Long-Term Approach for the Sustainability of CDFs

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Motivation

- Declining disposal capacity
- Emergence of sustainability initiatives
- Maturing of regional sediment management and beneficial use opportunities

The Goal of Sustainability

- **…as it applies to CDFs, is to manage dredged material disposal in such a manner that:**
  - 1) disposal capacity is optimized and dredging operations are not limited by disposal capacity;
  - 2) operations are economically feasible now as well as in the future; and
  - 3) adverse environmental impact is minimized and benefits maximized.

Objectives

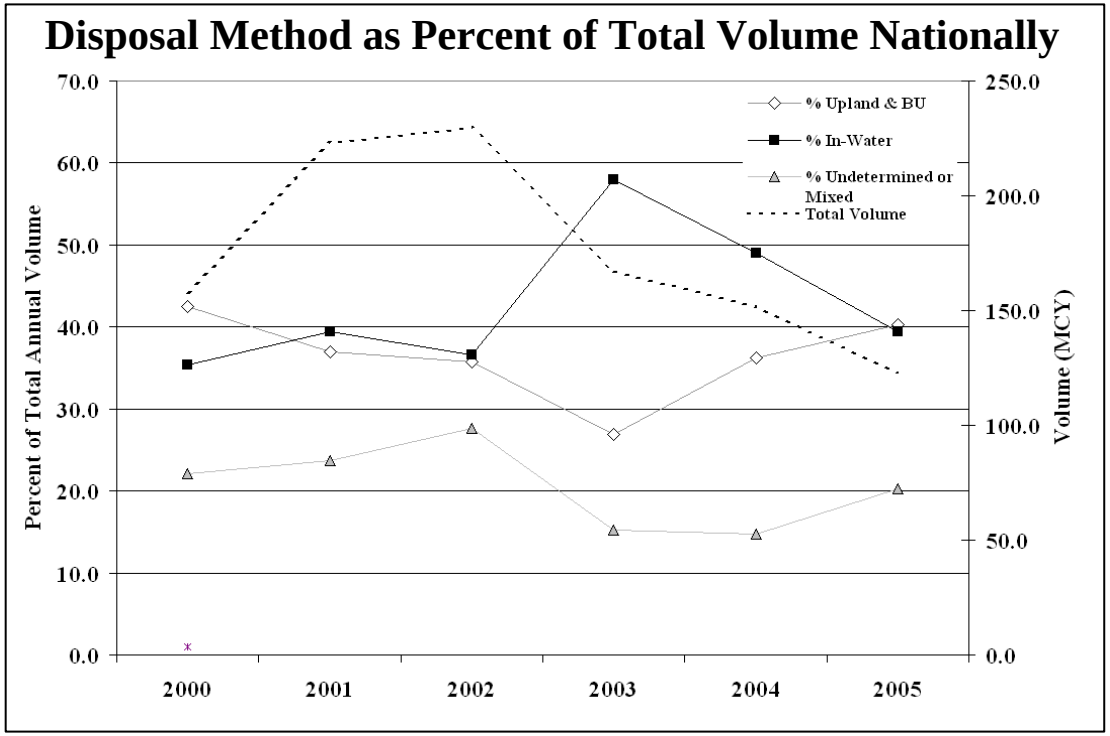
- **Assess the scope of the problem**
  - Dredged volume going to CDFs
  - Storage critical timeline
  - Regional complexion?
- **Develop a management strategy**
  - Policy changes
  - Management practices
  - Needed research

