

# Sediment Sample Collection



# Why collect sediment?

To investigate...

- Trends in contaminant loading
- Potential effects on sediment and aquatic organisms
- Better indicator of long-term conditions than water samples



# Common Sediment Contaminants:

## Metals

Arsenic  
Chromium  
Copper  
Lead  
Mercury

## Pesticides

Chlordane  
DDT  
Diazinon  
Dieldrin  
Endrin

## Semivolatile Organics

PAHs  
Phthalates  
Phenols

## Volatile Organics

Benzene  
Carbon  
Tetrachloride  
Ethylbenzene  
Toluene  
Xylenes

# Use of Sediment Data

DRAFT 2006 Texas Water Quality Inventory  
Water Bodies with Concerns for Use Attainment and Screening Levels

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## 1006 Houston Ship Channel Tidal

	<u>Level of Concern</u>
<i>1006_04 Patrick Bayou Tidal</i>	
acenaphthene in sediment	CS
orthophosphorus	CS
pyrene in sediment	CS
total phosphorus	CS
phenanthrene in sediment	CS
mercury in sediment	CS
acenaphthylene in sediment	CS
fluorene in sediment	CS
nitrate	CS

## The Matrix:

Many of the contaminants of concern adsorb to fine particles. Sediment samples should consist of fine, recently deposited particulate matter.

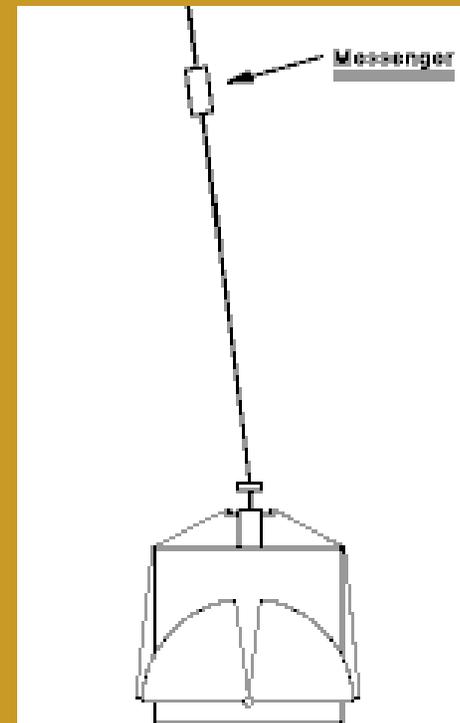
Avoid clay, gravel, bank deposits, disturbed/filled areas



# The Equipment:

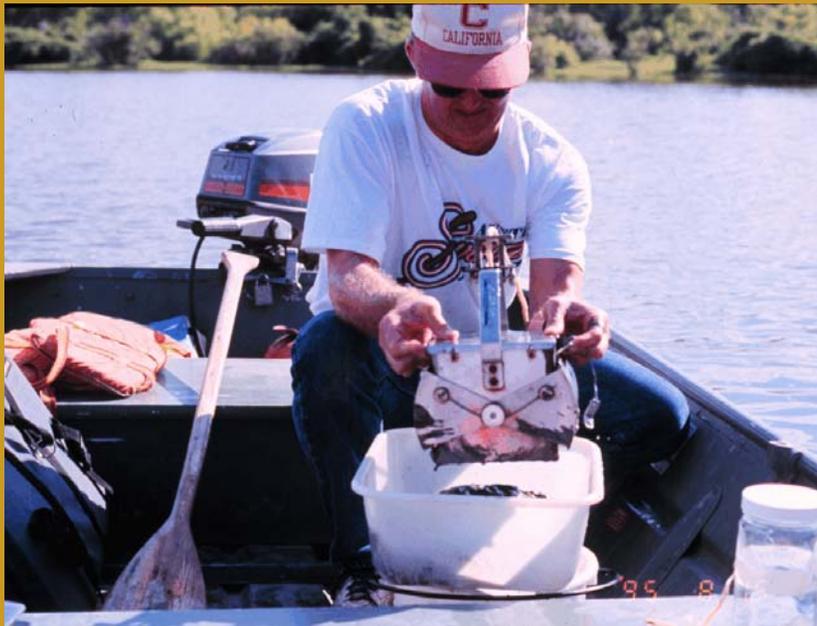
- Dredge
  - Used primarily in reservoirs and estuaries (though may be used in larger rivers with depositional areas)

## Eckman



# Large Rivers, Reservoirs, and Bays...

Dredges are primarily used from a boat in deeper water but can be used with a pole for wadable water bodies.



