

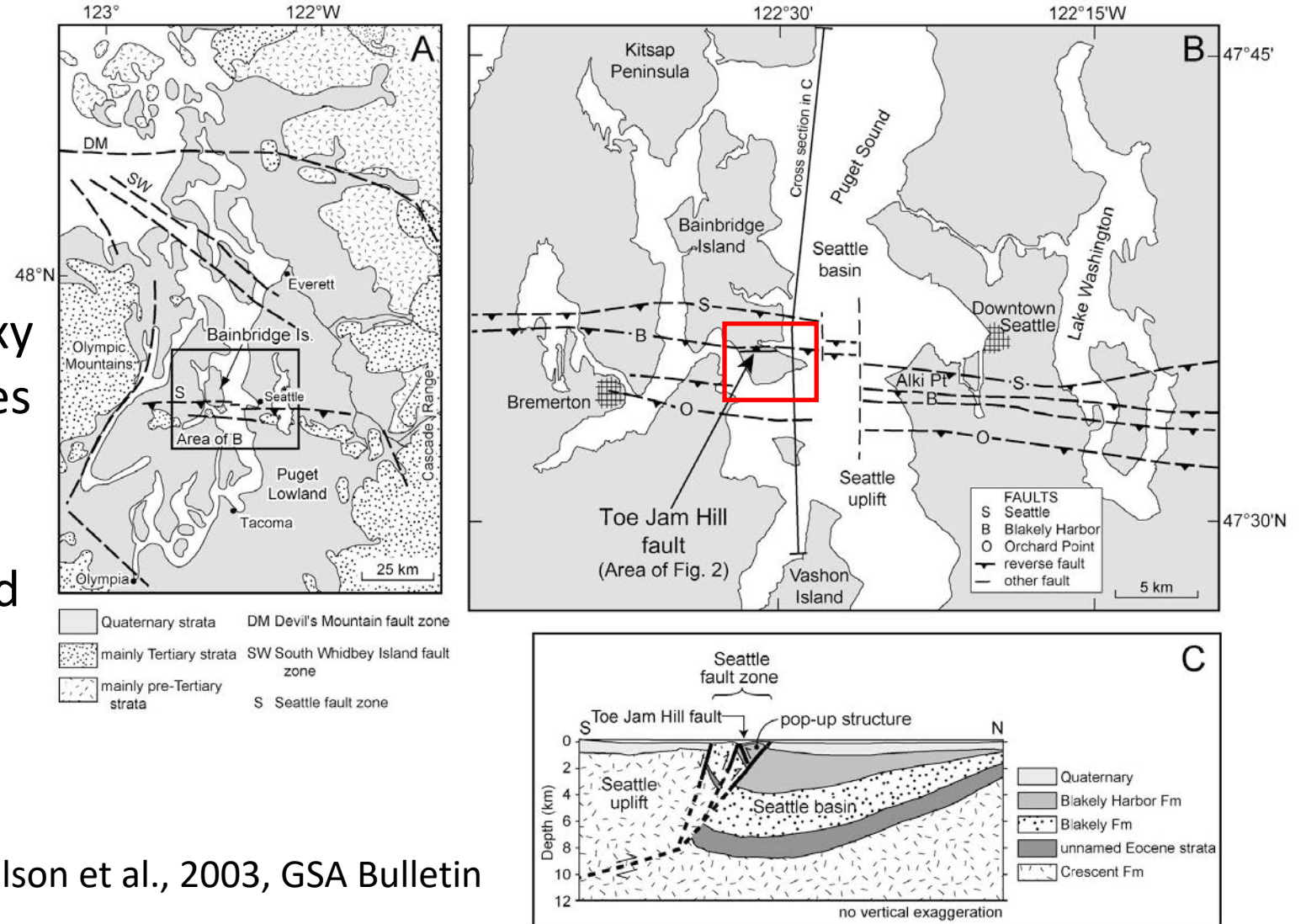
Seattle fault, Bainbridge Island, WA

LATE HOLOCENE EARTHQUAKES, SEATTLE FAULT ZONE, BAINBRIDGE ISLAND, WASHINGTON

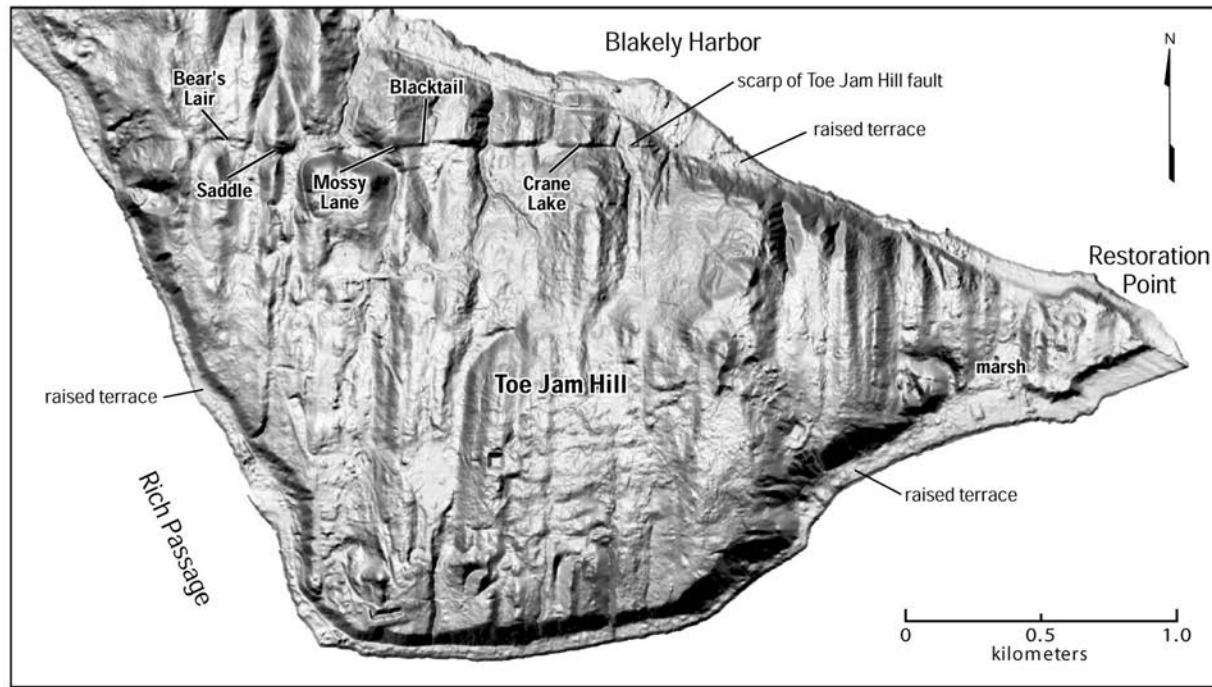
Toe Jam Hill fault is a north-dipping backthrust to the Seattle fault zone.

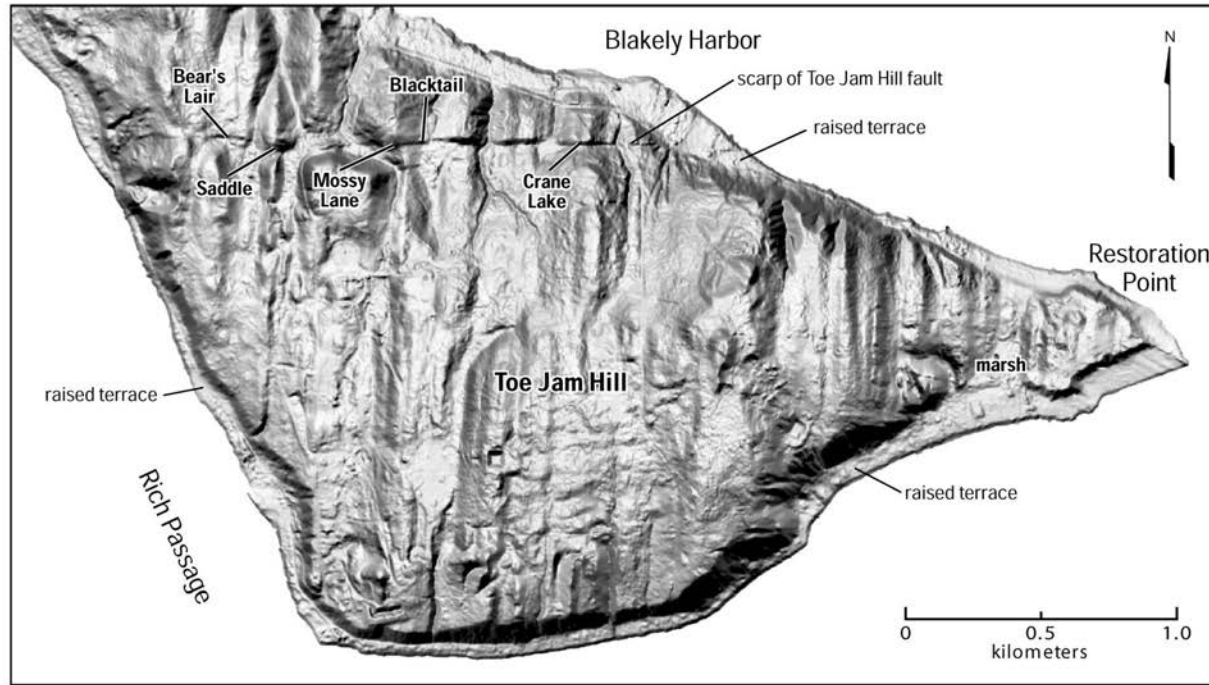
The earthquake history of the Toe Jam Hill fault provides a proxy for the recurrence of earthquakes along the Seattle fault zone.

