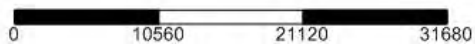
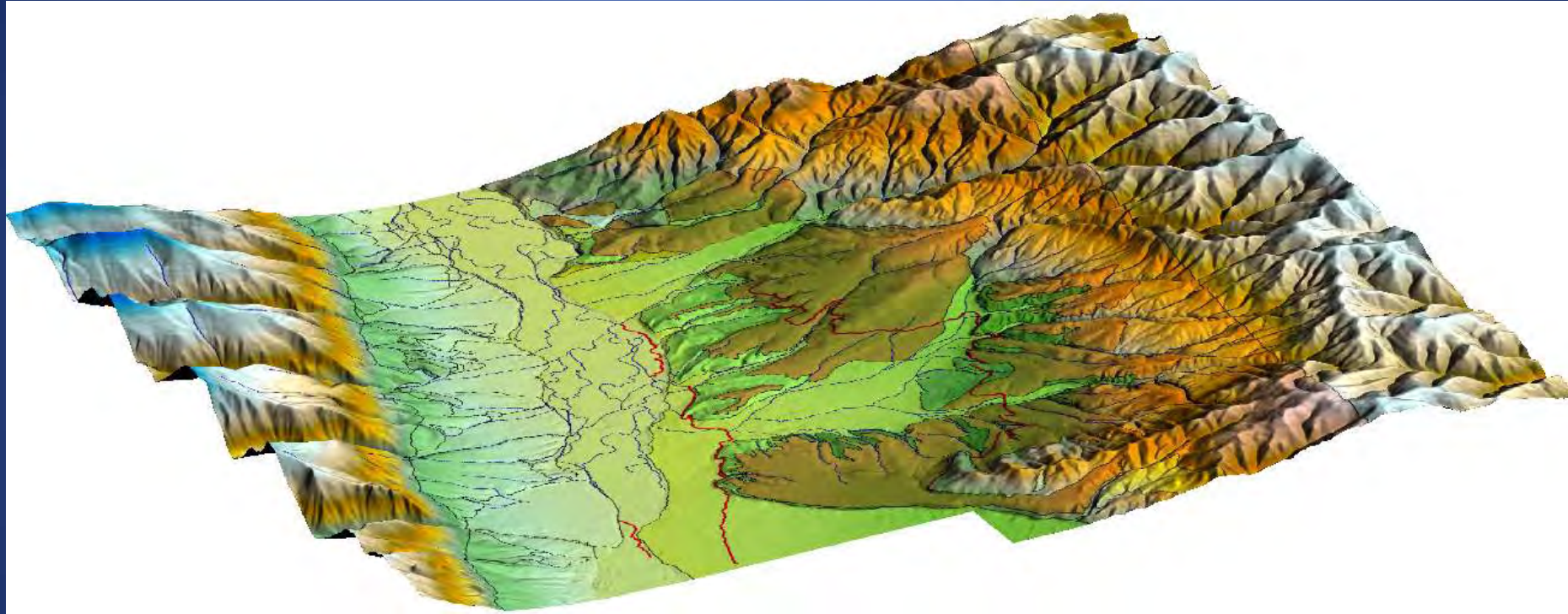
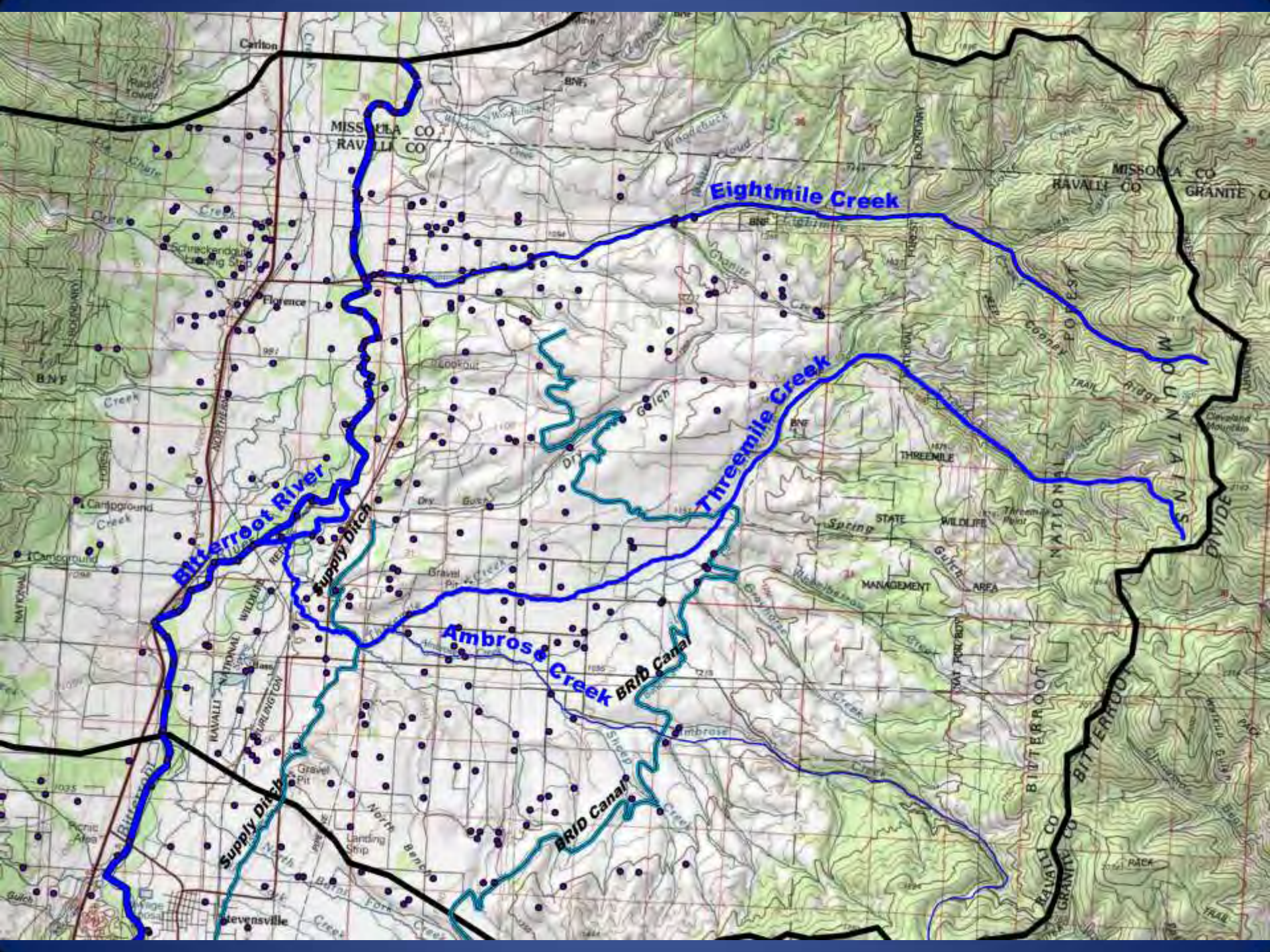
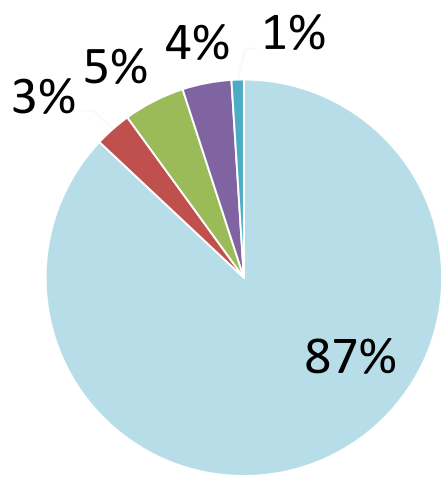


# Physical Availability of Groundwater in the Eightmile and Threemile Creek drainages



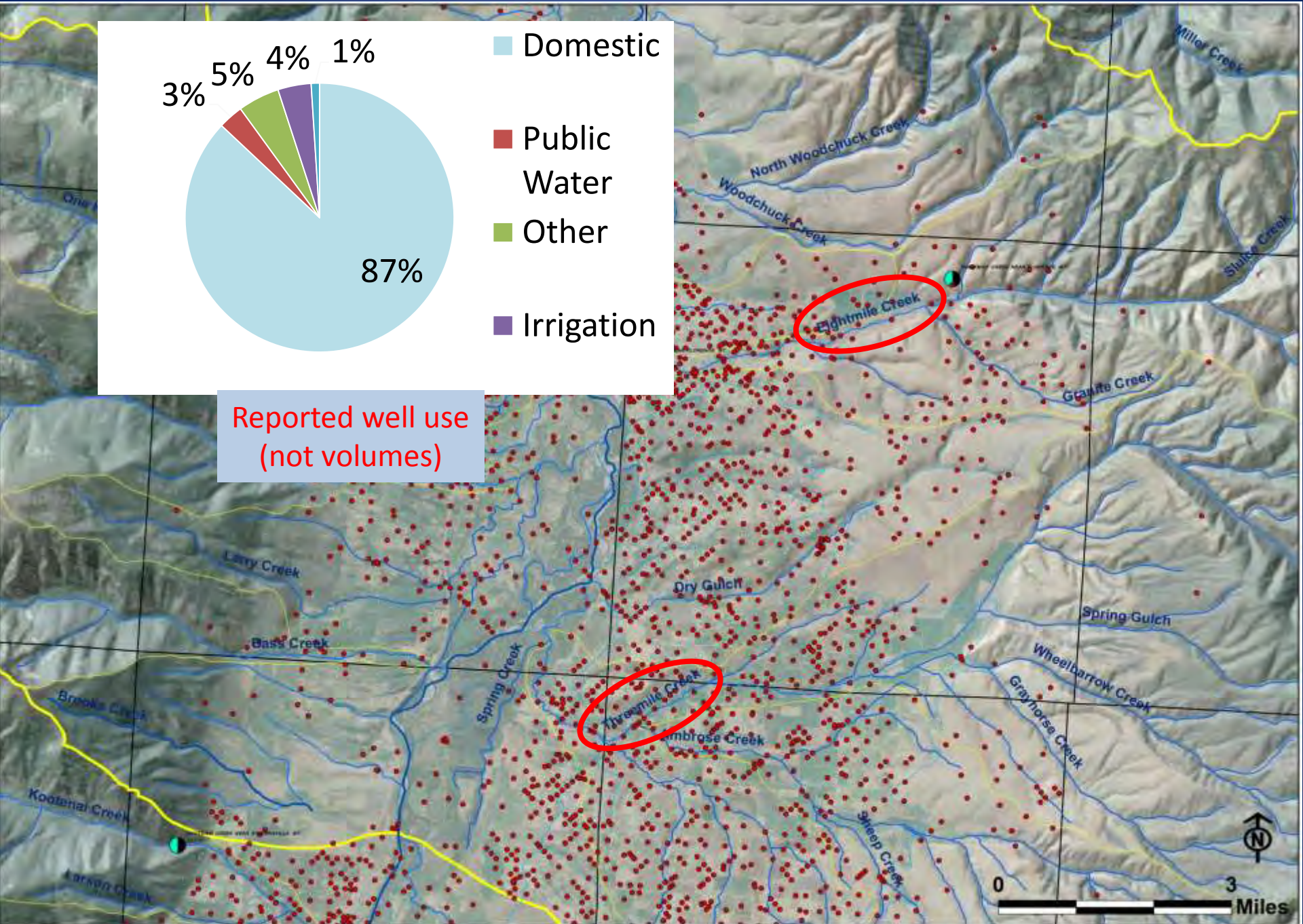
John Metesh  
Montana Bureau of Mines and Geology  
Presented to  
Water Policy Interim Committee – Montana Legislature  
January 10, 2012



