

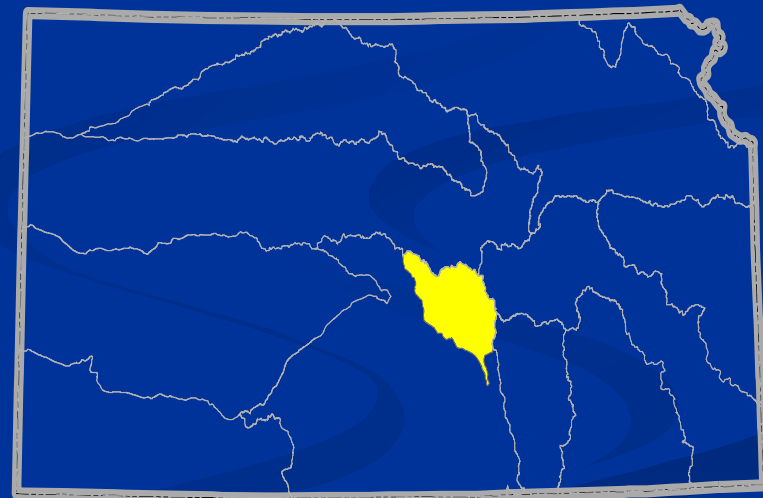


# Geomorphic Stream Assessment and Monitoring: Little Arkansas River, KS

Tim Keane, Phil Barnes and Jeff Neel

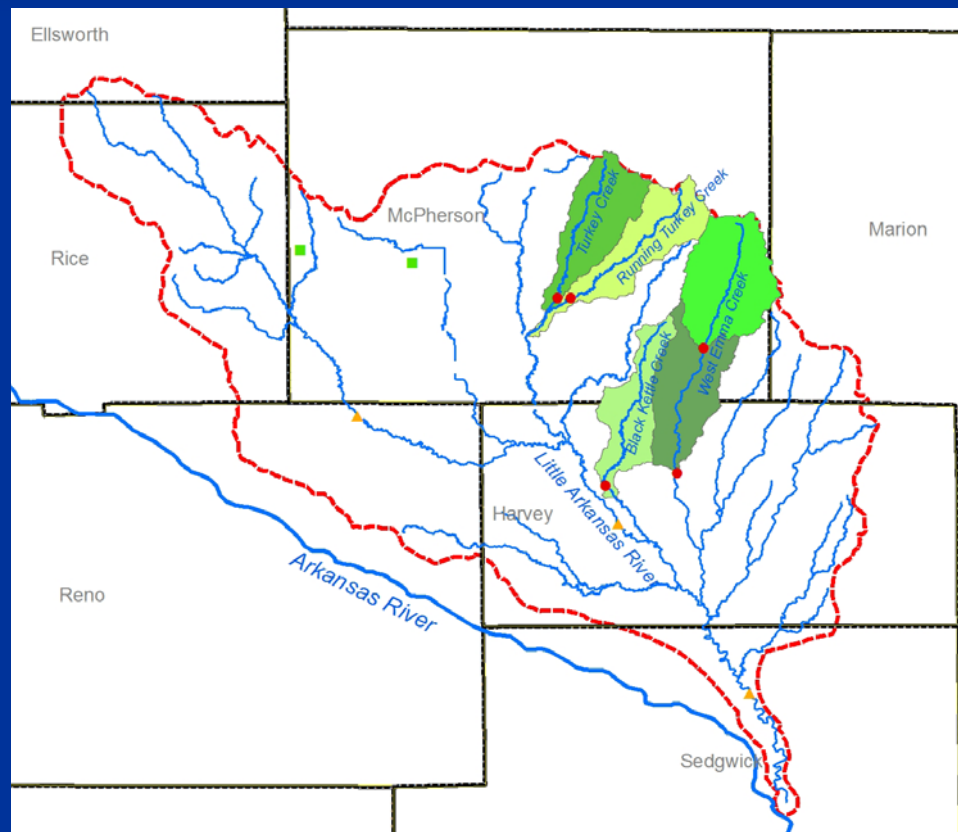
# Purpose

- USDA-CSREES Project is aimed at measurement and subsequent modeling of sediment sources, transport and deposition in Little Arkansas River watershed.
- Geomorphic stream assessment will be used to predict and measure sediment contributions from stream bed and banks.

