



Monitoring Network

Allan Wylie, IDWR

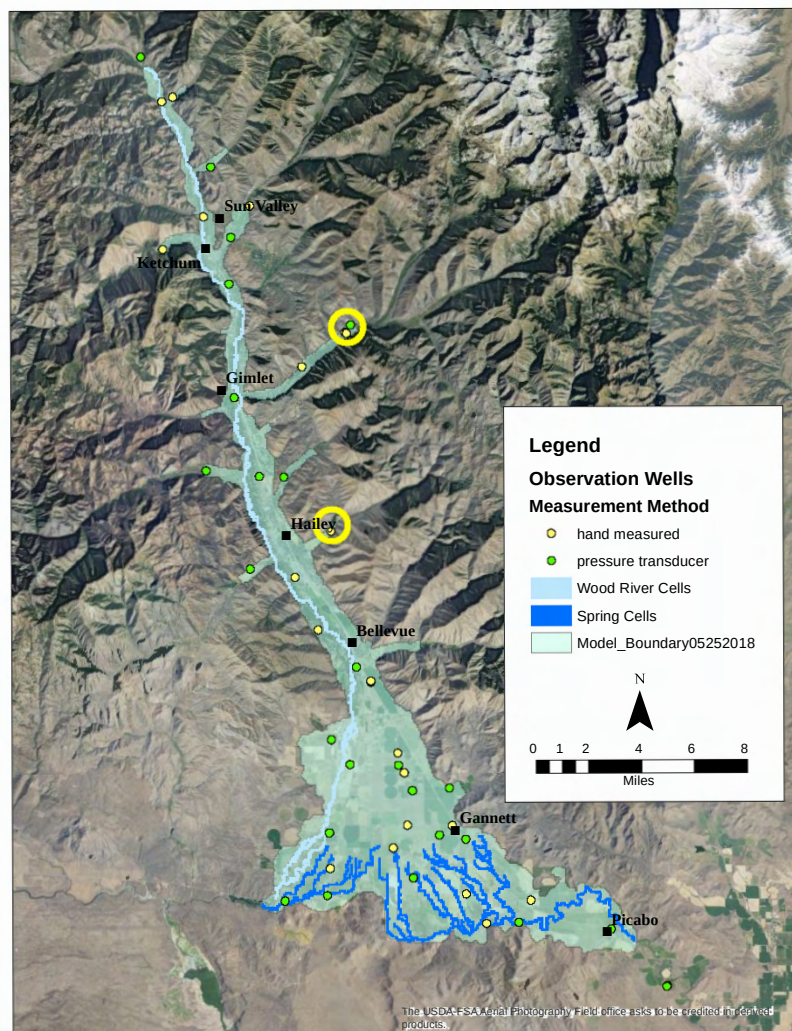
January, 2019



Outline

- Well network
 - 50 wells
 - 22 hand measured
 - 28 transducer
 - New wells
 - Quigley
 - 2 East Fork
- Stream monitoring
 - Continuous gages on Wood River
 - Opportunistic stage measurements on Wood River
 - Continuous gages on tributary streams
 - NEW monitoring of tributary streams

Wood Network Fall 2018



- Added wells
 - Quigley Canyon
 - 2 wells in East Fork
 - 50 total wells
 - 28 have transducers
 - 22 measured by hand at least twice a year

Quigley Well



- South side of Quigley Canyon

Quigley Well



- South side of Quigley Canyon

Quigley Well

Form 758-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES WELL DRILLER'S REPORT

1. WELL TAG NO. 0078239
 Existing Permit No. 887932
 Water rights or schedule with it

2. OWNER:
 Name Idaho Dept. of Water Resources
 Address 322 E Front Street
 City Boise State Idaho Zip 83350

3. WELL LOCATION:
 Twp. 02 North or South 18 High 1st or West
 Sec. 02 1st SE 1st SW 1st
 County Blaine
 Lot 43 31.7748 (Long and Section number)
 Long -114 16.6362 (Dep. and Section number)
 Address of Well Day Soc GPS
 City Rollover

4. USE:
☐ Domestic ☐ Municipal ☒ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other

5. TYPE OF WORK:
☒ New well ☐ Reconstruct well ☐ Modify existing well
☐ Abandonment ☐ Other

6. DRILL METHOD:
☐ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES:
 Size of seal 3/8 Chip Bent 0 18 1150 lbs. Dry Pour

8. CASING/LINER:

Outer dia.	Inner dia.	Length	Material	Coupling	Direction	Notes
8"	7"	38'	Steel	250'		

 Was drive shoe used? ☒ Y ☐ N Shoe Depth: 38'