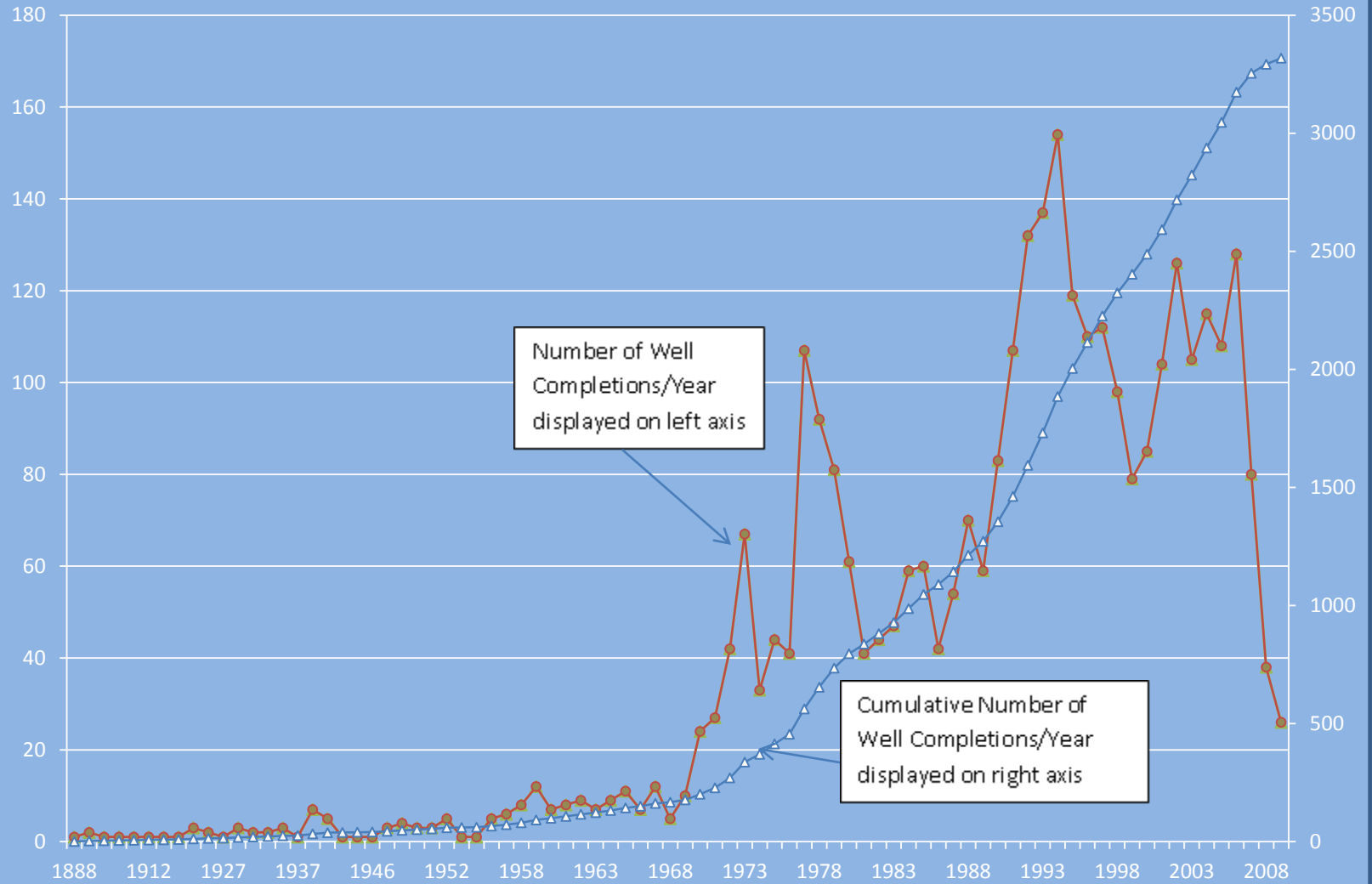


- Domestic
- Public Water
- Other
- Irrigation

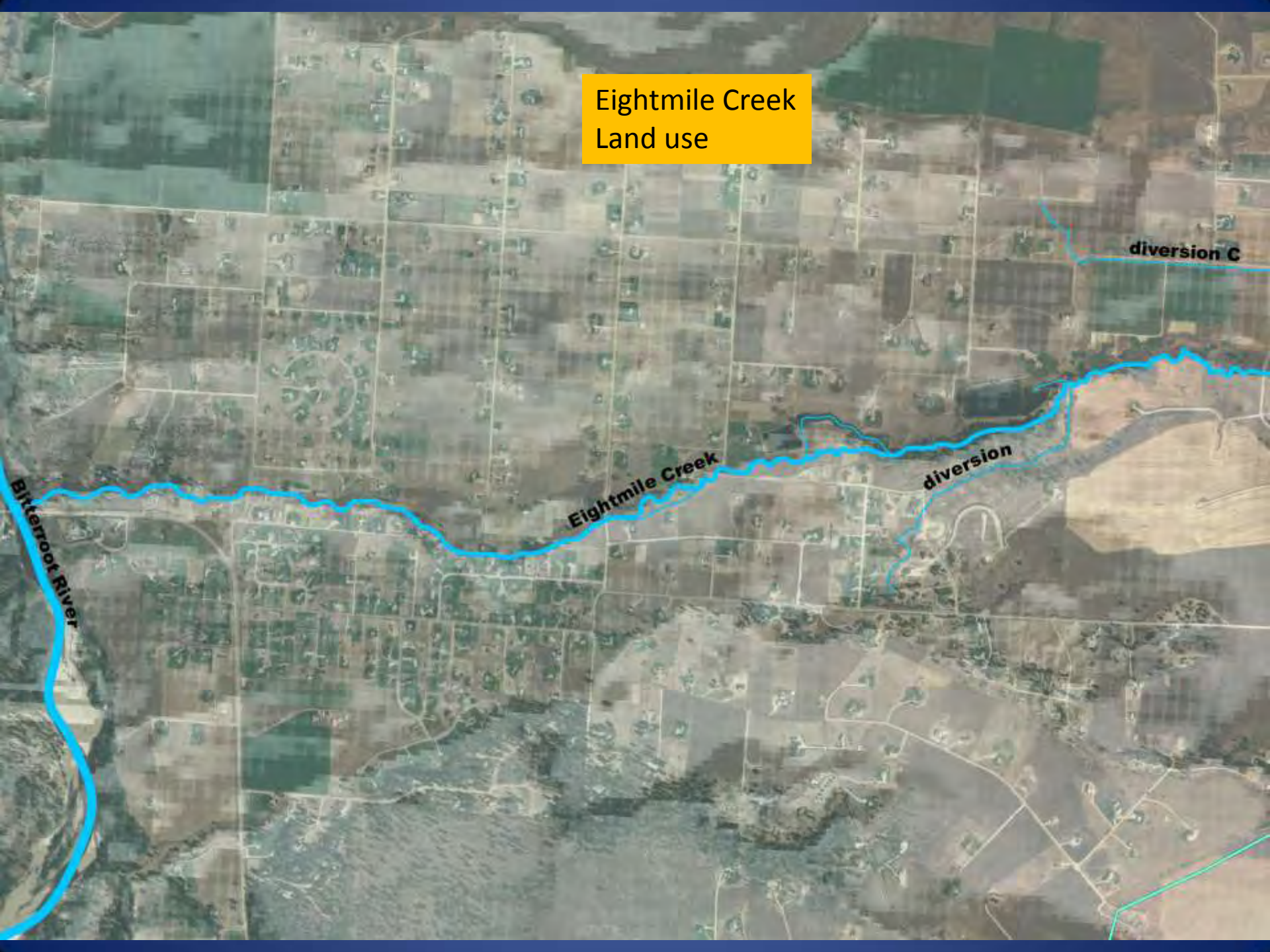
Reported well use  
(not volumes)



