Hydrogeologic framework (preliminary), Treasure Valley, Idaho:

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Idaho Water Science Center
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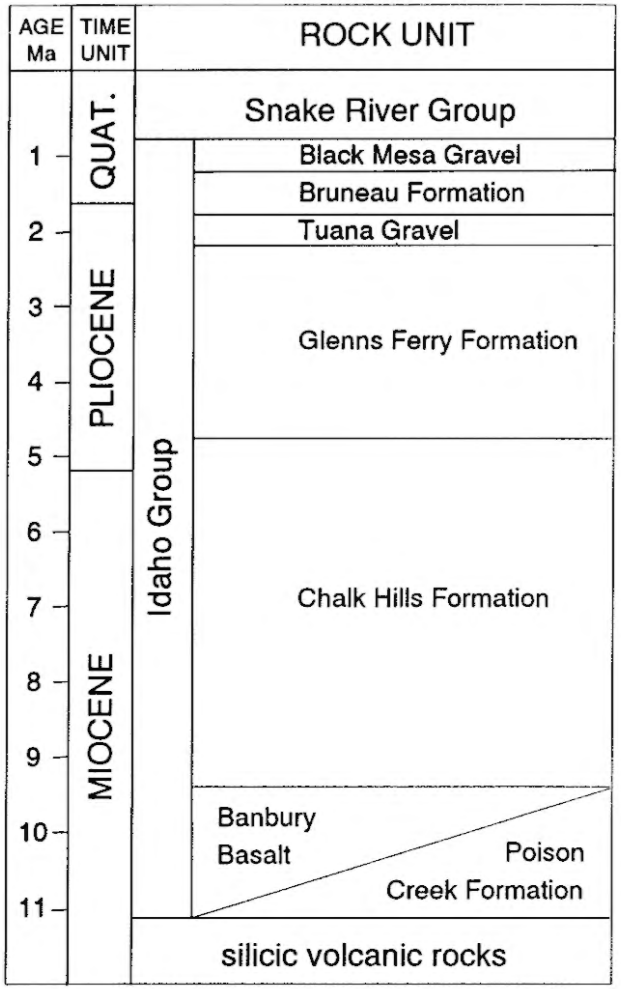
Stratigraphy

Southeastern WSRP



Northern WSRP

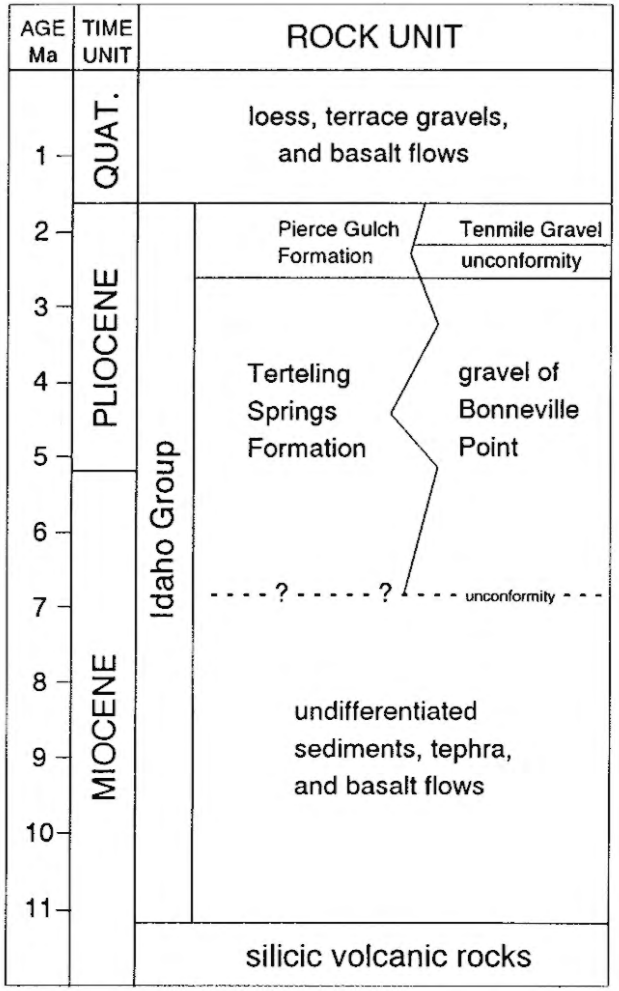


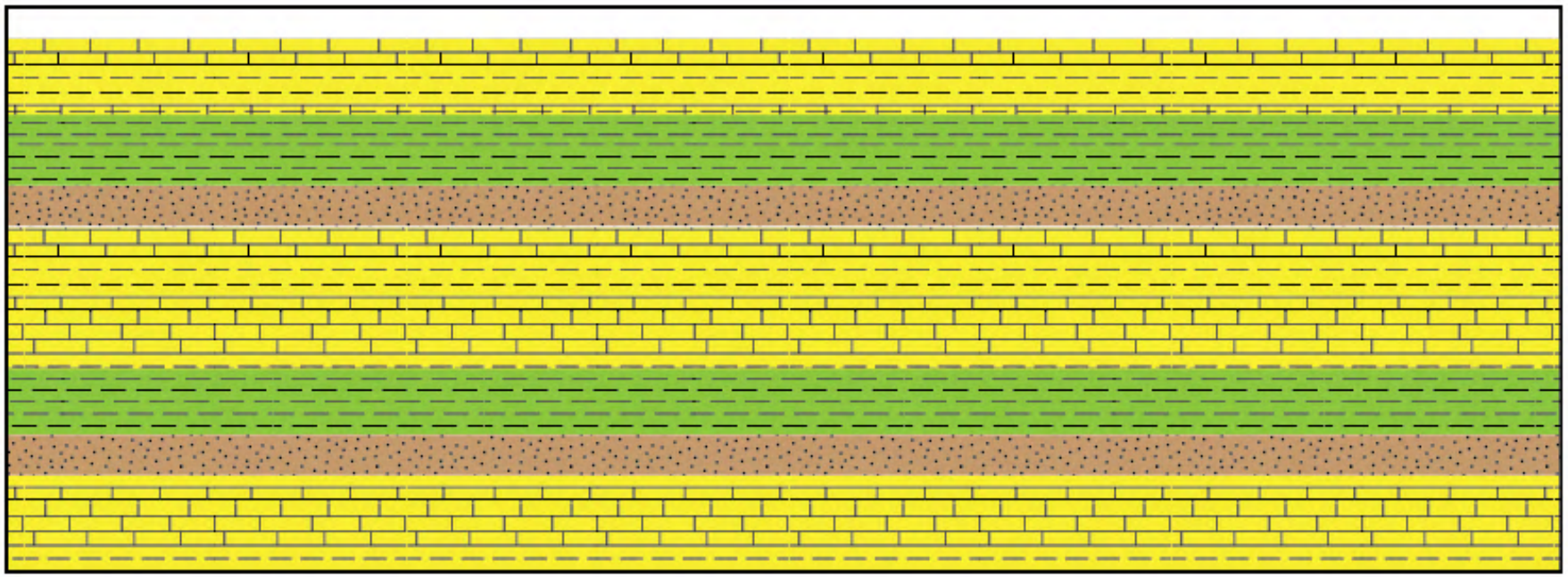
Figure 10. Stratigraphy of the southeastern part of the western Snake River Plain (modified from Malde, 1991) and the north part of the western Snake River Plain (adapted from Othberg and Burnham, 1990; Burnham and Wood, in press; and Malde, 1991).

Source: Othberg (1994)

Geologic history (1)

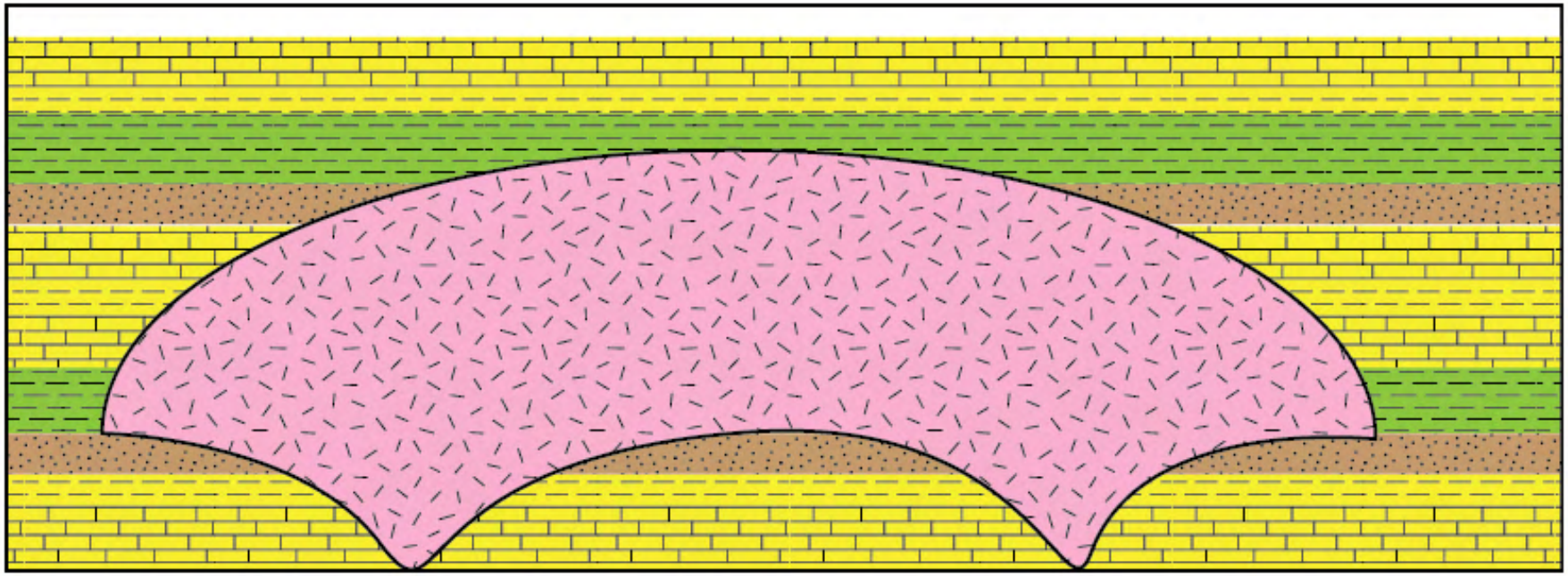
- Main sources:
  - Wood and Clemens (2002)
  - Bonnichsen and Godchaux (2002)
  - Squires, Wood, and Osiensky (1992)
- Dates may have changed

