

Permit Condition Water Level Data in the Harney Basin

Harney Basin Groundwater Study
Advisory Committee Meeting
April 20, 2017



Darrick Boschmann, RG
Hydrogeologist
Oregon Water Resources Department

Introduction

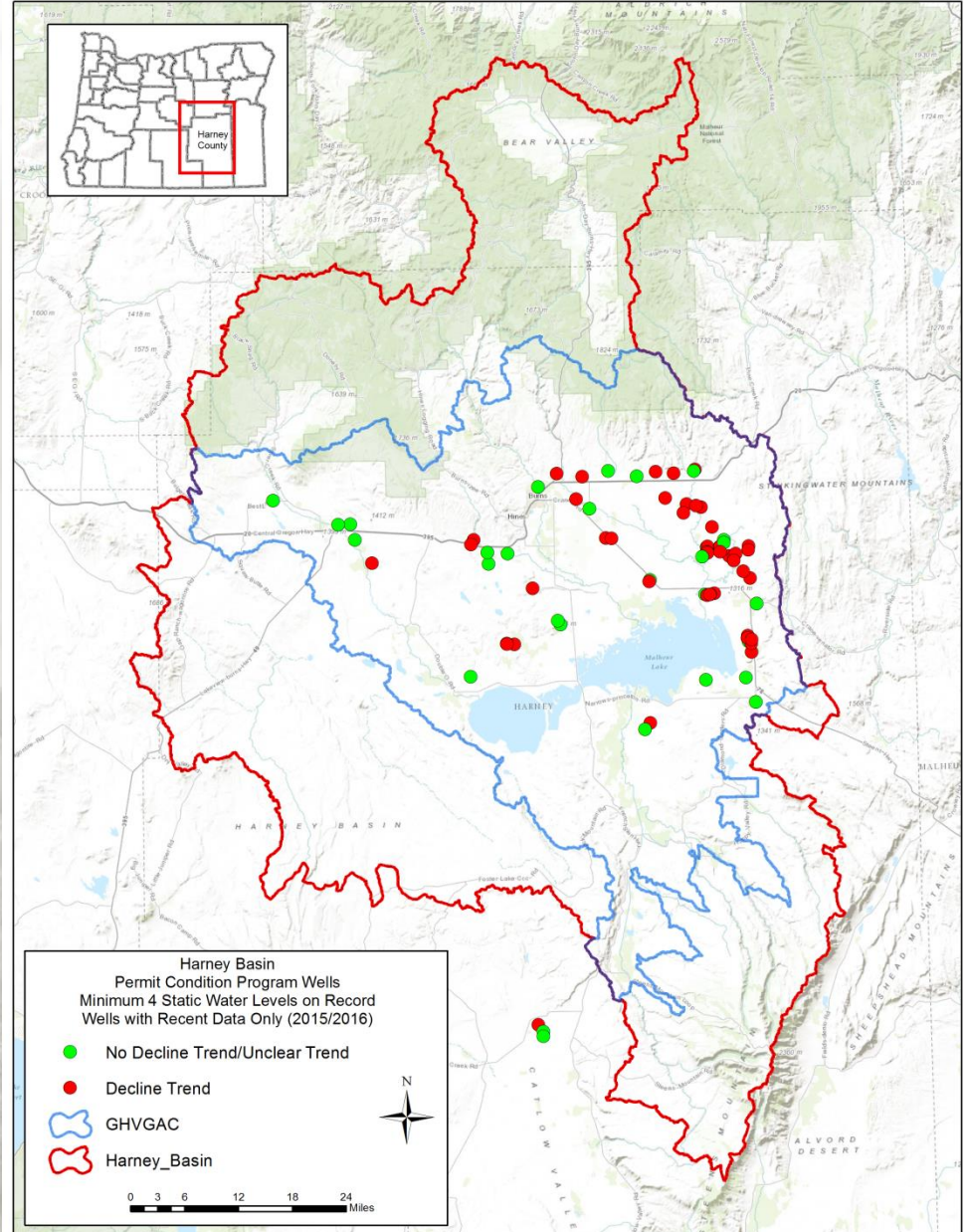
- The following slides are based on water level data submitted to the department as a part of the permit condition program. In general, the measurements used here were made by a CWRE, RG, CEG, PE, licensed well constructor, or licensed pump installer.
- Only wells with at least 4 reported static water levels (SWL) are included in the analysis, and only if at least one of the 4 water levels is from 2015 or 2016 (recent data).
- In general, the water levels depicted on the hydrographs are March (spring) measurements.
- The only data shown in the hydrographs are reported water levels from the permit condition program. Other data points from other sources may exist for the well, but they are not included here.
- March 2017 data were not in our system as of the making of the hydrographs and as such are not included here.

Introduction (continued)

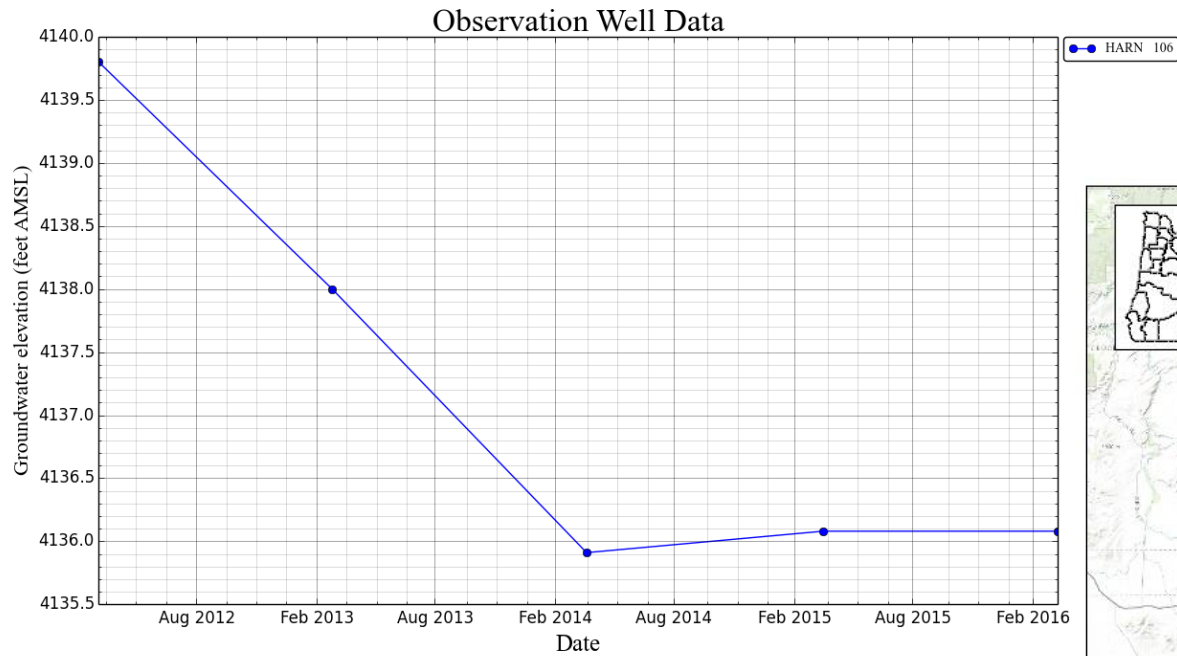
- **473 authorized POD's within the Malheur Lake Basin have the "no limit" annual March SWL condition. Many of these have not been drilled at this time.**
- **There are additional POD's that have or had a limited duration requirement for SWL reporting (i.e. 2, 5, 7, 10 year period). These are not included here.**
- **78 wells in the Malheur Lake Basin meet the criteria used to select the hydrographs shown here:**
 - **Minimum 4 reported static water levels**
 - **At least one SWL from 2015 or 2016 (recent data)**
- **The data used here are taken directly as reported from the permit condition program and have not been modified or verified by OWRD staff.**

Permit Condition Program Trend Analysis

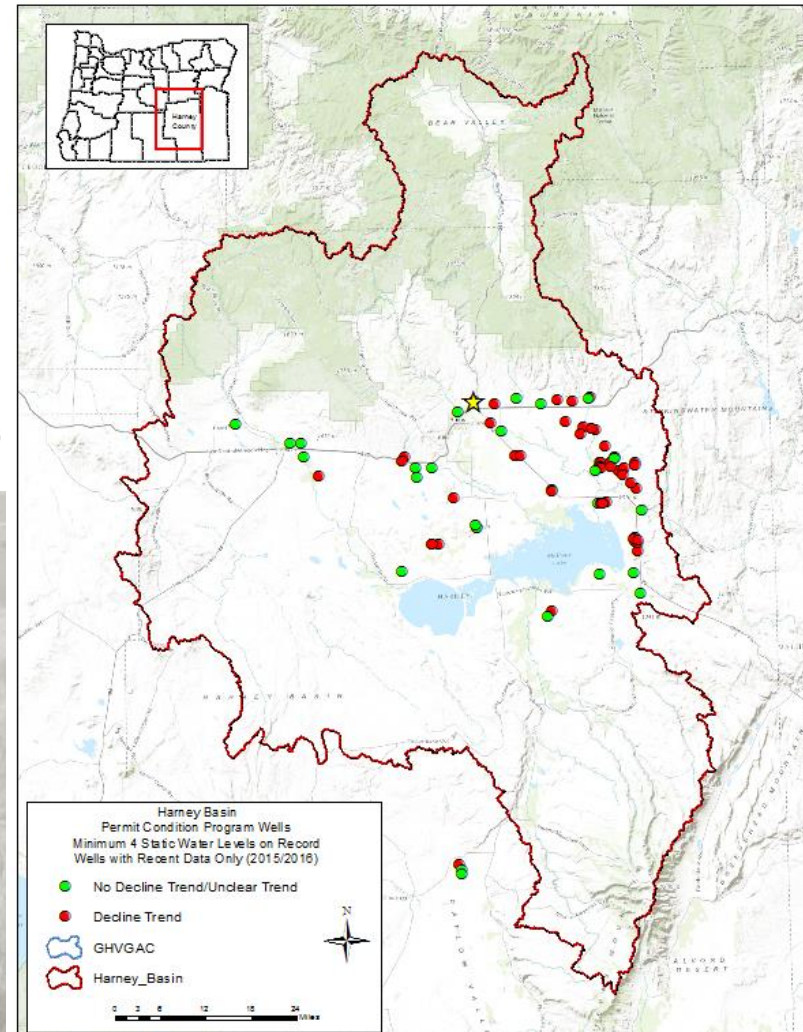
- This map shows the locations of the 78 wells that meet the criteria outlined above. Red circles indicate a well that shows a clear decline trend. Green circles indicate wells that show no decline trend and/or an unclear trend.
- These trend analyses were performed by visual inspection of the hydrographs that follow below.
- The rates of decline range between >5 feet per year to <1 foot per year.



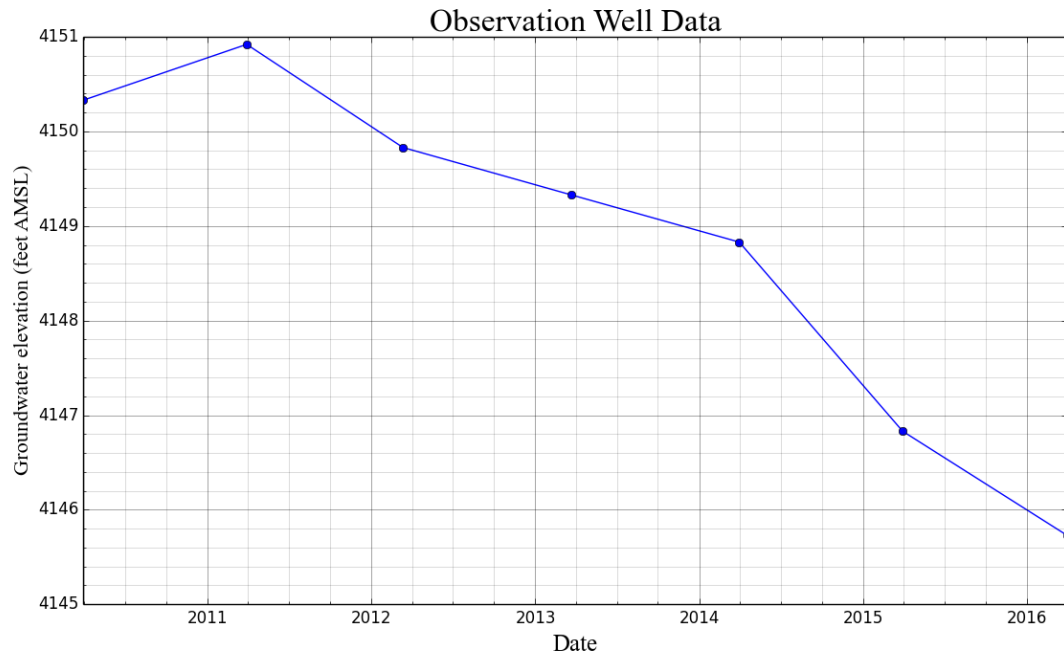
Hydrographs – permit condition data



The yellow star on the map indicates the location of the well corresponding to the hydrograph

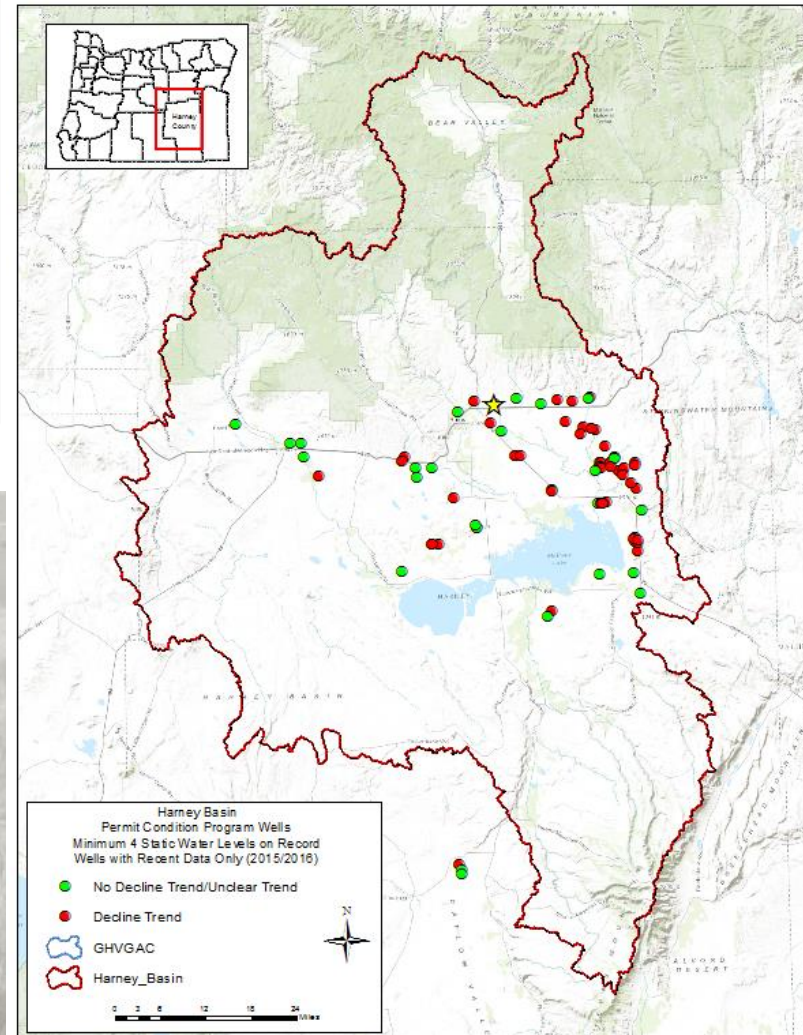


Hydrographs – permit condition data

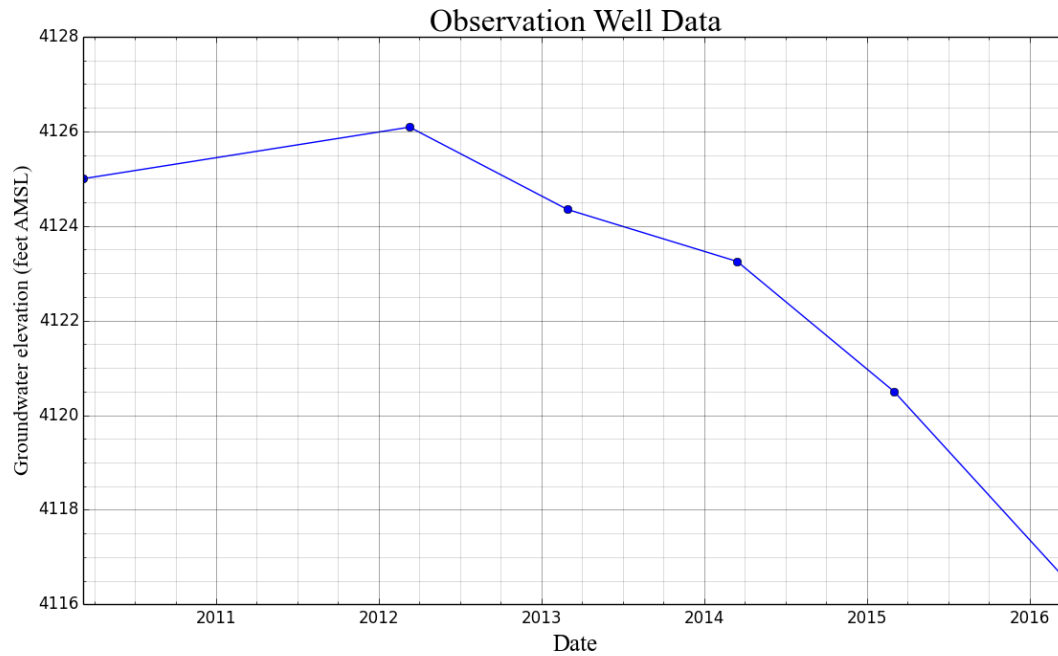


● HARN 143

The yellow star on the map indicates the location of the well corresponding to the hydrograph

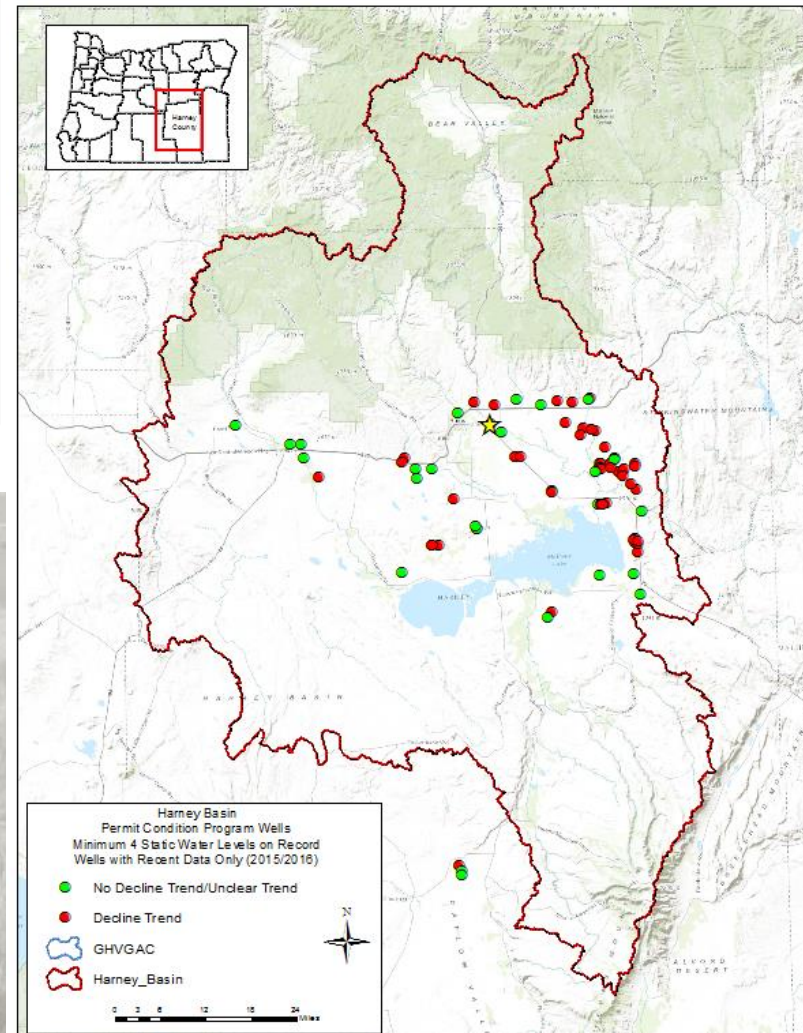


Hydrographs – permit condition data

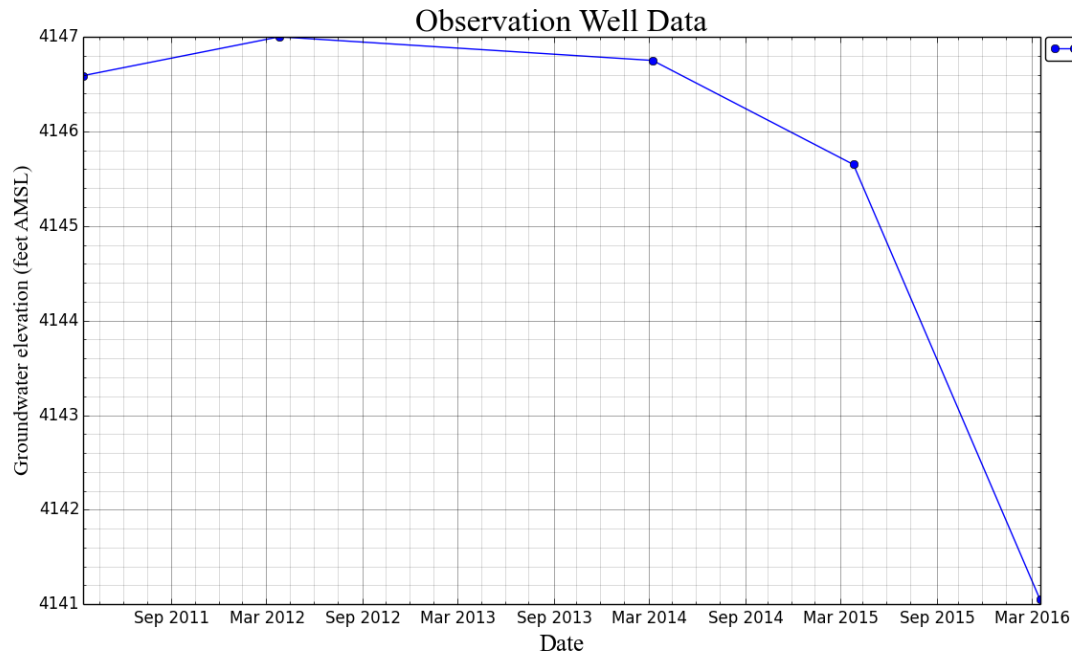


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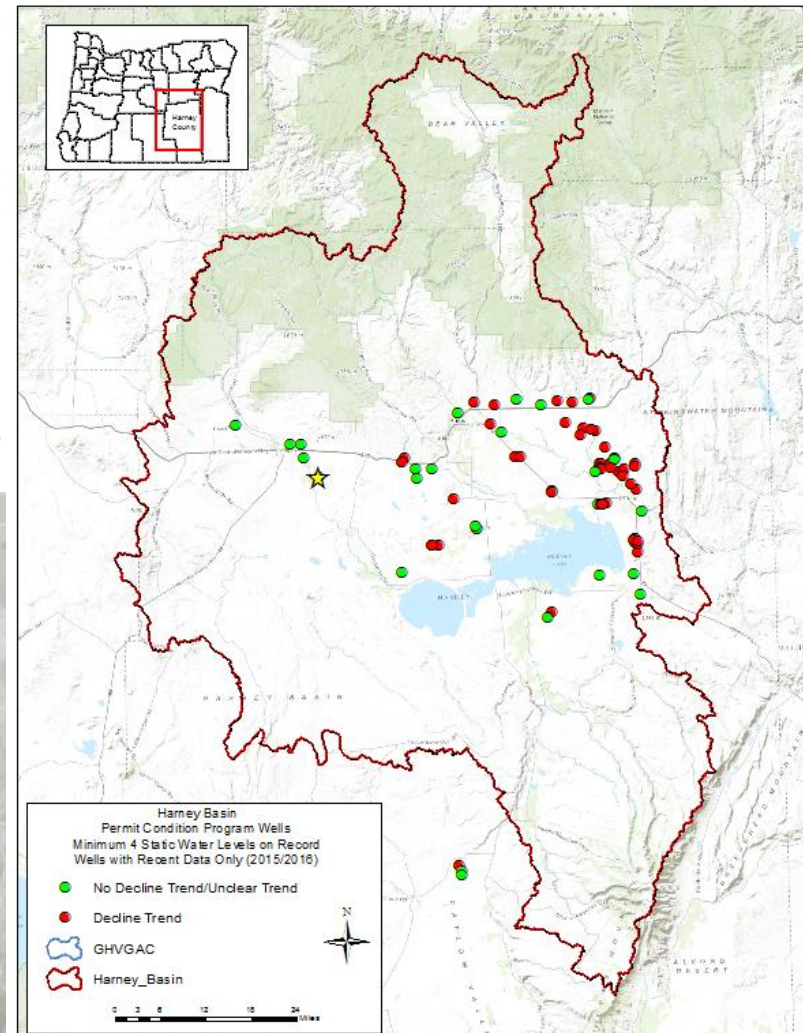
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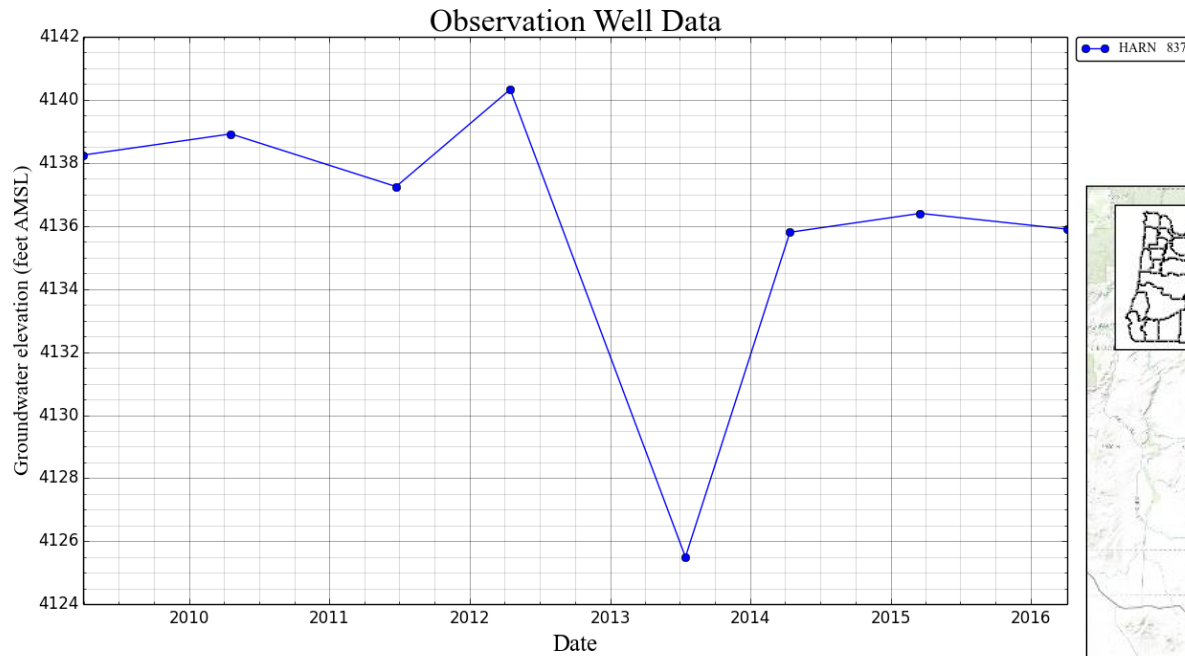
Hydrographs – permit condition data



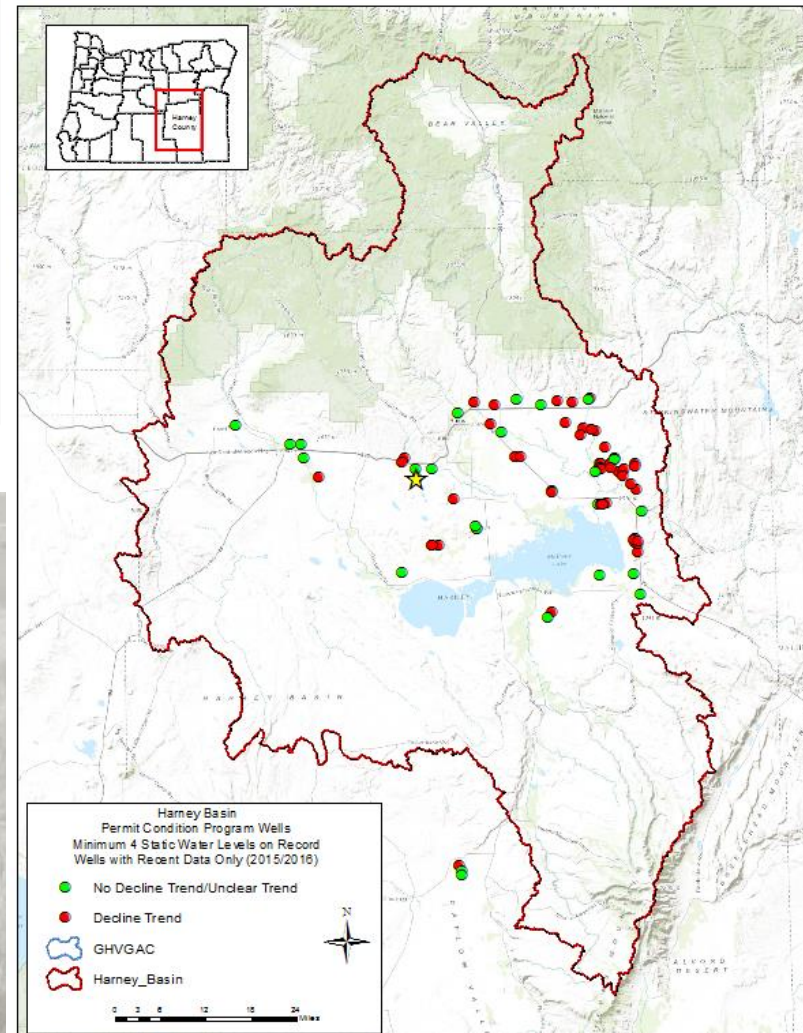
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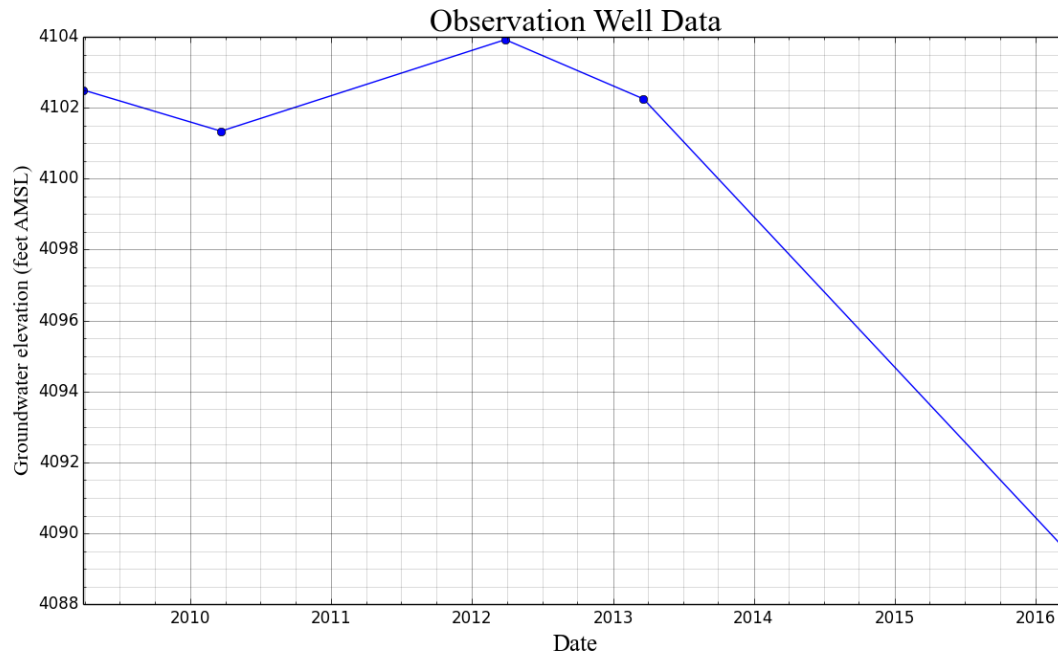
Hydrographs – permit condition data



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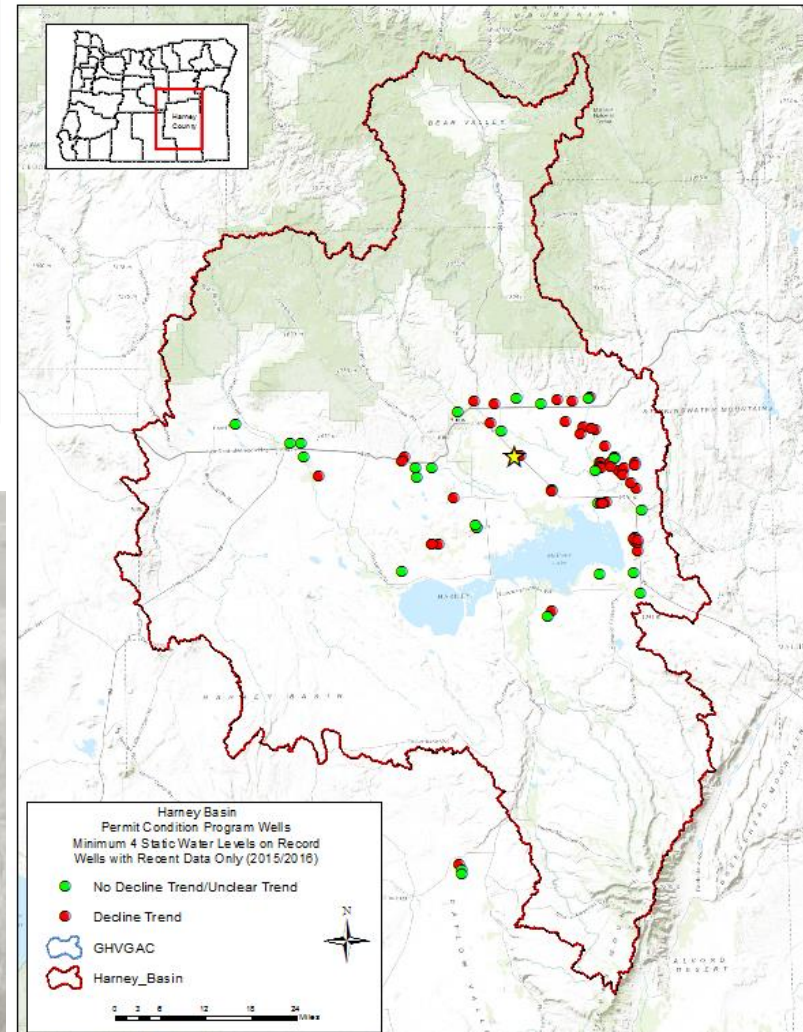


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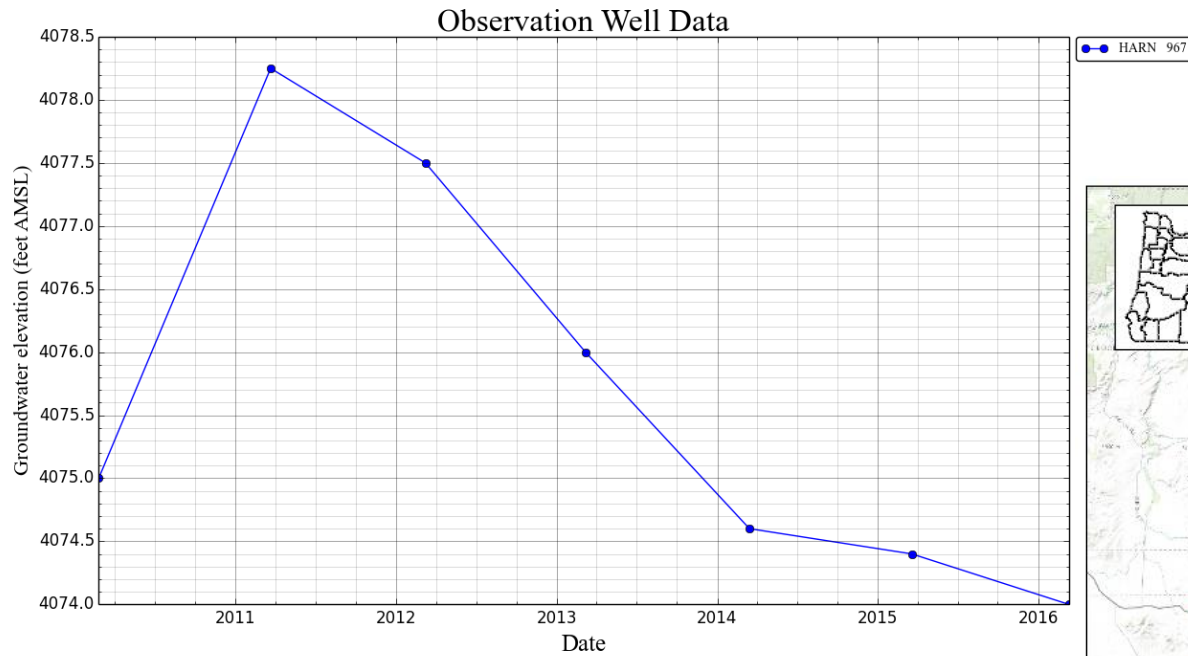


