

11:00 am leave CWU
 I-90... Silica Road exit... follow signs to Frenchman Coulee

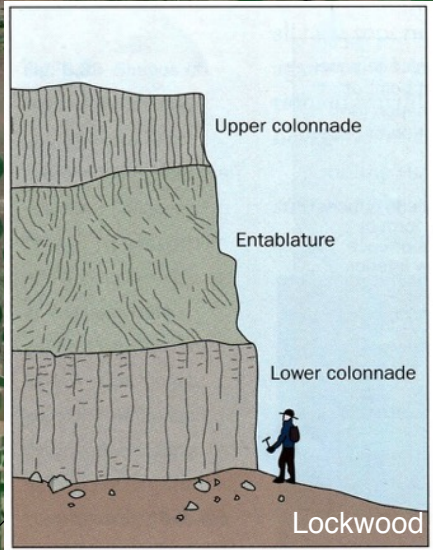
12:00 - 2:00 pm Frenchman Coulee
 I-90... 26E... Royal City... 7.9 miles... turn N on 262... 3.5 miles... turn E at stop sign (12 SE Road)... 10.1 miles... turn N onto gravel road (gate open)... park on shoulder within view of wall of columns

3:00 - 5:00 pm Drumheller Channels

6:30 pm return to CWU



Foster



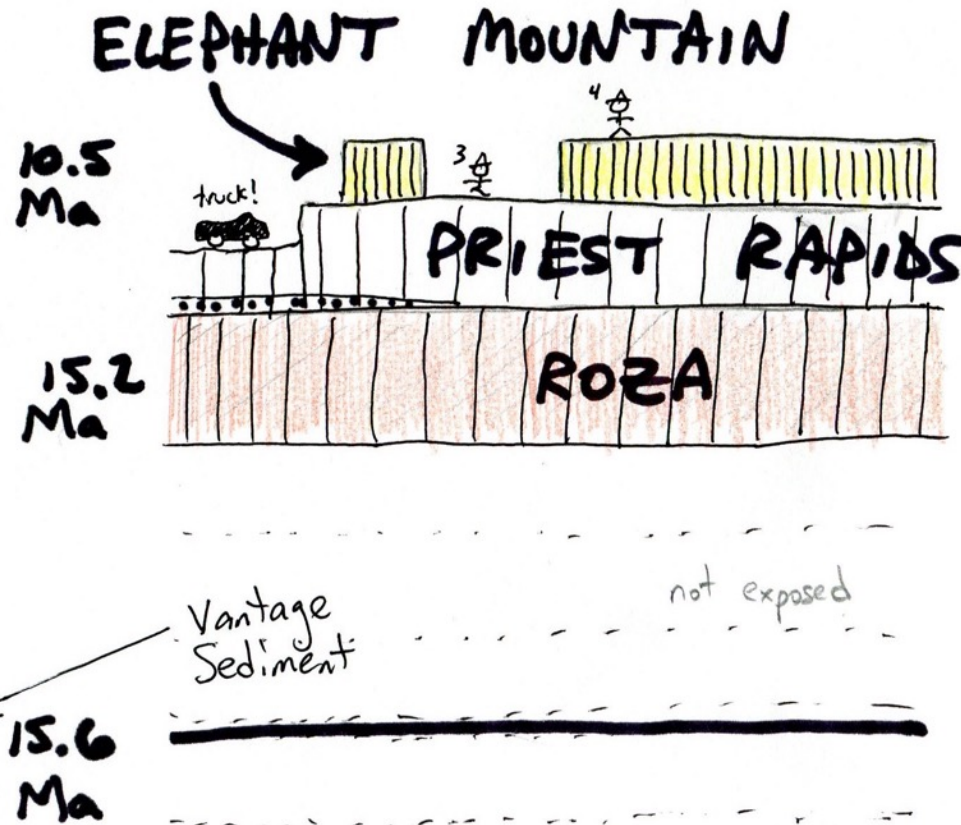
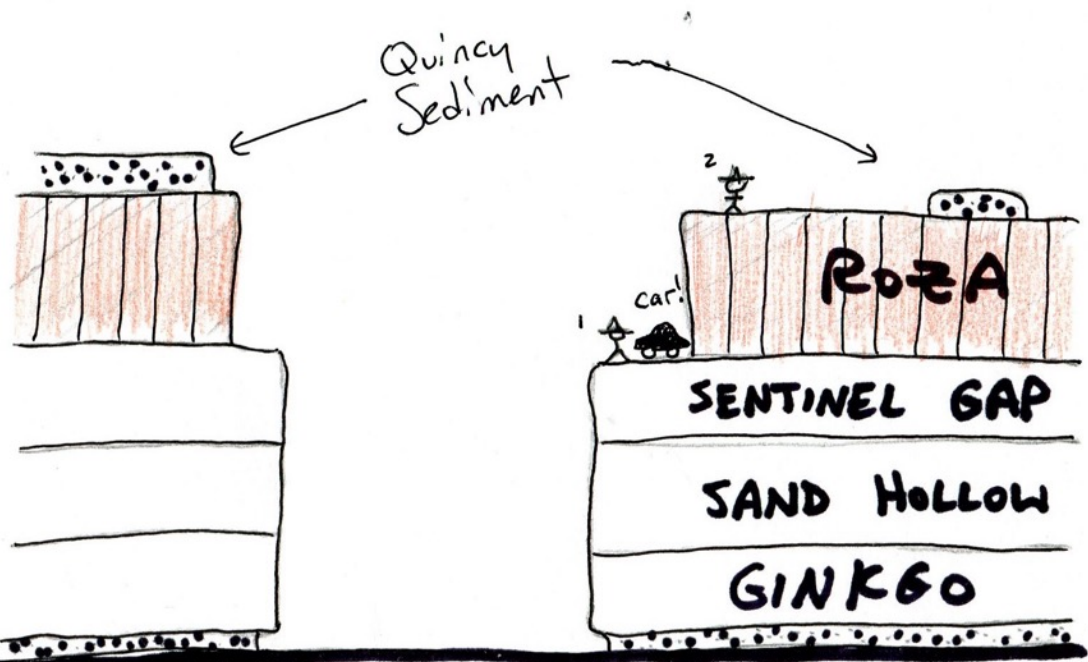
Foster

