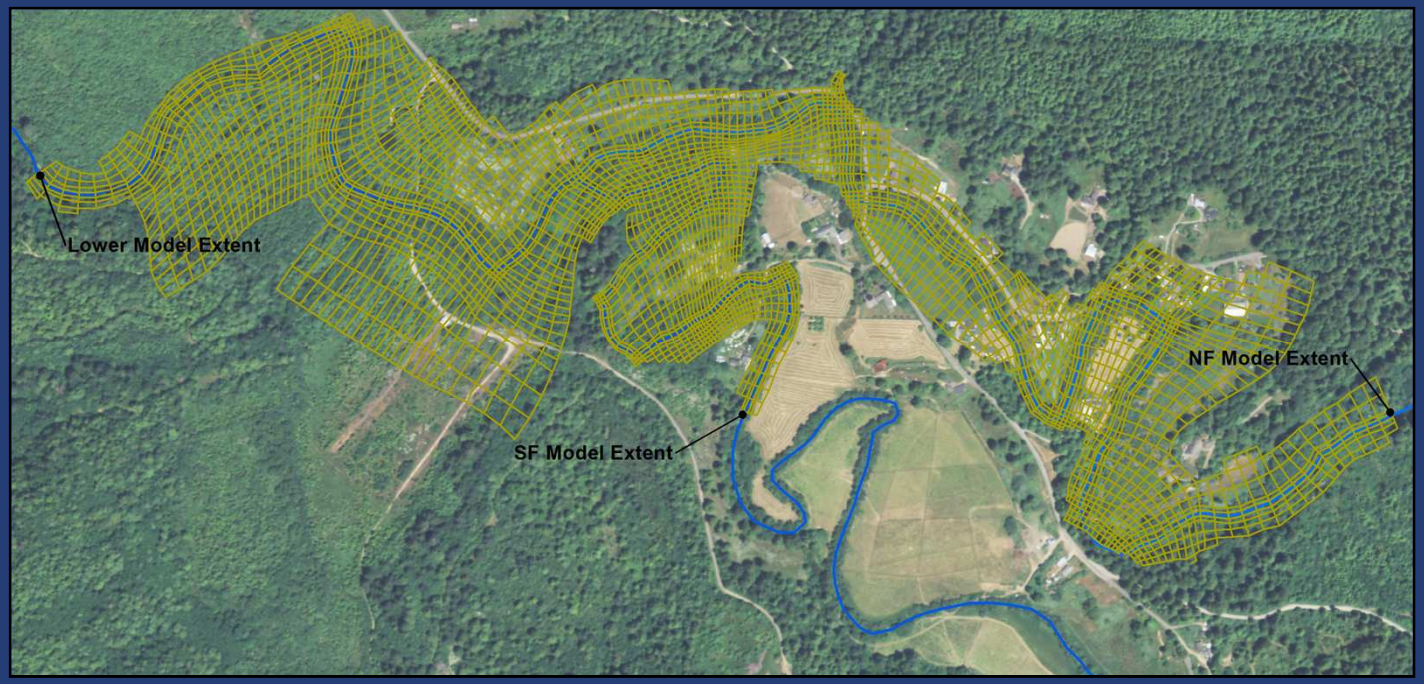
Pilot Project

Project Objective: Develop and evaluate a hydrodynamic and sediment transport model on a study reach of the Elk River.

Study reach includes vicinity of North and South Fork Elk River confluence



Tasks

1. Evaluate and process existing flow, sediment and cross-section data for use in hydrodynamic/sediment transport model.

2. Describe, sample and analyze sediment composition of bed, bank and floodplain; analyze particle size of existing suspended sediment samples.

