

River Engineering and Modeling

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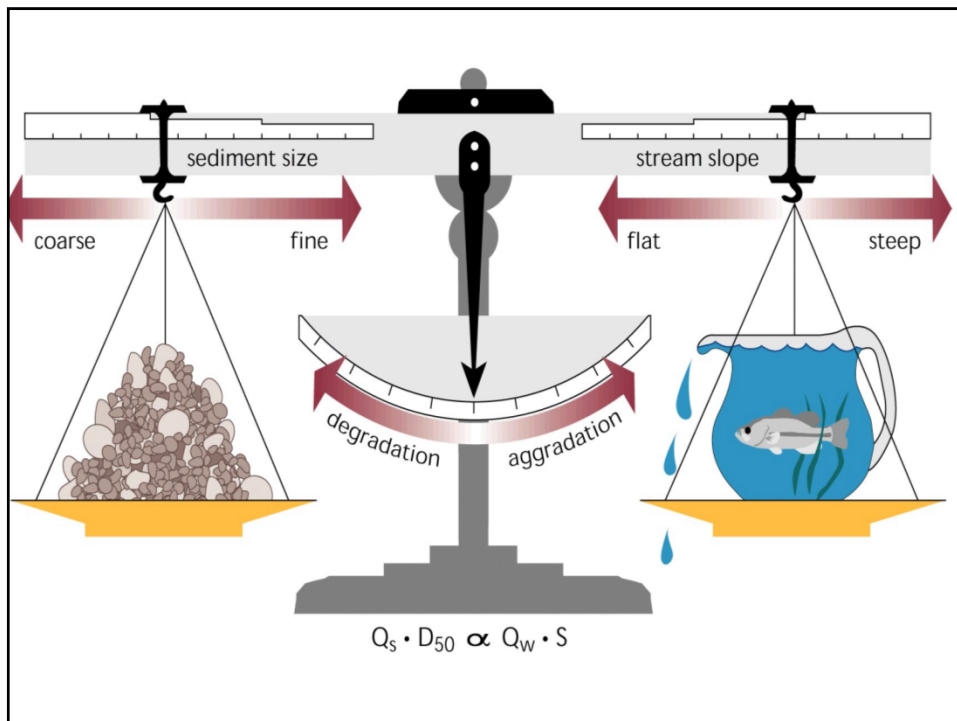
River Mechanics and Sediment Transport
Lima Peru – January 2016

Objectives

Brief overview of methods and case studies for river engineering and modeling:

1. Degradation, Scour and Gravel Mining;
2. Aggradation, Sedimentation and Flushing;
3. Dredging and Sediment Management.