- Small, lighter weight
- Needs area with soft mud, sand, silt
- Easily fouled by twigs, leaves, rock, etc.

# Wadeable Streams...

## The Equipment:

- Scoop - Teflon or Stainless Steel
  - May be used in streams or rivers where dredges are not very effective



- Requires calm, shallow water
- May be used in areas with multiple substrate types
- Fines may wash out in water column
- Take care not to dig too deep; need surface layer

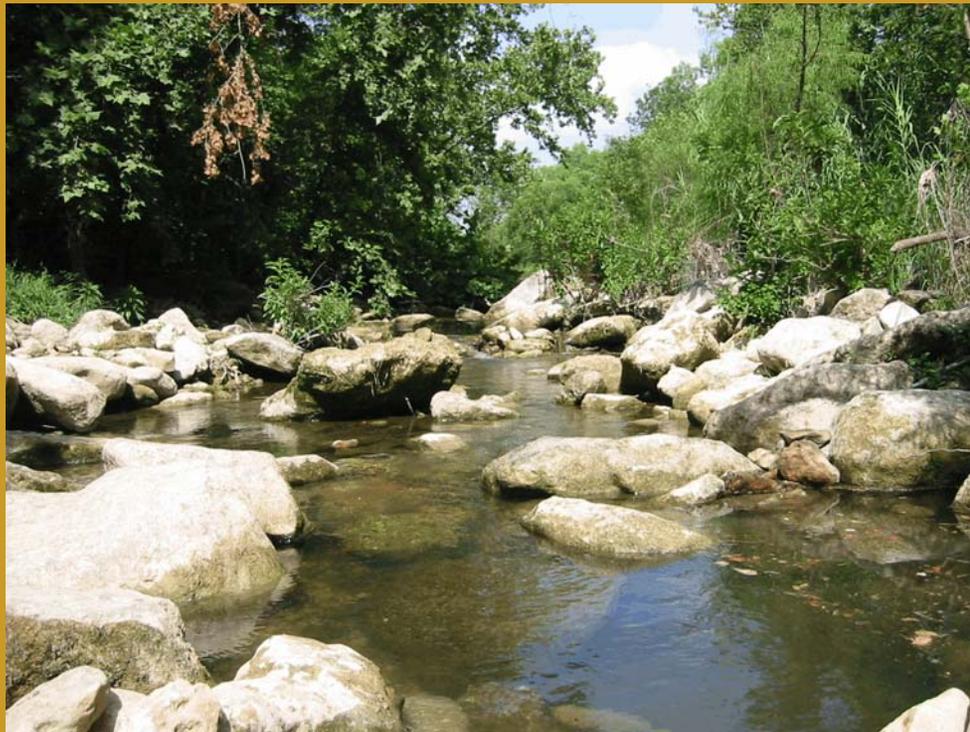
## Site Selection: Streams and Rivers



Sometimes you really  
have to hunt.....

