

# SUSTAINABILITY: WHAT DOES IT MEAN IN DREDGING PROJECTS?

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# What is Sustainability?

- “A sustainable project is a project which can be design, constructed and maintained with anticipated resources for 25 years”
- “(1) of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged and (2) of or relating to a lifestyle involving the use of sustainable methods.”  
(<http://www.merriam-webster.com/dictionary/sustainability>)

# Sustainability Definitions

- Many definitions exist, but most are relatively consistent. Most definitions:
  - Include meeting needs of current & future generations
  - Refer to the “triple bottom line”:
    - Environment
    - Economy
    - Society

# Is *sustainability* just a fad?

- Sustainability has become a popular concern
- Driving force – Can our natural resources and environment support the growing global population?
- Popularity has encouraged sustainability assessment during design and construction of many projects – especially public projects.

# LEED

(Leadership in Energy and Environmental Design)

- Simple measuring system for being “environmentally friendly”
- Includes many sustainability principles
  - Material reuse
  - Local sourcing
  - Energy use
  - Water use
- Difficult to apply outside of vertical buildings.
- Many LEED concepts now integrated directly into local building codes.

# ENVISION™

*A RATING SYSTEM FOR SUSTAINABLE INFRASTRUCTURE*

- Simple measure of sustainability for civil infrastructure projects
- Supported by ASCE, APWA, and other professional organizations
- Similar structure to LEED
- <http://sustainableinfrastructure.org/>
- Only a few applications of ENVISION™ to dredging projects

# Sustainability & Dredging Projects

- Sustainability assessment should be applied on a system-wide basis.
- Dredging systems are diverse and variable.
- Need a comprehensive inventory of project components at the level at which they are interchangeable.

# Dredging Project Components

- Dredge plant
  - type, size, fuel, project duration, waste, lubricants, carbon emissions
- Support equipment
  - number, types, usage, fuel, waste, carbon emissions
- Hydraulic transportation system
  - pipe materials, wear, maintenance, breaks, energy requirements/friction losses, pumping stations, carbon emissions
- Mechanical transportation system
  - propulsion system, units required, barge materials, fuel, waste, lubricants, carbon emissions.



# Dredging Project Components

- Sediment management related construction and operation
  - equipment needs, construction duration, local environmental impacts, material sources, waste, carbon emissions
- Final sediment disposition
  - disposal, beneficial use, carbon emissions
- Environmental and ecological impacts
  - Negative – habitat changes, physical system changes, water quality, etc.
  - Positive – habitat restoration and development, water quality, etc.

# Dredged Material Management

- Disposal
  - little (or no) sustainability value
- Storage (CDF, etc)
  - May enhance carbon sequestration
- Beneficial Uses
  - Largest opportunity for positive sustainability contributions
  - Ecological restoration may contribute significantly to sustainability

# Challenges

- Dredging is a small part of the overall watershed/coastal system
- Sustainability modifications to equipment may increase costs and jeopardize a bidder's selection as low bid.
- Since the Federal Standard is based upon the least cost alternative, differences in cost between pure disposal and beneficial uses must be borne by the local sponsor.

# Summary

- Dredging projects will be required to provide sustainability assessments
- We should do so in a manner that shows the benefits of dredging