Approach

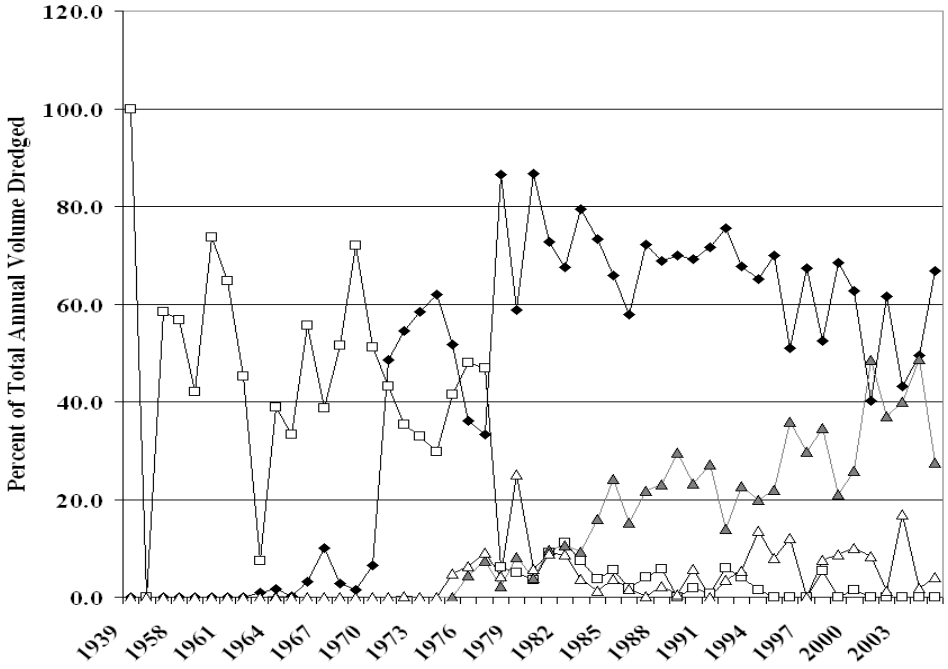
- **Survey**
- **Inventory**
- **Identify available tools**
  - State of the practice vs. state of the art
  - Dredging/disposal minimization
  - CDF management
  - Beneficial use
  - Cost optimization
- **Identify obstacles**
- **Develop a strategy**

Inventory

- **USACE Districts, DMMPs, webpages**
  - Projects
  - Annual and projected dredging volumes (trends)
  - Confined Disposal Facilities
  - Remaining capacity/Projected life
  - CDF management practices

