CONCEPTS Modelling: Channel erosion in Goat Canyon, Tijuana

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Outline

1. Background Channel Erosion
2. Research Questions
3. Field Survey
4. CONCEPTS Model
5. Scenario Outputs
6. Channel Erosion

Channel Erosion

Research Questions

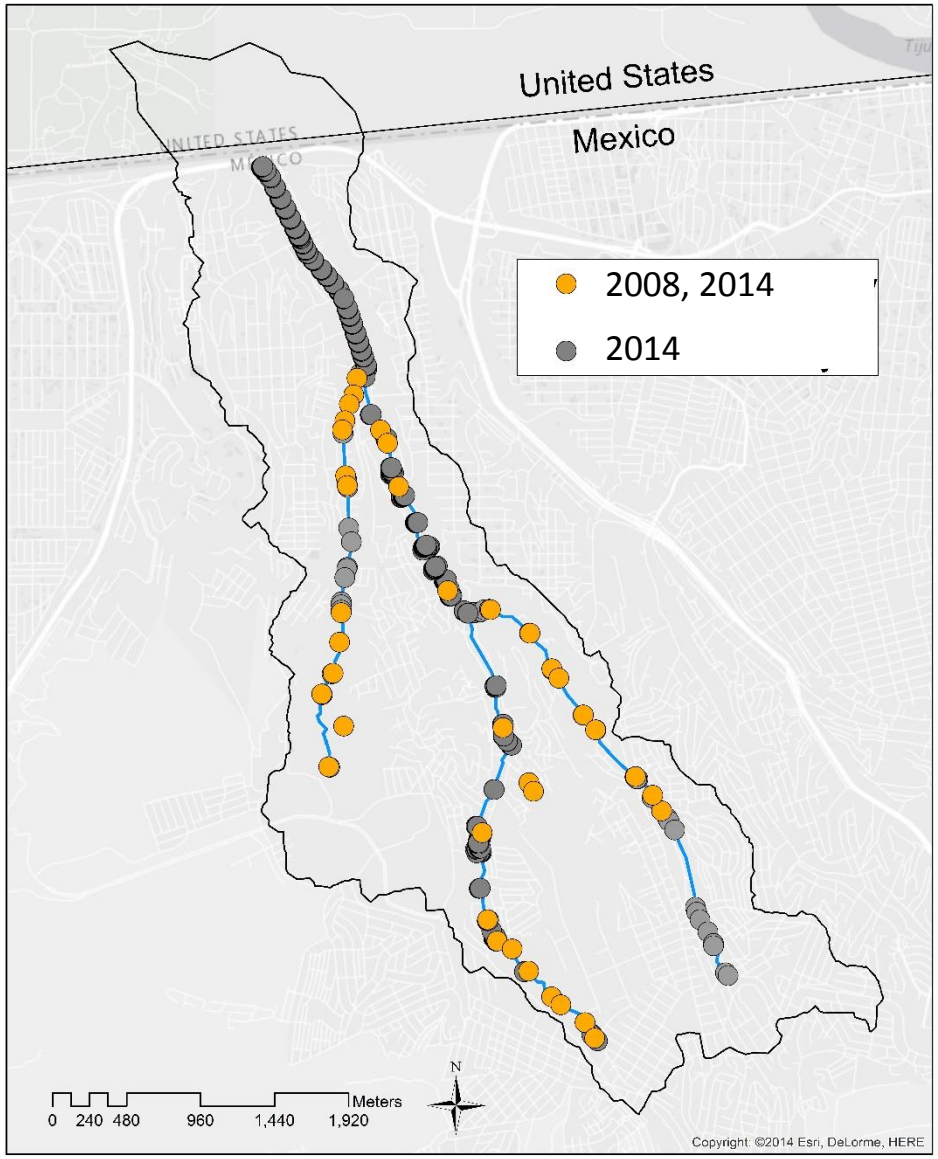
1. What is the impact of road paving on stormflow at the outlet of Goat Canyon?

