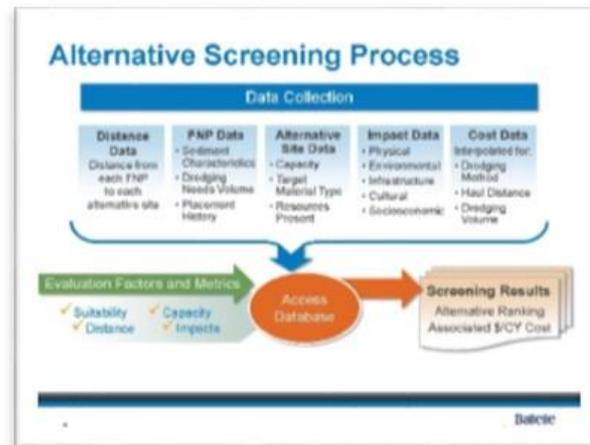
Solving the Rubik's Cube



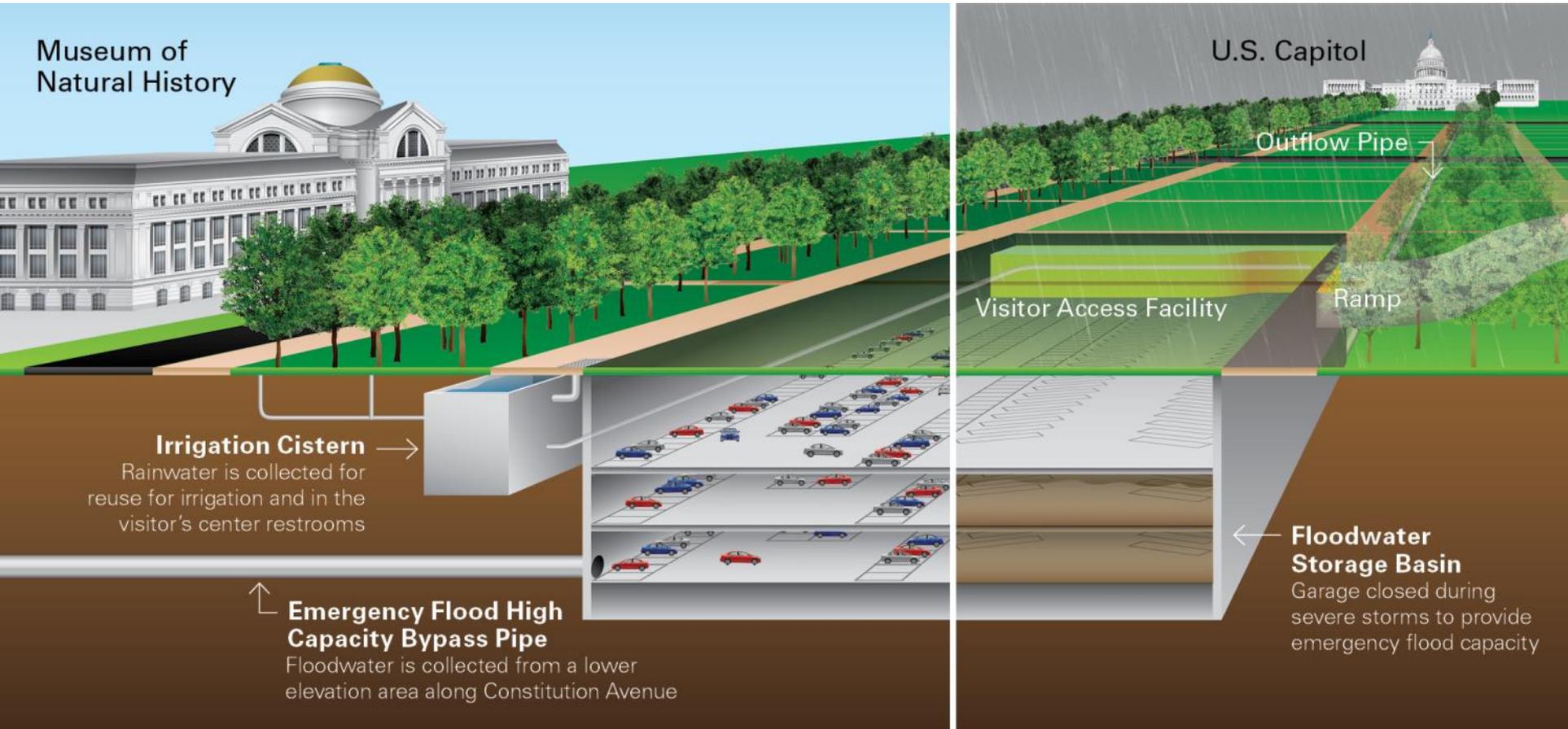
Putting the framework in place achieve broad collaborative support for solving the multi-dimensional Rubik's Cube

