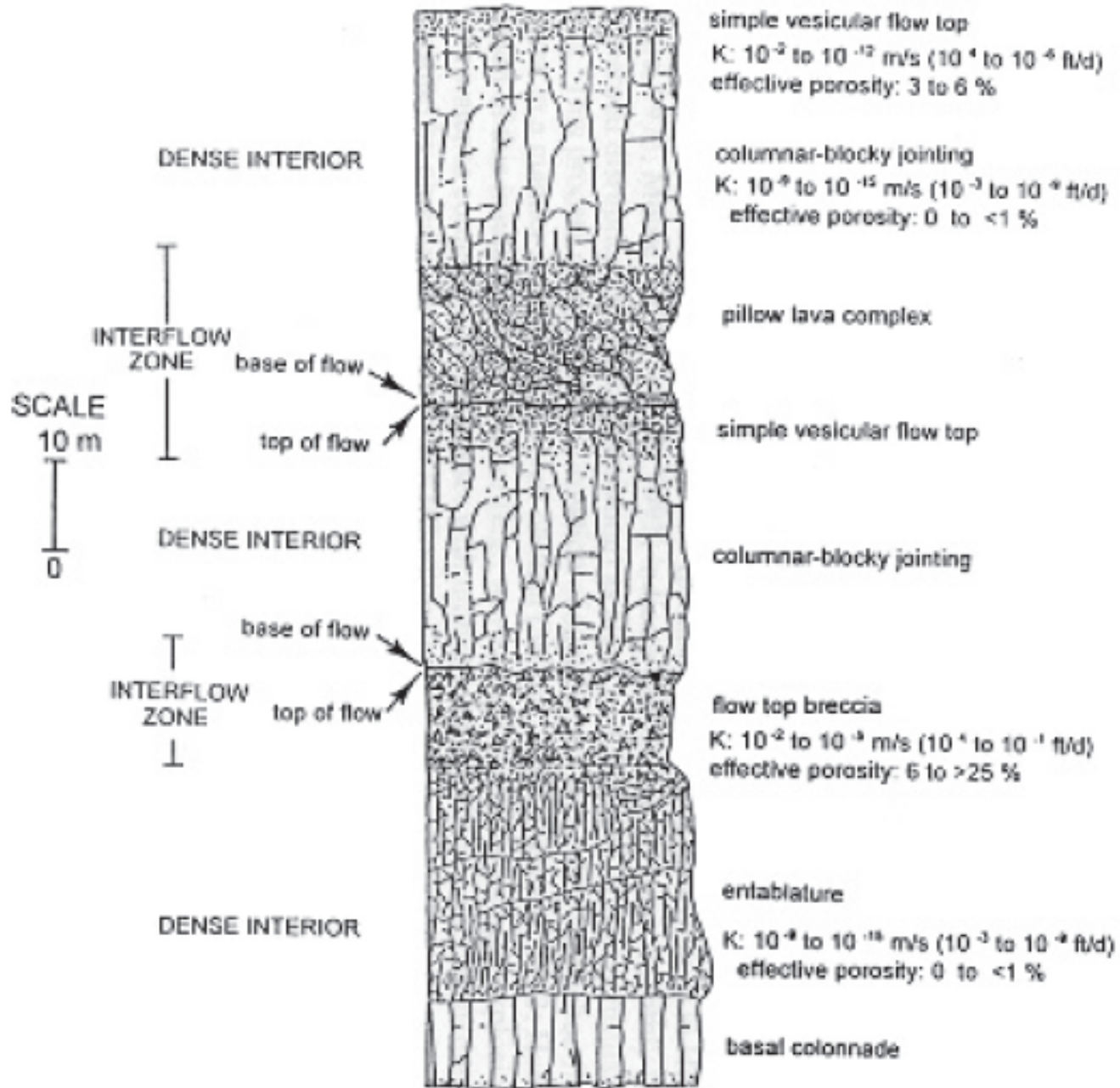