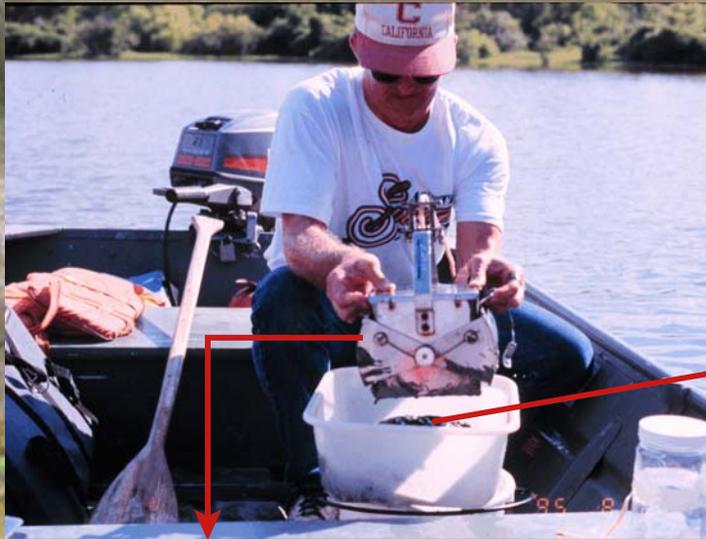
## Site Selection: Streams and Rivers

- Collect sample from depositional areas



- Inside bends with pools
- Downstream of obstacles (boulders, islands, sandbars)
- Avoid collecting next to the bank; the material tends to be soil from the bank and not river sediment

# Collecting the sample...



A minimum of 3 grabs are put in a clean pan/bucket.



Sediment grab may be stratified with a light colored aerobic layer and a black anaerobic layer.

Subsamples are composited in a clean pan/bucket with teflon or stainless steel scoop



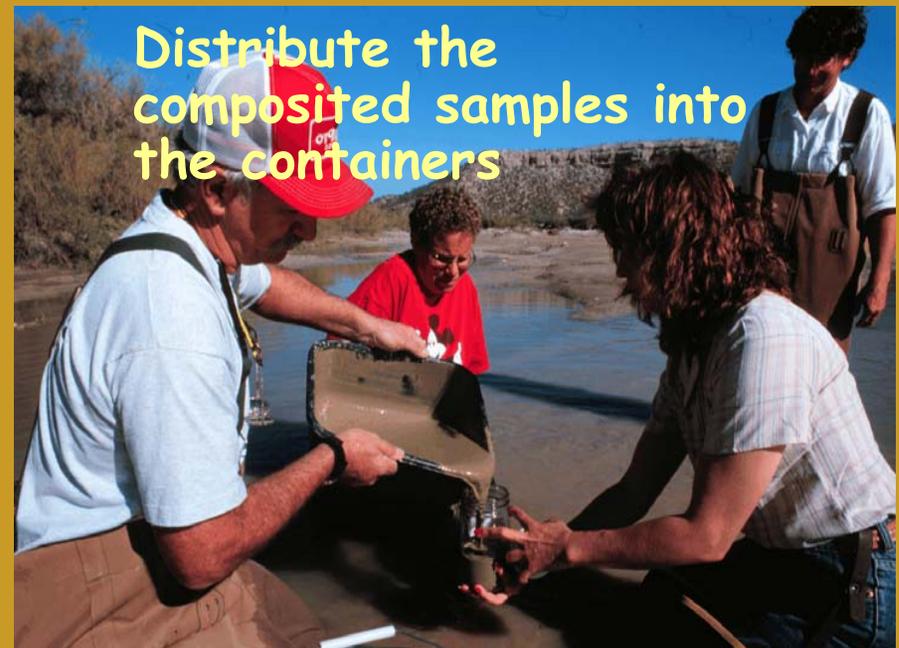
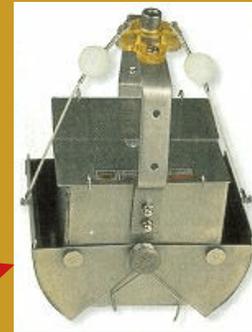
# Collecting the sample...

*Conventionals, Metals,  
Pesticides, and Semivolatiles:*

✓ Composite min. 3 grabs\* in  
pan, mix, and transfer to  
sample containers



\*Collecting by hand  
requires multiple scoops  
to meet the required  
sample volume



Avoid transferring  
leaves, sticks, rocks,  
and any other debris

Questions?