# #wells/year completed in Florence, MT

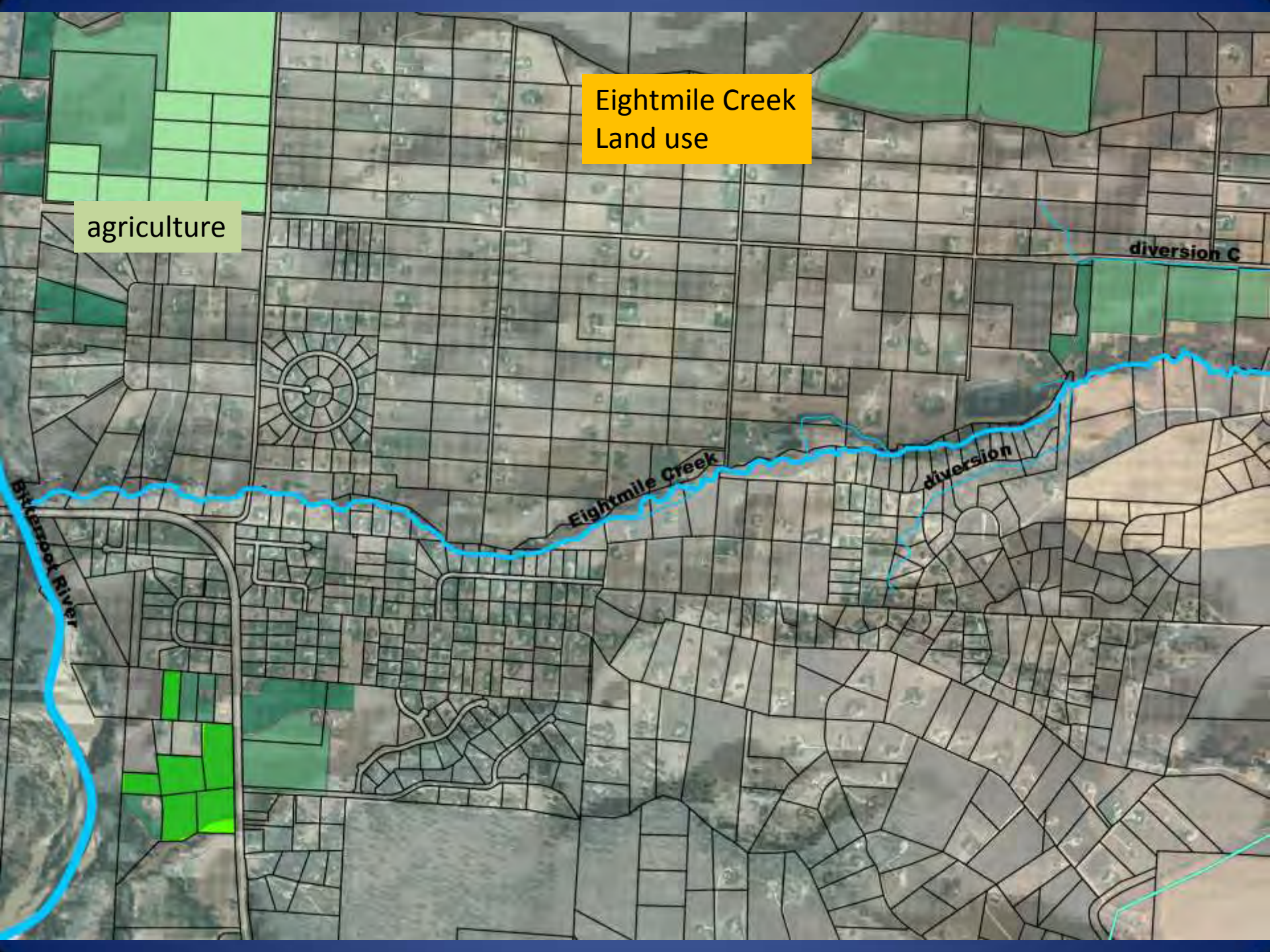


Eightmile Creek  
Land use



Eightmile Creek  
Land use

agriculture



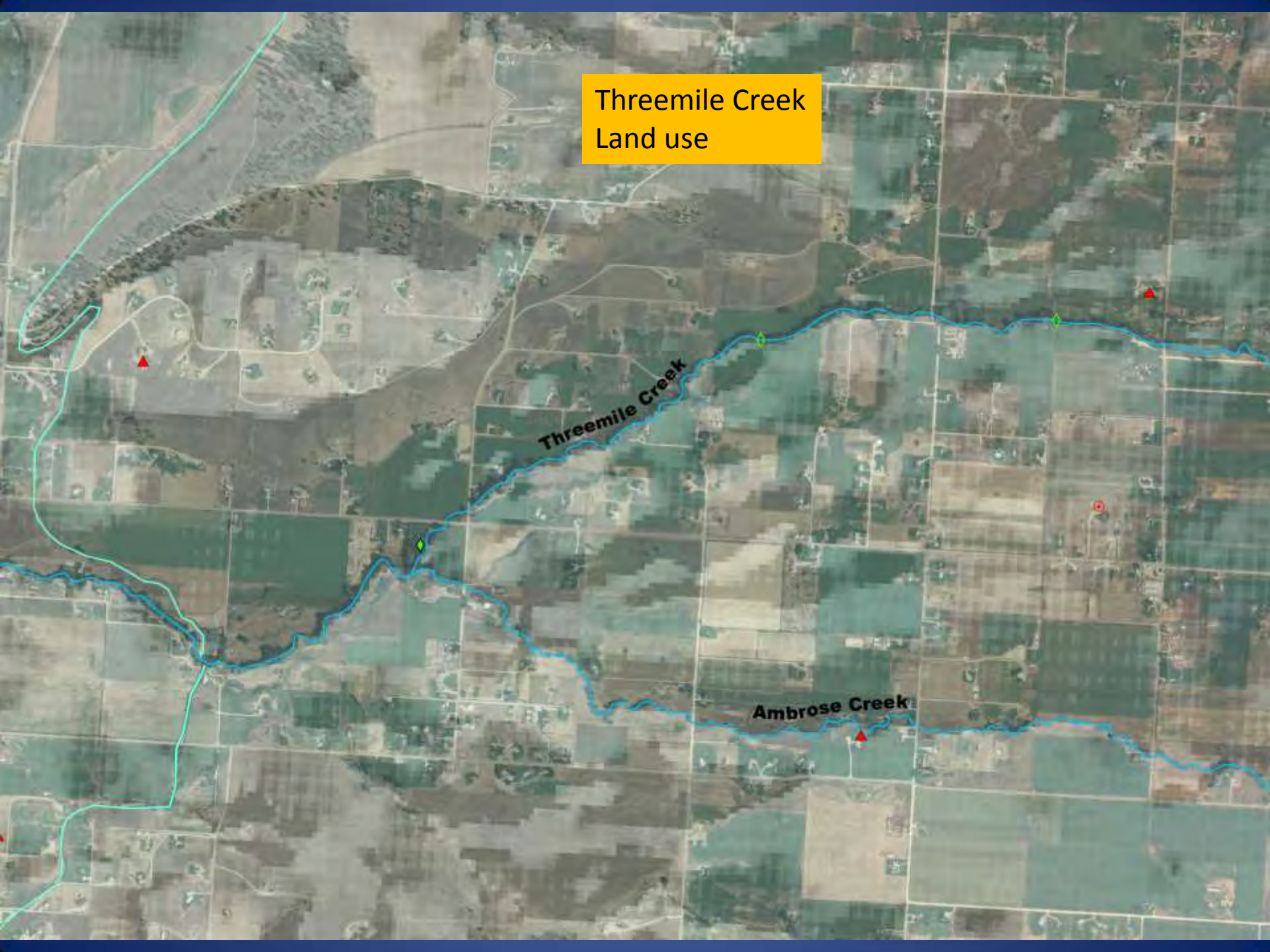
diversion C

Eightmile Creek

diversion

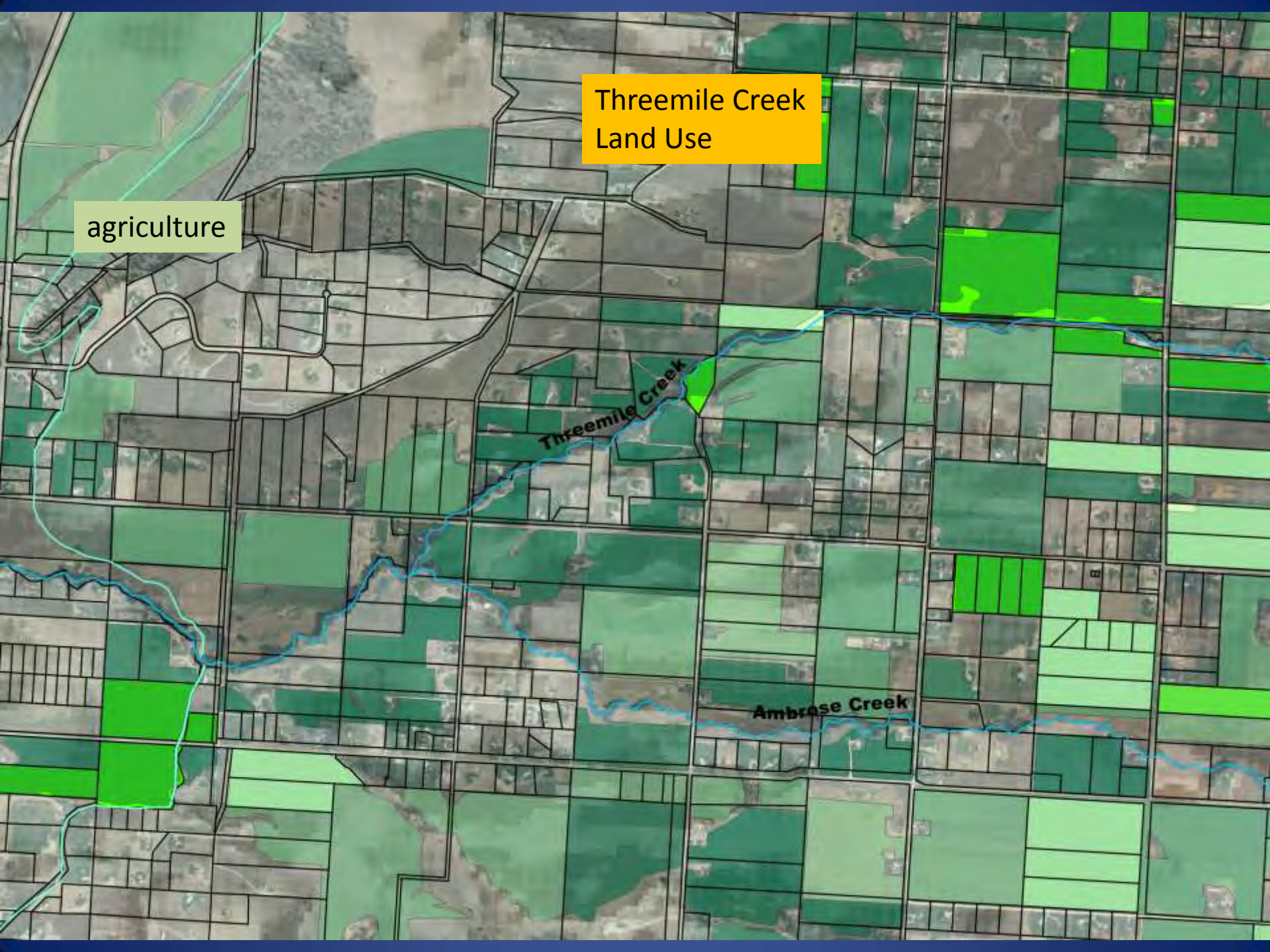
Bitterroot River

Threemile Creek  
Land use



Threemile Creek  
Land Use

agriculture





# Water budget components

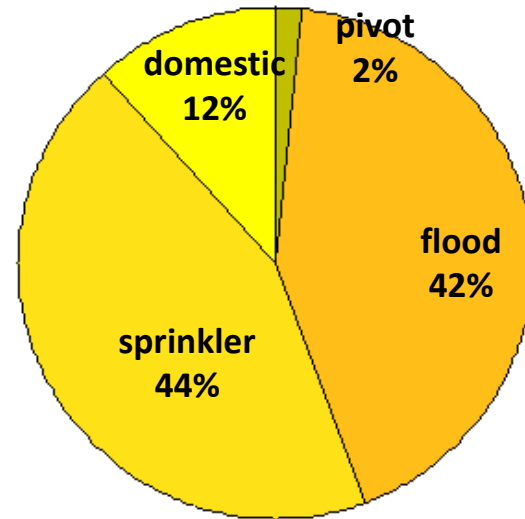