Geologic history (2)



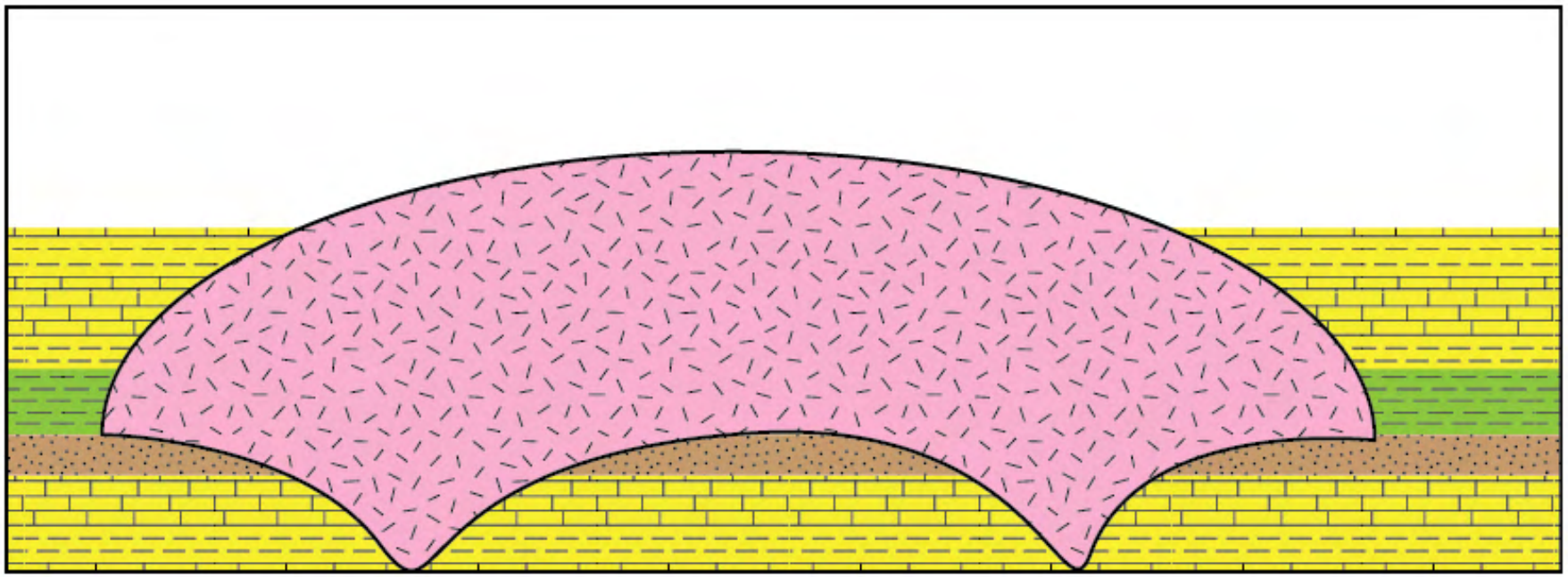
- Paleozoic sedimentary rocks

Geologic history (3)



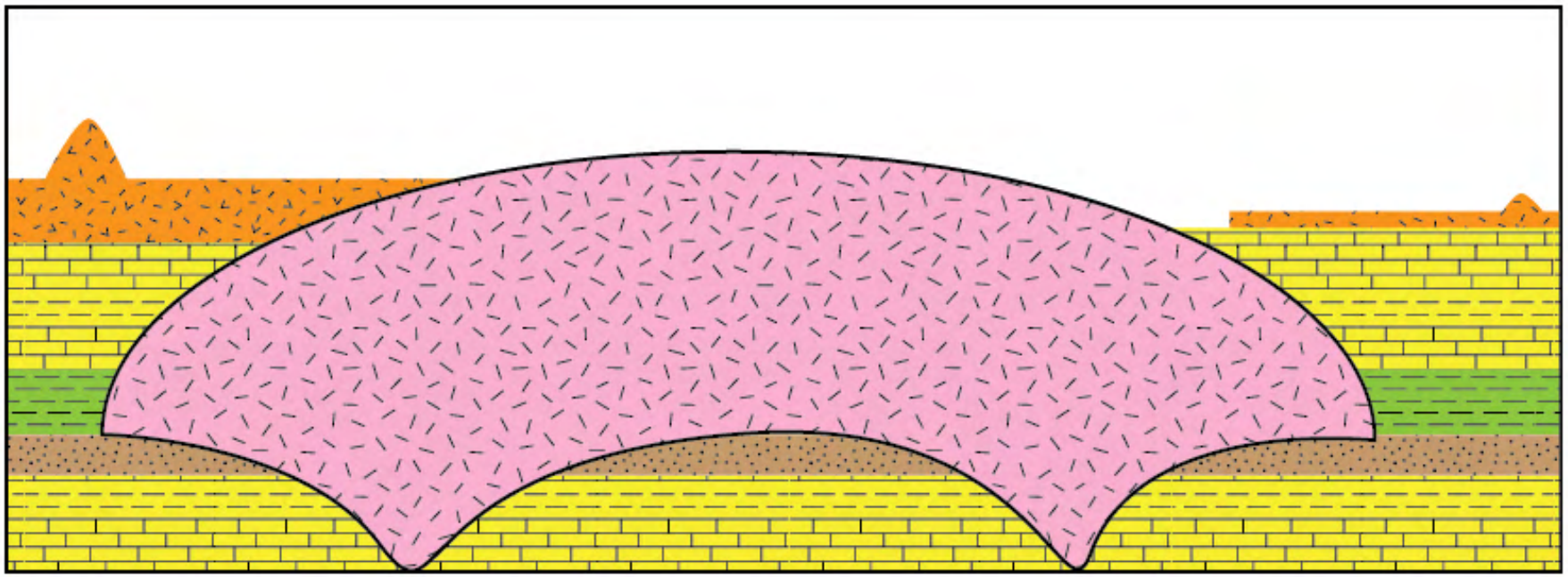
- Intrusion of Idaho batholith (85-67 ma)

Geologic history (4)



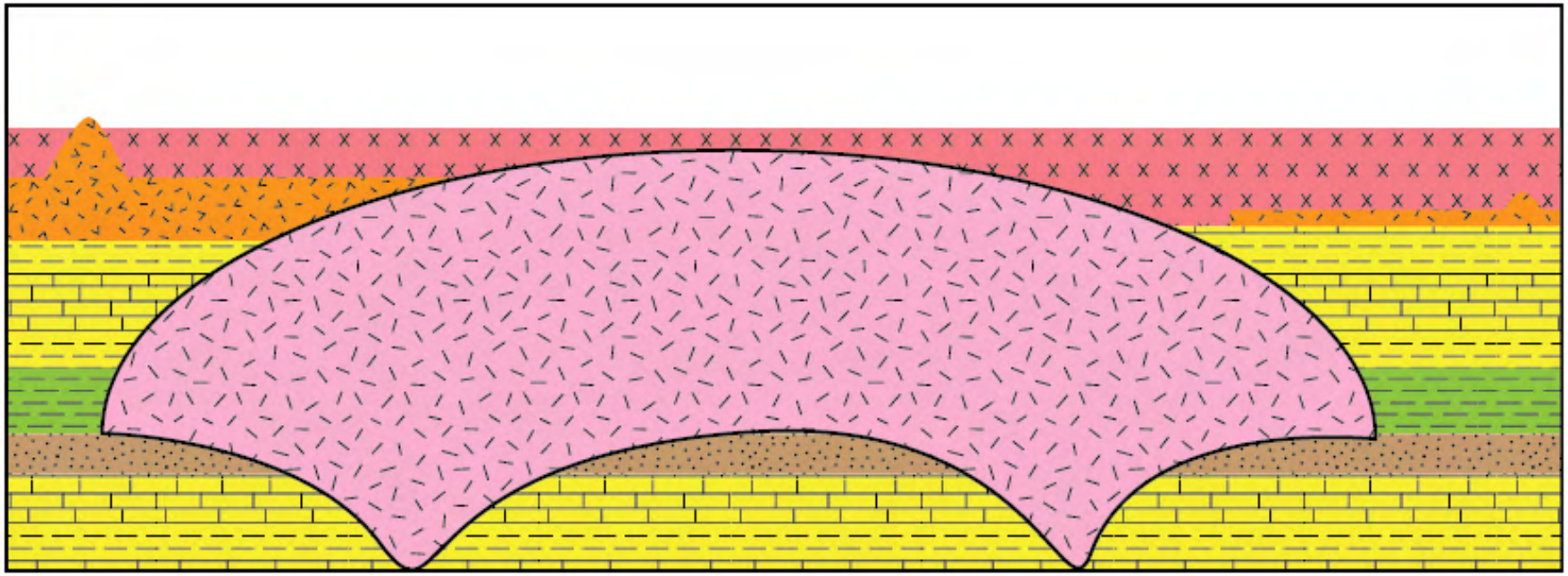
- Uplift/erosion

Geologic history (5)