9. PERFORATIONS/SCREENS:
 Manufacturer ☐ Y ☒ N Aligned
 Manufactured screen ☐ Y ☒ N Type
 Method of installation

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method

 Length of Headpipe: Length of Tailpipe:
 Packer ☐ Y ☒ N Type

11. FLOWING ARTESIAN:
 Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSI):
 Describe control device

12. STATIC WATER LEVEL AND WELL TESTS:
 Depth first water encountered (ft) 38' Static water level (ft) 22'
 Water temp. (°F) Bottom hole temp. (°F)
 Describe access point

Well test:
 Drawdown (ft) Discharge or yield (gpm) Loss (psi per foot) Test method:
 Pump Base Air 1 hour
 Dry when ☐ ☐ ☐ ☐
 Failed ☐ ☐ ☐ ☐

Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

Depth (ft)	Remarks, stratigraphy or description of repairs or abandonment, water temp.	Water
10'	Top Soil	
10'	Sand & Gravel w/ some Boulder	X
10'	Black Shale	

 Well was dry when drilled. Next morning the well had a 22' SWL.

RECEIVED
OCT 22 2018
DEPT. OF WATER RESOURCES
SOUTHERN REGION

887932

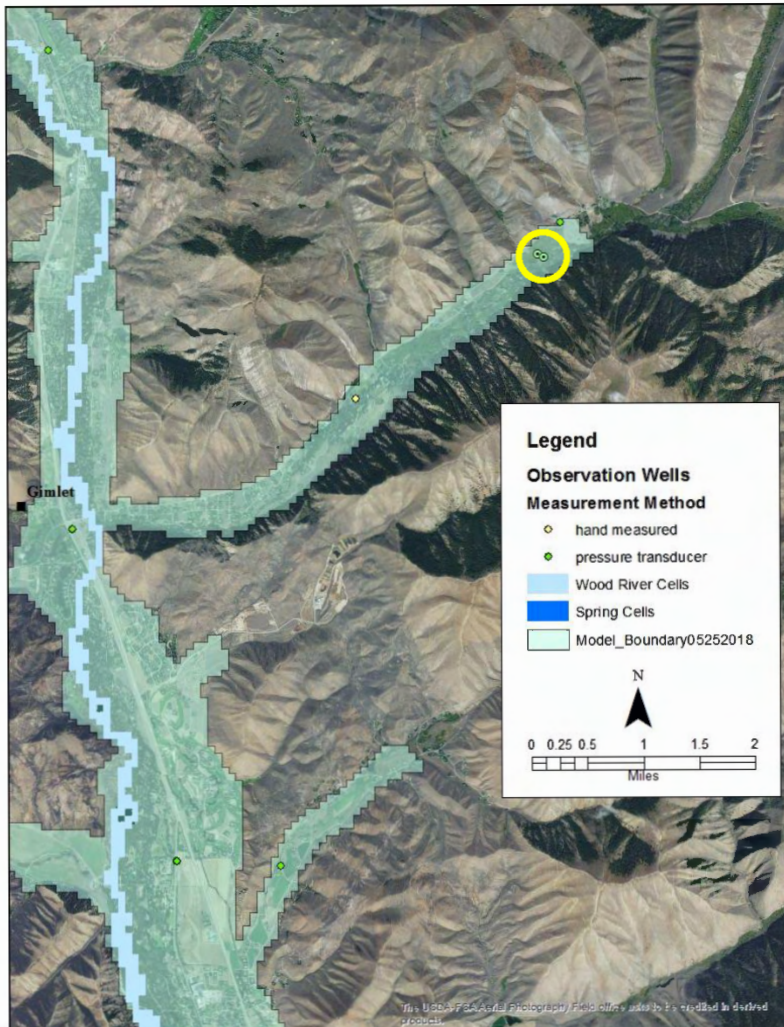
Completed Depth Measurable: 38'
 Date Received 10/17/2018 Date Completed 10/18/2018

14. DRILLER'S CERTIFICATION:
 I hereby certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Tanner Pump & Drilling LLC Co. No. 640
 Principal Driller [Signature] Date 10/19/2018
 Operator [Signature] Date
 Operator [Signature] Date
 * Signatures of Principal Driller and rig operator are required.