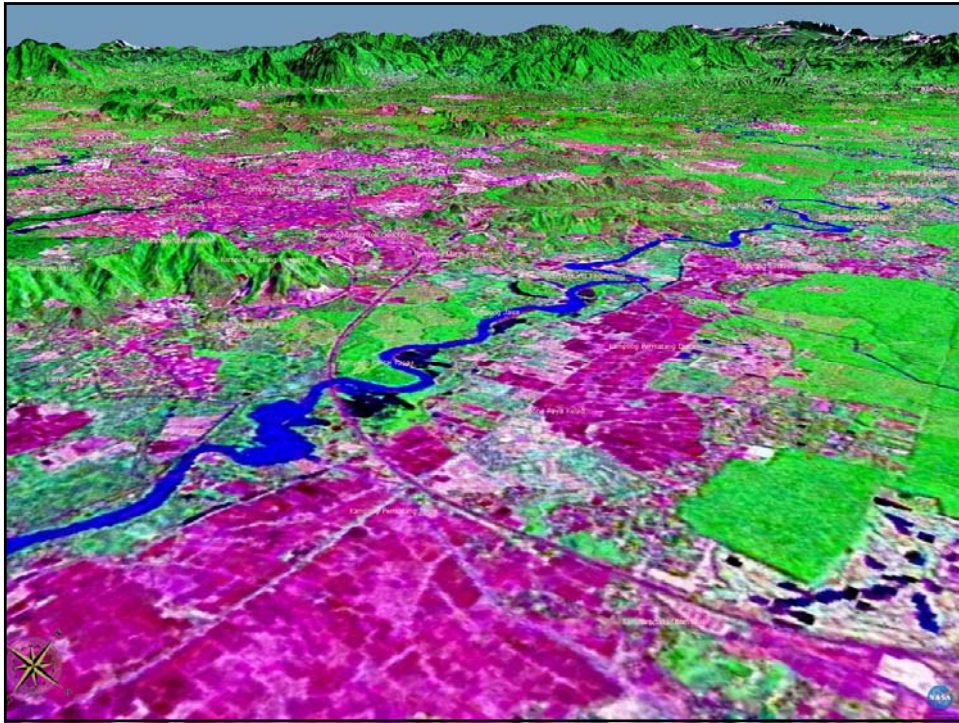
1. Degradation, Scour and Gravel Mining











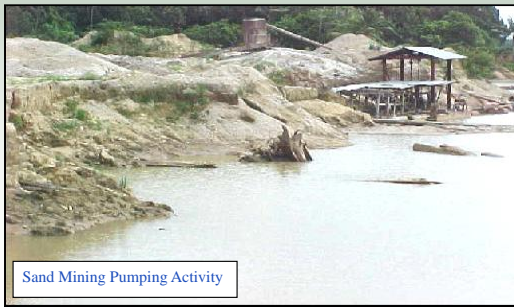
Sand and Gravel Mining



Kampong Kubang Bedengong



Kampong Lubok Segintah

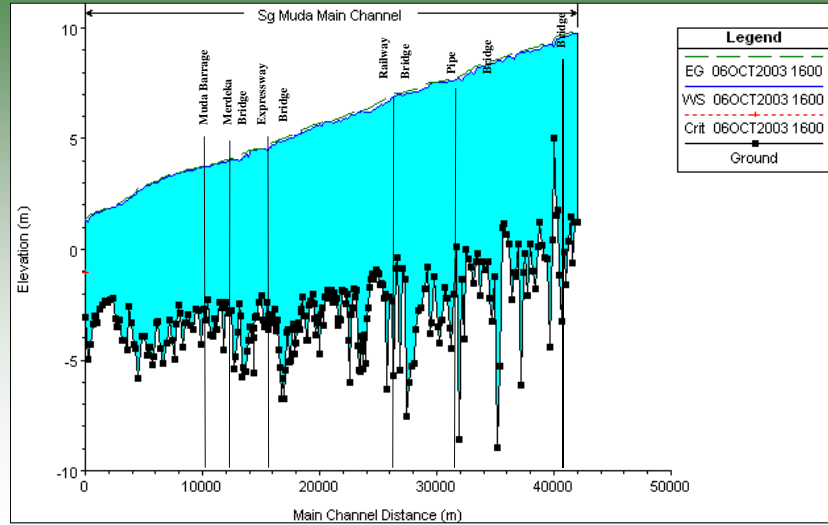


Sand Mining Pumping Activity

River Sand Mining



Longitudinal Flood Profile for Sg Muda ($Q=1340\text{m}^3/\text{s}$)