2. How have channels responded to rapid urbanization in Goat Canyon?

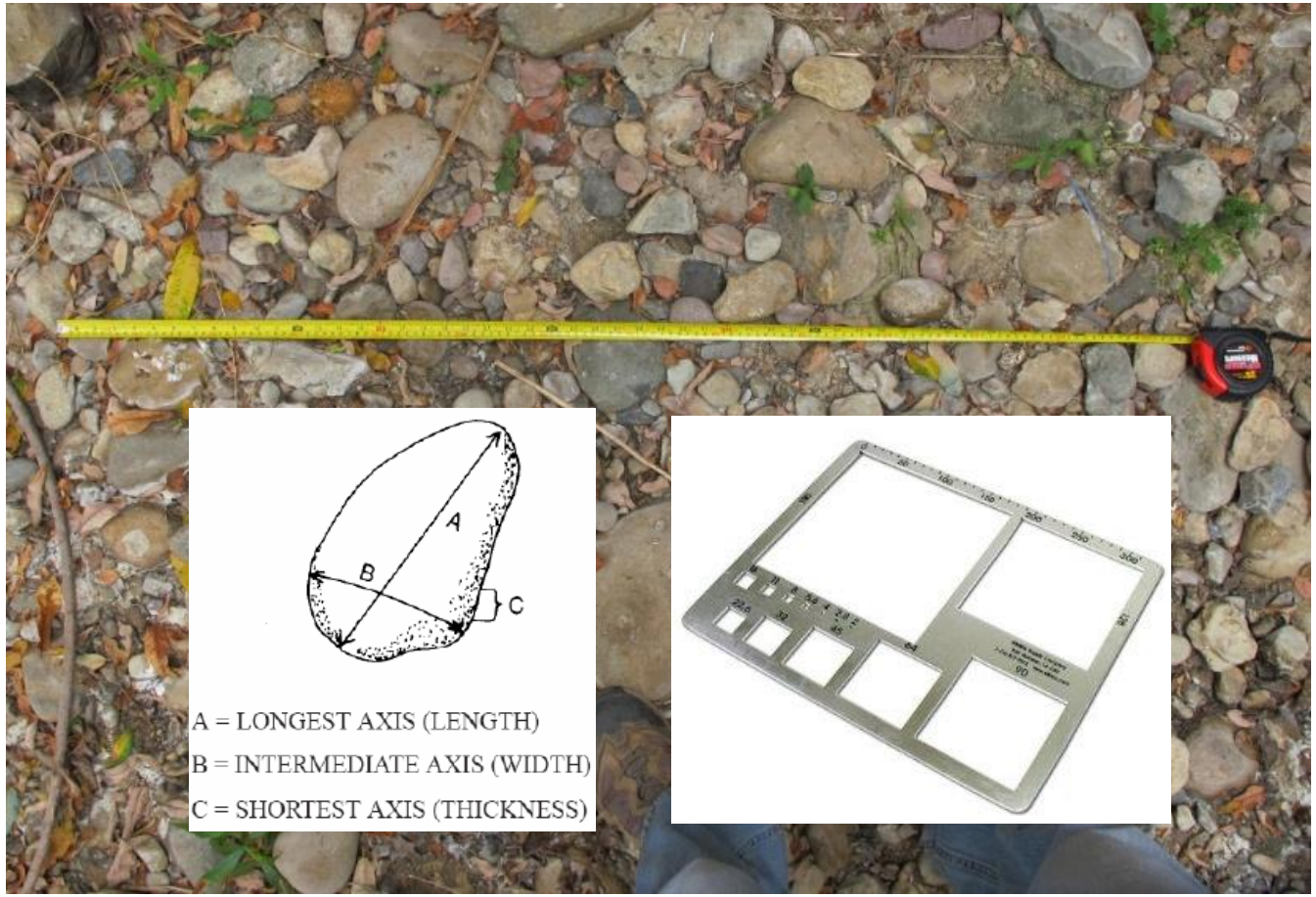
Field Survey

Channel Profiles:

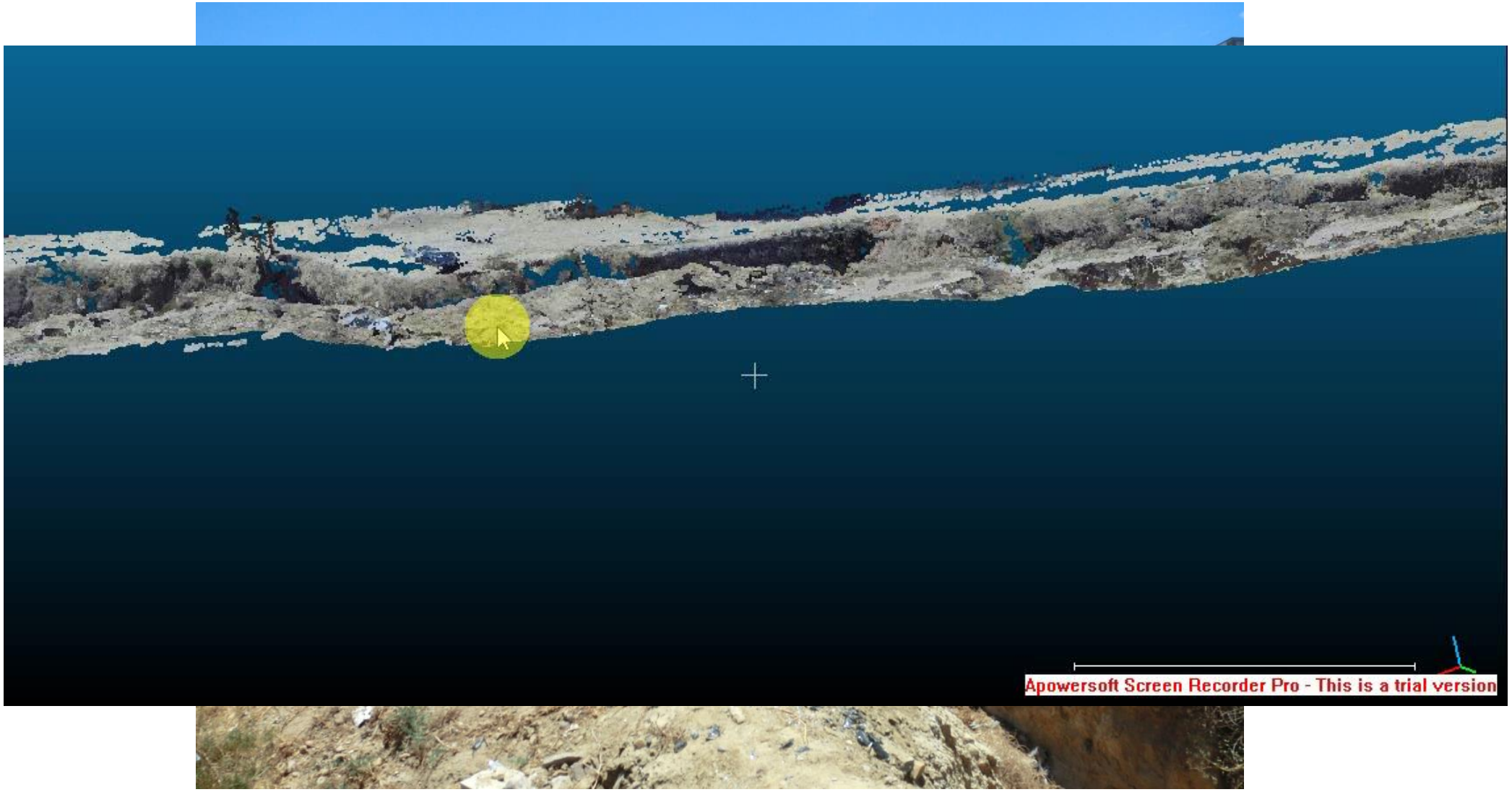
- **38** locations resurveyed from 2008
- **100** additional locations in 2014