These data inform seismic hazard assessments.

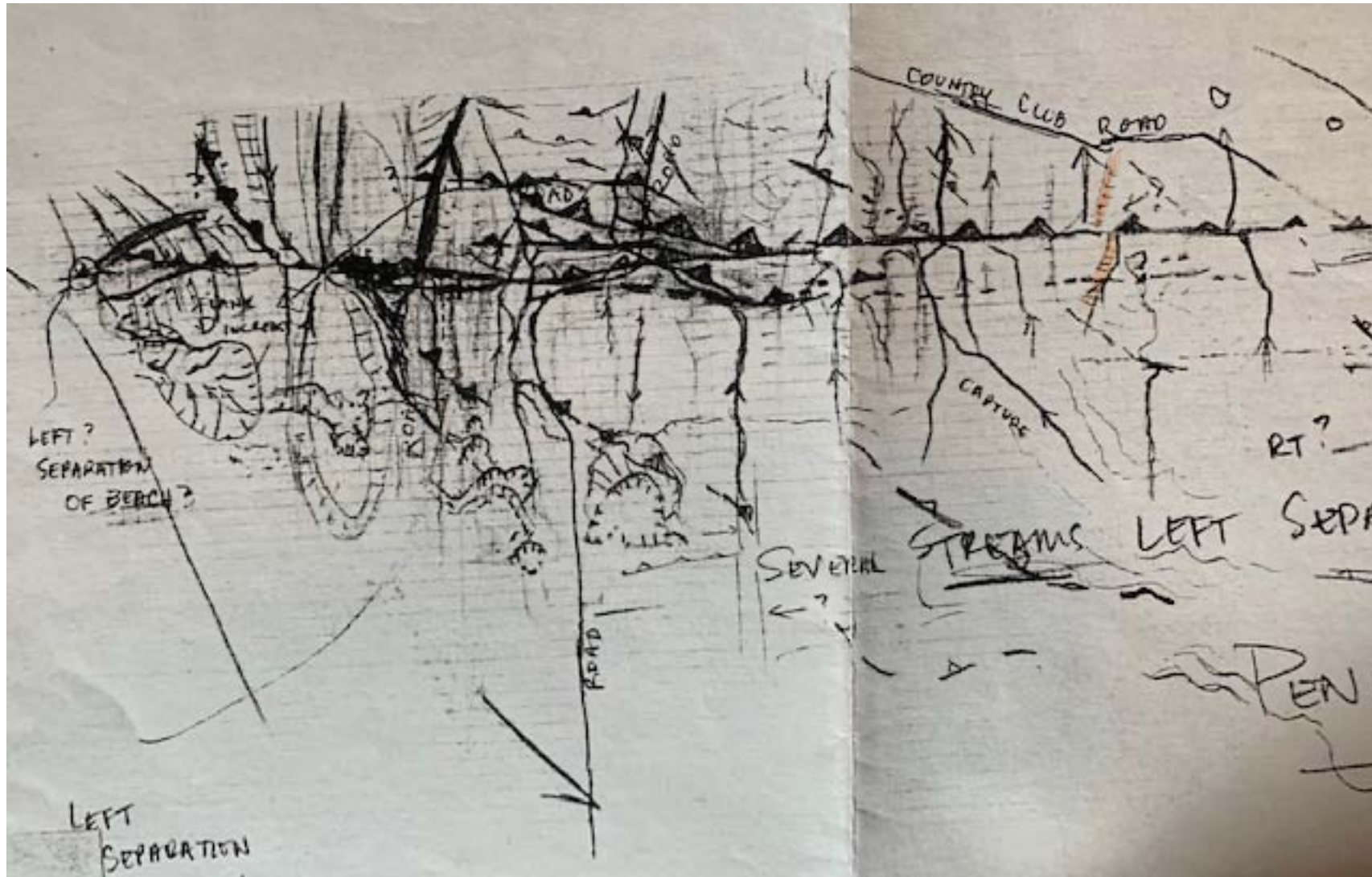


Nelson et al., 2003, GSA Bulletin



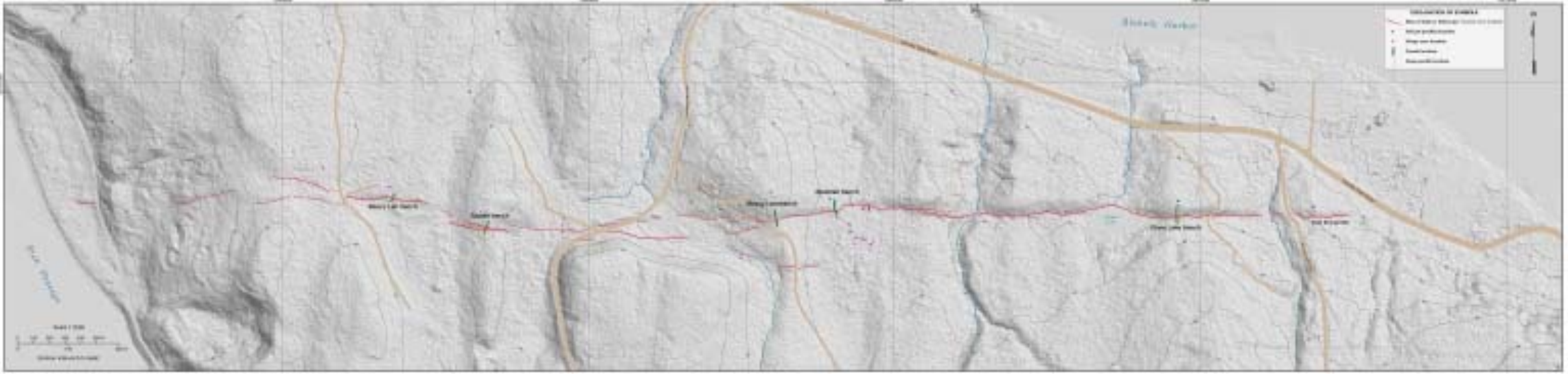
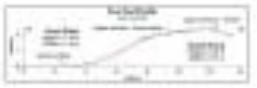
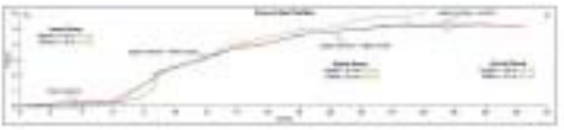
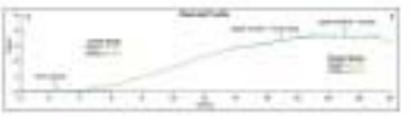
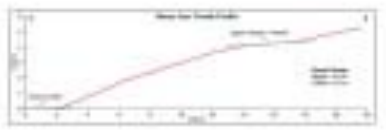
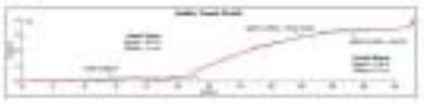


Interpretation of lidar and morphology mapping



Pezzopane, 1999

DESCRIPTION OF INSTRUMENTS
 - Model: [Model Name]
 - Serial: [Serial Number]
 - Date of Calibration: [Date]