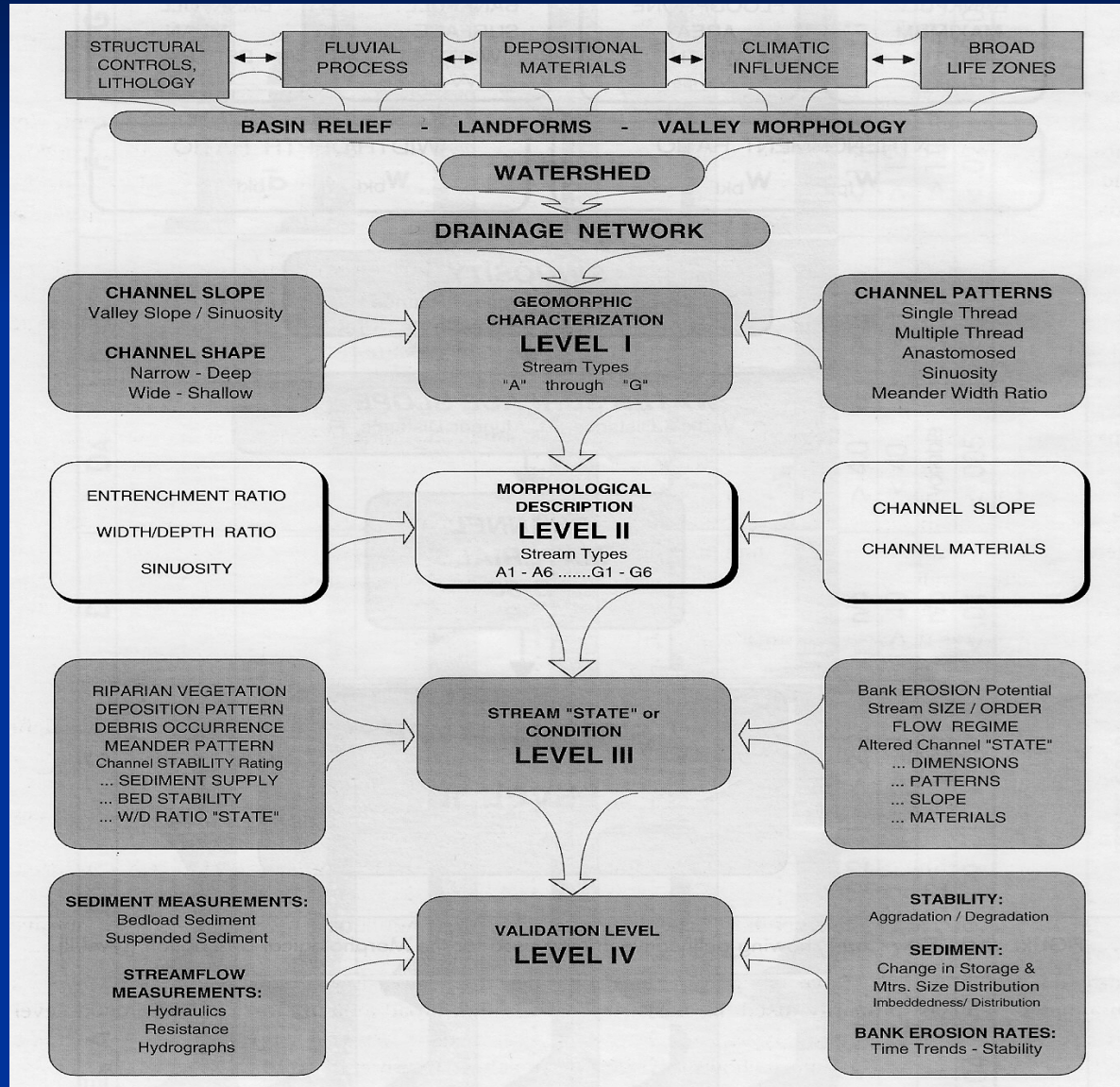


# Responsibility

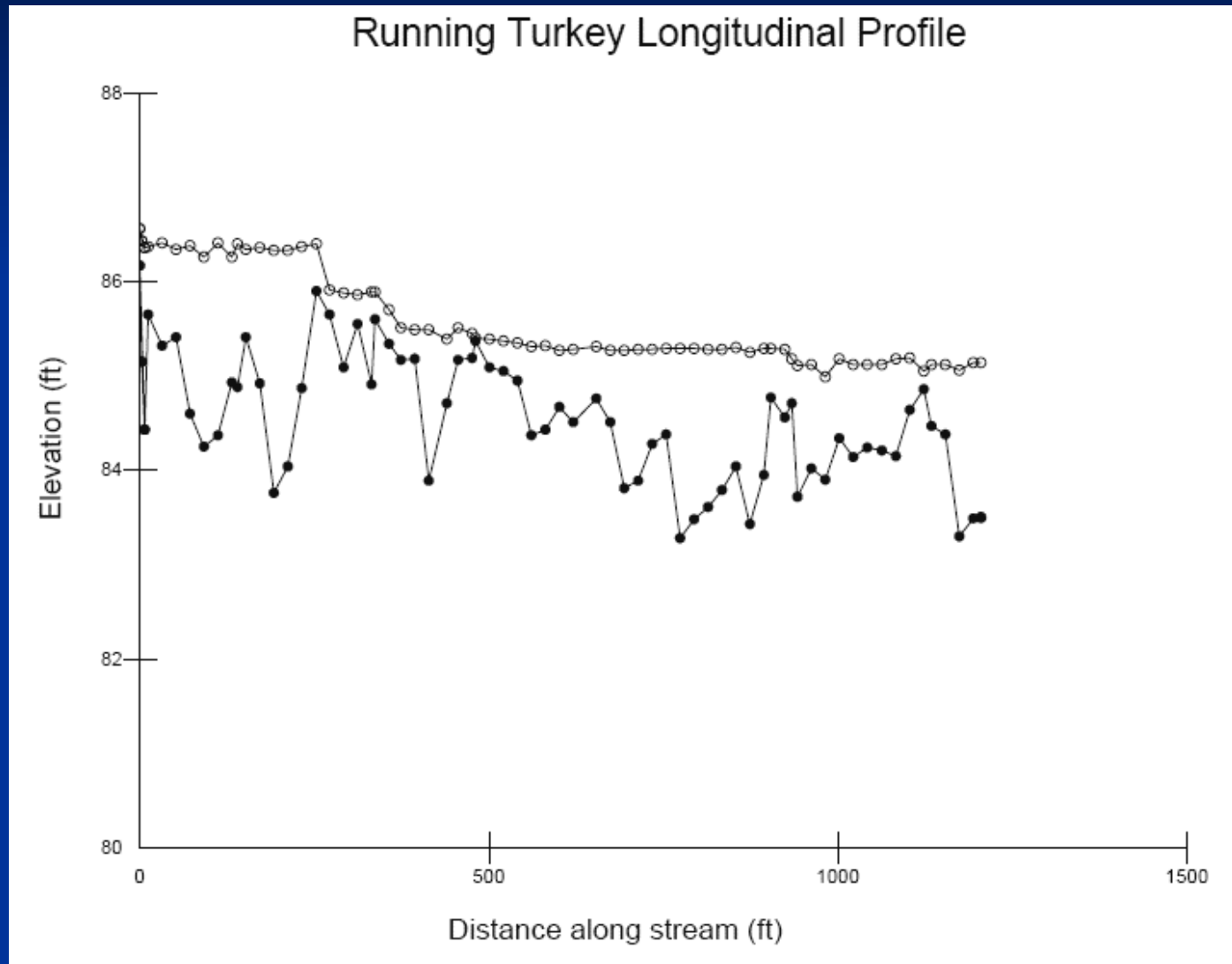
- To evaluate sediment and channel morphology dynamics in monitored stream reaches where different management practices are being employed.