3. Generate topographic surface integrating 2002 cross-section data LIDAR data.

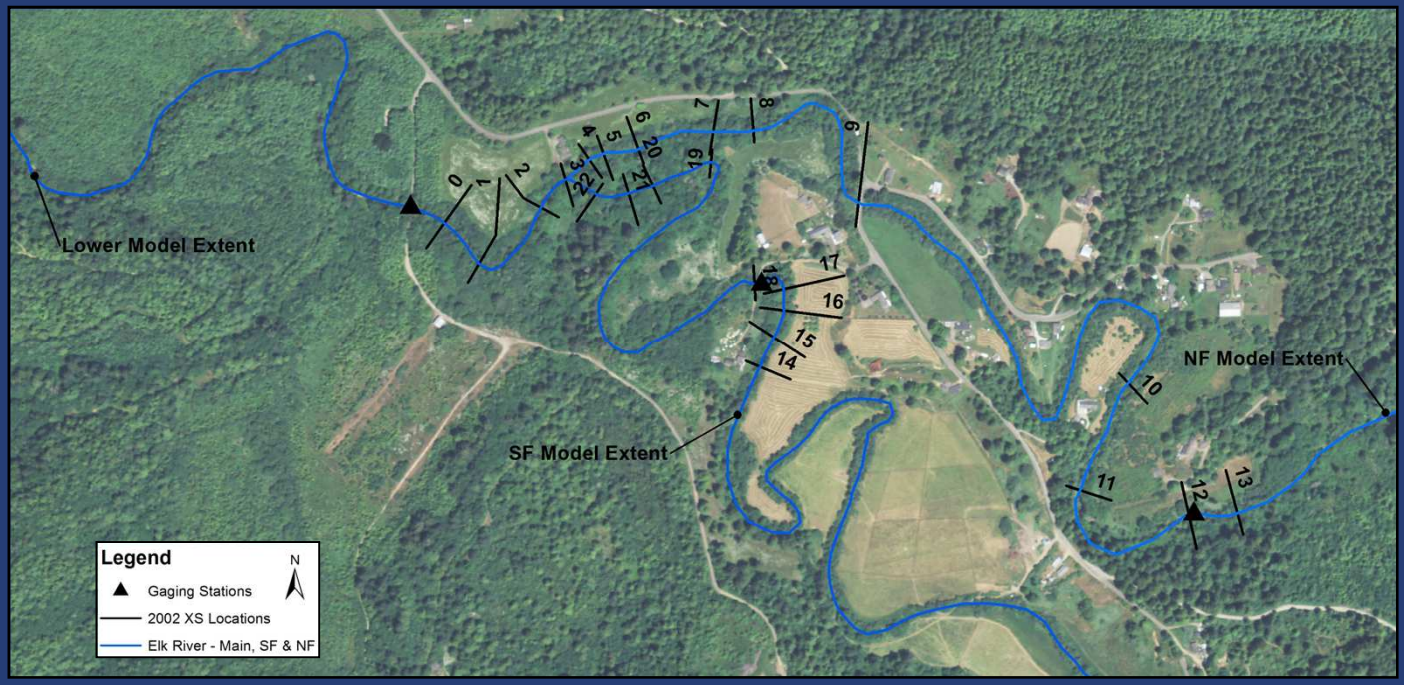
4. Develop and calibrate hydrodynamic/sediment transport model

5. Evaluate and compare model predictions to observed conditions:
   - Depositional patterns (spatial pattern and rate) observed in cross sections
   - Observed suspended sediment concentrations
   - Bed material grain size