East Fork Wells

- Monitoring wells drilled by Idaho Department of Lands



East Fork Wells

IDAHO DEPARTMENT OF WATER RESOURCES WELL DRILLER'S REPORT

1. WELL TAG NO. D 0078145
DRILLING PERMIT NO. 887502
Water Right / Injection Well No.

2. OWNER
Name Idaho Department of Lands
Address 300 North 6th Street Suite 103
City Boise State ID Zip 83720

3. WELL LOCATION:
Twp. 4 N or S 18 E or W
Sec. 36 1/4 SW 1/4 NW 1/4
Gov't Lot 3 Co. Blaine
Lat. 43 Deg. 38.331 (Deg and Dec min)
Long. 114 Deg. 16.004 (Deg and Dec min)
Address of Well Site South Triumph Gulch Road
City Triumph

4. USE:
☐ Domestic ☐ Municipal ☒ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other

5. TYPE OF WORK: (check all that apply)
☒ New Well ☐ Replacement Well ☐ Modify Existing Well
☐ Abandonment ☐ Other

6. DRILL METHOD:
☒ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES:
Seal Material From To Quantity (lb/ft) Placement method/procedure
bentonite 0 9 550 lbs over bore / dry pour

8. CASING/LINER:
Dia. From To Depth Material Casing Liner Thru-set Welded
6 *+2 7 0.250 steel ☒ ☒ ☒
2 *+2 10 40 pvc ☐ ☒ ☐

Was drive shoe used? ☐ Y ☒ N Shoe Depth

9. PERFORATIONS/SCREENS:
Perforations ☐ Y ☒ N Method
Manufactured screen ☒ Y ☐ N Type pvc

Method of installation over bore / install
From (ft) To (ft) Slot size Numberft Diameter Material Gauge/Schedule
10 30 0.020 2 pvc sch. 40

Length of headpipe 12' Length of tailpipe
Packer ☐ Y ☒ N Type

10. FILTER PACK:
Filter Material From To Quantity Placement Method
colored silica sand 9 30 550 lbs over bore / dry pour

11. FLOWING ARTESIAN:
Flowing Artesian ☐ Y ☒ N Artesian Pressure (PSIG)
Describe control device

12. STATIC WATER LEVEL AND WELL TESTS:
Depth first water encountered(ft) 7' Static water level (ft) 7'
Water temp. (°F) < 85 Bottom hole temp(°F) < 85
Describe access port well cap

Well test:
Drawdown (ft) Discharge (gpm) Test Duration Pump Bailer Air Flowing
1.875 60 minutes ☒ ☐ ☐

Water Quality test comments:
13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, Lithology, or description of repairs, or abandonment, water temp.	Water
8	0	3	top soil	Y N
8	3	8	gravel, sand	
8	8	28	cobbles, boulders, some gravel & sand	X
8	28	31	cobbles, boulders, gravel, sand very little clay	X

RECEIVED

NOV 13 2018

DEPT. OF WATER RESOURCES
SOUTHERN REGION

Completed Depth (Measurable) 30'
Date Started: 10/3/2018 Date Completed: 10/4/2018

14. DRILLER'S CERTIFICATION:
I/We certify that all minimum well construction standards were complied with at the time this rig was moved

Company Name Apex Drilling LLC Co No 667
Principal Driller [Signature] Date 10/4/2018
Driller [Signature] Date 10/4/2018
Operator II [Signature] Date 10/4/2018
Operator I [Signature] Date 10/4/2018
* Signatures of Principal Driller and rig operator are required.

IDAHO DEPARTMENT OF WATER RESOURCES WELL DRILLER'S REPORT

1. WELL TAG NO. D 0078146
DRILLING PERMIT NO. 887505
Water Right / Injection Well No.

2. OWNER
Name Idaho Department of Lands
Address 300 North 6th Street Suite 103
City Boise State ID Zip 83720

3. WELL LOCATION:
Twp. 4 N or S 18 E or W
Sec. 36 1/4 SW 1/4 NW 1/4
Gov't Lot 3 Co. Blaine
Lat. 43 Deg. 38.310 (Deg and Dec min)
Long. 114 Deg. 15.943 (Deg and Dec min)
Address of Well Site South Triumph Gulch Road
City Triumph

4. USE:
☐ Domestic ☐ Municipal ☒ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other

5. TYPE OF WORK: (check all that apply)
☒ New Well ☐ Replacement Well ☐ Modify Existing Well
☐ Abandonment ☐ Other

6. DRILL METHOD:
☒ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES:
Seal Material From To Quantity (lb/ft) Placement method/procedure
bentonite 0 8 200 lbs over bore / dry pour

8. CASING/LINER:
Dia. From To Depth Material Casing Liner Thru-set Welded
6 *+2 7 0.250 steel ☒ ☒ ☒
2 *+2 10 40 pvc ☐ ☒ ☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth 7'

9. PERFORATIONS/SCREENS:
Perforations ☐ Y ☒ N Method
Manufactured screen ☒ Y ☐ N Type pvc

Method of installation over bore / install
From (ft) To (ft) Slot size Numberft Diameter Material Gauge/Schedule
10 30 0.02 2 pvc 40

