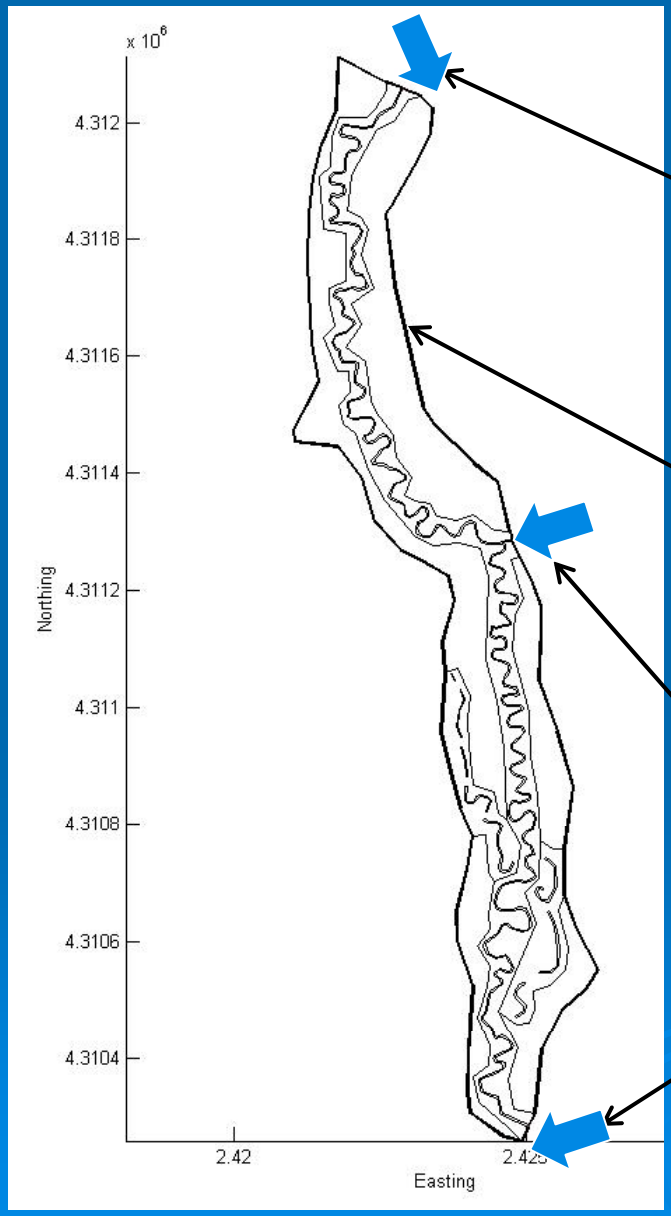
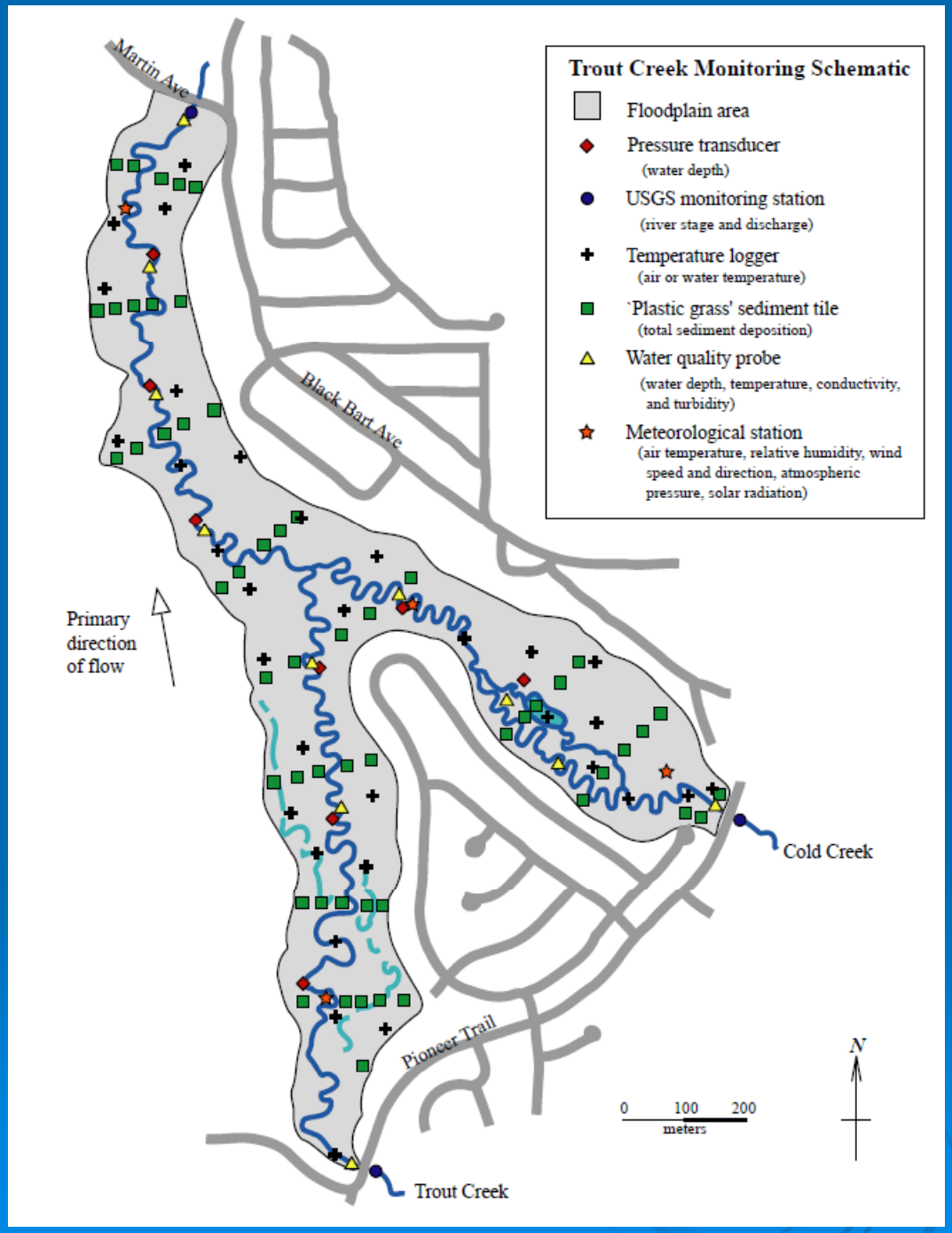
Boundary Conditions