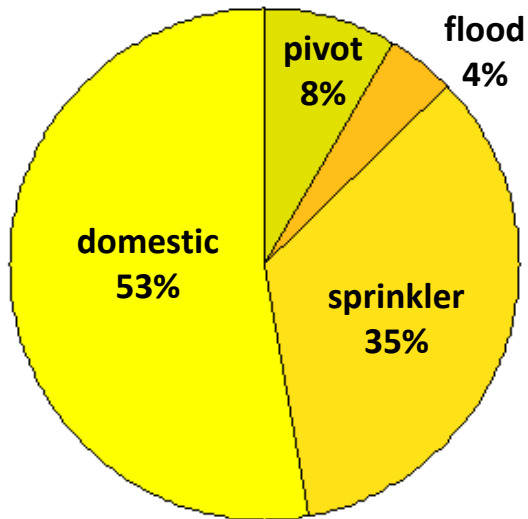
**Consumptive use** (all diversions, precipitation subtracted from monthly estimates)

## Eightmile Creek

Pivot	145
Flood	75
Sprinkler	600
Domestic	890

## Threemile Creek

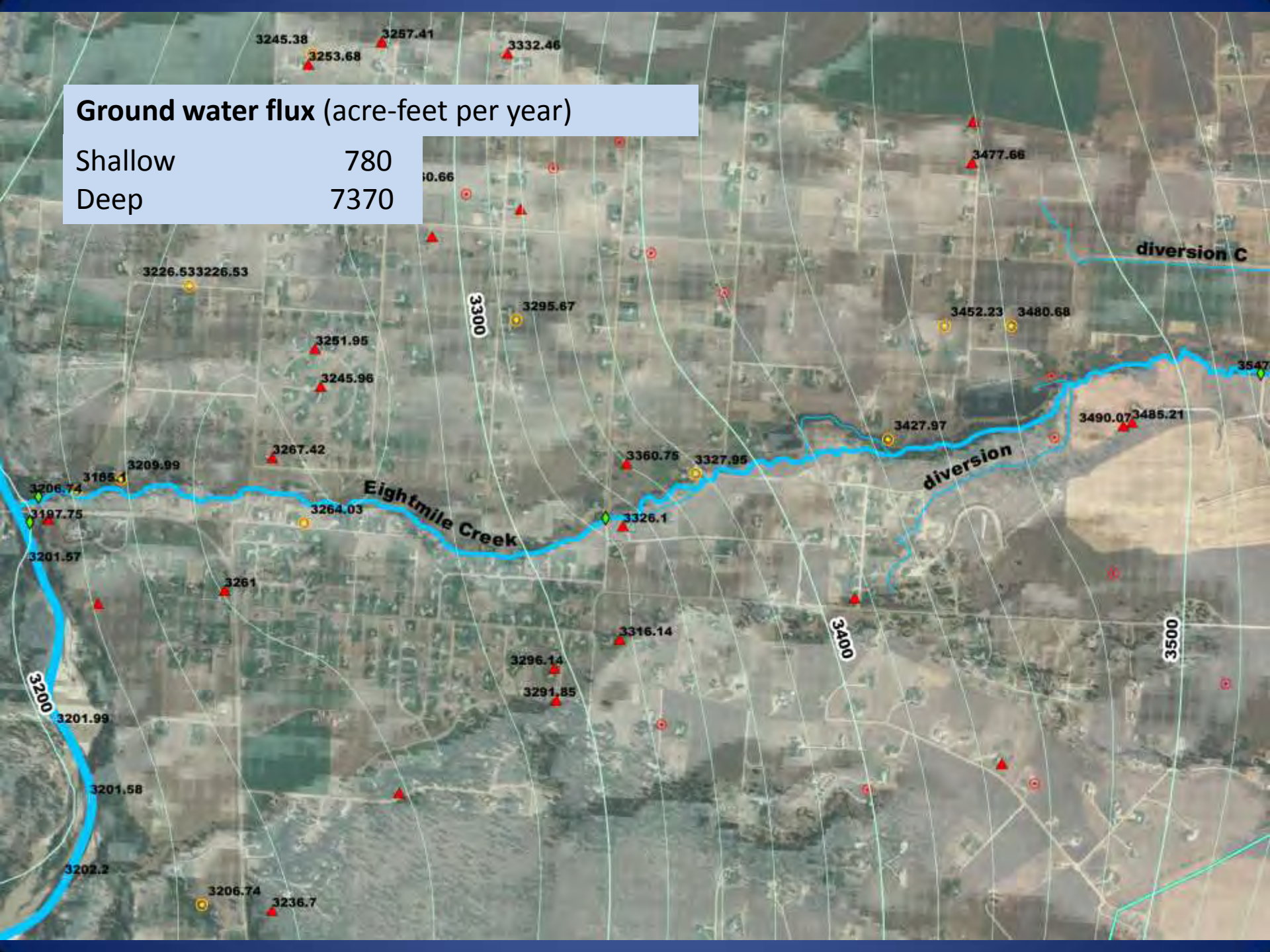
Pivot	190
Flood	4470
Sprinkler	4640
Domestic	1190



All values are acre-feet per year

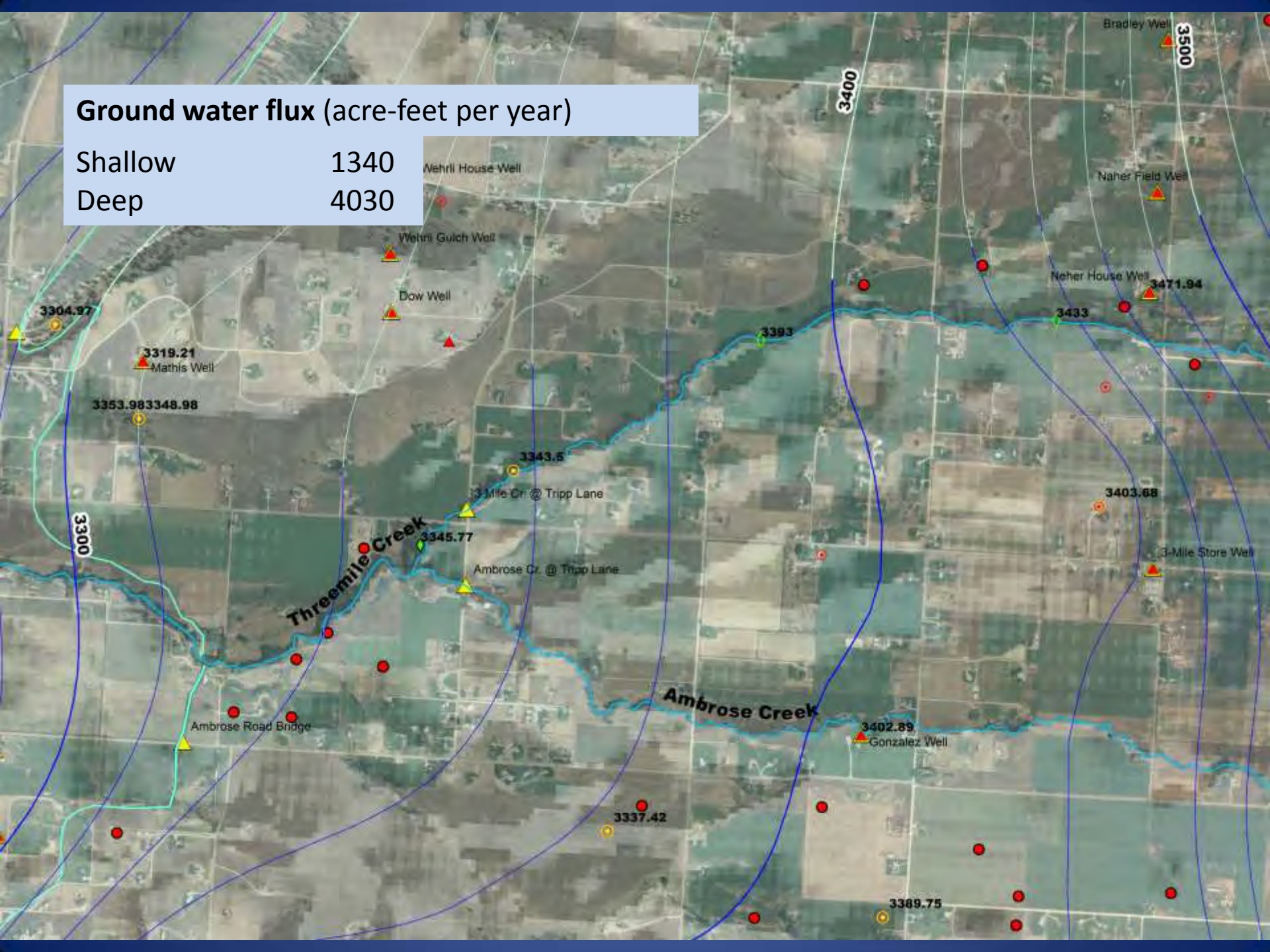
## Ground water flux (acre-feet per year)