Length of headpipe 12' Length of tailpipe
Packer ☐ Y ☒ N Type

10. FILTER PACK:
Filter Material From To Quantity Placement Method
colored silica sand 8 30 700 lbs over bore / dry pour

11. FLOWING ARTESIAN:
Flowing Artesian ☐ Y ☒ N Artesian Pressure (PSIG)
Describe control device

12. STATIC WATER LEVEL AND WELL TESTS:
Depth first water encountered(ft) 7' Static water level (ft) 7'
Water temp. (°F) < 85 Bottom hole temp(°F) < 85
Describe access port well cap

Well test:
Drawdown (ft) Discharge (gpm) Test Duration Pump Bailer Air Flowing
1.875 60 minutes ☒ ☐ ☐

Water Quality test comments:
13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, Lithology, or description of repairs, or abandonment, water temp.	Water
8	0	3	top soil	Y N
8	3	10	cobbles, gravel	X
8	10	30	cobbles, gravel & sand	X

RECEIVED

NOV 13 2018

DEPT. OF WATER RESOURCES
SOUTHERN REGION

Completed Depth (Measurable) 30'
Date Started: 10/5/2018 Date Completed: 10/5/2018

14. DRILLER'S CERTIFICATION:
I/We certify that all minimum well construction standards were complied with at the time this rig was moved

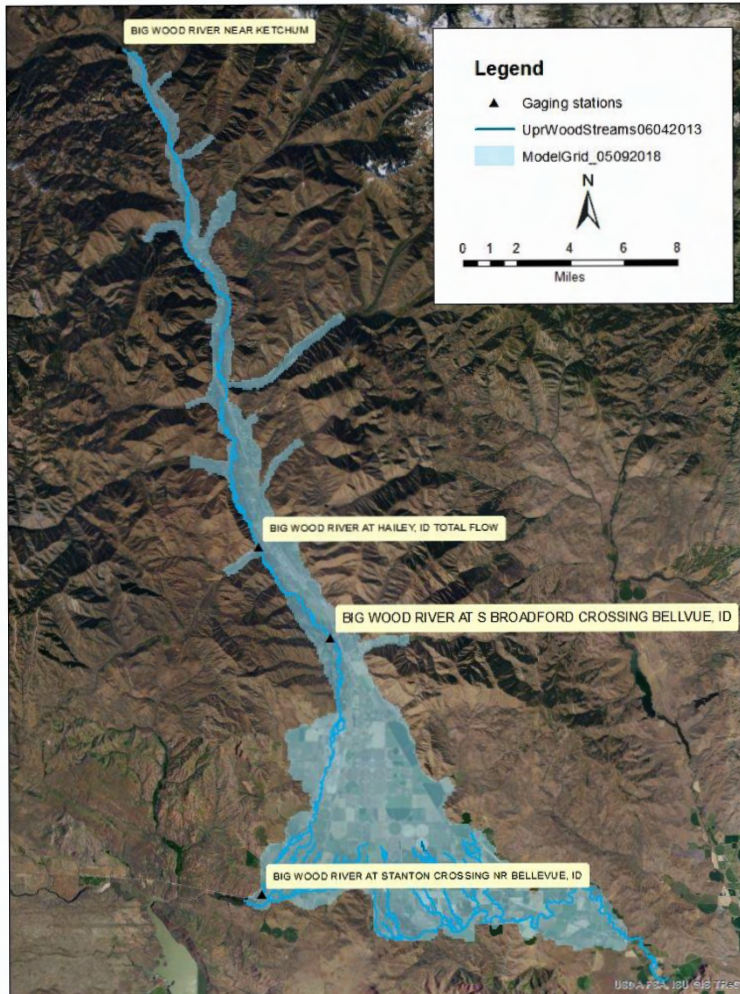
Company Name Apex Drilling LLC Co No 667
Principal Driller [Signature] Date 10/5/2018
Driller [Signature] Date 10/5/2018
Operator II [Signature] Date 10/5/2018
Operator I [Signature] Date 10/5/2018
* Signatures of Principal Driller and rig operator are required.