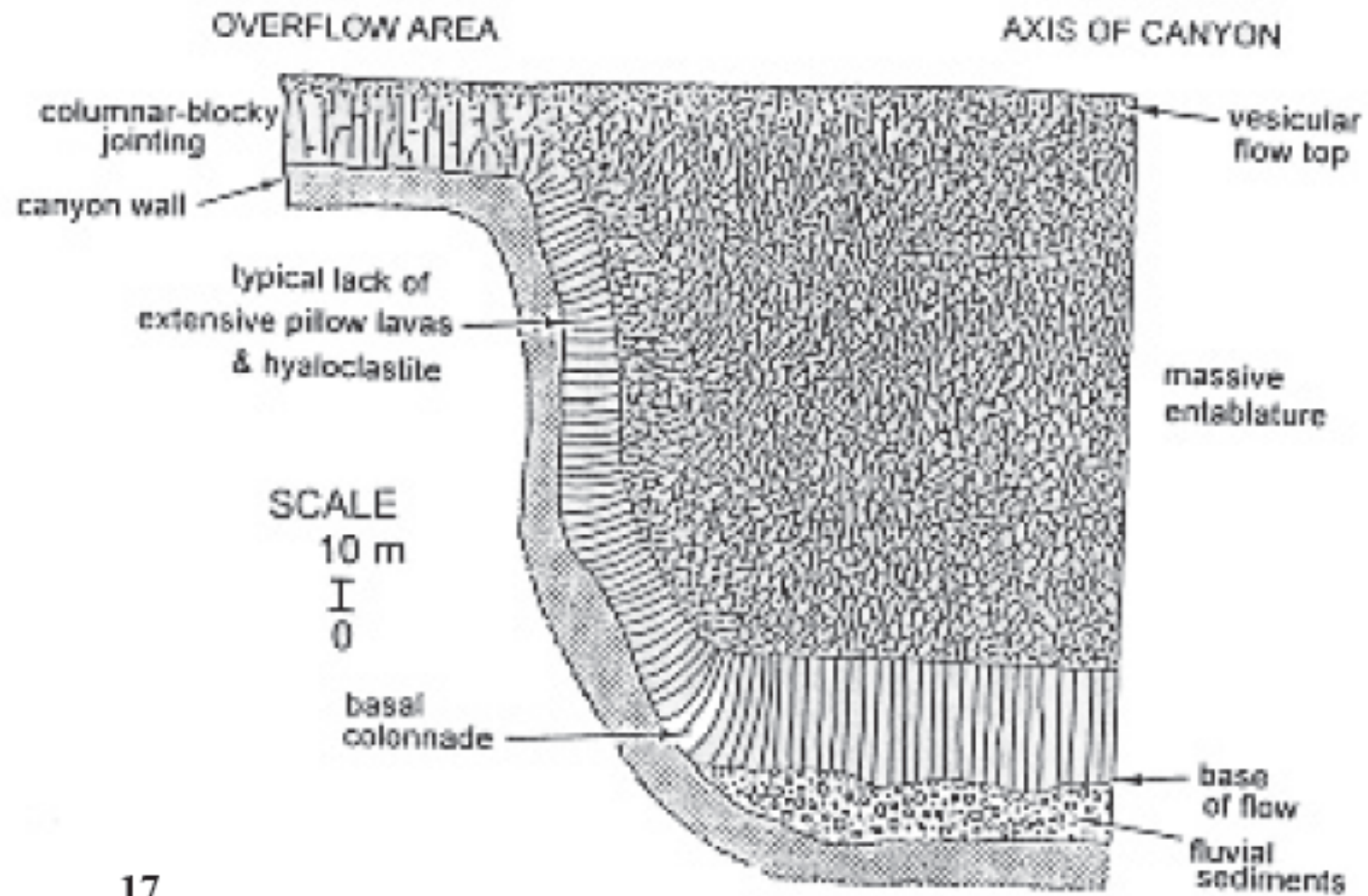