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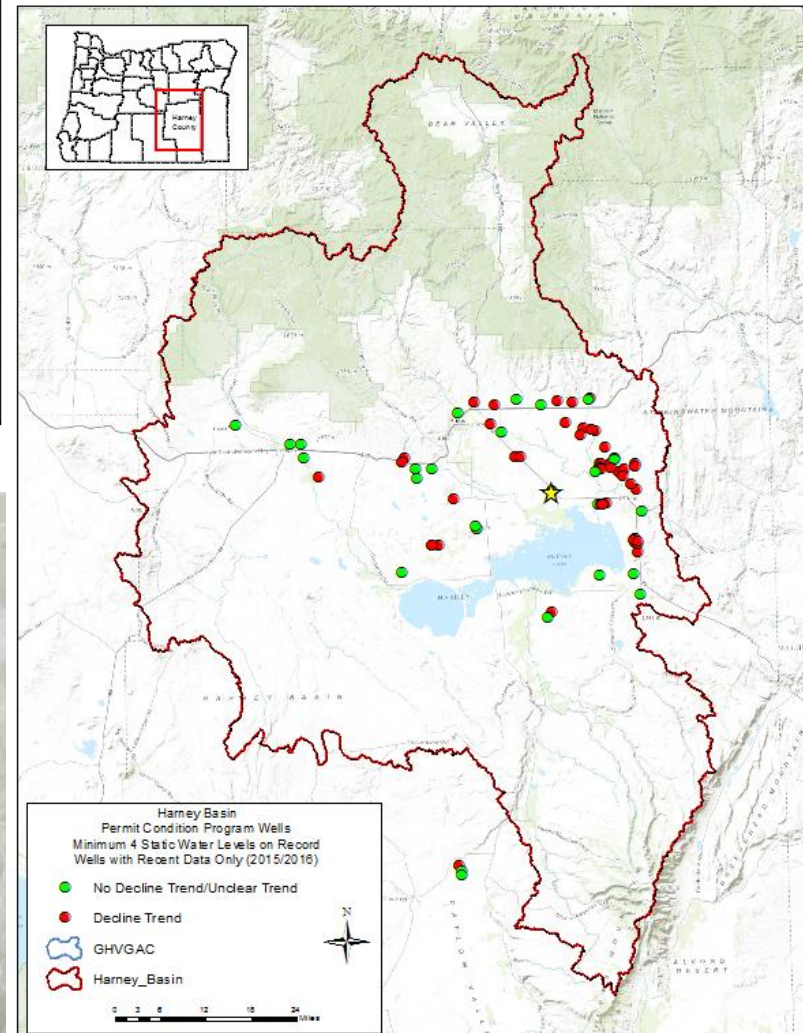
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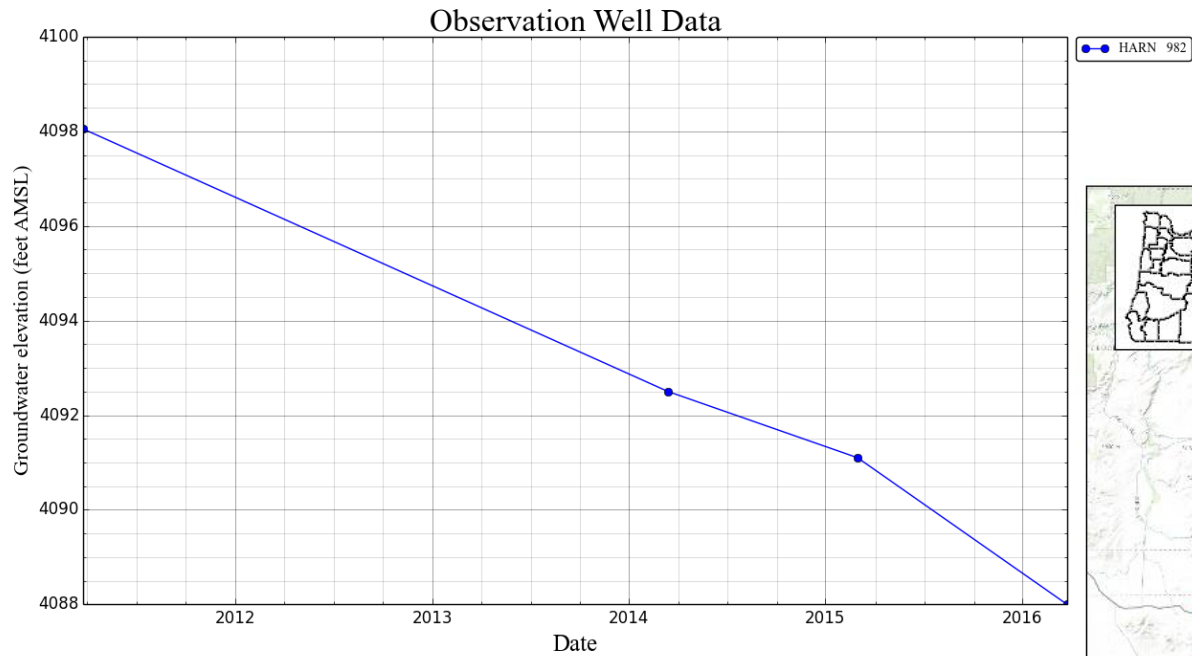
Hydrographs – permit condition data



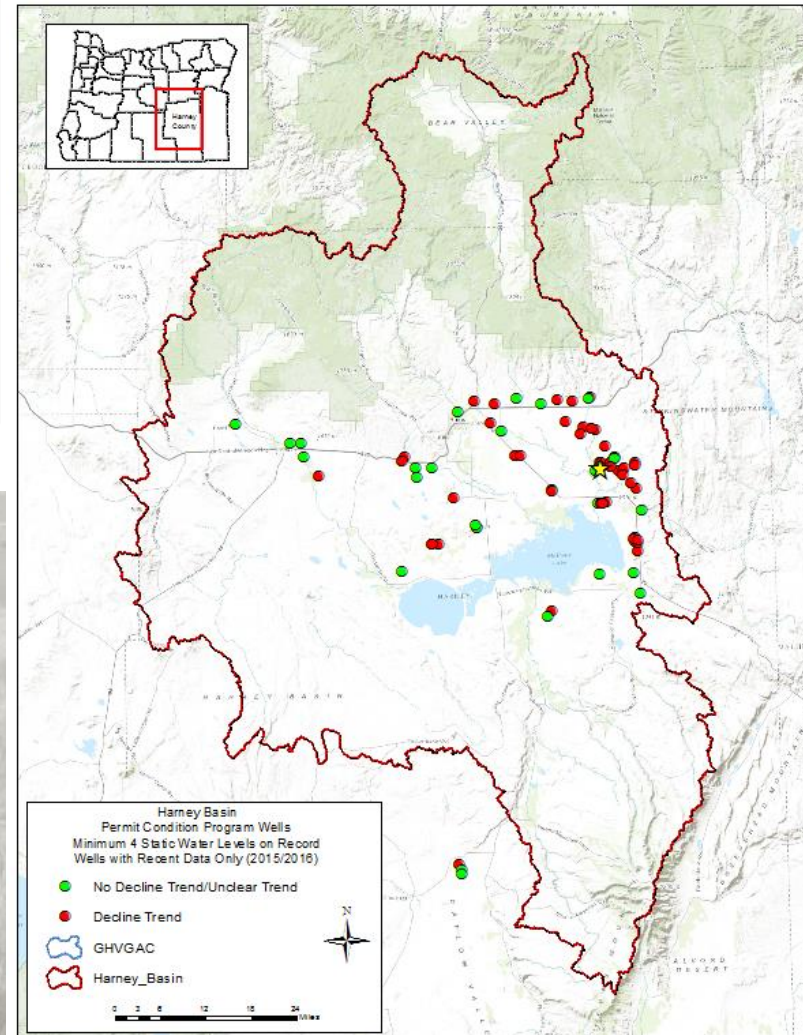
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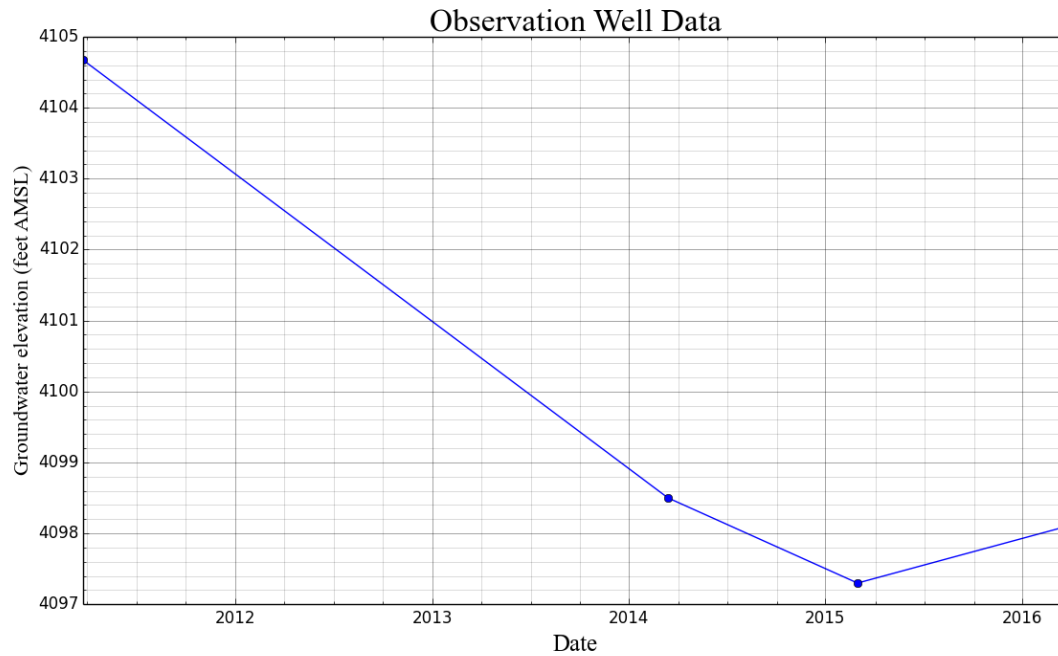
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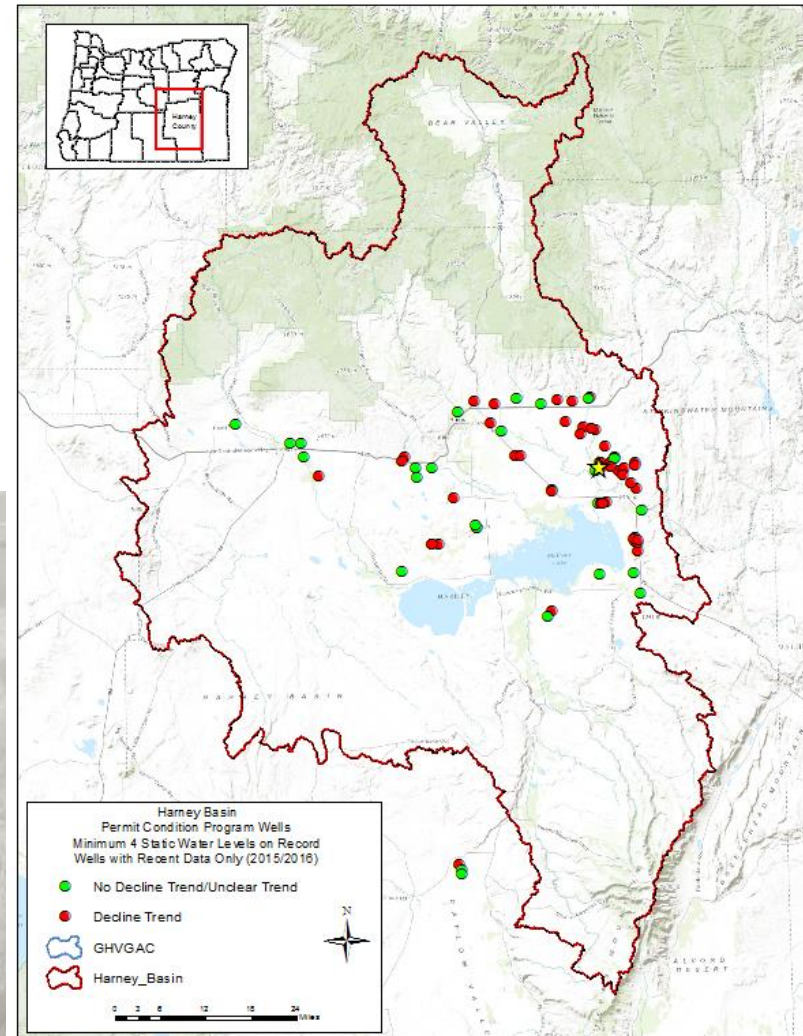


Hydrographs – permit condition data

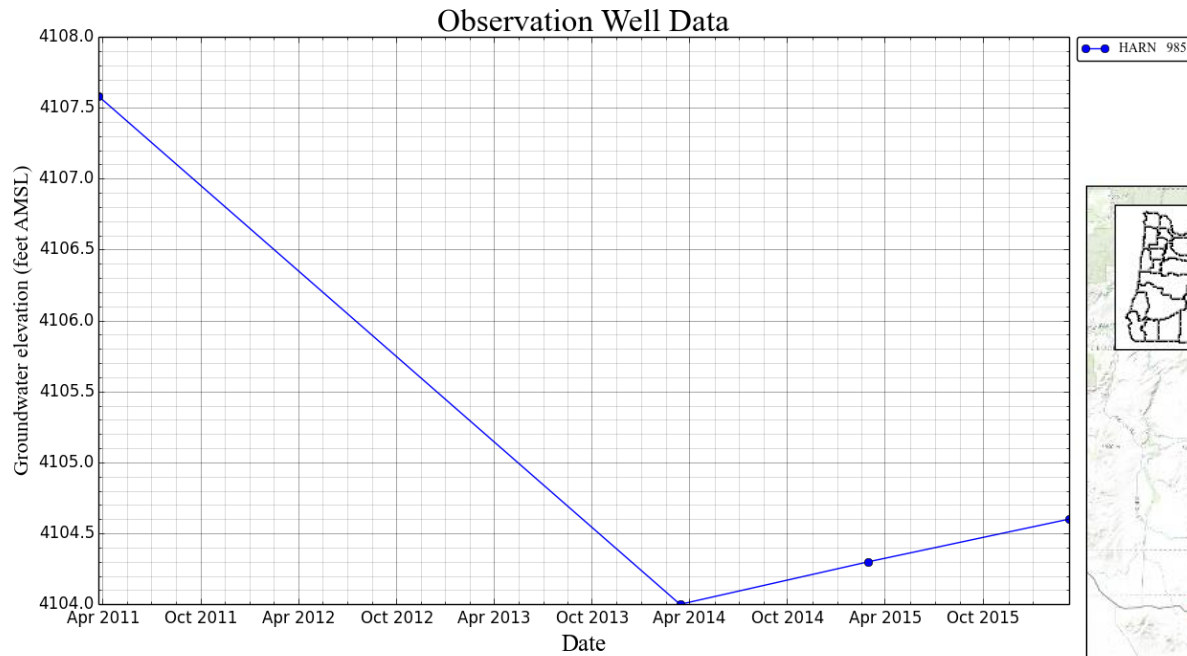


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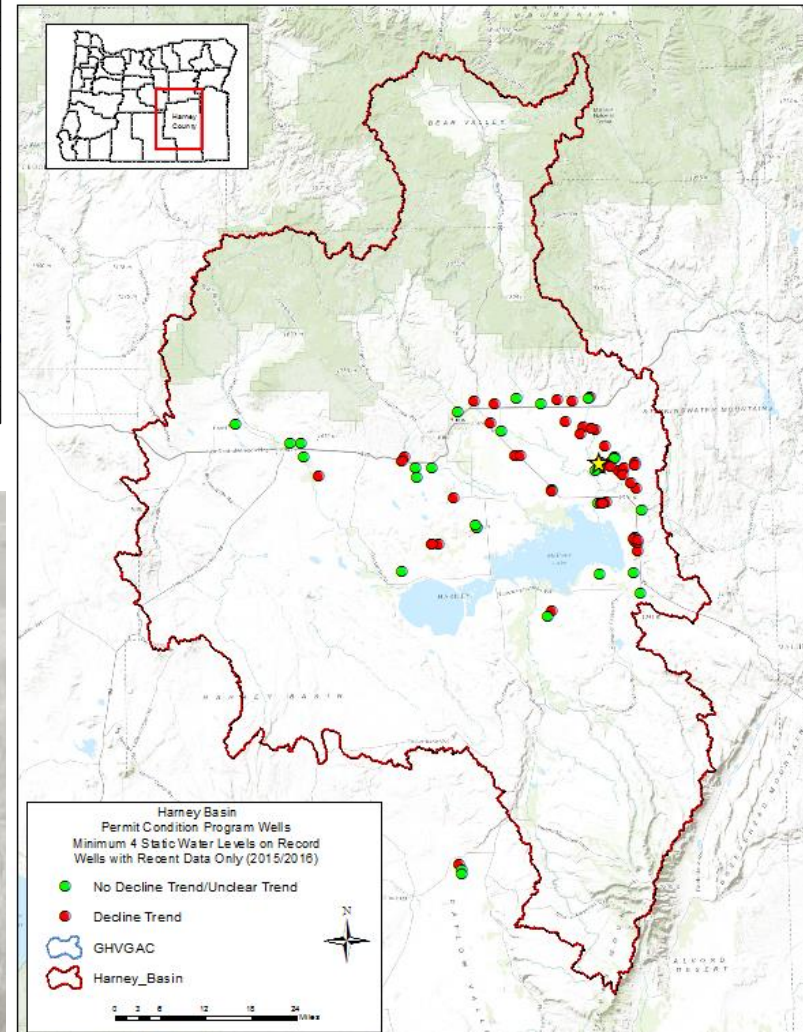
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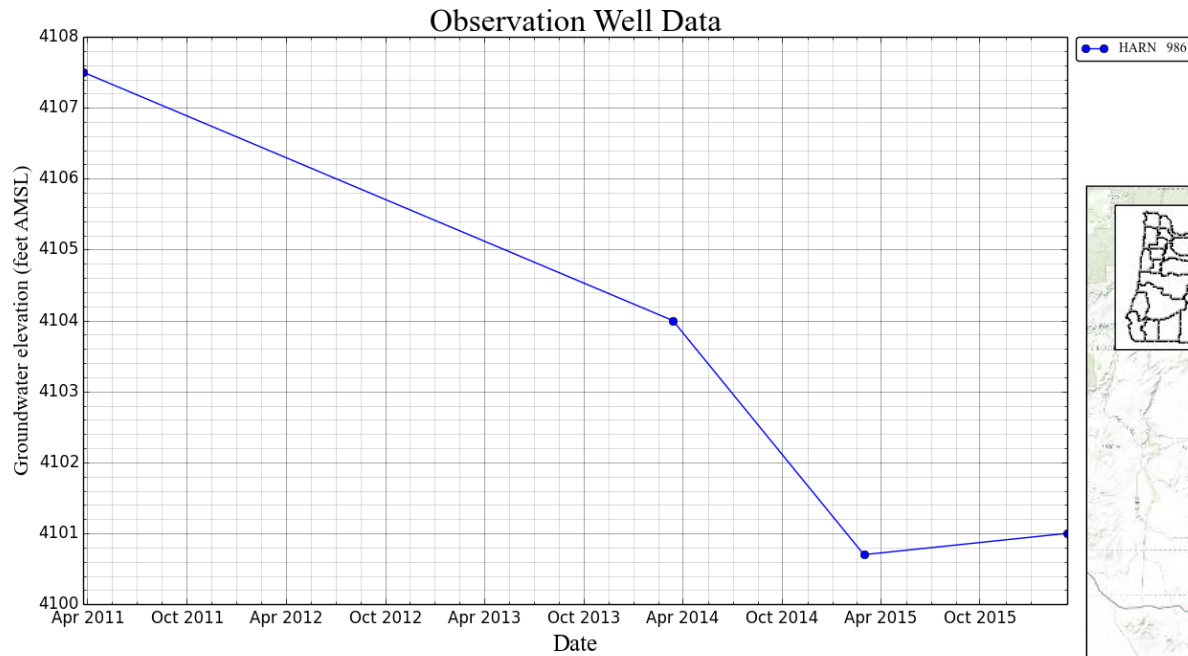
Hydrographs – permit condition data



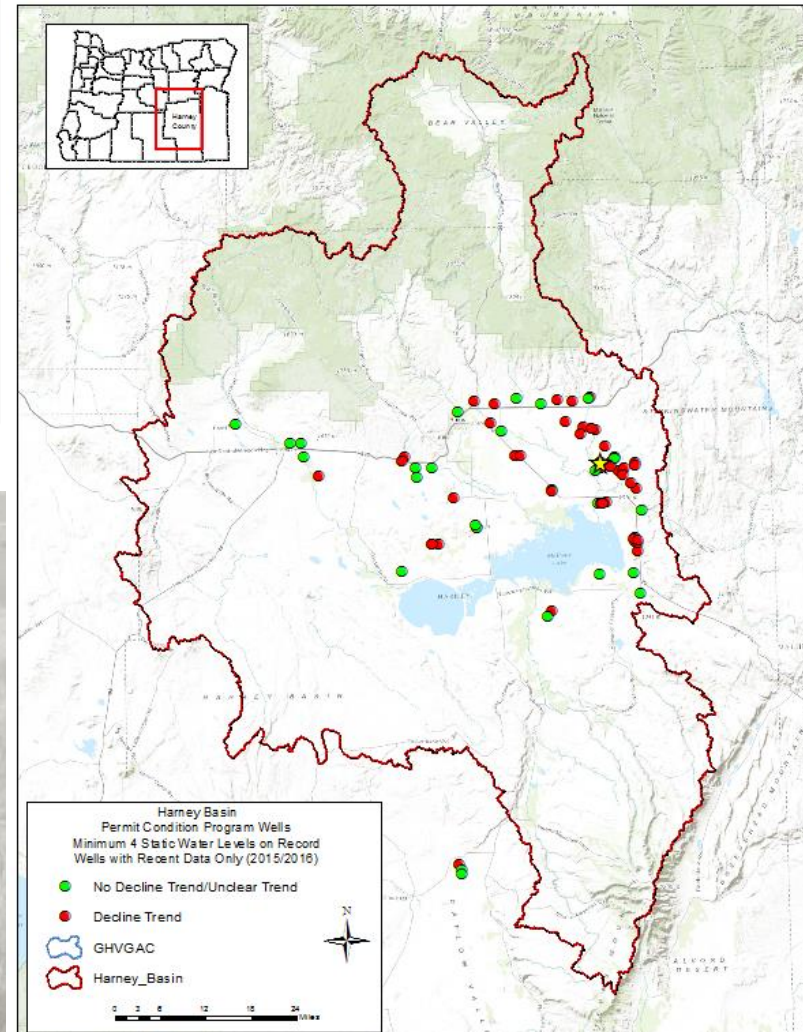
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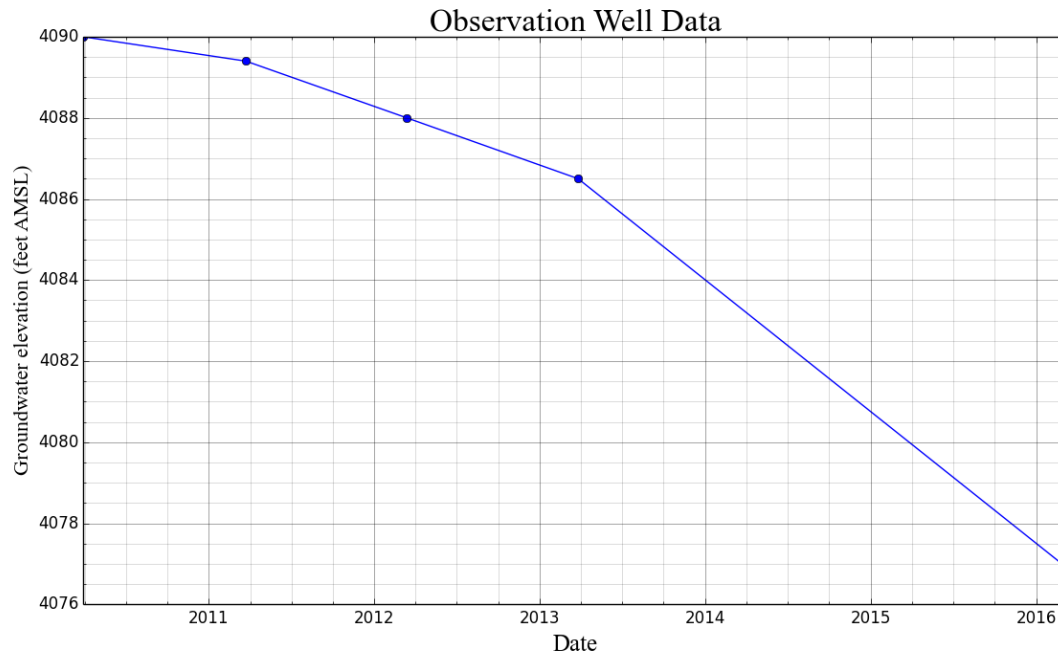
Hydrographs – permit condition data



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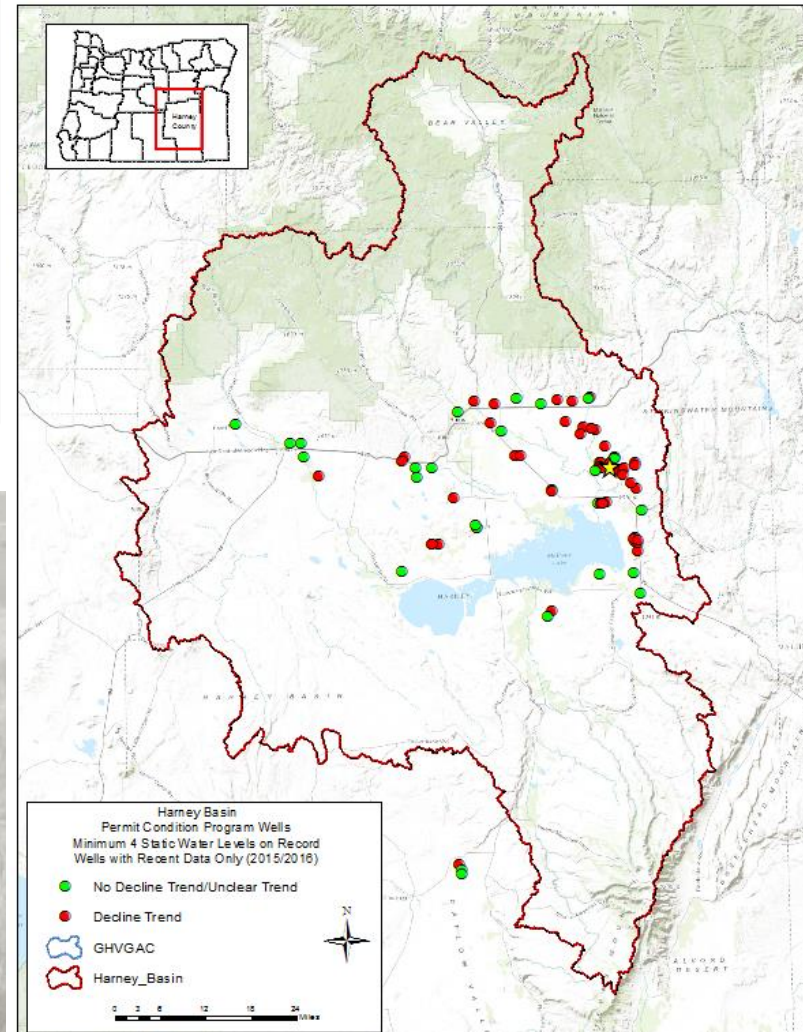


Hydrographs – permit condition data

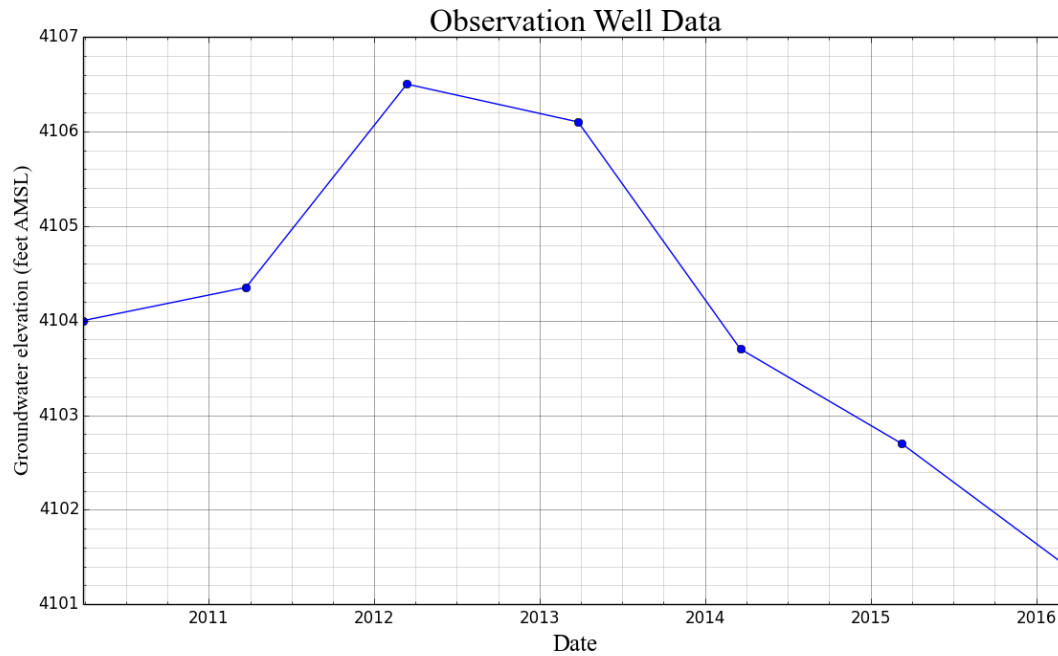


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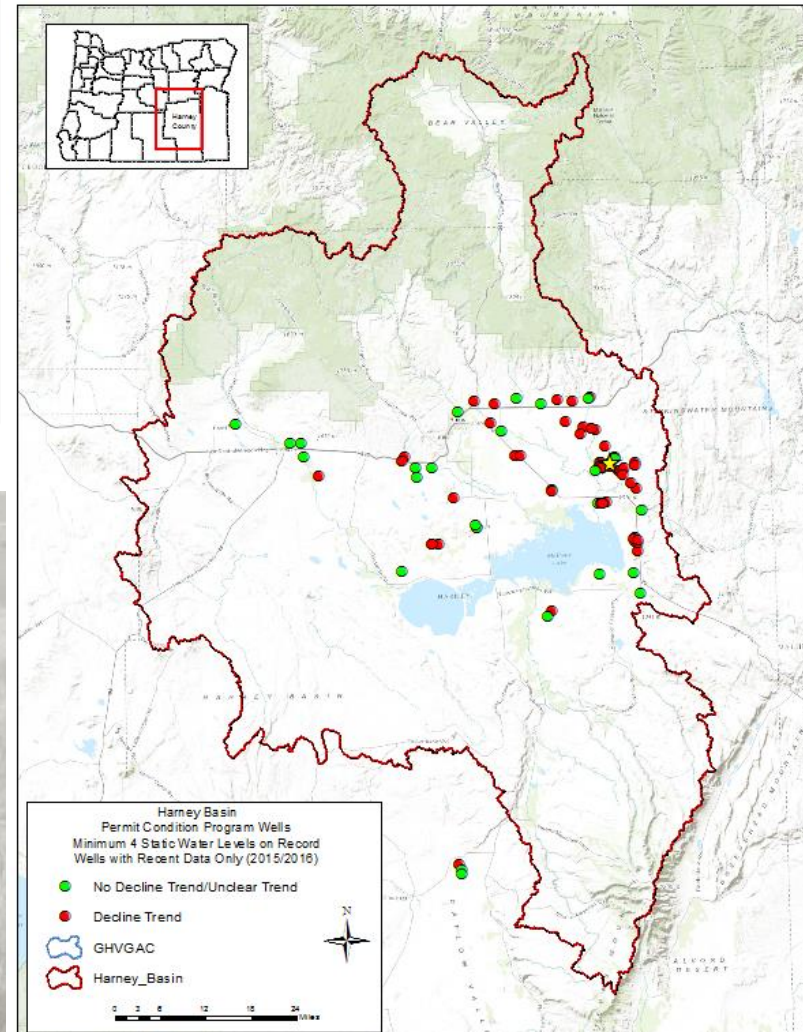