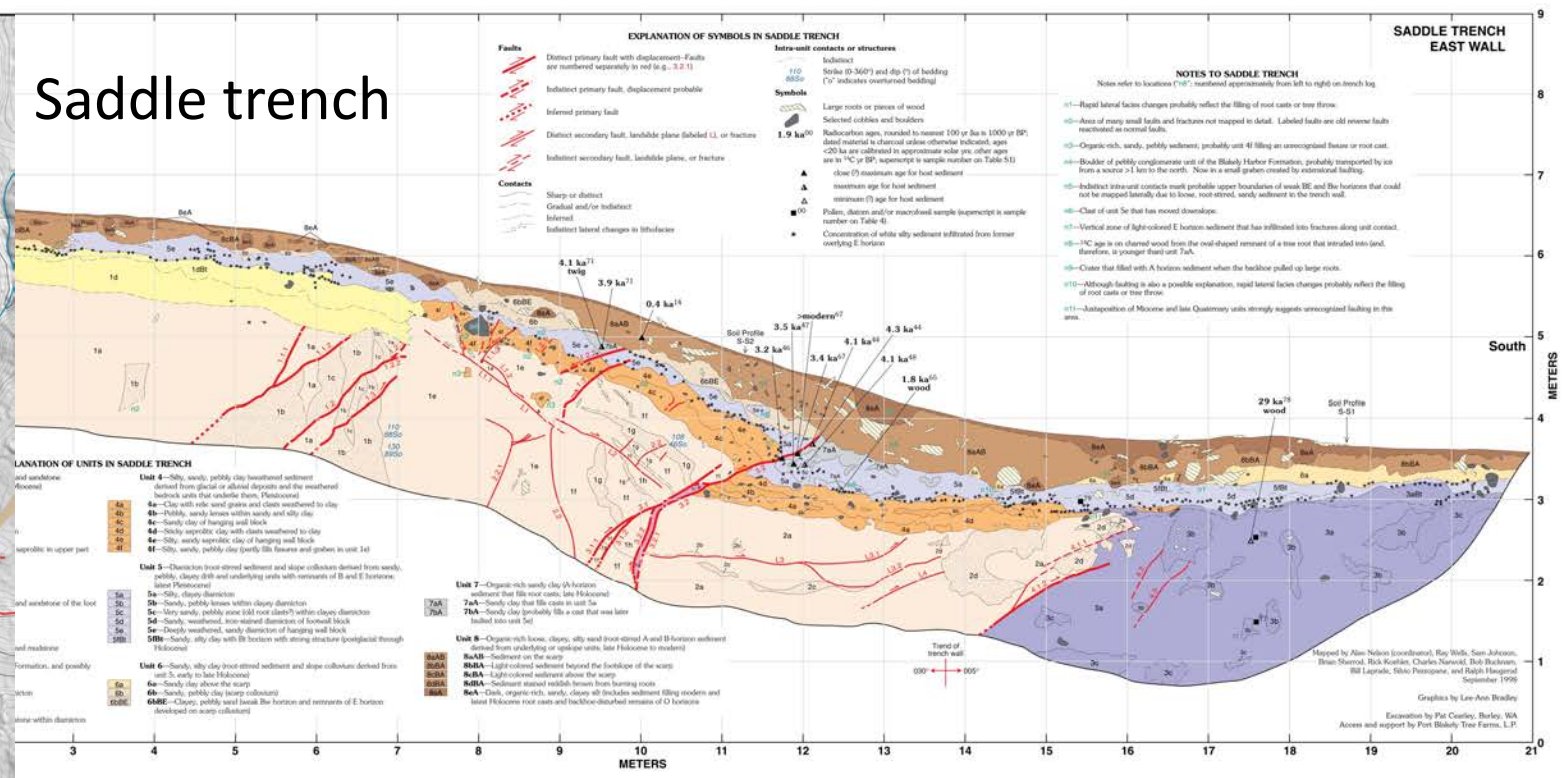
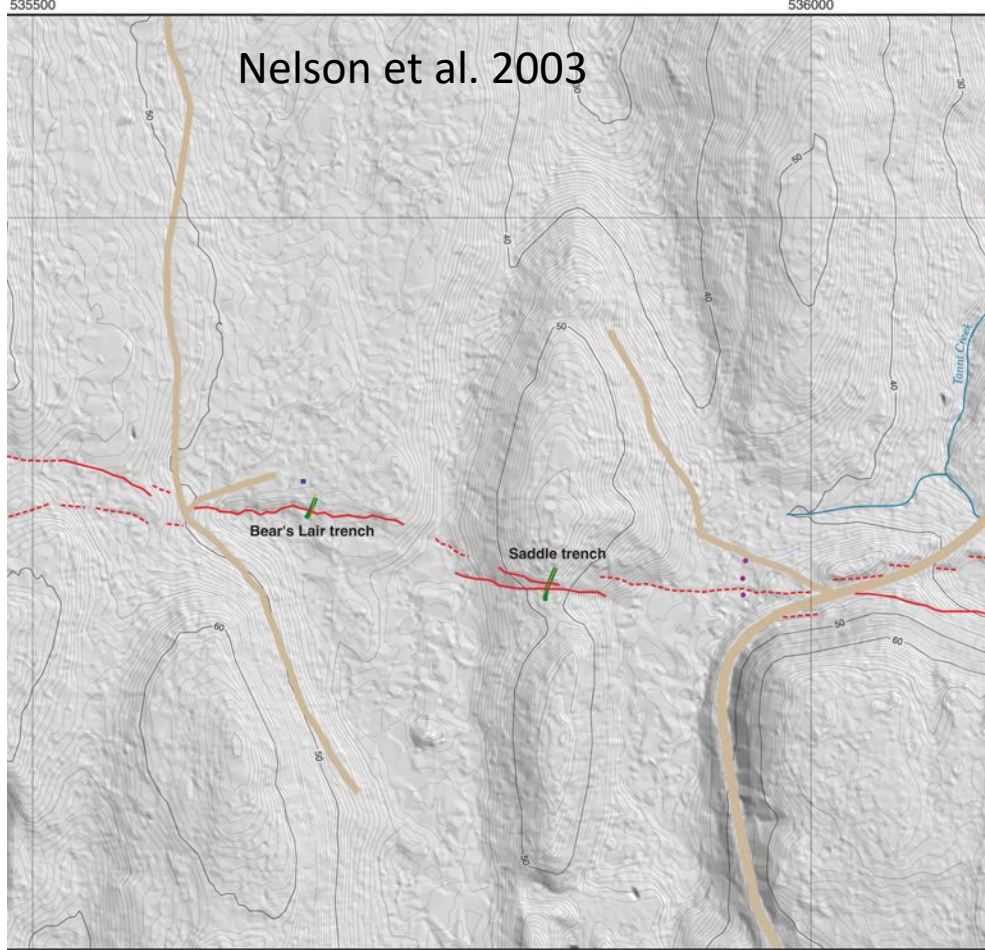


DESCRIPTION OF SYMBOLS
 - [Symbol] [Description]
 - [Symbol] [Description]
 - [Symbol] [Description]
 - [Symbol] [Description]
 - [Symbol] [Description]

Map data courtesy of [Source]. All other data are the property of the [Agency].

Nelson et al. 2003

Saddle trench



1—The thickness of unit 9aA at this location is probably due to a large tree-throw crater. The lower part of the unit here is a mixture of sediment derived from units 5a, 6a, 6E, and 9aA. The underlying colluvial unit (7) was derived mostly from unit 4d.

2—Unit contacts and lithologies in the upper part of the fissure are indistinct, but at least two faults appear to extend into unit 9aA.

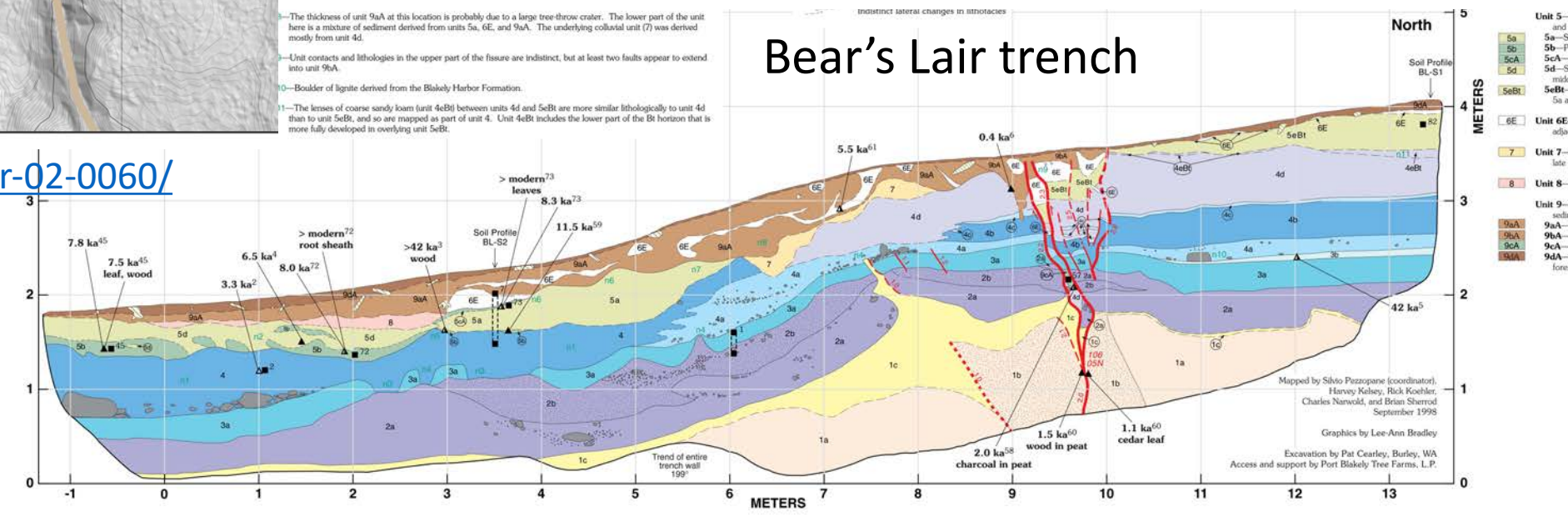
3—Boulder of lignite derived from the Blakely Harbor Formation.