Dredged Material Management

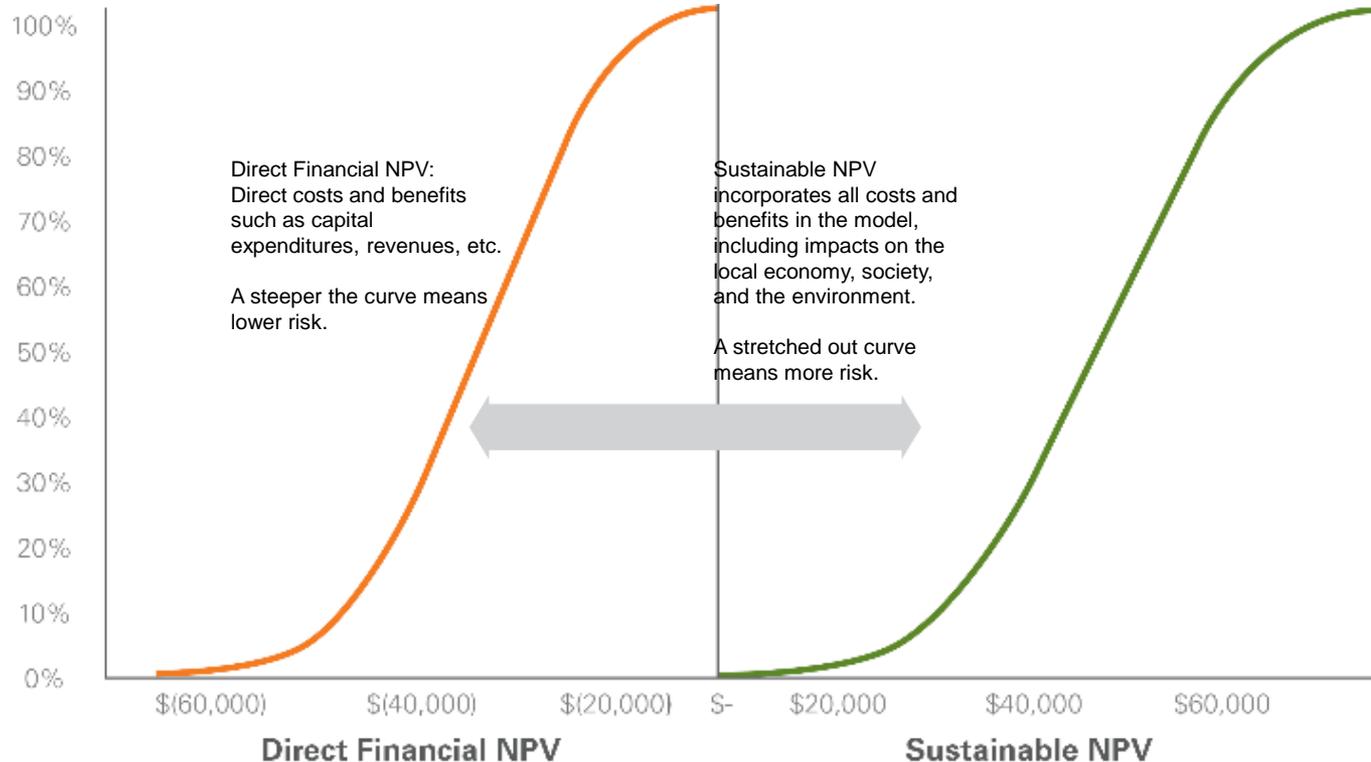
- Battelle's OCPD Team has been involved in managing ocean disposal of sediments for over 30 years
 - Designation of ocean disposal sites
 - Development of Dredged Material Management Plans (DMMP)
 - Developing and conducting innovative monitoring programs
 - Sampling and testing sediments for suitability determinations
- SMEs with extensive experience in the science and policy of dredged material management
- Example: Long Island Sound
 - Assess sources
 - Management options
 - Stakeholder meetings
 - Screening and selection
 - Maximize beneficial use