Hydrographs – permit condition data

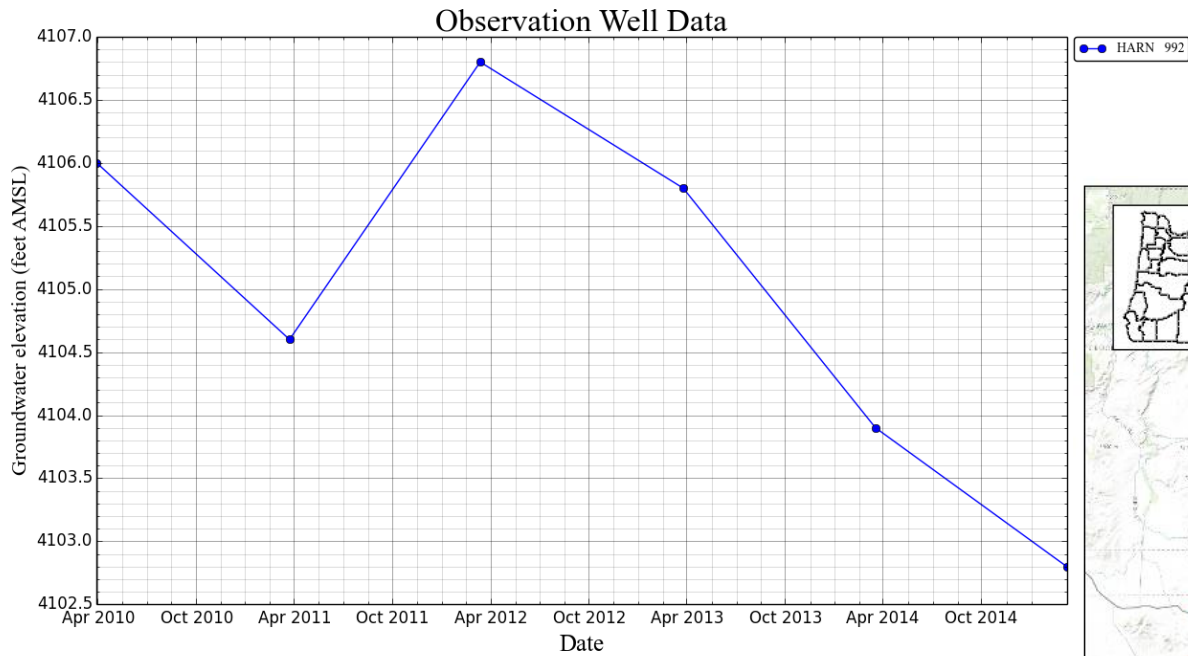


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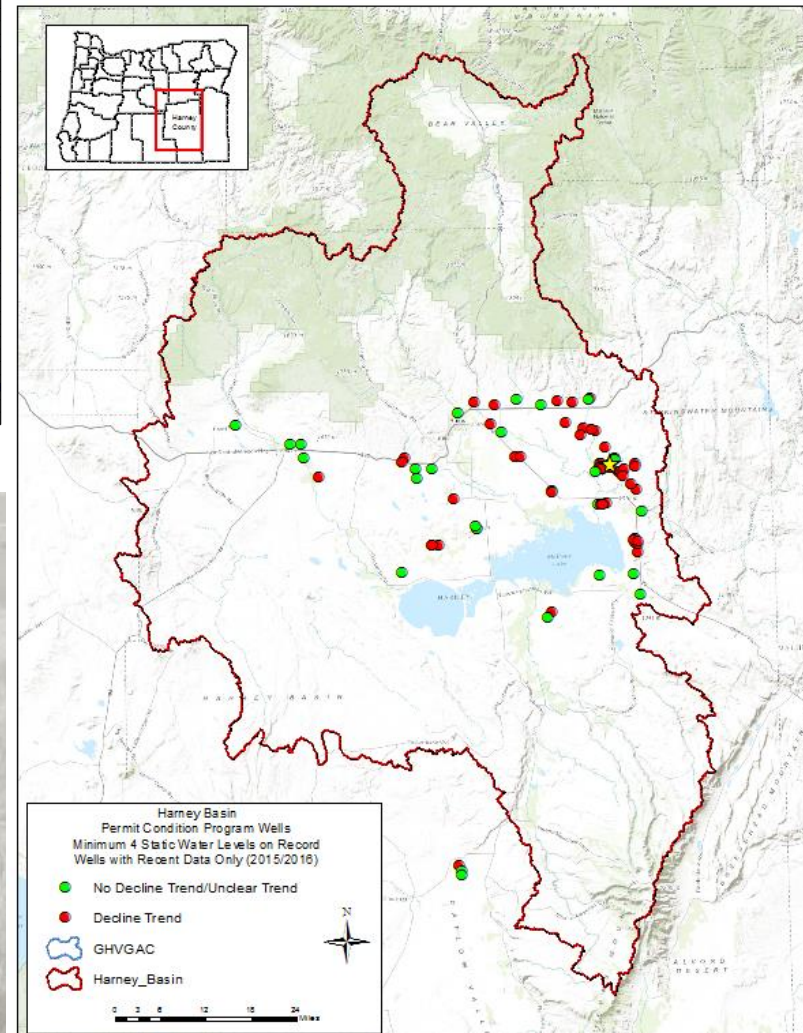
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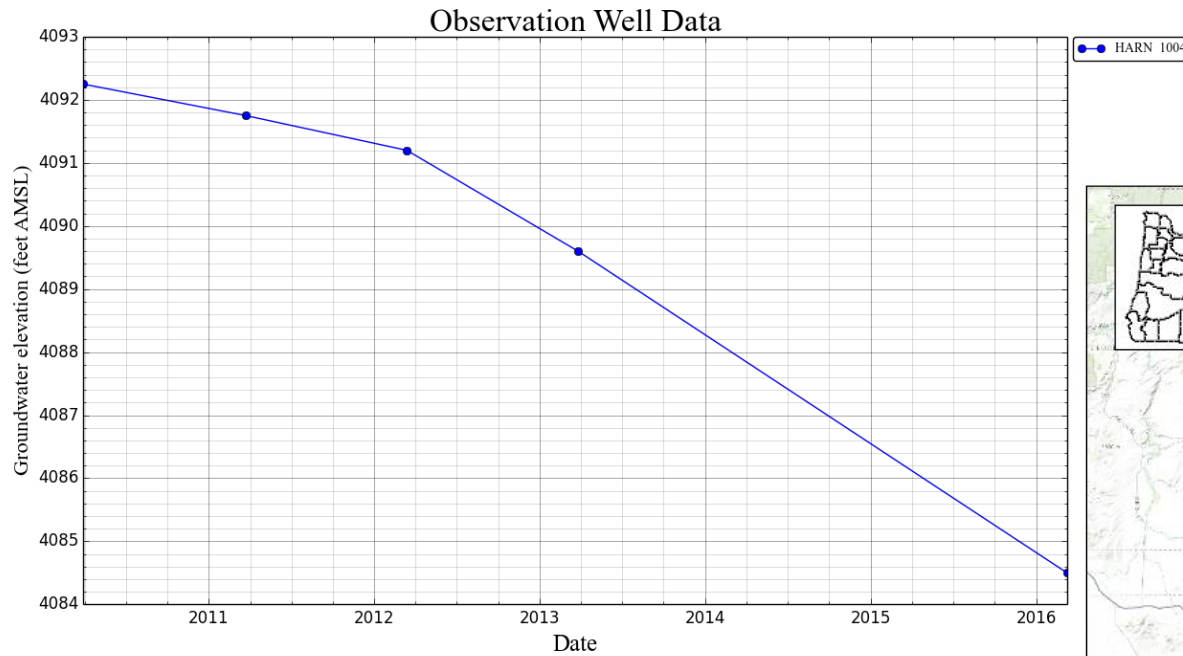
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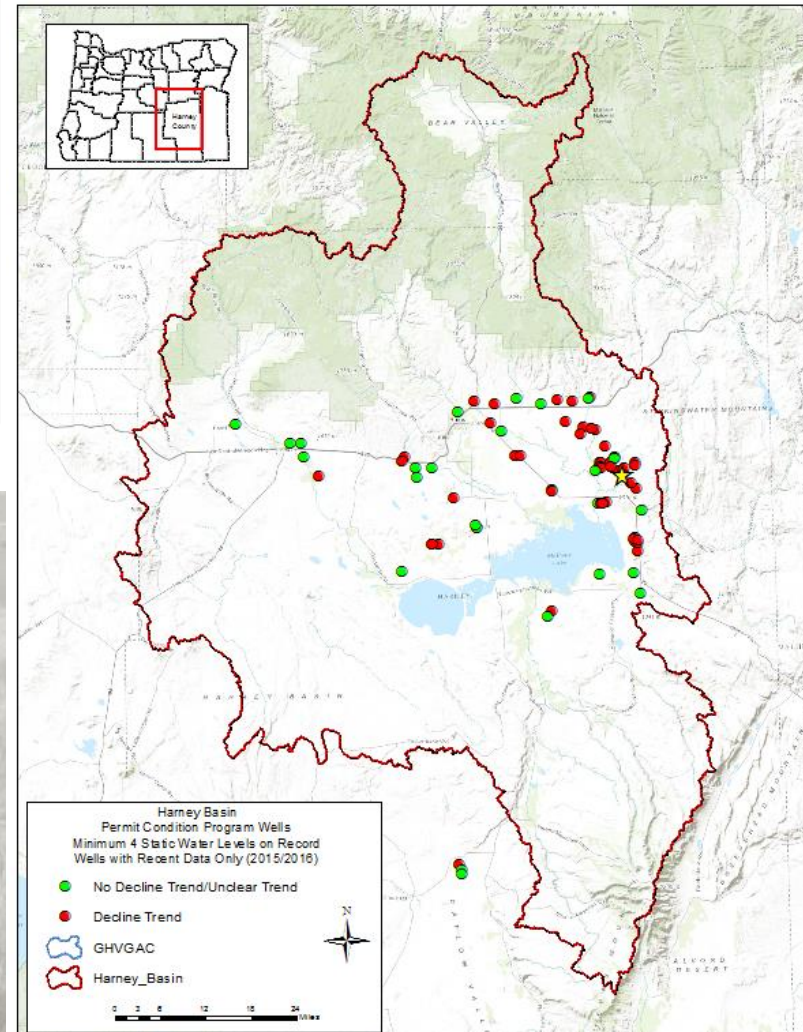
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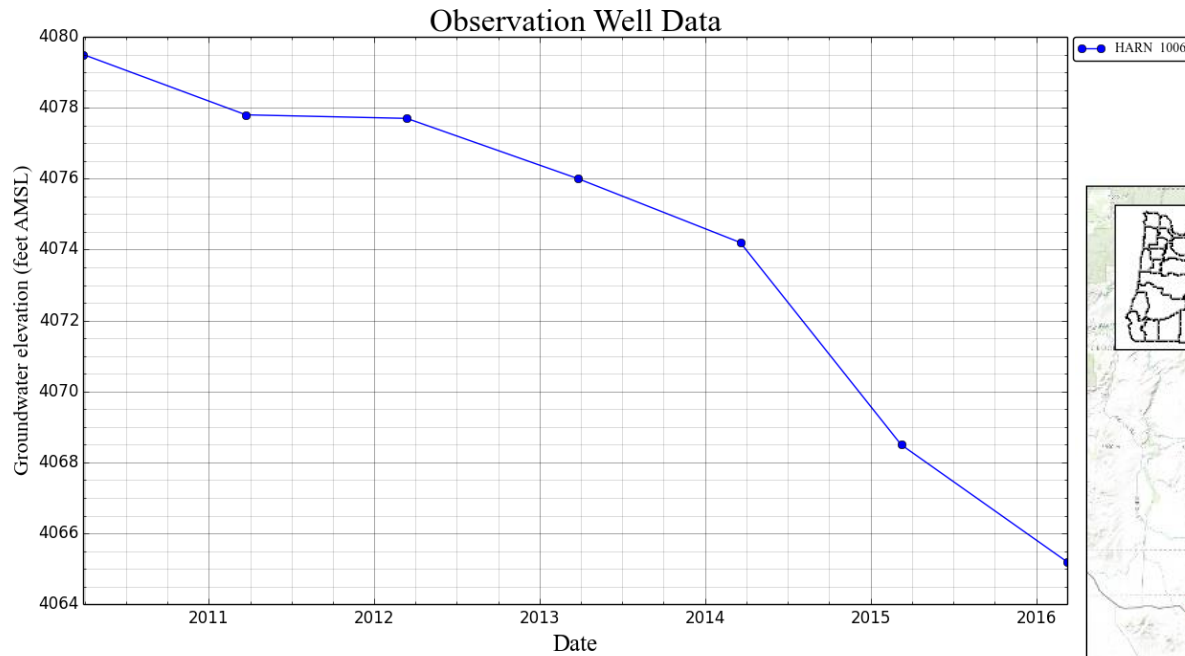
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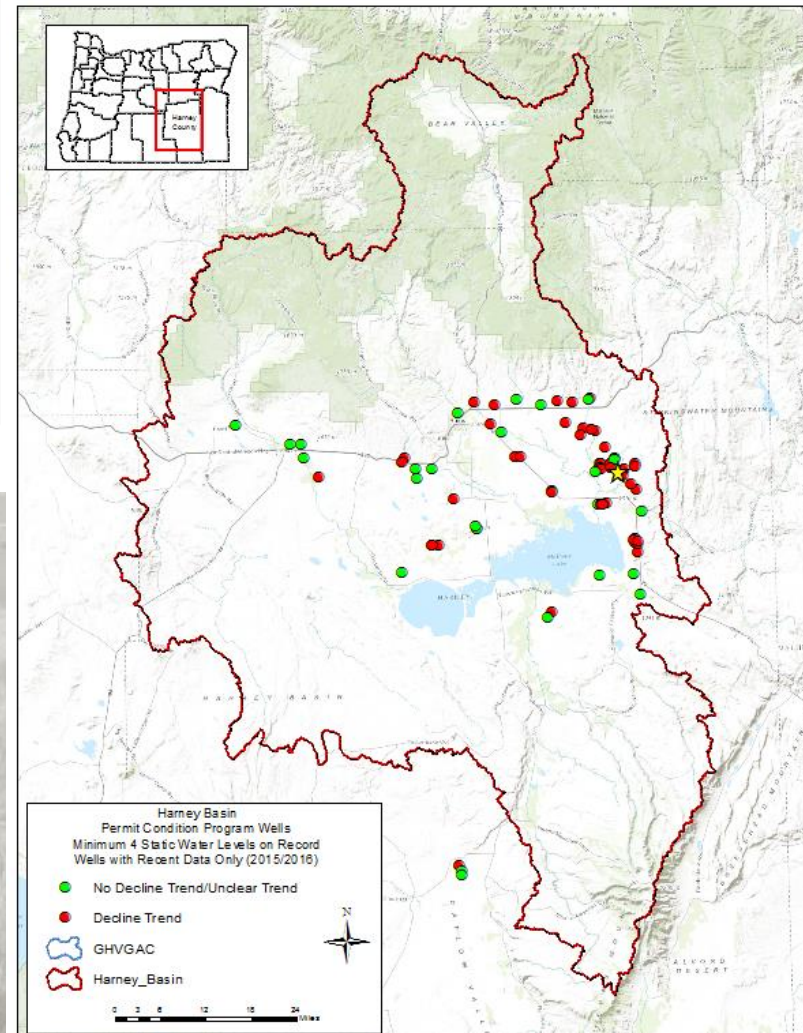
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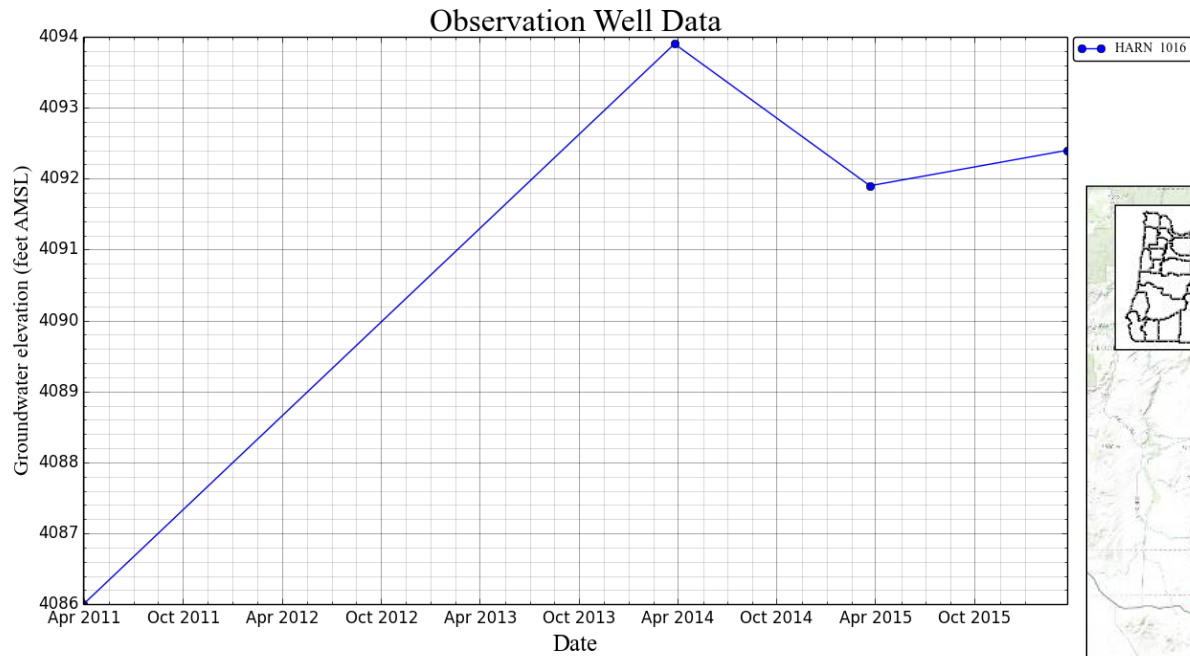
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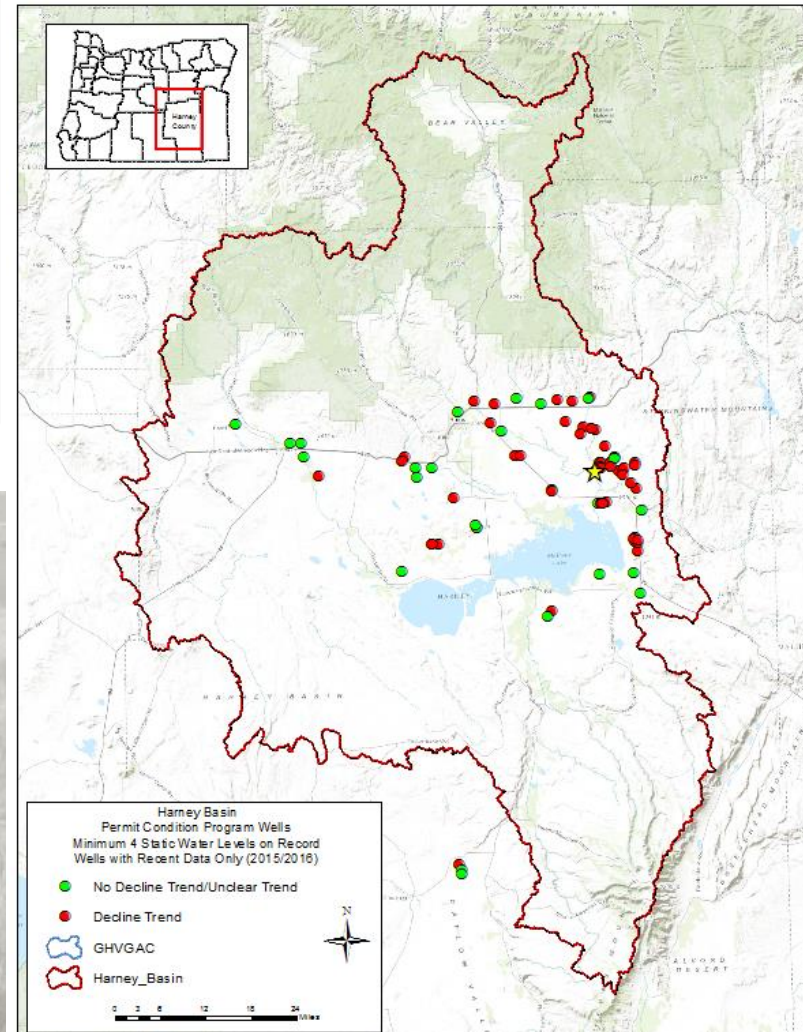
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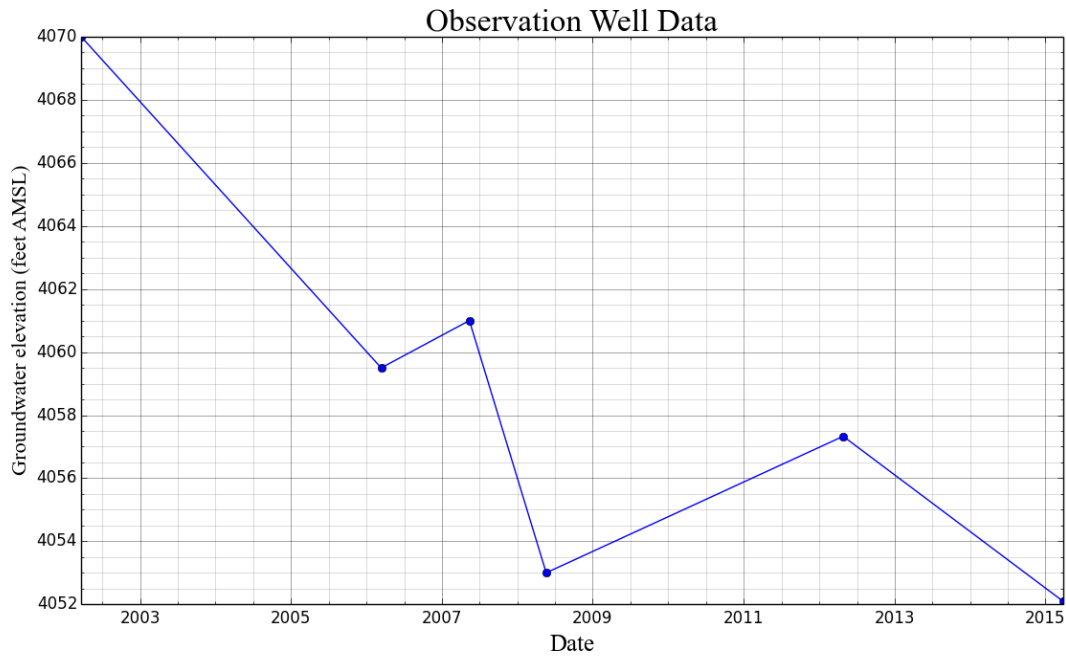
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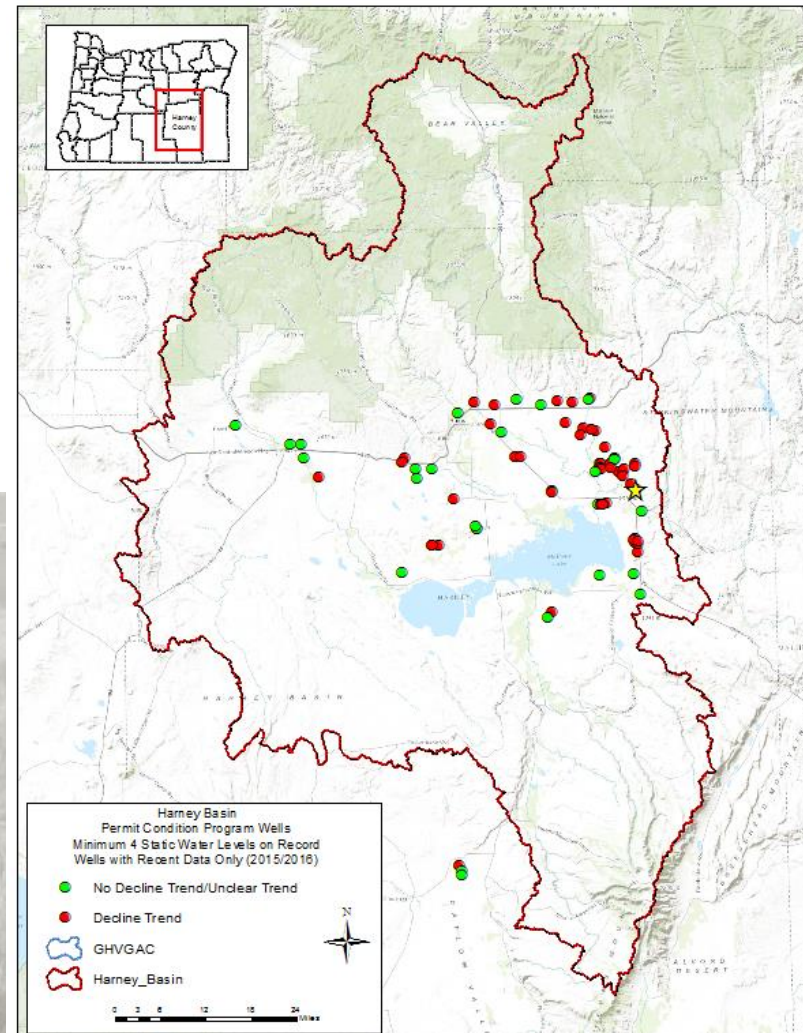
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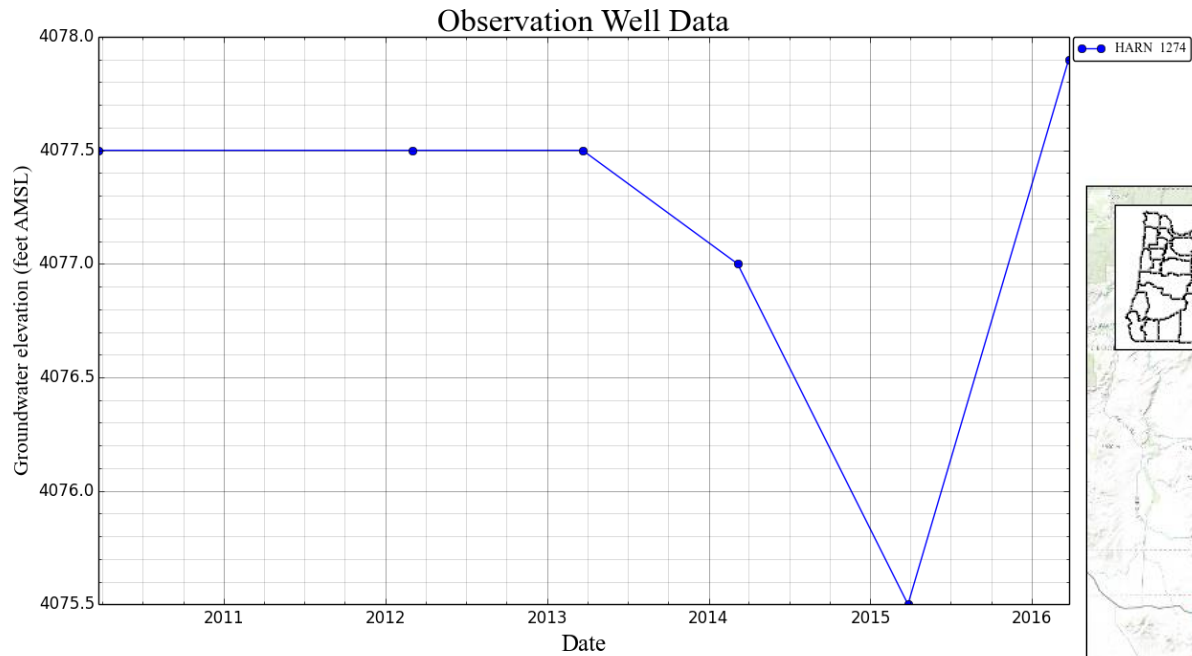
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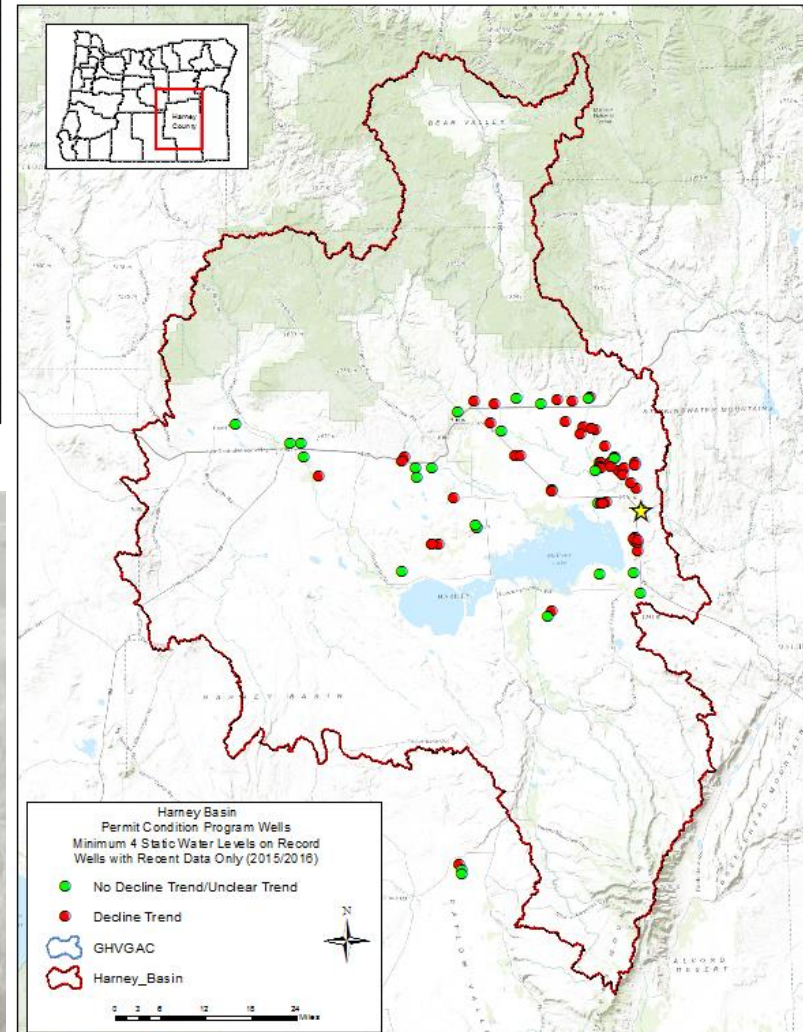
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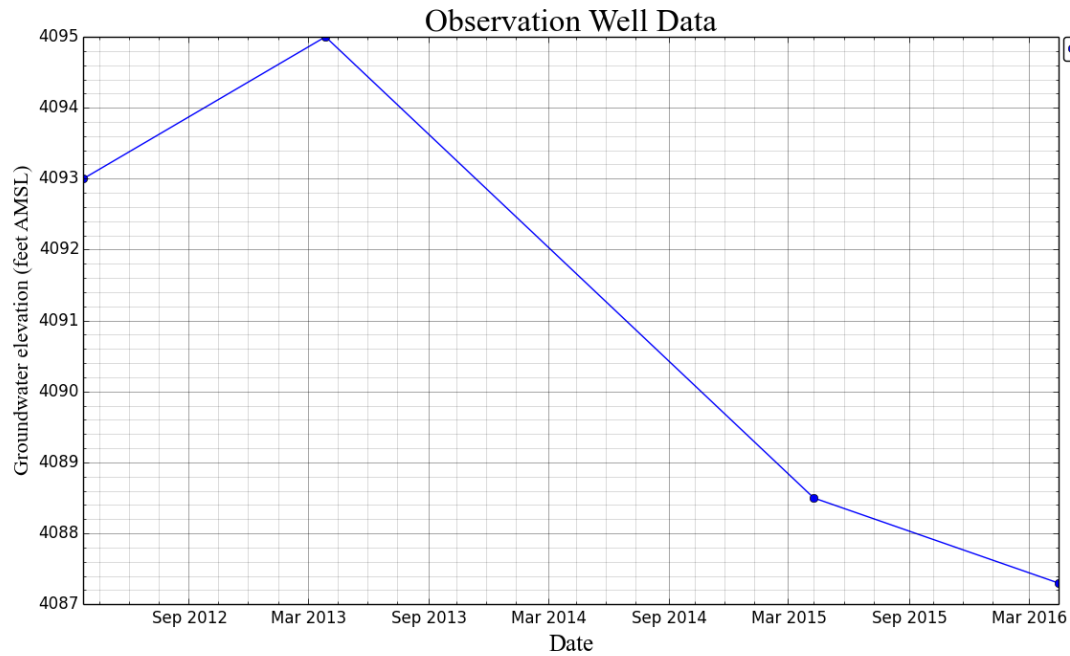
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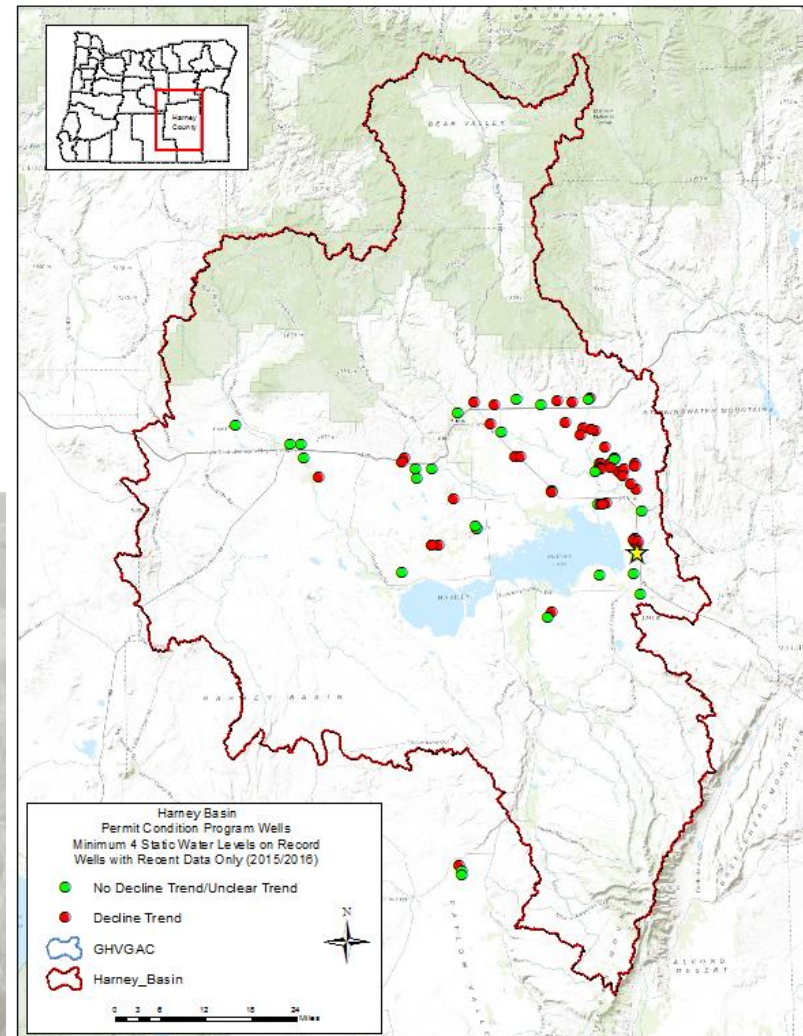
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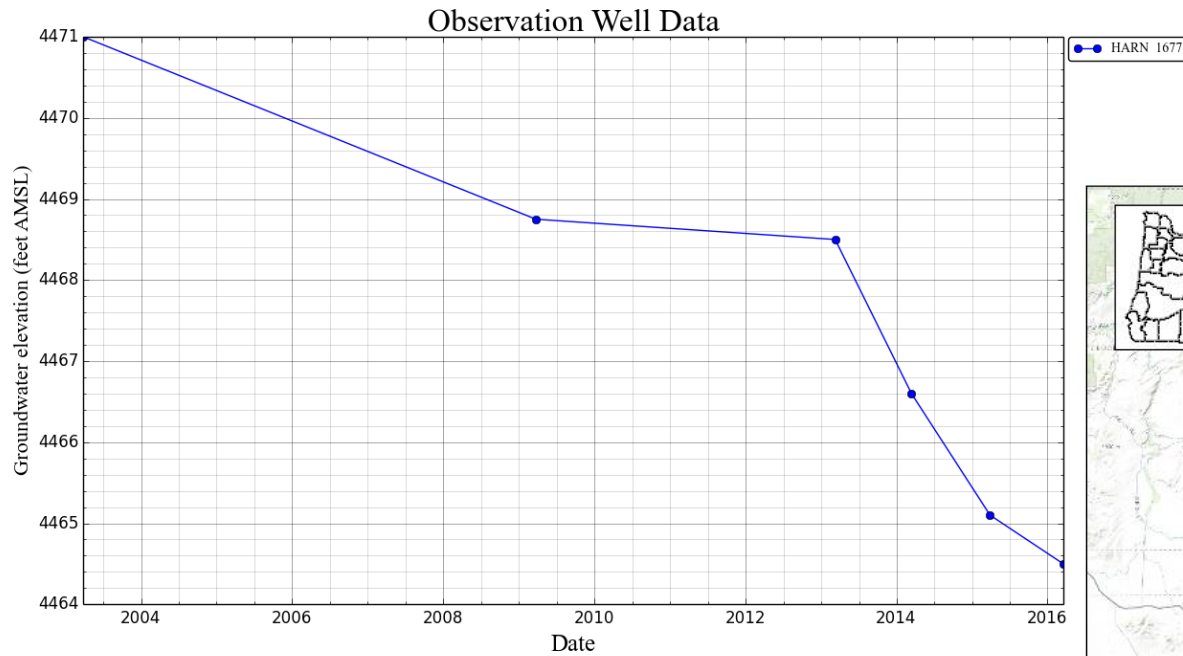
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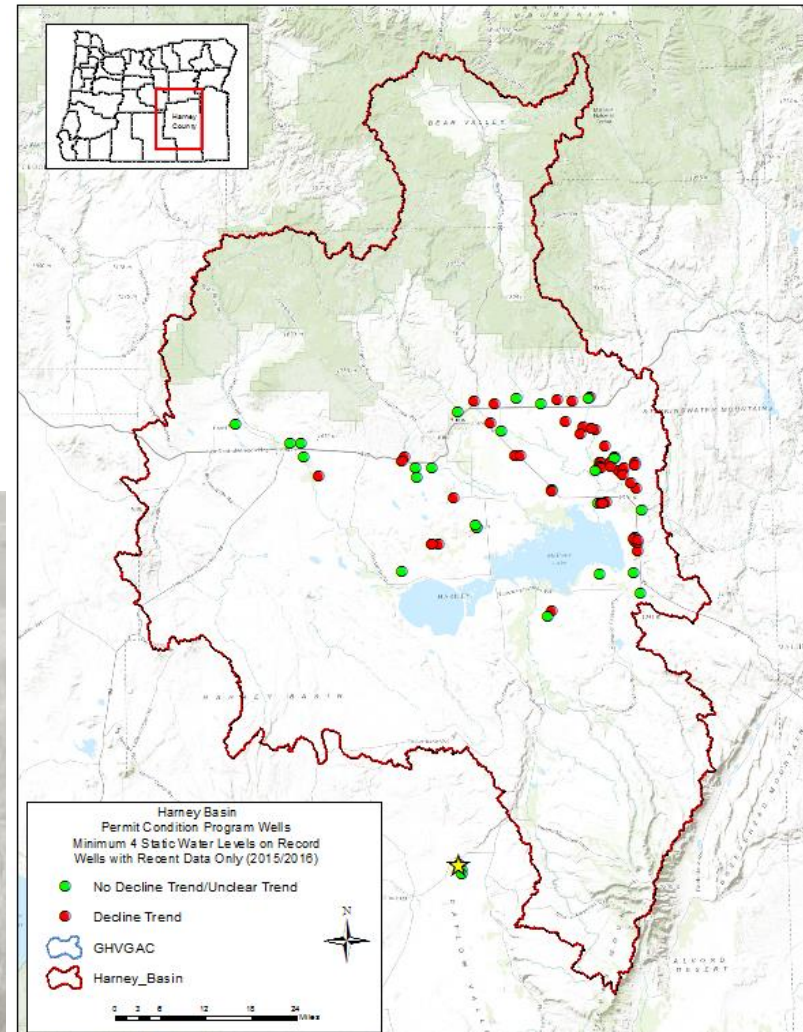
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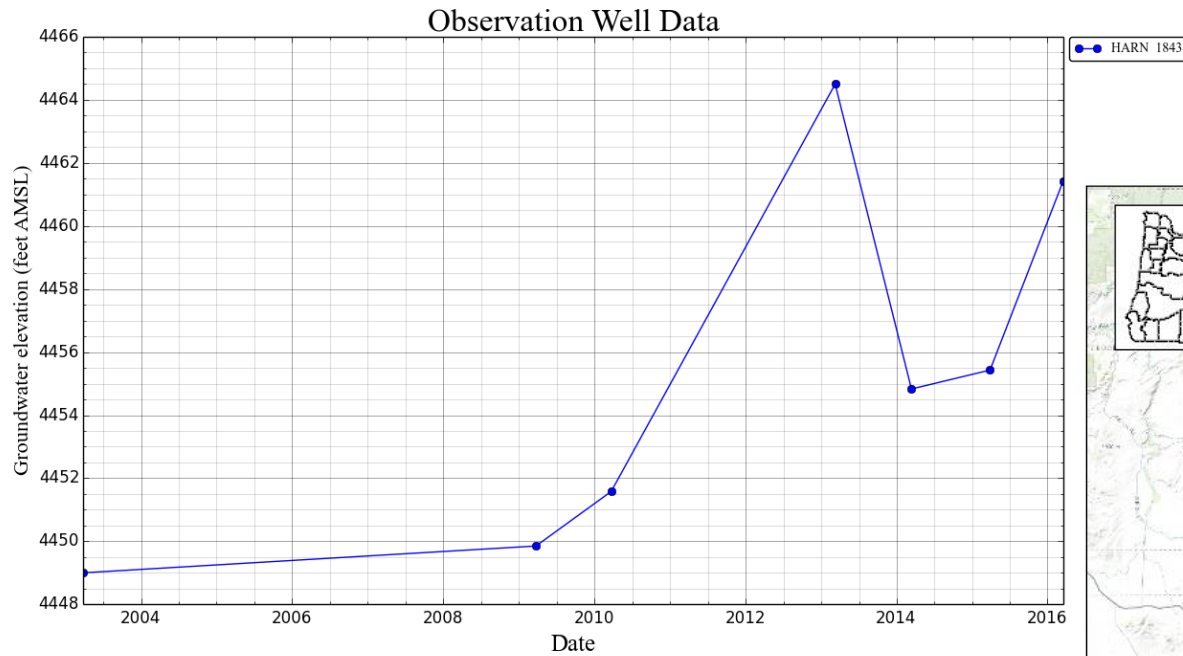
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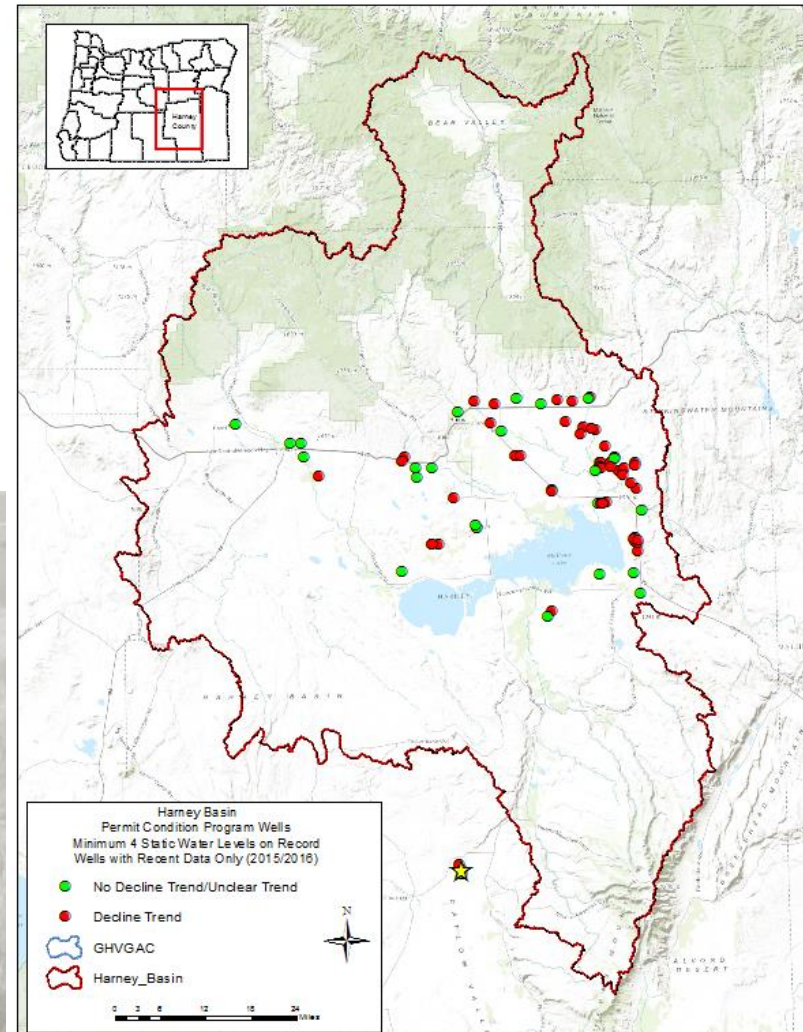
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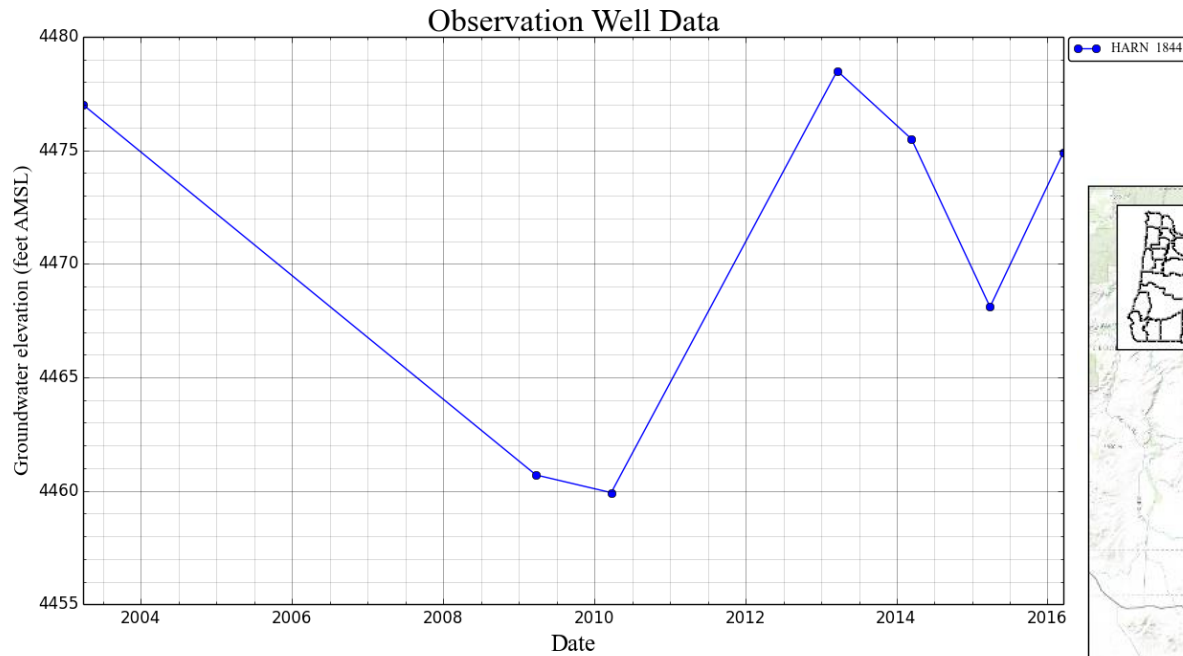
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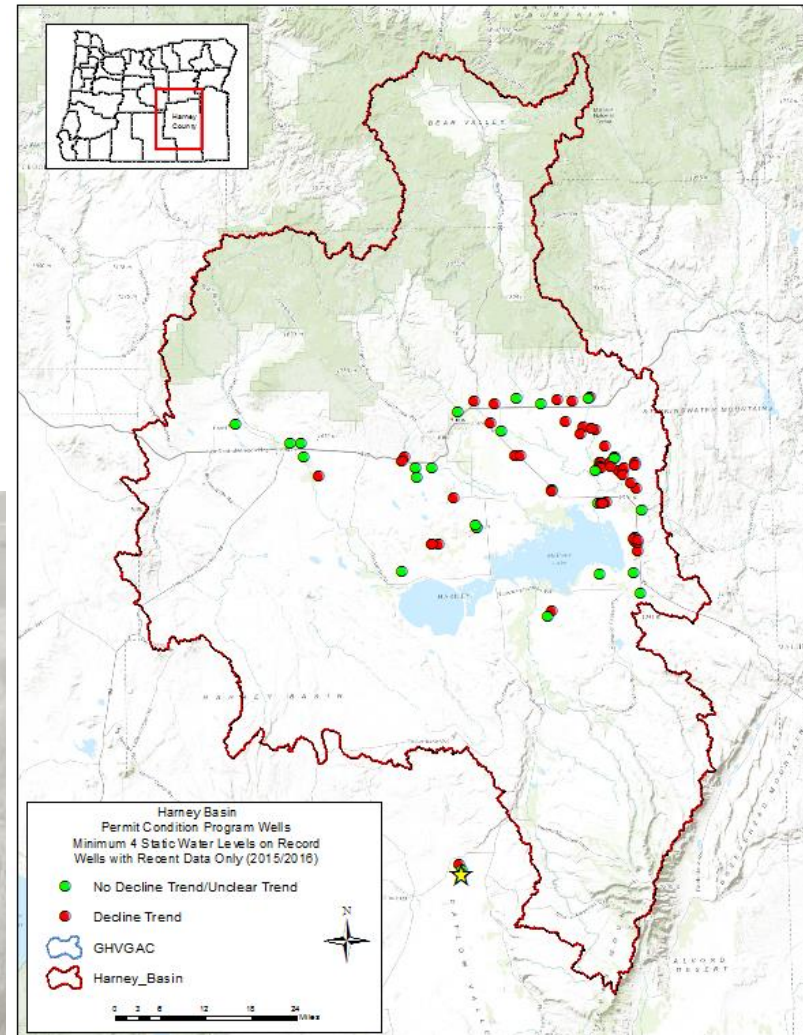
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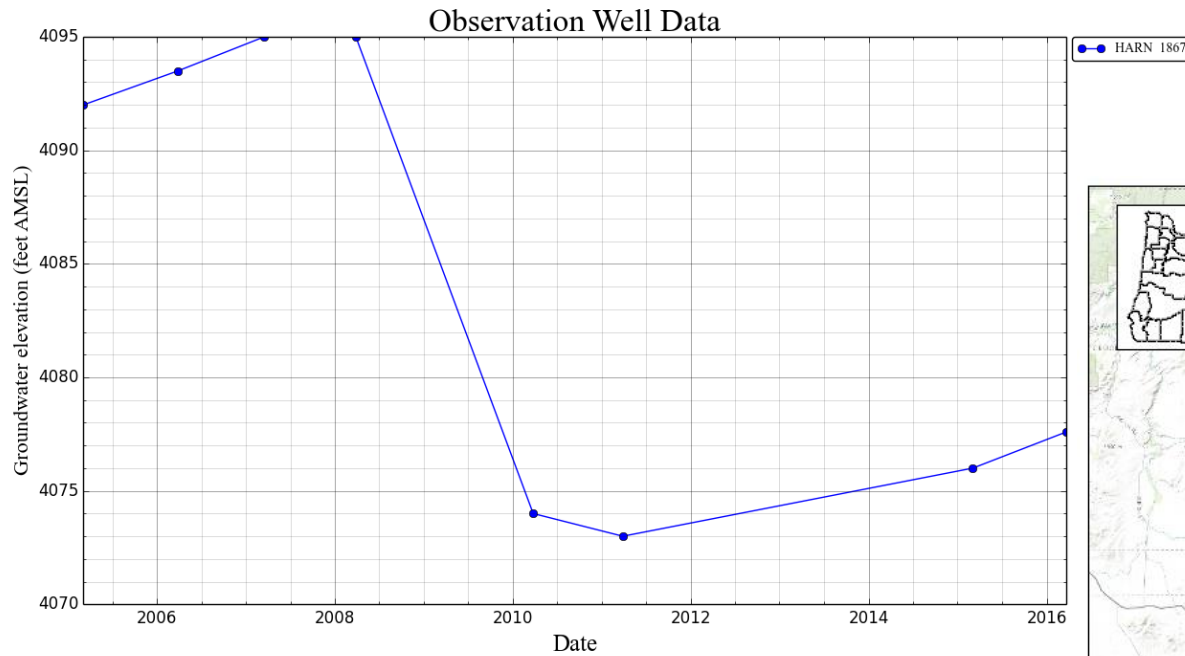
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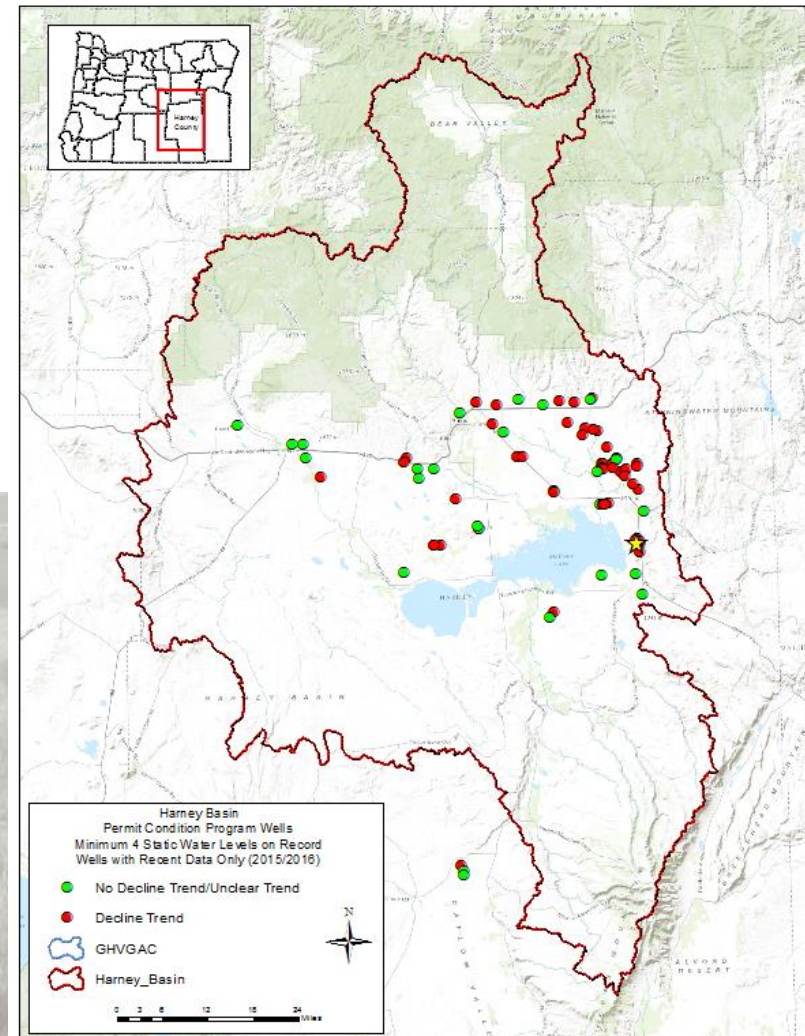
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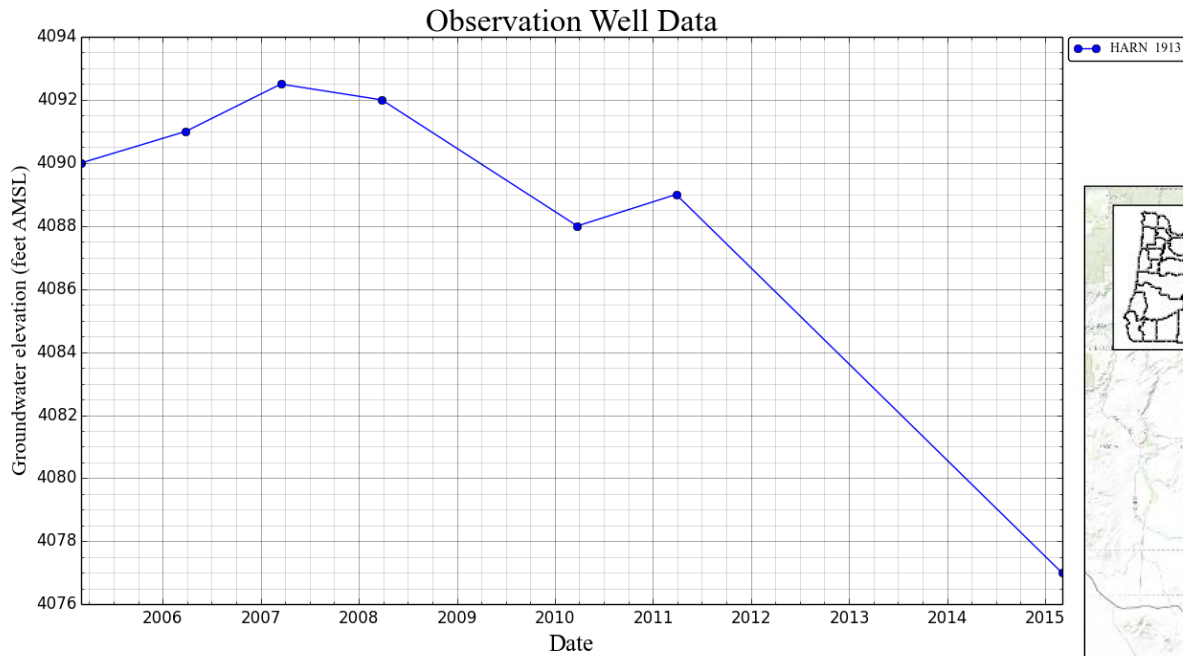
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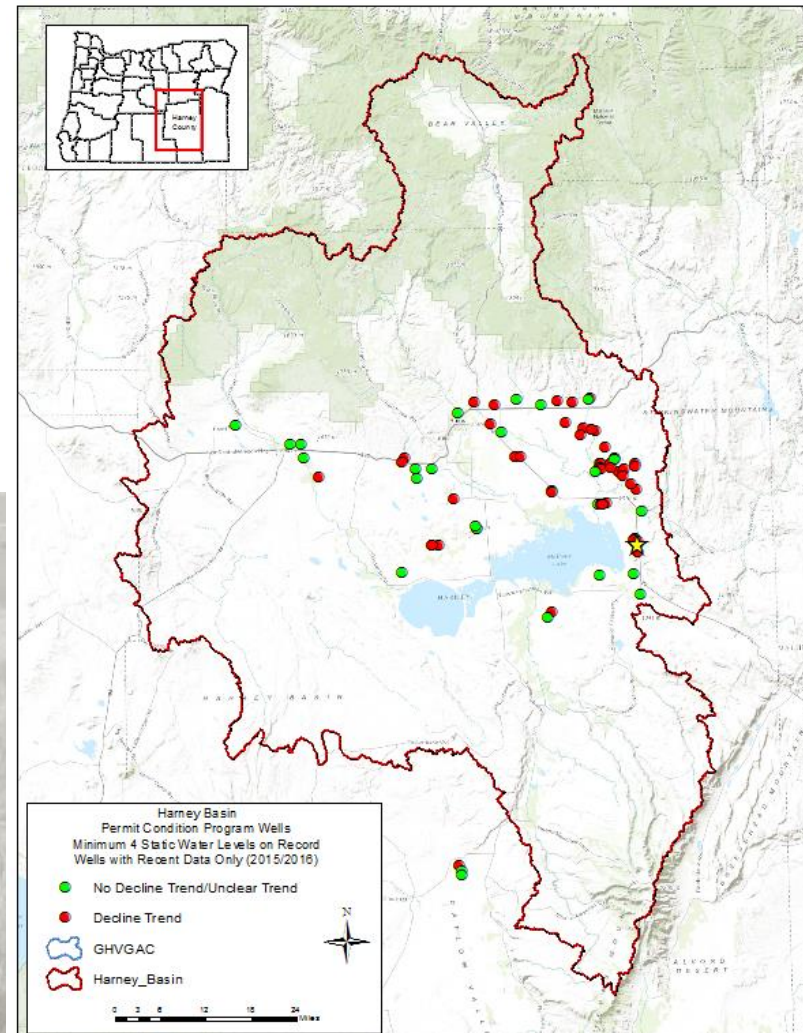
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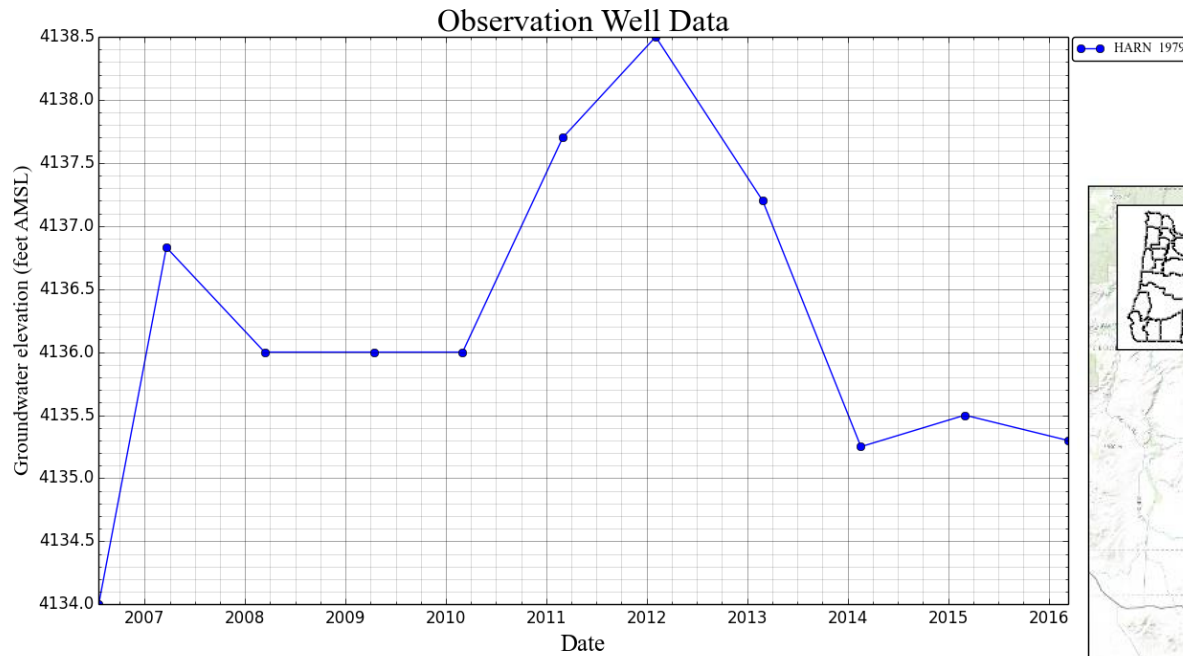
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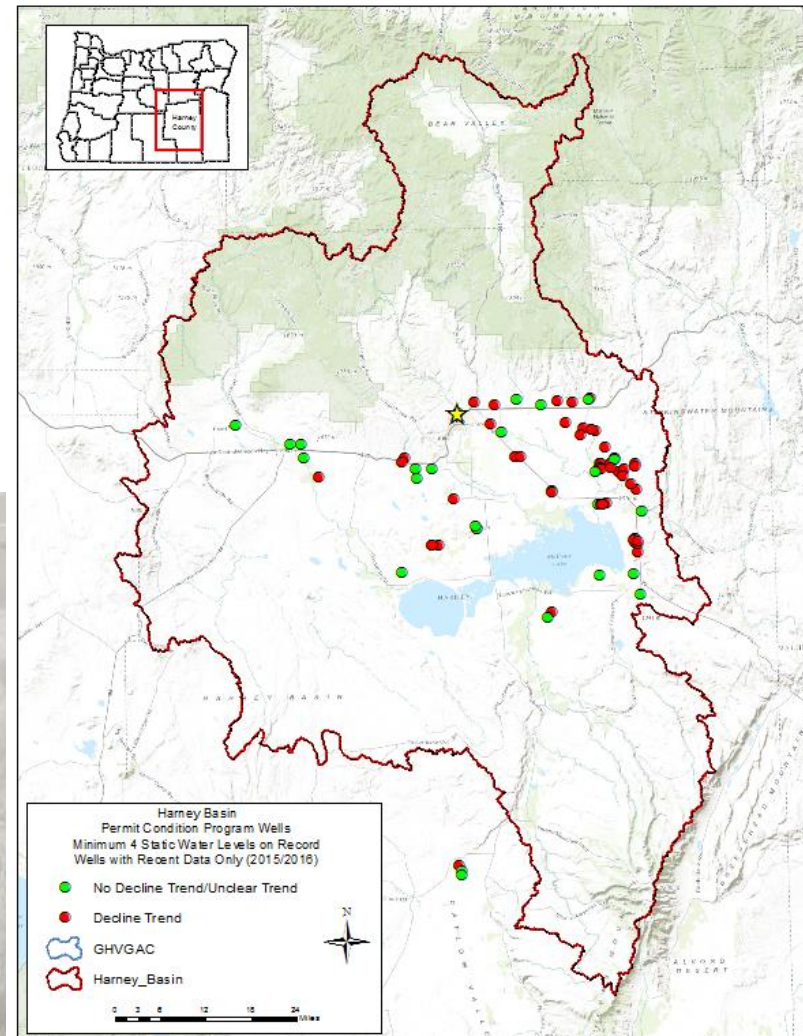