Columnar Basalt Field Trip
 April 24, 2016 Nick Zentner CWU Geology

Drumheller Channels
 10.1 miles
 3.5 miles
 Columbia National Wildlife Refuge

FRENCHMAN COULEE

DRUMHELLER CHANNELS



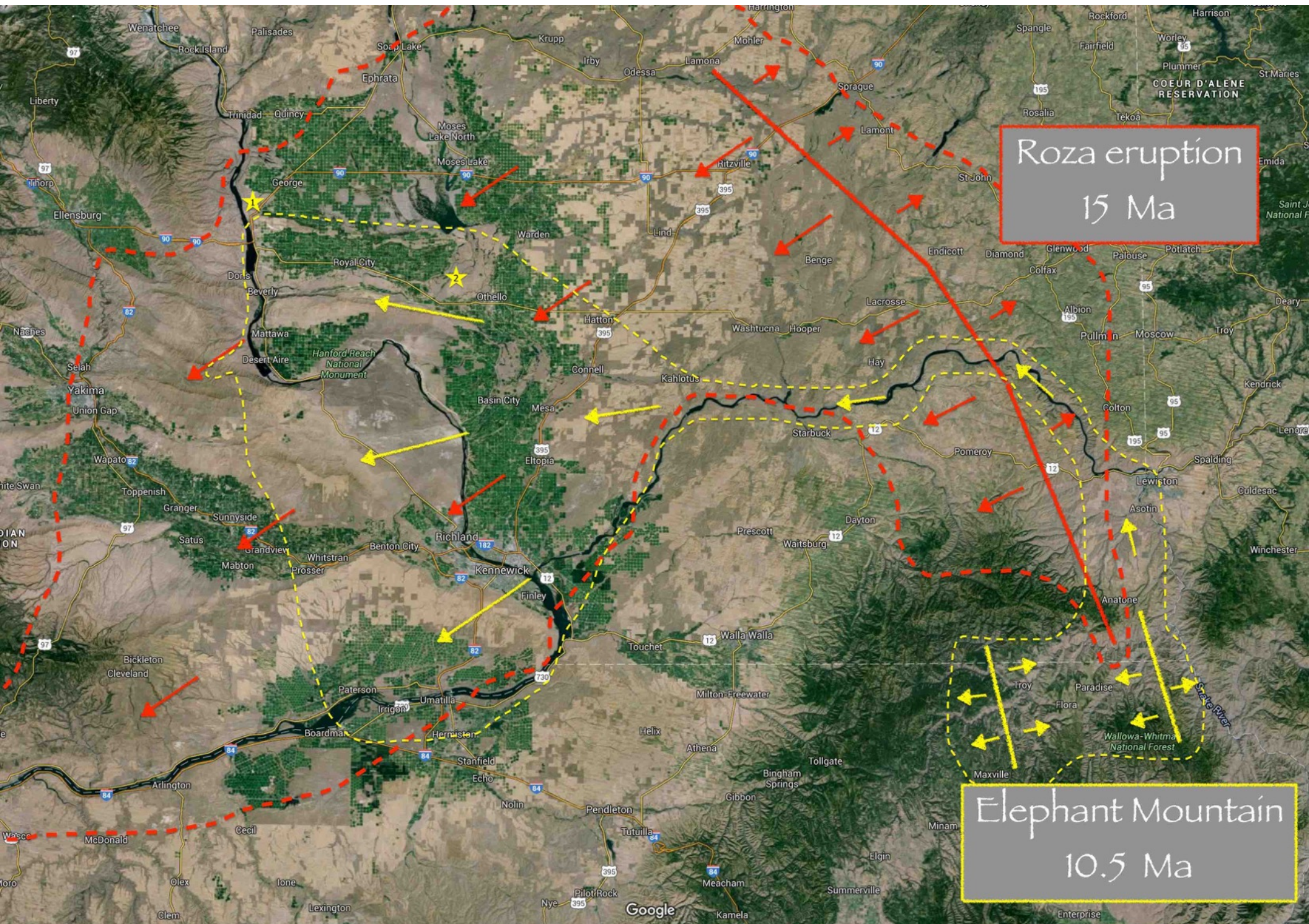
GRANDE RONDE

FLAWS



Basalt Flows at Frenchman Coulee

Tom Foster photo looking NE toward Quincy



Roza eruption
15 Ma

Elephant Mountain
10.5 Ma



Reidel 2013

Columbia River Basalt Group		Formation	Age (Ma)	Volume		
Columbia River Basalt Group	Yakima Basalt Subgroup	Saddle Mountains Basalt	6.0	2,424 km ³ 1.1%	Waning Phase	
		Wanapum Basalt	15.0	12,175 km ³ 5.8%		