Prescribe water depth leaving

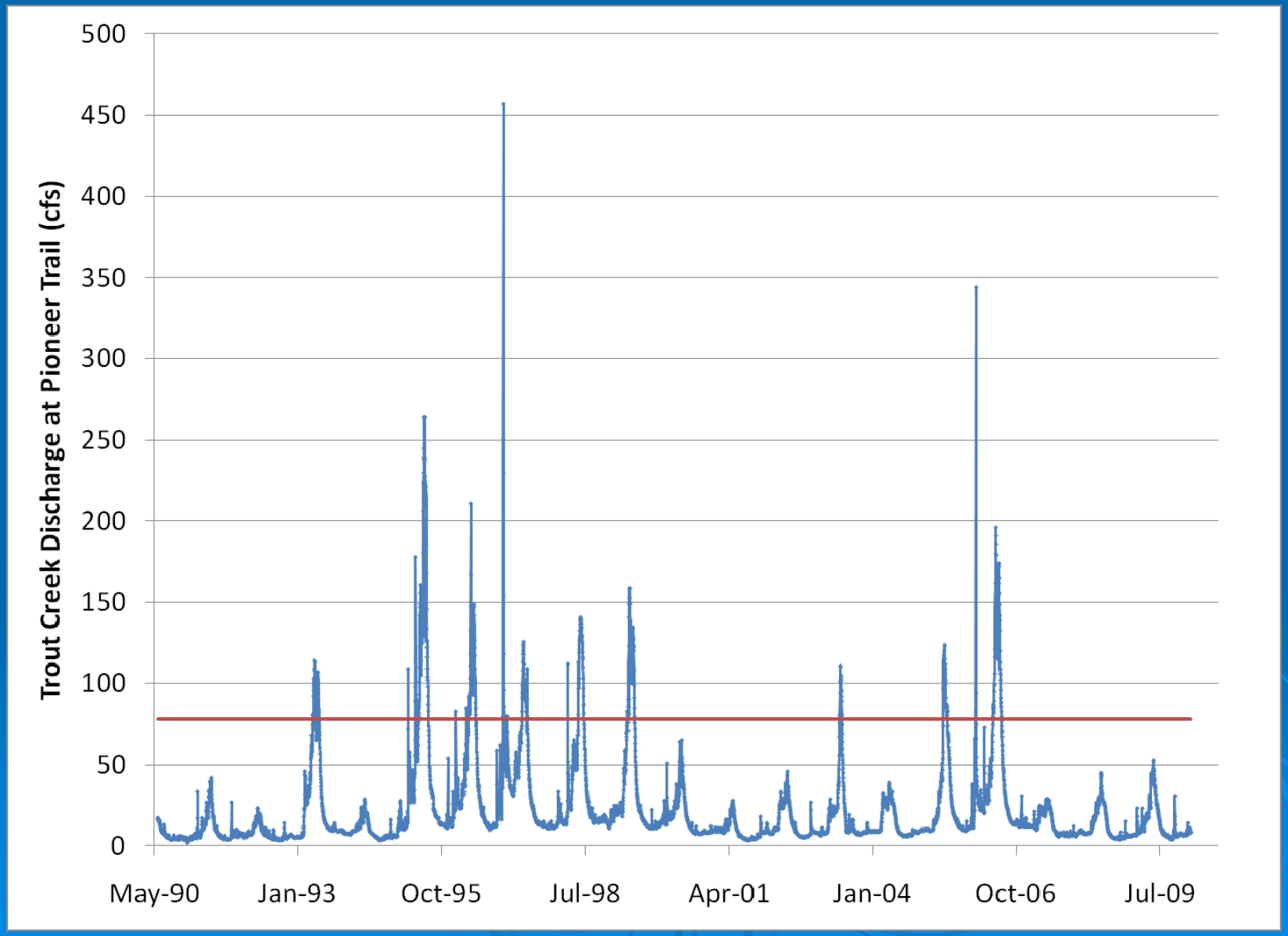
No flow boundary

Prescribe flow and suspended sediment concentration entering

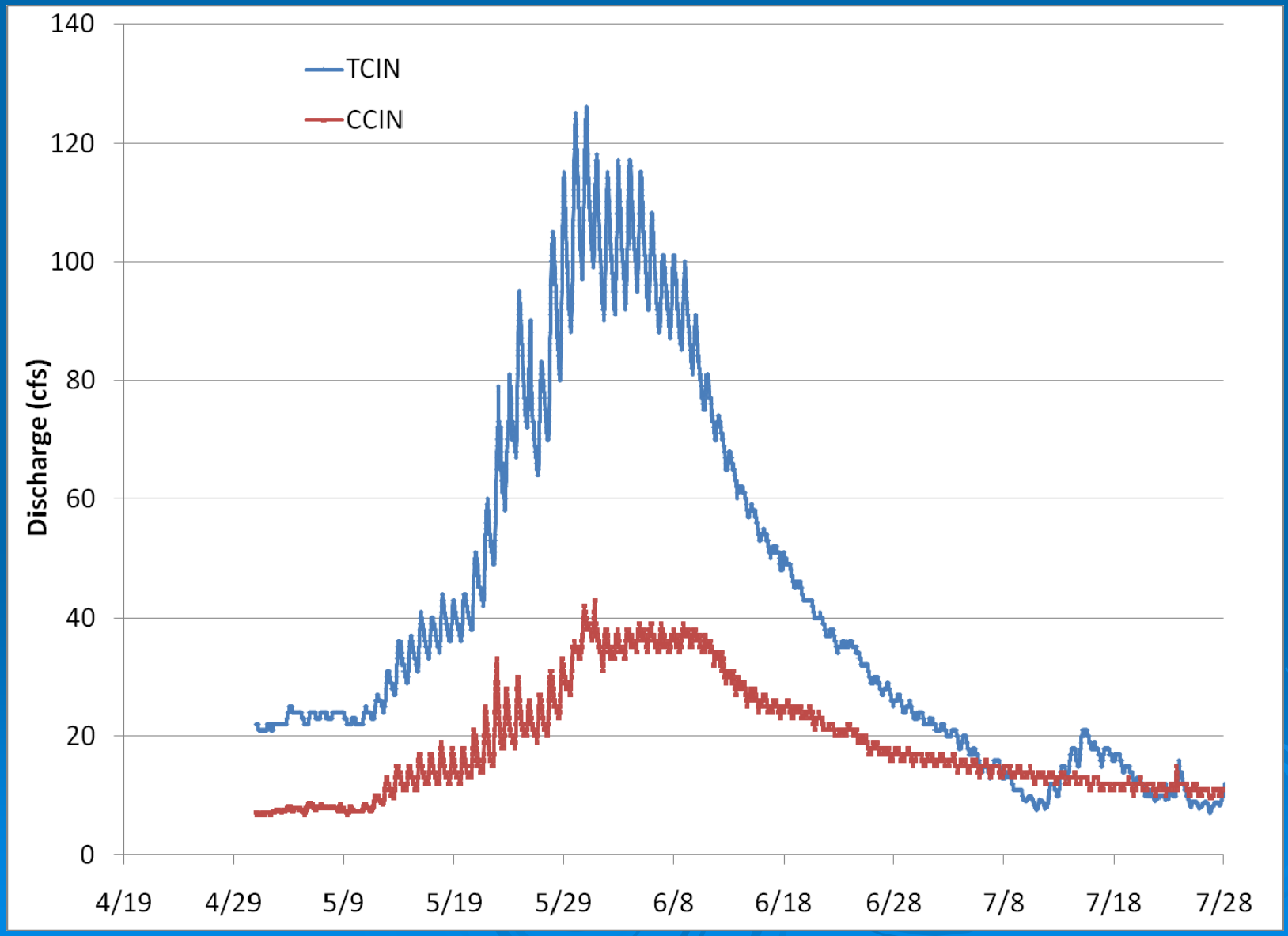


Monitoring Network

Trout Creek Discharge Record