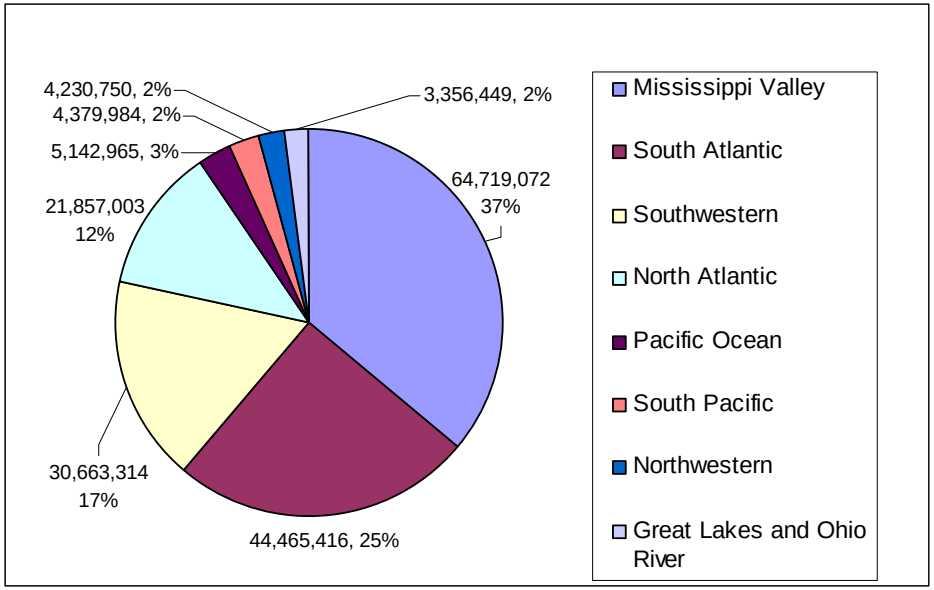


Inventory



Disposal Method as Percent of Annual Dredging Volume for Detroit District

Division 5-yr Average Dredging Volumes



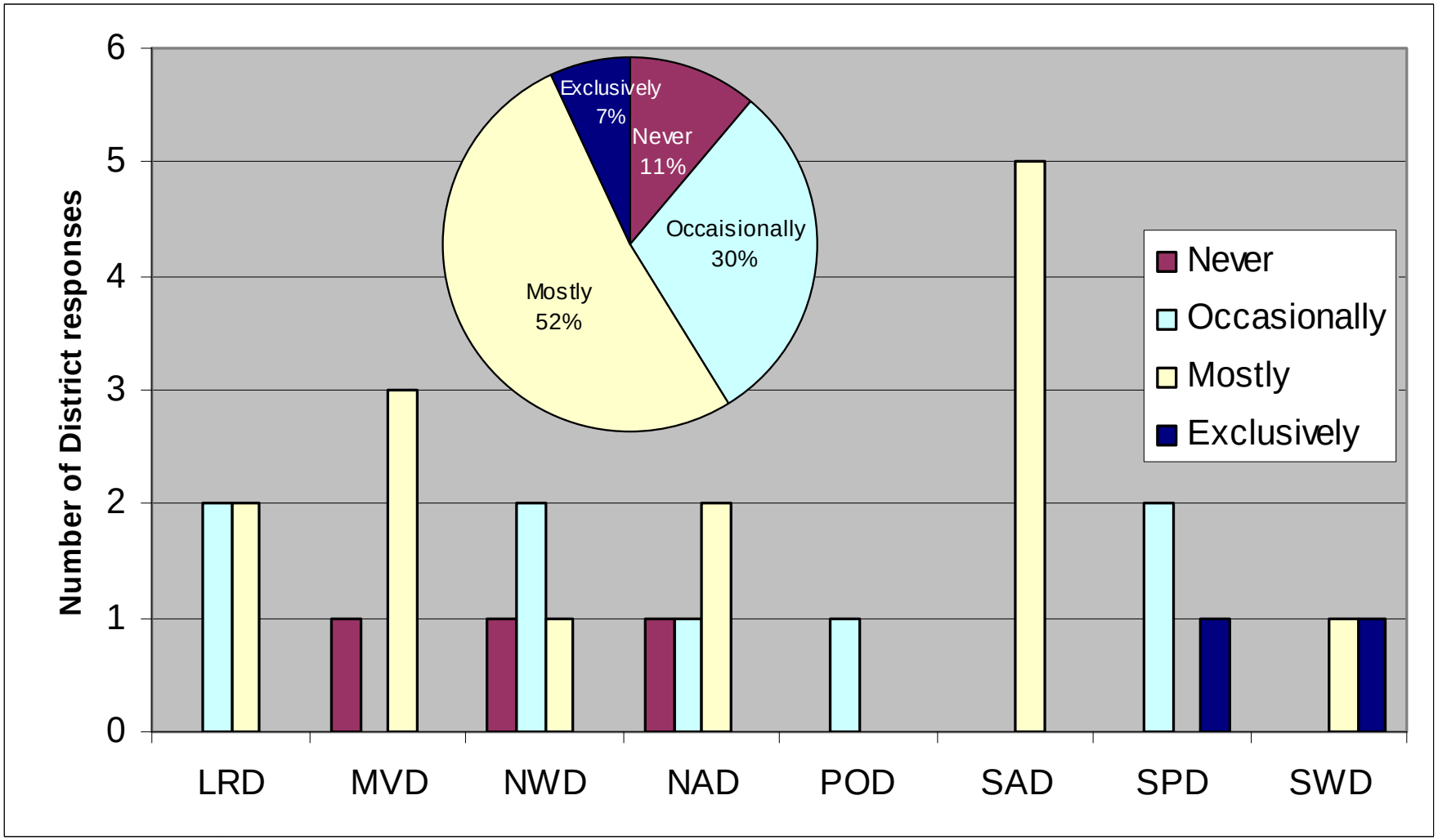
Survey

- Questions pertained to
  - CDF usage
  - storage capacity shortages
  - beneficial use of dredged material
  - obstacles that hamper CDF usage and beneficial use
  - regional sediment management
- 24 Districts responded
- Limitations
  - Single viewpoint (subjective)
  - Nonspecific as to scope of response