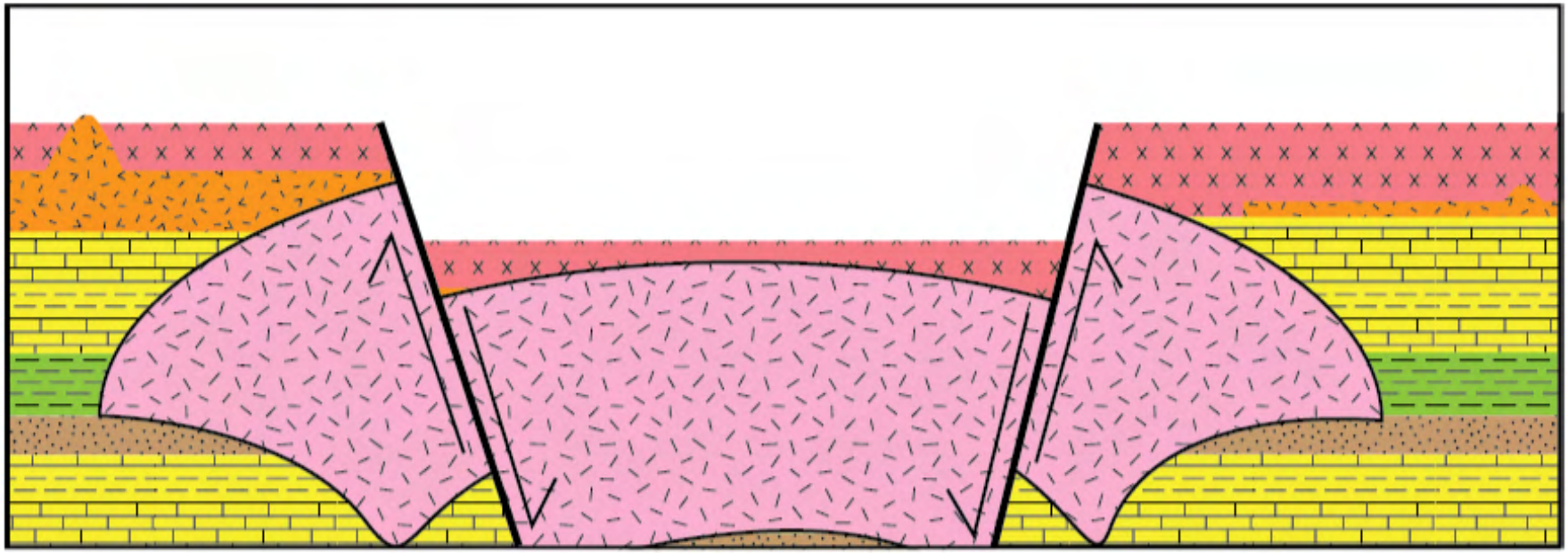
- Columbia River basalts (17-14 ma)

Geologic history (6)



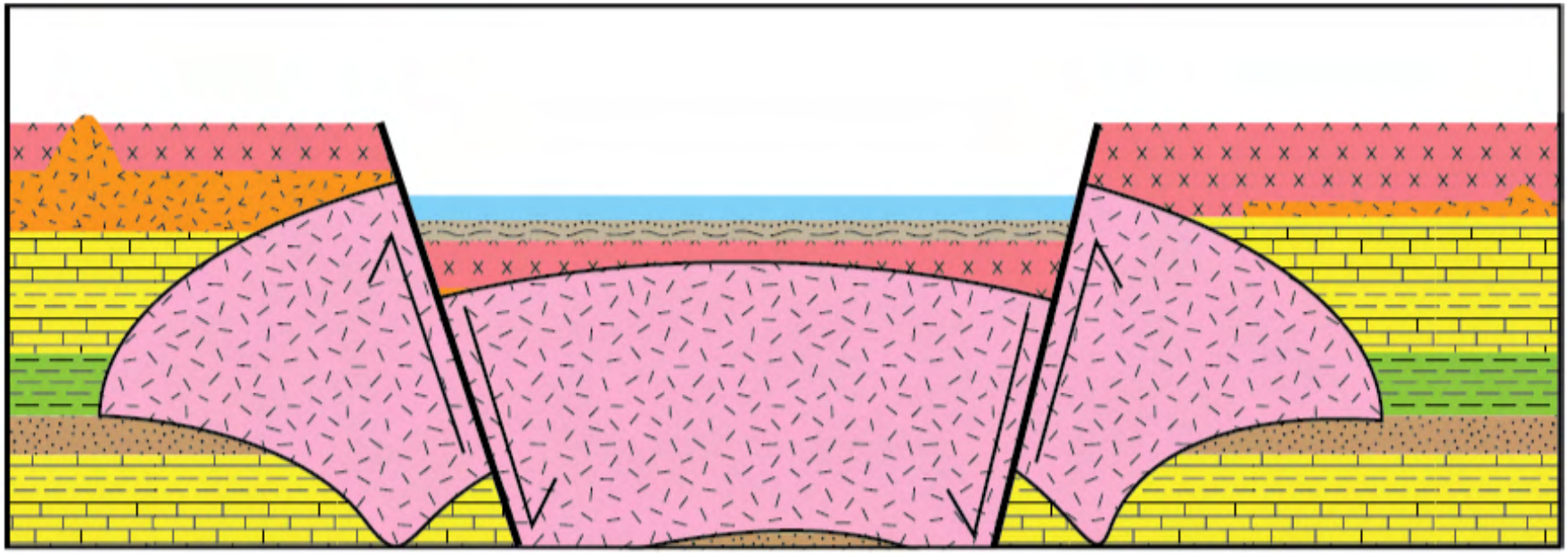
- Idavada rhyolites (12-9 ma)

Geologic history (7)



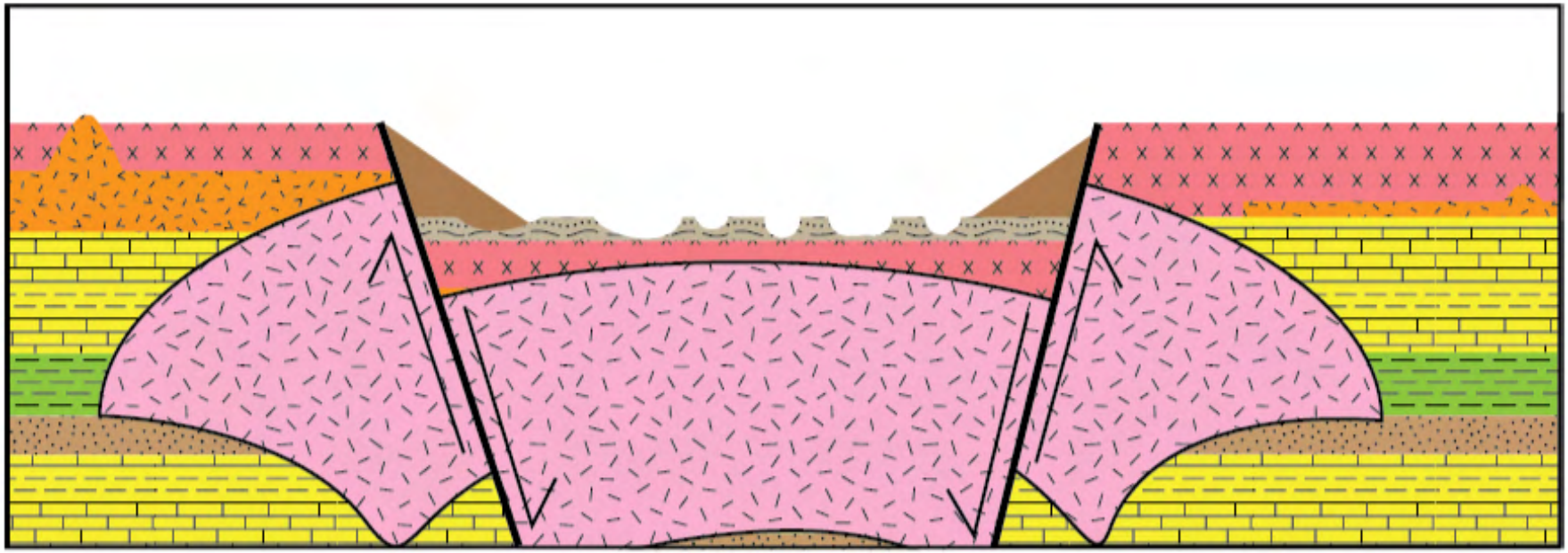
- Formation of Western Snake River Plain (11-9 ma)

Geologic history (8)



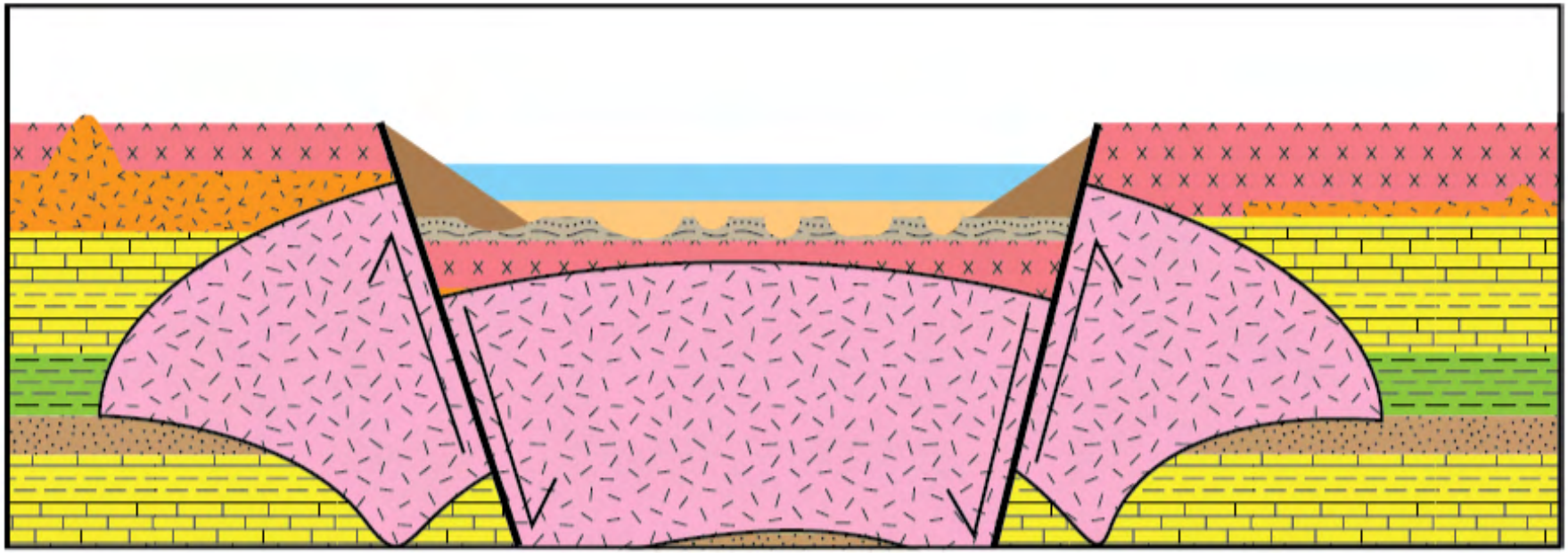
- Banbury Basalt/Chalk Hills Fm lake (10-6.4 ma)