		Prineville Basalt	Grande Ronde Basalt	15.6		590 km ³ 0.3%
				Picture Gorge Basalt		149,000 km ³ 72%
		Imnaha Basalt	16.0	2,400 km ³ 1.1%		Main Eruptive Phase
	Imnaha Basalt	Steens Basalt	16.0	11,000 km ³ 5.3%		
			16.7	31,800 km ³ 15.2%		
	~16.8					

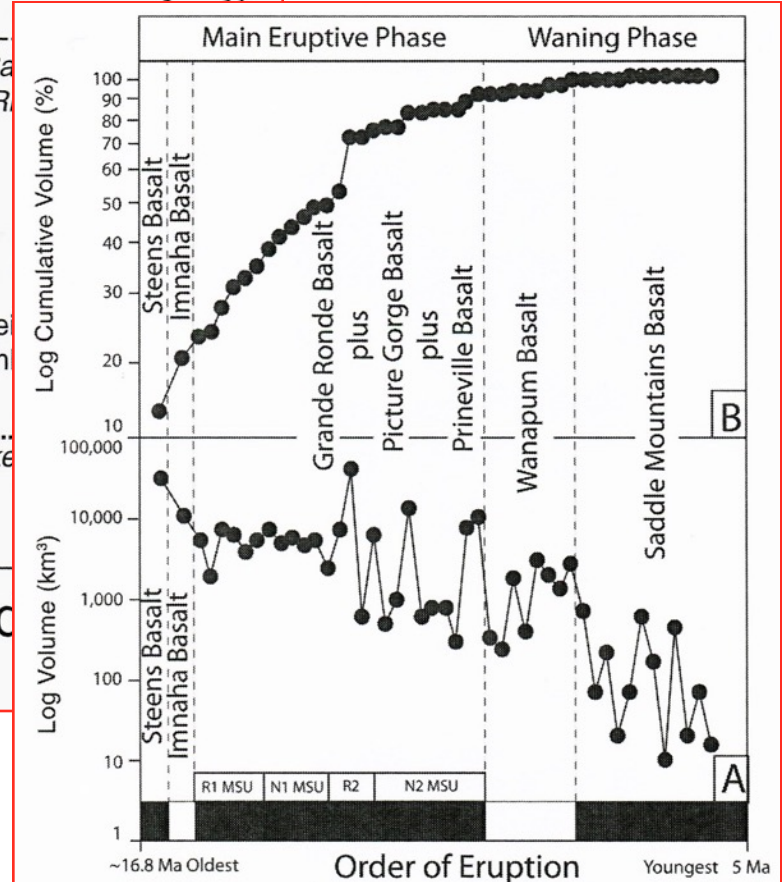


Figure 6. Volume of Columbia River Basalt Group eruptions over time. (A) The log volume of stratigraphic units through time. (B) The log cumulative volume of the same units through time. Both examples show that the peak eruptive period ends with the Grande Ronde Basalt eruptions.