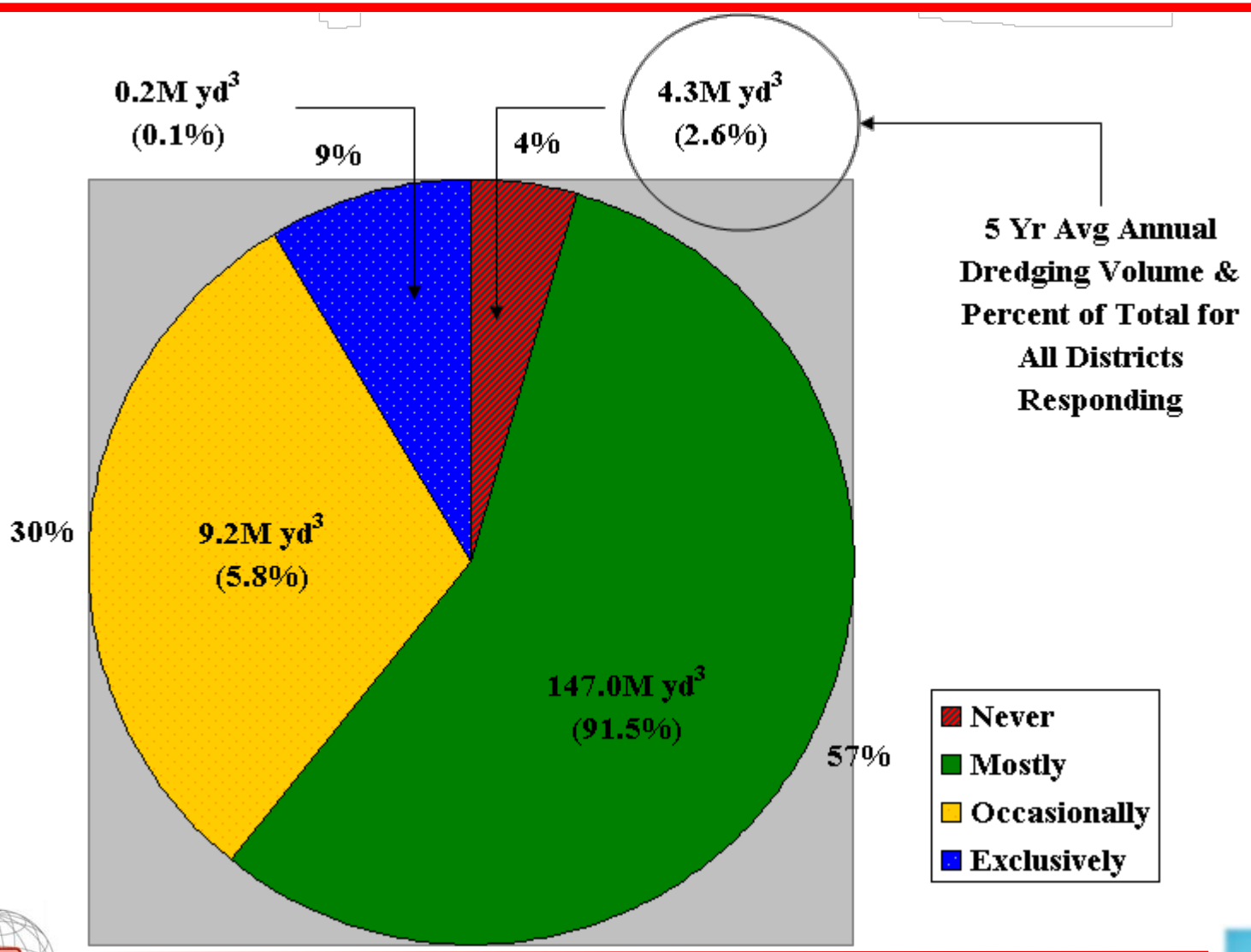
How critical is issue of CDF storage capacity?

9 %	Unlimited
73 %	Shortage in ?? yrs
18 %	Out of capacity

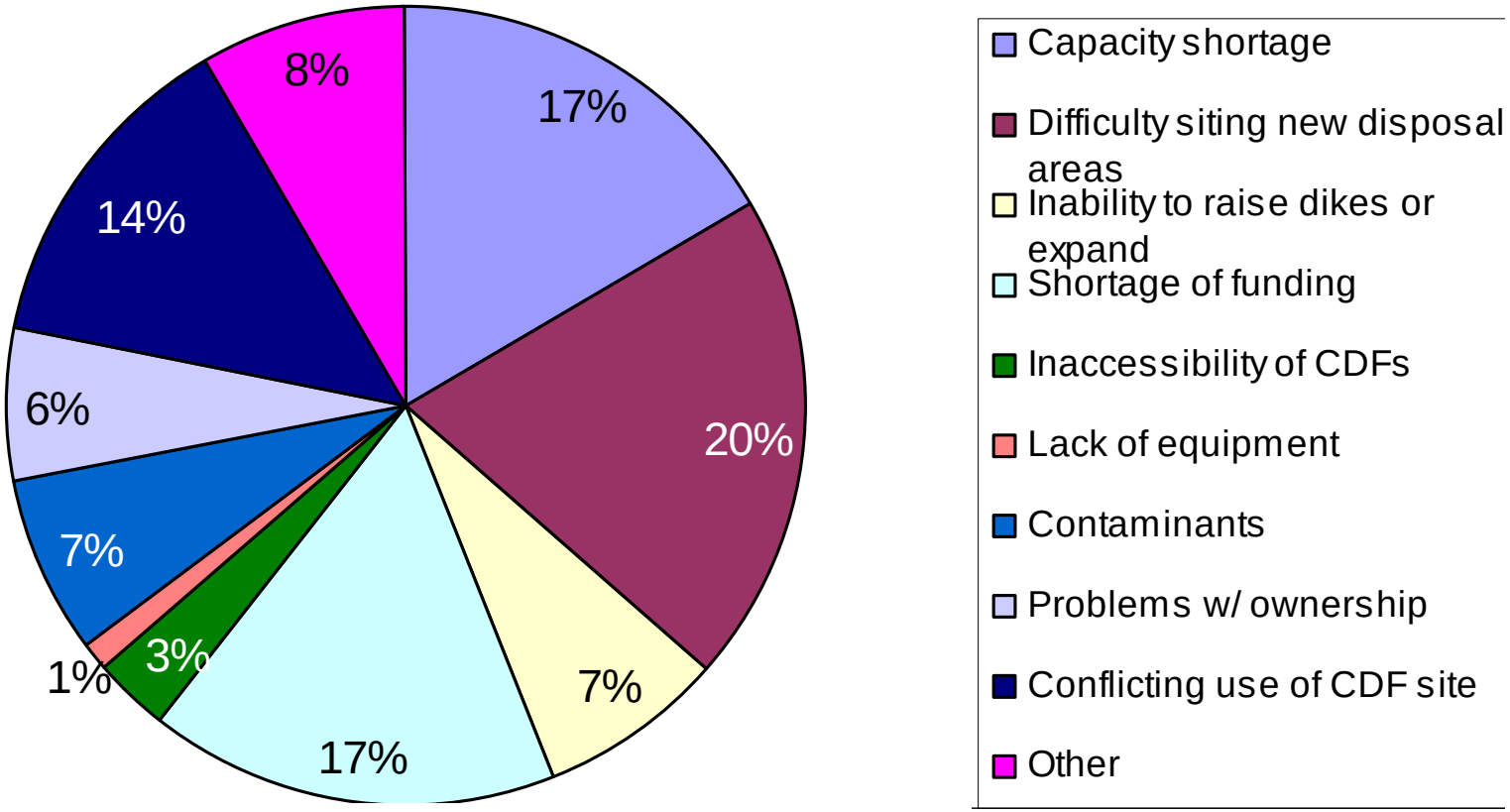
To what extent are CDFs used for dredged material disposal?