Bed and Bank Characterization



3D Photo-reconstruction

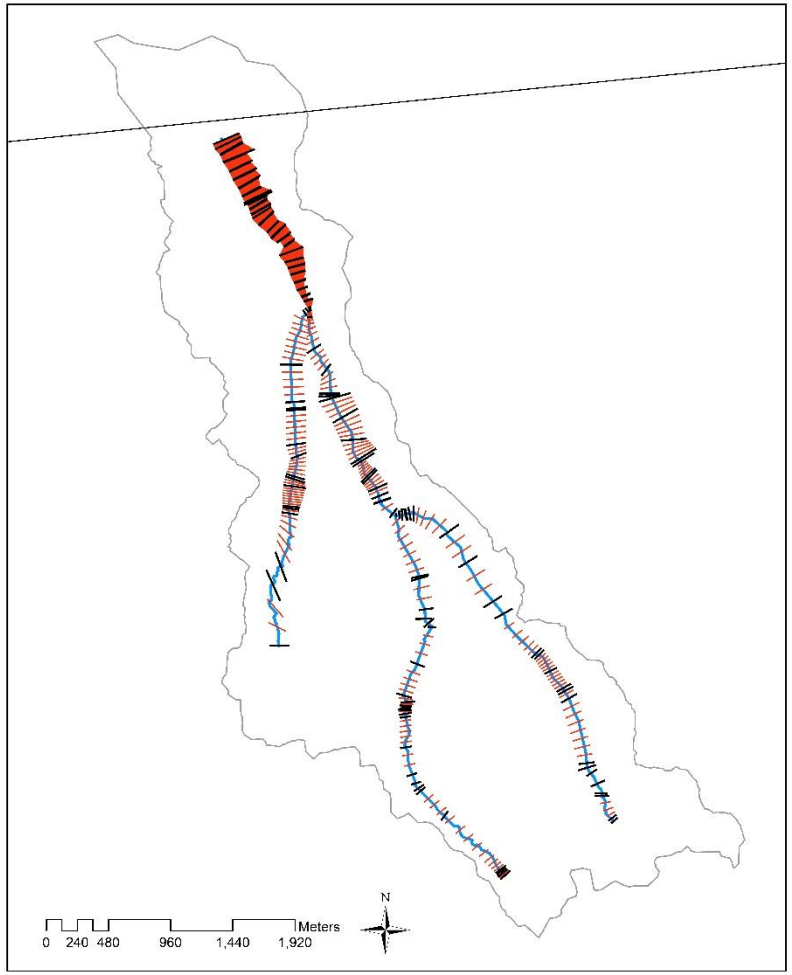


Channel Model

Output from AGNPS, Geometric data, Manning's roughness, Bed and Bank characterization, Hydrographs