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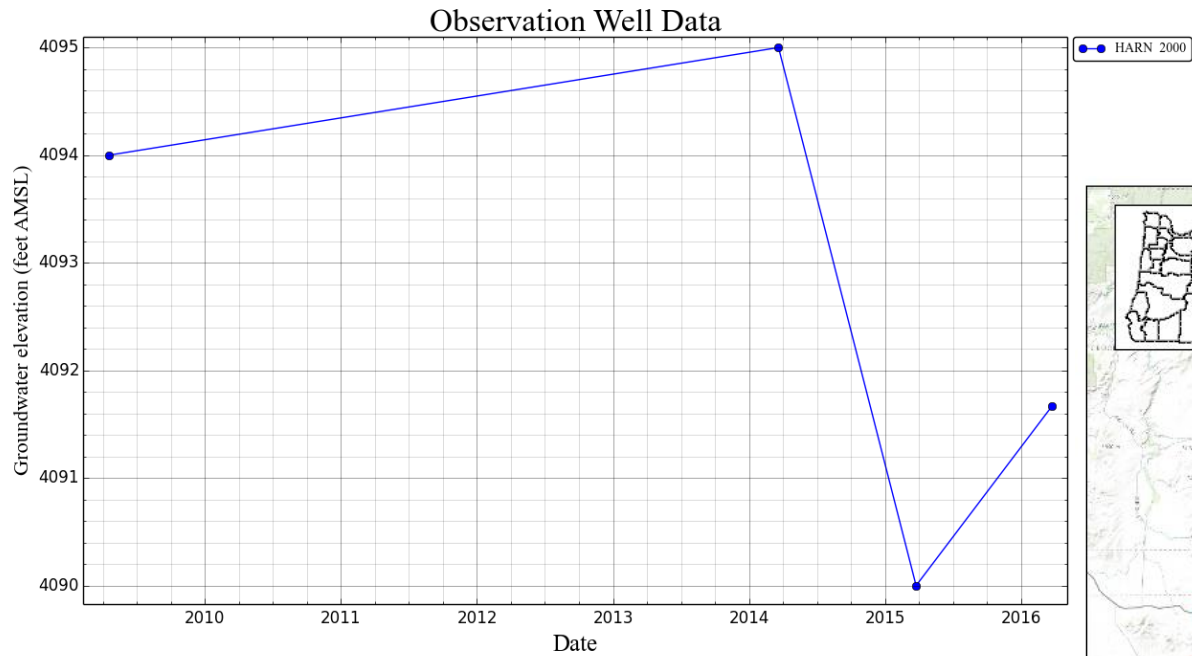
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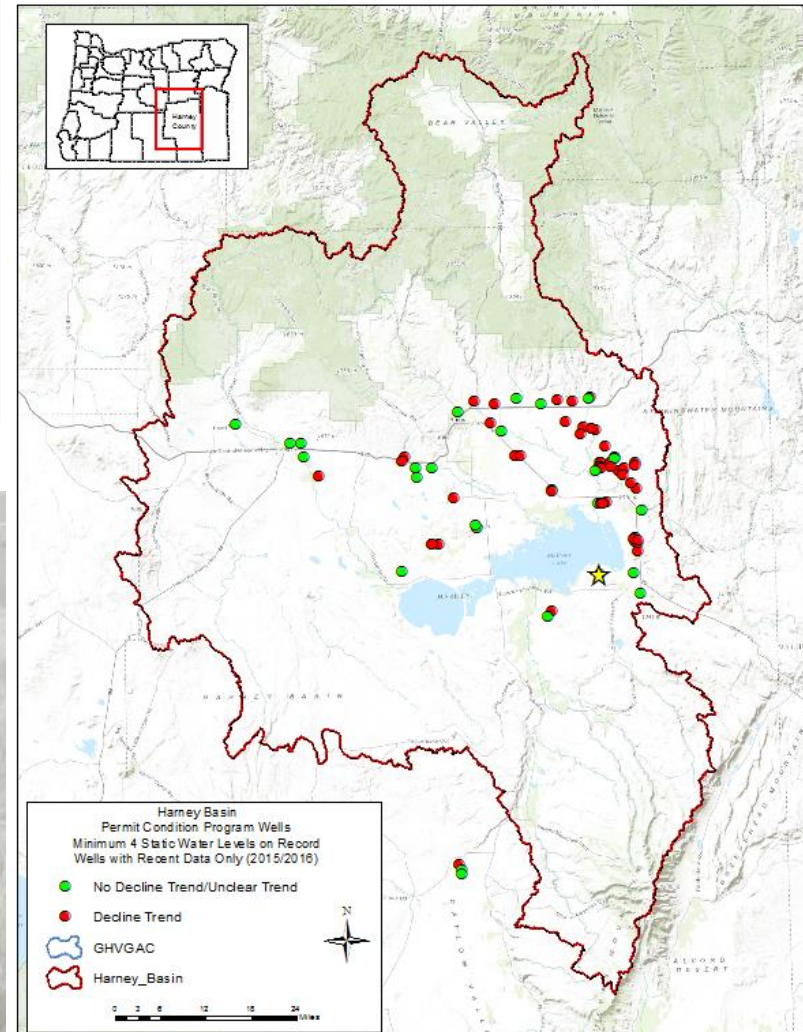
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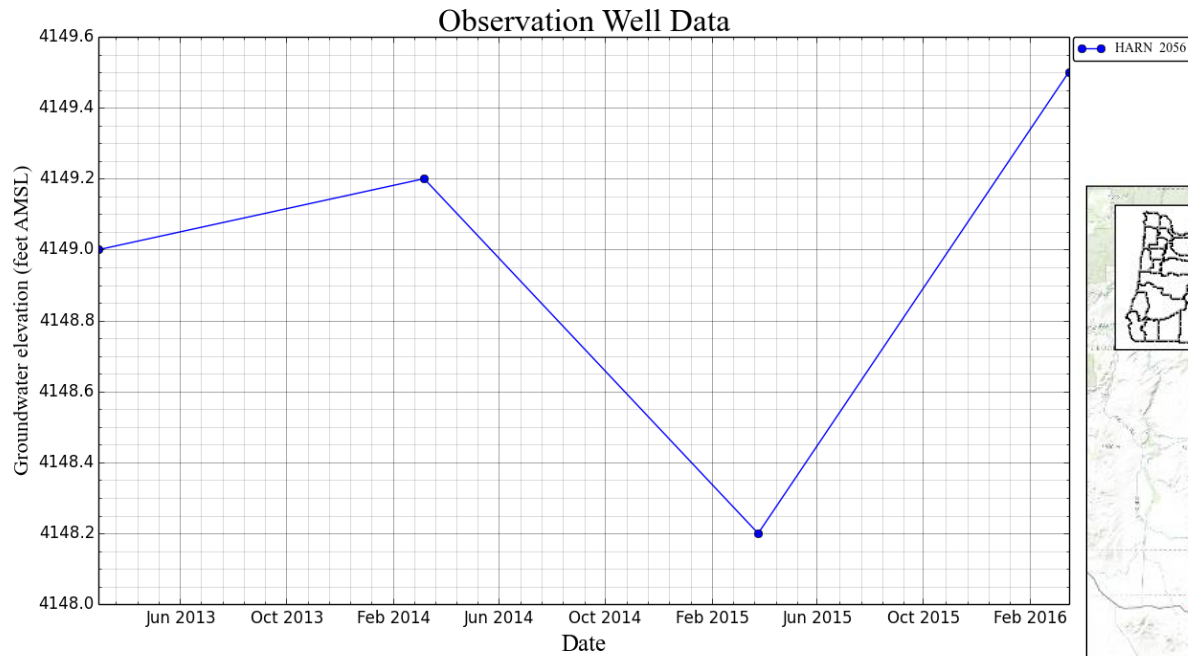
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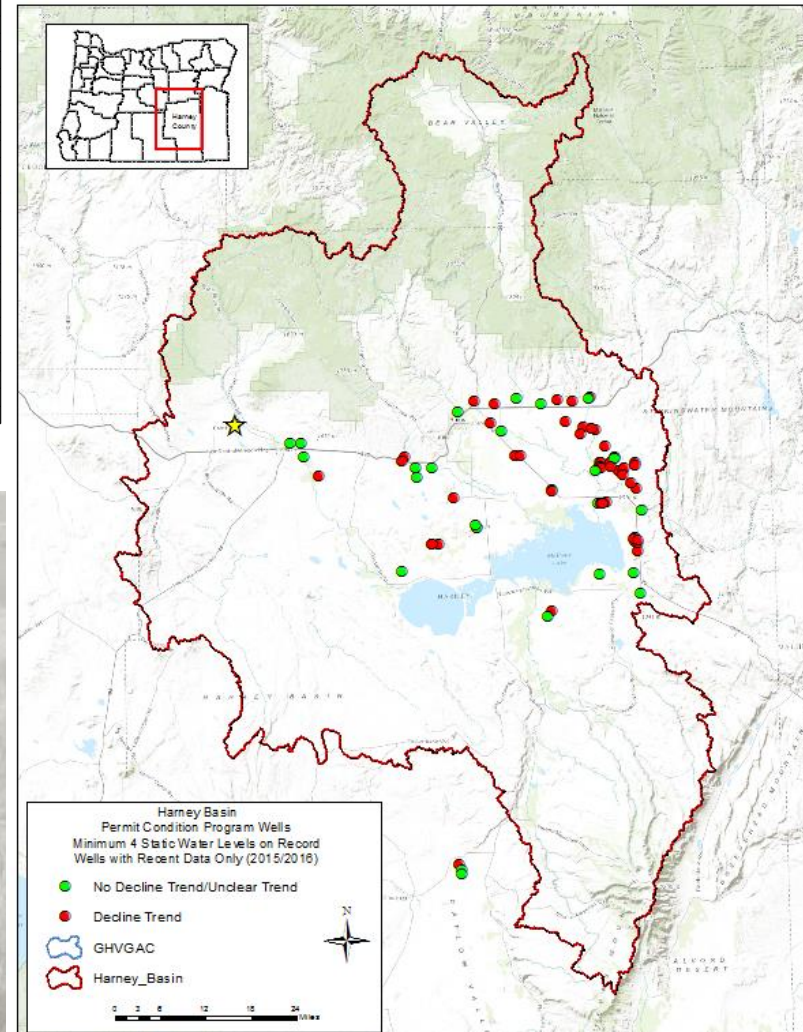
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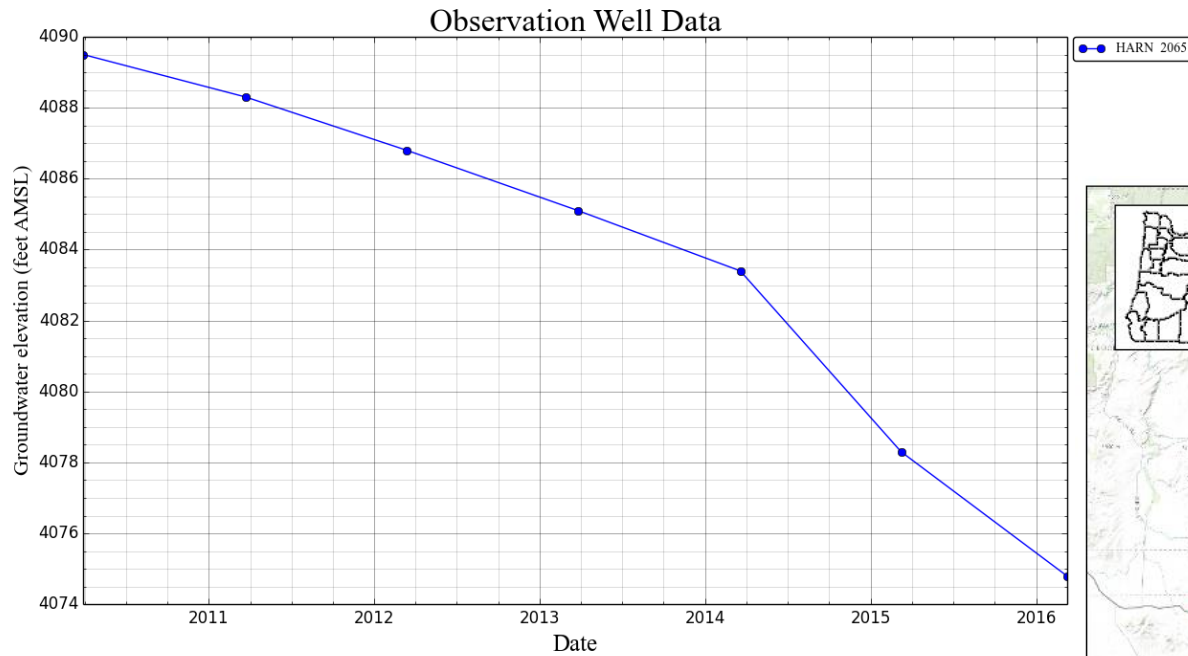
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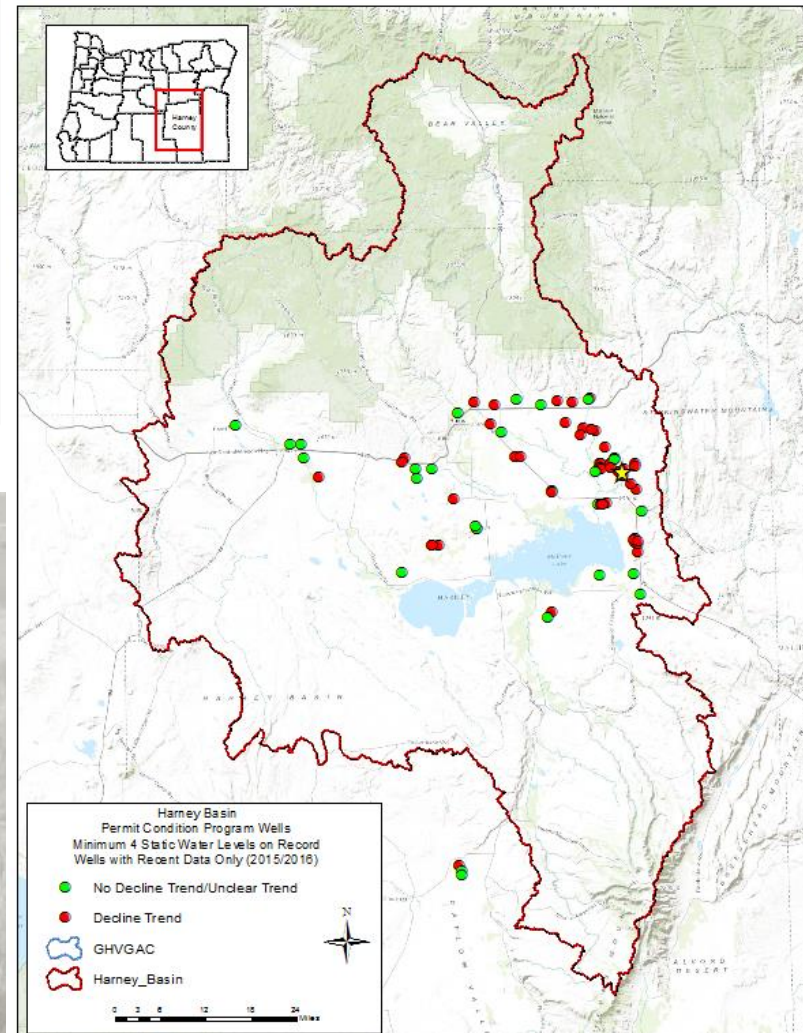
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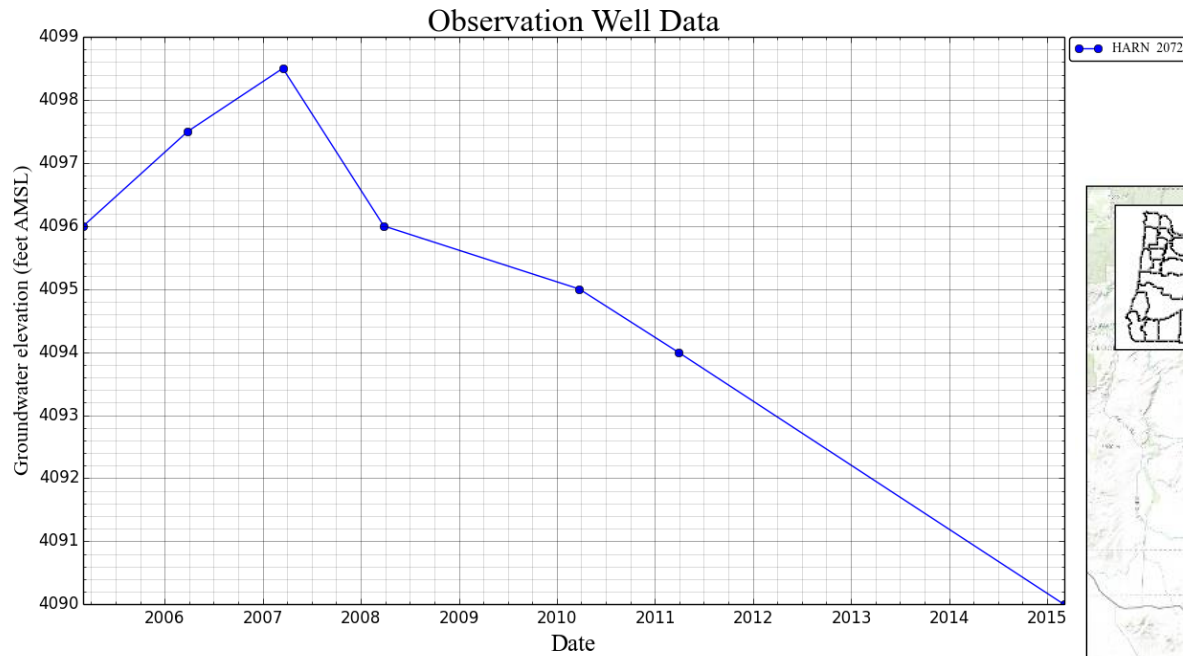
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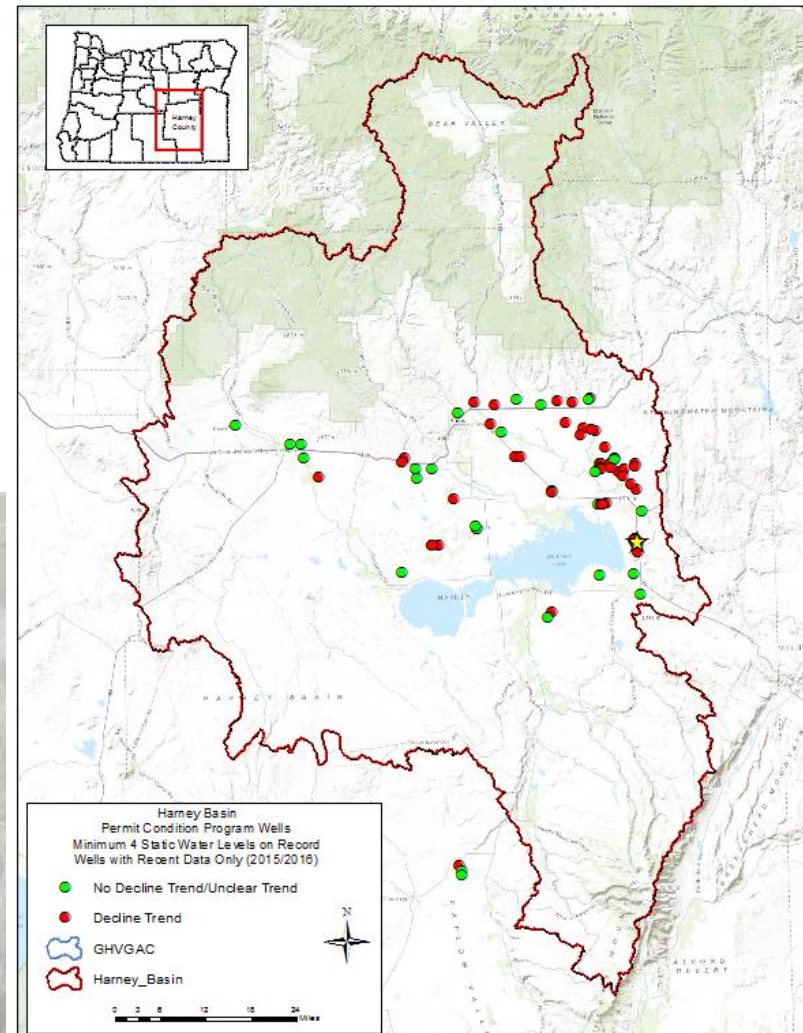
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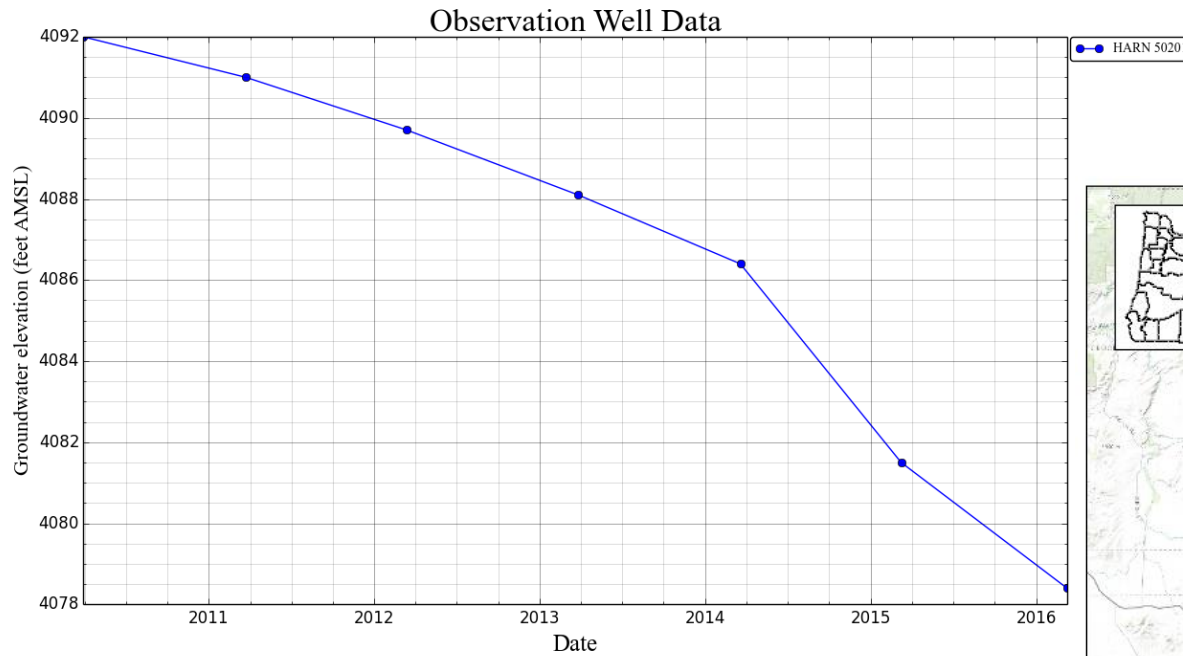
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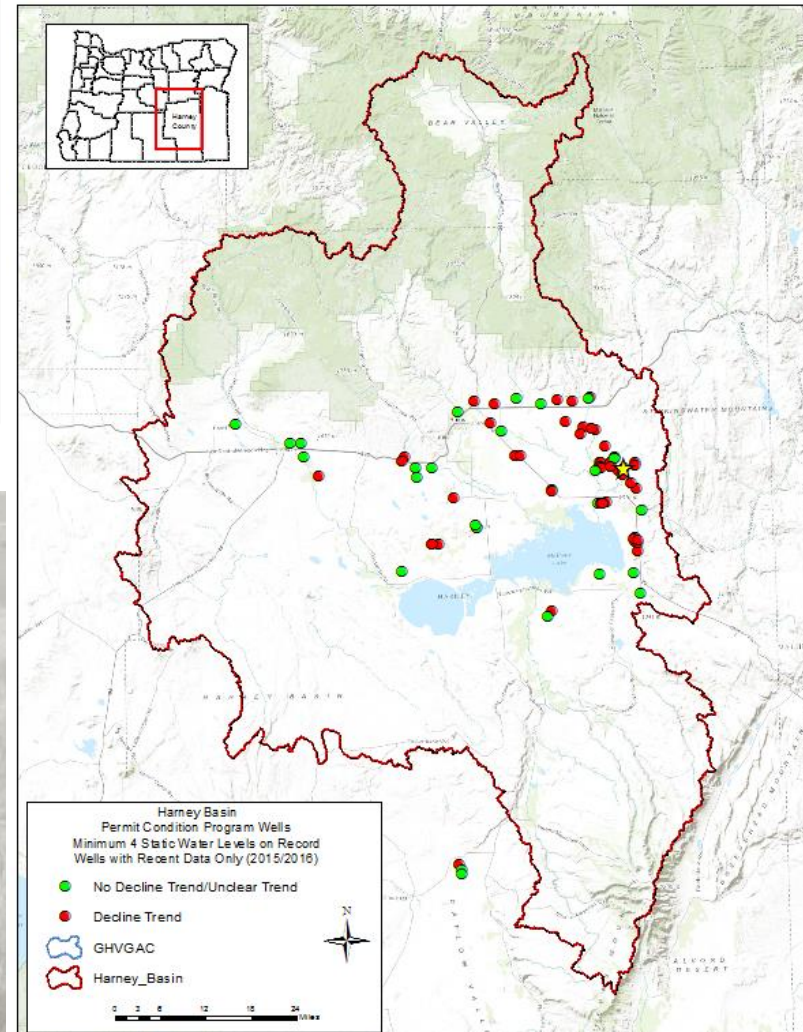
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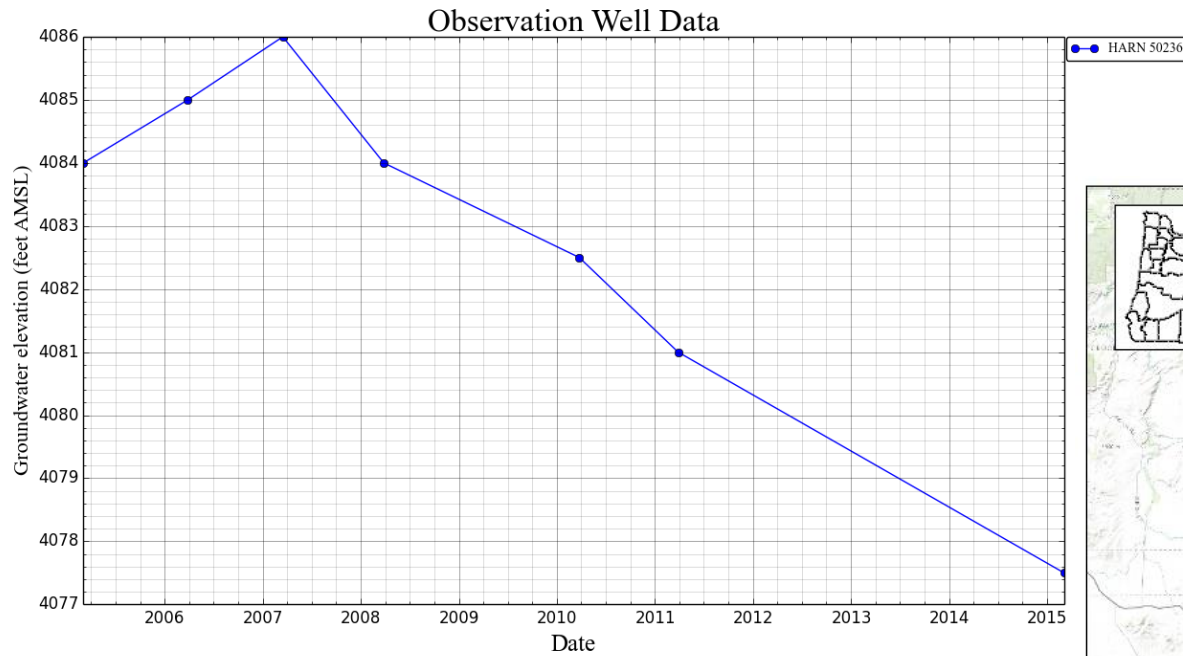
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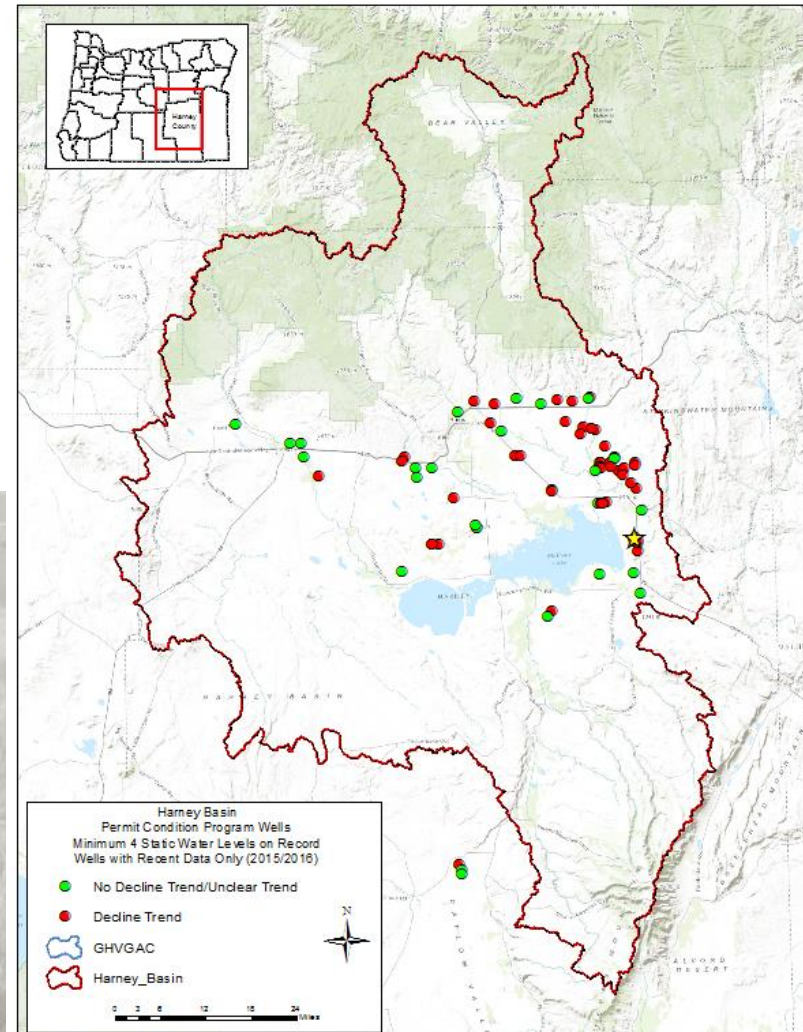
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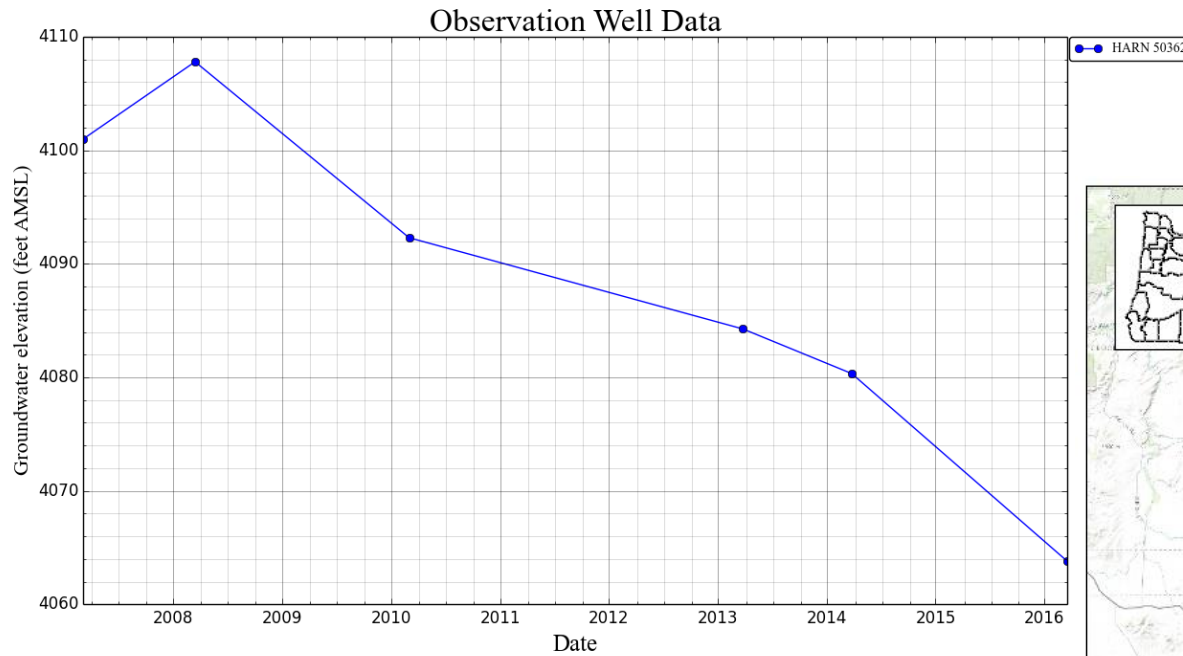
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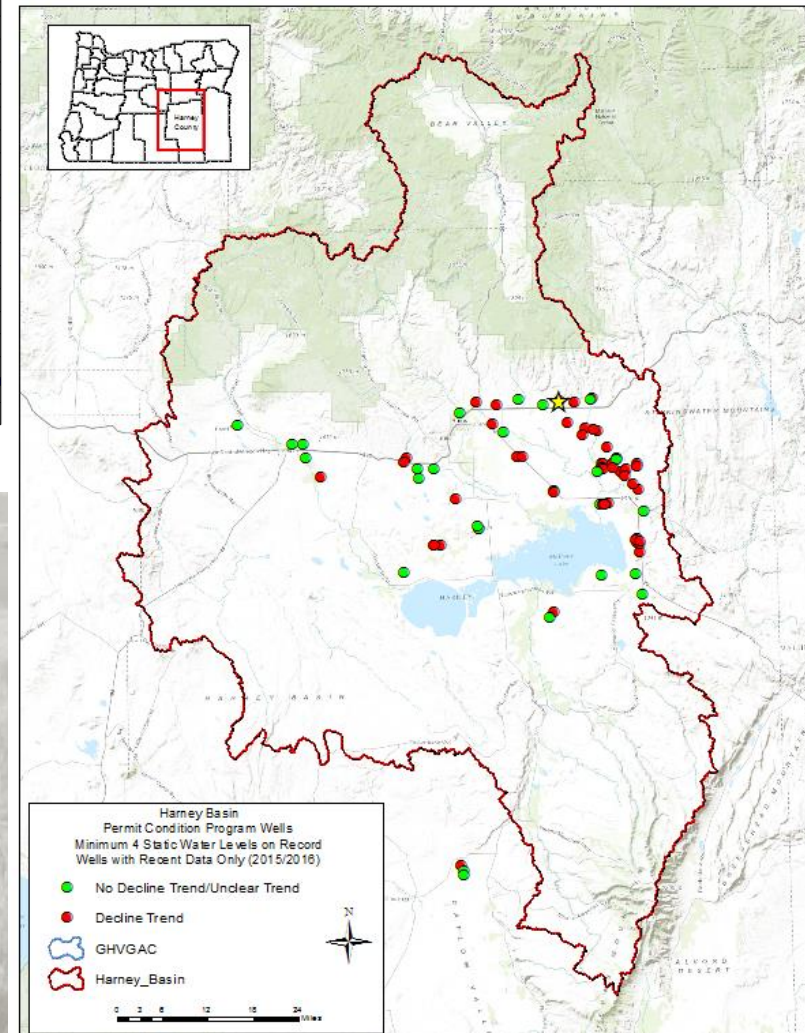
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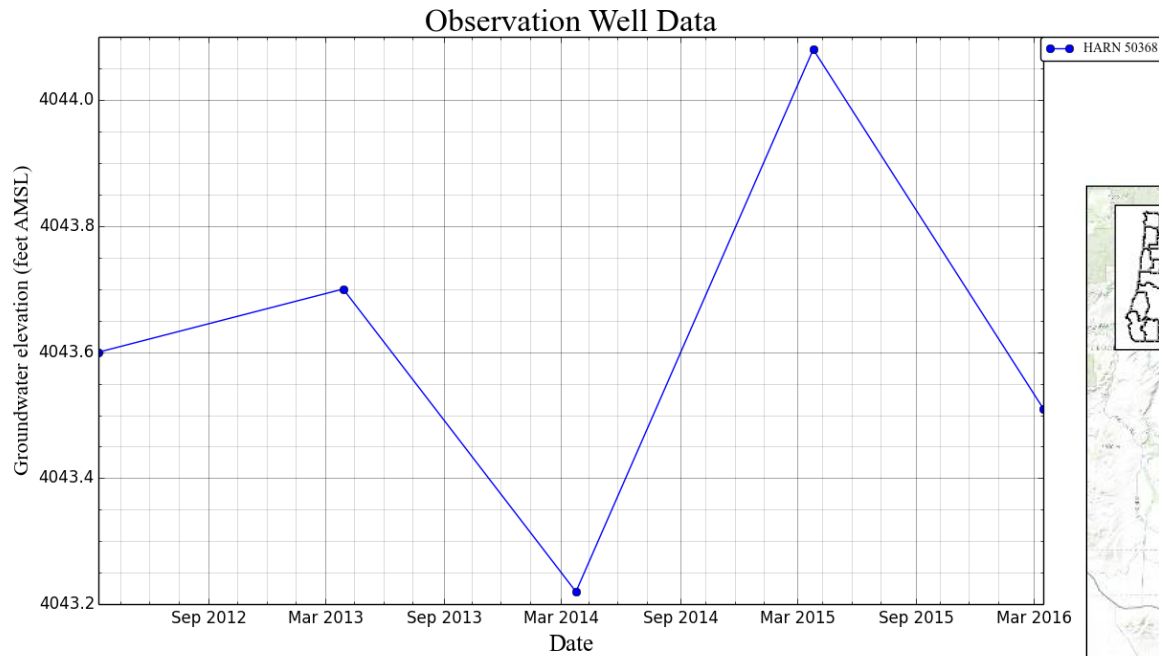
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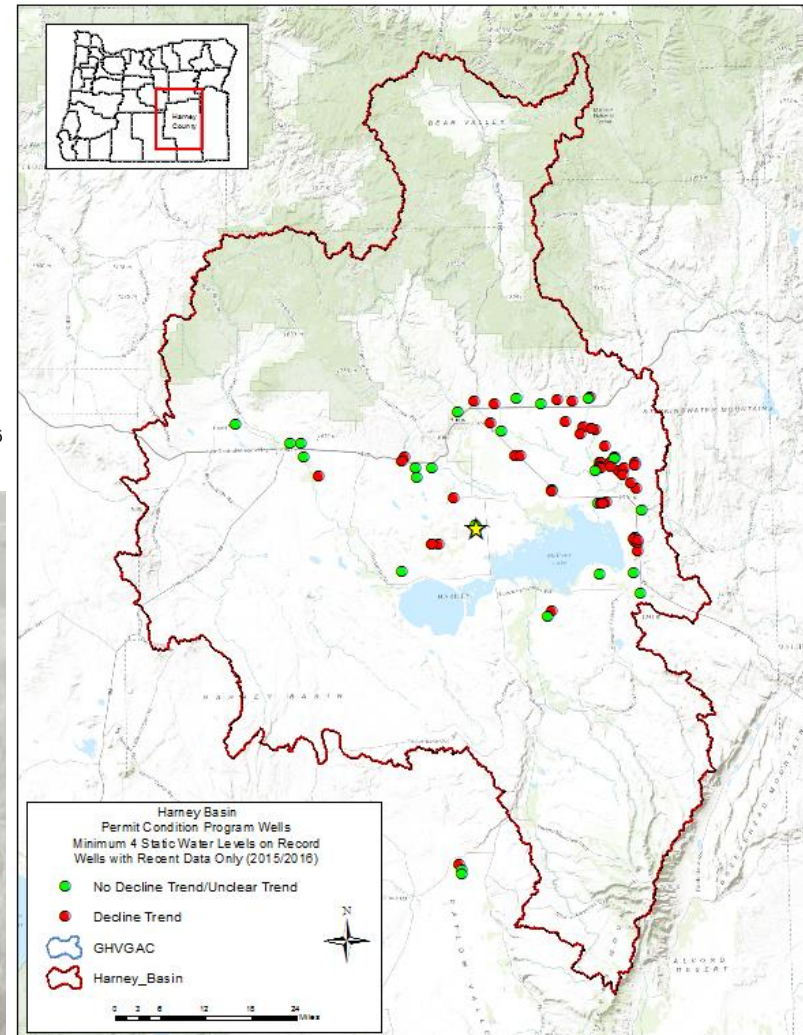
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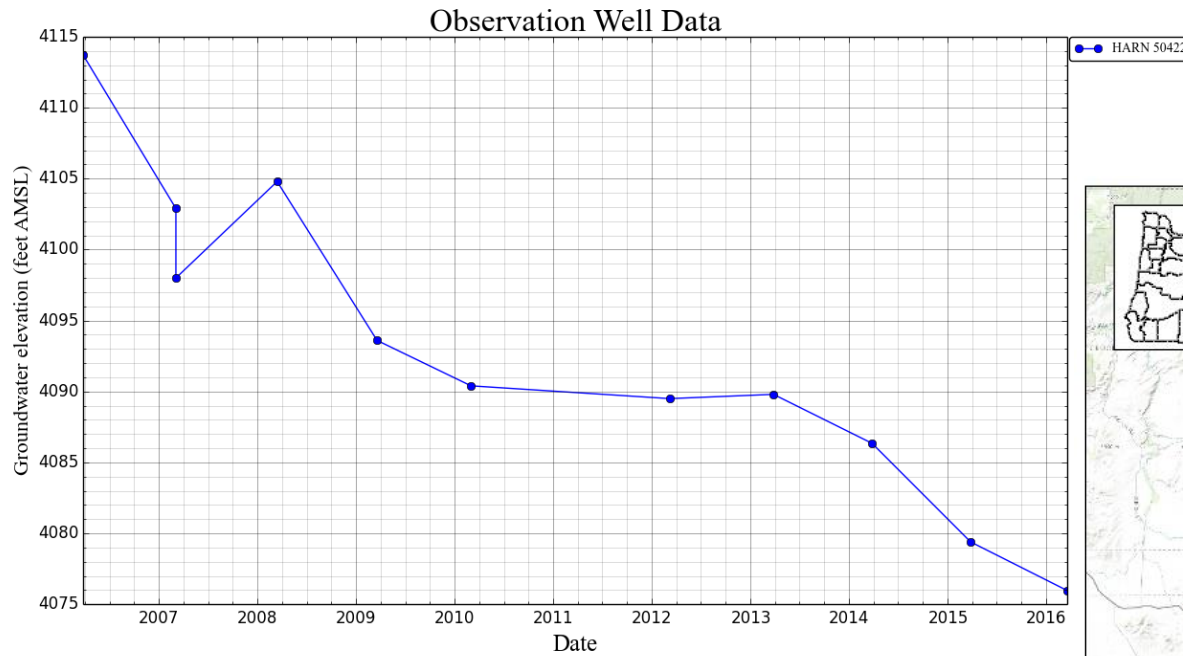
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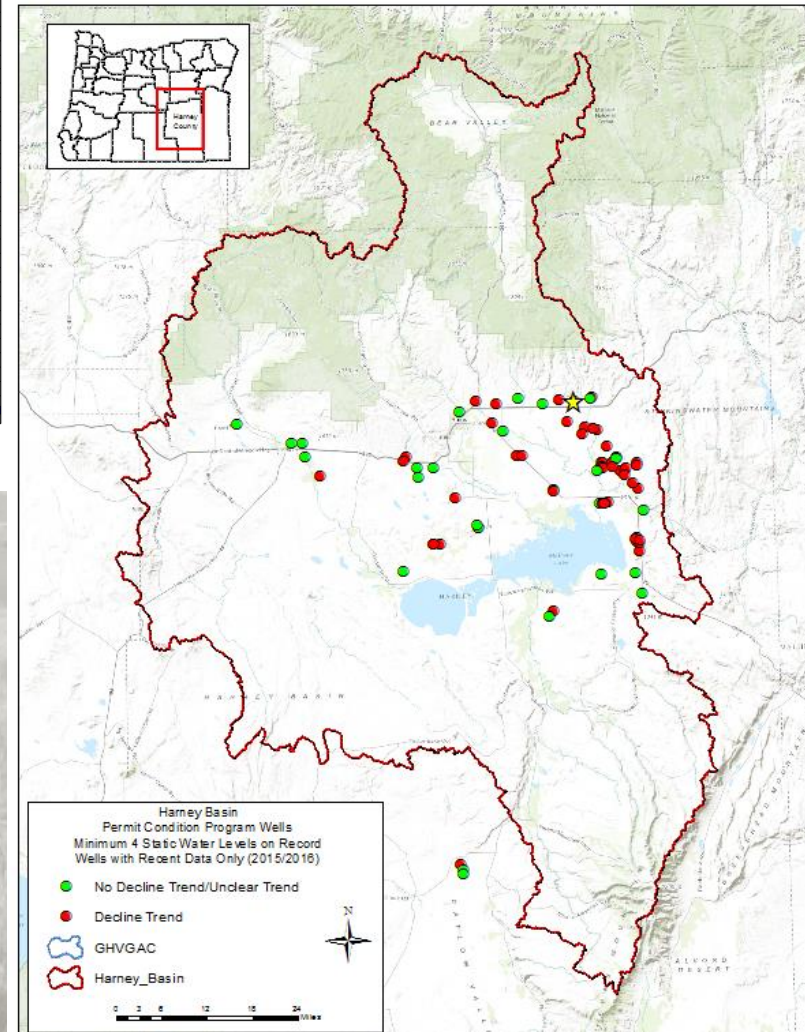
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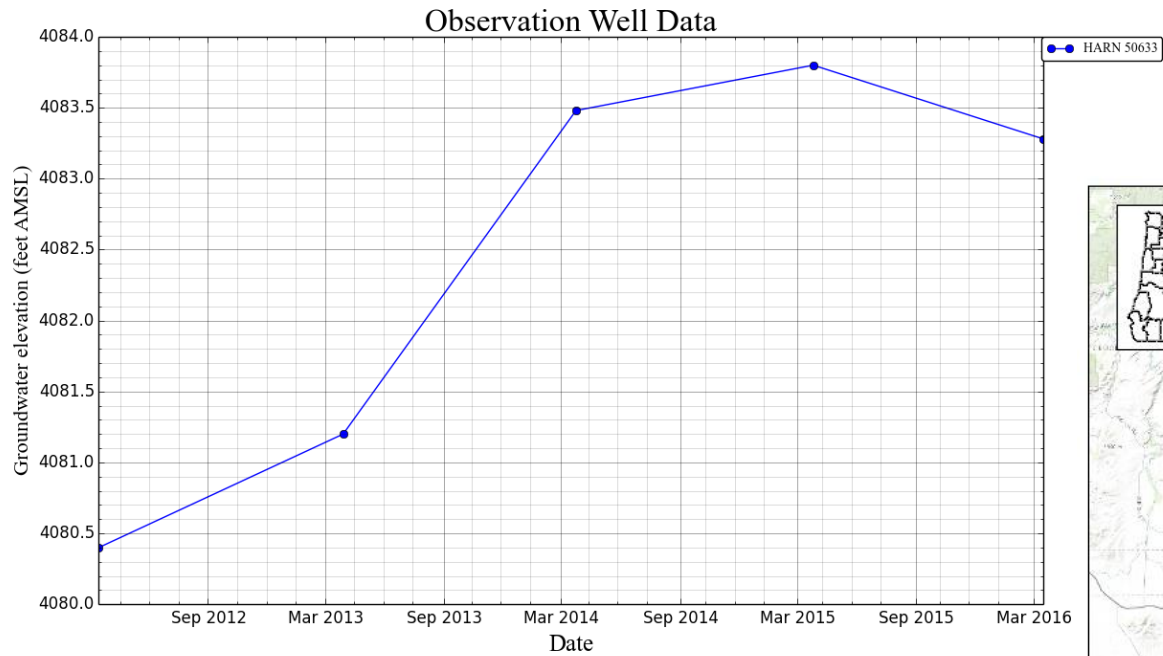
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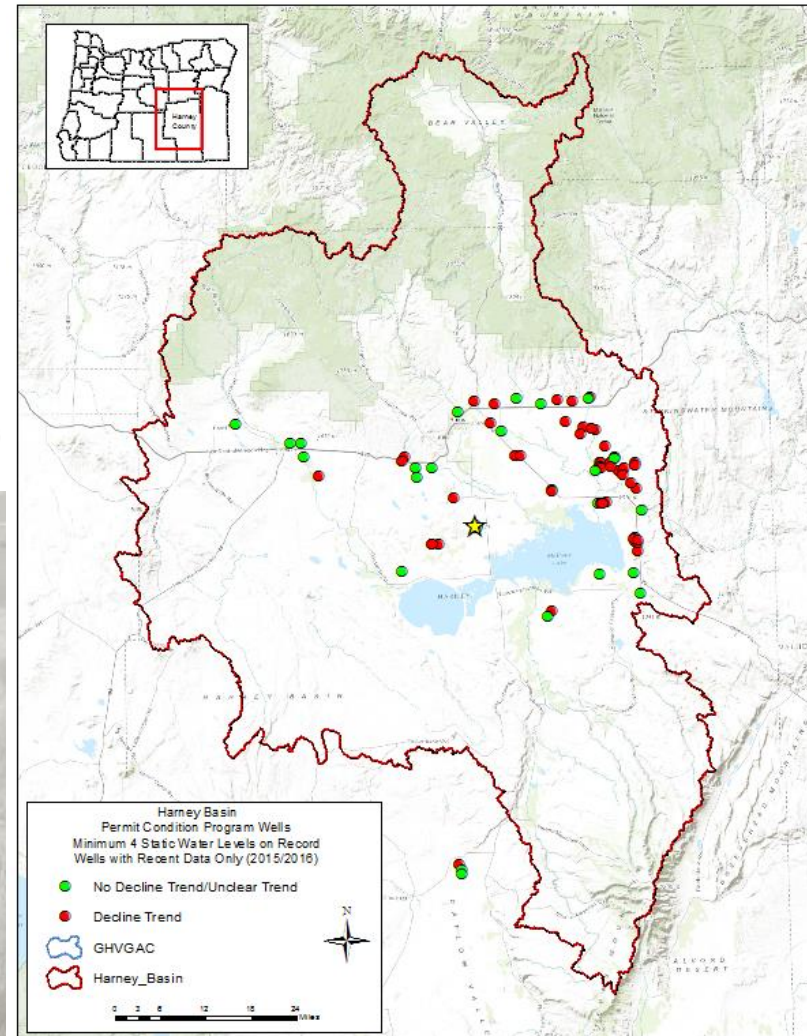
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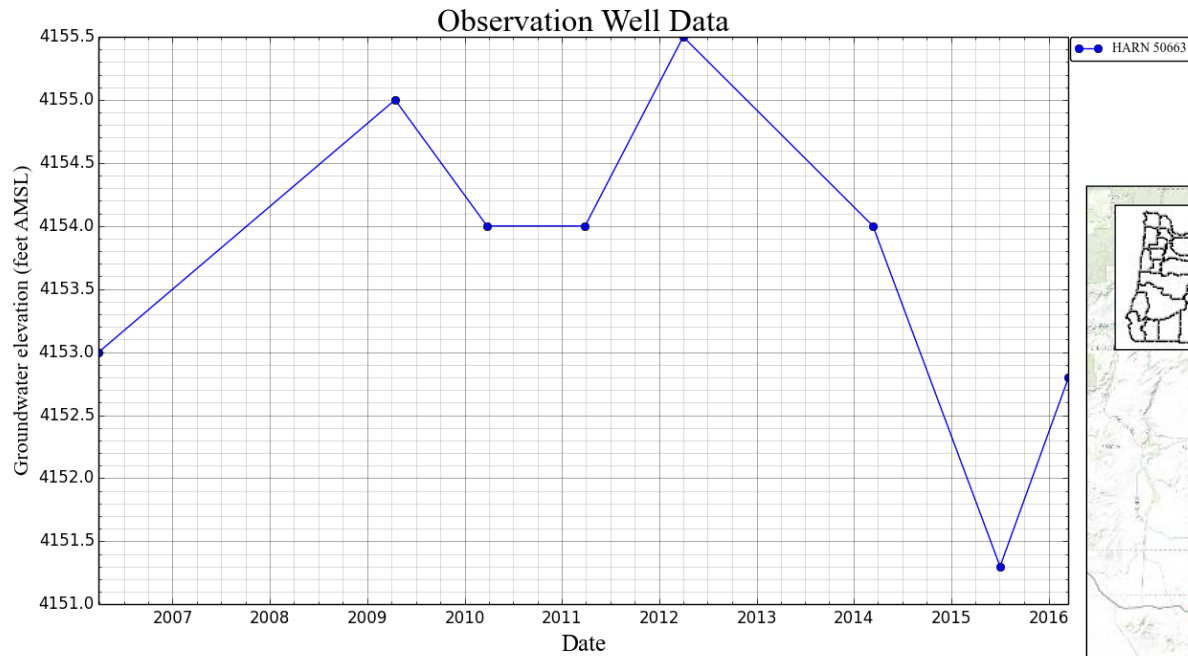
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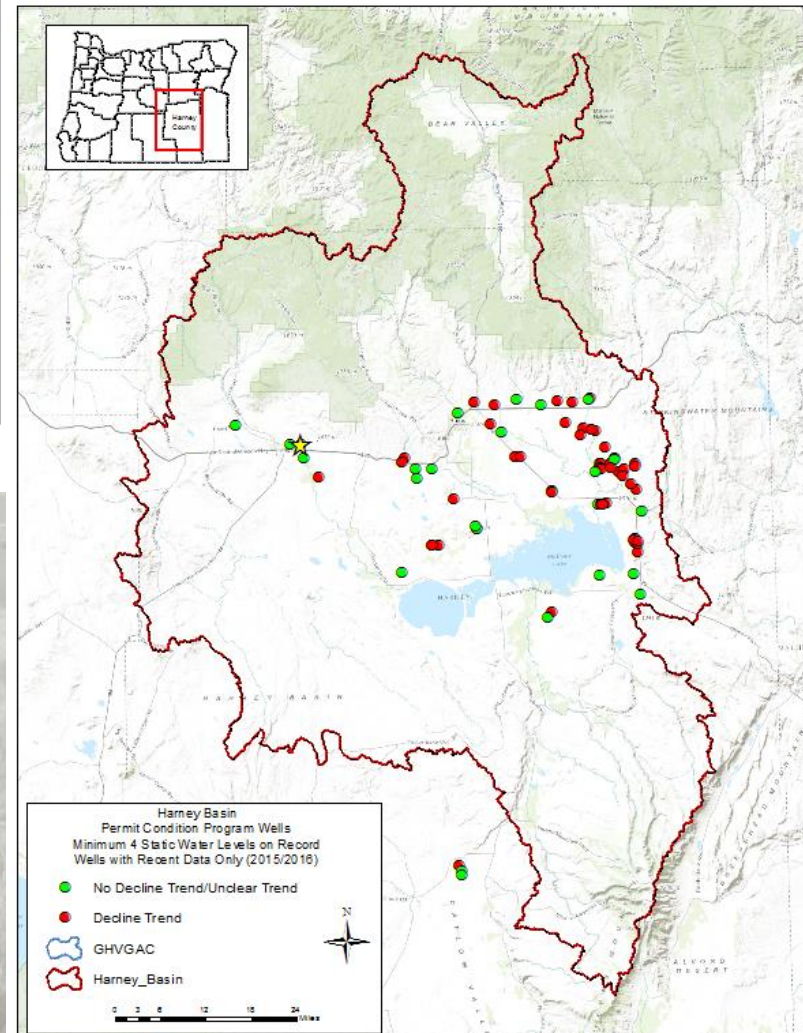
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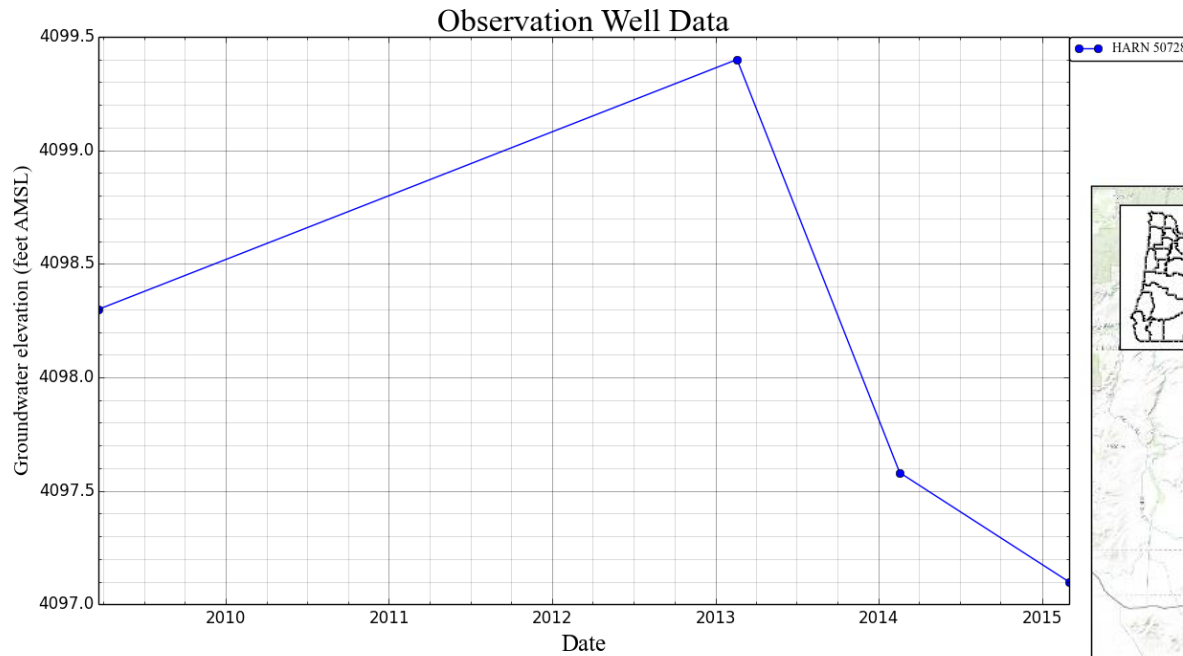
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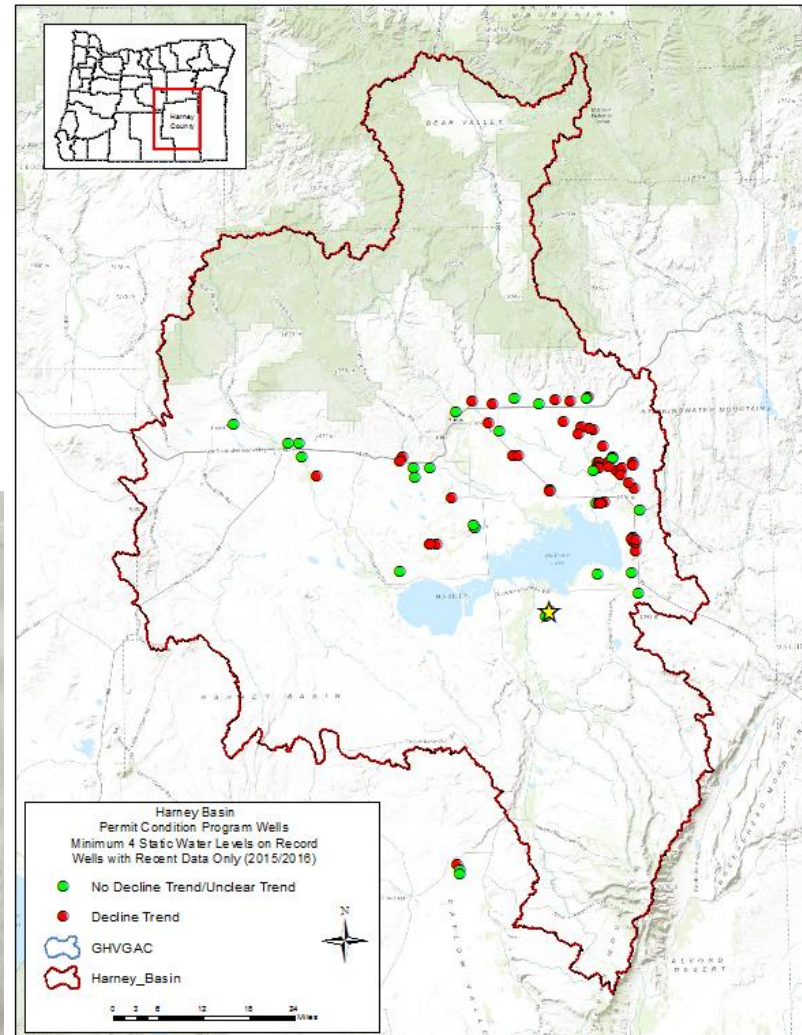
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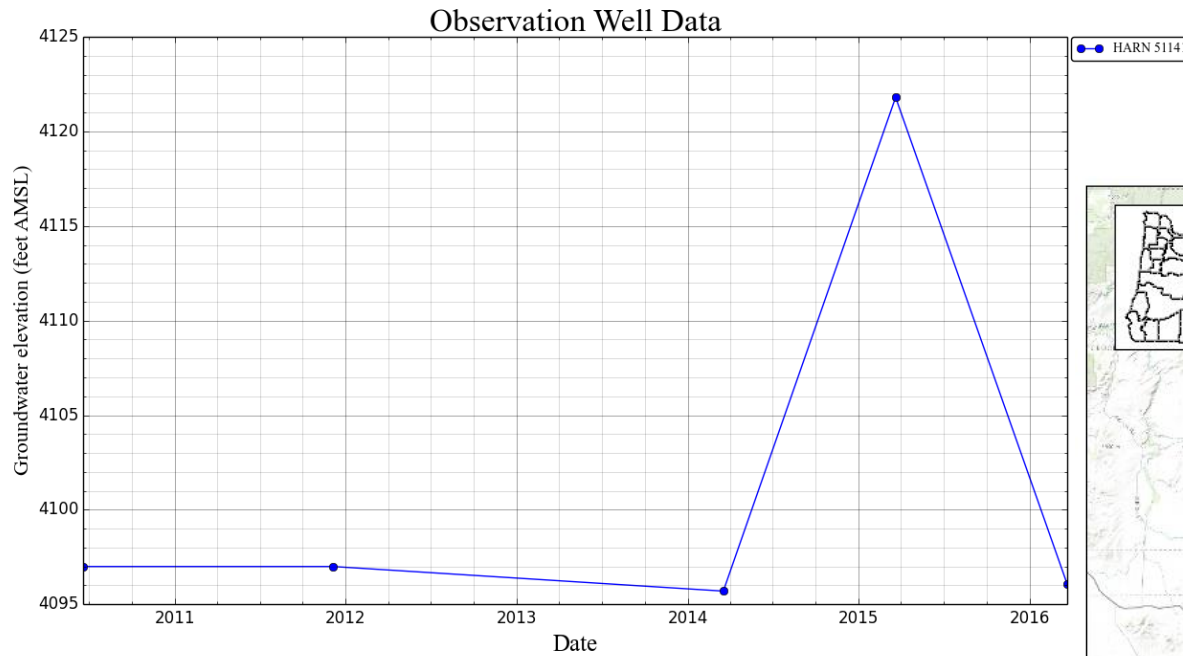
Hydrographs – permit condition data