CDF Use for DM Disposal – Percent of District Responding



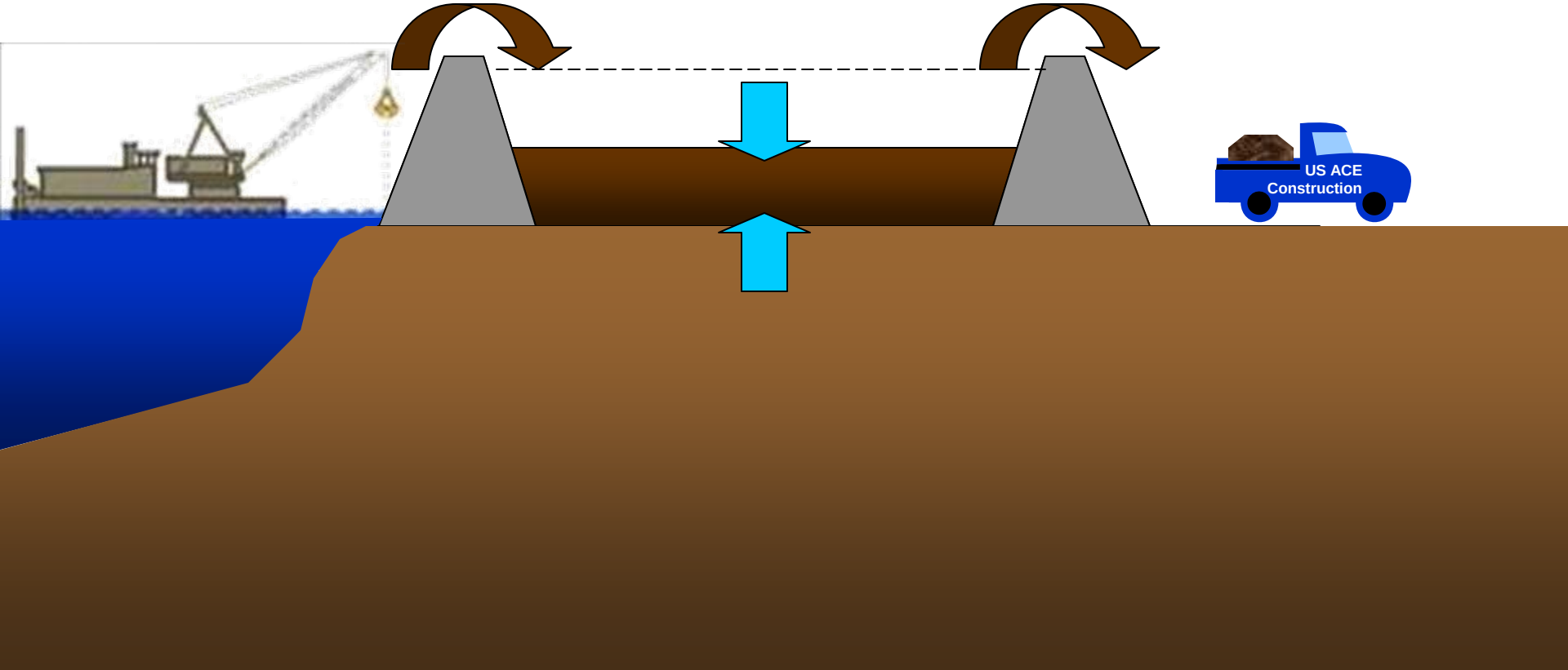
Problems that Hamper Effective Usage of CDFs