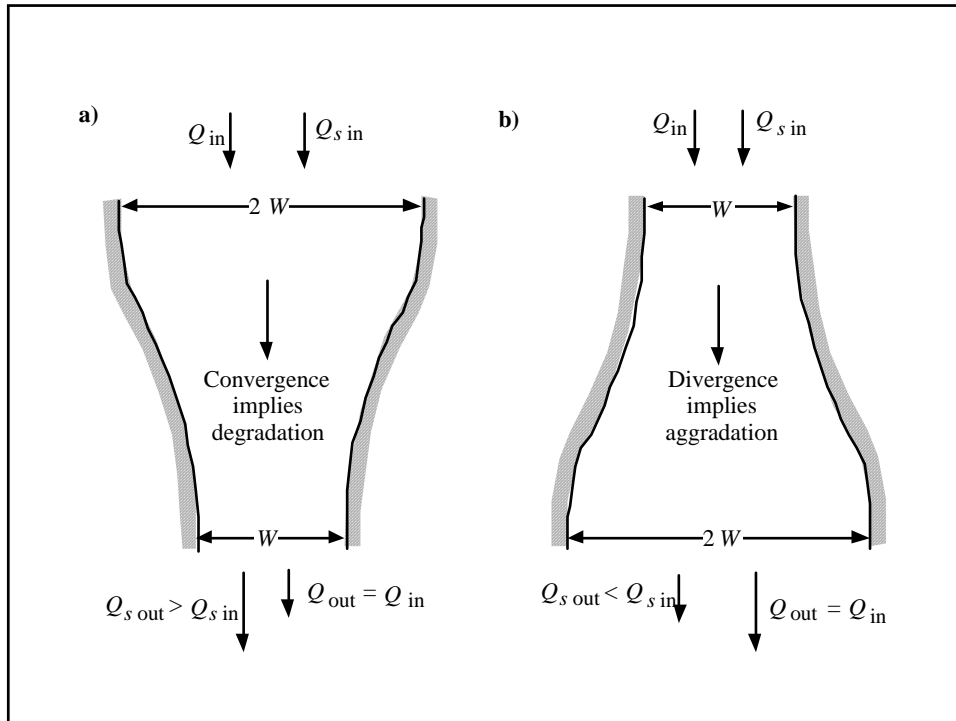


Off-stream Sand and Gravel Mining

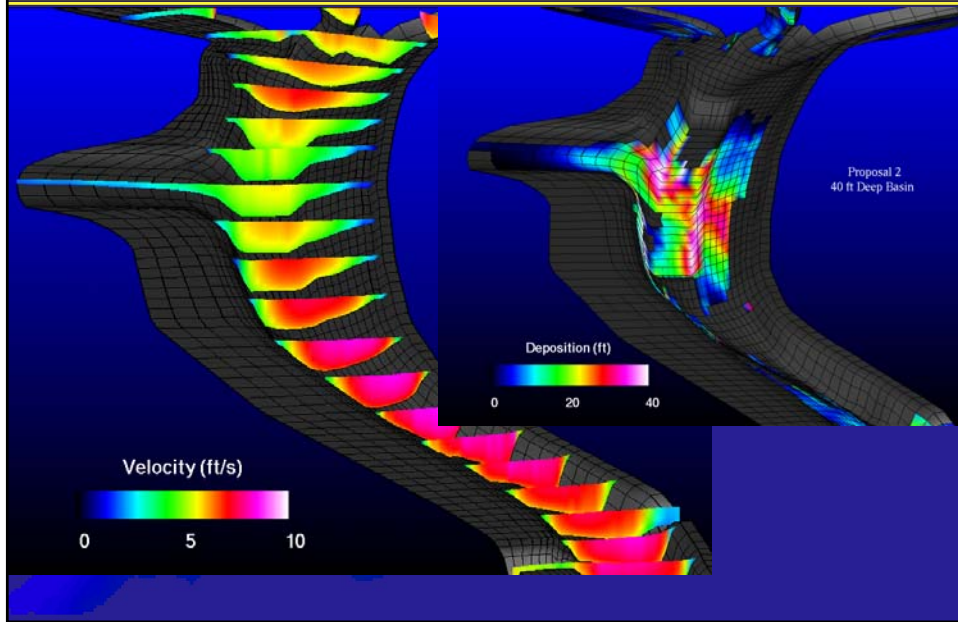




2. Aggradation, Sedimentation