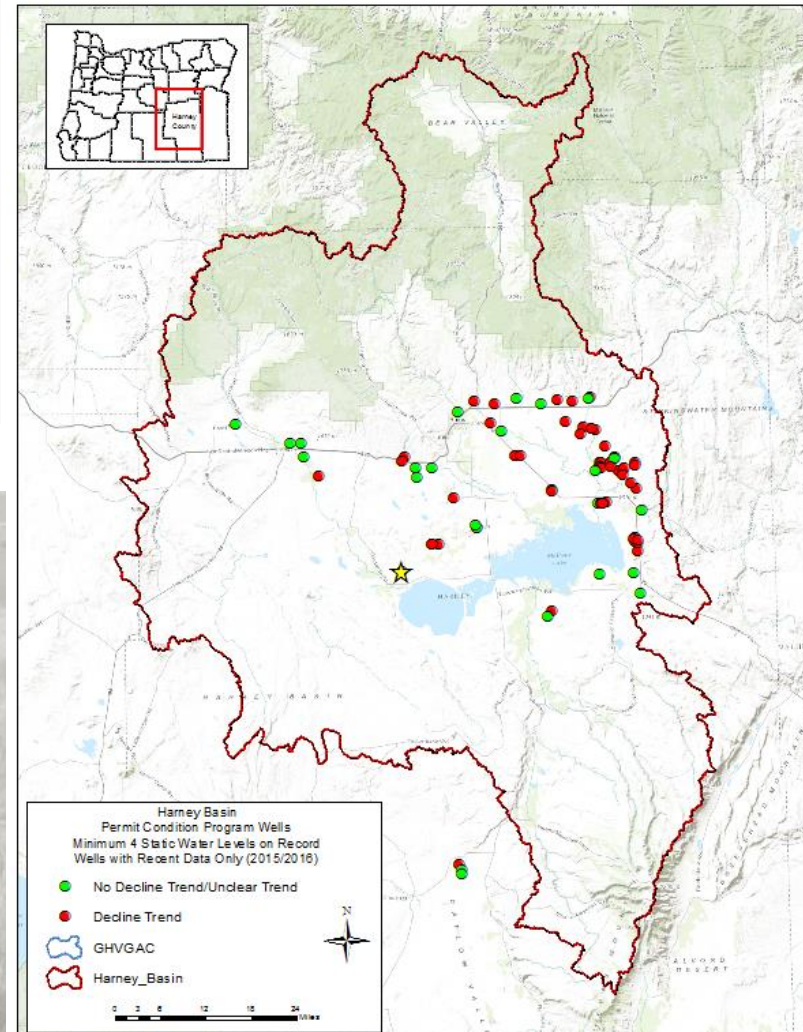
The yellow star on the map indicates the location of the well corresponding to the hydrograph