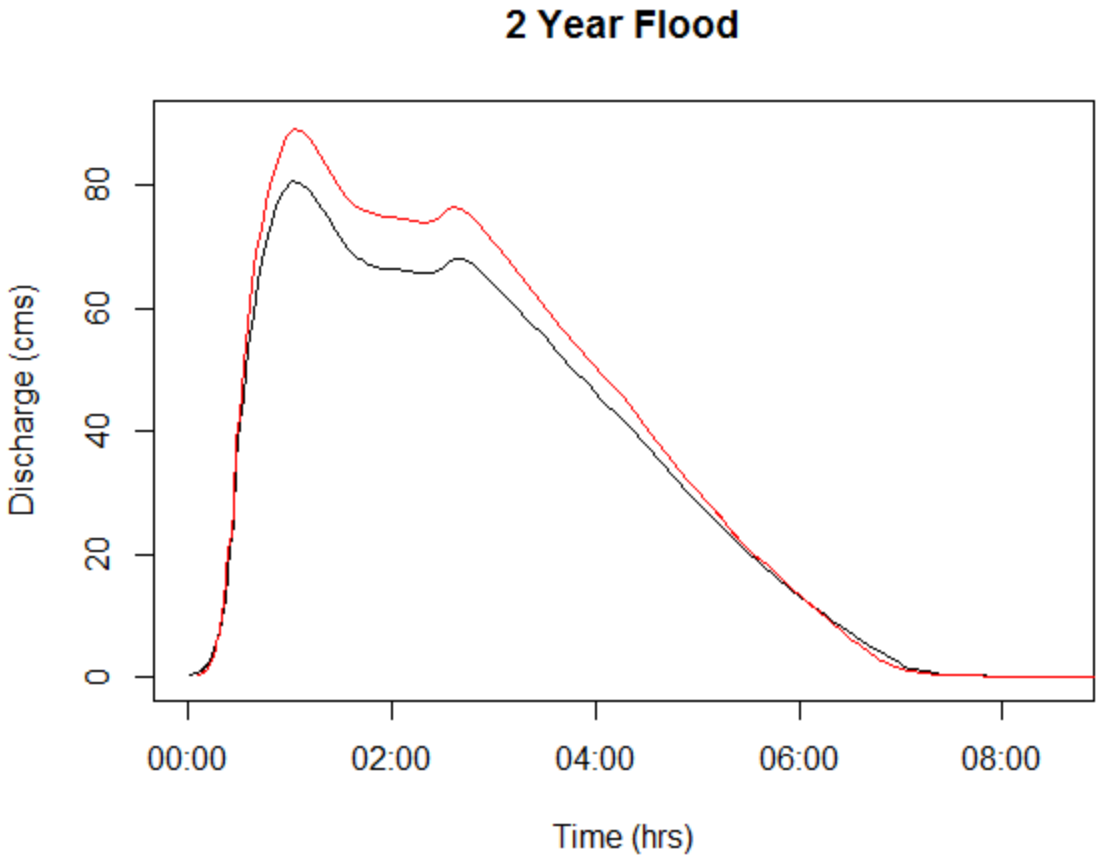
CONCEPTS

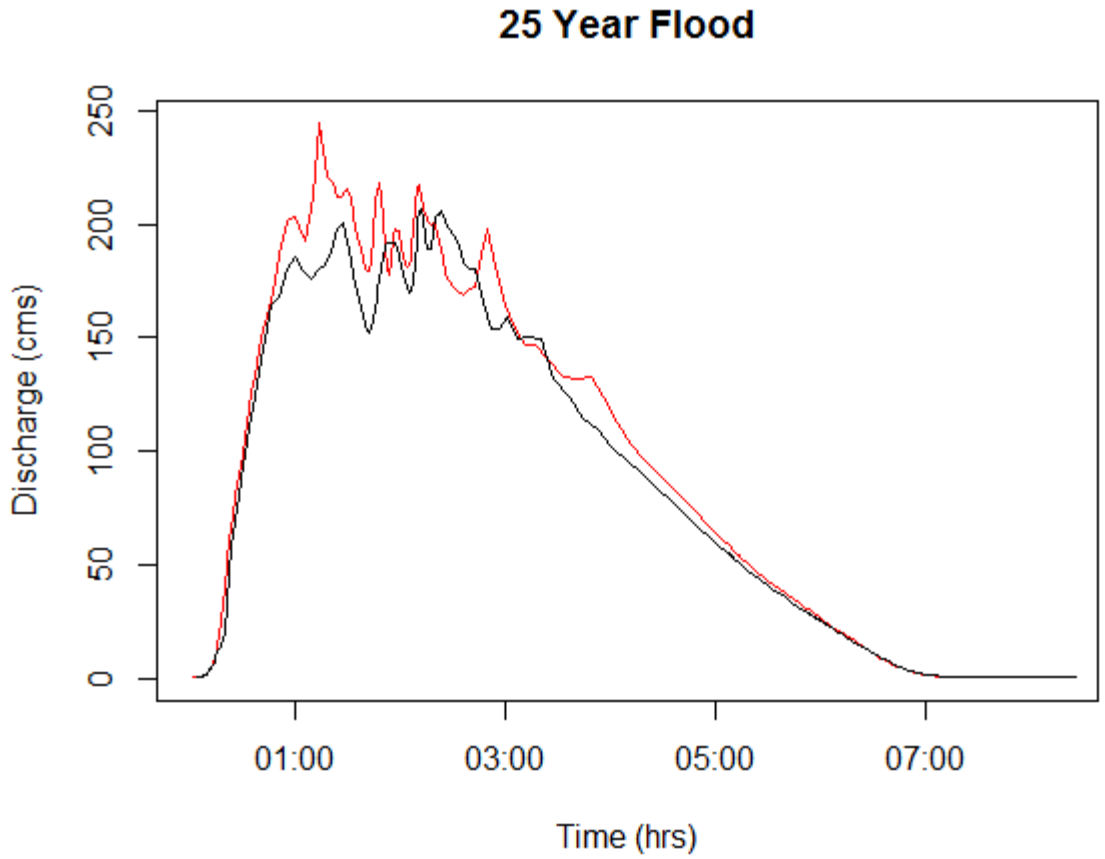
Discharge, Channel Erosion, and Sediment Transport/Deposition