887505

River and Stream Gages

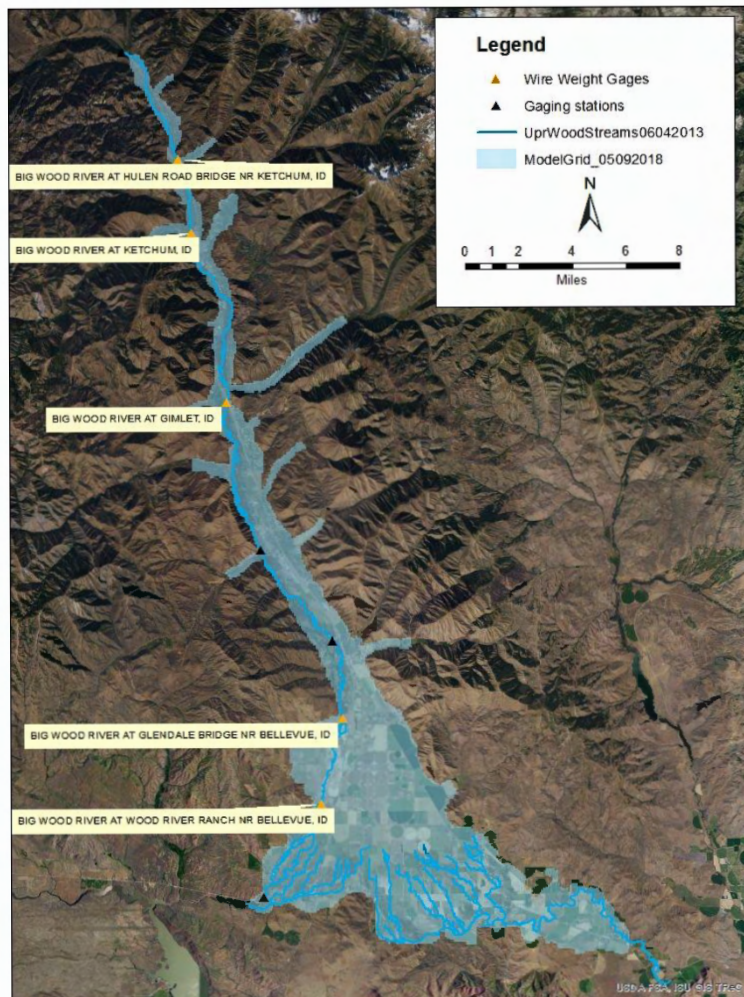
- Continuous gages
 - Wood River Gages
 - Perennial tributary streams
- Opportunistic gaging
 - River stage at selected locations on Wood River
 - Silver Creek near Picabo
 - Ephemeral streams tributary to Wood River

Wood River Gages



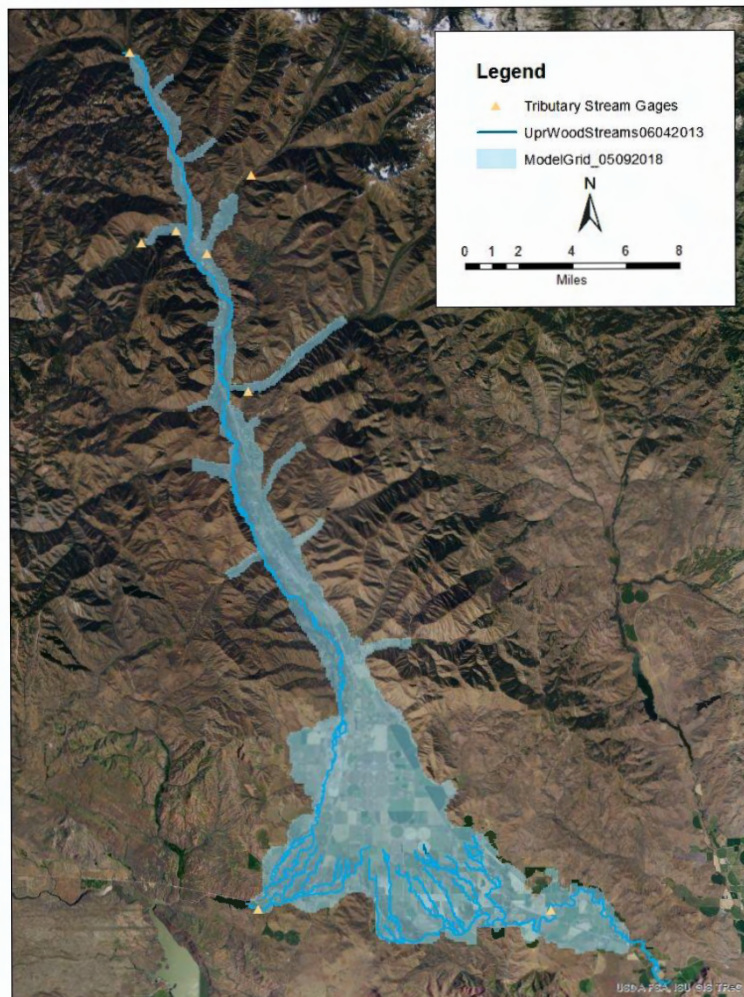
- Wood River near Ketchum
 - 1948-1971, 2011-Present
- Wood River at Hailey
 - 1915-Present
- Wood River at S Broadford
 - 2017-Present
- Wood River at Stanton Crossing
 - 1996-Present