Geologic history (9)



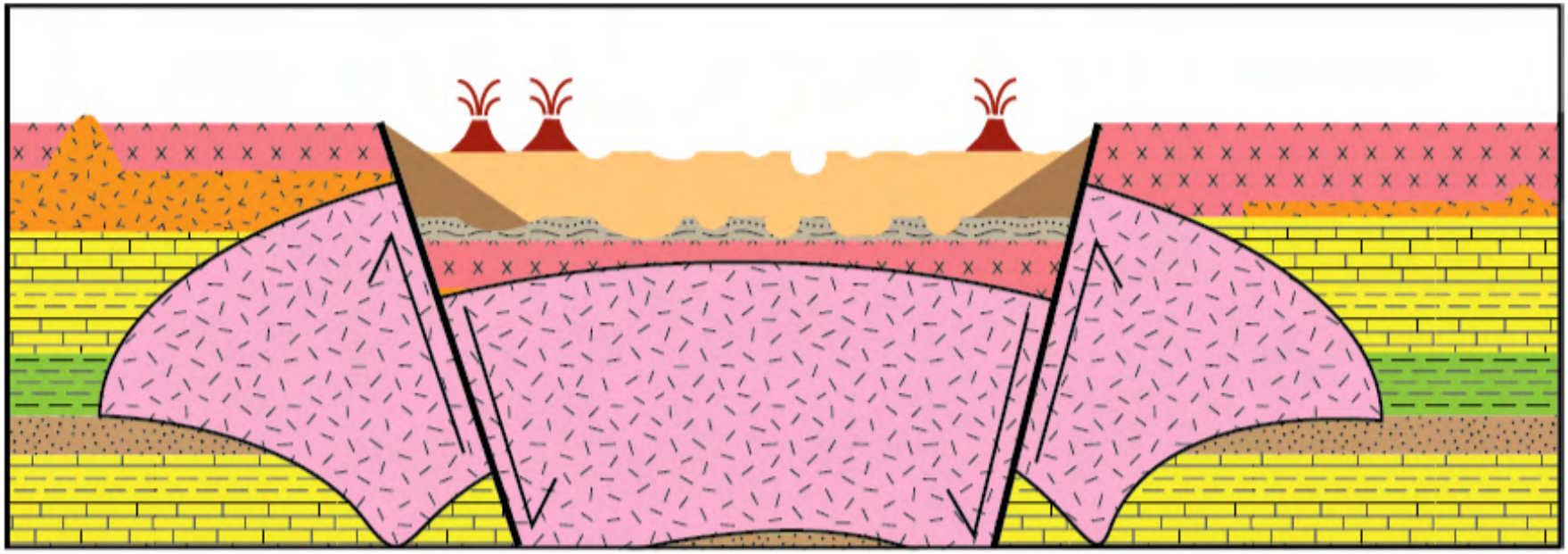
- Lowest lake level (6.4 ma)--erosion and fan formation

Geologic history (10)



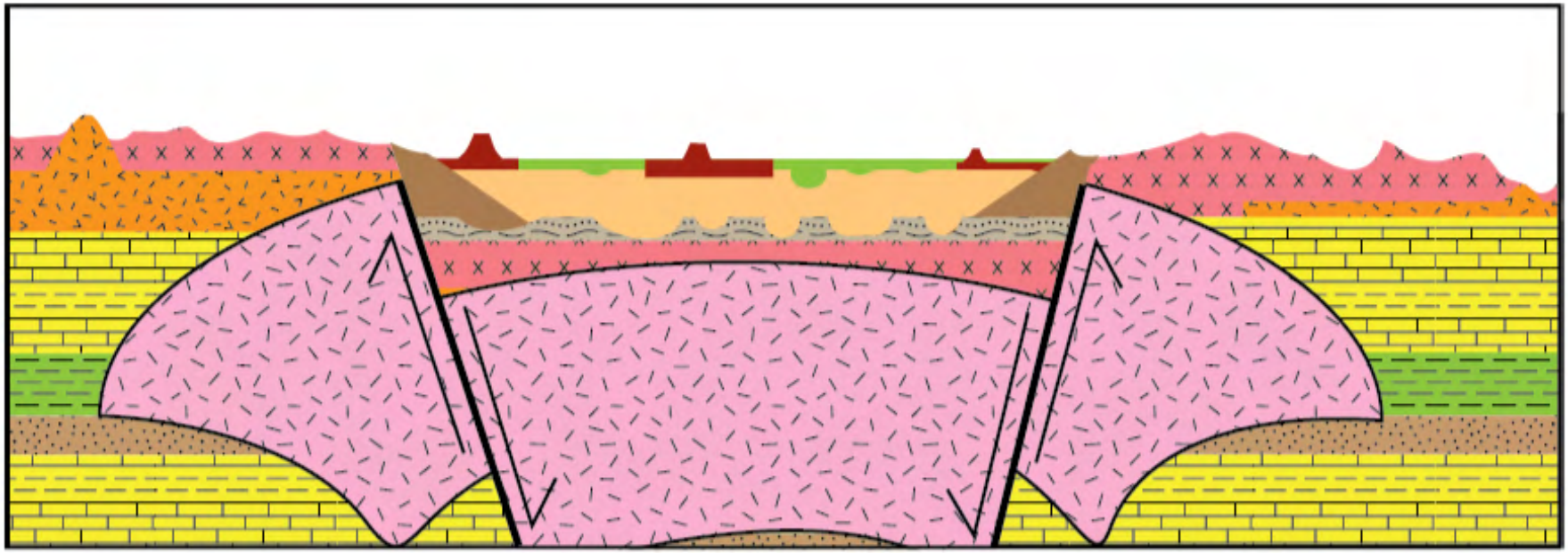
- Lake Idaho (4.5-2 ma)

Geologic history (11)



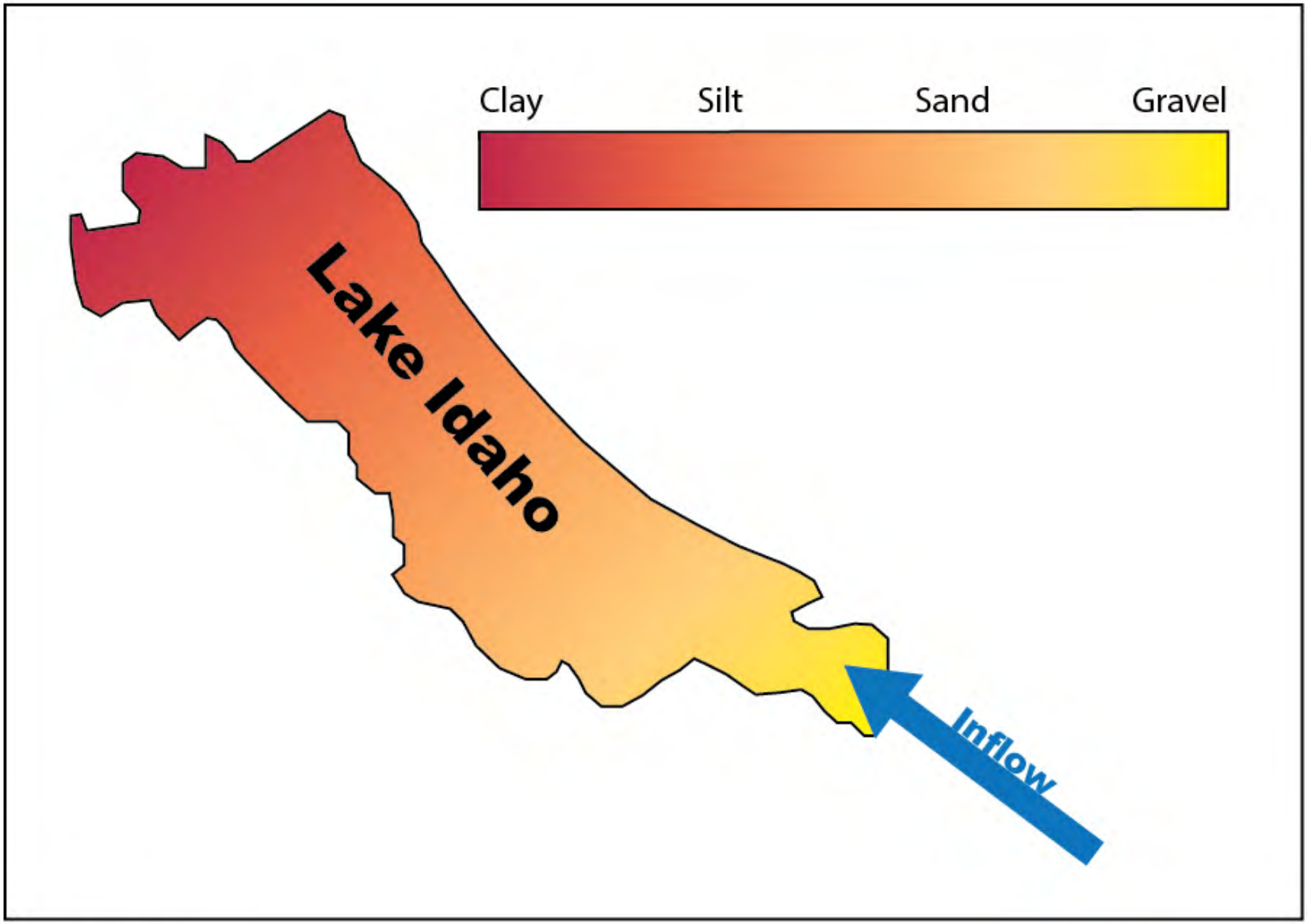
- Basalts (2.2-0.1ma)