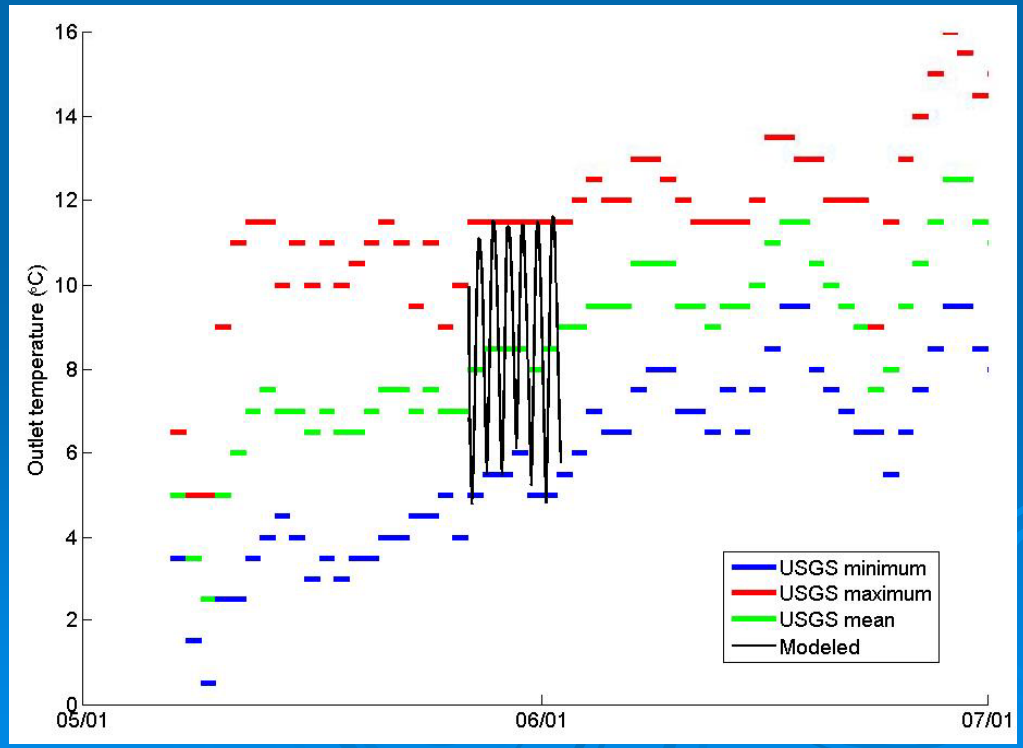


Spring 2003 Flooding



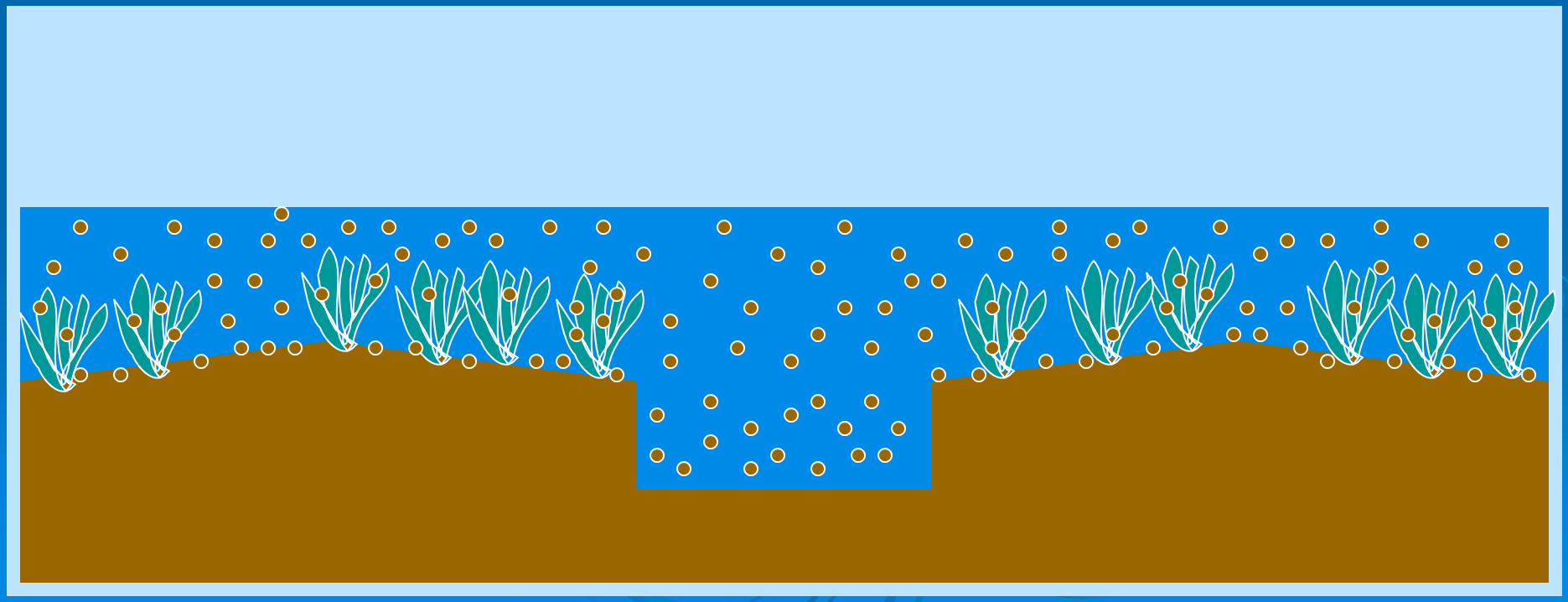
Model Calibration

- Incipient flooding at correct discharge
- Outlet water velocities
- Evapotranspiration + infiltration
- Outlet water temperatures