6. Evaluate effects of reduced sediment loads to the study reach

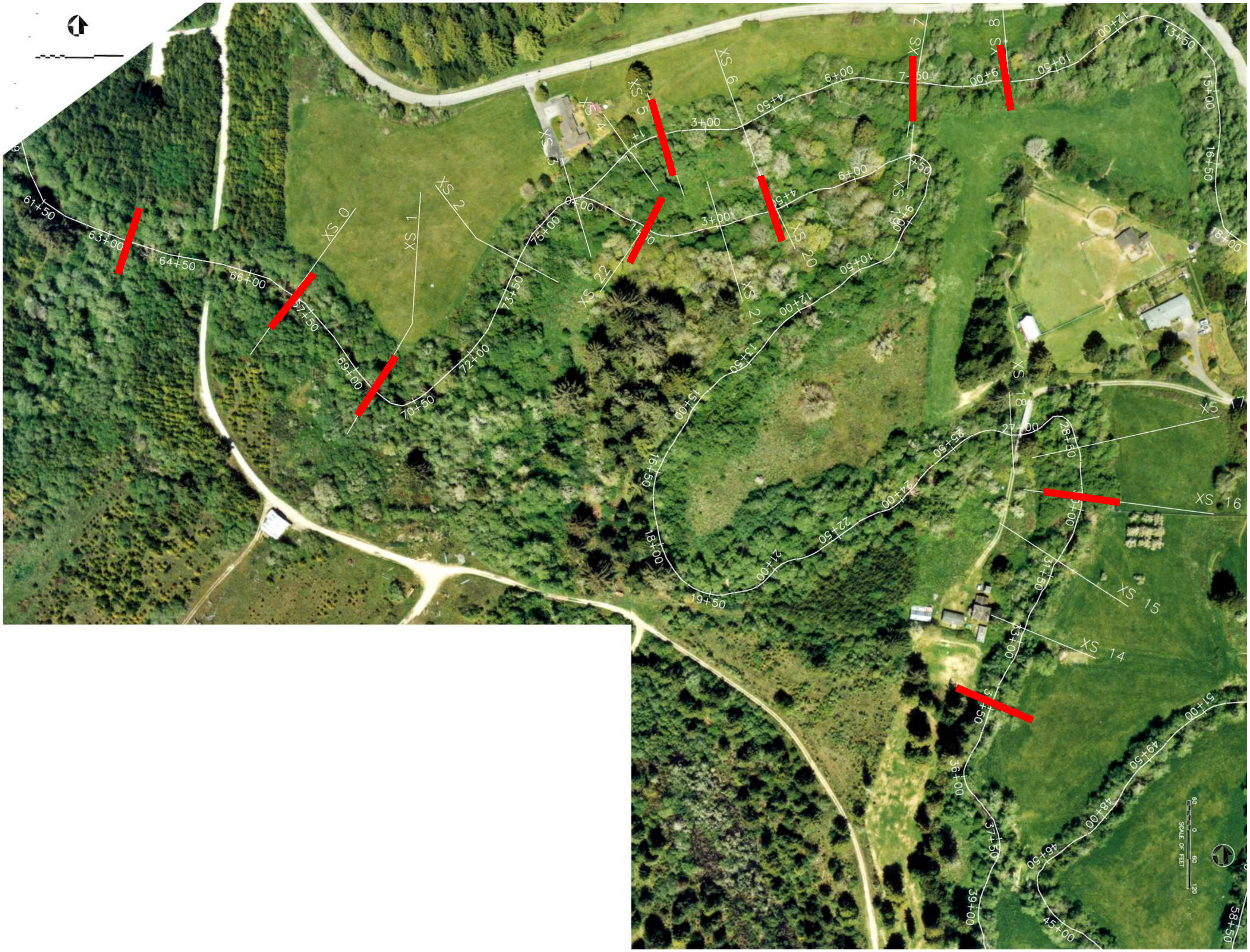
Existing Data

- Monitoring stations on North Fork and South Fork: stage, discharge, suspended sediment concentrations (SSC) at 10 min steps, SSC sand fraction.
- Monitoring station on the mainstem at steel bridge (HRC station 166): stage, discharge, SSC at 15 minute steps.
- Cross sections surveyed in 2002.
- LiDAR (Light Detection and Ranging) data acquired in 2005 by the North Coast Regional Water Quality Control Board.



Additional Data Collected

- Observations of channel sediment storage and roughness characteristics.
- Bulk sampling of channel bed, bank, and floodplain sediment deposits.
- Sediment cores of channel bed material.
- Laboratory analysis to determine grain size distribution and bulk density of channel bed, bank, and floodplain sediment.