Geologic history (12)



- Gravels, loess, Bonneville flood, erosion

Depositional environment (1)



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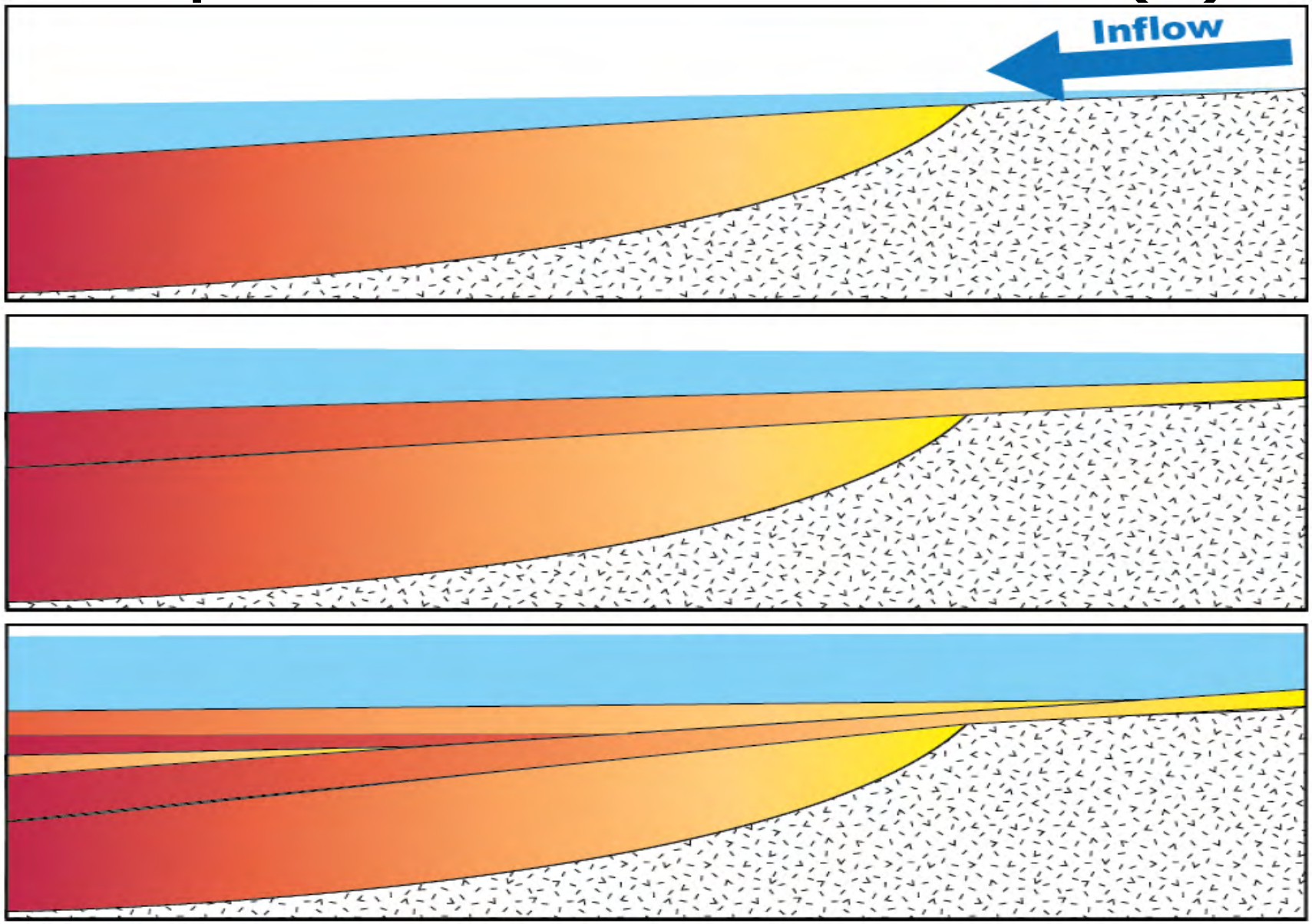
Depositional environment (2)



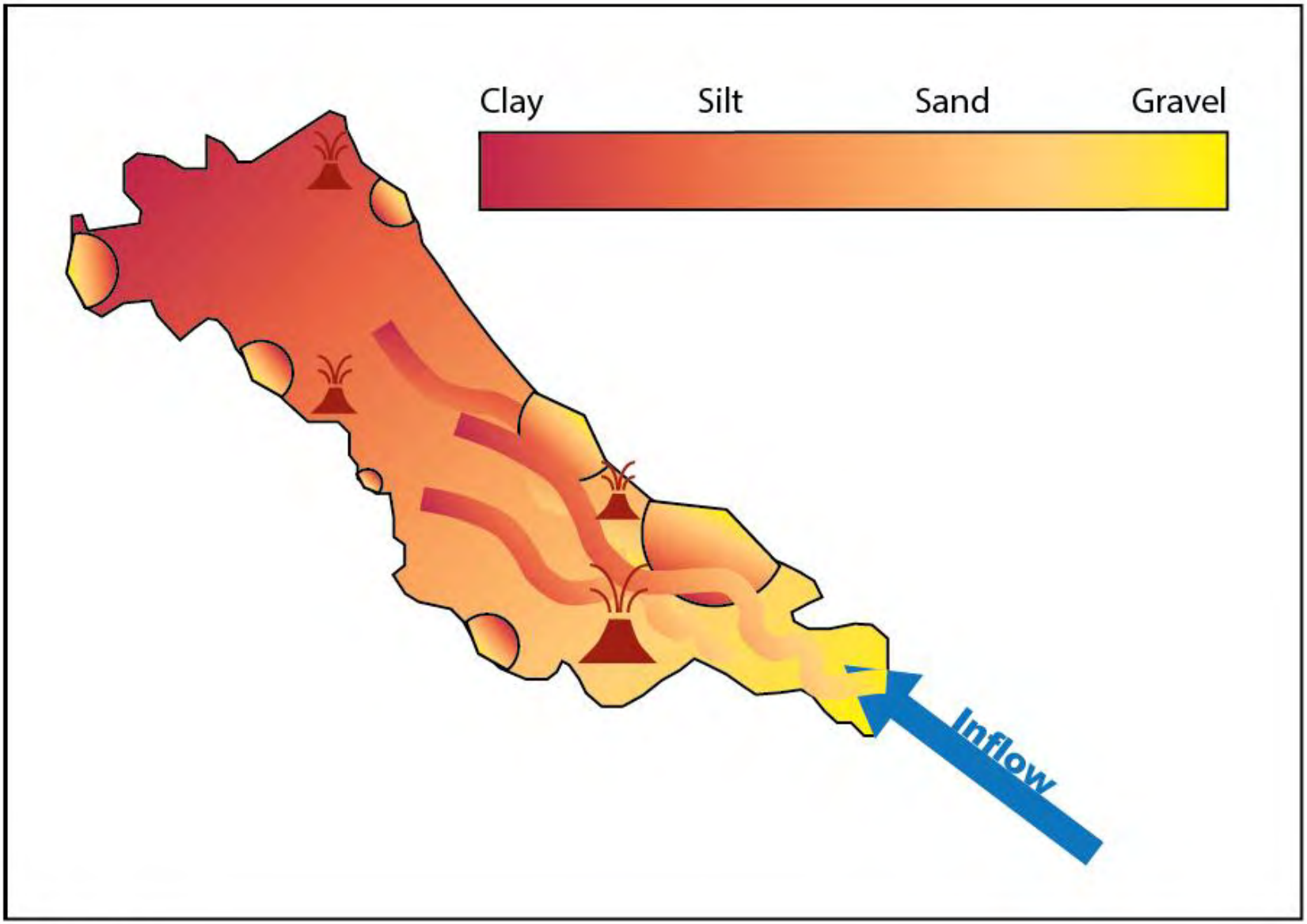
USGS

Depositional environment (3)

Magic Reservoir
06Sep13

USGS

Depositional environment (4)