4—The lenses of coarse sandy loam (unit 4eBt) between units 4d and 5eBt are more similar lithologically to unit 4d than to unit 5eBt, and so are mapped as part of unit 4. Unit 4eBt includes the lower part of the Bt horizon that is more fully developed in overlying unit 5eBt.

cross numbered crosses were described in the field, and other

<http://pubs.usgs.gov/of/2002/ofr-02-0060/>

Bear's Lair trench



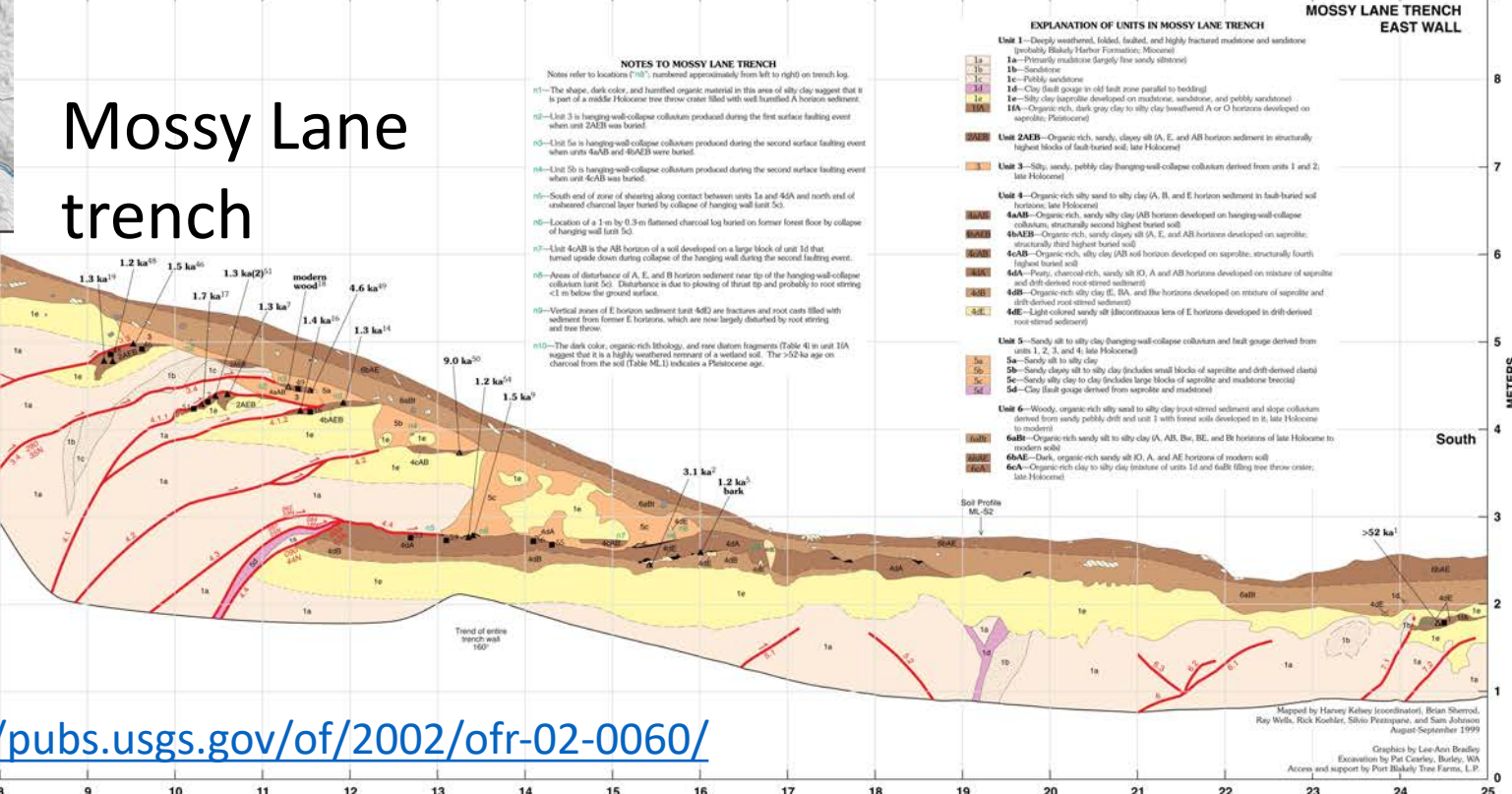
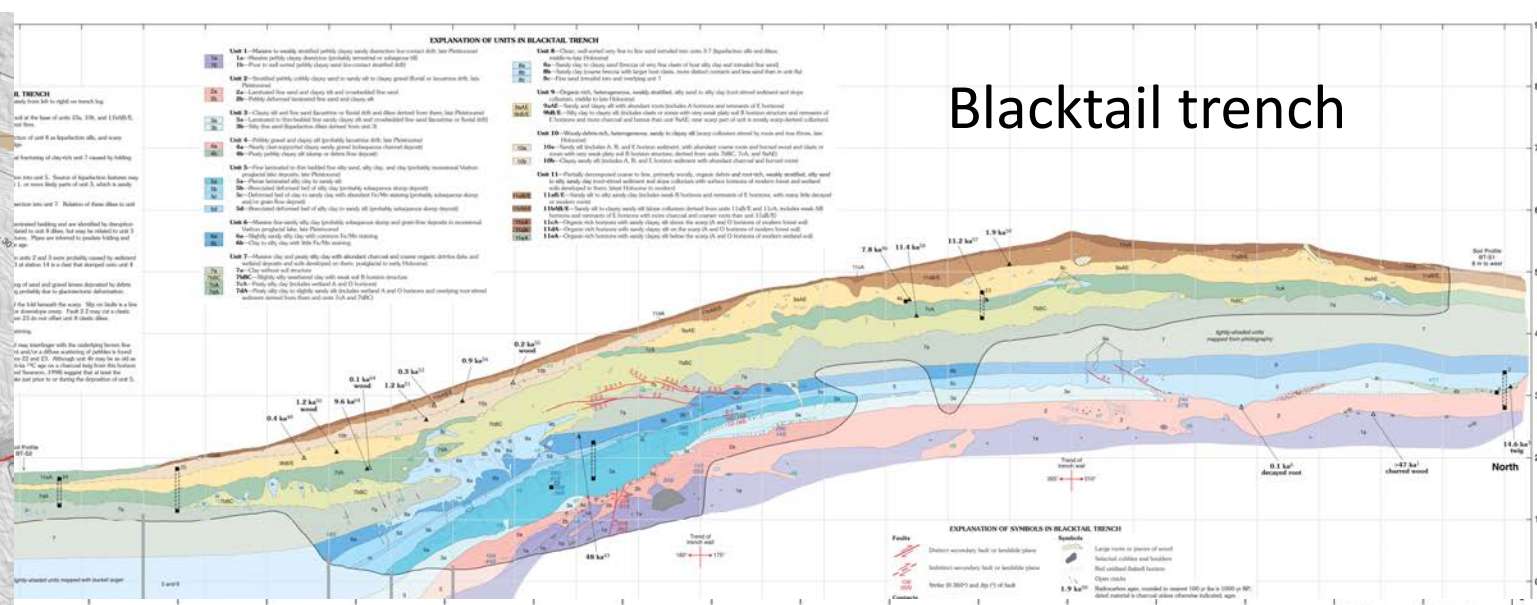
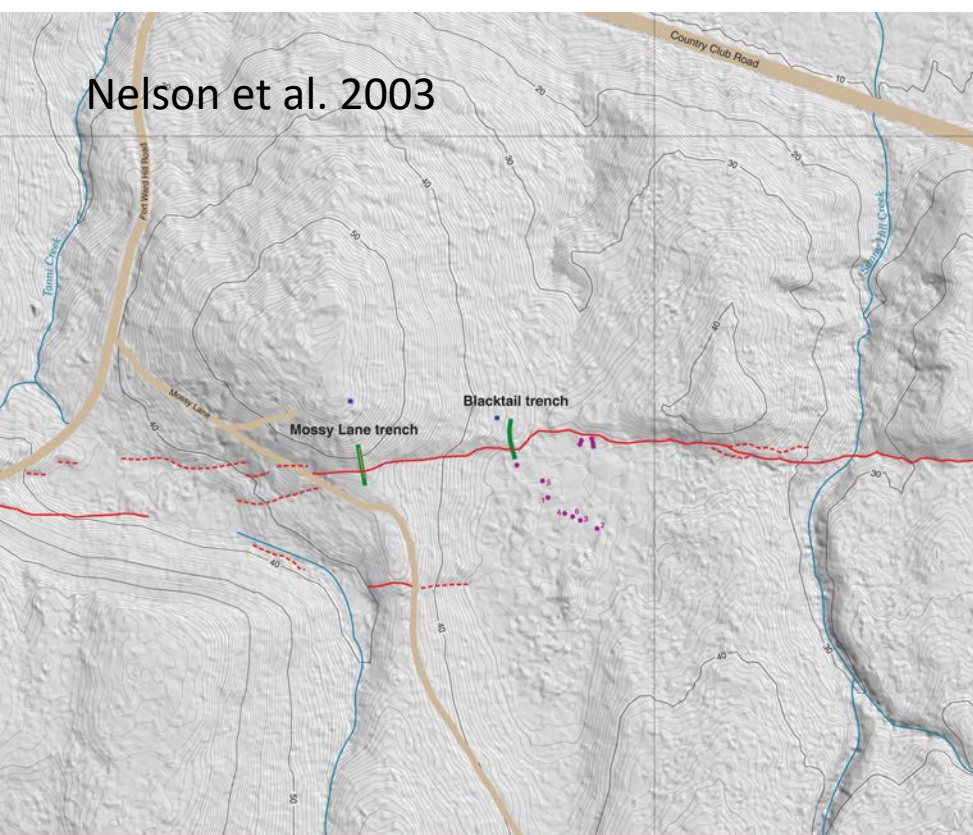
Mapped by Silvio Pizzopane (coordinator), Harvey Kelsey, Rick Koehler, Charles Nanwood, and Brian Sherrod, September 1998.