(based on informal survey response)

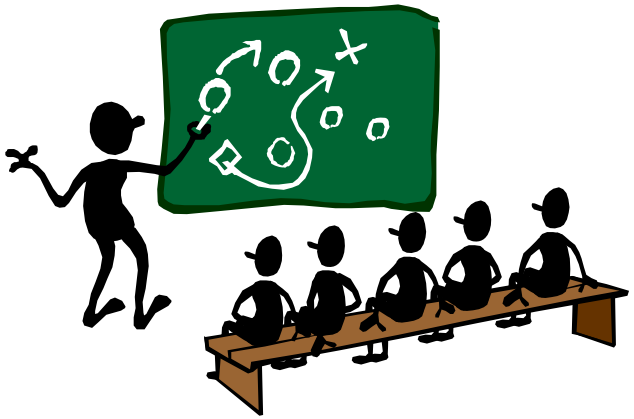
Mass Balance Approach

Capacity = CDF size - Space Occupied - Material Added + Material Removed



Approaches to Sustainability

- **Minimize the volume of dredged material placed into CDFs**
  - Reduce dredging needs
  - Improve dredging efficiency
  - Alternative placement areas
- **Manage CDFs to maximize capacity**
  - Maximize storage volume
  - Minimize sediment volume (dewater)
  - Facilitate removal
- **Recover capacity through beneficial use**



Dredging/Disposal Minimization

- **Reduce dredging needs**
  - Erosion control
  - Structures to minimize shoaling
- **Precision/alternative dredging methods**
- **Alternative placement**
  - Open water
  - Beach nourishment