National Mall Underground



National Mall Underground



The difference between the curves is the (net) non-market or societal benefits (externalities) such as lower carbon emissions, less urban heat island effect.

National Mall Underground Case Study based on preliminary estimates.

Benefit Cost Analysis

Including Additional Ecosystem Service Benefits for FEMA's Benefit Cost Analysis			Input Required
Enter Project Type	Floodplain and Stream Restoration Project		*
Ecosystem Service Tpe	Riparian		*
Benefits Per Acre	\$	39,535	
Number of Acres of the Project		0.61	*
Total Benefits per Year	\$	24,116	
Enter Project Useful Life		30	*
Discount Rate		0.07	
Total Additional Benefits (Discounted)	\$	305,462.01	
Benefits Calculated by BCA Tool (Project Benefits)	\$	418,607.00	*
Project Costs utilized in BCA Tool	\$	551,023.00	*
Benefit Cost Ratio Before Additional Benefits		0.76	
*Note: Ecosystem Service Benefits cannot be included if the project ratio is less than 0.75			
Total Project Benefits with Ecosystem Service Benefits (if meeting the >0.75 requirement)	\$	724,069.01	
Adjusted Benefit Cost Ratio		1.31	

Water Infrastructure Improvements for the Nation Act (WRDA 2016)

Section 1122: Beneficial Use of Dredged Material

- Secretary of the Army to establish a new pilot program
 - Select 10 beneficial use projects, in consultation with relevant State agencies, on the basis of environmental, economic, and social benefits, and the need for a diversity of project types and geographical project locations
- Regional Beneficial Use Teams
 - Identify and assist in the implementation of pilot projects
 - Each team led by Commander of the relevant Division of U.S. Army Corps of Engineers
 - Each team's membership to include relevant Corps Districts and Divisions, State and local agencies, and Federal and other entities Secretary determines appropriate
- Pilot projects exempt from the "Federal Standard" (i.e., least cost alternative)
- Pilot projects can use sediments from both Federal and State dredging projects



Questions / Discussion?

SiteWise™

- SiteWise™ is a decision-support tool that applies Green and Sustainable Remediation principles to remedial alternative evaluations
- Quantifies sustainability metrics to optimize environmentally-friendly remediation approaches
 - Compares sustainability of remedial alternatives
 - Calculates greenhouse gas emissions, energy consumption, pollutant emissions, and water impact
 - Facilitates environmental footprint reduction at all phases of remediation
 - Recommends renewable energy options for local conditions
- SiteWise™ was initiated as a Battelle internal R&D investment; further developed in collaboration with the Navy and U.S. Army Corps of Engineers
- Publicly available; now mandatory for all Navy environmental remediation Feasibility Studies

“Battelle has shown innovation in supporting NAVFAC ESC in establishing leadership in the GSR topic area through the development of SiteWise™. SiteWise™ is designed to calculate the environmental footprint of remedial alternatives widely used in the industry [and]...is being developed by Battelle, US Navy and US Army Corps jointly.”

(Award Fee Performance Evaluation Summary)