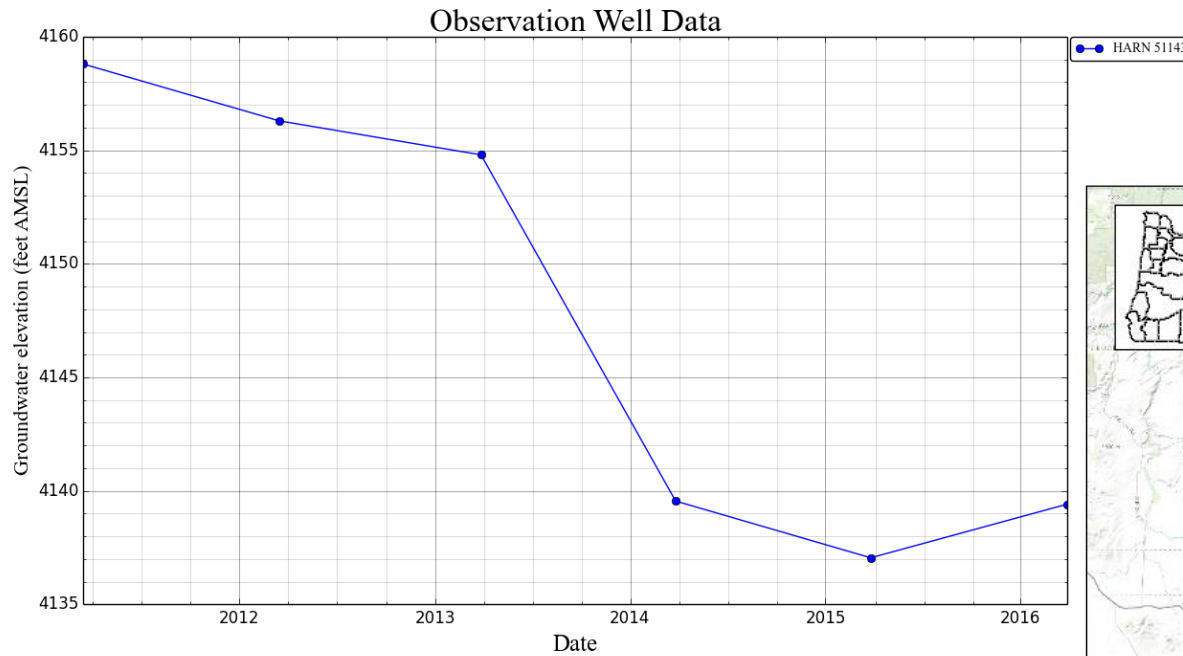
Hydrographs – permit condition data



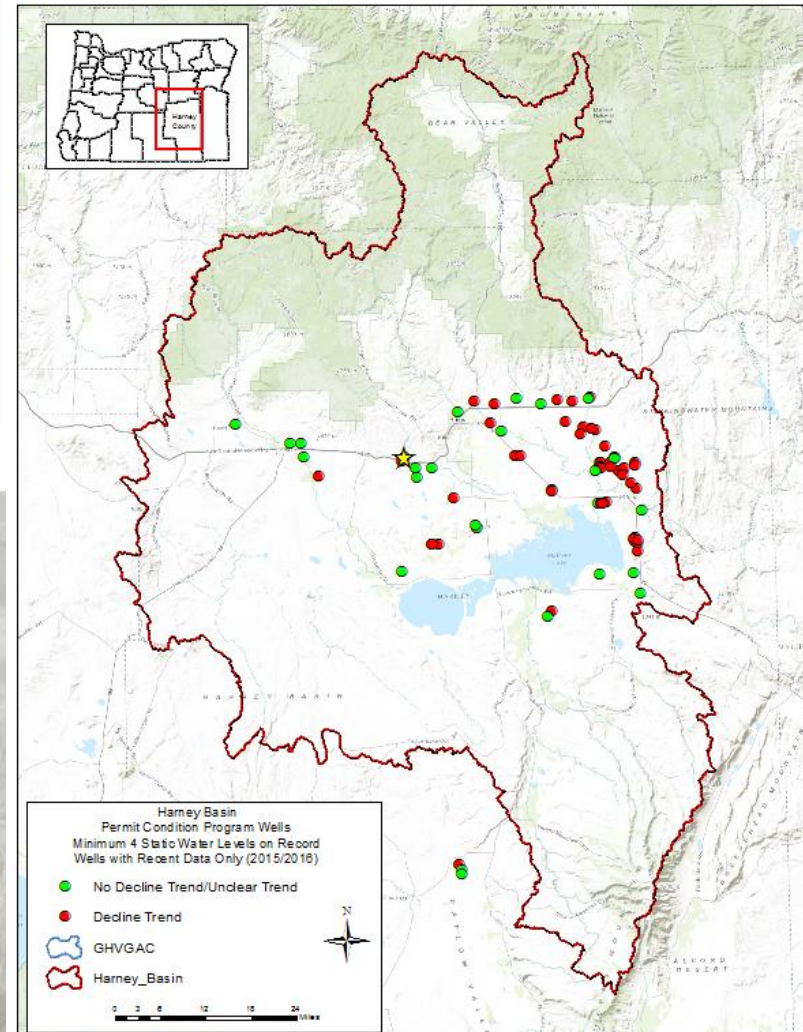
The yellow star on the map indicates the location of the well corresponding to the hydrograph



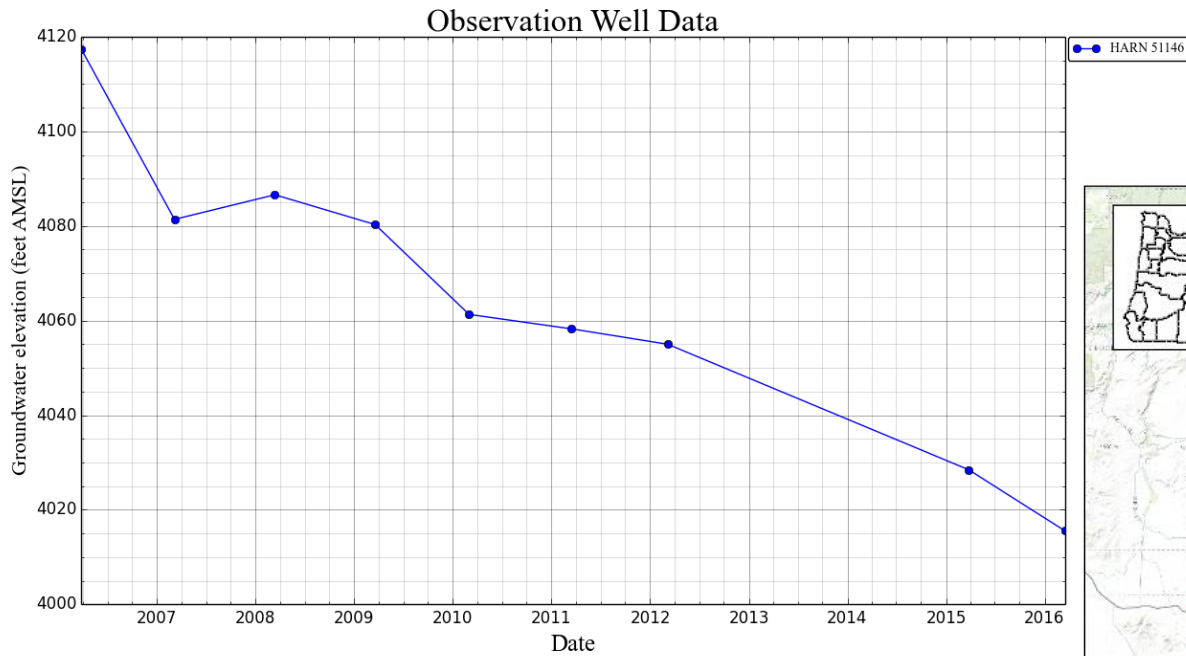
Hydrographs – permit condition data



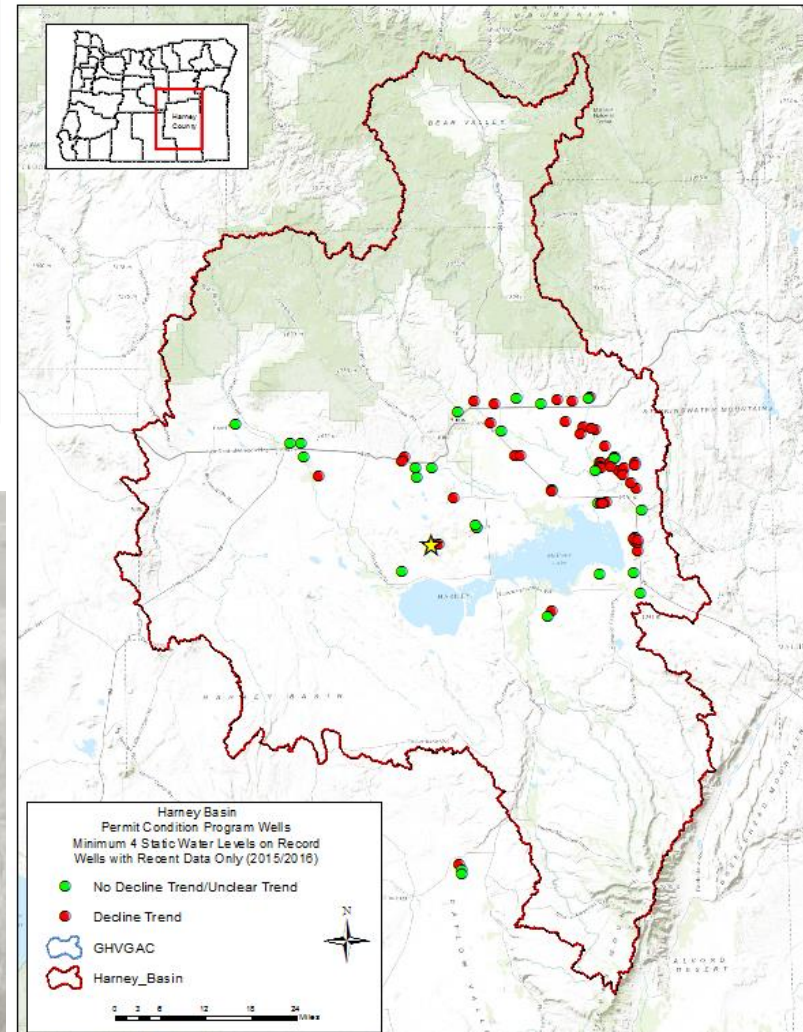
The yellow star on the map indicates the location of the well corresponding to the hydrograph



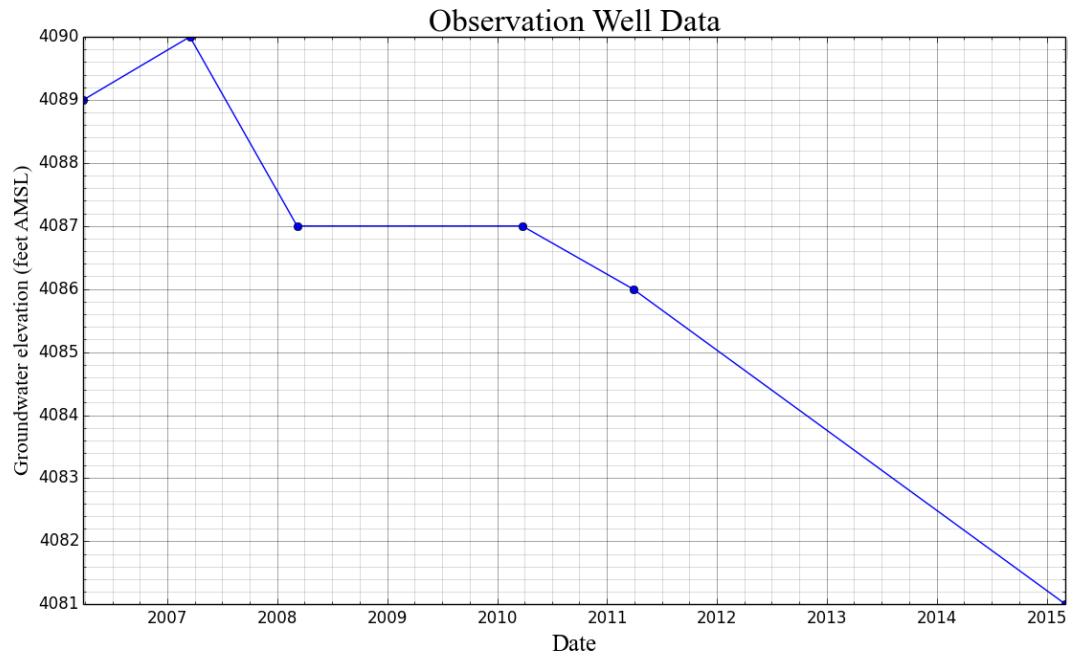
Hydrographs – permit condition data



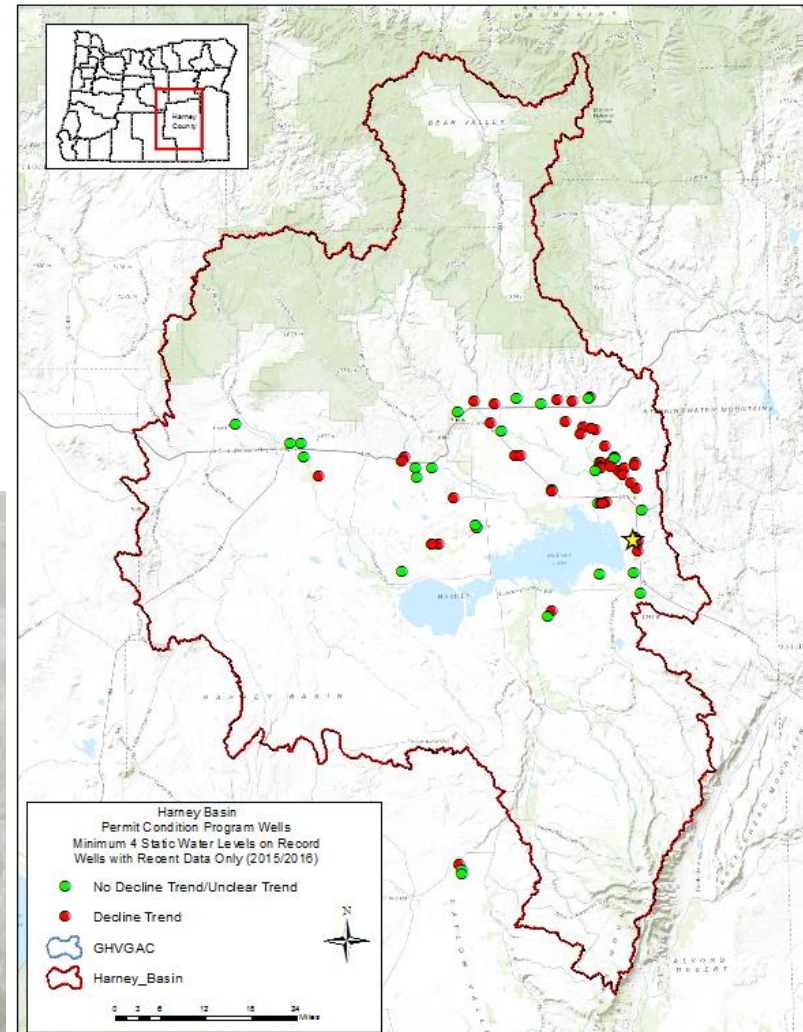
The yellow star on the map indicates the location of the well corresponding to the hydrograph



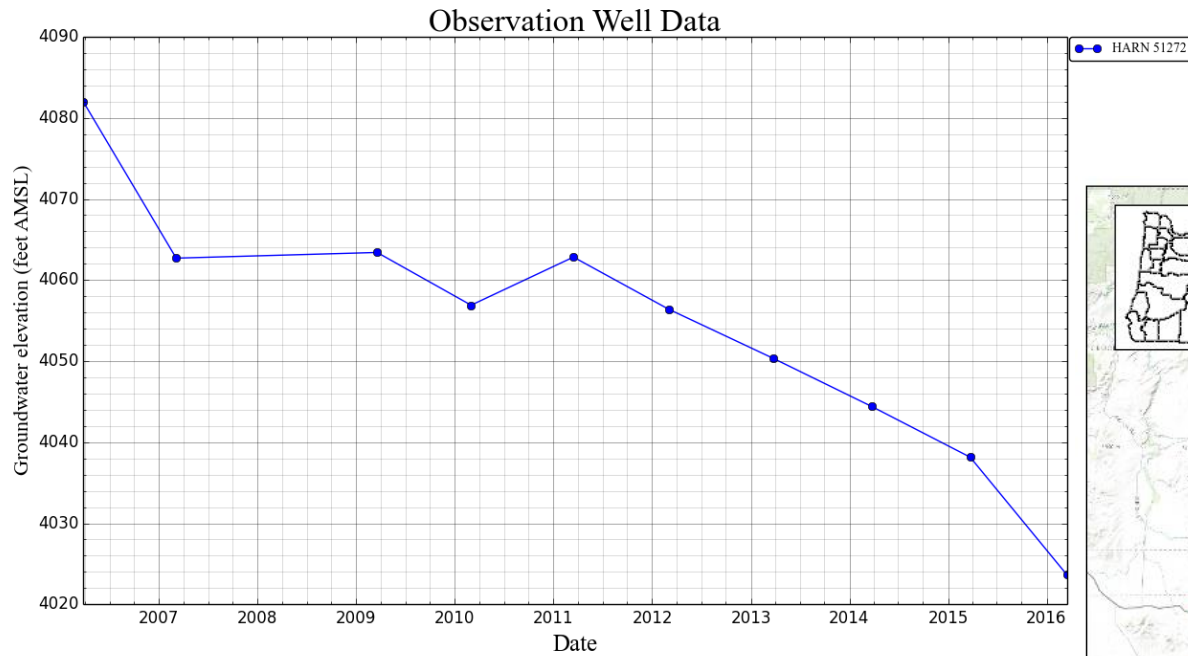
Hydrographs – permit condition data



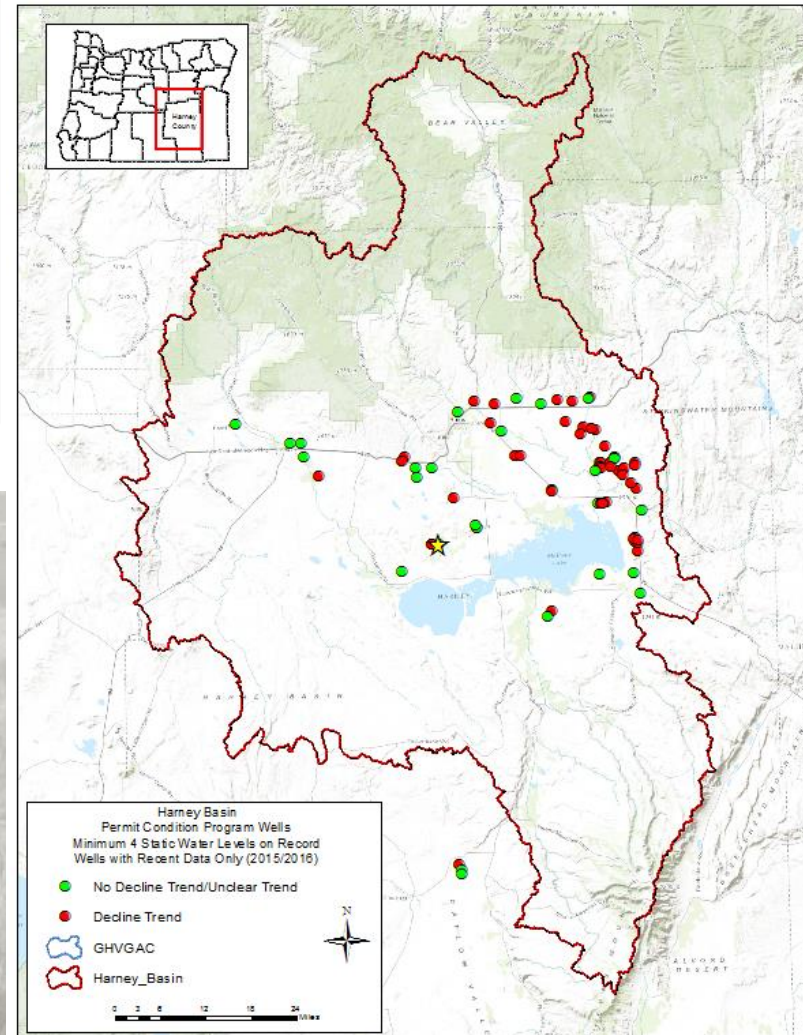
The yellow star on the map indicates the location of the well corresponding to the hydrograph



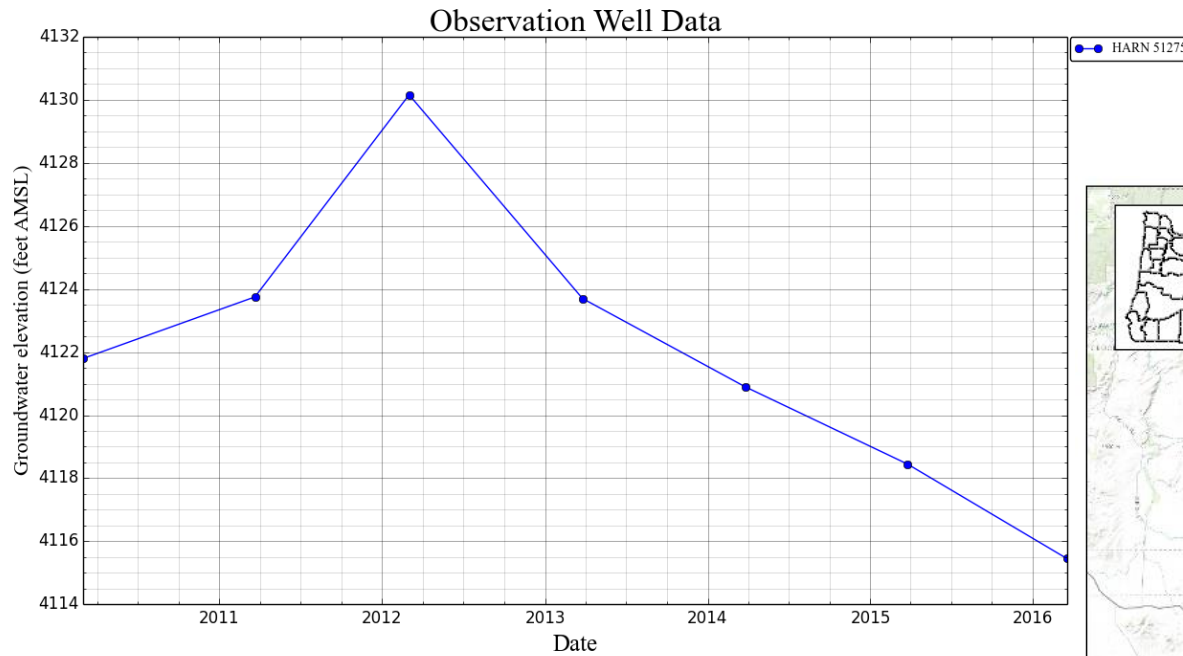
Hydrographs – permit condition data



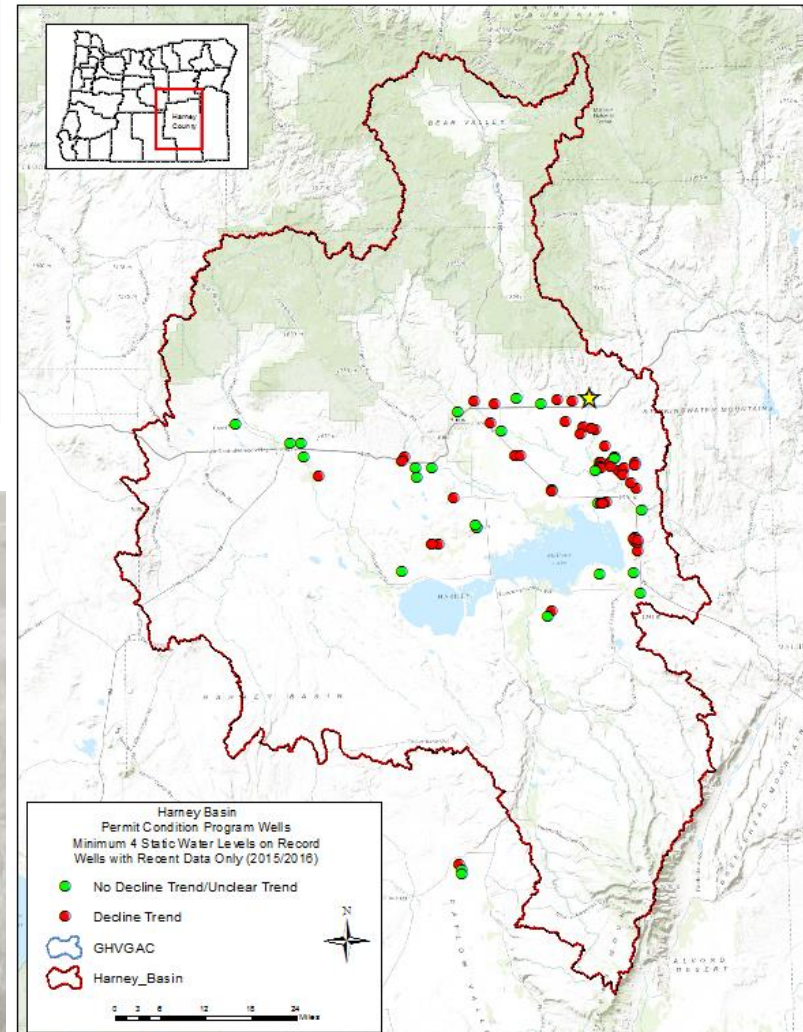
The yellow star on the map indicates the location of the well corresponding to the hydrograph



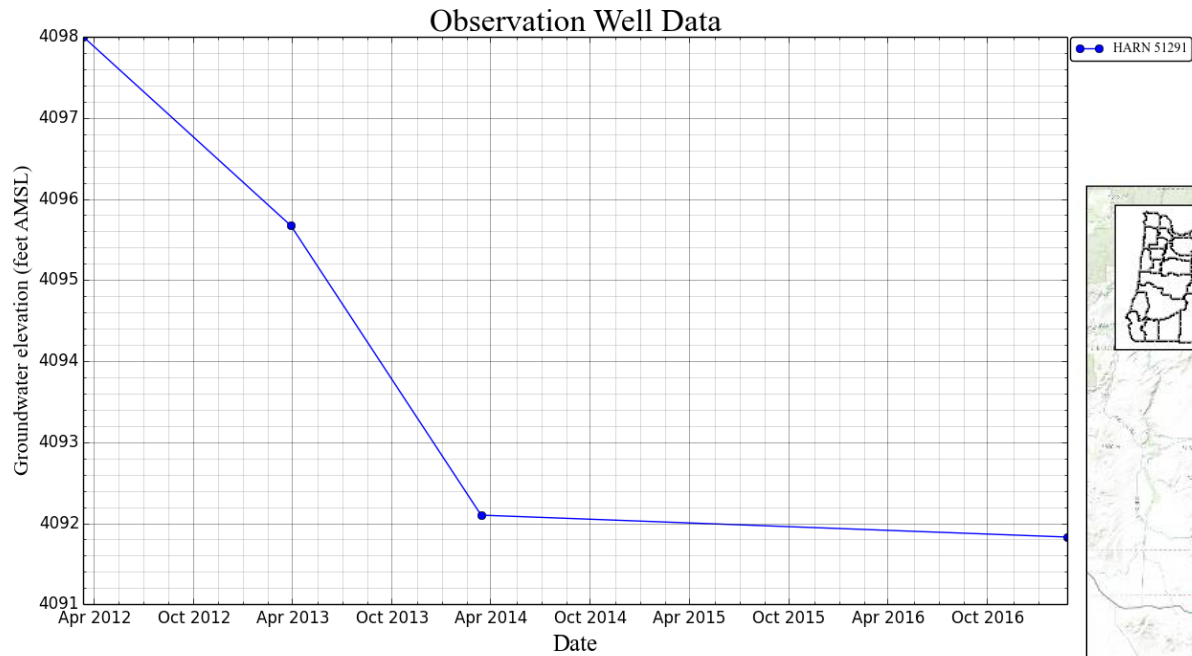
Hydrographs – permit condition data



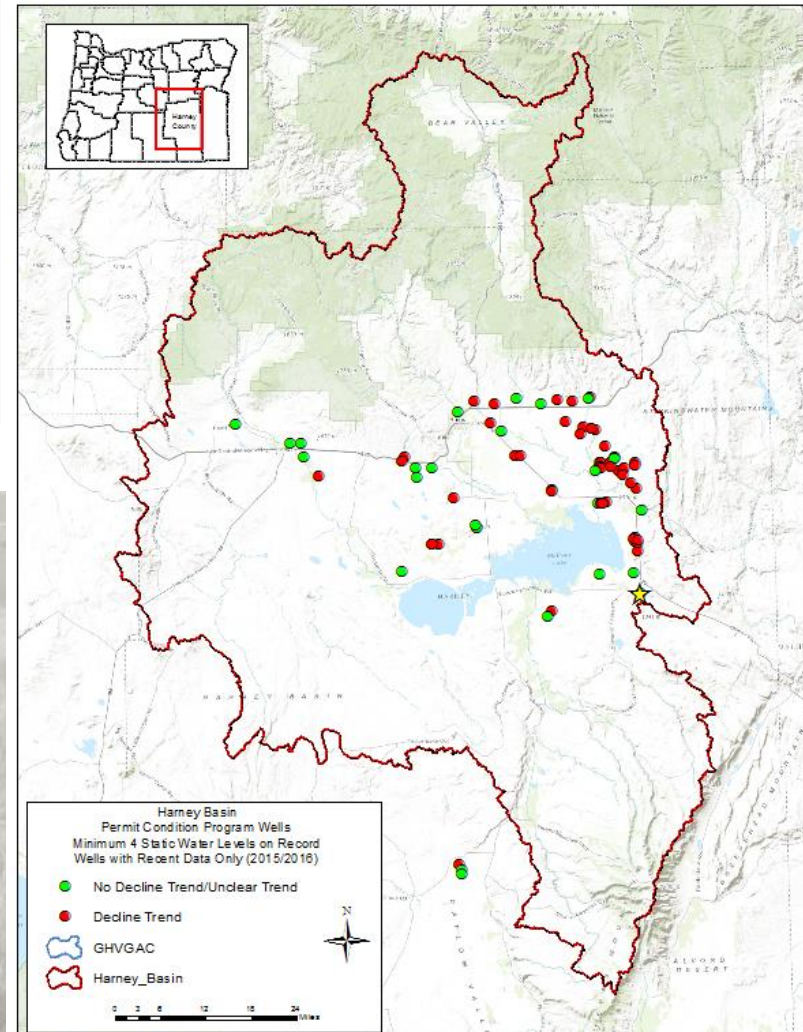
The yellow star on the map indicates the location of the well corresponding to the hydrograph



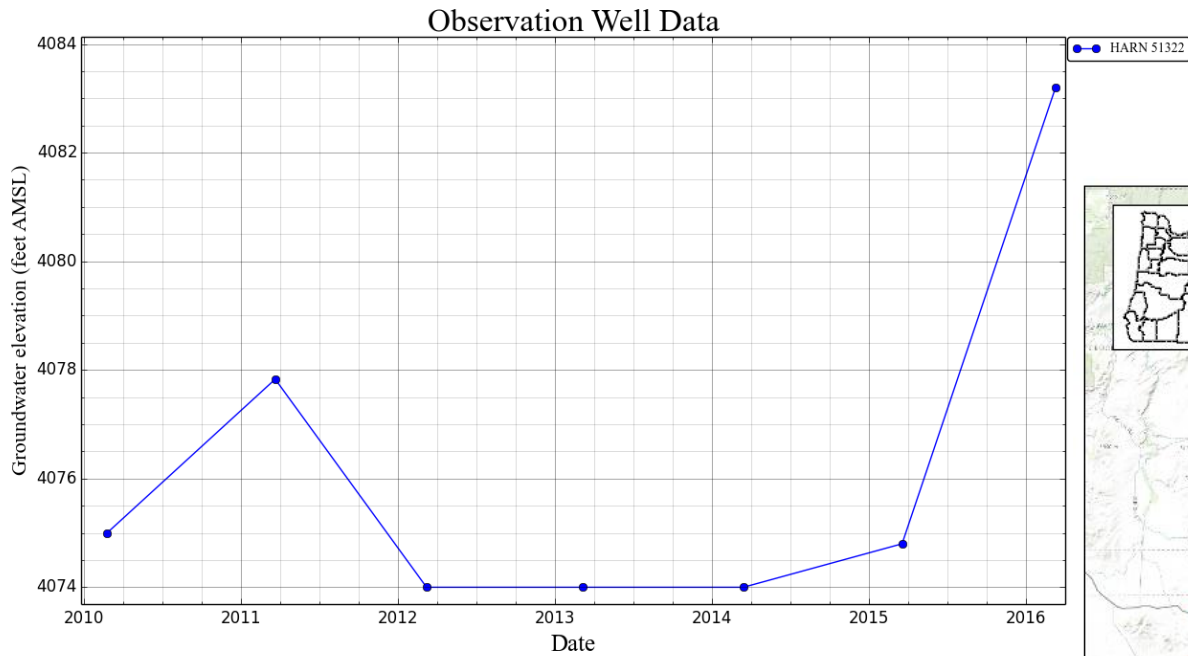
Hydrographs – permit condition data



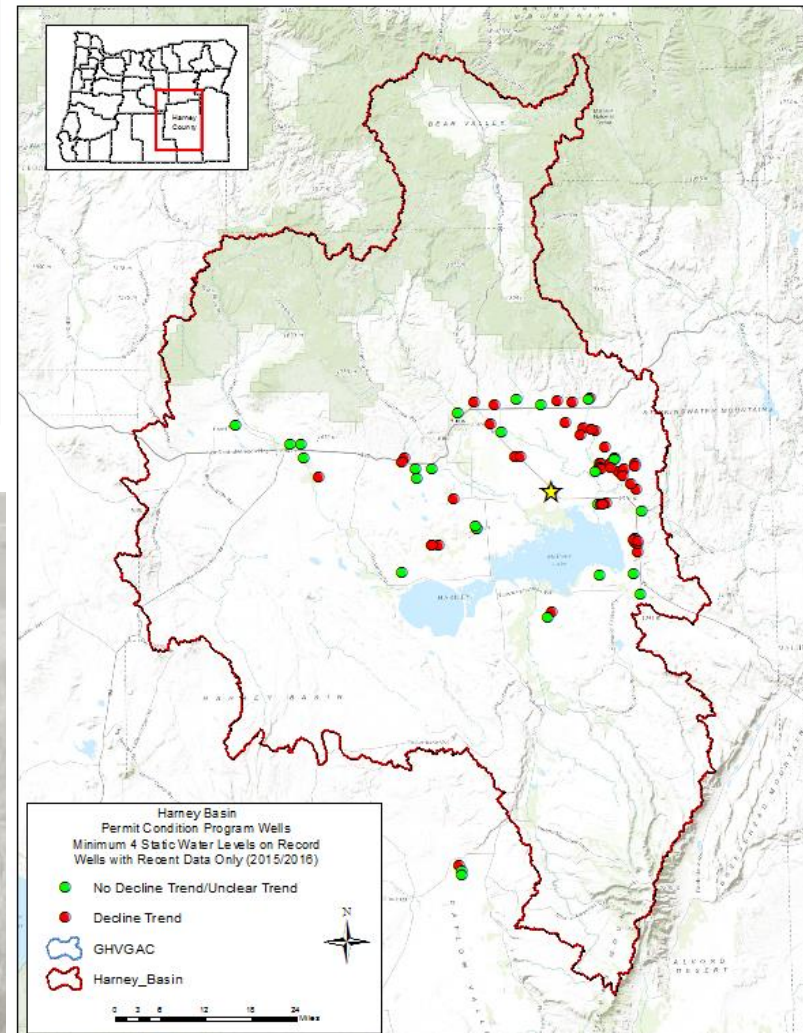
The yellow star on the map indicates the location of the well corresponding to the hydrograph