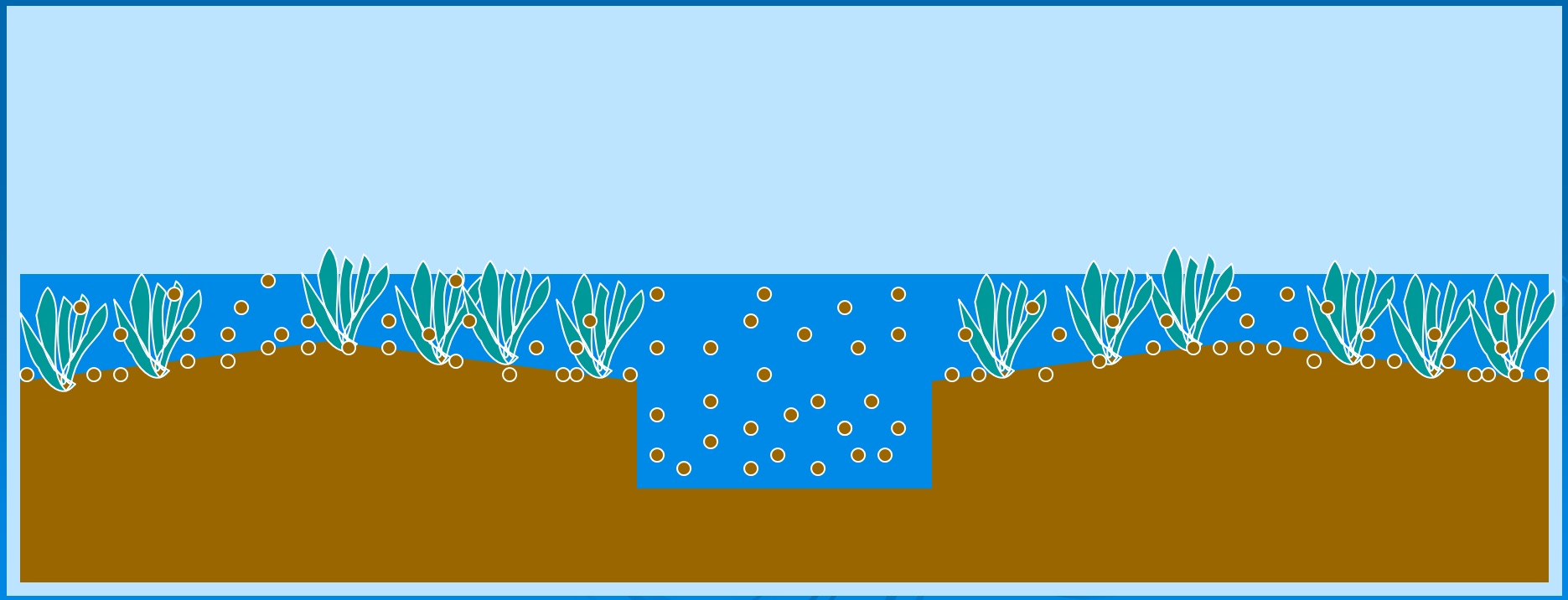
Fine Sediment Removal Mechanisms

1. Settling
2. Removal from impaction on submerged vegetation



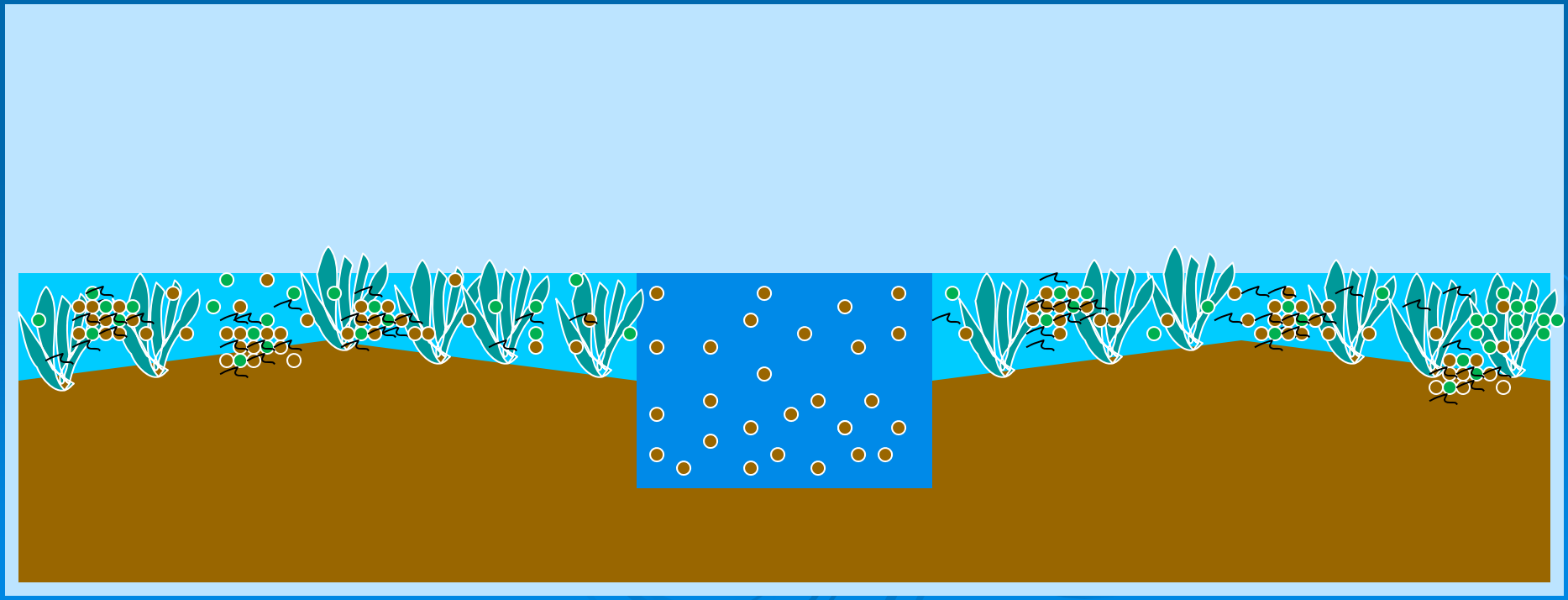
Fine Sediment Removal Mechanisms

1. Settling
2. Removal from impaction on submerged vegetation