Opportunistic Stage Measurements



- Initiated 2015
 - Hulen Road
 - At Ketchum
 - At Gimlet
 - Glendale Bridge
 - Wood River Ranch

Perennial Tributary Streams



- North Fork Wood River
 - 2011
- 2 on Warm Springs
 - Mouth 2011
 - Upstream 2018
- 2 on Trail Creek
 - Mouth 2010
 - Upstream 2016
- East Fork
 - 2010
- Willow Creek
 - 2000
- Other
 - Silver Creek
 - 1974

Monitoring Ephemeral Streams

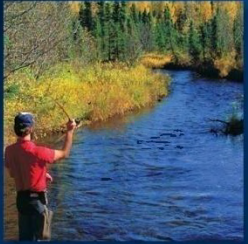
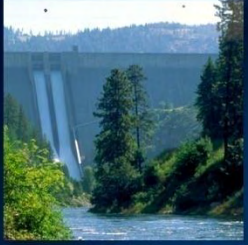


- Install cameras to monitor ephemeral streams
 - November 2018
- Cameras programmed to take pictures every 4 hours
 - Flowing or not
 - Whether or not the stage has changed

Monitoring Ephemeral Streams

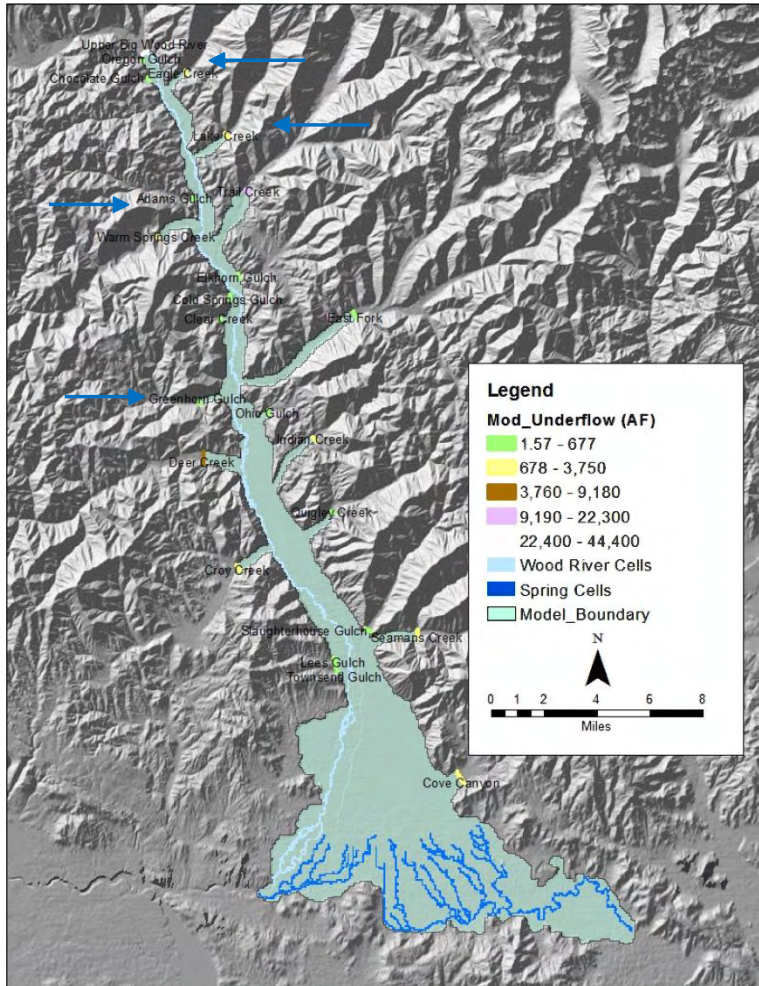


- Eagle Creek
 - Flowing when we initiated monitoring
- Lake Creek
- Adams Gulch
- Greenhorn
 - Flowing when we initiated monitoring