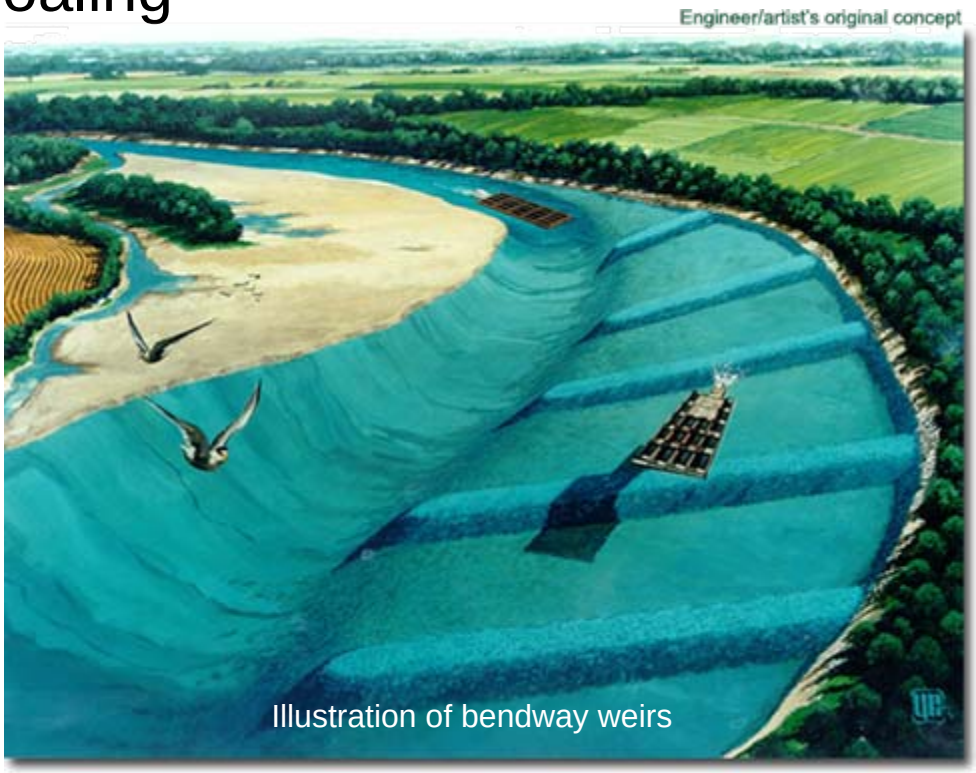


Illustration of bendway weirs

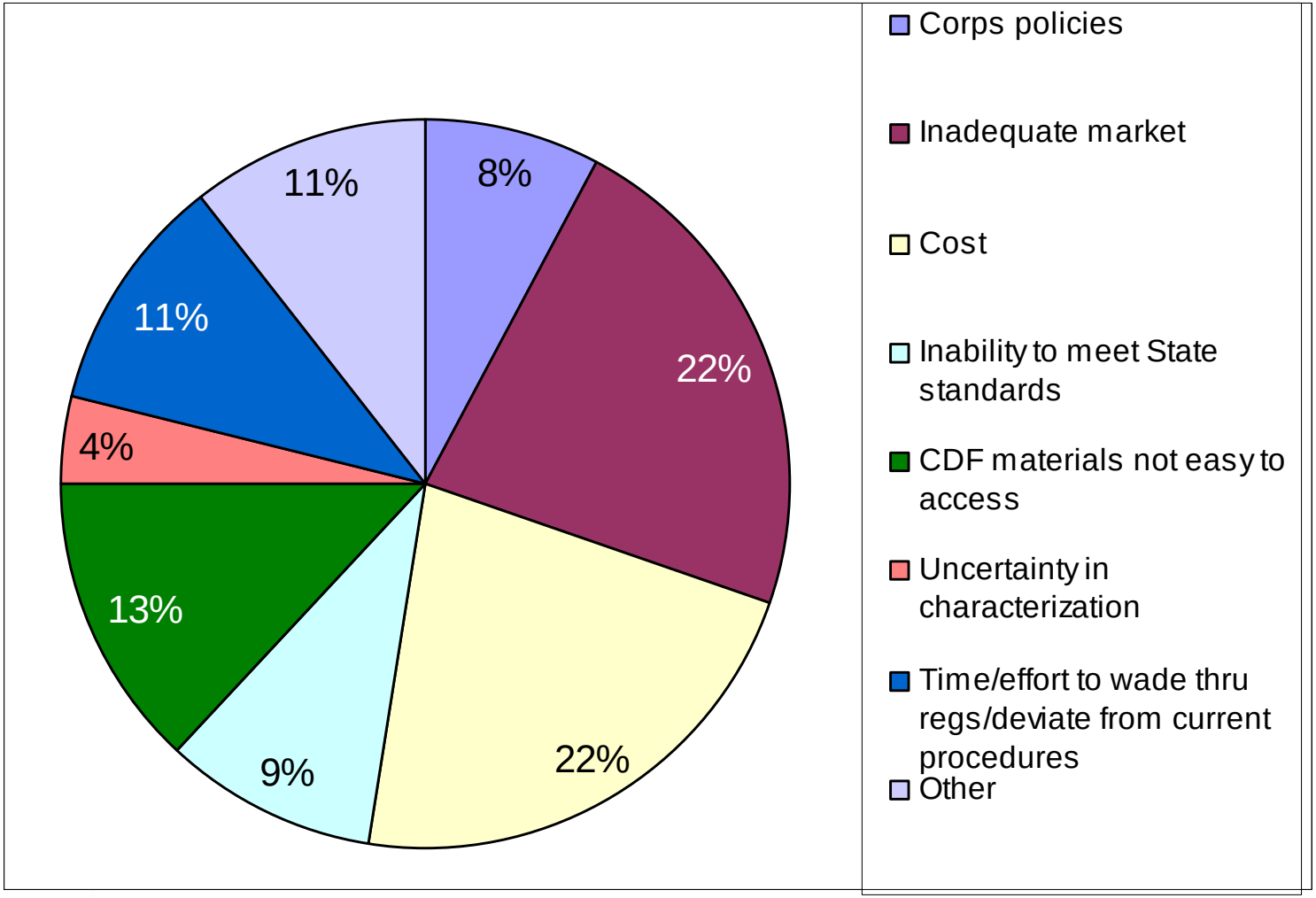
Management

- **Maximize CDF capacity**
  - Sound construction and expansion
  - Ideal placement
- **Minimize occupied volume (trenching, dewatering)**
- **Management to facilitate beneficial use**
  - Processing or staging areas
  - Active or passive separation
  - Compartmentalization
  - Blending
  - Provide access
- **Obstacles**
  - Inconsistent funding
  - Limited dredging budget