3. Stranding from infiltration + evapo-transpiration

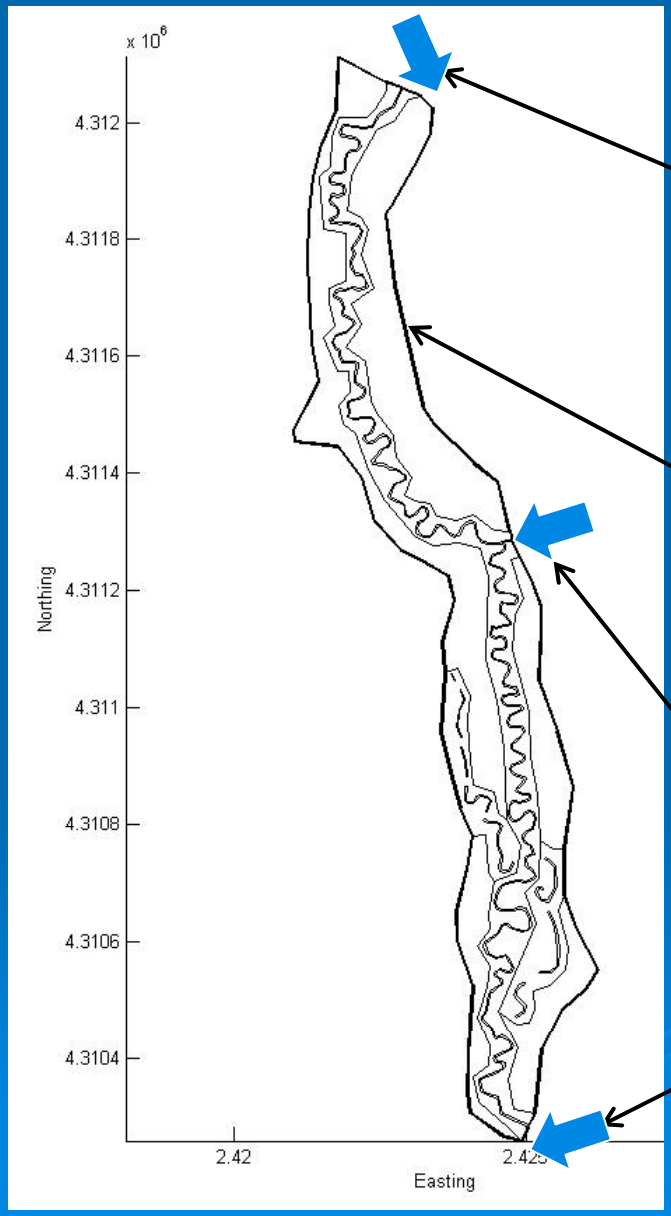


Fine Sediment Removal Mechanisms

1. Settling
2. Removal from impaction on submerged vegetation
3. Stranding from infiltration + evapo-transpiration
4. Flocculation