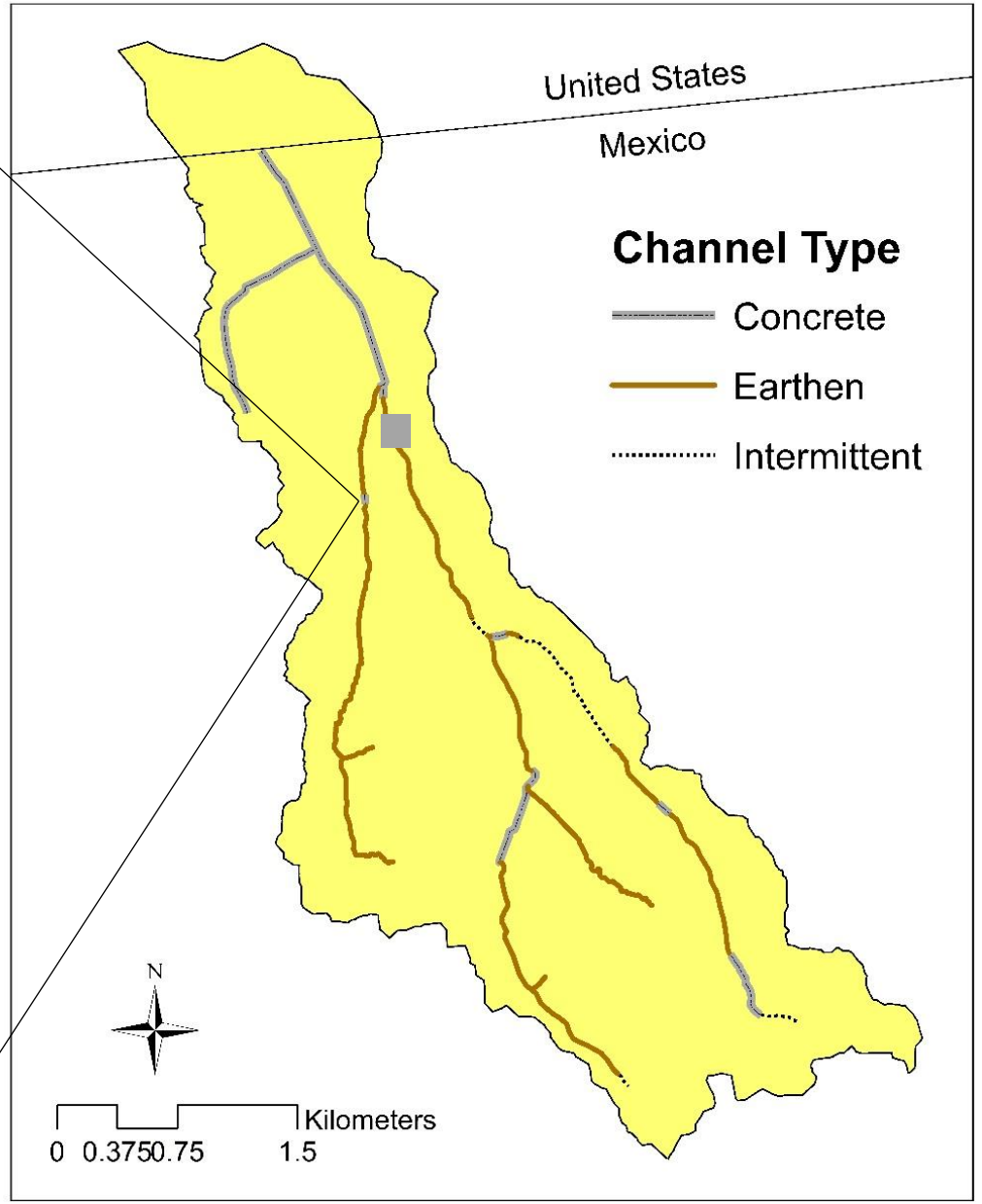
Scenario Outputs

- Current and paved conditions for the 2 year and 25 year storms

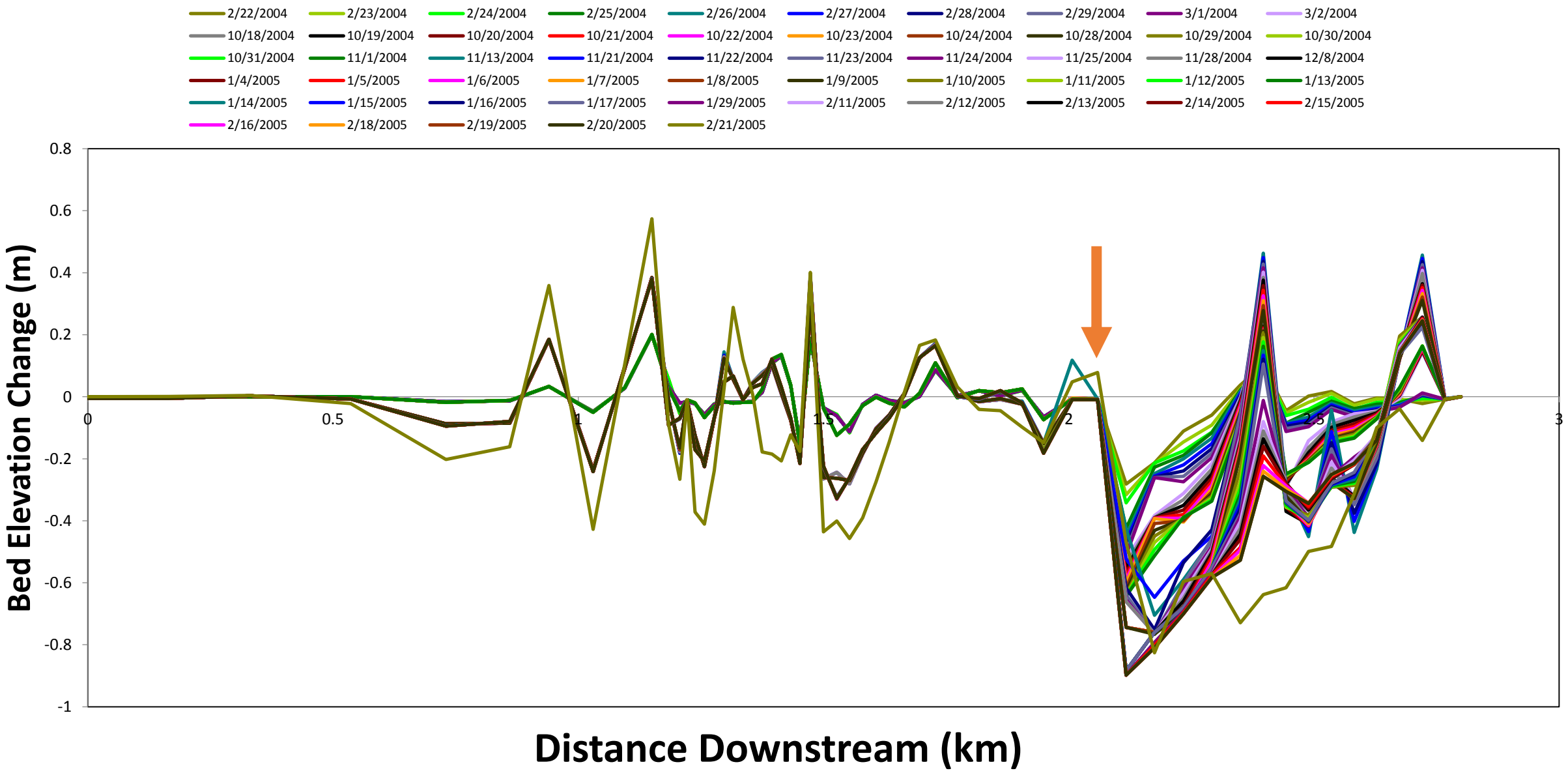




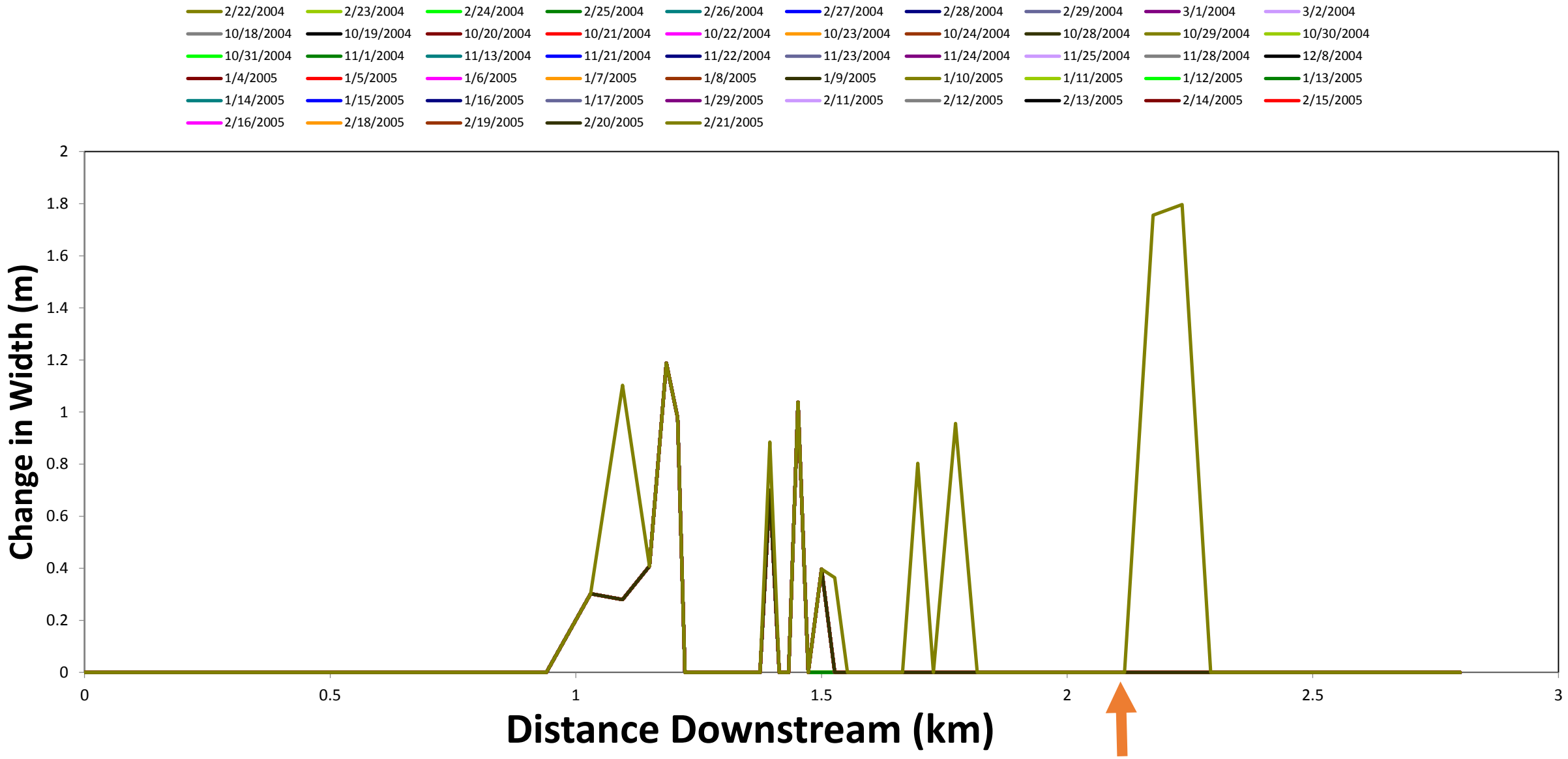
Channel Condition