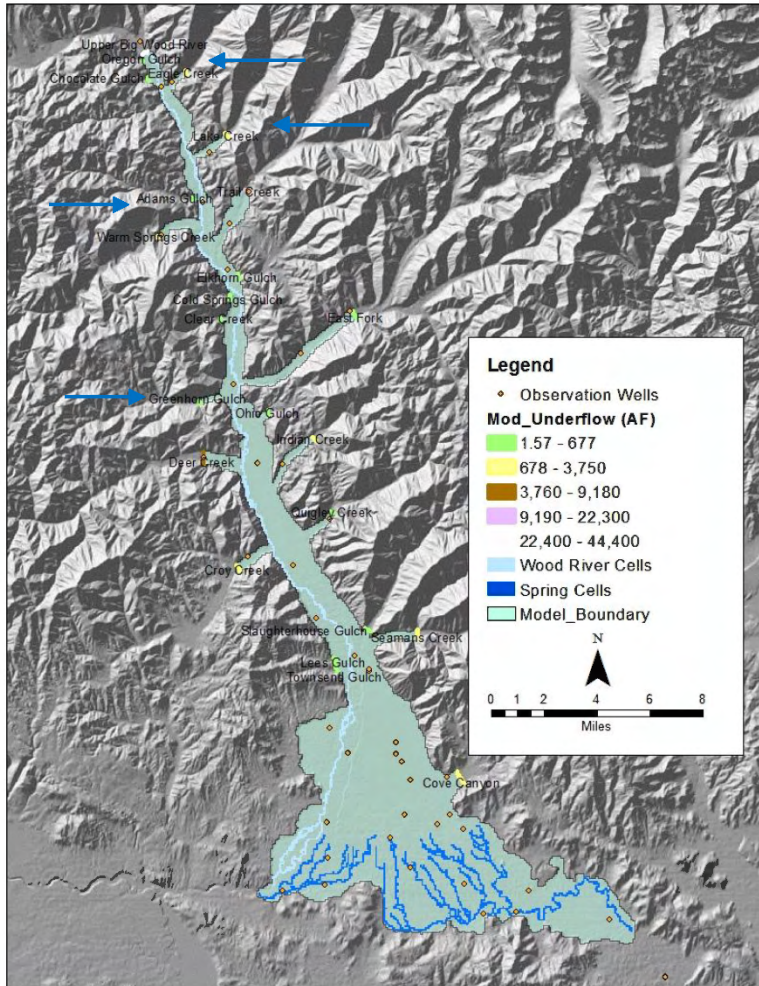
End

Tributary Underflow



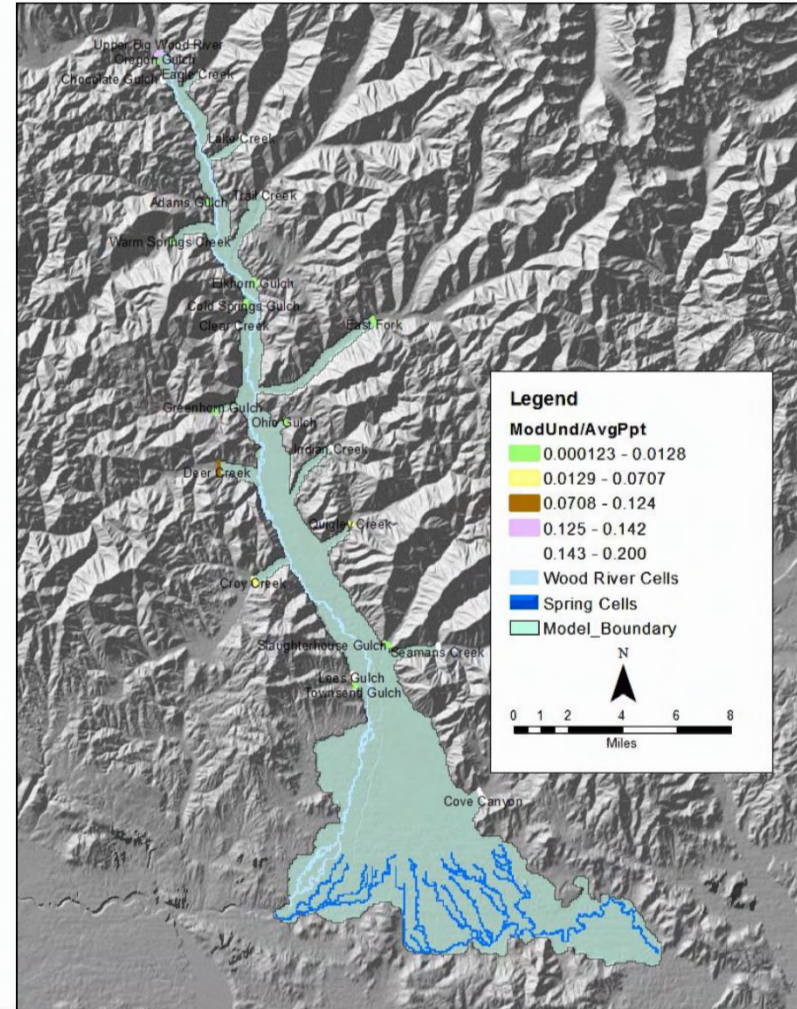
Tributary	Avg Precip (AF)	Underflow (AF)	Underflow/Avg
Adams Gulch	17600	8.51	0.0005
Chocolate Gulch	864	172.80	0.2000
Cold Springs Gulch	3,341	7.05	0.0021
Clear Creek	2,288	457.60	0.2000
Cove Canyon	11,200	2,239.99	0.2000
Croy Creek	23,595	1,668.43	0.0707
Deer Creek	74,213	9,184.39	0.1238
Eagle Creek	17,248	3,449.60	0.2000
Elkhorn Gulch	12,757	1.57	0.0001
East Fork	120,629	642.29	0.0053
Greenhorn Gulch	30,464	6.82	0.0002
Indian Creek	10,149	2,029.80	0.2000
Lake Creek	17,280	3,456.00	0.2000
Lees Gulch	2,240	448.00	0.2000
Ohio Gulch	4,270	39.40	0.0092
Oregon Gulch	6,919	6.39	0.0009
Quigley Creek	15,504	677.43	0.0437
Seamans Creek	18,768	3,753.60	0.2000
Slaughterhouse Gulch	11,509	5.06	0.0004
Trail Creek	111,274	22,254.79	0.2000
Townsend Gulch	960	12.18	0.0127
Upper Big Wood River	313,278	44,381.10	0.1417
Warm Springs Creek	180,735	2,308.57	0.0128