XS 0
XS 1
XS 2
XS 3
XS 4
XS 5
XS 6
XS 7
XS 8
XS 14
XS 15
XS 16
XS 18
XS 20
XS 21
XS 22
61+50
63+00
64+50
66+00
67+50
69+00
70+50
72+00
73+50
75+00
3+00
4+50
6+00
7+50
9+00
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45+00
46+50
48+00
49+50
51+00
58+50
SCALE OF FEET


60 0 60 120
SCALE OF FEET
1" = 60'
27+00
28+50
30+00
31+50
33+00
34+50
36+00
37+50
39+00
40+50
42+00
43+50
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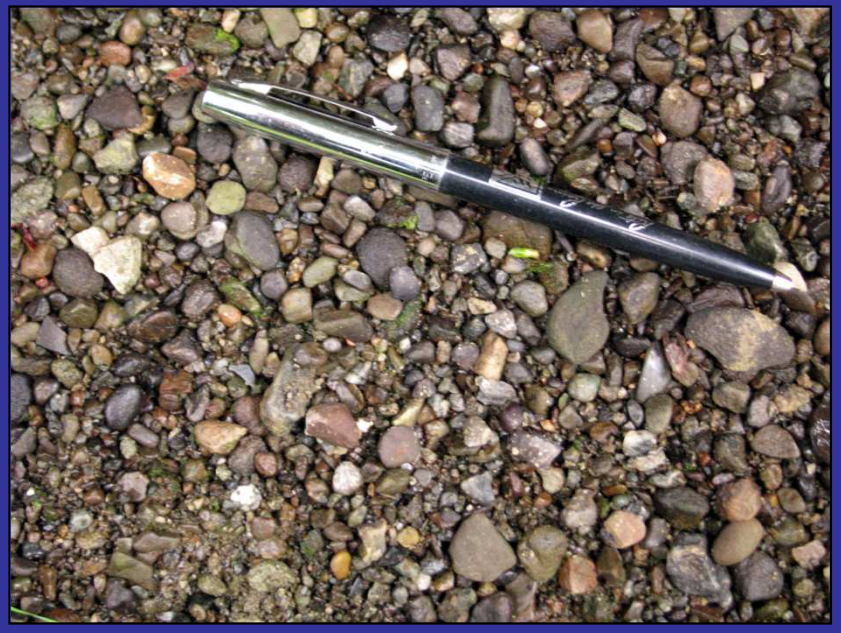
XS 13