Boundary Conditions



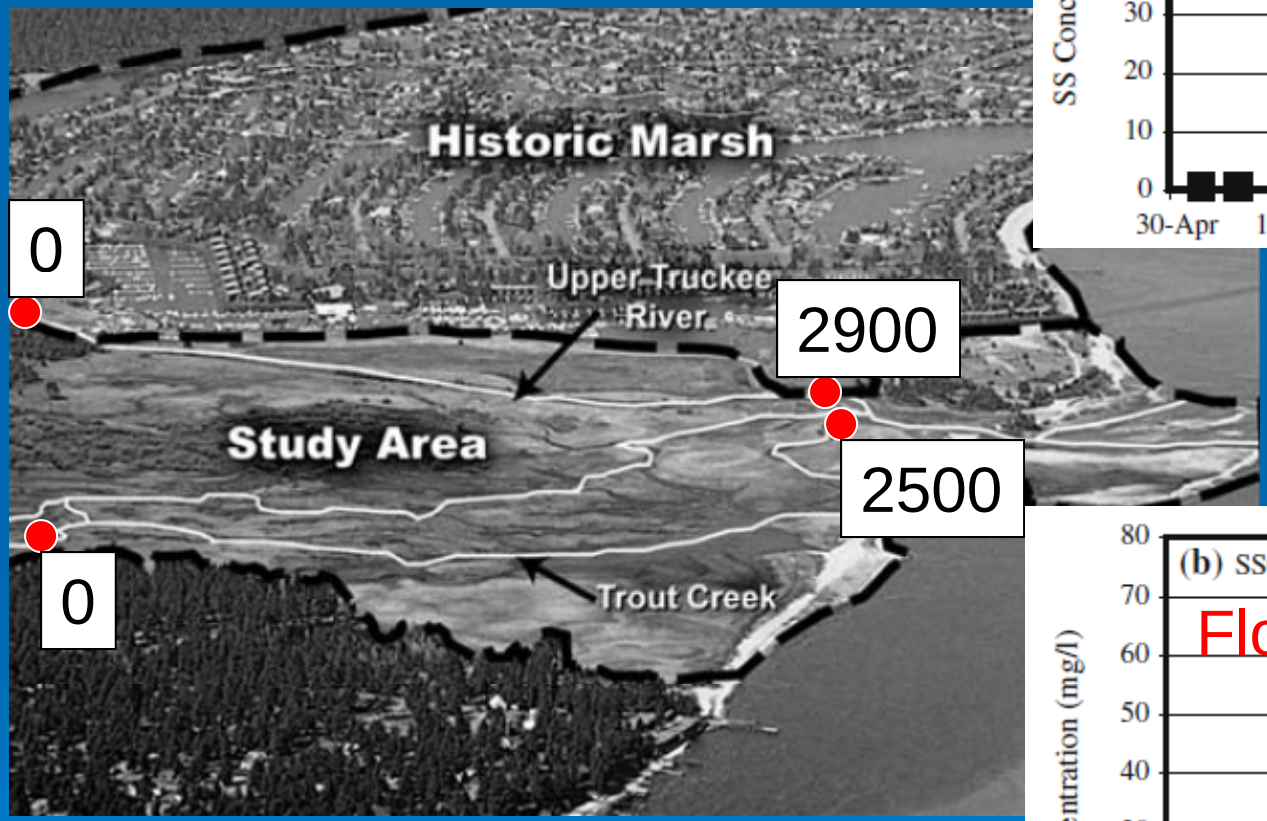
Prescribe water depth leaving

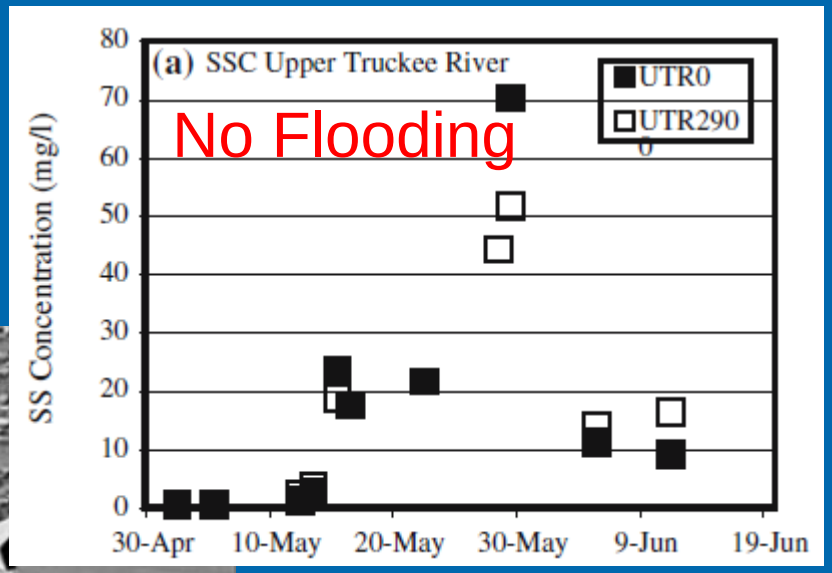
No data on suspended sediment leaving

No flow boundary

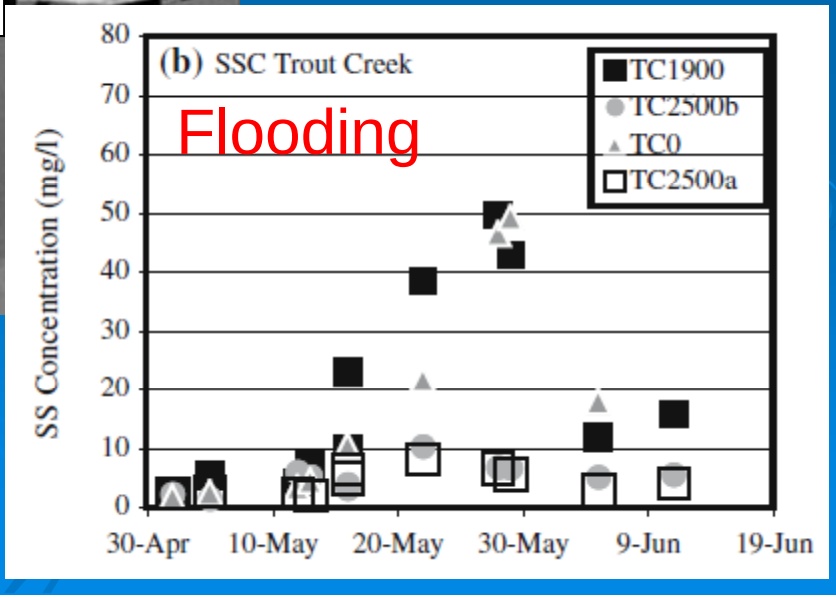