Graphics by Lee-Ann Bradley

Excavation by Pat Cearley, Burley, WA

Access and support by Port Blakely Tree Farms, L.P.





EXPLANATION OF UNITS IN BLACKTAIL TRENCH

Unit 1 - Massive to weakly stratified pebbly clayey sandy siltstone to sandstone (see Unit 1a) (see Plate 1)

Unit 2 - Clayey to silty clayey siltstone to sandstone (see Unit 2a) (see Plate 1)

Unit 3 - Silty, sandy, pebbly clay (see Unit 3a) (see Plate 1)

Unit 4 - Fine-grained to silty clayey siltstone to sandstone (see Unit 4a) (see Plate 1)

Unit 5 - Fine-grained to silty clayey siltstone to sandstone (see Unit 5a) (see Plate 1)

Unit 6 - Fine-grained to silty clayey siltstone to sandstone (see Unit 6a) (see Plate 1)

Unit 7 - Fine-grained to silty clayey siltstone to sandstone (see Unit 7a) (see Plate 1)

Unit 8 - Fine-grained to silty clayey siltstone to sandstone (see Unit 8a) (see Plate 1)

Unit 9 - Fine-grained to silty clayey siltstone to sandstone (see Unit 9a) (see Plate 1)

Unit 10 - Fine-grained to silty clayey siltstone to sandstone (see Unit 10a) (see Plate 1)

Unit 11 - Fine-grained to silty clayey siltstone to sandstone (see Unit 11a) (see Plate 1)

Unit 12 - Fine-grained to silty clayey siltstone to sandstone (see Unit 12a) (see Plate 1)

Unit 13 - Fine-grained to silty clayey siltstone to sandstone (see Unit 13a) (see Plate 1)

Unit 14 - Fine-grained to silty clayey siltstone to sandstone (see Unit 14a) (see Plate 1)

Unit 15 - Fine-grained to silty clayey siltstone to sandstone (see Unit 15a) (see Plate 1)

Unit 16 - Fine-grained to silty clayey siltstone to sandstone (see Unit 16a) (see Plate 1)

Unit 17 - Fine-grained to silty clayey siltstone to sandstone (see Unit 17a) (see Plate 1)

Unit 18 - Fine-grained to silty clayey siltstone to sandstone (see Unit 18a) (see Plate 1)

Unit 19 - Fine-grained to silty clayey siltstone to sandstone (see Unit 19a) (see Plate 1)

Unit 20 - Fine-grained to silty clayey siltstone to sandstone (see Unit 20a) (see Plate 1)

EXPLANATION OF SYMBOLS IN BLACKTAIL TRENCH

Faults: Distinct secondary fault with displacement (Faults are numbered separately in red (e.g., 3.2.1))

Inferred primary fault

Distinct secondary fault, landslide plane (labeled L), or fracture

Strike (0-360°) and dip (°) of fault

100 05V

Contacts: Sharp or distinct

Gradual and/or indistinct

Inferred

Strike (0-360°) and dip (°) of bedding

Symbols: Charcoal beds

Large roots or pieces of wood

Selected cobbles and boulders

1.9 ka⁰⁰

Radiochron ages, rounded to nearest 100 yr (ix is 1000 yr BP; dated material is charcoal unless otherwise indicated; ages <20 ka are calibrated to approximate solar yr; other ages are in ¹⁴C yr BP; superscript is sample number on Table ML1)

▲ close (7) maximum age for host sediment

△ maximum age for host sediment

△ minimum (7) age for host sediment

▴ Probe, datum and/or macrofossil sample (superscript is sample number on Table 6)

EXPLANATION OF UNITS IN MOSSY LANE TRENCH

Unit 1 - Deeply weathered, folded, faulted, and highly fractured mudstone and sandstone (see Unit 1a) (see Plate 1)

Unit 2 - Organic-rich, sandy, silty clay (see Unit 2a) (see Plate 1)

Unit 3 - Silty, sandy, pebbly clay (see Unit 3a) (see Plate 1)

Unit 4 - Organic-rich silty sand to silty clay (see Unit 4a) (see Plate 1)

Unit 5 - Sandy silty clay (see Unit 5a) (see Plate 1)

Unit 6 - Woody, organic-rich silty sand to silty clay (see Unit 6a) (see Plate 1)

EXPLANATION OF SYMBOLS IN MOSSY LANE TRENCH

Faults: Distinct secondary fault with displacement (Faults are numbered separately in red (e.g., 3.2.1))

Inferred primary fault

Distinct secondary fault, landslide plane (labeled L), or fracture

Strike (0-360°) and dip (°) of fault

100 05V

Contacts: Sharp or distinct

Gradual and/or indistinct

Inferred

Strike (0-360°) and dip (°) of bedding

Symbols: Charcoal beds

Large roots or pieces of wood

Selected cobbles and boulders

Red unsorted detrital horizon

Open circles

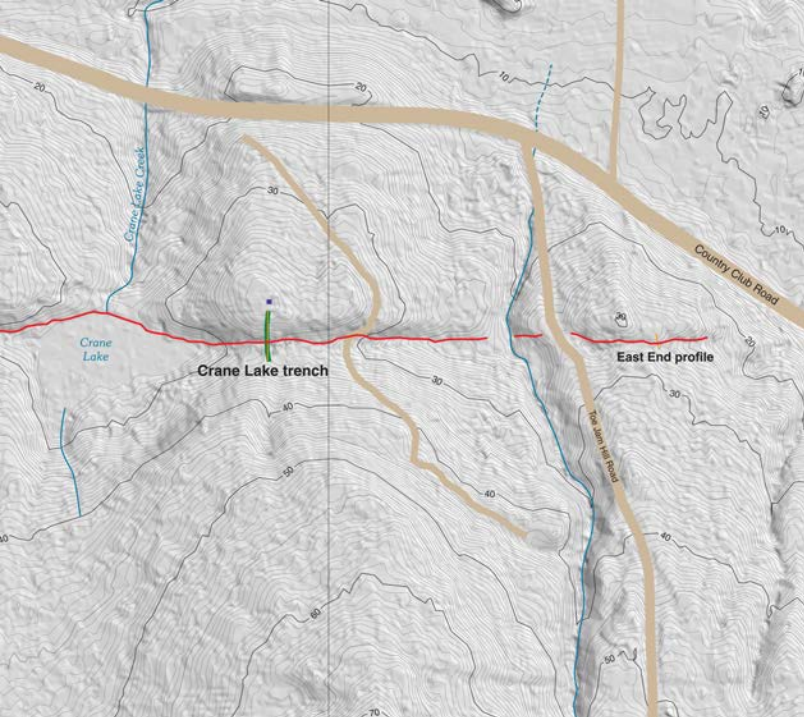
Radiochron ages, rounded to nearest 100 yr (ix is 1000 yr BP; dated material is charcoal unless otherwise indicated; ages <20 ka are calibrated to approximate solar yr; other ages are in ¹⁴C yr BP; superscript is sample number on Table ML1)