and Flushing



Example 3-D Model Mississippi



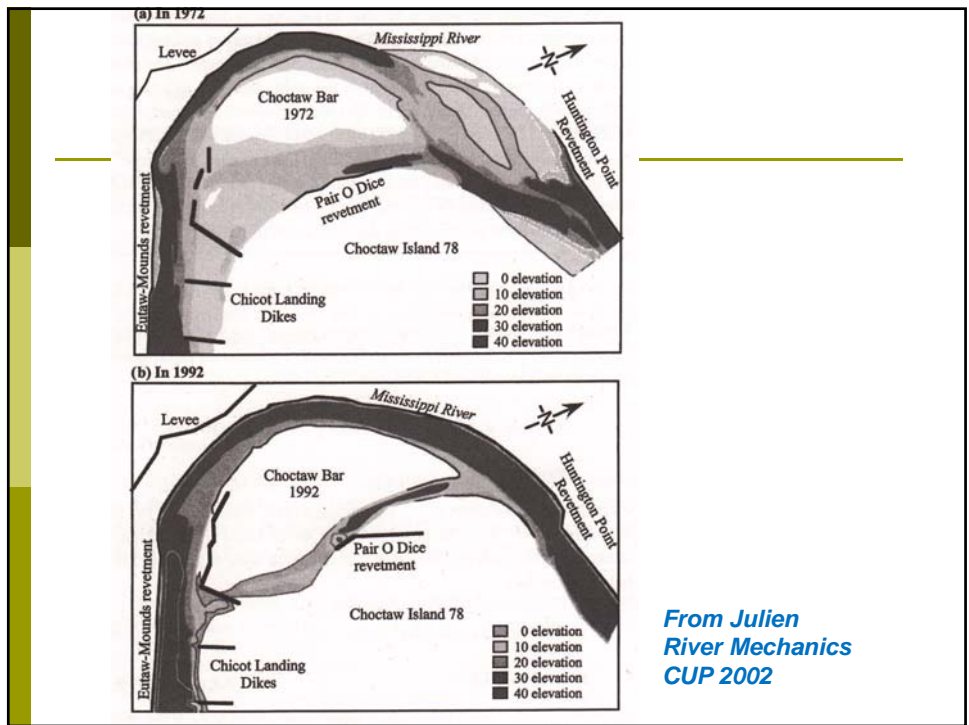
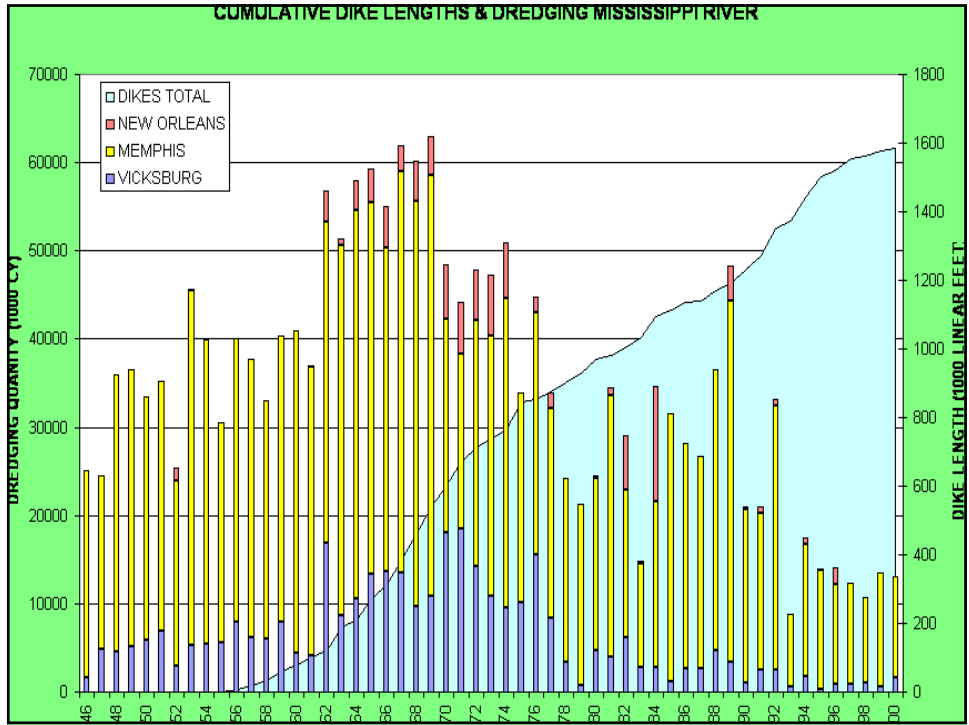
PGC1