Prescribe flow and suspended sediment concentration entering (USGS and LTIMP)

Stubblefield et al. Study





Spring 03 snowmelt



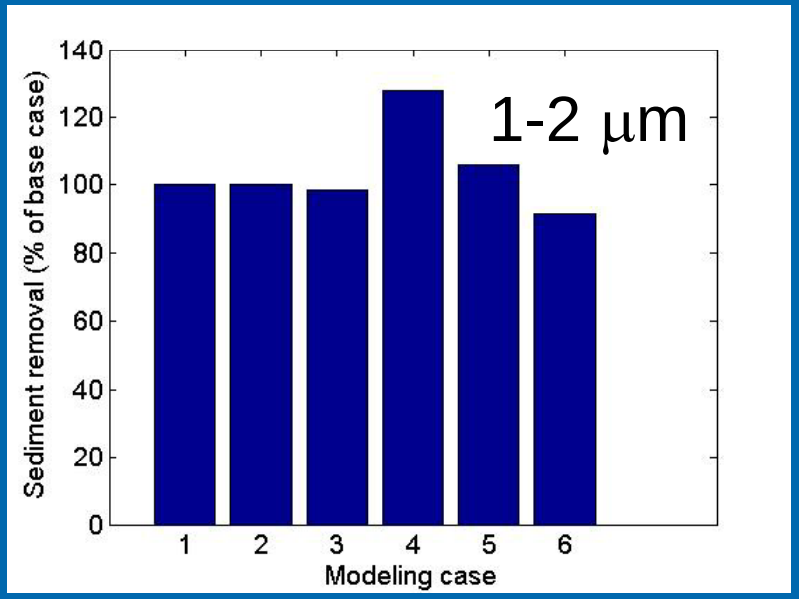
Fine particles retained with the same efficiency as total SS