Mossy Lane trench

<http://pubs.usgs.gov/of/2002/ofr-02-0060/>



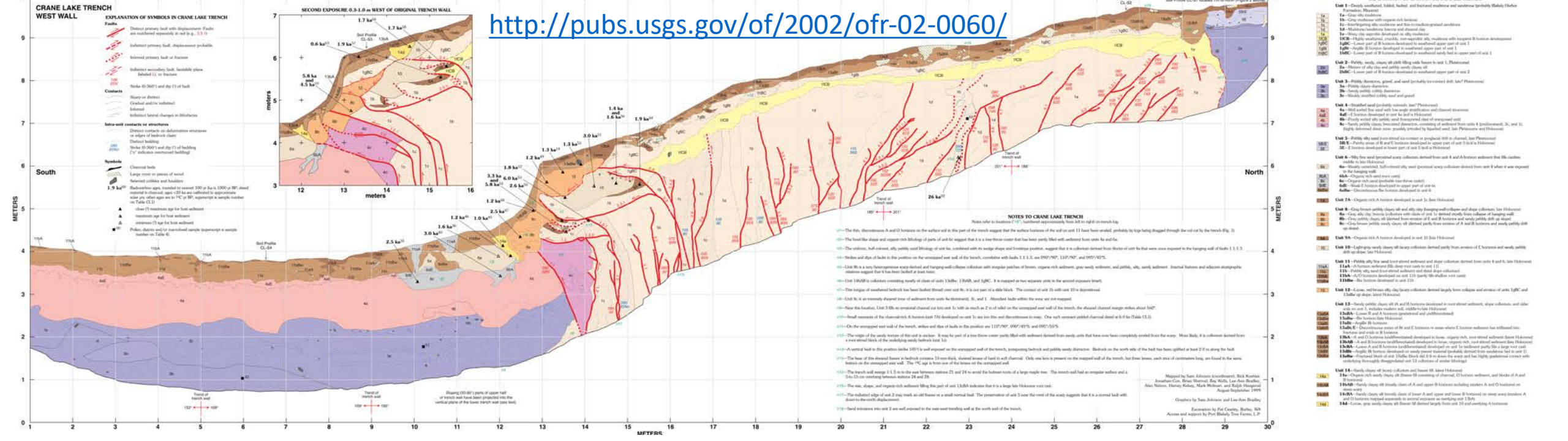
Crane Lake trench









Nelson et al. 2003

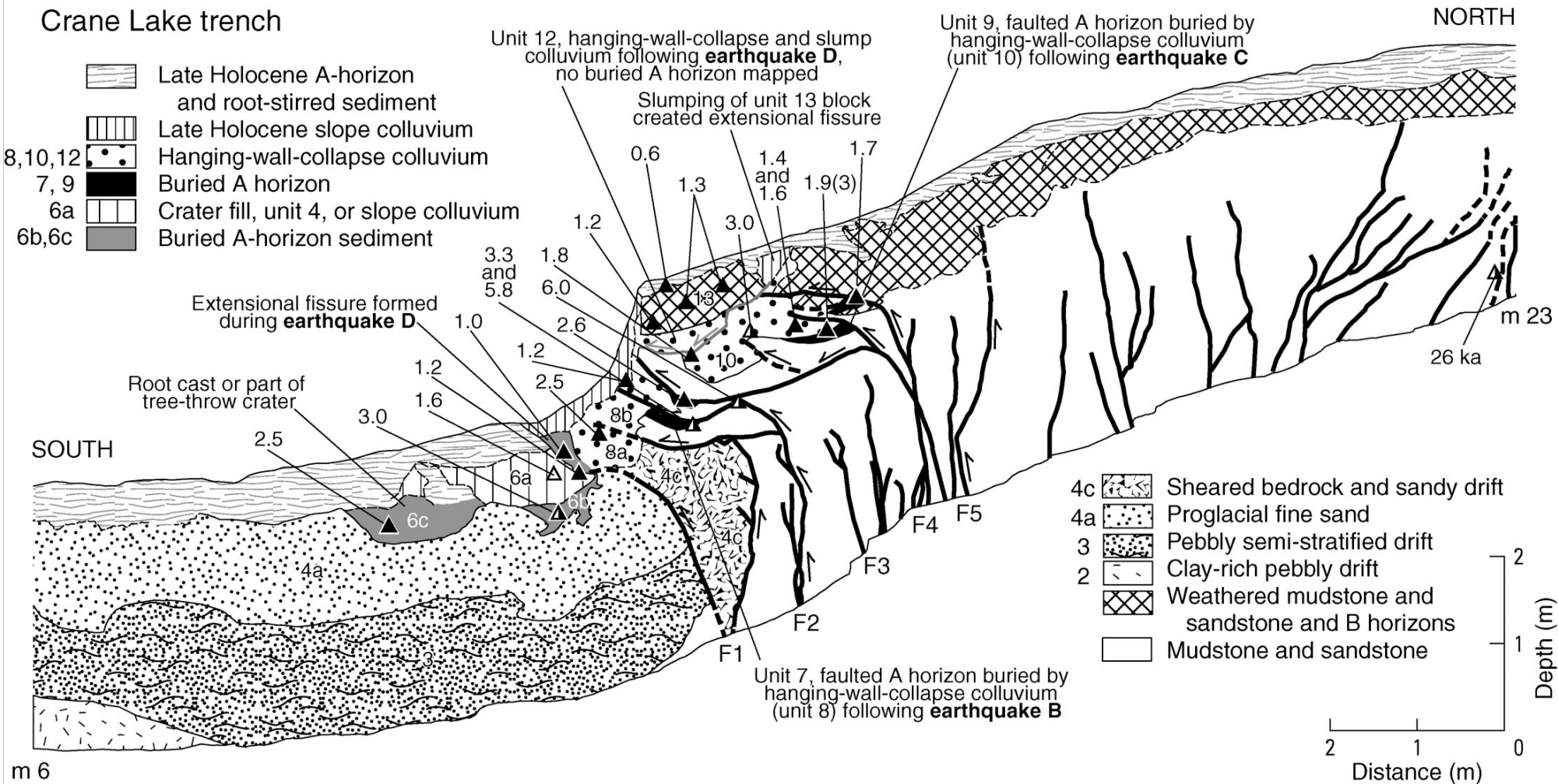








<http://pubs.usgs.gov/of/2002/ofr-02-0060/>





Crane Lake trench

-  Late Holocene A-horizon and root-stirred sediment
-  Late Holocene slope colluvium
-  Hanging-wall-collapse colluvium (8, 10, 12)
-  Buried A horizon (7, 9)
-  Crater fill, unit 4, or slope colluvium (6a)
-  Buried A-horizon sediment (6b, 6c)






-  4c Sheared bedrock and sandy drift
-  4a Proglacial fine sand
-  3 Pebbly semi-stratified drift
-  2 Clay-rich pebbly drift
-  Weathered mudstone and sandstone and B horizons
-  Mudstone and sandstone

Contacts

-  Sharp or distinct
-  Gradual and/or indistinct

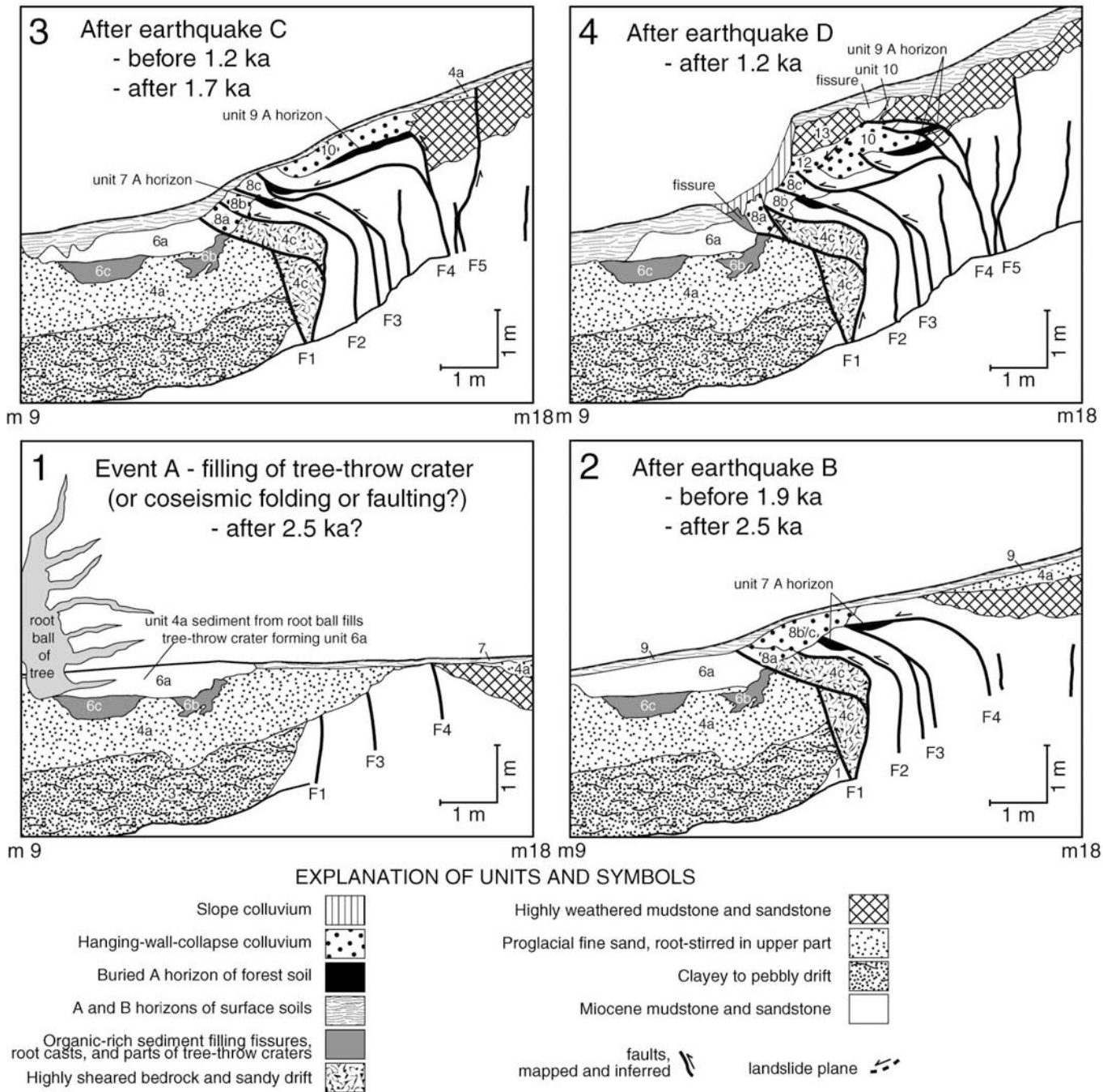
6a Unit labels next to patterns as on Fig. 6 and Nelson et al. (2002)