Shallow	780
Deep	7370



# Ground water flux (acre-feet per year)

Shallow	1340
Deep	4030



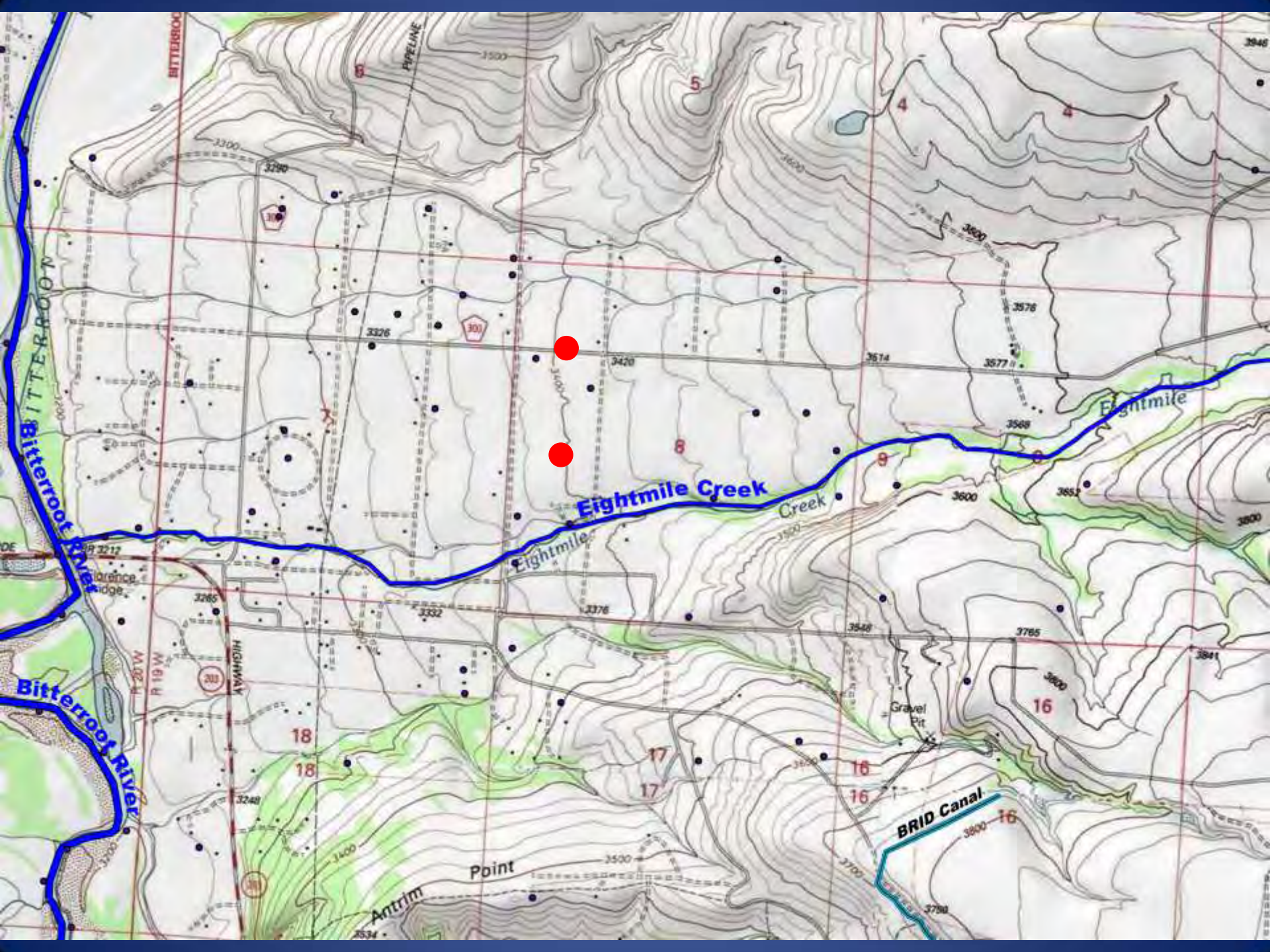
## Eightmile versus Threemile hydrogeology a few bottom lines

### **Aquifer properties**

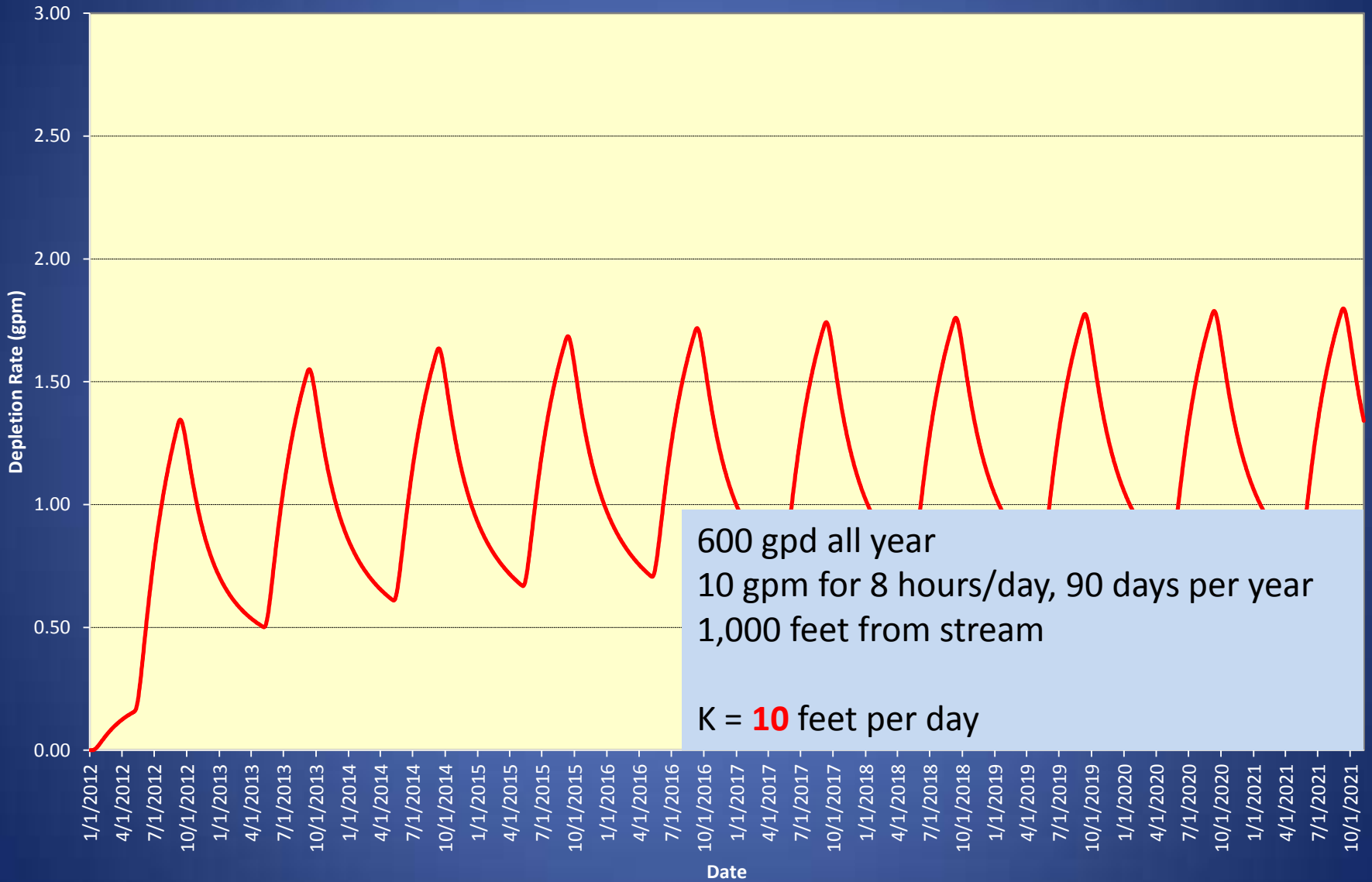
- Eightmile Creek: lower yield wells  
more drawdown, BUT  
limited well interference  
stream depletion more localized, BUT  
creek may be disconnected part of the year
- Threemile: depletion of more than one stream possible  
less likely to extend SD outside immediate area