Dykes



Slide 24

PGC1 Typical dike construction on the Mississippi River
Phil Combs, 8/29/2002



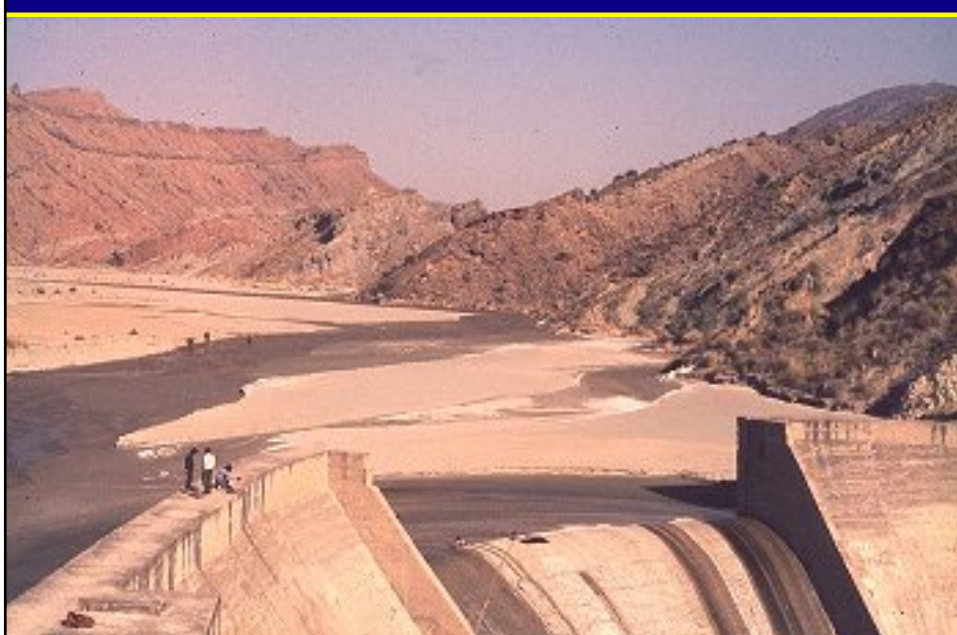
Locks and Dams



Sedimentation Problems Can Be Solved