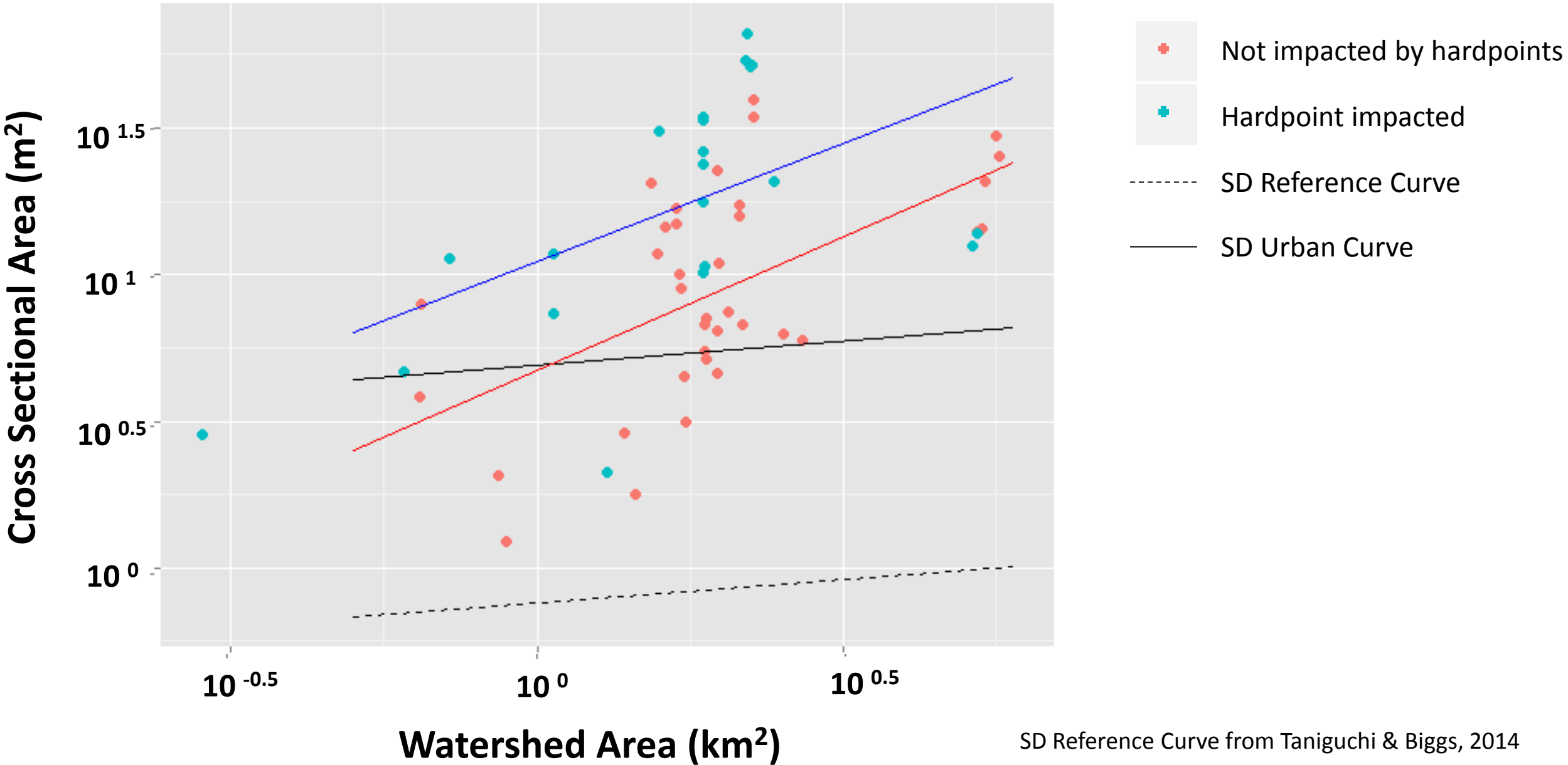
Channel Incision in SW Reach



Bank Failure in SW Reach



Cross Sectional Area Curves



SD Reference Curve from Taniguchi & Biggs, 2014

Conclusion

- Peak discharges do not increase substantially with paving the roads.
- Los Laureles channels are significantly larger than San Diego reference channels and have a higher rate of increase.
- Significant enlargement downstream of channel hardpoints.