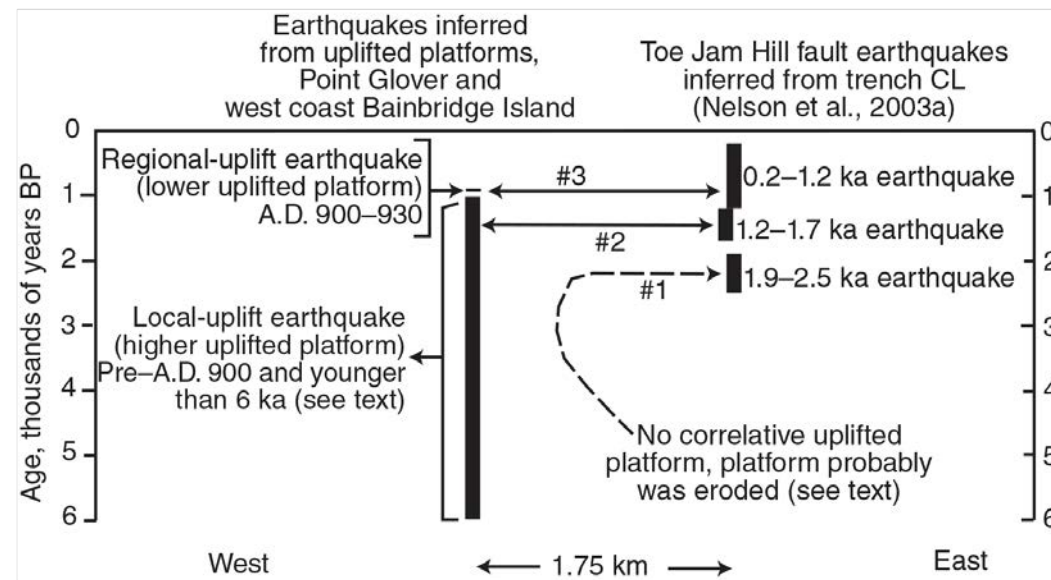
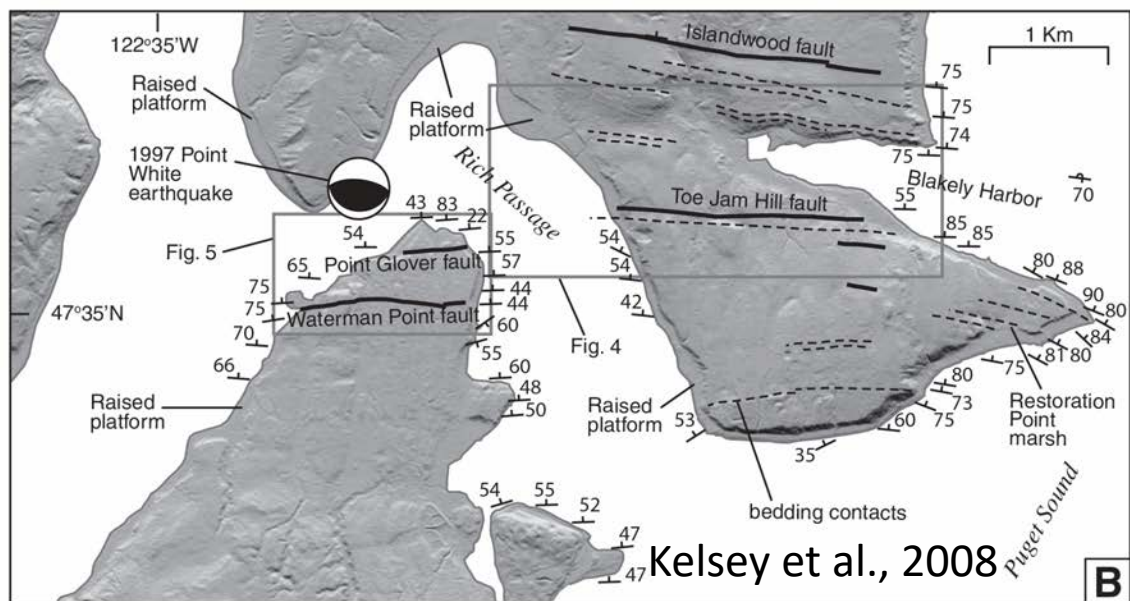
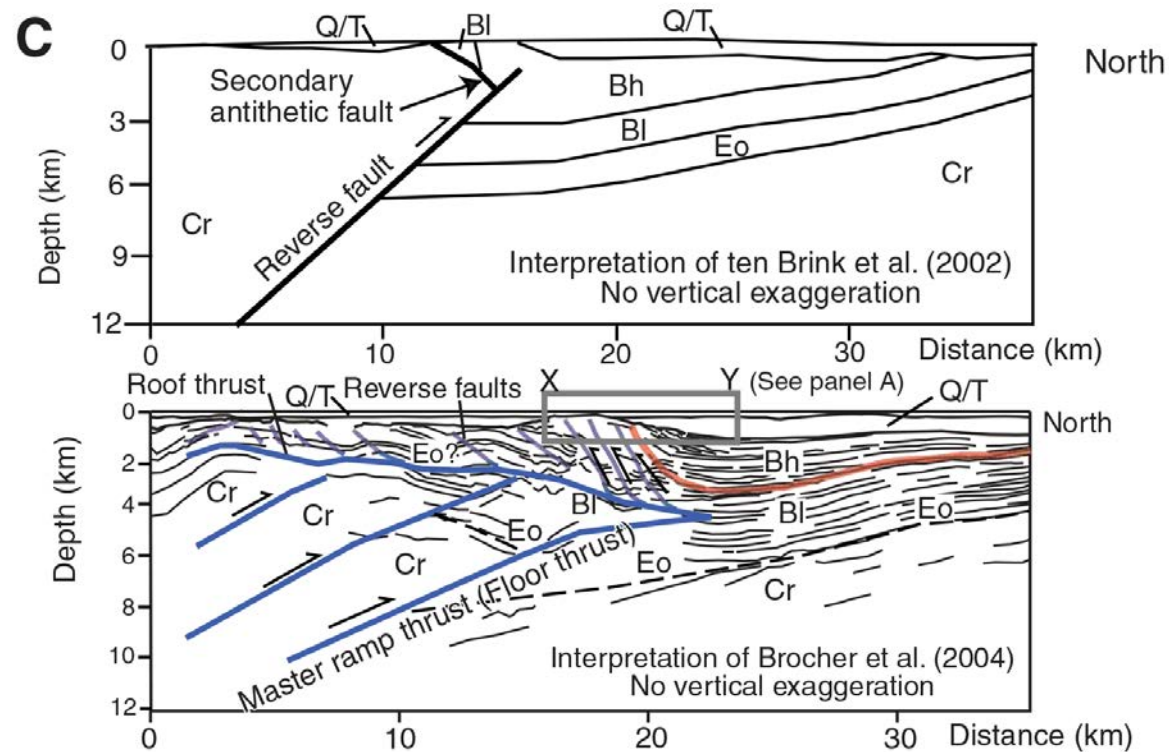
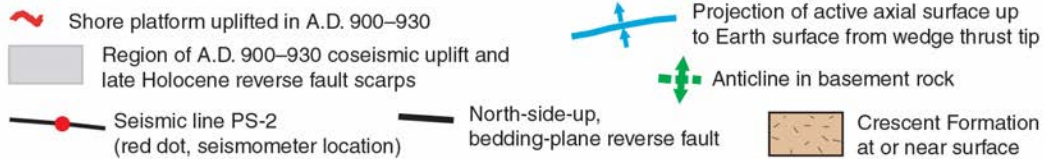
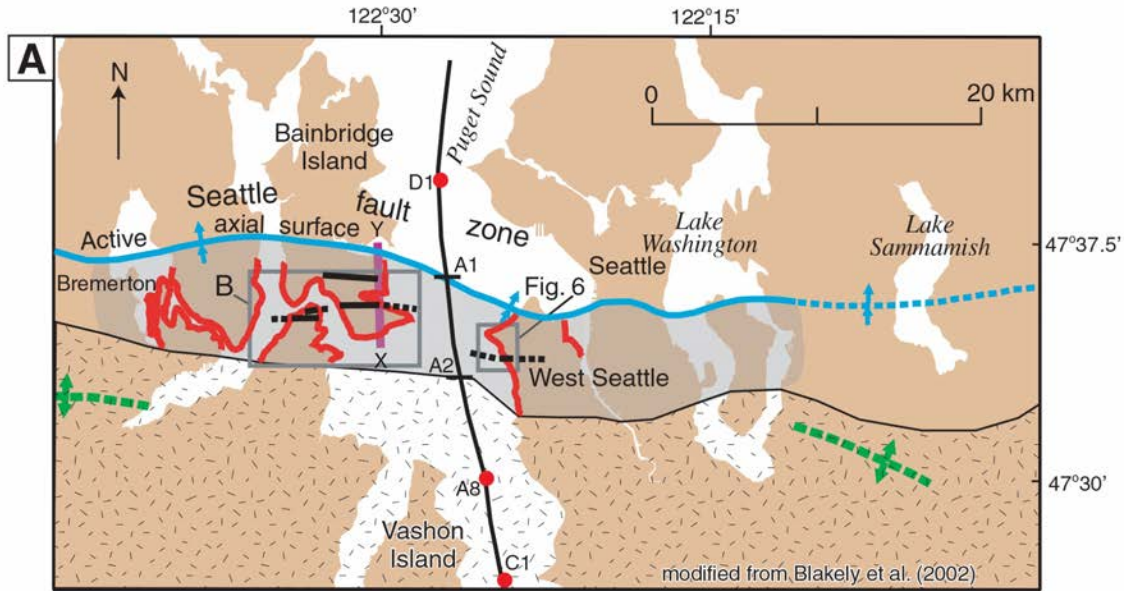
Faults