# SHEET FLOWS



# INTRACANYON FLOW





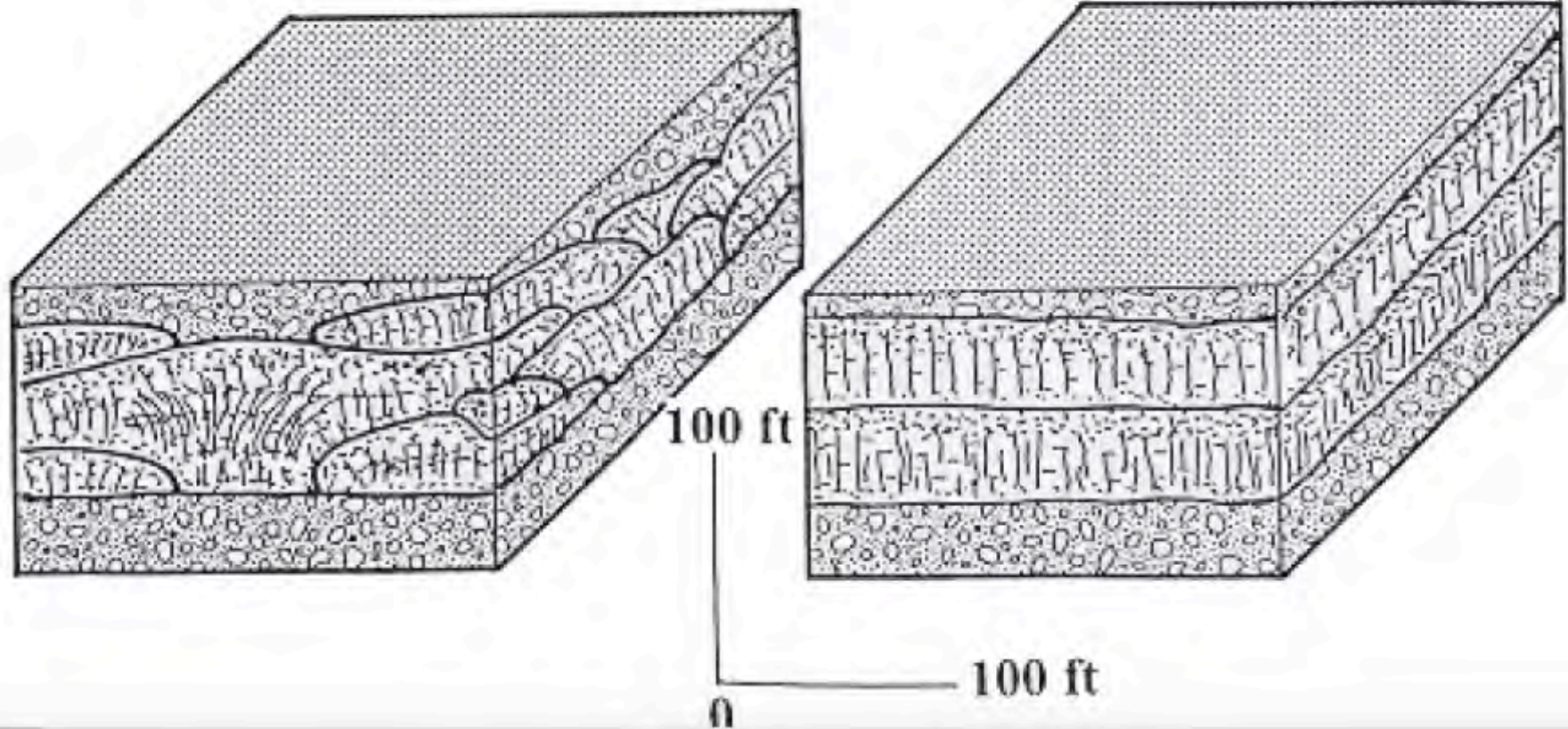
© LYN TOPINK 2006



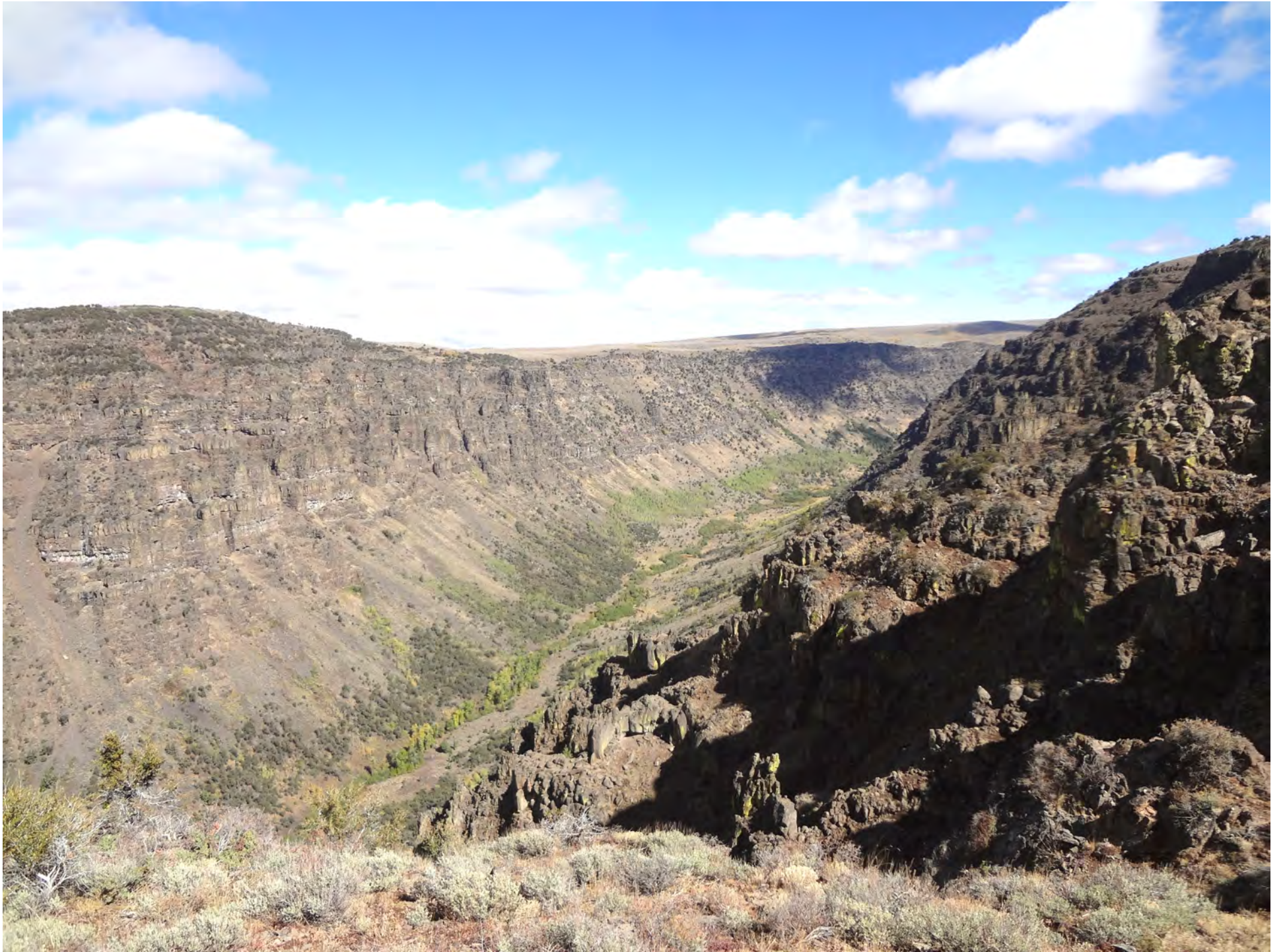
Figure 6. South face of Hamilton Mountain showing thick intracanyon Ortle Member flow above N-dipping pillow-breccia beds on left and banked against Eagle Creek Formation on right; overlying flows are also in Ortle Member; entire cliff face is ~300 m high.