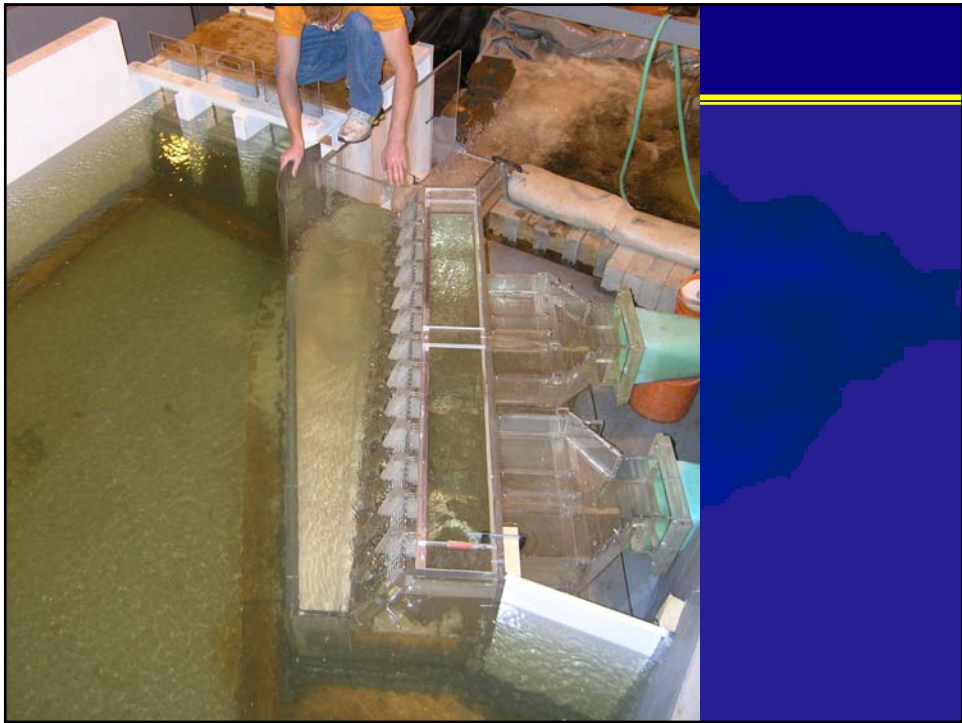
Bengal and Indus



Sediment Flushing



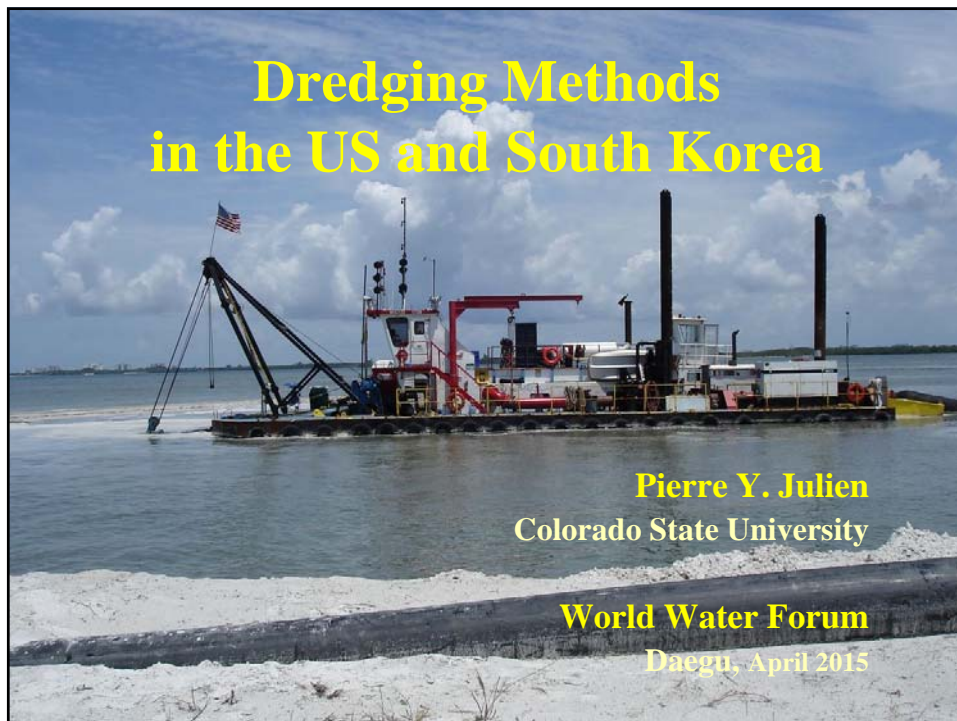
CSU Hydraulics Laboratory

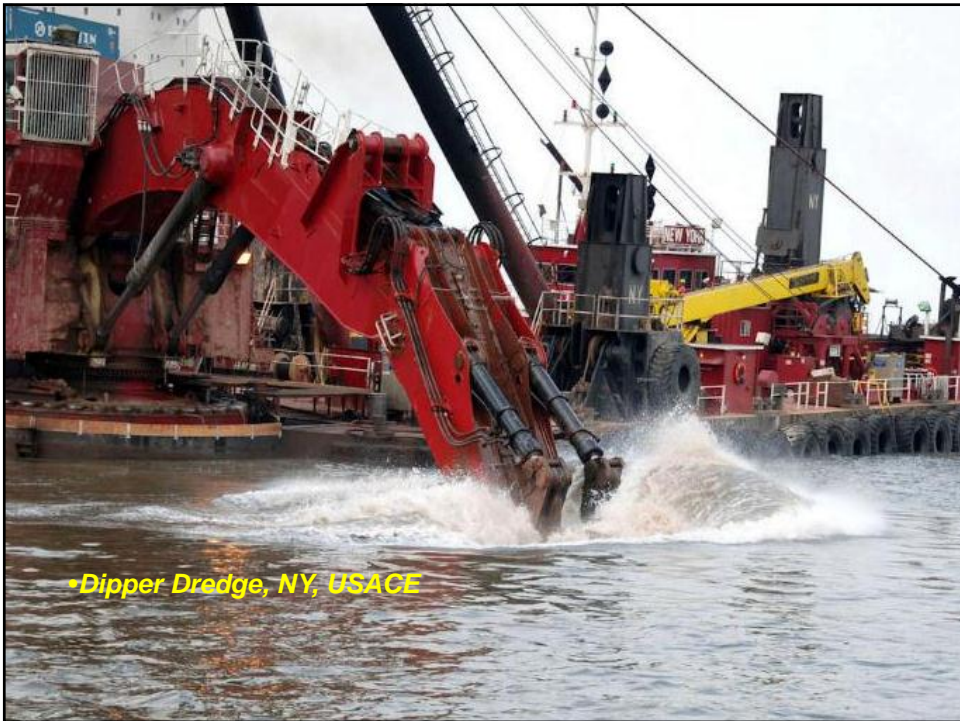
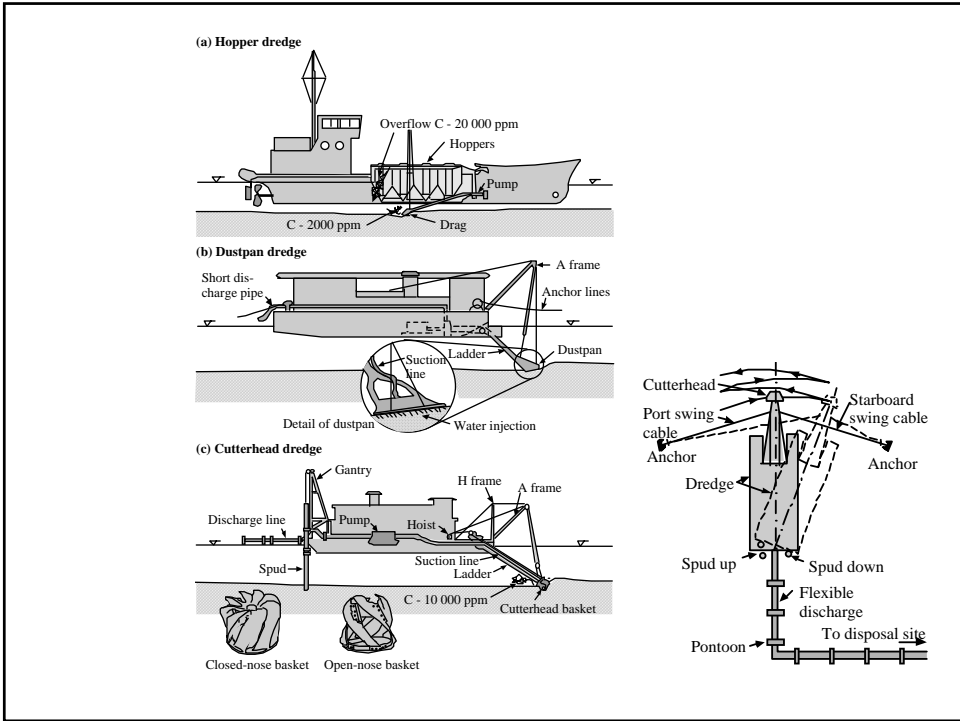