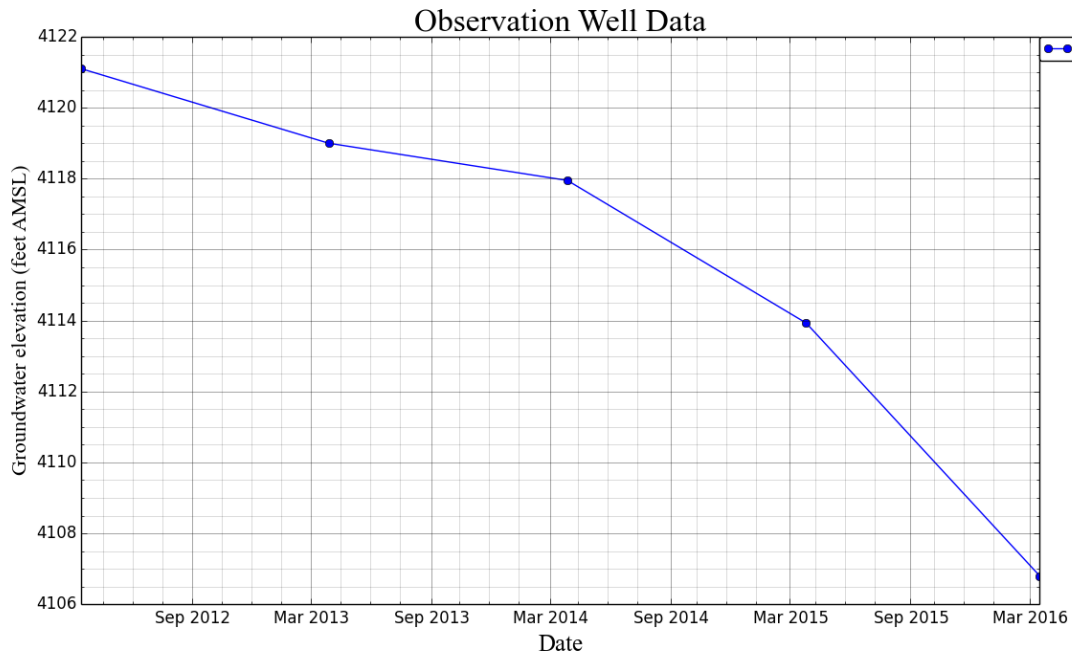
Hydrographs – permit condition data



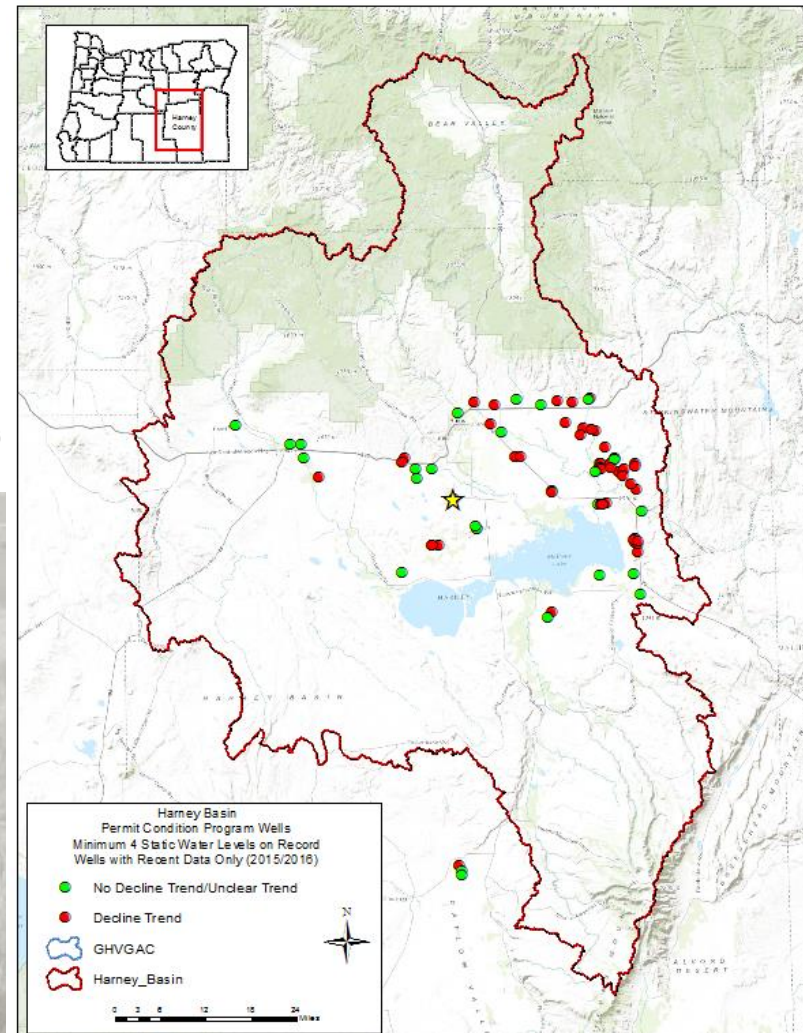
The yellow star on the map indicates the location of the well corresponding to the hydrograph



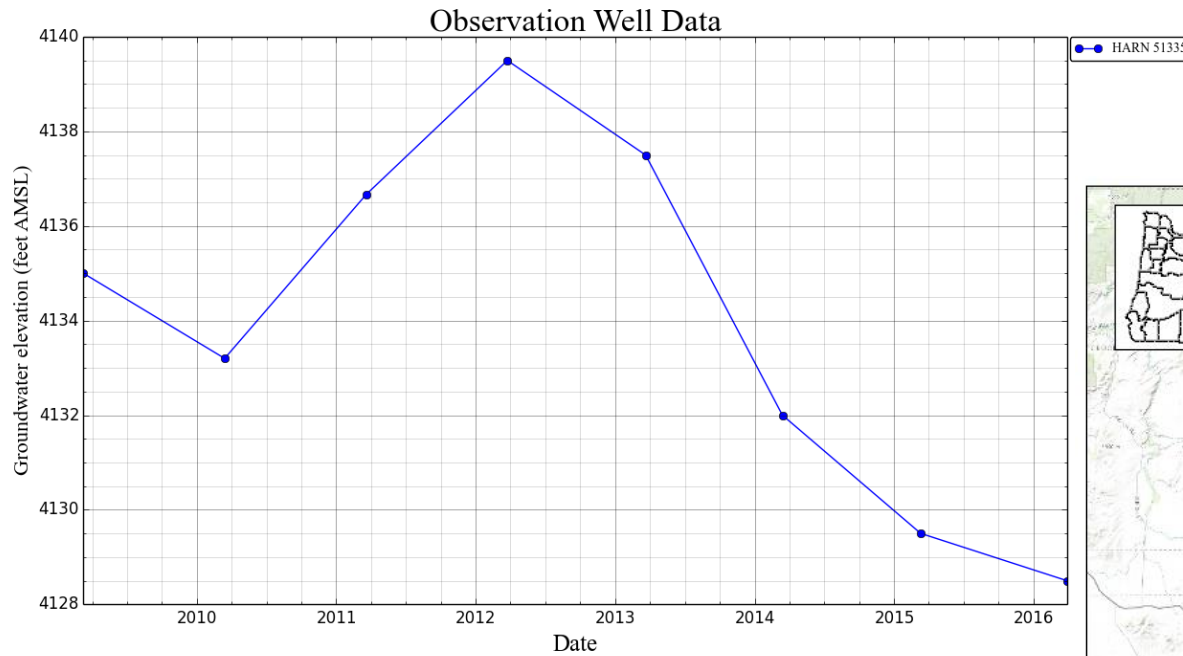
Hydrographs – permit condition data



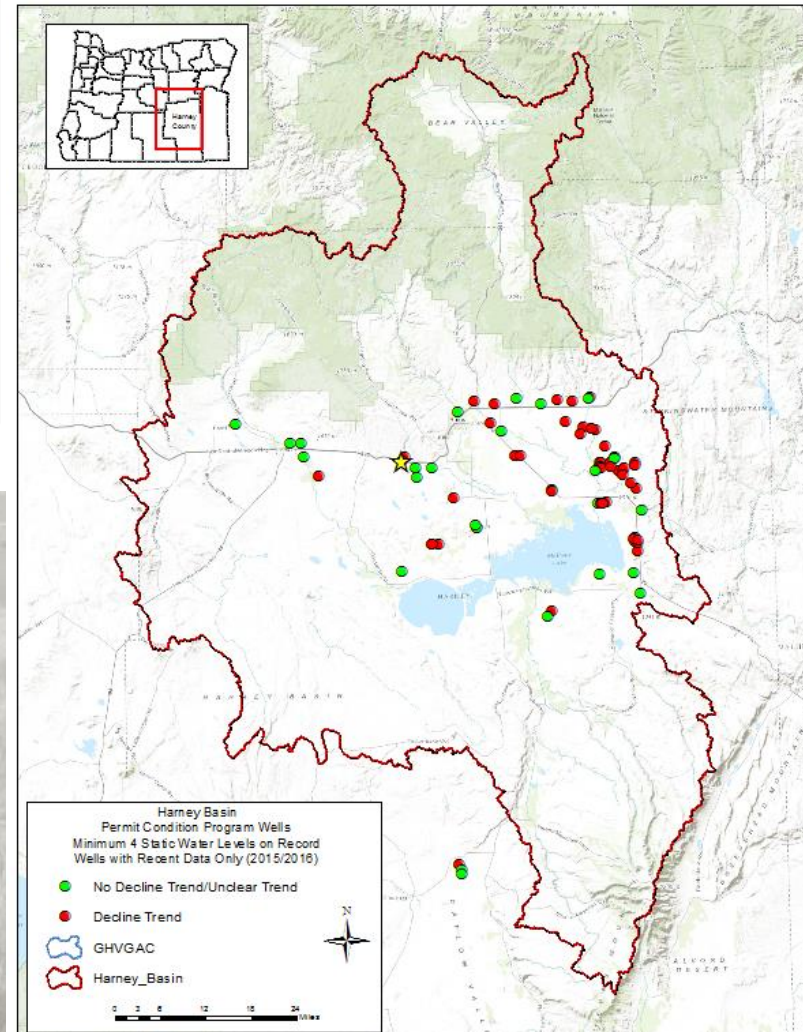
The yellow star on the map indicates the location of the well corresponding to the hydrograph



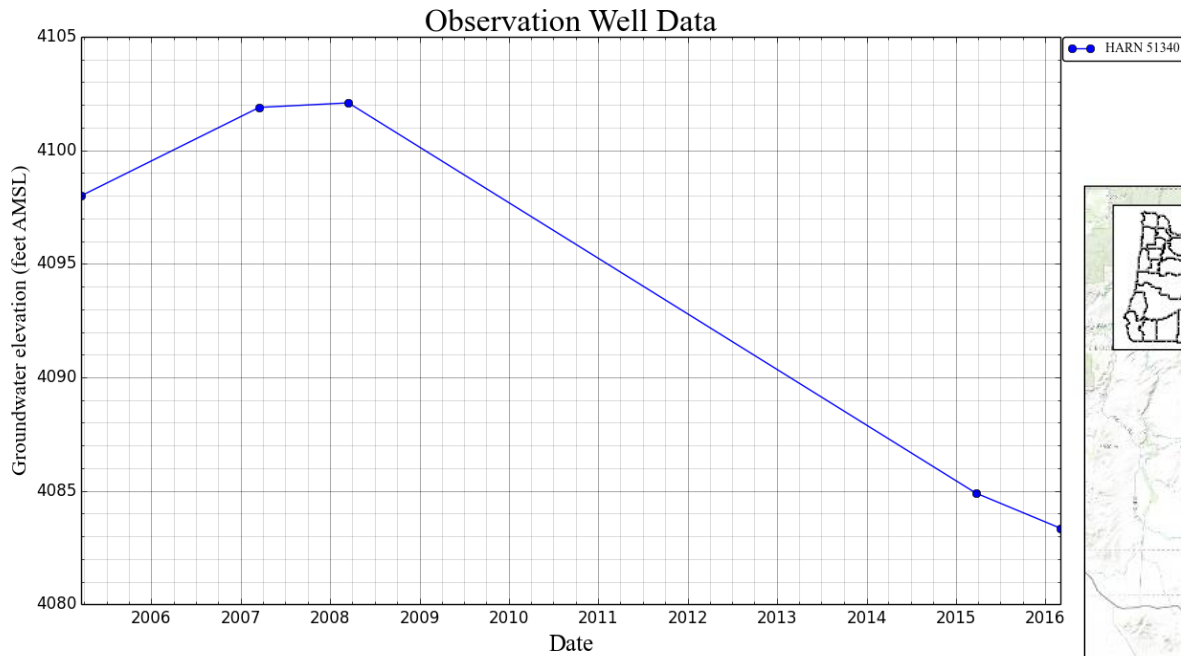
Hydrographs – permit condition data



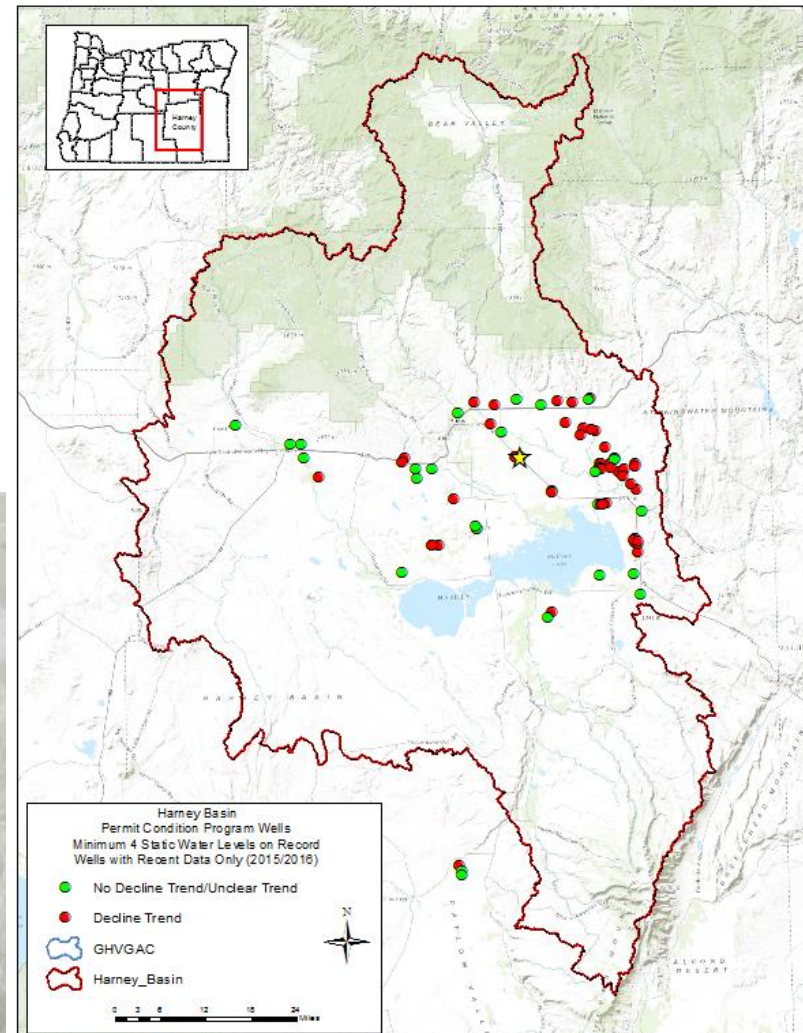
The yellow star on the map indicates the location of the well corresponding to the hydrograph



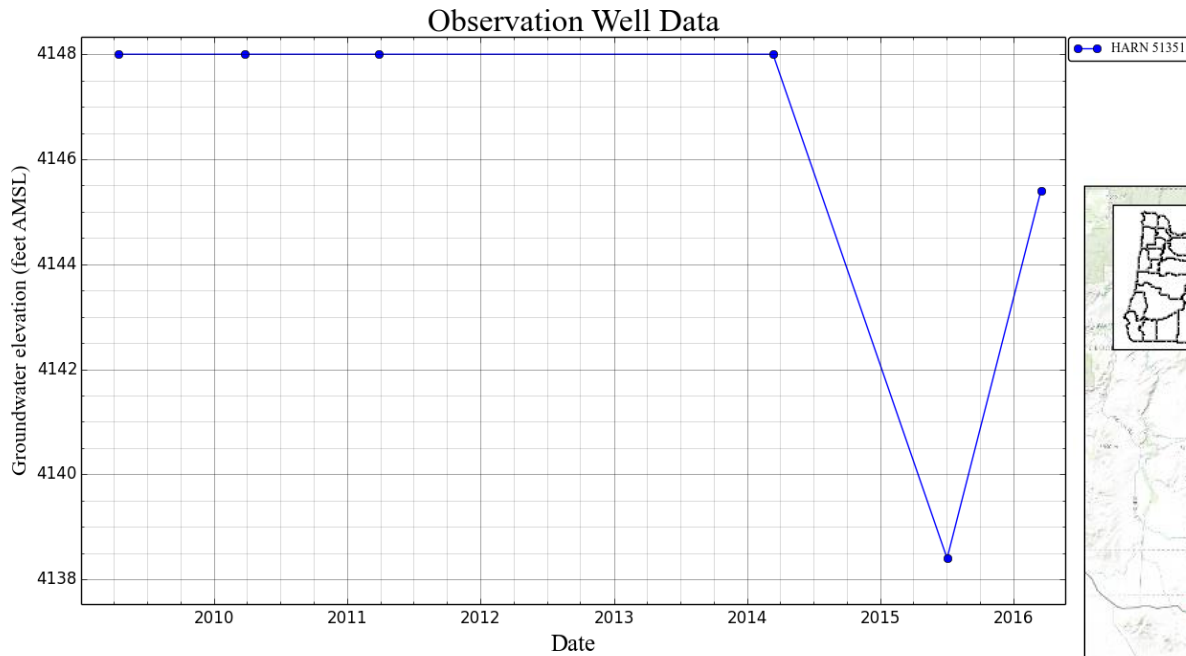
Hydrographs – permit condition data



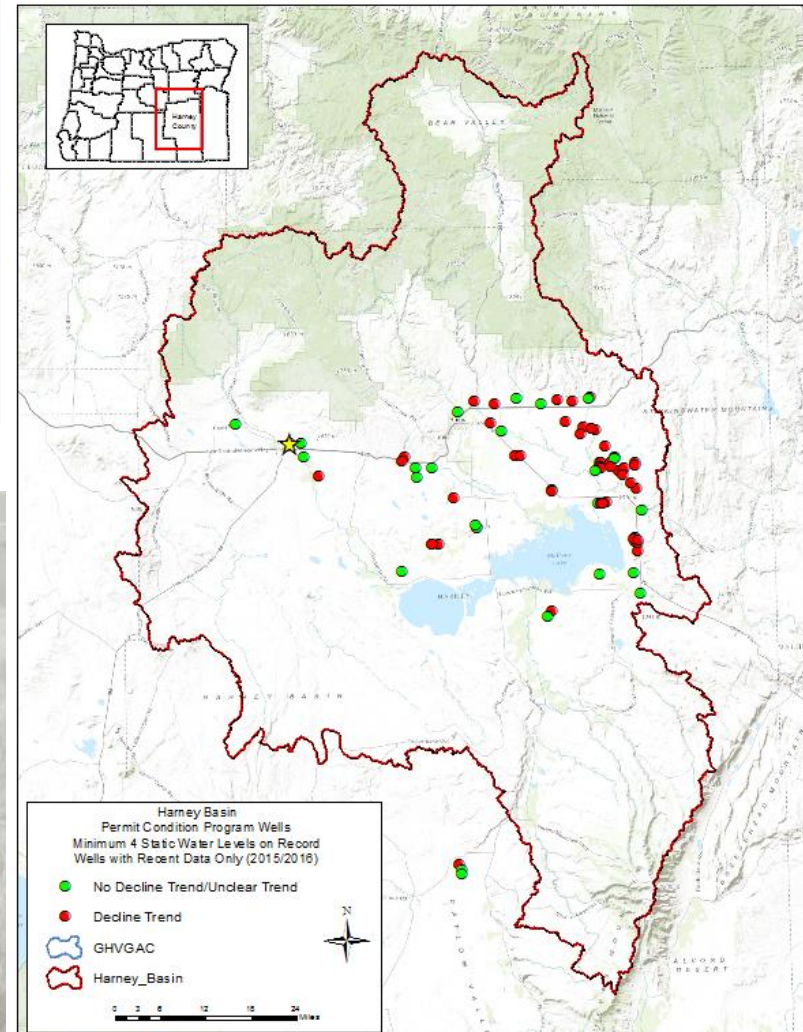
The yellow star on the map indicates the location of the well corresponding to the hydrograph



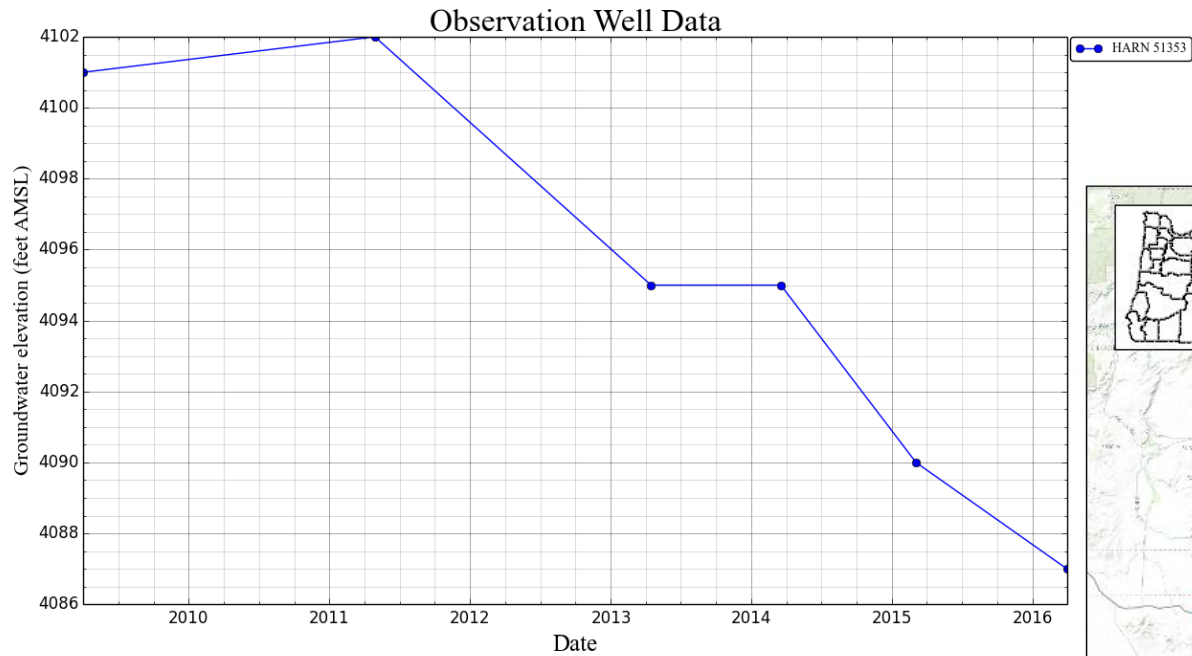
Hydrographs – permit condition data



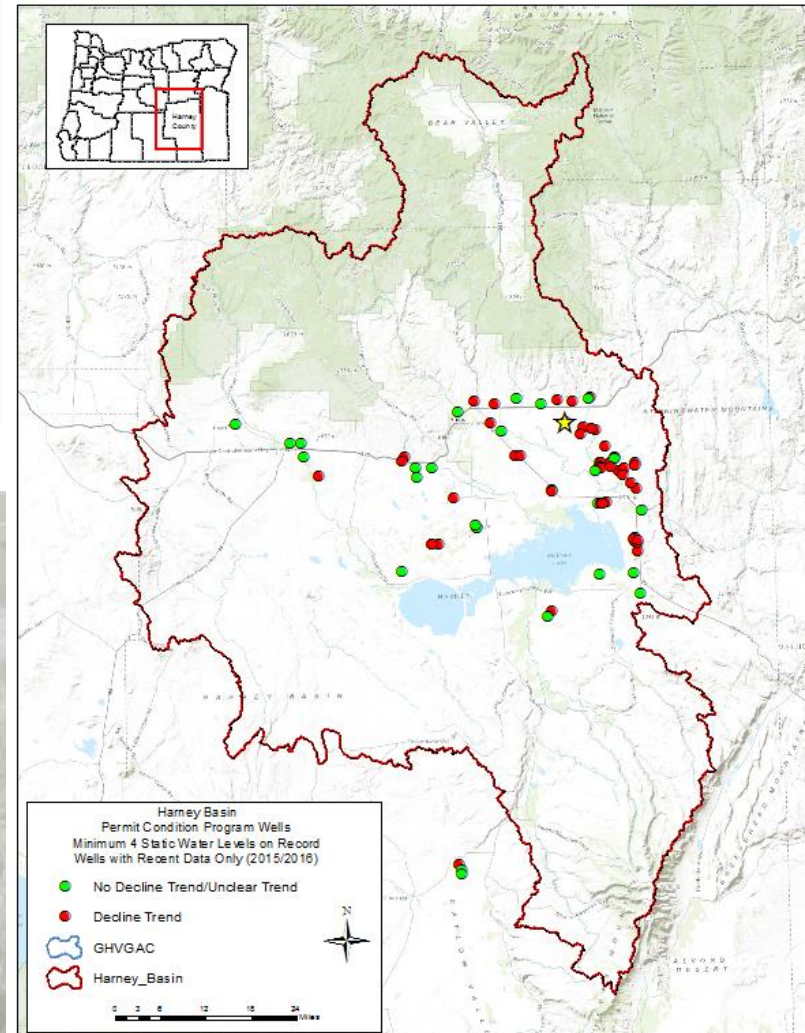
The yellow star on the map indicates the location of the well corresponding to the hydrograph



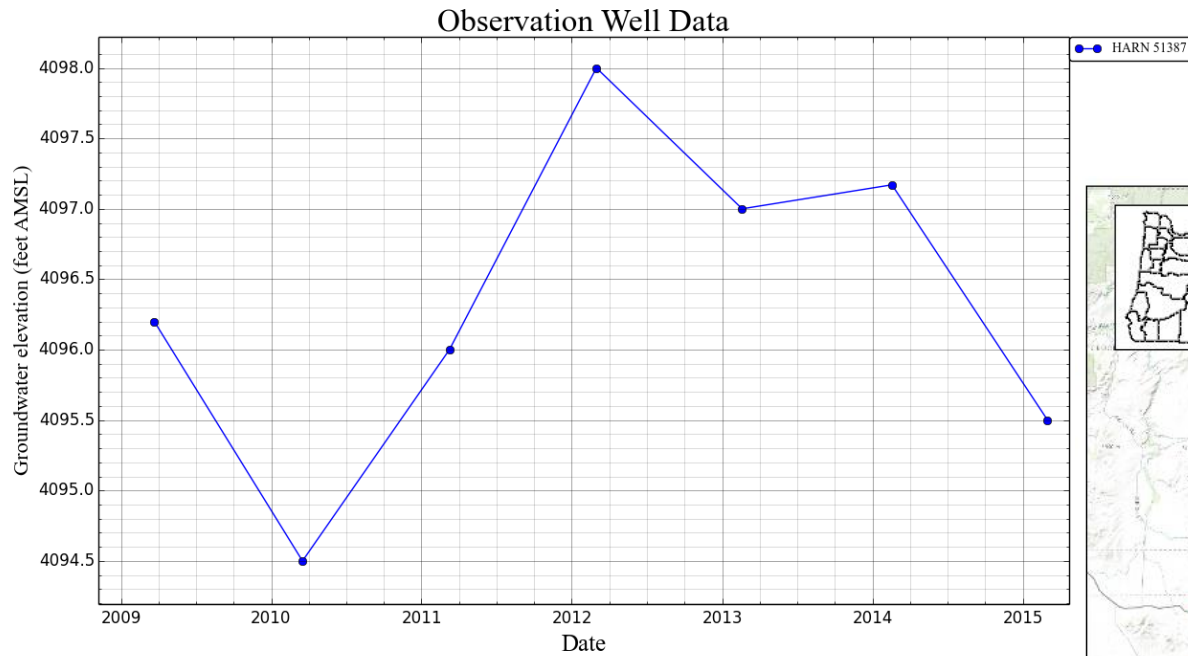
Hydrographs – permit condition data



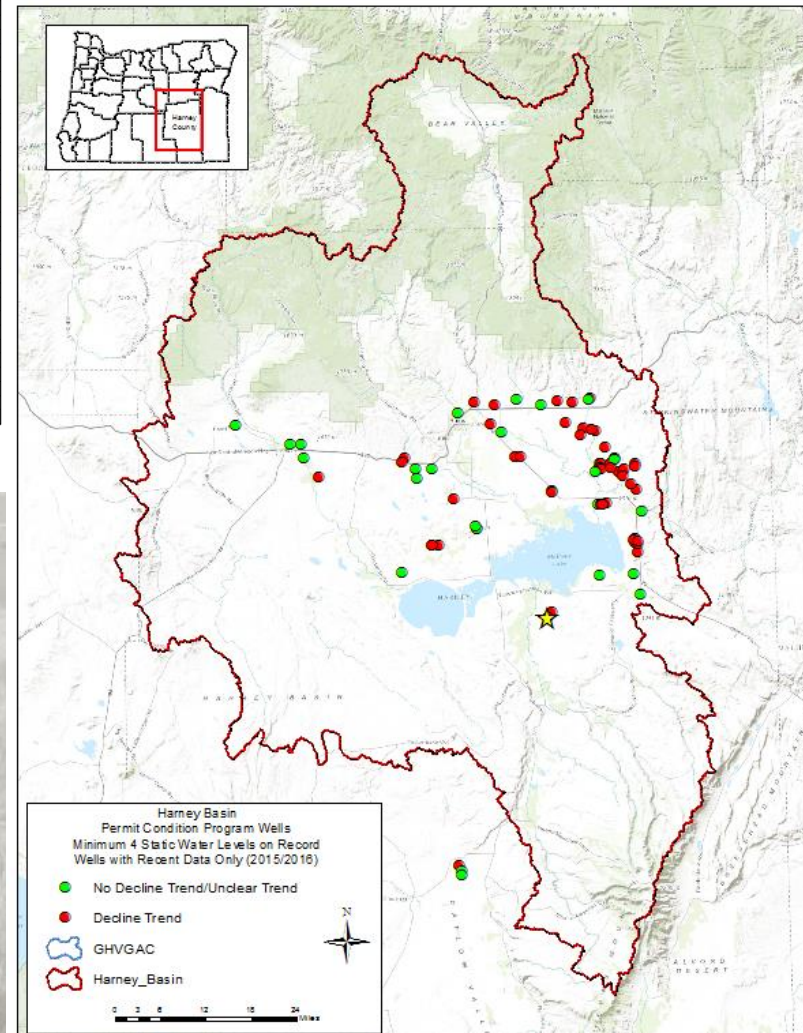
The yellow star on the map indicates the location of the well corresponding to the hydrograph



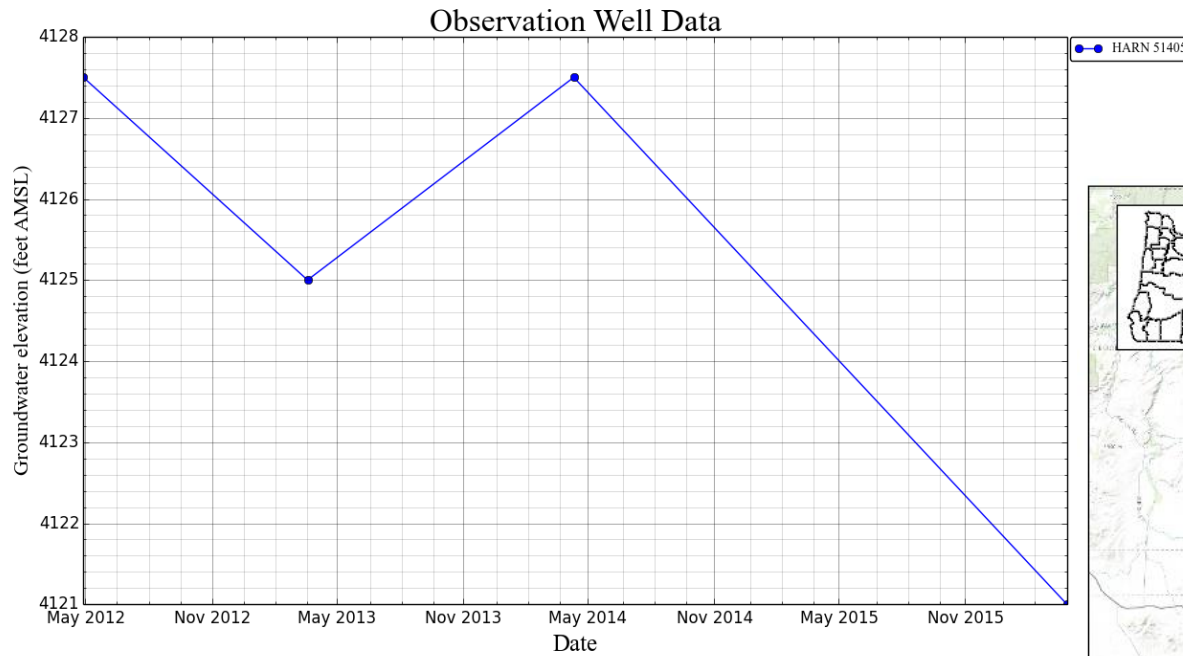
Hydrographs – permit condition data



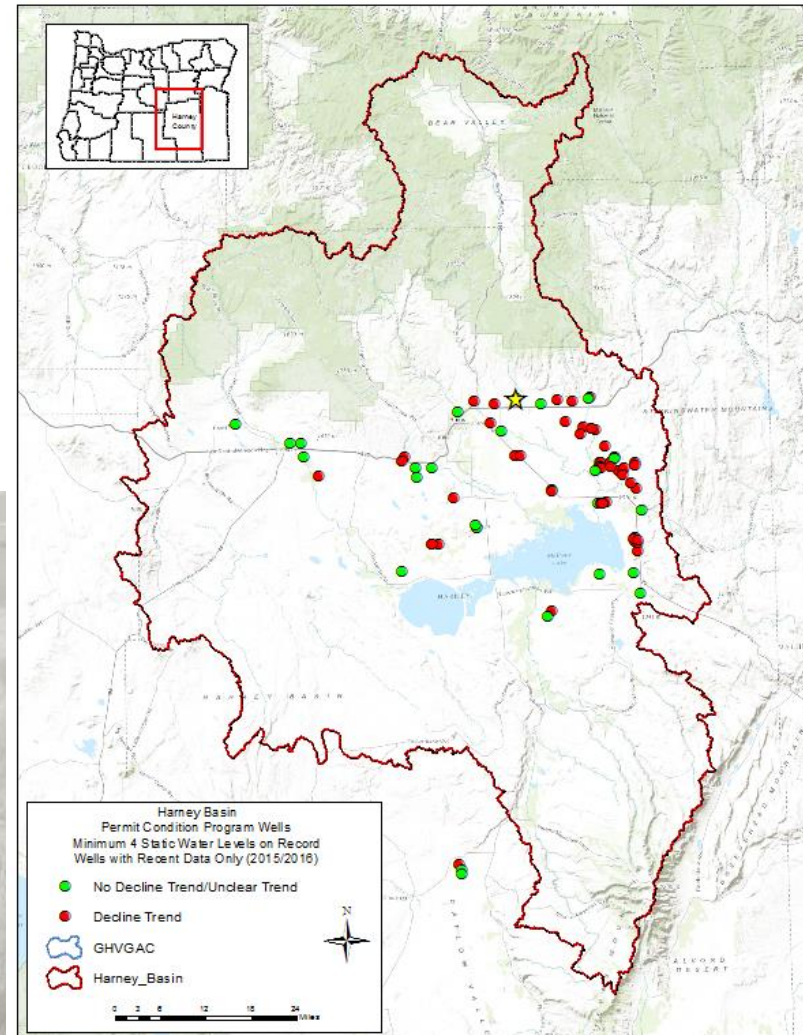
The yellow star on the map indicates the location of the well corresponding to the hydrograph



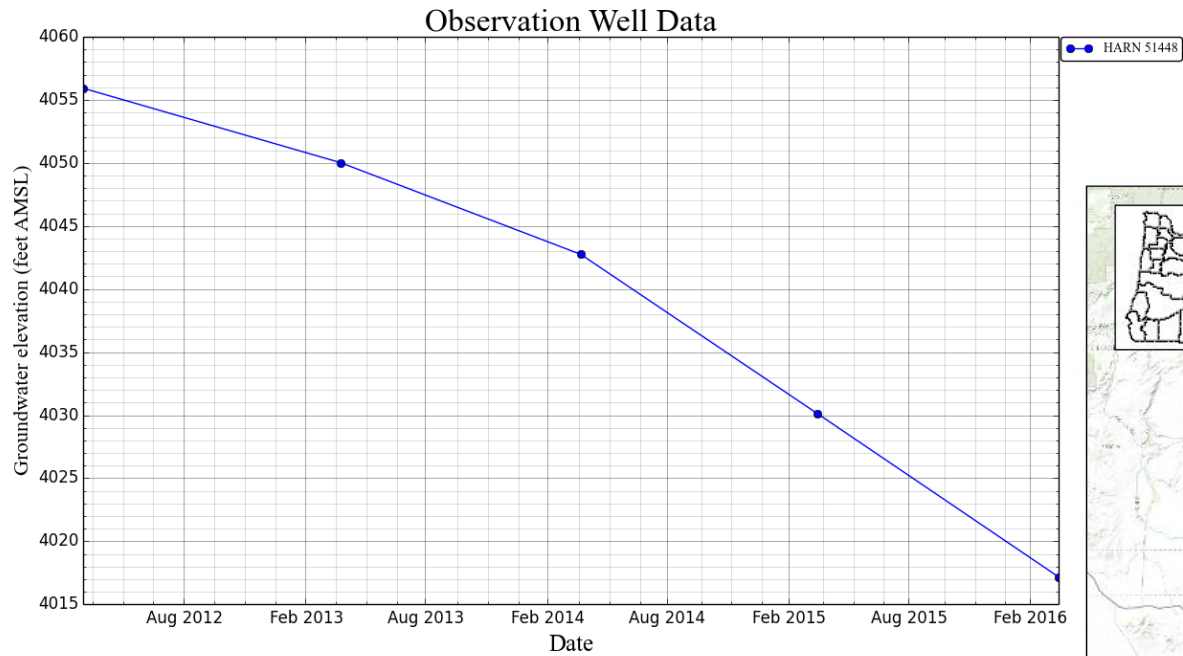
Hydrographs – permit condition data



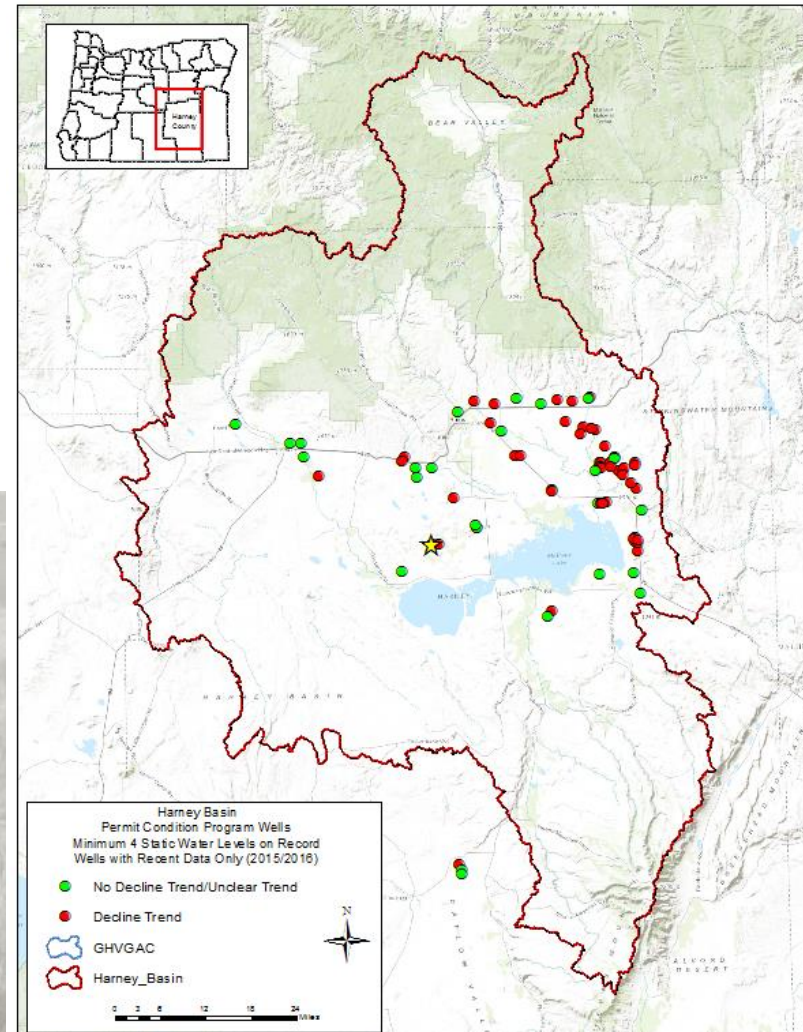
The yellow star on the map indicates the location of the well corresponding to the hydrograph