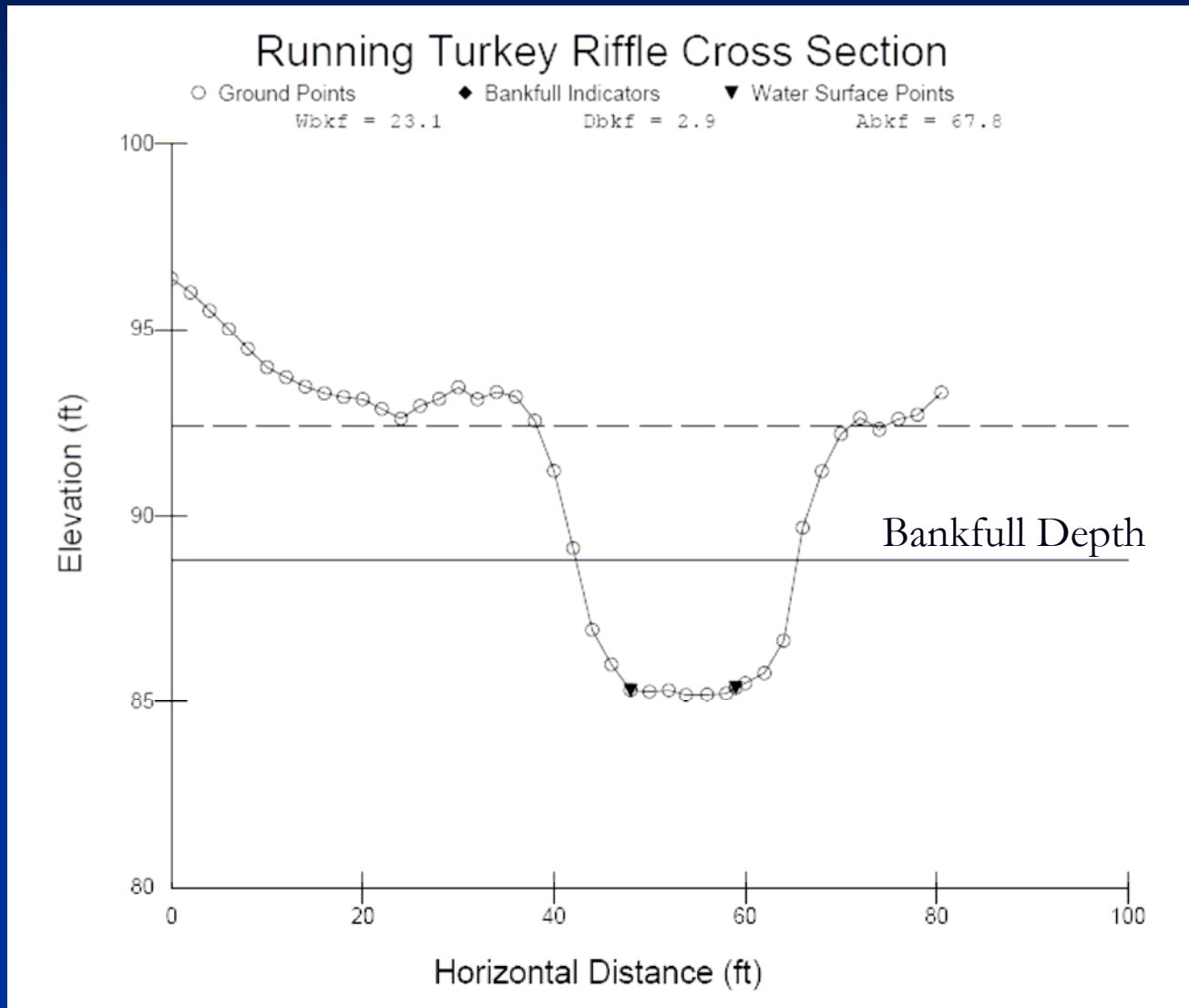
# Baseline Measures: Rosgen



# Methods: Profile



# Methods: Dimension



# Riffle: Scour Chains



# Pool: Bank Profile, BEHI, NBS



## Report

### Input Data

08/30/06

Bankfull Height (ft)	2.7
Bank Height (ft)	2.7
Root Depth (ft)	2.7
Root Density (%)	45
Bank Angle (degrees)	75
Surface Protection (%)	0
Total Bank Length (ft)	1
Total Reach Ln (ft) *	0

Bank Material Adjustment

0

Bank Stratification Adjustment Yes

5

- Use Colorado Erosion Data (1989)
- Use Yellowstone Erosion Data (1989)
- User Specified Bank Erosion Rates

### Select a Near Bank Stress Method

NBS Method #1: Channel Pattern and/or Depositional Features for Adjustments in Near-Bank Stress

Links

#1

#2

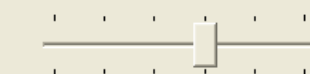
#3

#4

#5

#6

#7



Very Low

Extreme

### Results

Override BEHI Calculation

BEHI Numerical Rating 27.1

BEHI Adjective Rating Moderate

NBS Estimate Method #1

NBS Numerical Rating 0

NBS Adjective Rating High

Predicted Erosion (yd<sup>3</sup>/yr) 0.07

Predicted Erosion (ton/yr) 0.09

\* Note: This includes the entire length of the reach and not just the individual BEHI length. Length must be the same for all BEHIs.