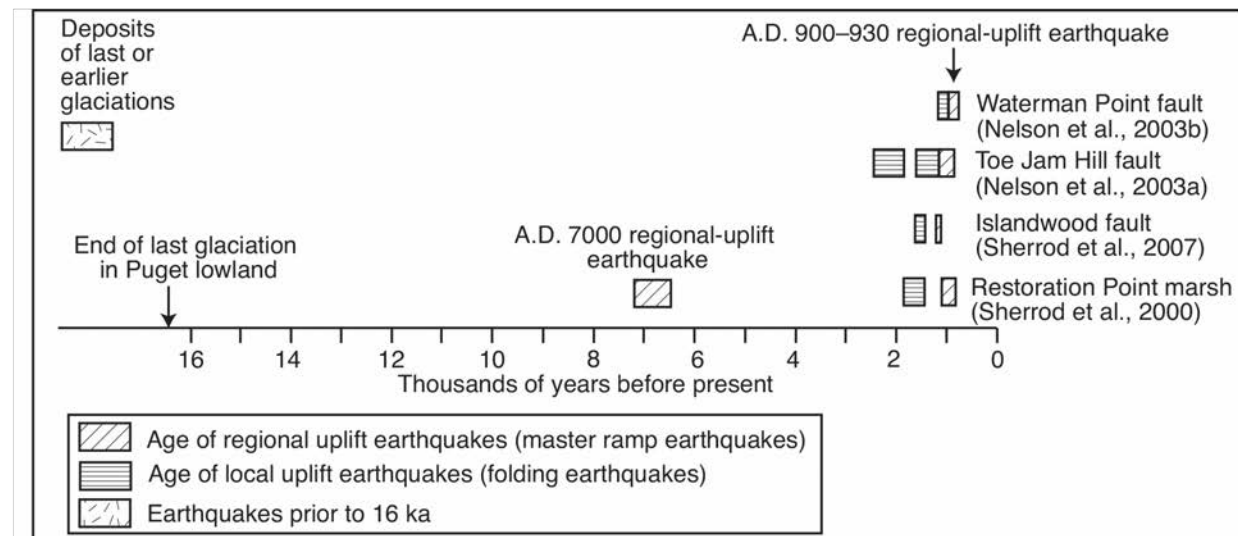
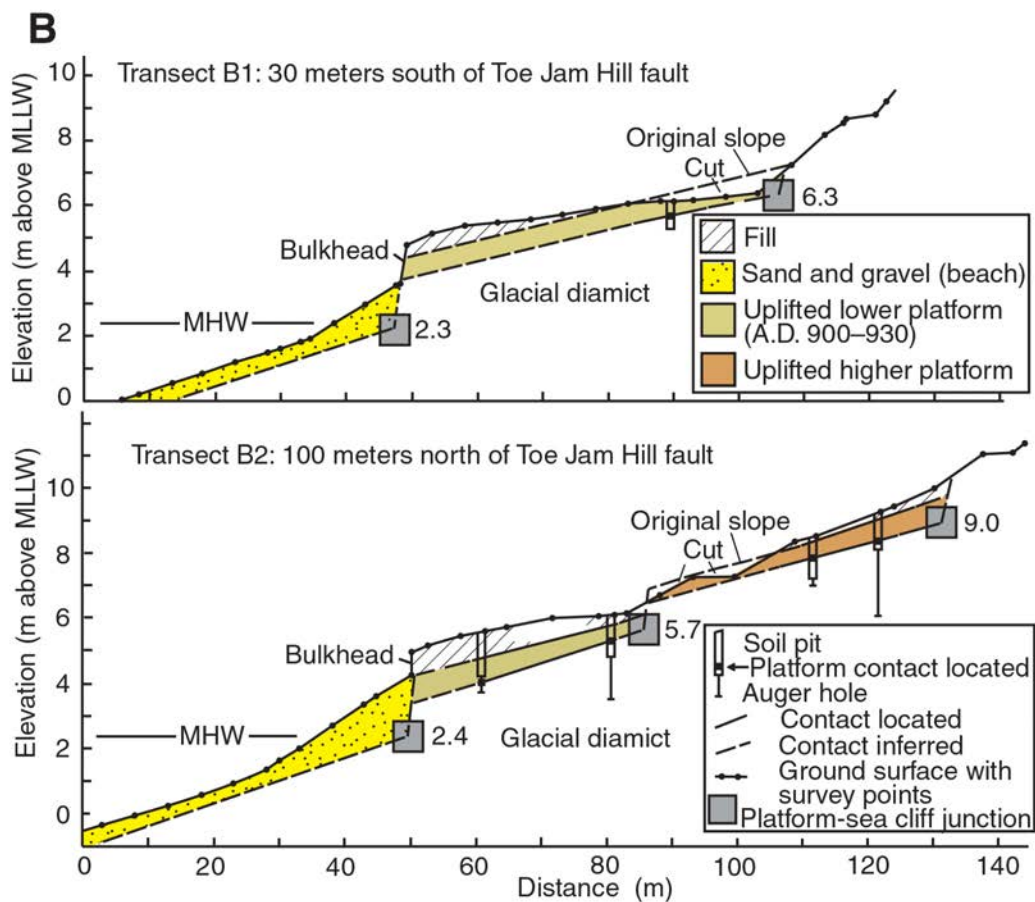
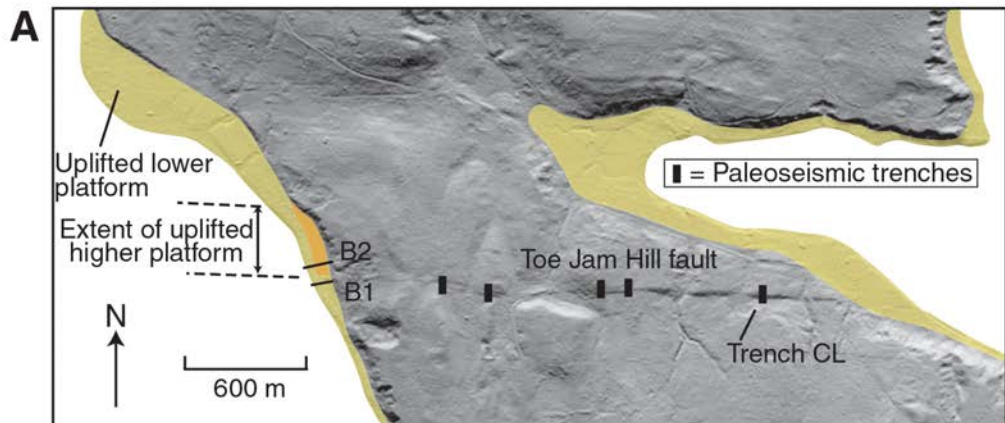
-  Distinct primary fault
-  Indistinct or inferred primary fault
-  Indistinct landslide plane
- F2 Fault label

- 1.9 Radiocarbon ages (x 1000 yr BP), rounded to nearest 100 yr
- ▲ Close (?) maximum age for host sediment
- ▲ Maximum age for host sediment
- △ Minimum (?) age for host sediment

Three, or possibly four, earthquakes between 2500 and 1000 yr ago. The most recent earthquake occurred Between 1050–1020 cal. (calibrated) yr B.P. (A.D. 900–930).







Kelsey et al., 2008