### **Land use**

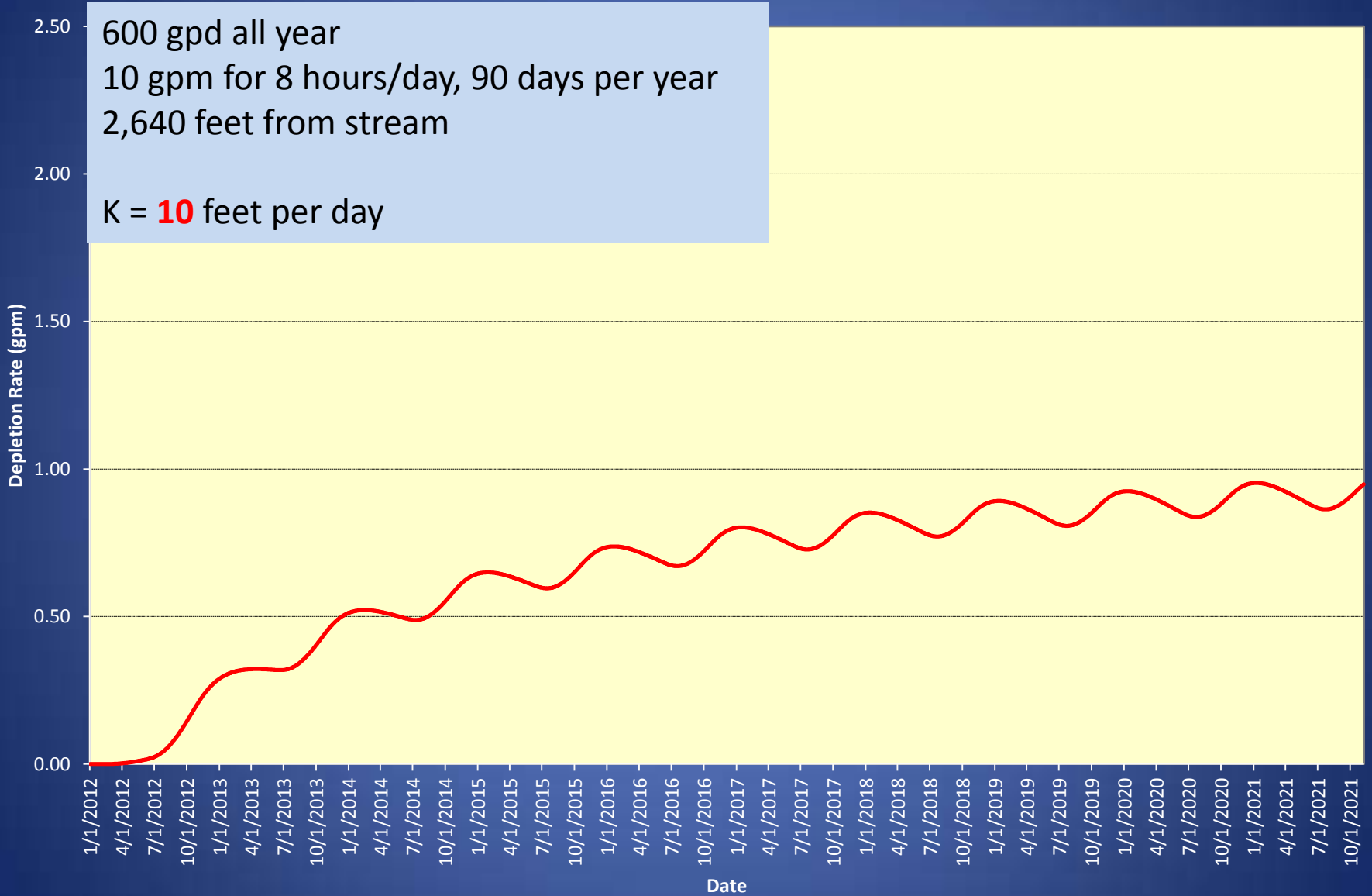
- Eightmile Creek: transition from ag to domestic  
no recharge from canals(?), less from irrigation
- Threemile: canal loss and irrigation return flow important