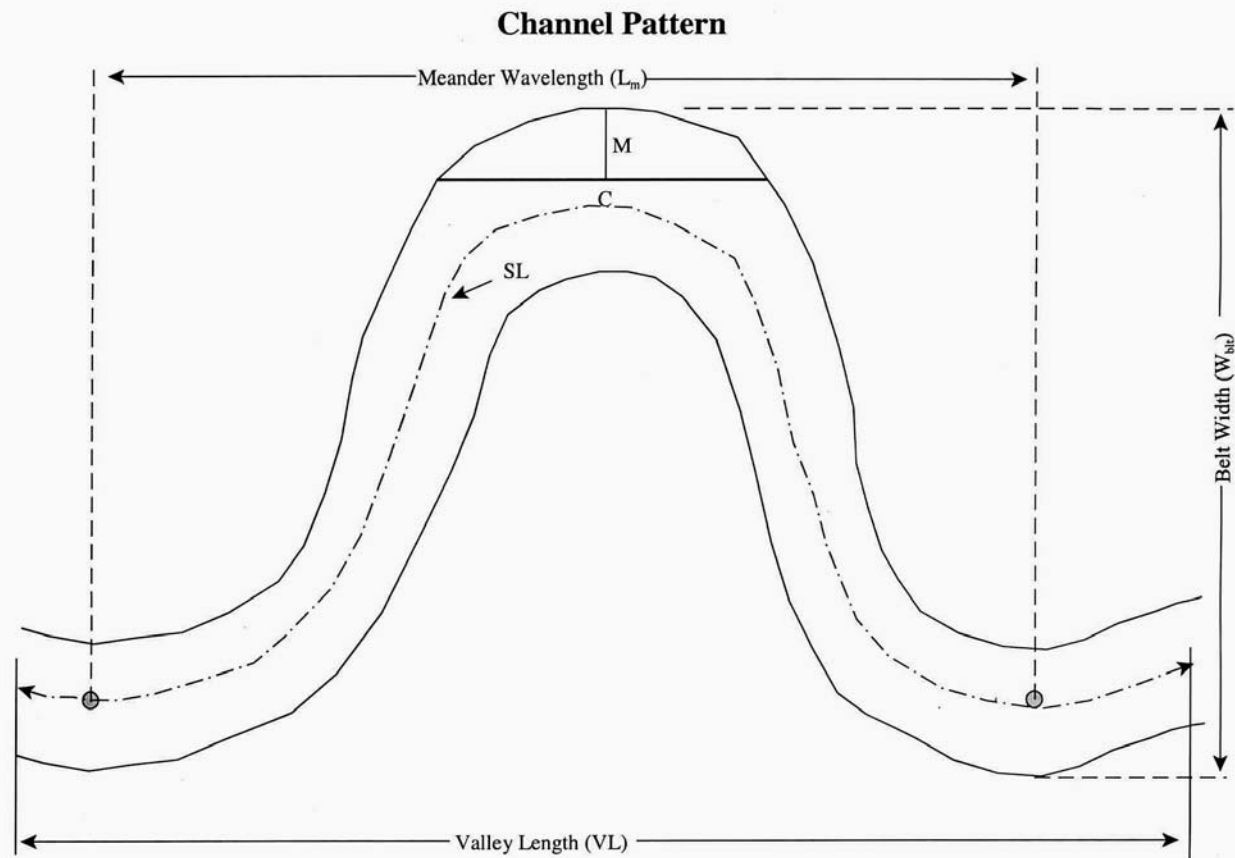
Create a Reach-Scale Bank Summary Report