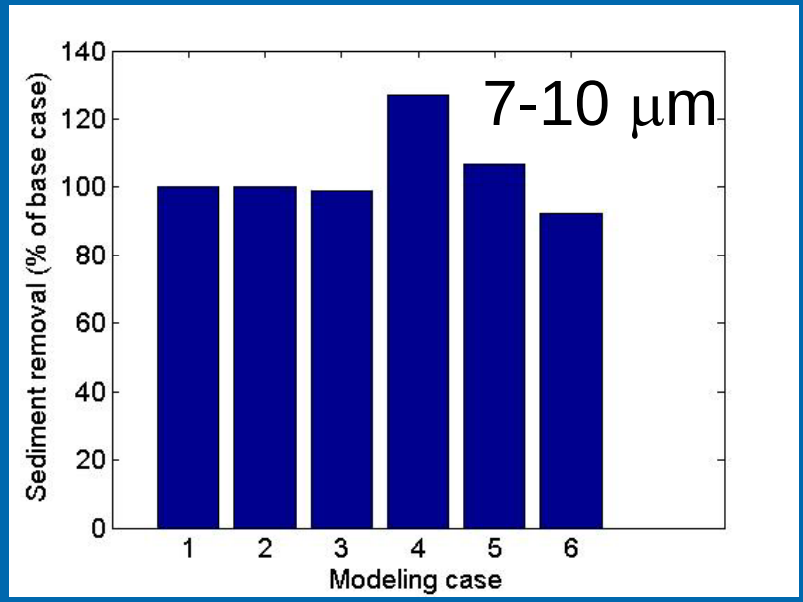
Modeling Cases

- 1. Base case
- Vegetation changes
  - 2. All grass floodplain
  - 3. All willows floodplain
- Topographic changes
  - 4. Check dam downstream of confluence
  - 5. Check dam upstream of confluence
  - 6. Cross-floodplain berm downstream of confluence

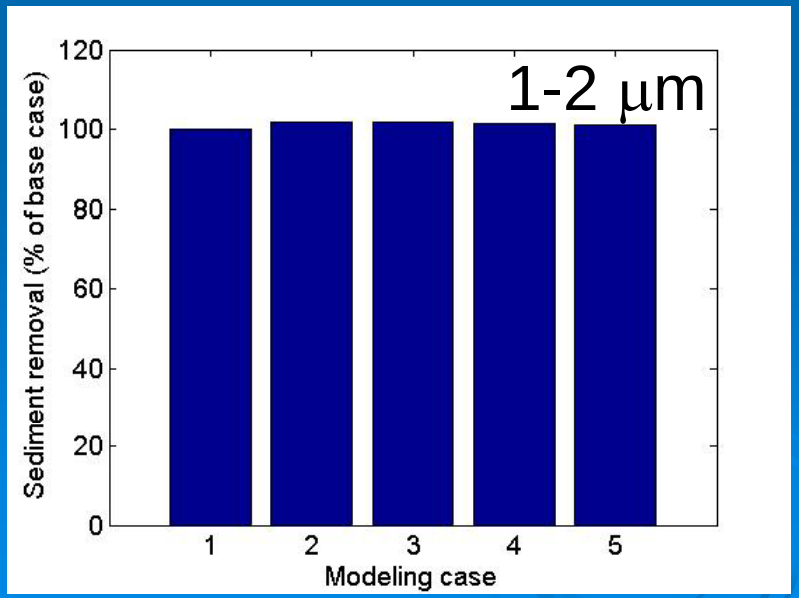
Results

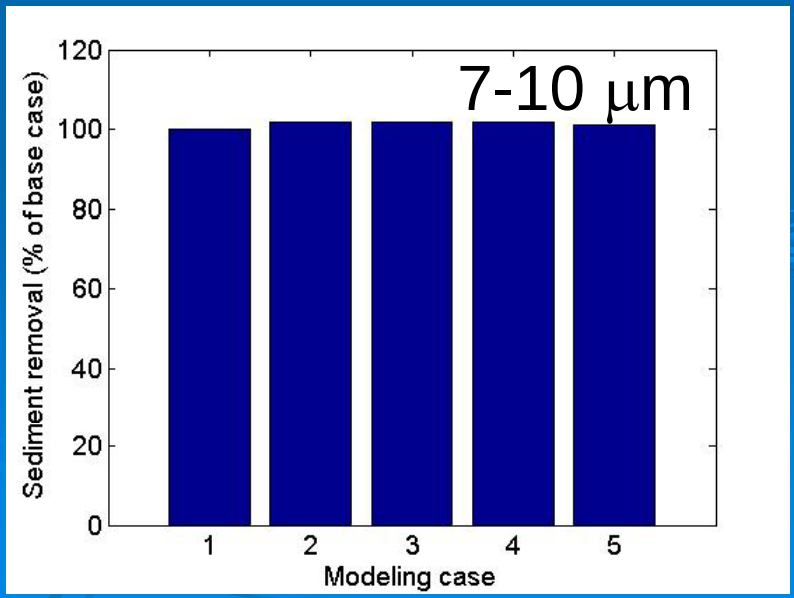
Spring 2003 Snow-melt: Peak = 150 cfs





New Year's Eve 2005 Peak = 450 cfs





Review: Monitoring Data Needs

- Help from the weather
- Measurements of fine sediment discarges into floodplain and sediment out (turbidity sensors)
- Future studies will take advantage of lidar data

Acknowledgements

- Funding – CTC, SNPLMA Round 8
- Field site introduction – Scott Carroll, Cyndie Walck, Virginia Mahacek