Ice Age Floods at Frenchman Coulee

Kittitas County

Columbia River

columns leaving

Echo Basin

basalt rib

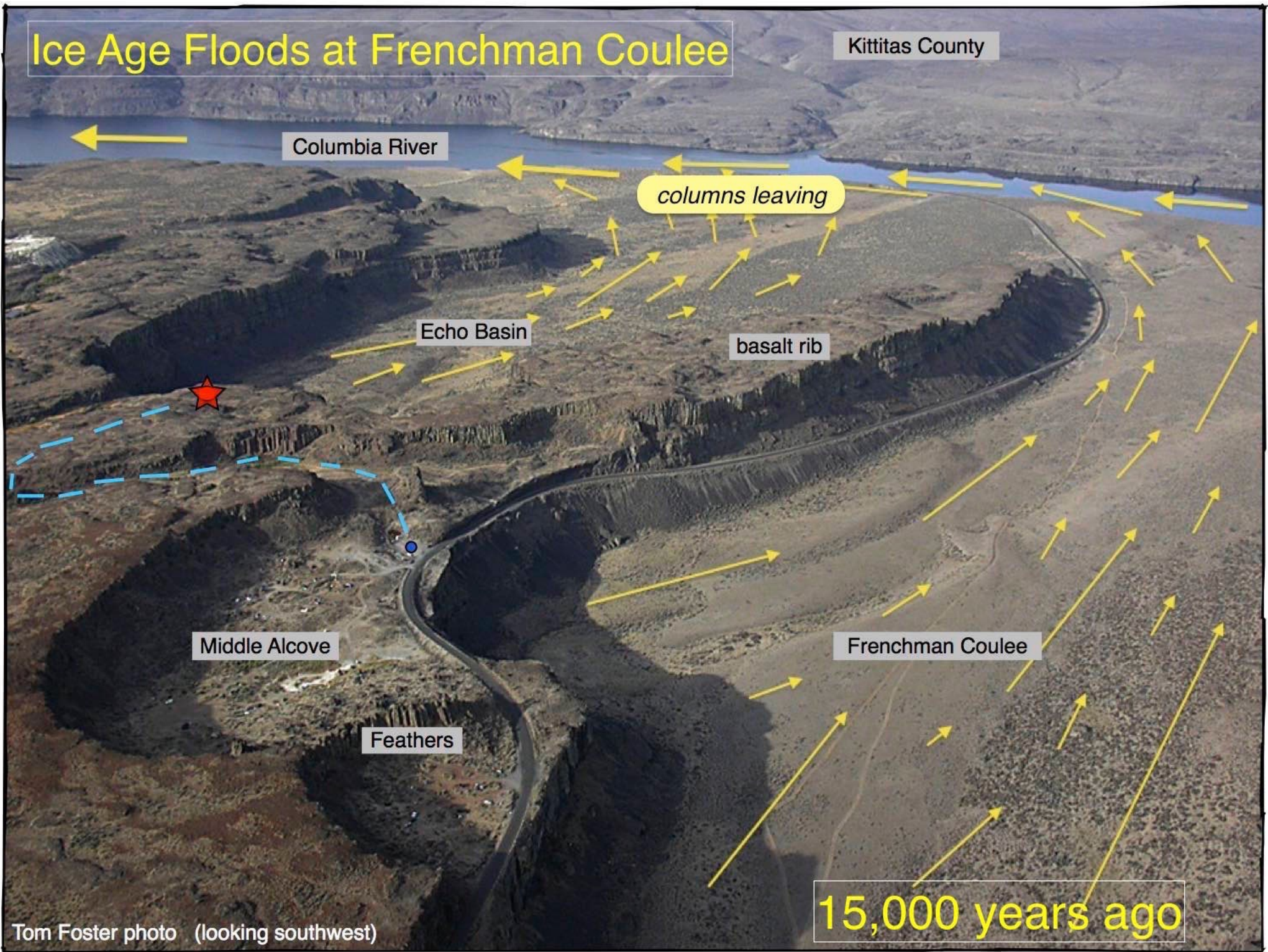
Middle Alcove

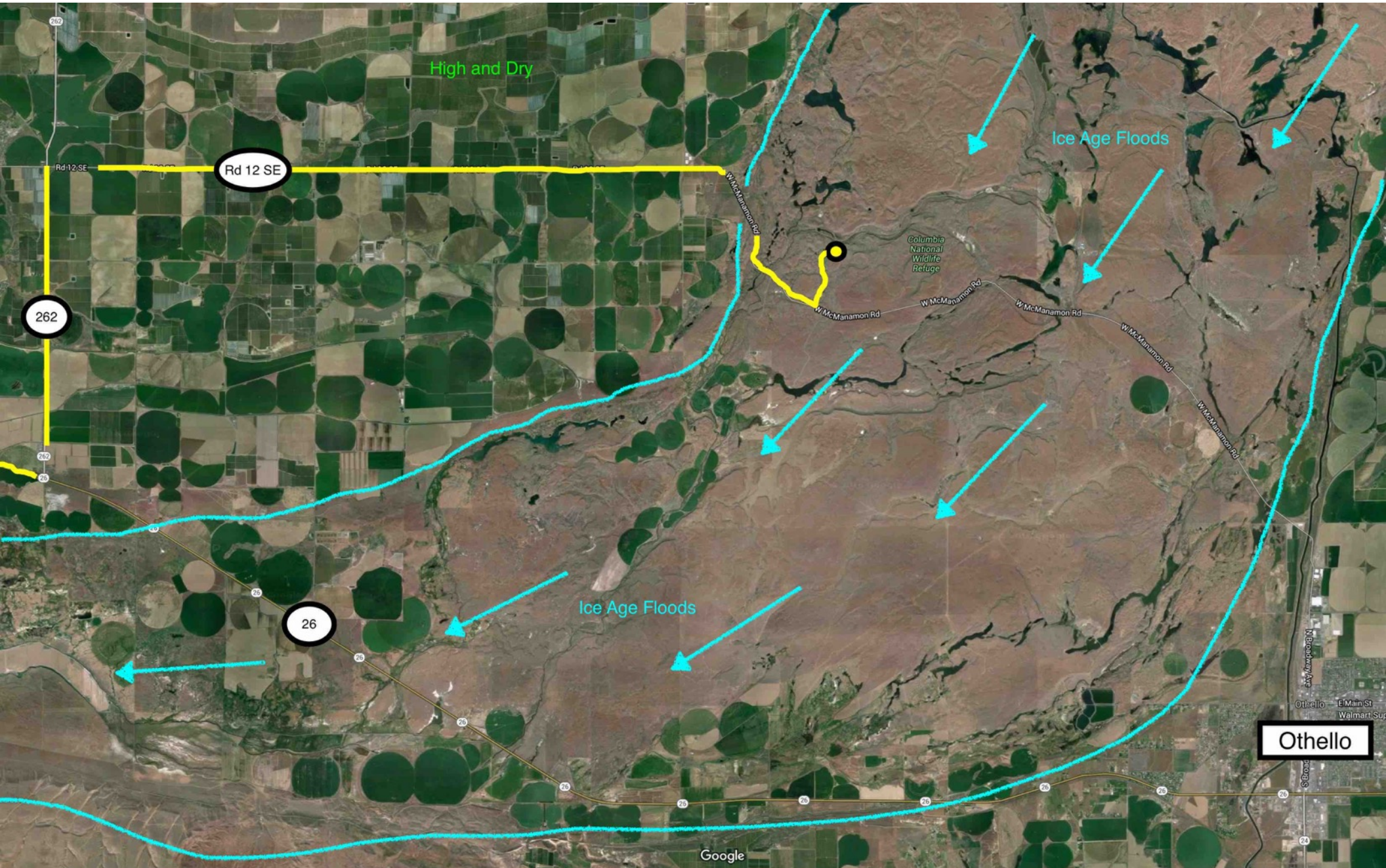
Frenchman Coulee

Feathers

15,000 years ago

Tom Foster photo (looking southwest)





High and Dry

Rd 12 SE

262

26

Ice Age Floods

Ice Age Floods

Columbia National Wildlife Refuge

W. McManamon Rd

W. McManamon Rd

W. McManamon Rd

W. McManamon Rd

W. McManamon Rd

Othello

Google

Othello E Main St Walmart Sup

S. Bronz

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262

Rd 12 SE

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