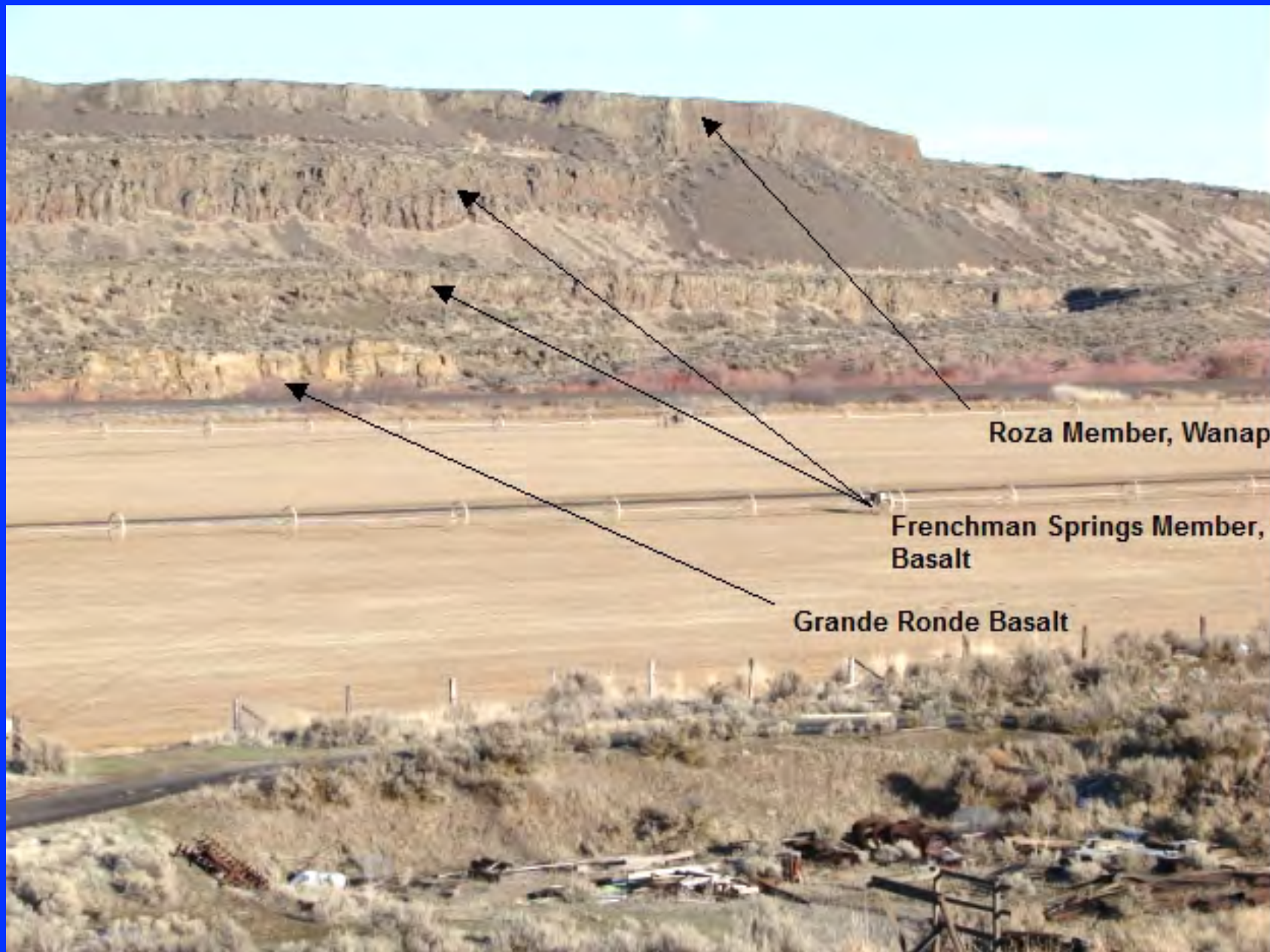
Compound Flows

Sheet Flows









**Roza Member, Wanapum Basalt**

**Frenchman Springs Member, Wanapum Basalt**

**Grande Ronde Basalt**



Ecola State Park and Rippet Quarry  
(Stop 3-3)

Onion Peak and Humbug-Saddle Mtn.  
(Stops 3-5, 3-5a, and 3-6)

Wickiup Mtn.

Nicolai Mtn.

Tillamook Head invasive sill  
(250 m)

CRBG submarine canyon complex & pillow breccia fill (> 600 m)