North Fork Elk River



South Fork Elk River

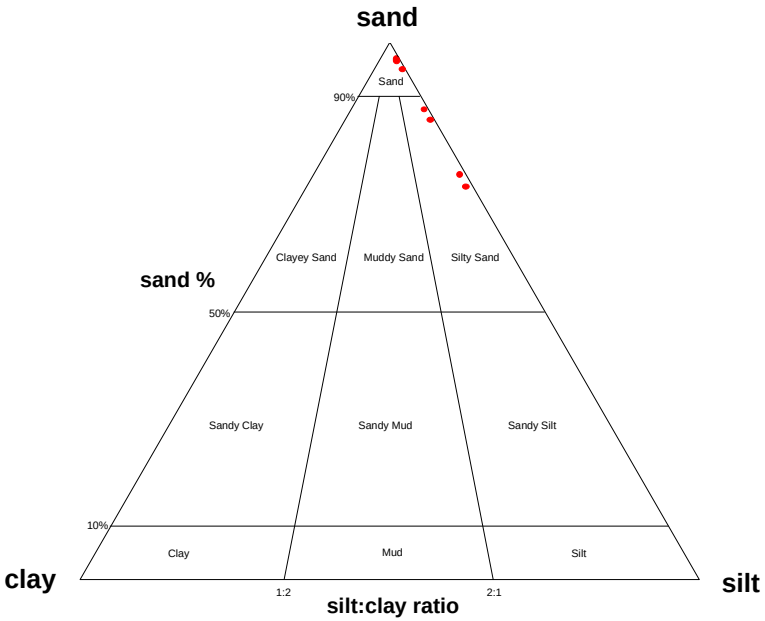
Mainstem
Elk River

Bank sample, South Fork

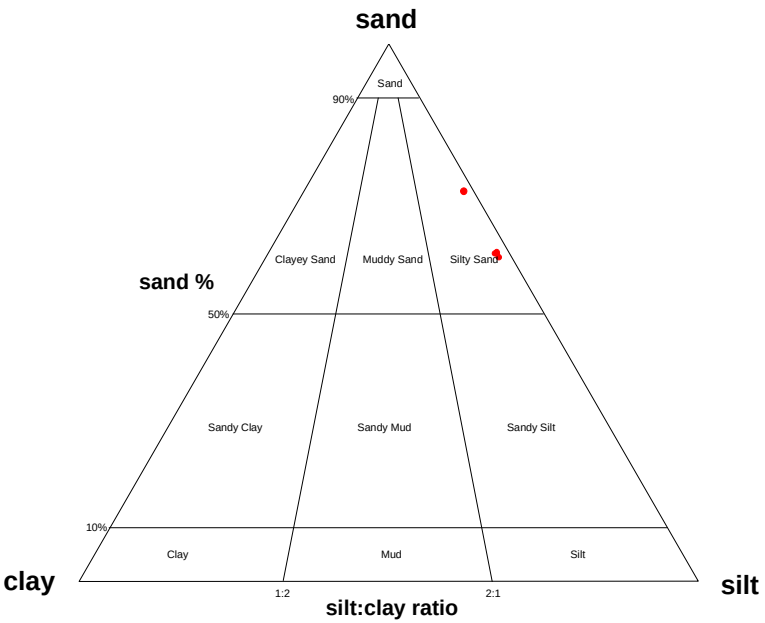
Channel bed sample, South Fork

Channel bed sample and core, North Fork

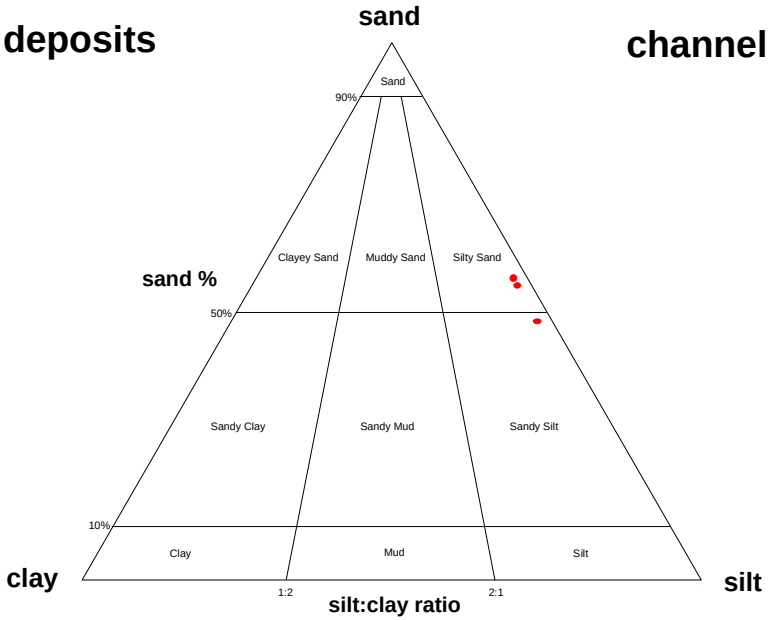
Channel bed sample and core, mainstem



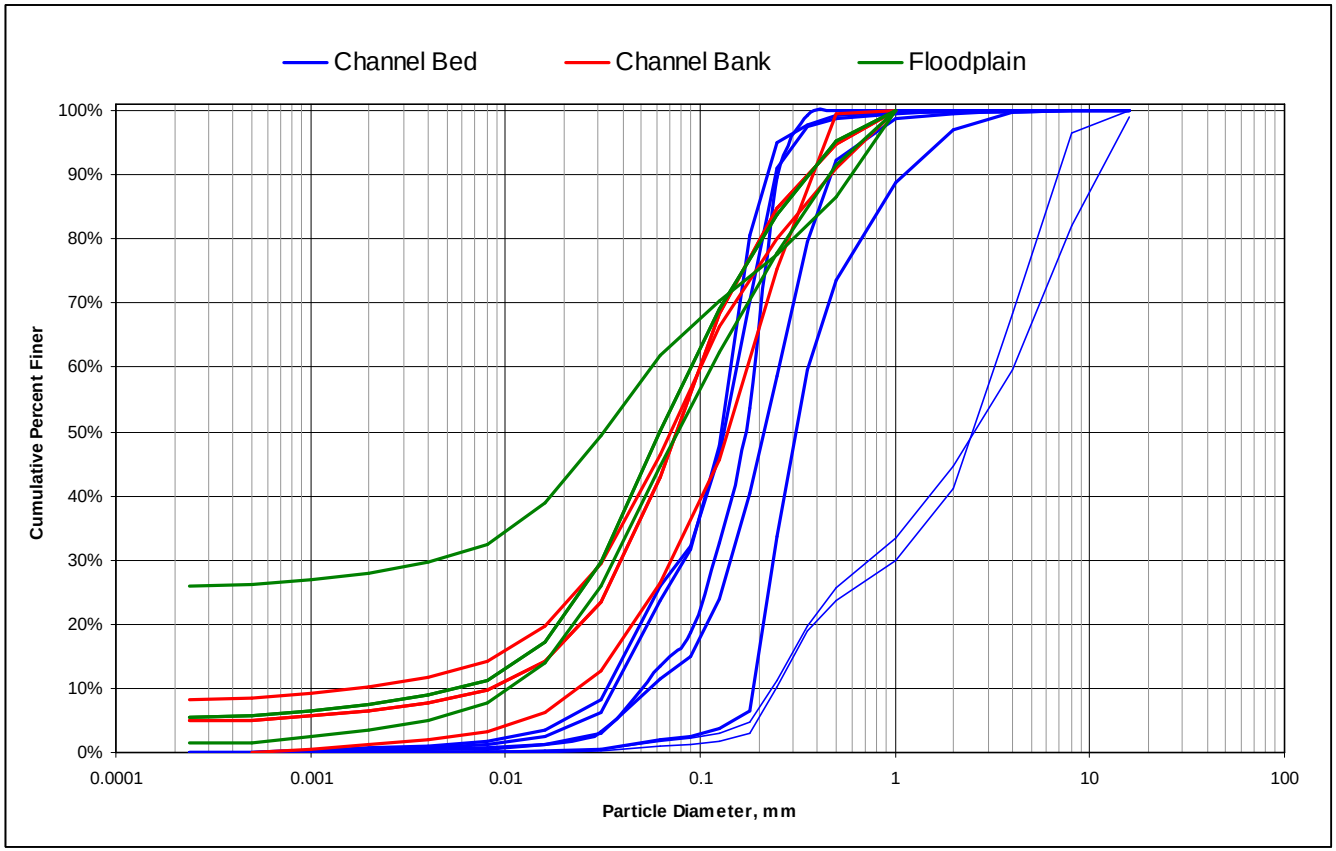
channel bed deposits



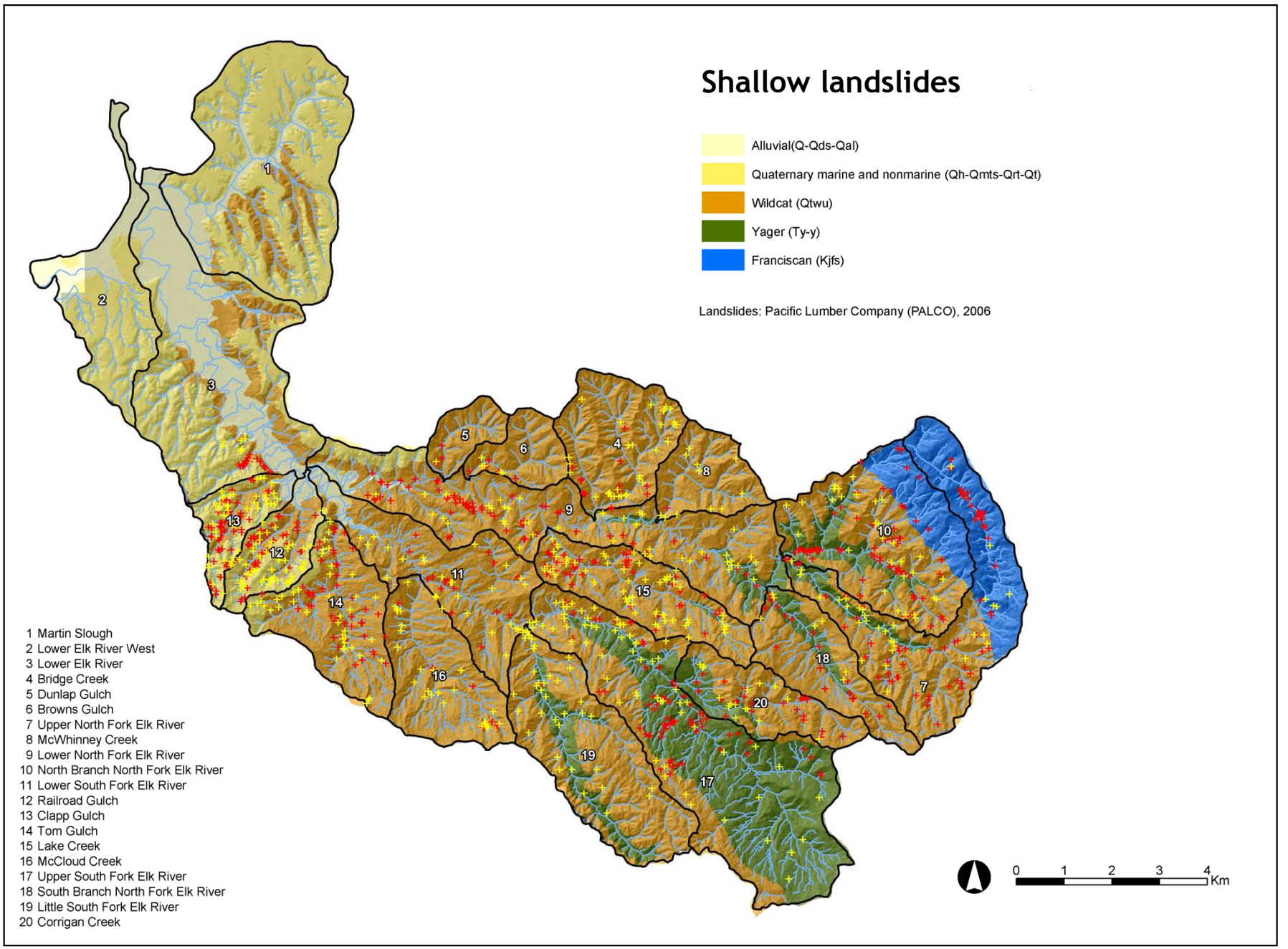