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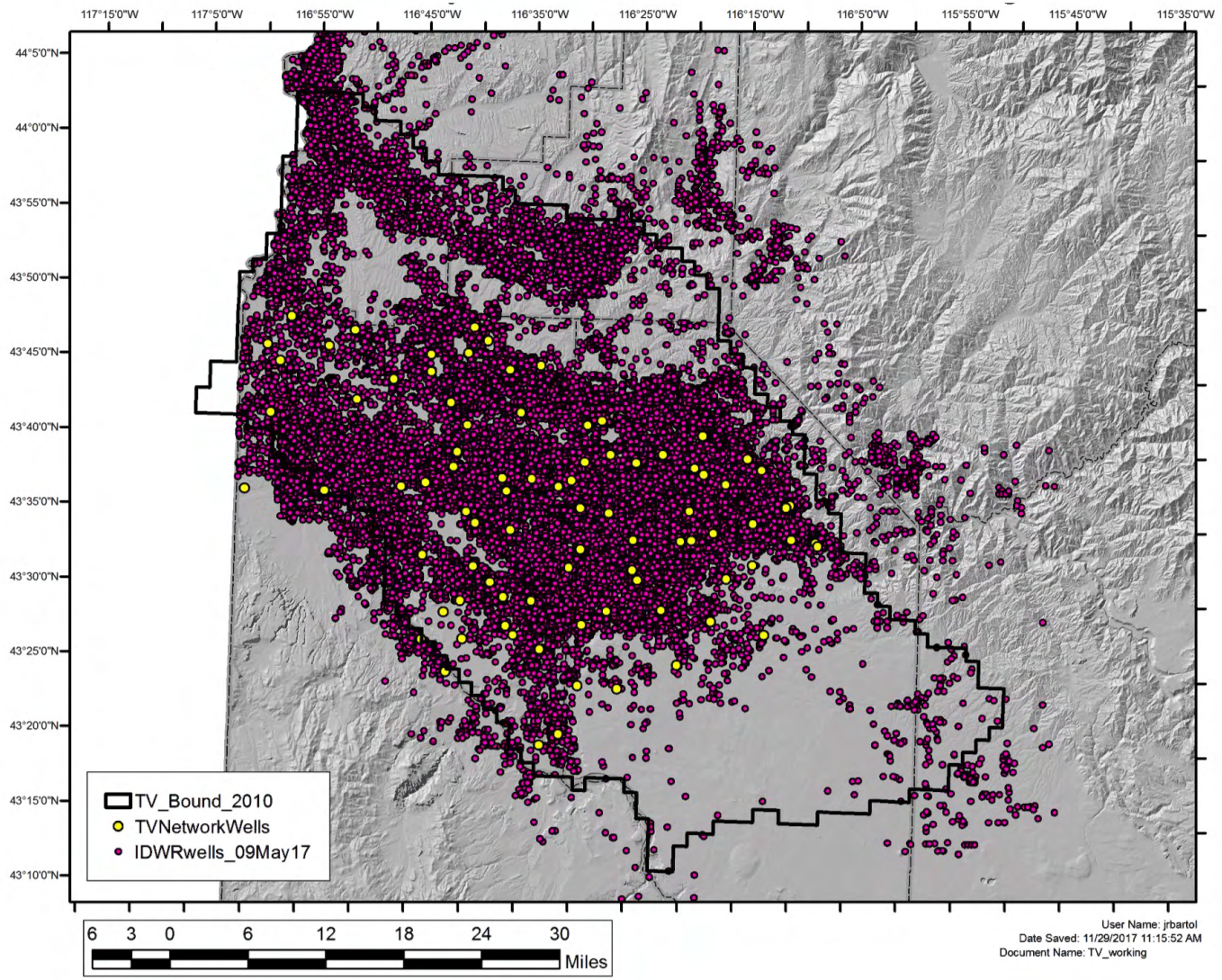
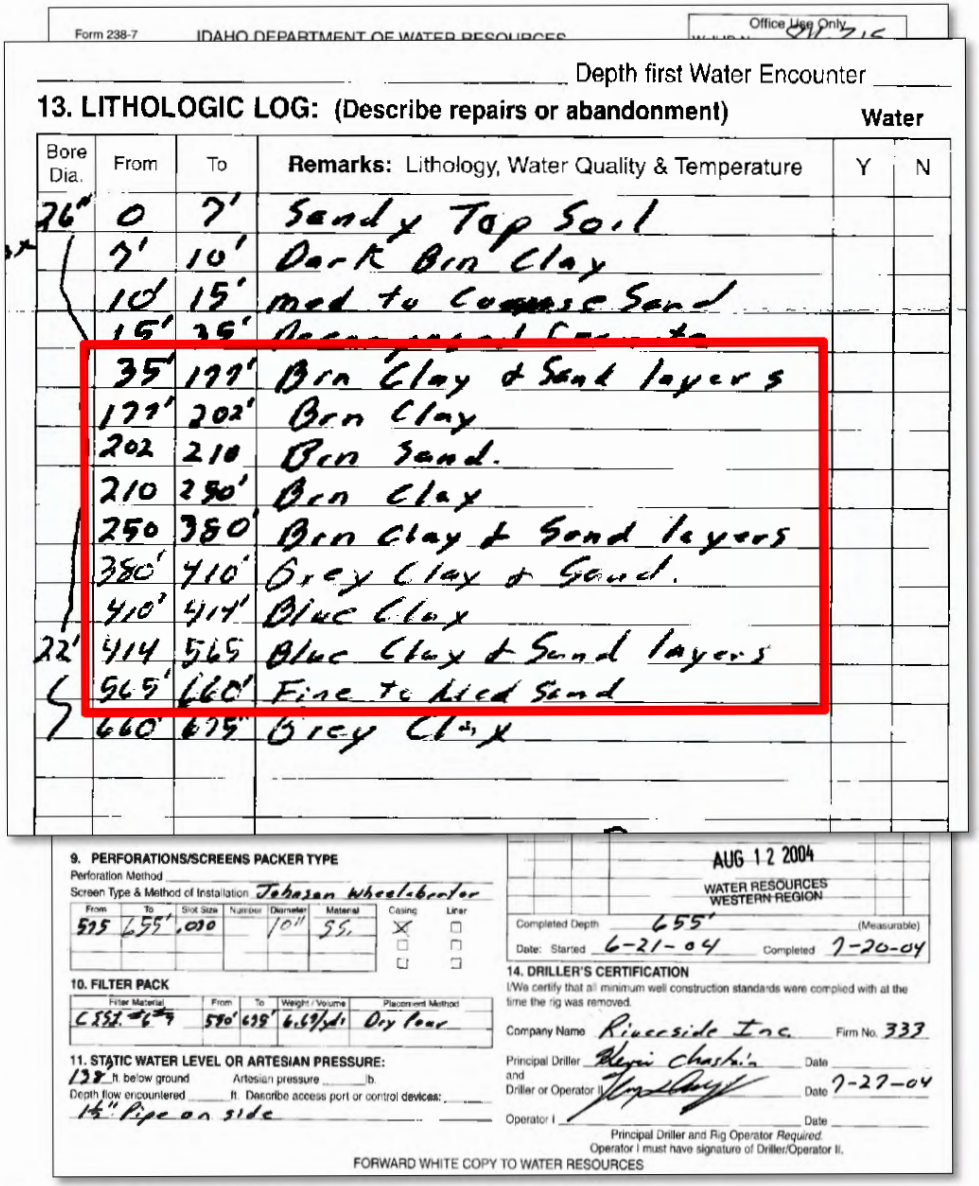
Drillers' logs (1)



- Well driller reports were requested, but not required, prior to 1953
- IDWR database "most of the well-driller reports from July 1987 to the present"

USGS

Drillers' logs (2)



Form 238-7 IDAHO DEPARTMENT OF WATER RESOURCES Office Use Only

Depth first Water Encounter

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
26"	0	7'	Sandy Top Soil		
	7'	10'	Dark Brn Clay		
	10'	15'	med to Coarse Sand		
	15'	35'	[illegible]		
	35'	177'	Brn Clay & Sand layers		
	177'	202'	Brn Clay		
	202	210	Brn Sand.		
	210	250'	Brn Clay		
	250	380'	Brn Clay & Sand layers		
	380'	410'	Grey Clay & Sand.		
	410'	414'	Blue Clay		
22'	414	565	Blue Clay & Sand layers		
	565'	660'	Fine To Med Sand		
	660'	675'	Grey Clay		

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method
Screen Type & Method of Installation Johnson Wheelabrator

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
535	655'	.030		10"	SS	X	

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method
CSS [illegible]	540'	638'	6.69 yds	Dry Pour

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
138 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices:
1½" Pipe on side

AUG 12 2004
WATER RESOURCES
WESTERN REGION

Completed Depth 655' (Measurable)
Date: Started 6-21-04 Completed 7-20-04

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
Company Name Riverside Inc. Firm No. 333
Principal Driller Wayne Chastain Date
and
Driller or Operator II [signature] Date 7-27-04
Operator I Date
Principal Driller and Rig Operator Required.
Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES

RockWorks 17

Depth to Top	Depth to Base	Key-word	2nd Litho-logy	Color	Com-ment
35	177	Clay	Sand	brown	layers
177	202	Clay		brown	
202	210	Sand		brown	
210	250	Clay		brown	
250	380	Clay	Sand	brown	layers
380	410	Clay	Sand	gray	
410	414	Clay		blue	
414	565	Clay	Sand	blue	layers
565	660	Sand			fine-med

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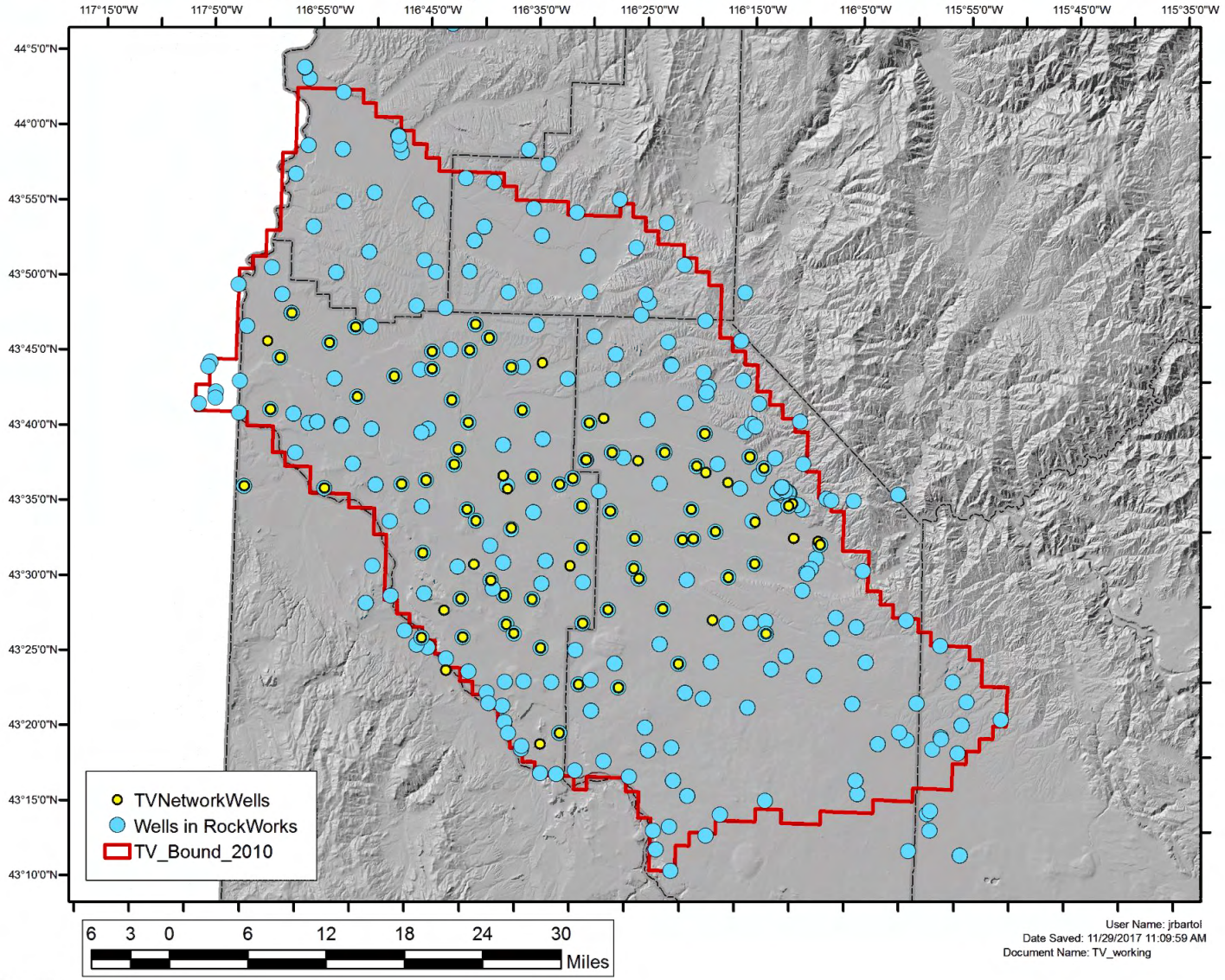
Lithologic models (1)