Niem and others, 1994, field trip stops

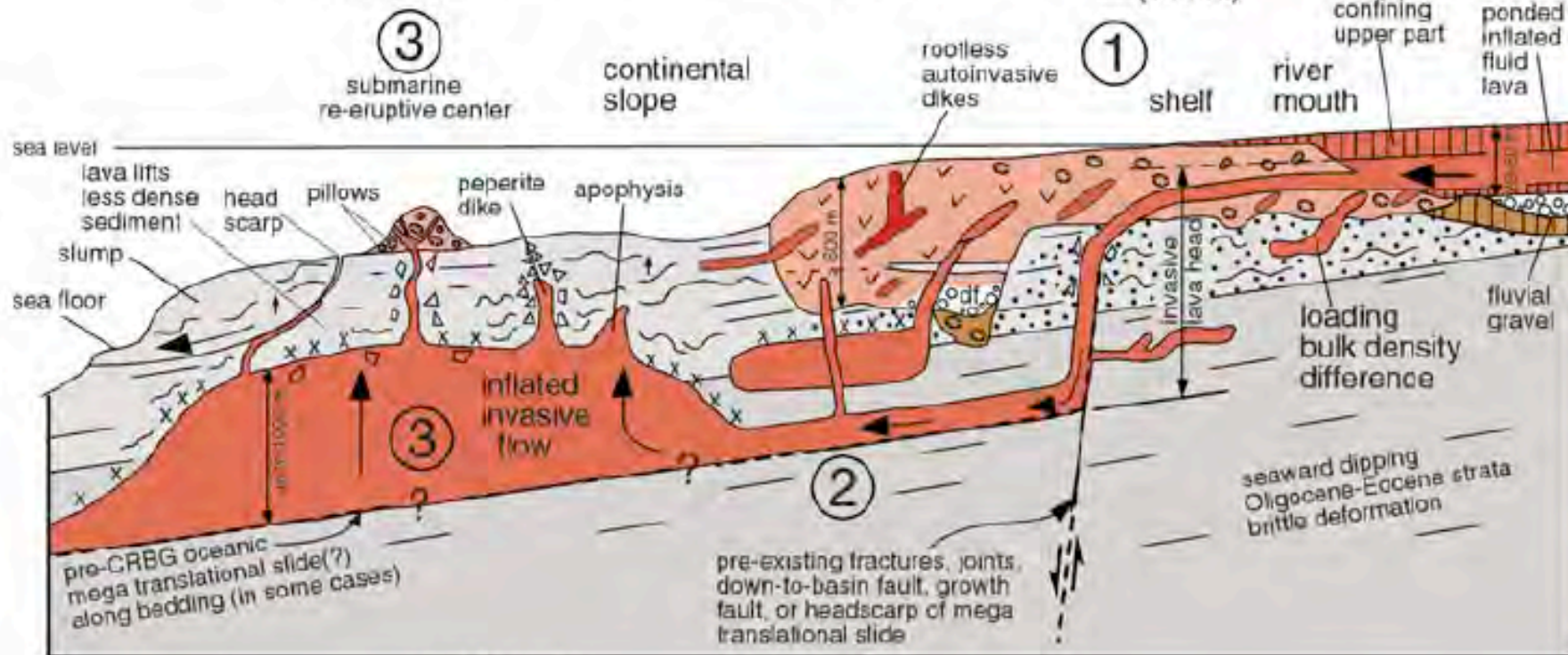
Haystack Rock (Ginkgo)

Humbug Pt. (Stop 3-4)

lava delta (100 m)

subaerial flow (20-50 m) thick, cooled confining upper part

ponded inflated fluid lava



not to scale



Astoria Fm. (lower and middle Miocene) plastically deformed slope and ancestral Astoria canyon head facies, Cannon Beach (nested turbidite channels) and Youngs Bay (deep-sea sandstone channels) members



sedimentary breccia near margins of peperitic dikes



thick baked contact



Astoria Fm., ancestral Columbia River mouth: Angora Peak Mbr. (coal-bearing)