Beneficial Use

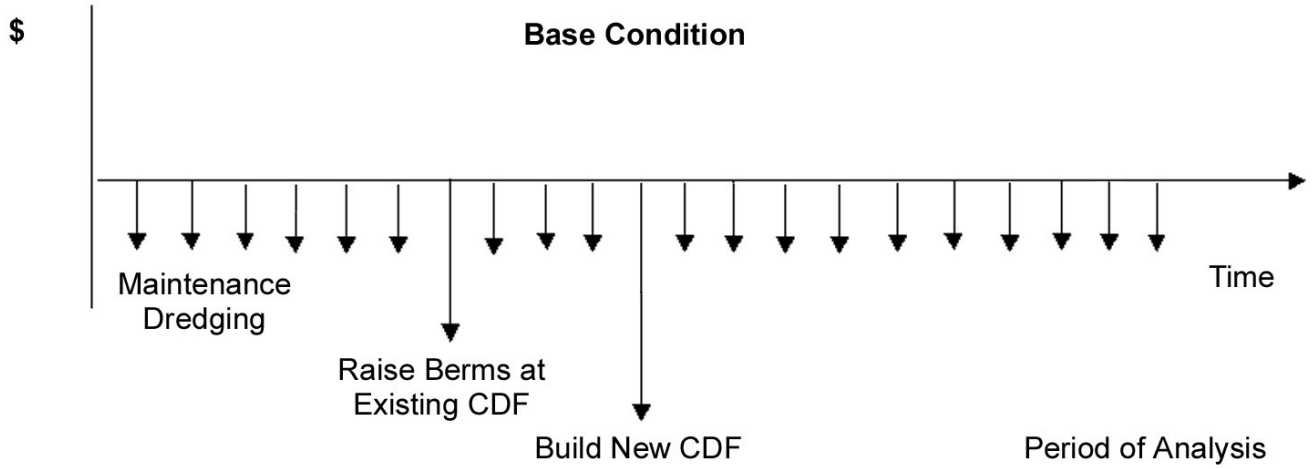
- **Obstacles**
  - Cost (rehandling, transport)
  - Policy (Federal Standard)
  - Cost sharing
    - **Unwieldy mechanisms (Section 204)**
    - **Funding limitations – public and private**
  - Limited advance planning
  - Criteria
- **Recommendations**

Obstacles to Beneficial Use of Dredged Material



Cost Optimization

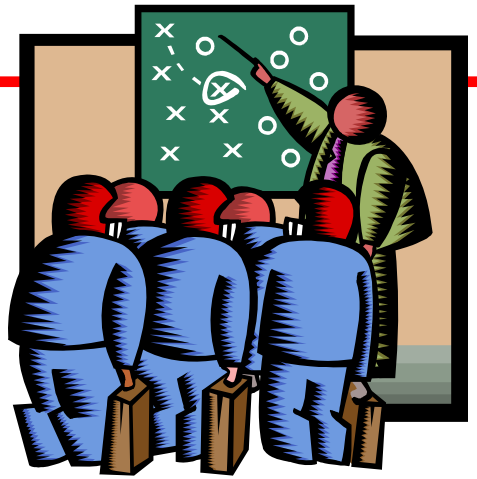
- **Present value comparisons**
  - Staged construction
  - Life cycle analysis
- **Economies of scale**



Findings

- **Capacity shortage – clearly an issue**
- **Multifaceted approach**
  - BU has most potential
- **Need BU policy roadmap**
- **Integrate planning and operations**
- **Agency coordination**

Strategy



- **Implementation**
  - **Collaboration**
    - Workshops, National BU Team?
    - “How to” tech notes
    - Website
  - **Innovative dredging contracts**
  - **Improve BU marketing**
  - **Sediment source reduction plan**
  - **CDF Inventory**
  - **Tools for cost/life cycle assessment of alternatives**
- **Research needs**

Identified Research Needs

- Establishment of Risk-Based Criteria
- Testing Protocols for Beneficial Use
- CDF Characterization
- Benefits Analysis Tool for DMMP
- Dredged Material Processing for Reuse
- Retro-Fitting for Sustainability
- CDF Construction
- Implementation of Sustainability Strategies

Implementation Plan

- **Step 1 –Real capacity recovery potential**
- **Step 2 – Assess site specific issues**
- **Step 3 –Develop a comprehensive, long term plan for sustainability**
- **Step 4 – Implementation, funding recruitment, permitting, formal agreements in place**

QUESTIONS?

- **Look for a Tech Report out later this FY**

http://el.erdc.usace.army.mil/dots/doer/doer.html