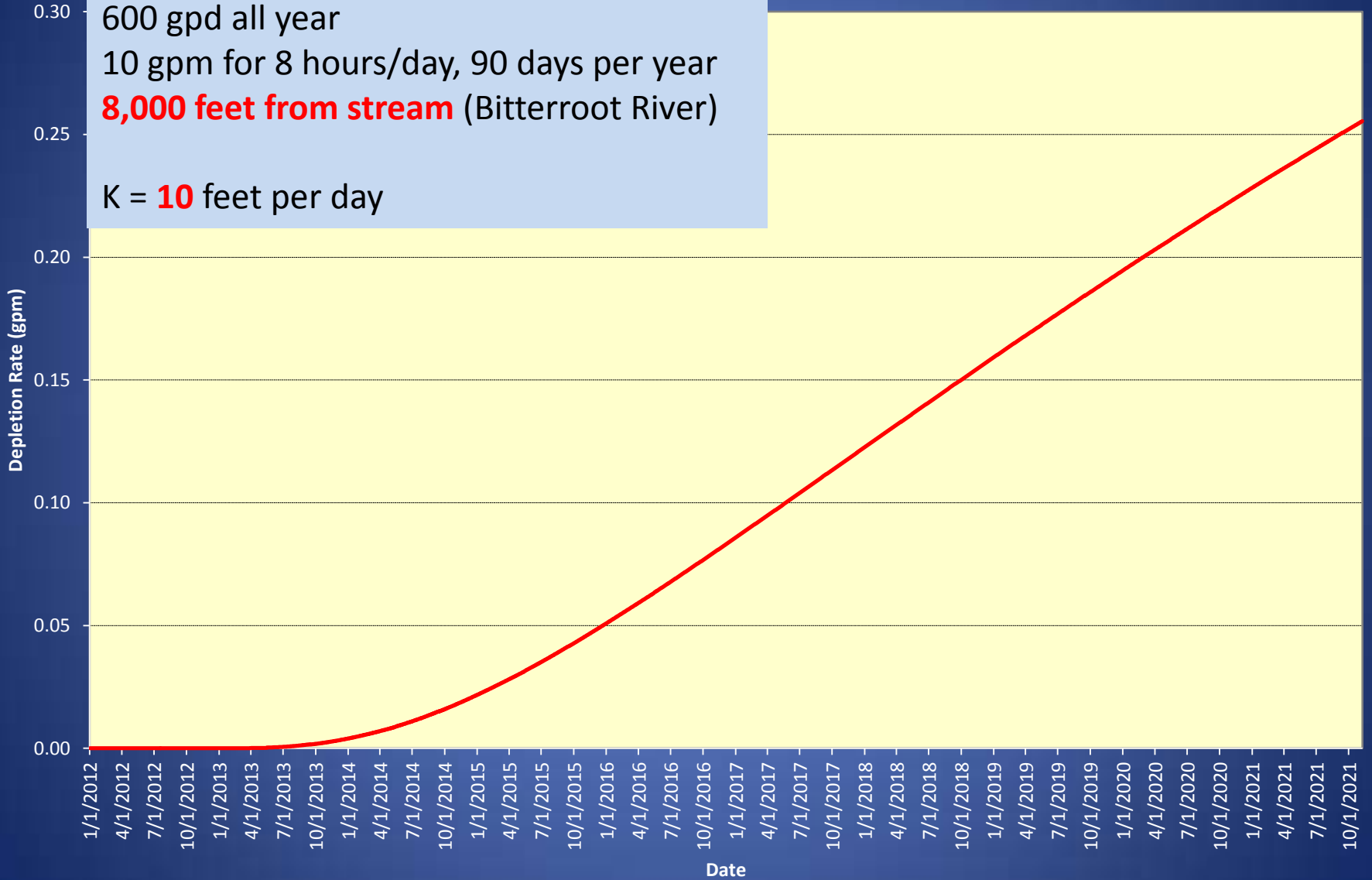
# Eightmile Creek Depletion Rate



# Eightmile Creek Depletion Rate

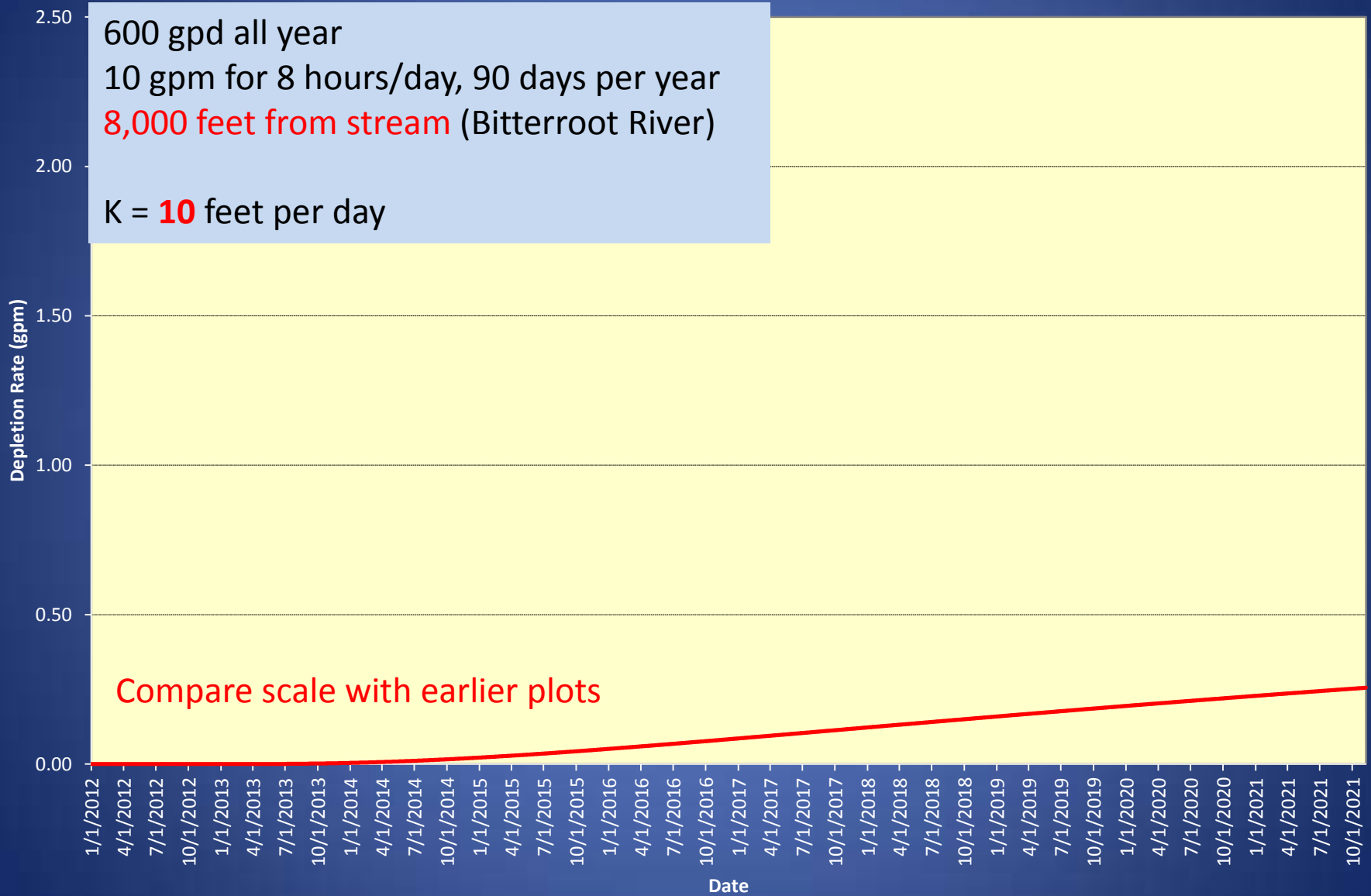


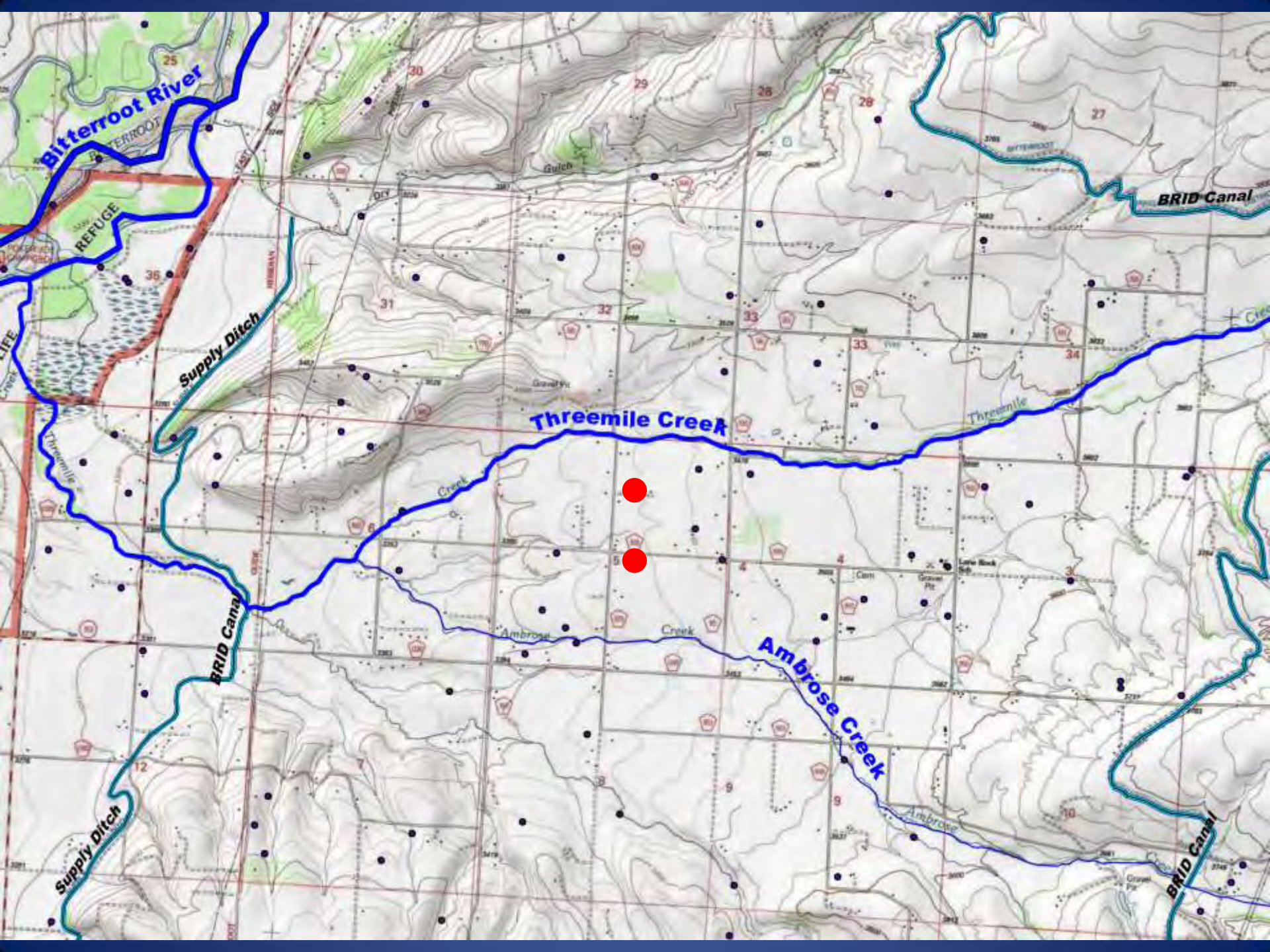
# Eightmile Creek Depletion Rate



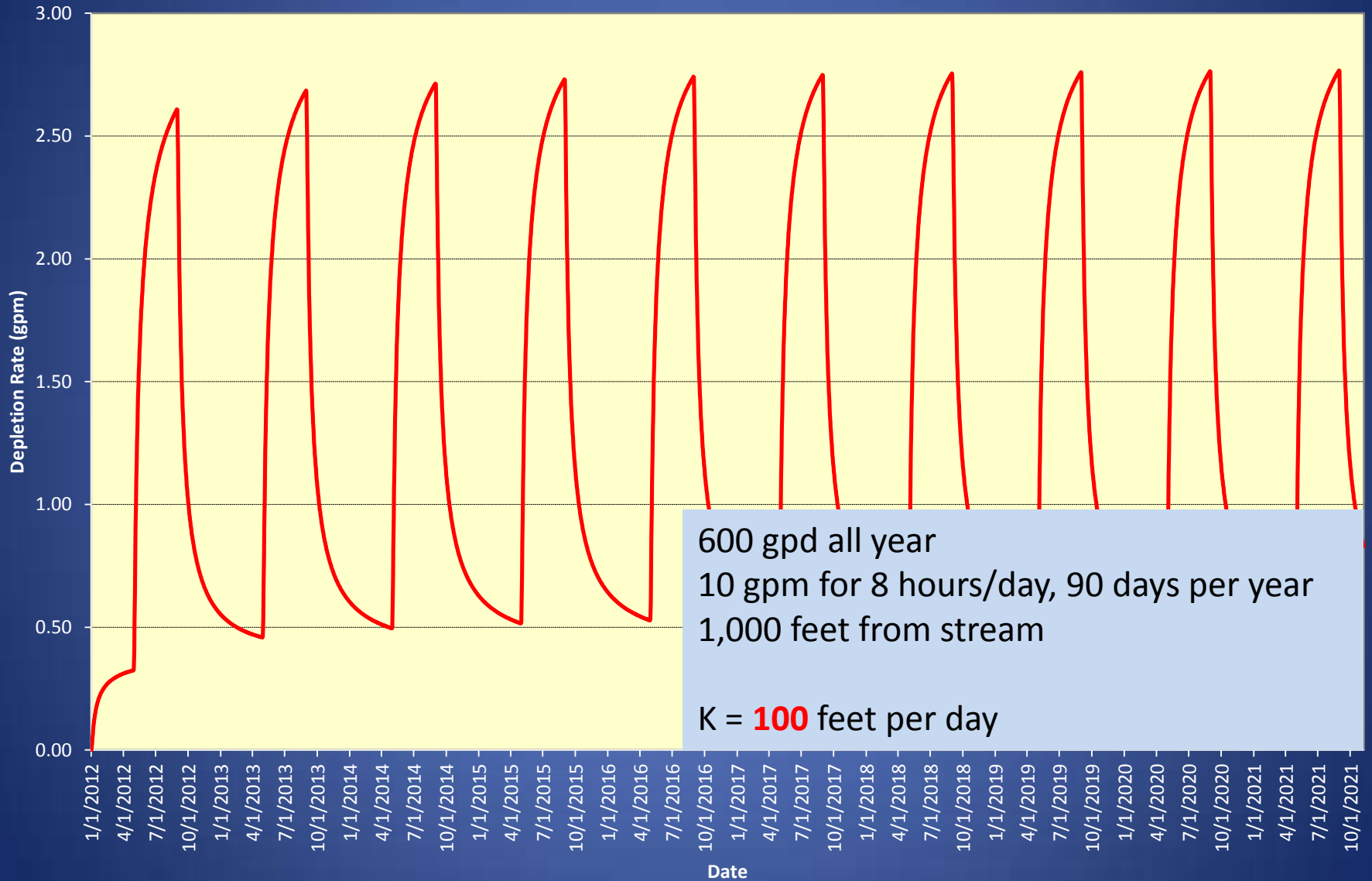


## Eightmile Creek Depletion Rate

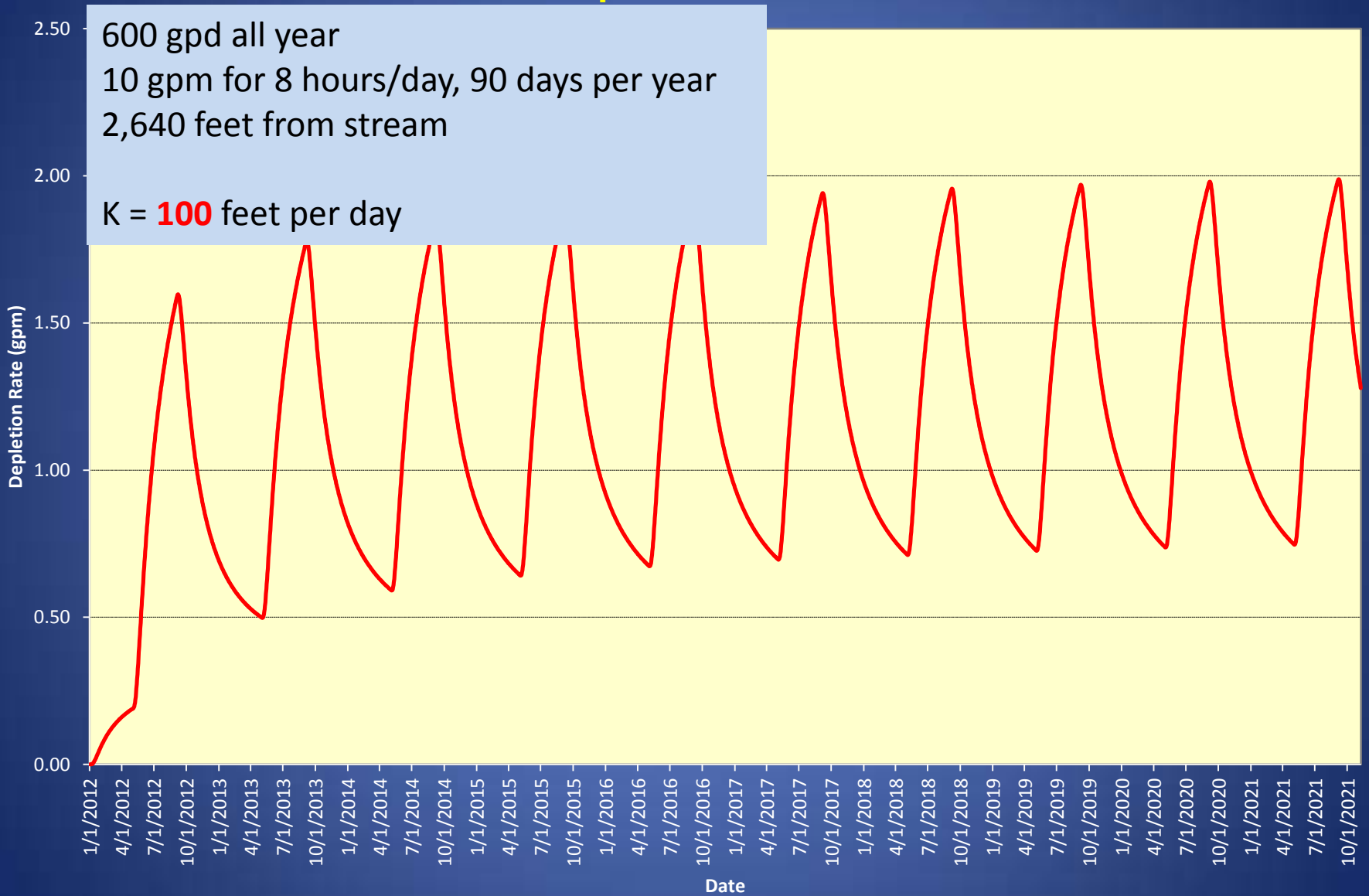




# Threemile Creek Depletion Rate

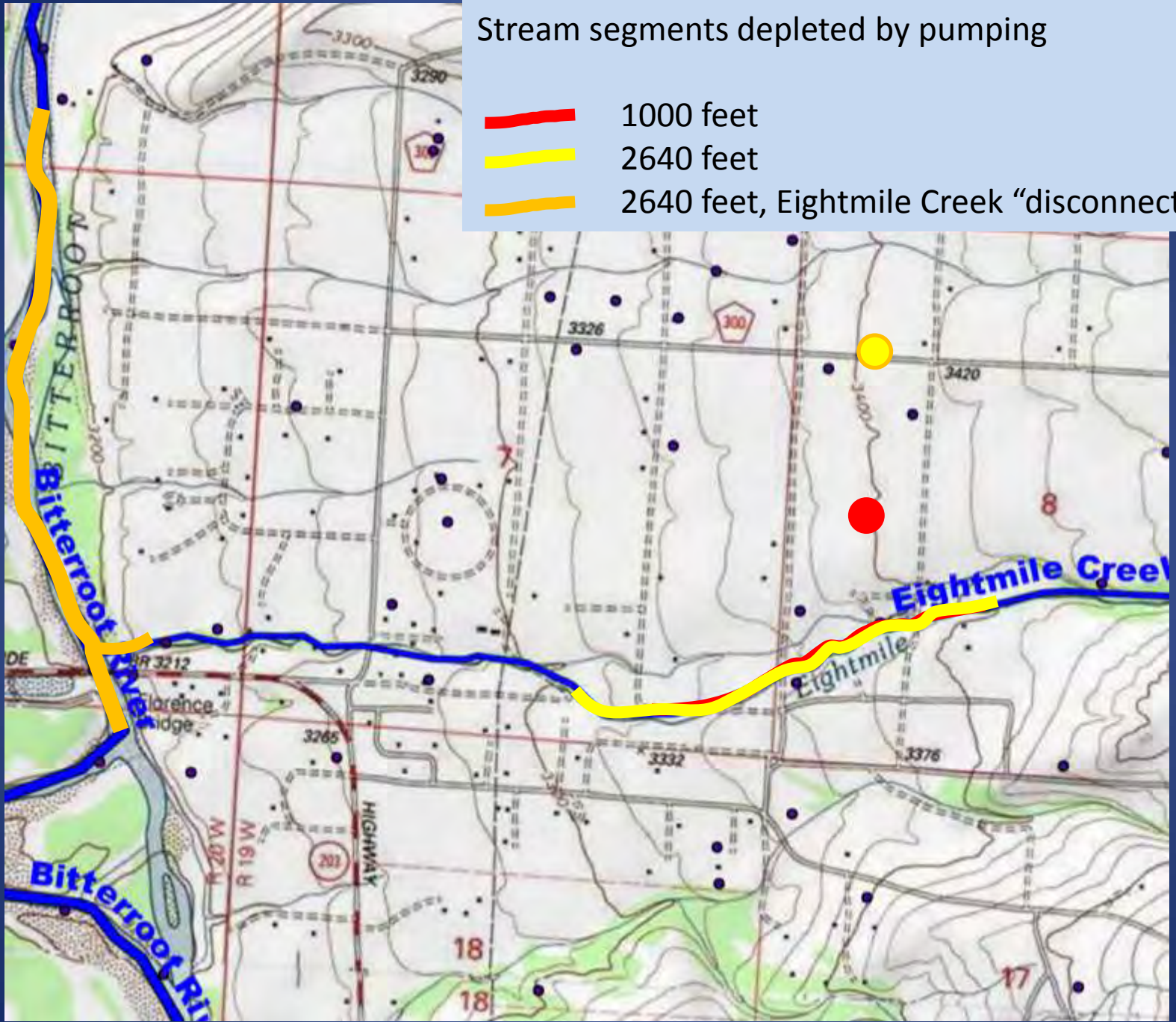


# Threemile Creek Depletion Rate





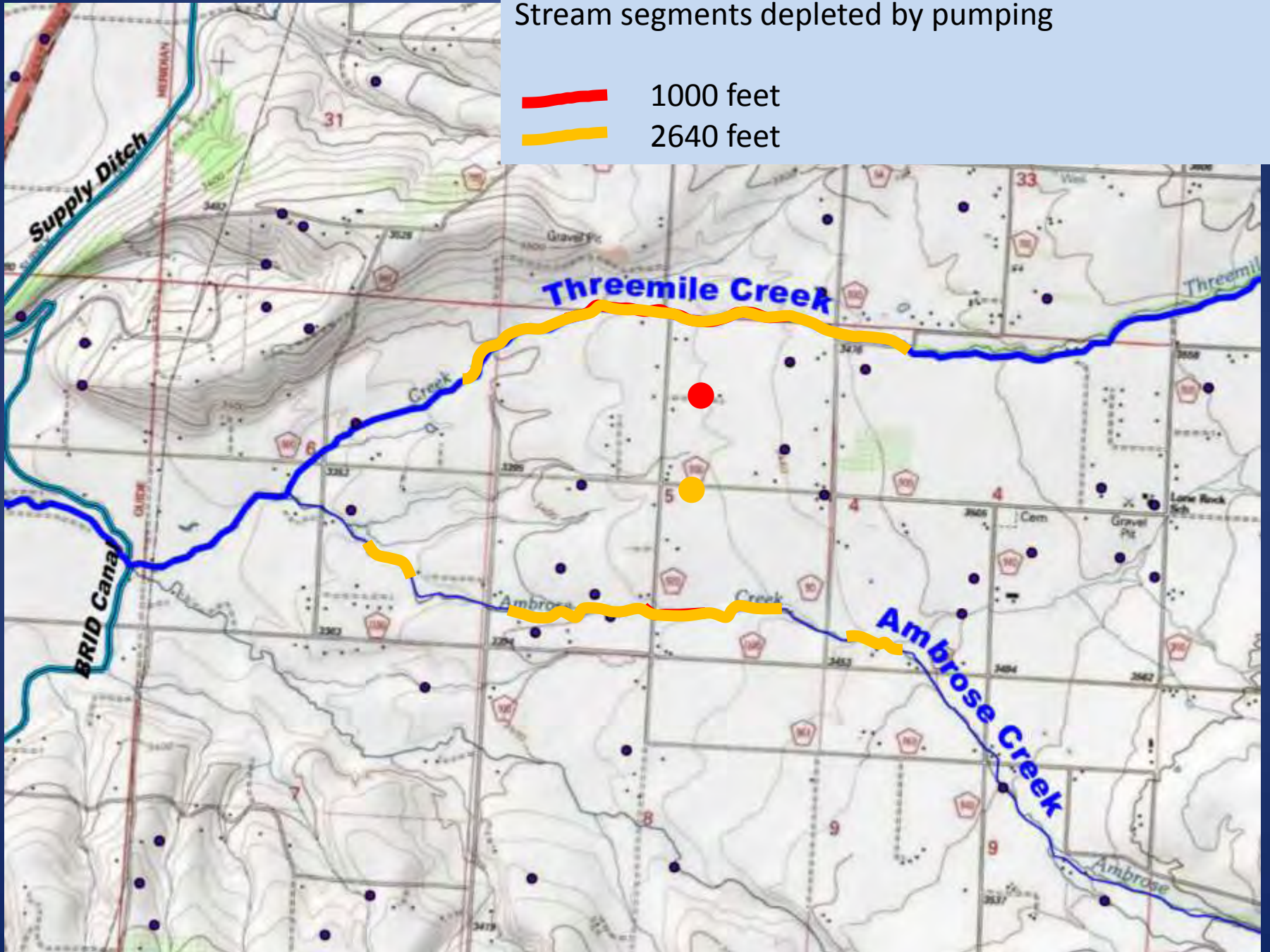
# Stream segments depleted by pumping

-  1000 feet
-  2640 feet
-  2640 feet, Eightmile Creek "disconnected"



# Stream segments depleted by pumping

-  1000 feet
-  2640 feet



## Summary

Hydrogeologic conditions much different between nearby drainages  
local data are very important

Conditions within each sub-basin were also variable (e.g. shallow vs deep)

Stream depletion models benefit considerably with improved hydrology data  
will need to resolve treatment of an intermittent stream