pillow breccia

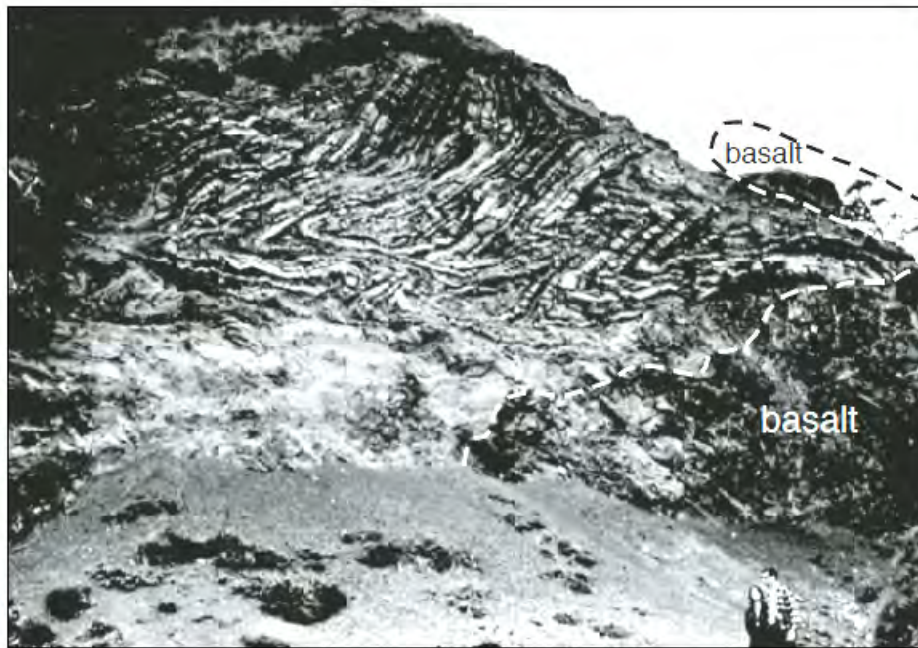


Figure 27. Soft-sediment chevron-folded turbidite sandstone and mudstone beds of Miocene Astoria Formation (Cannon Beach Member) deformed by apophyses of Miocene Winter Water invasive sill. Sea cliff at the north end of Crescent Beach, Ecola State Park.

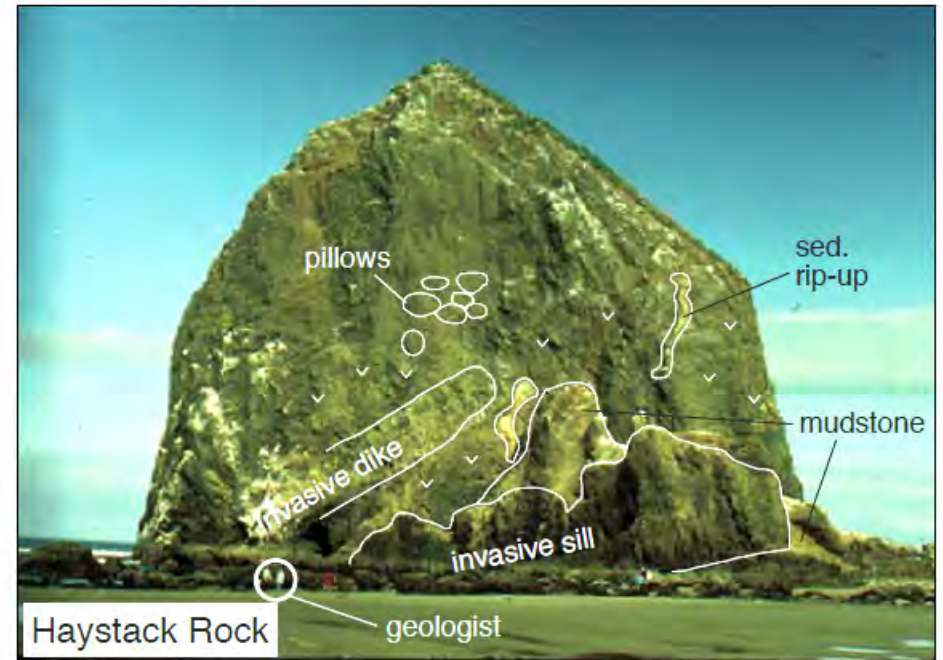


Figure 28. Stop 3-3a: Haystack Rock is a large sea stack eroded from a re-eruptive center of Ginkgo pillow basalt and breccia, invasive feeder dikes and sills, and baked sediment ripped up off the Miocene deep seafloor (accessible only at low tide). Haystack Rock is the landmark symbol of the community of Cannon Beach.