# Pool: Bank Pins

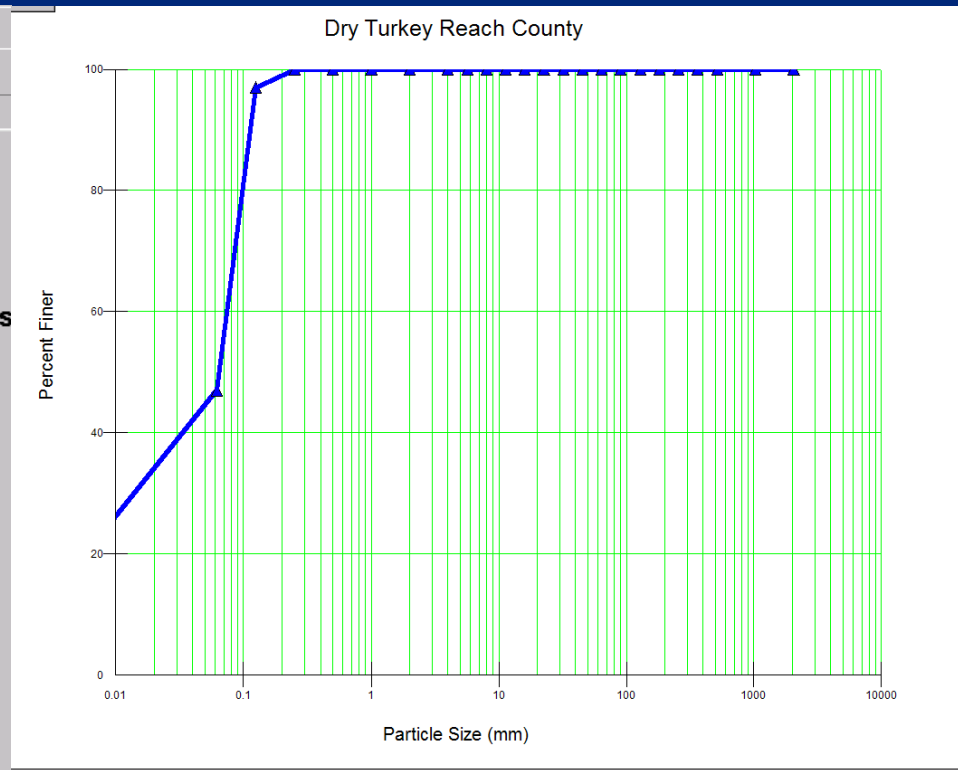
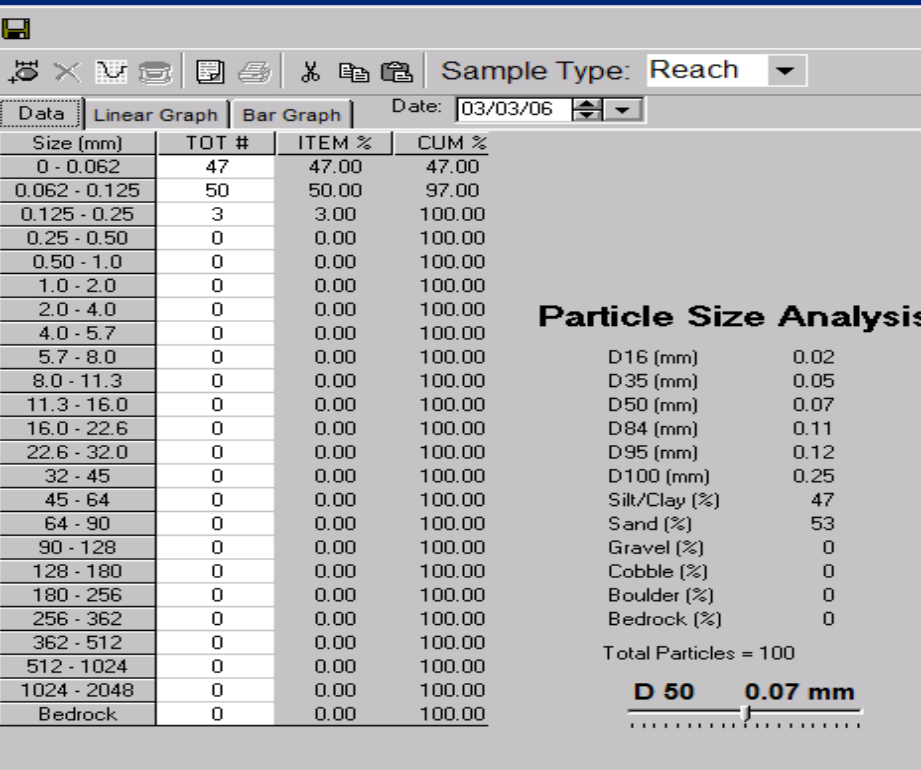


# Methods: Pattern



Adapted from Rosgen, 1996

# Methods: Sediment



# Active Measures

- Measured at cross-section at our near  $Q_{bkf}$
- Velocity
- Discharge
- Suspended load (depth integrated)
- Bedload

# Reach Assessment

- Longitudinal Profile
- Cross Sections: Riffle, Pool, Glide, Run
- Sediment Sample (Pebble Count)
- Riparian Vegetation Community Survey
- BEHI, NBS, and Pfankuch
- Pattern – Sinuosity, ROC,  $L_m$ , and etc.
- Bar Sample – Entrainment Calculations

# Outcomes and Applications

- Local Issues
- Broader Context
  - BEHI/ NBS curves for Midwestern landscapes
- Comparison/ Coordinated/ Synthetic Opportunities
  - WRAPS
  - P in streams
  - Kansas Wildlife and Parks
  - Etc.

# Communication



# Questions