channel bank deposits

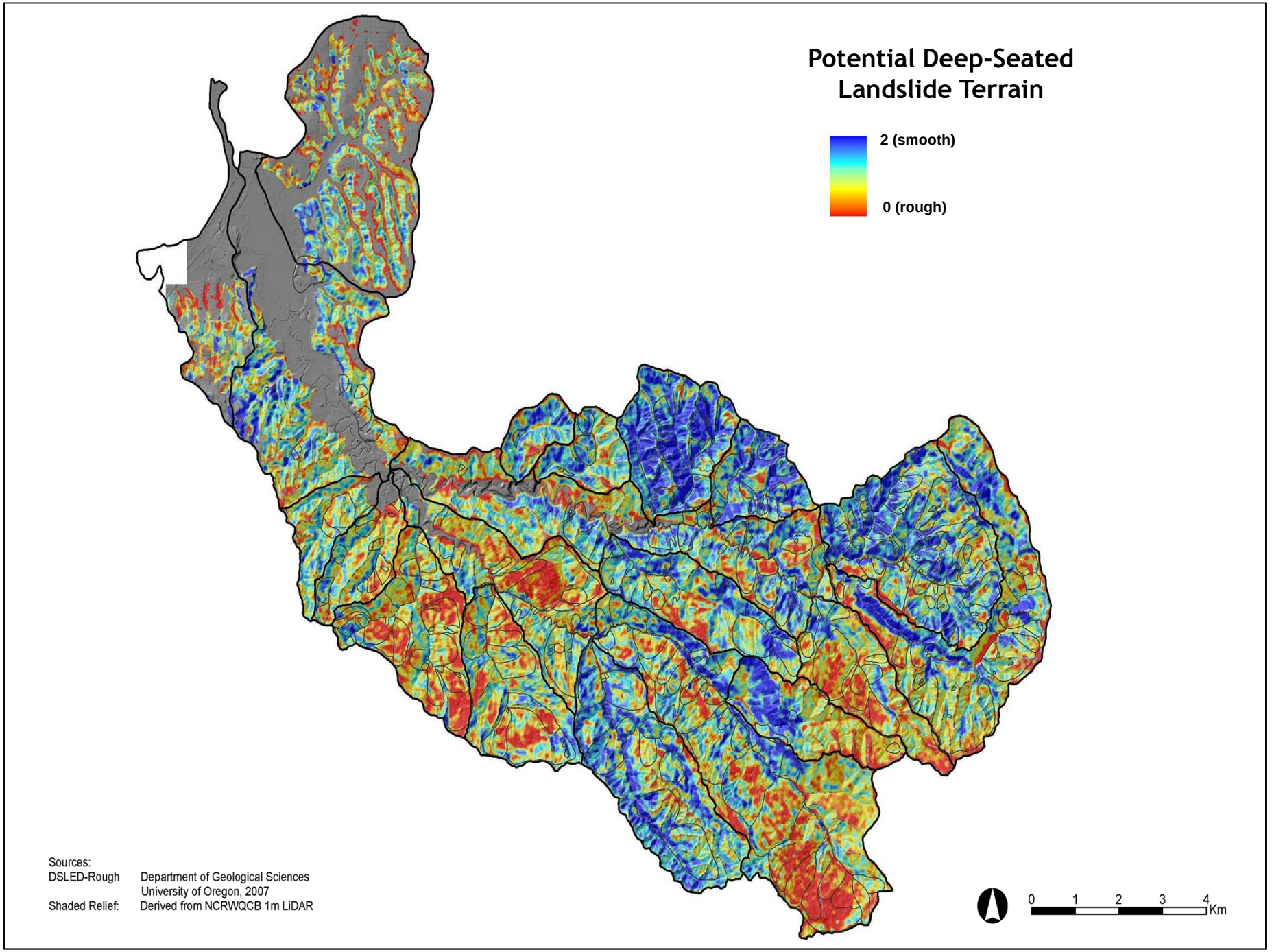


floodplain deposits



Grain Size phi	Grain Size mm	Descriptive term	
-10	1024	Very Large	Boulder
-9	512	Large	
-8	256	Medium	
-7	128	Small	
-6	64	Very small	
-5	32	Very coarse	Gravel
-4	16	Coarse	
-3	8	Medium	
-2	4	Fine	
-1	2	Very fine	
0	1	Very coarse	Sand
1	500 microns	Coarse	
2	250	Medium	
3	125	Fine	
4	63	Very fine	
5	31	Very coarse	Silt
6	16	Coarse	
7	8	Medium	
8	4	Fine	
9	2	Very fine	
		Clay	


Shallow landslides
Alluvial(Q-Qds-Qal)
Quaternary marine and nonmarine (Qh-Qmts-Qrt-Qt)
Wildcat (Qtwu)
Yager (Ty-y)
Franciscan (Kjfs)
Landslides: Pacific Lumber Company (PALCO), 2006
1 Martin Slough
2 Lower Elk River West
3 Lower Elk River
4 Bridge Creek
5 Dunlap Gulch
6 Browns Gulch
7 Upper North Fork Elk River
8 McWhinney Creek
9 Lower North Fork Elk River
10 North Branch North Fork Elk River
11 Lower South Fork Elk River
12 Railroad Gulch
13 Clapp Gulch
14 Tom Gulch
15 Lake Creek
16 McCloud Creek
17 Upper South Fork Elk River
18 South Branch North Fork Elk River
19 Little South Fork Elk River
20 Corrigan Creek
0 1 2 3 4 Km


Potential Deep-Seated
Landslide Terrain
2 (smooth)
0 (rough)
Sources:
DSLED-Rough Department of Geological Sciences
University of Oregon, 2007
Shaded Relief: Derived from NCRWQCB 1m LiDAR
0 1 2 3 4
Km

Model Development and Implementation