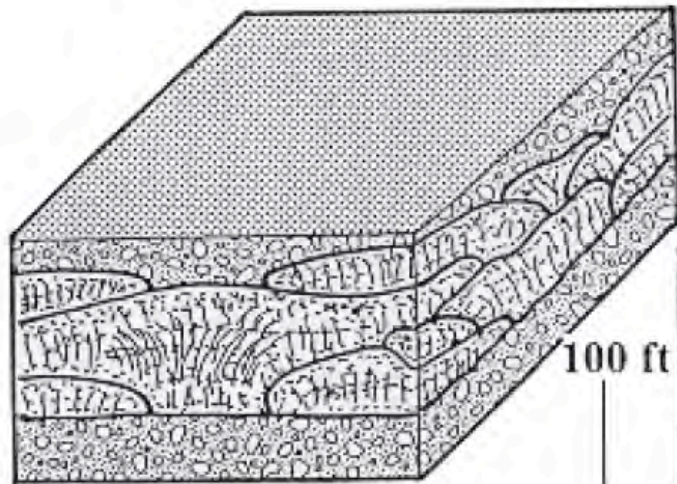
Figure 30. Weathered reddish-orange submarine Winter Water, poorly sorted pillow palagonite breccia, borrow pit boulders along Onion Peak Road between Stops 3-5 and 3-5a. White spots are lichens.

Fishing Rock, Fogerty Creek State Park

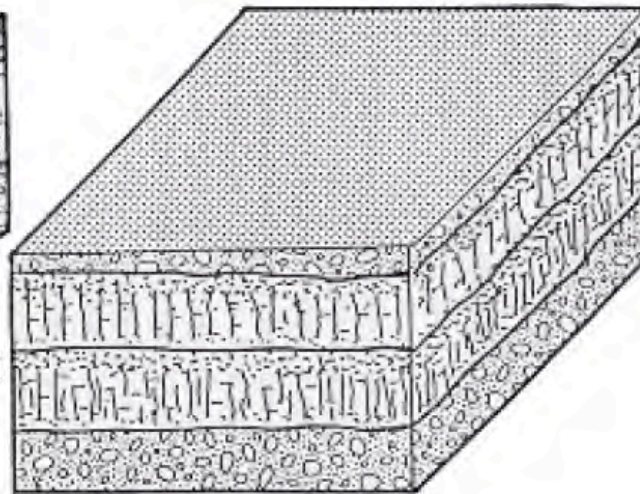




# Compound Flows



# Sheet Flows



100 ft

100 ft



Ecola State Park and Rippet Quarry (Stop 3-3)      Onion Peak and Humbug-Saddle Mtn. (Stops 3-5, 3-5a, and 3-6)      Wickiup Mtn. (Niem and others, 1994, field trip stops)      Nicolai Mtn.

Tillamook Head invasive sill (250 m)

Haystack Rock (Ginkgo)

③ submarine re-eruptive center

continental slope

Humbug Pt. (Stop 3-4)

CRBG submarine canyon complex & pillow breccia fill (> 600 m)

②

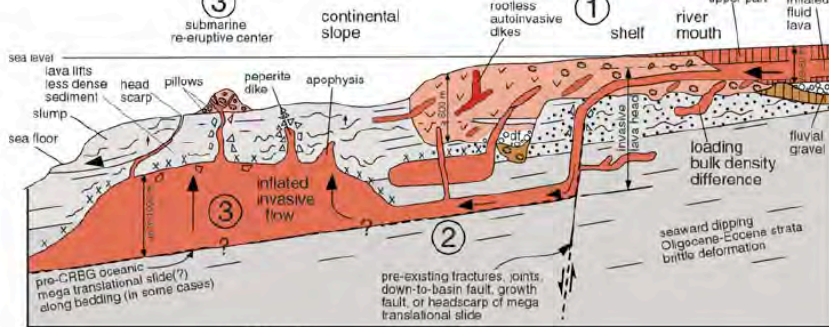
lava delta (100 m)

① shelf

river mouth

subaerial flow (20-50 m) thick coded confining upper part

ponded inflated fluid lava



not to scale

- Astoria Fm. (lower and middle Miocene) plastically deformed slope and ancestral Astoria canyon head facies, Cannon Beach (nested turbidite channels) and Youngs Bay (deep-sea sandstone channels) members
- Astoria Fm., ancestral Columbia River mouth: Angora Peak Mbr. (coal-bearing)
- sedimentary breccia near margins of peperitic invasive dikes
- thick baked contact
- pillow breccia

## INTRACANYON FLOW