Treasure Valley wells input into RockWorks



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Lithologic models (2)

- TV_LithAll_GE-DEM_c_rot
- TV_LithAll_GE-DEM_c_sl
- TV_LithAll_rot
- TV_LithAll_sl

- Wood (1997) Mudstone facies map
  - "unlikely that such broadly distributed of low permeability exist"
  - "Some mudstone…layers…can be traced for several miles, but not regionally."

Lithologic models (3)

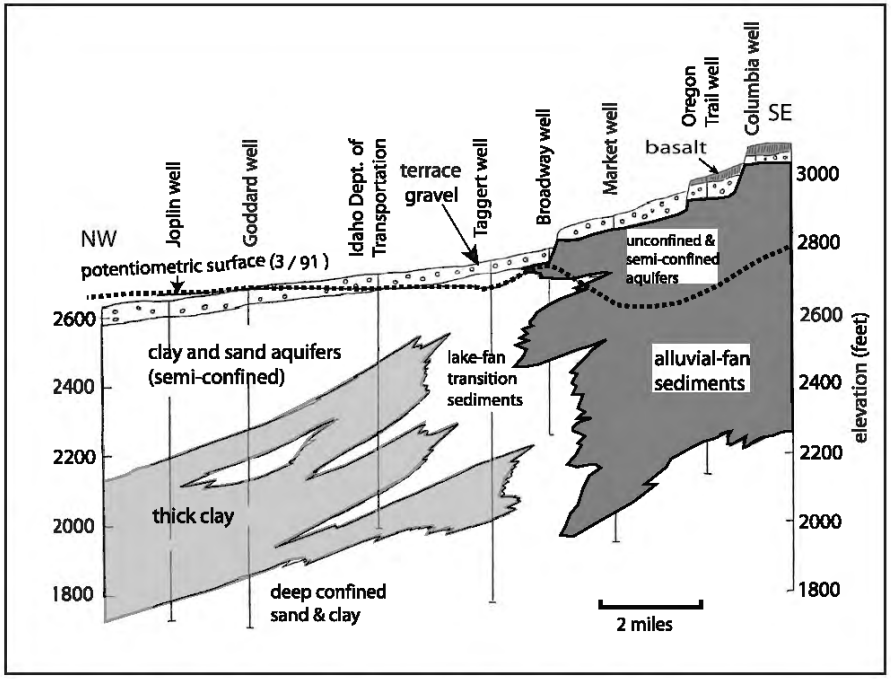


Figure 11. Cross section showing stratigraphy of alluvial fan and lake sediment aquifers beneath Boise (from Squires and others, 1992).

- Wood (1997) Mudstone facies map
  - "unlikely that such broadly distributed units of low permeability exist"
  - "Some mudstone…layers…can be traced for several miles, but not regionally."

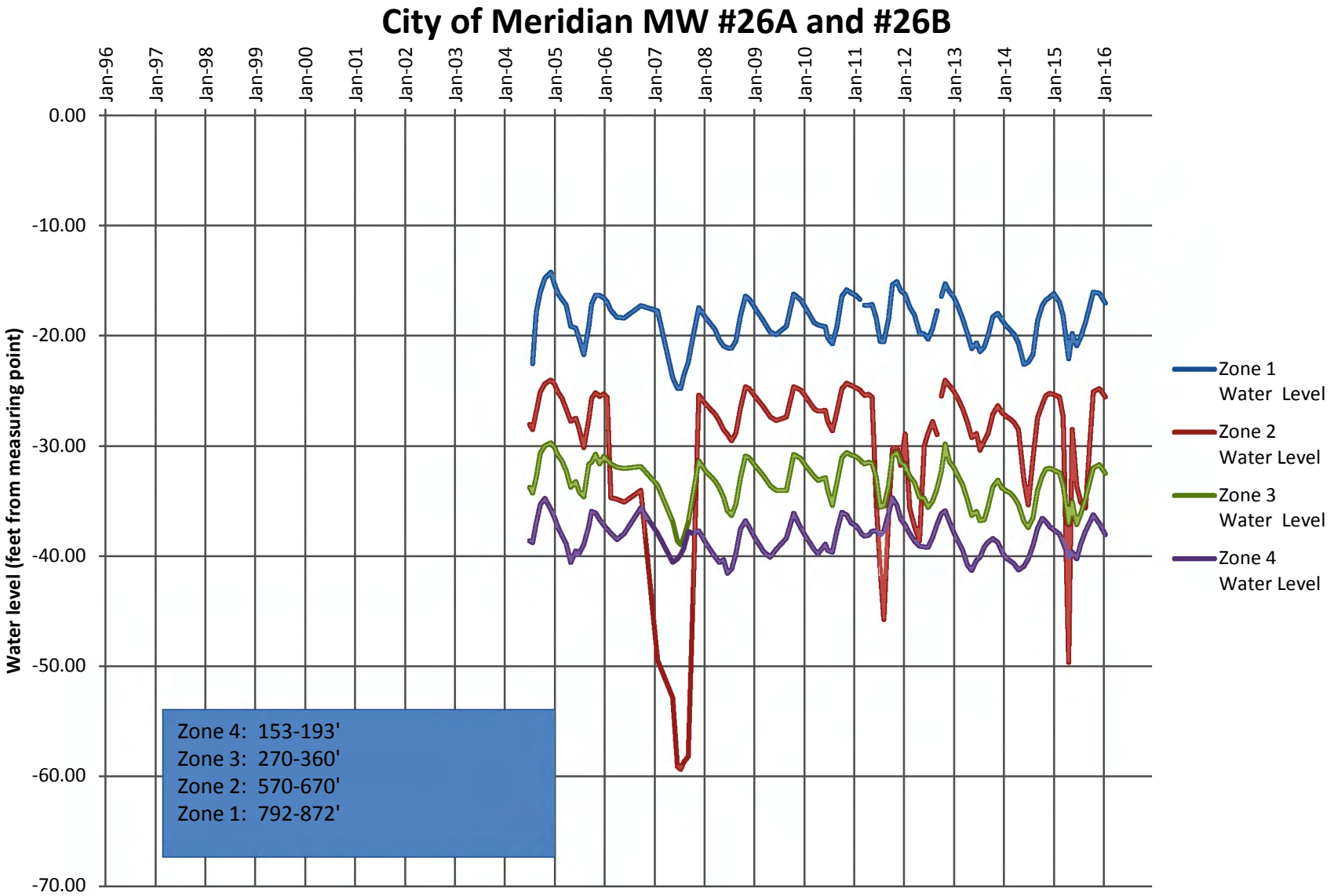
Model layers (1)

- Newton (1991)
  - Sedimentary and volcanic rock, unconfined, top 1980 water table, 500 ft thick
  - Fine-grained sedimentary and volcanic rock, confined, top 500 ft below water table, 4000 ft thick
  - Volcanic rock, confined, top 4500 ft below water table, 7000 ft thick

Model layers (2)

- Petrich (2004)
  - Coarse river and lake sediments, unconfined, top 1996 water table, 200 ft thick
  - Intermediate, confined, 200 ft thick
  - Deep Idaho Group sediments, confined, 400 ft thick
  - Deep Idaho Group sediments, confined, 400 ft thick
- Johnson (2013)
  - Essentially the same as Petrich

Water levels (1)