Tributary Underflow

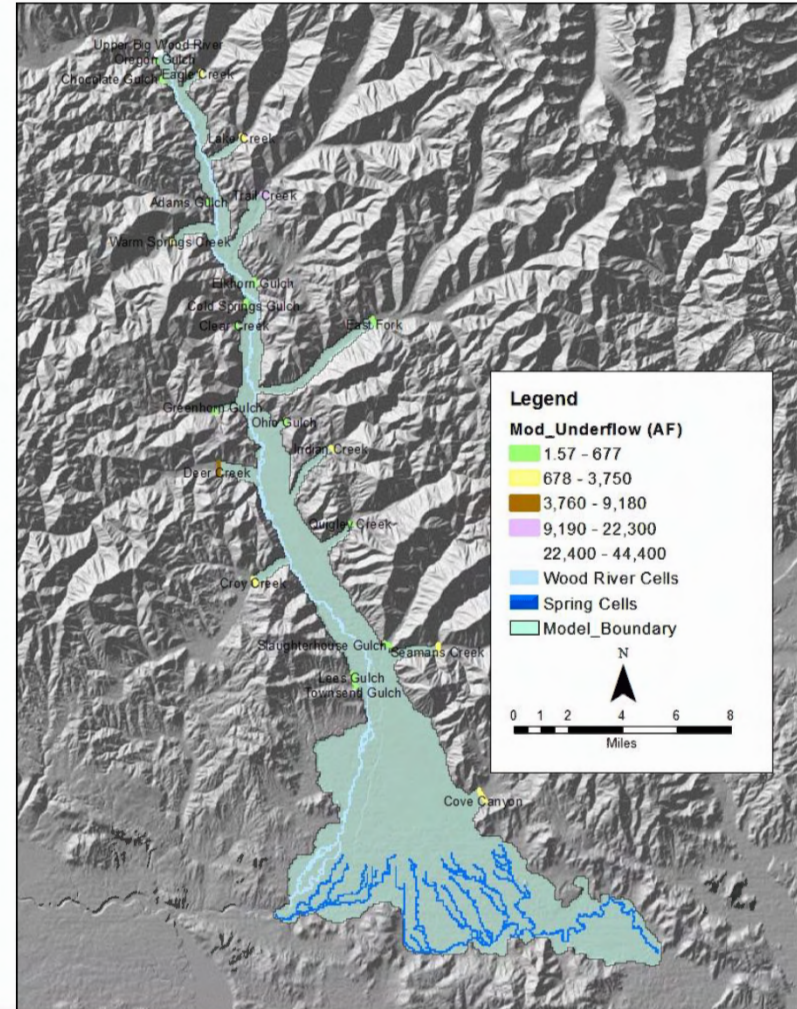


Tributary	Avg Precip (AF)	Underflow (AF)	Underflow/Avg
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Cove Canyon	11,200	2,239.99	0.2000
Croy Creek	23,595	1,668.43	0.0707
Deer Creek	74,213	9,184.39	0.1238
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Upper Big Wood River	313,278	44,381.10	0.1417
Warm Springs Creek	180,735	2,308.57	0.0128

Monitoring ephemeral streams



Monitoring ephemeral streams



Tributary Underflow



Tributary	Avg Precip (AF)	Underflow (AF)	Underflow/Avg
Adams Gulch	17600	8.51	0.0005
Chocolate Gulch	864	172.80	0.2000
Cold Springs Gulch	3,341	7.05	0.0021
Clear Creek	2,288	457.60	0.2000
Cove Canyon	11,200	2,239.99	0.2000
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Warm Springs Creek	180,735	2,308.57	0.0128