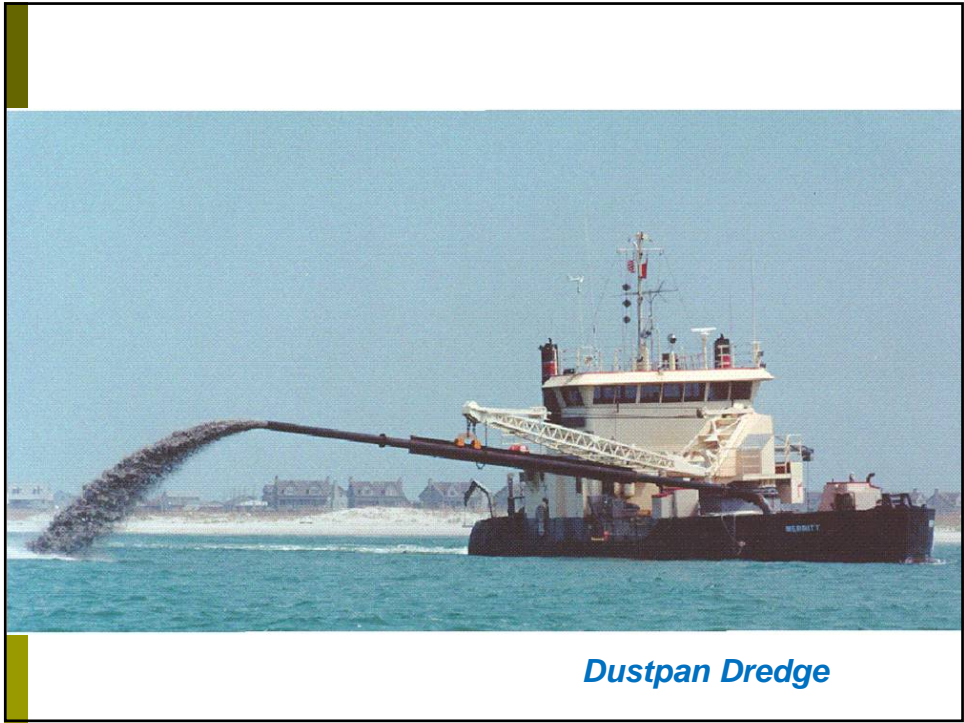
3. Dredging and Sediment Management











Cutterhead Dredge



Cutterhead Dredge



•Closed-nose Basket Cutterhead Dredge, Delaware River, USACE



•Open-nose Basket Cutterhead Dredge, Savannah River, USACE