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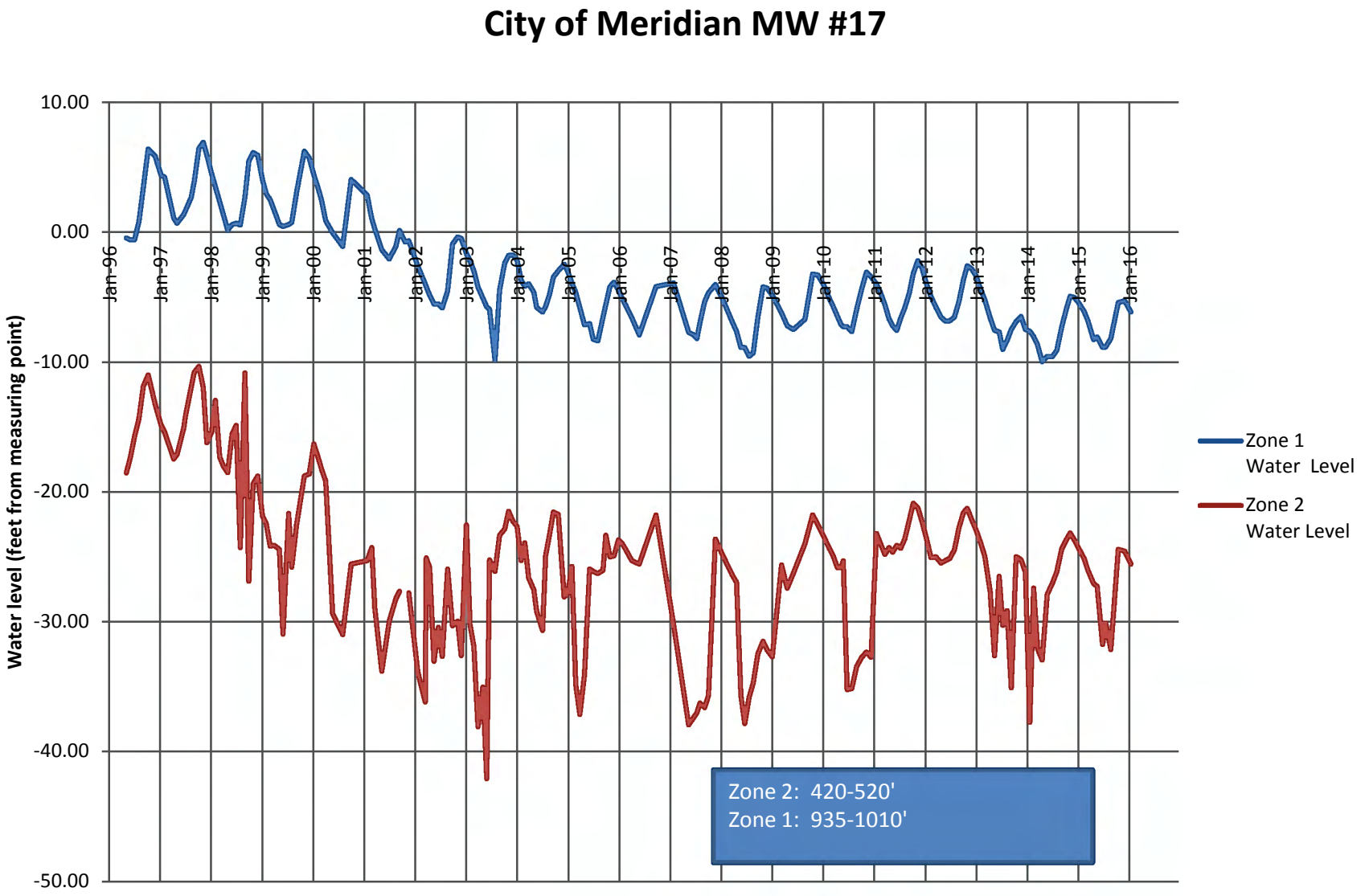
Water levels (1)



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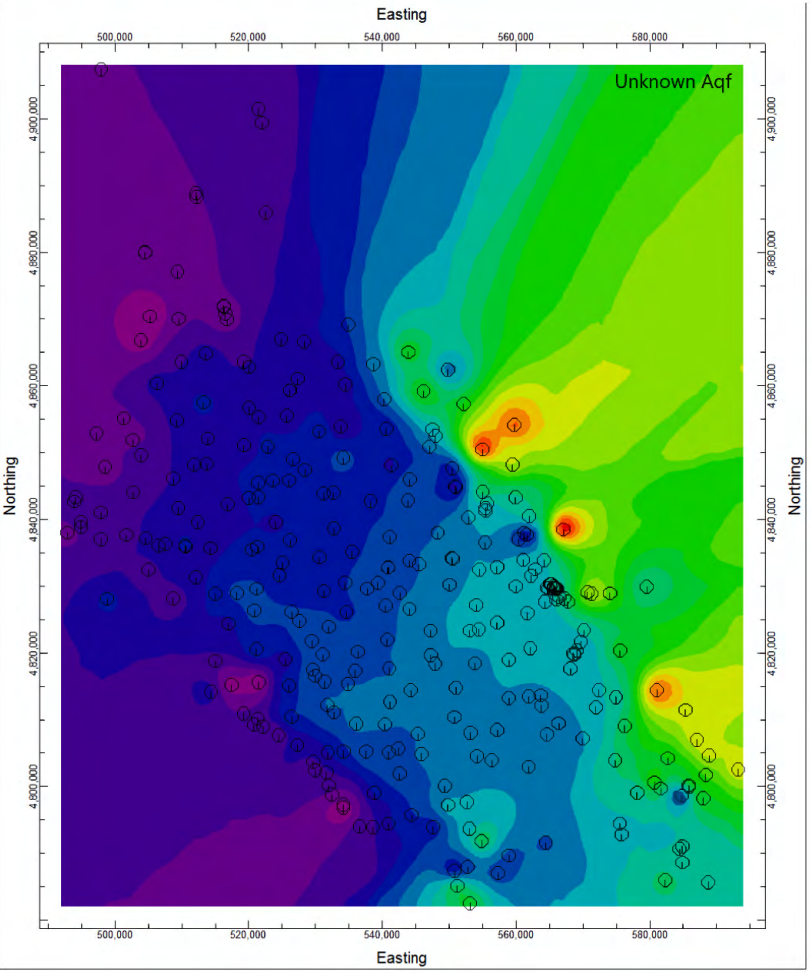
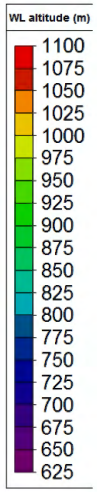
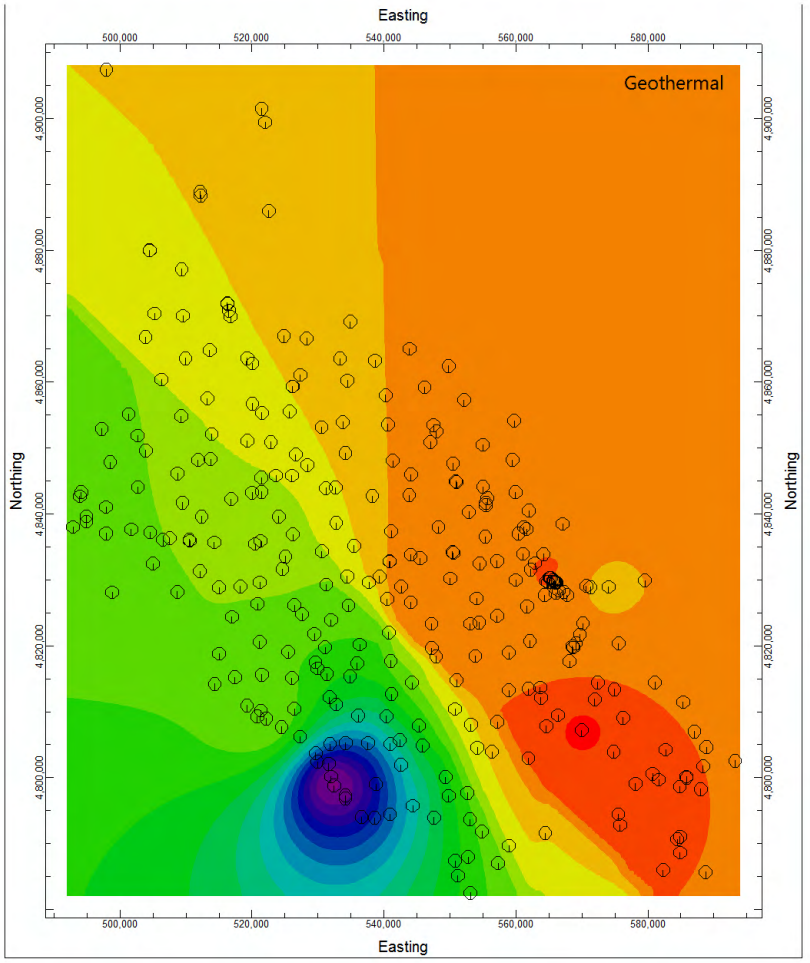
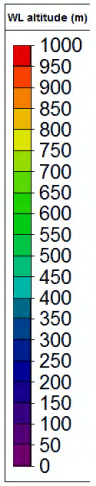
Water levels (3)









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Any data you have helps..

- Pumpage
- Water levels
- Pump/aquifer tests
- Drain/canal elevations

- Other data…
- Thanks (so far):
  - City of Meridian
  - City of Nampa
  - City of Boise
  - SPF
  - Brown and Caldwell

Mgal/mo

1996	Well #1	Well #2	Well #3	Well #4-A	Well #5	Well #7	Well #8	Well #10	Well #11	Total
Jan	5.83	2.72	0.00	0.00	13.15	24.02	0.00	0.00	3.30	49.02
Feb	5.46	2.92	0.30	0.00	14.18	24.20	0.00	0.00	2.60	49.67
Mar	5.78	2.51	0.00	0.00	14.63	25.08	0.00	0.00	2.95	50.95
Apr	5.86	1.88	0.00	0.00	9.41	21.84	0.07	0.00	2.83	41.89
May	6.13	1.88	4.90	5.84	10.02	37.89	0.12	0.00	12.35	79.13
Jun	5.57	4.16	14.04	11.31	22.39	27.45	7.32	0.00	68.35	160.58
Jul	5.44	5.89	19.88	9.15	31.93	27.42	23.95	0.00	79.42	203.08
Aug	5.42	5.66	4.69	10.54	30.50	29.02	29.48	0.00	75.99	191.30
Sep	5.29	4.81	0.00	0.00	26.18	14.38	19.99	0.00	65.68	136.33
Oct	5.64	2.78	0.00	0.00	15.00	0.60	6.35	0.00	44.64	75.00
Nov	5.39	1.98	0.00	0.00	10.91	0.01	0.11	0.00	26.75	45.14
Dec	5.86	2.50	0.00	0.00	13.98	0.00	0.00	0.00	32.79	55.12
Total	67.67	39.68	43.81	36.84	212.28	231.91	87.39	0.00	417.63	1137.22

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