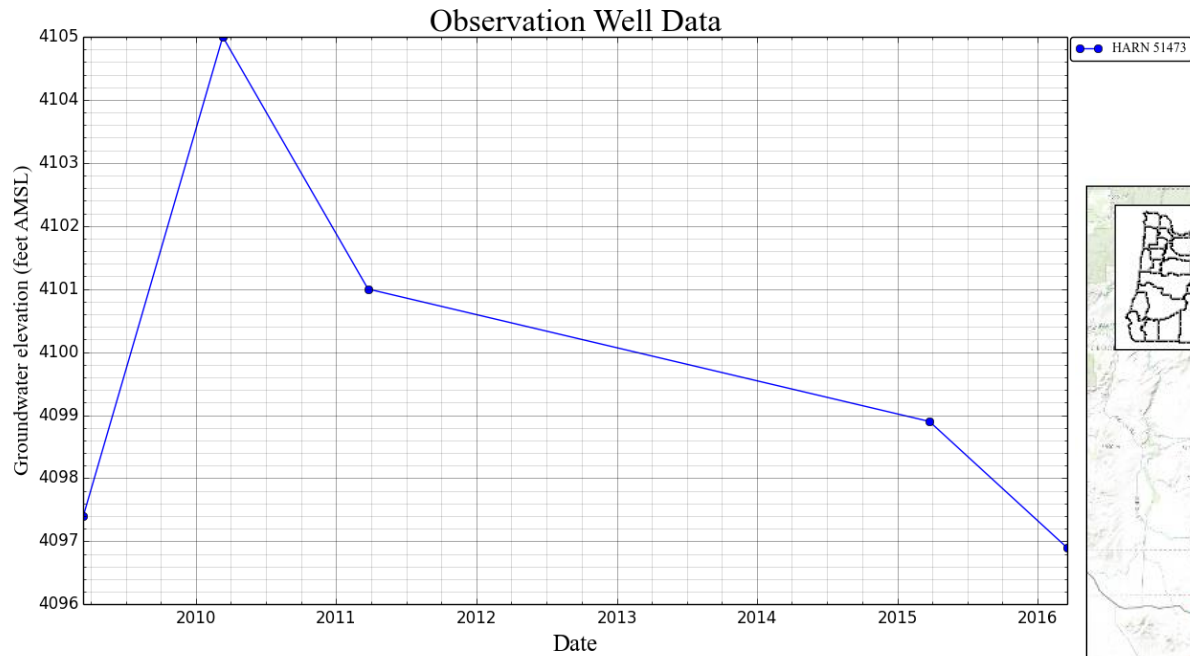
Hydrographs – permit condition data



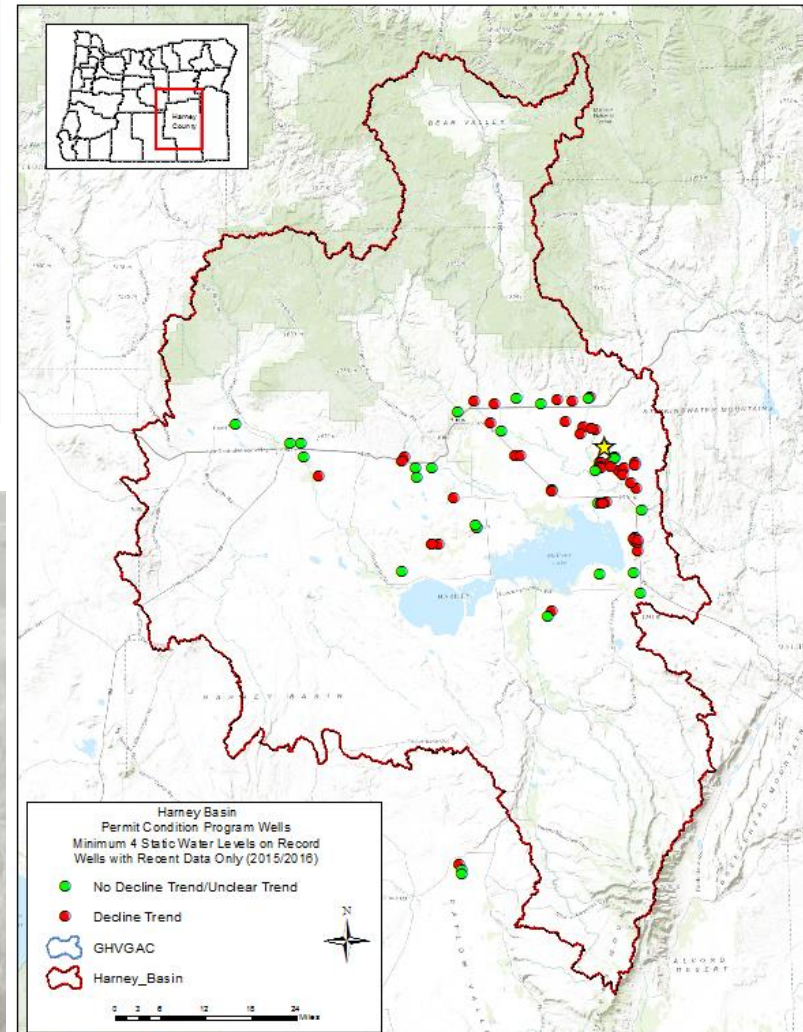
The yellow star on the map indicates the location of the well corresponding to the hydrograph



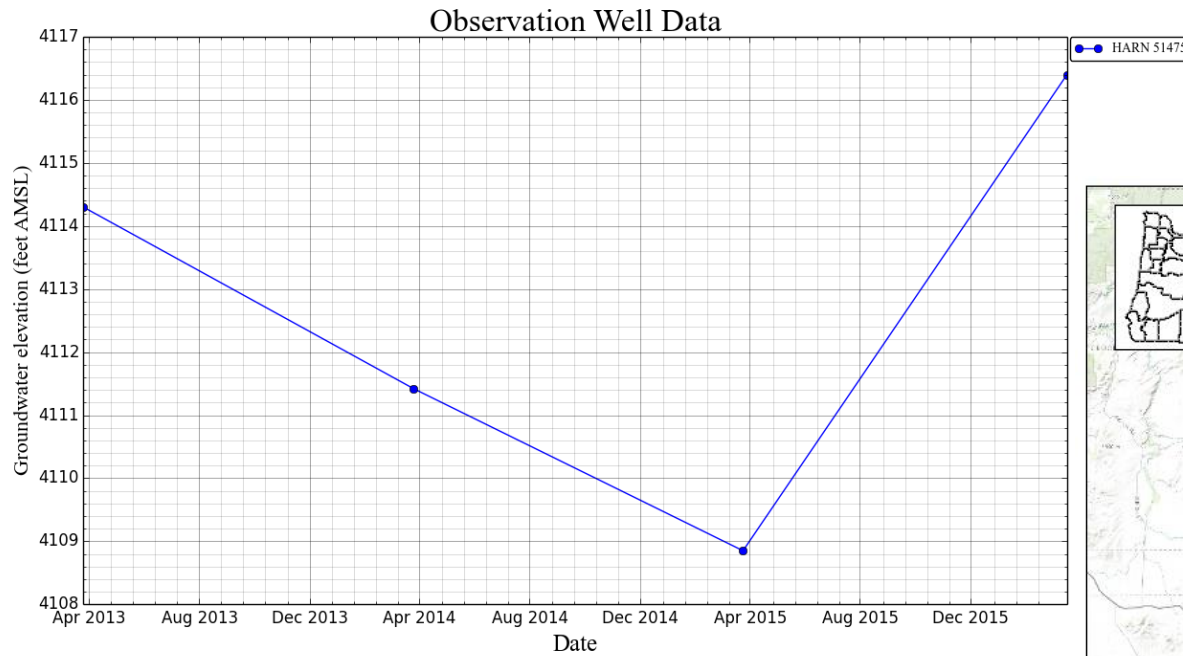
Hydrographs – permit condition data



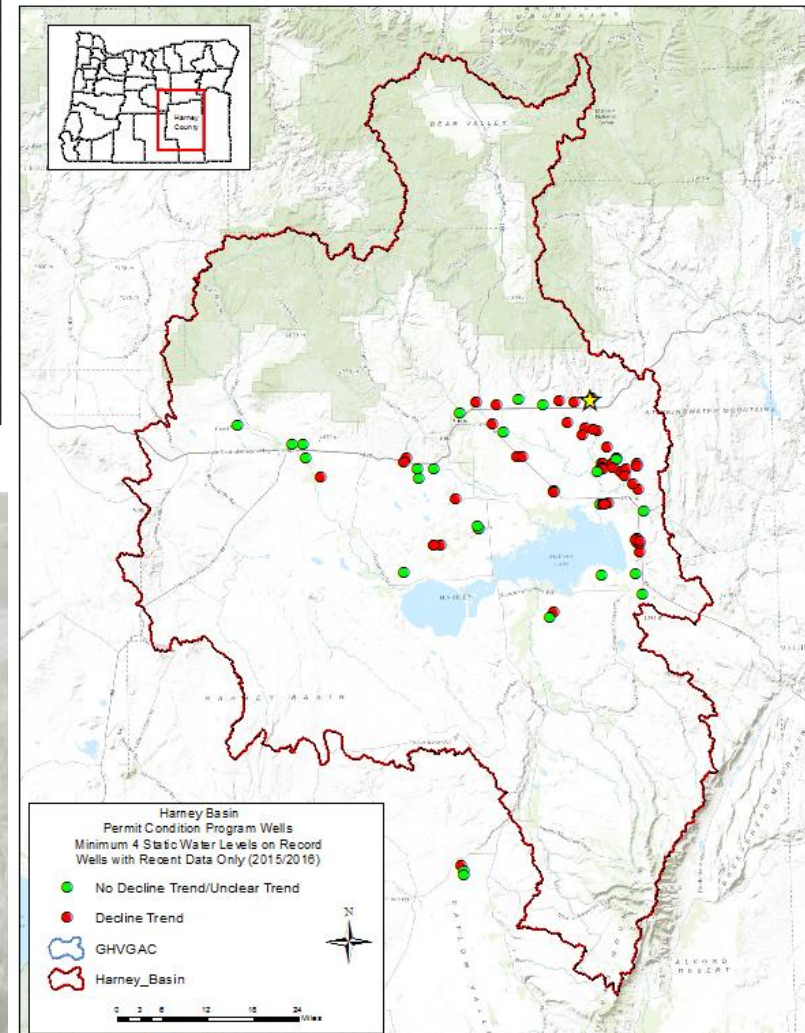
The yellow star on the map indicates the location of the well corresponding to the hydrograph



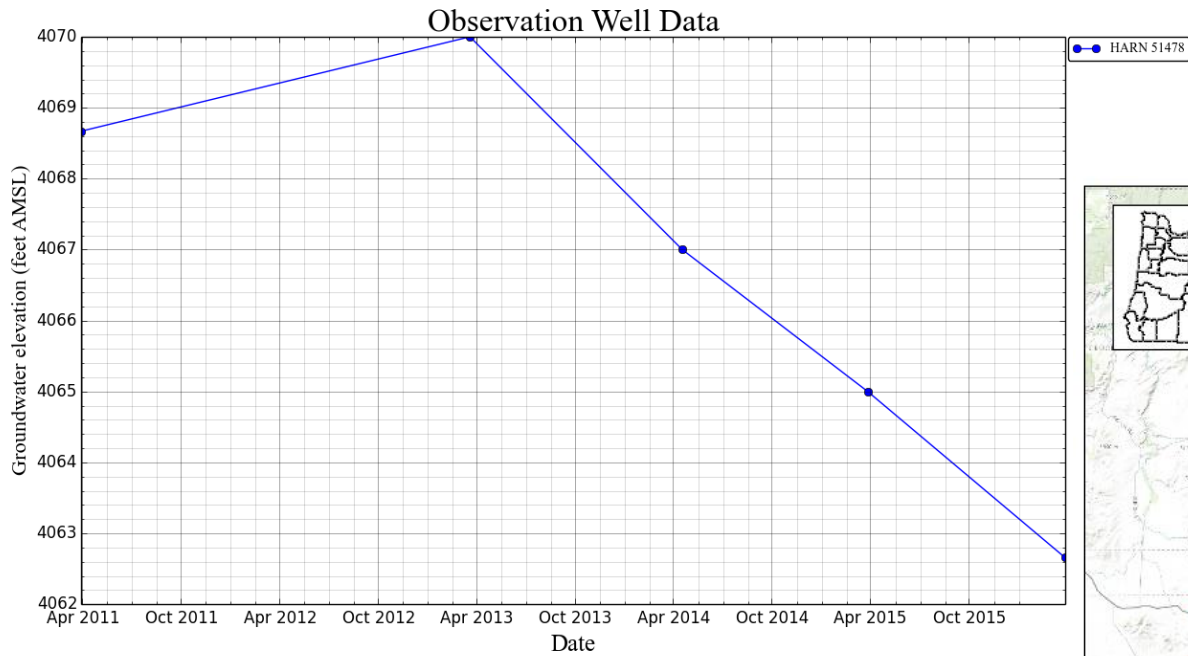
Hydrographs – permit condition data



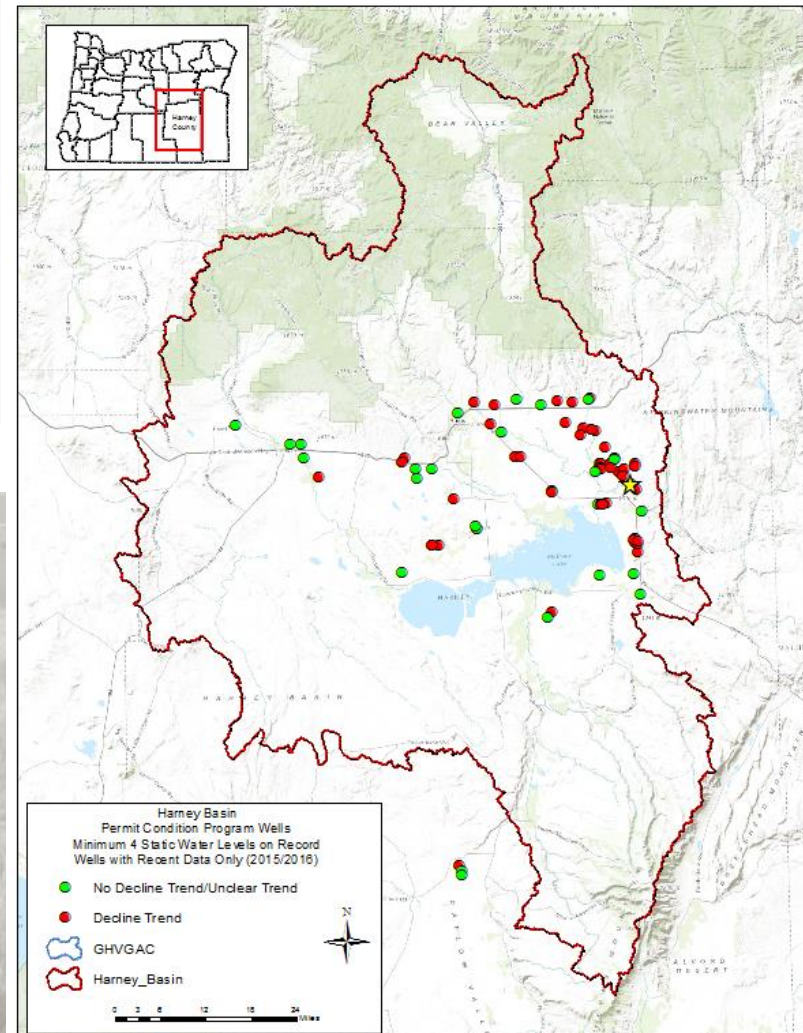
The yellow star on the map indicates the location of the well corresponding to the hydrograph



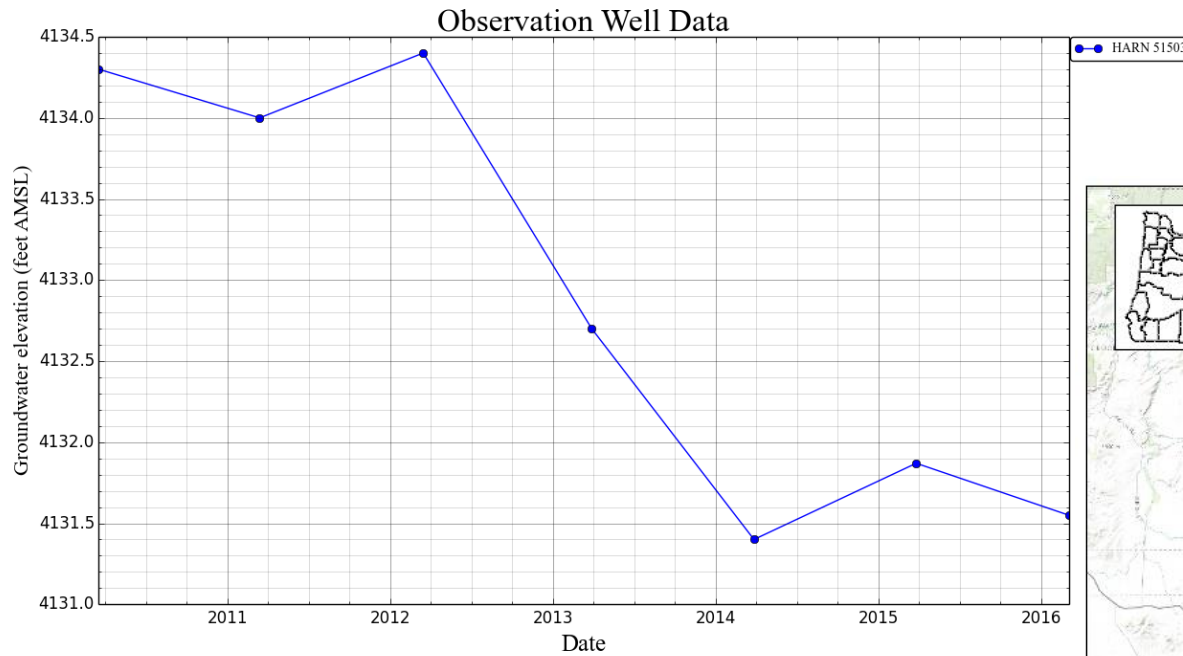
Hydrographs – permit condition data



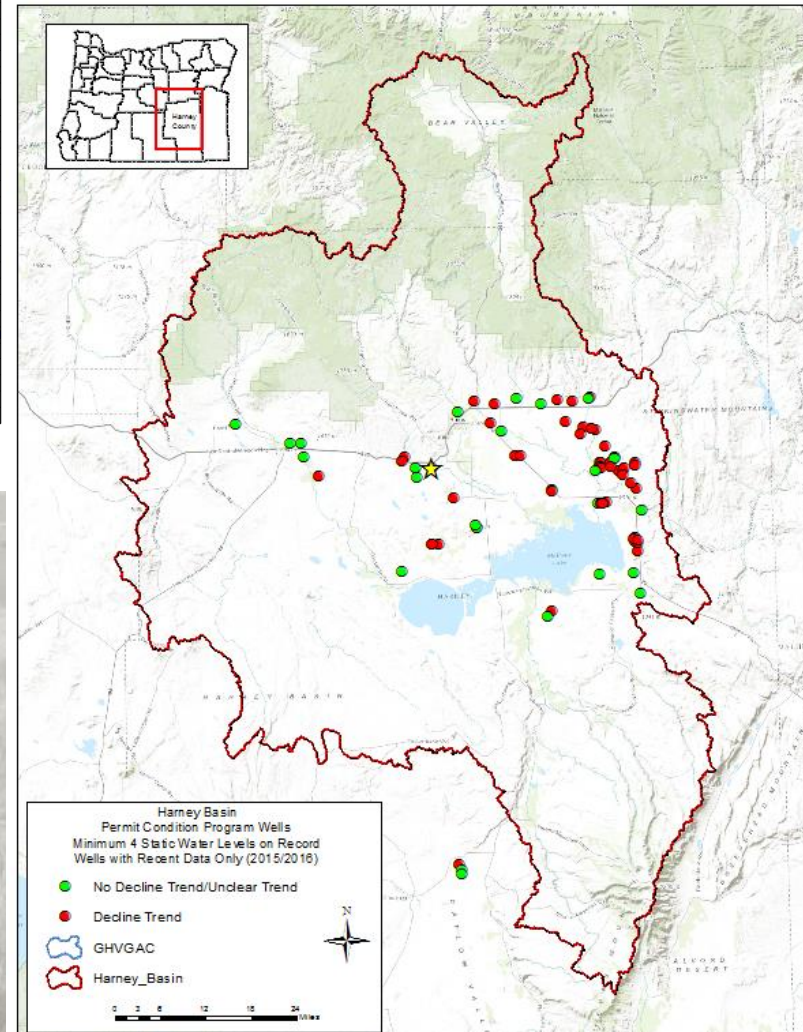
The yellow star on the map indicates the location of the well corresponding to the hydrograph



Hydrographs – permit condition data

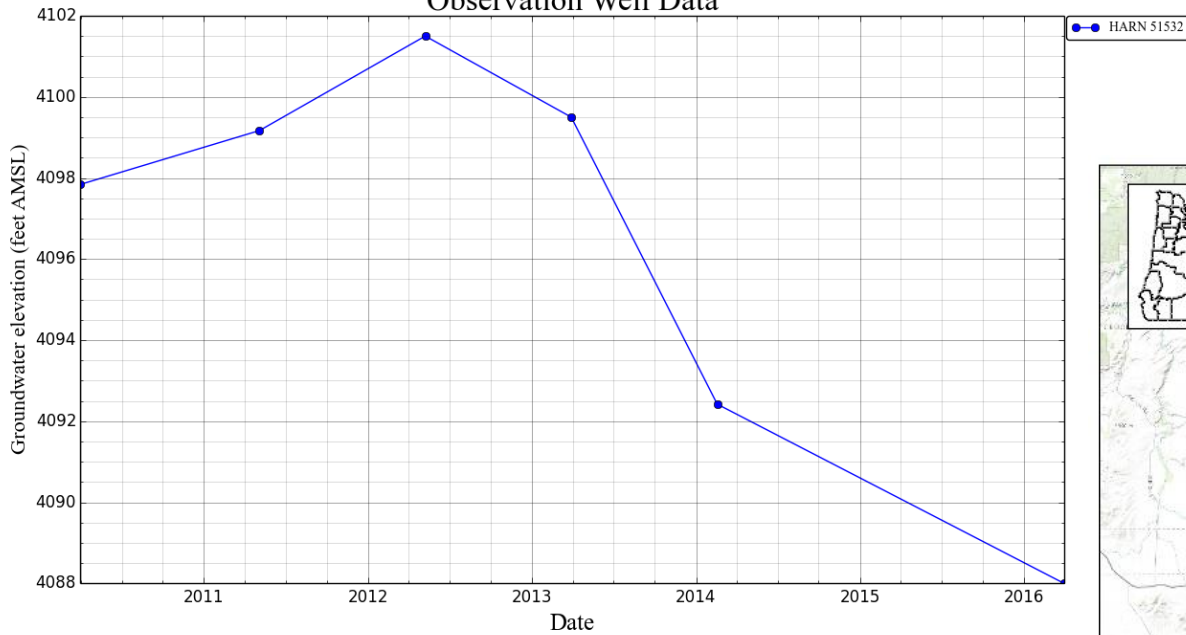


The yellow star on the map indicates the location of the well corresponding to the hydrograph

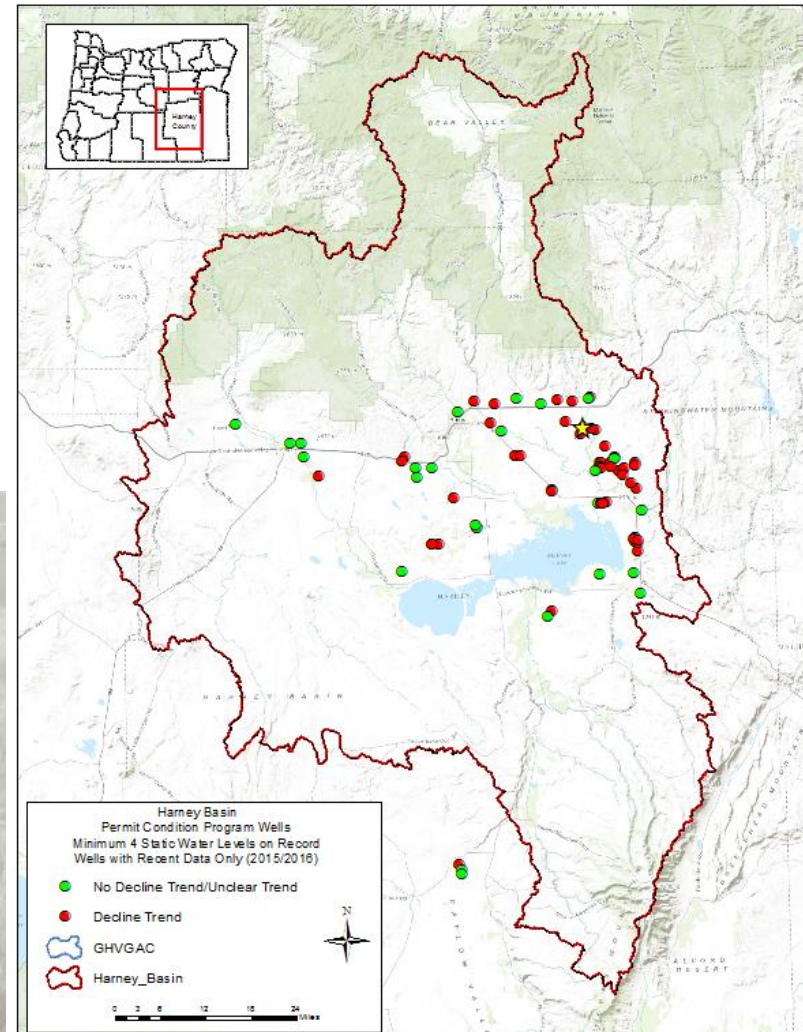


Hydrographs – permit condition data

Observation Well Data



The yellow star on the map indicates the location of the well corresponding to the hydrograph

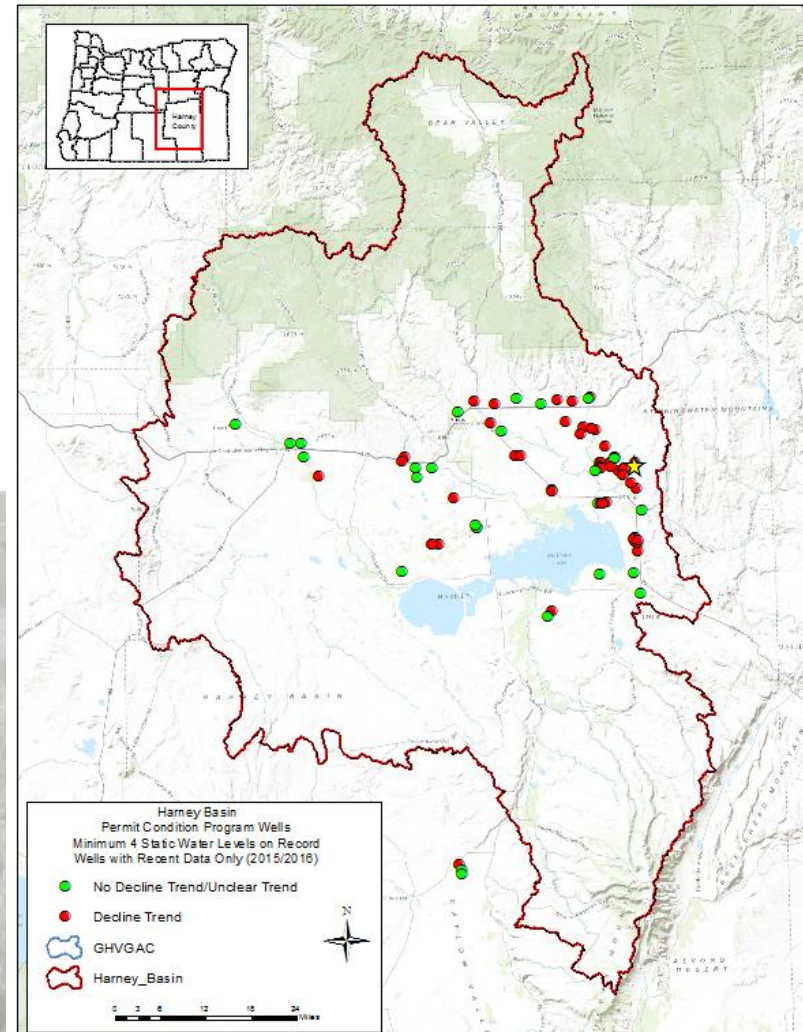


Hydrographs – permit condition data

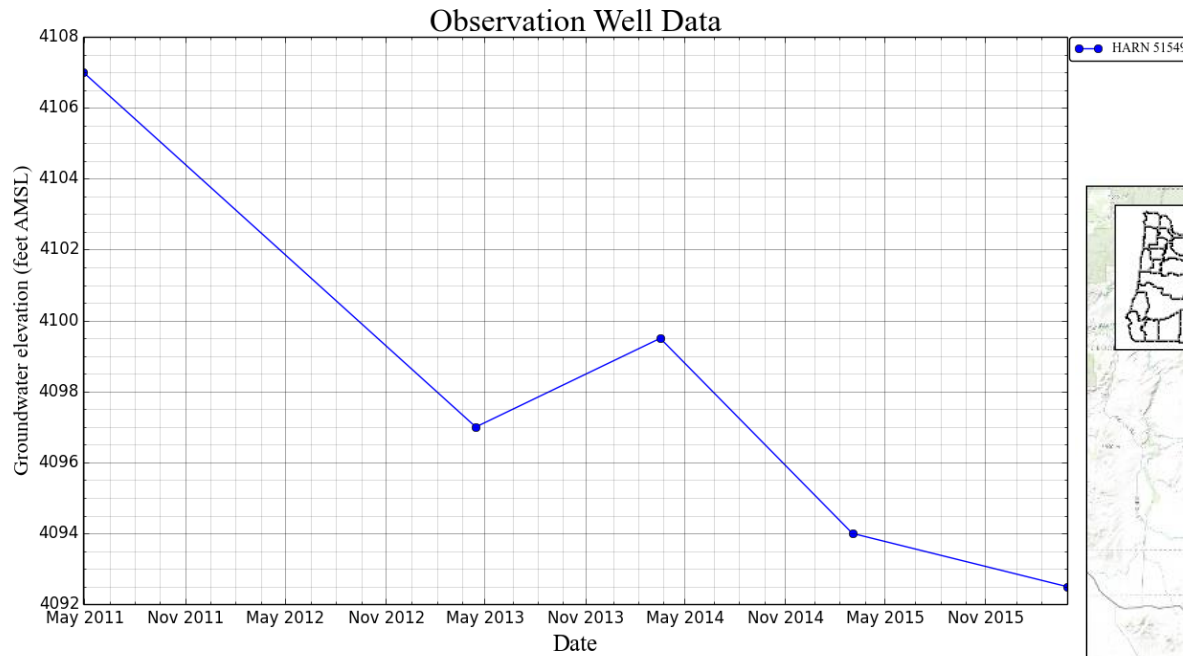
Observation Well Data



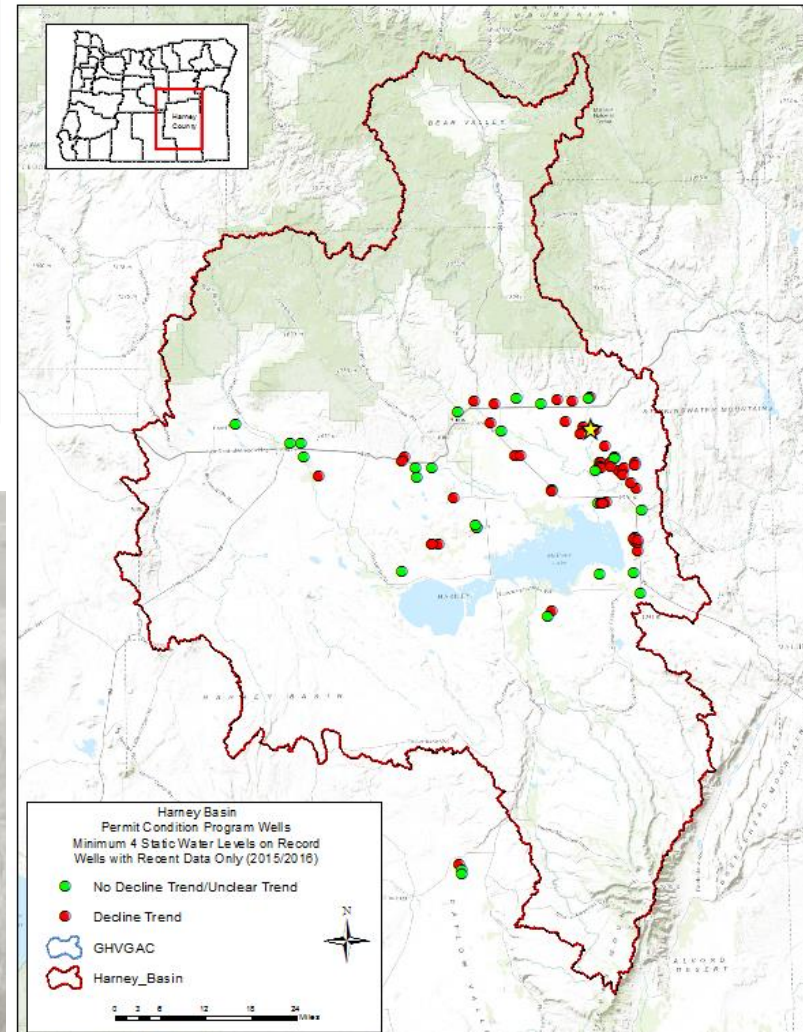
The yellow star on the map indicates the location of the well corresponding to the hydrograph



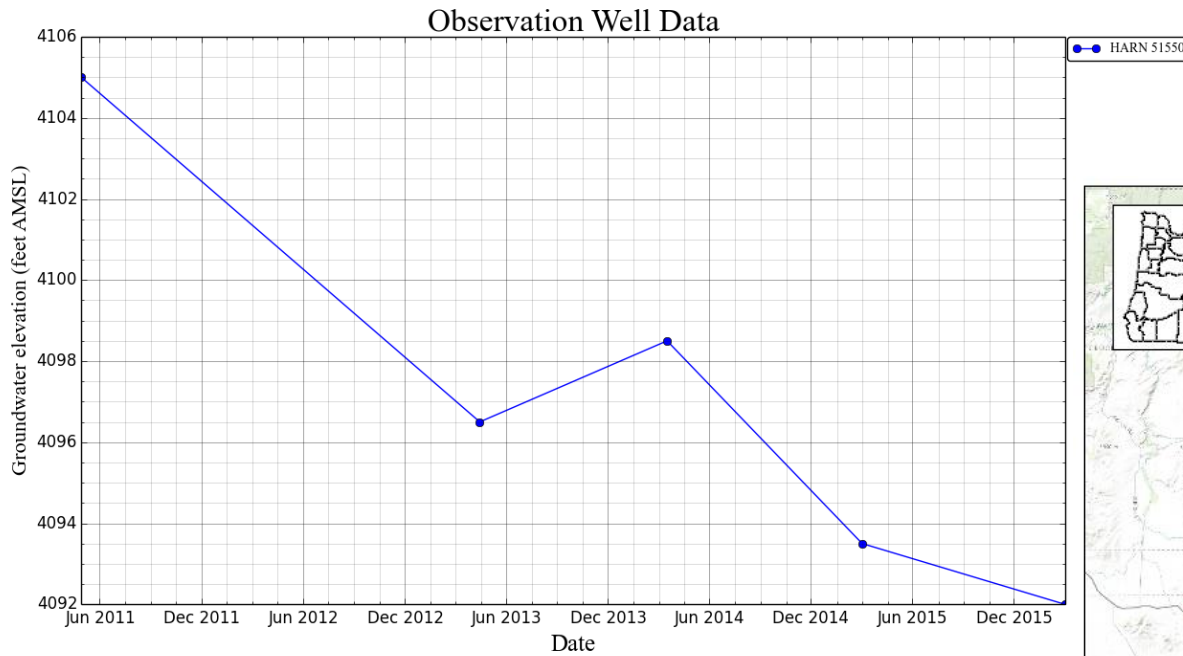
Hydrographs – permit condition data



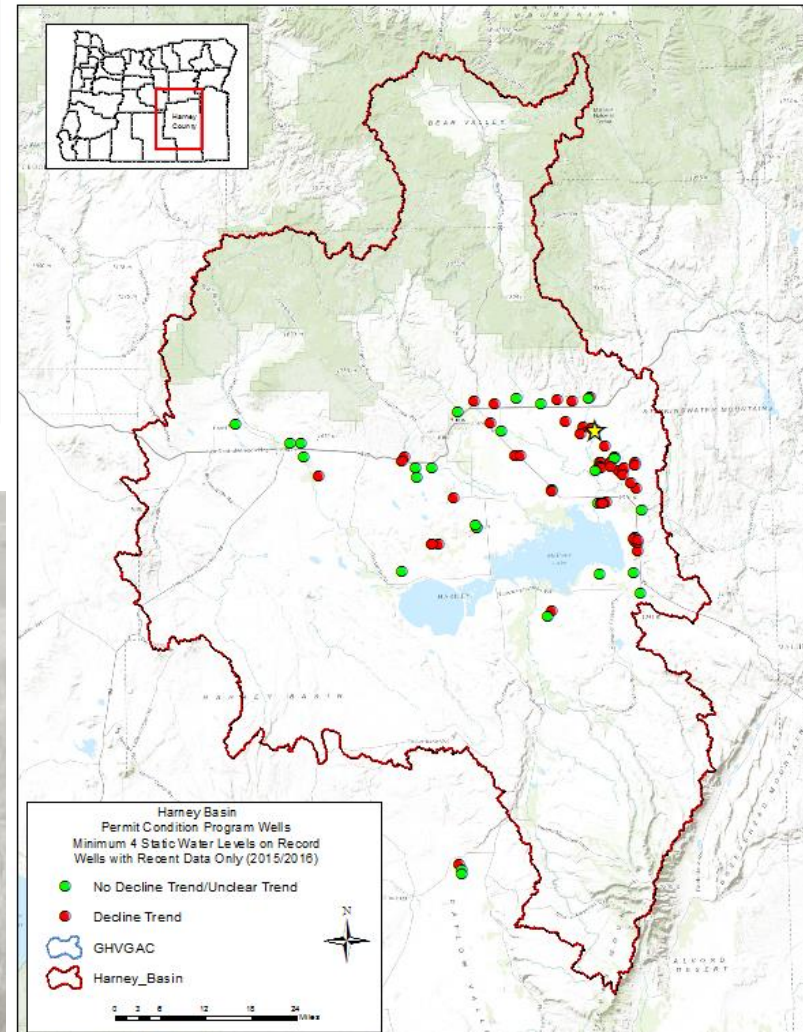
The yellow star on the map indicates the location of the well corresponding to the hydrograph



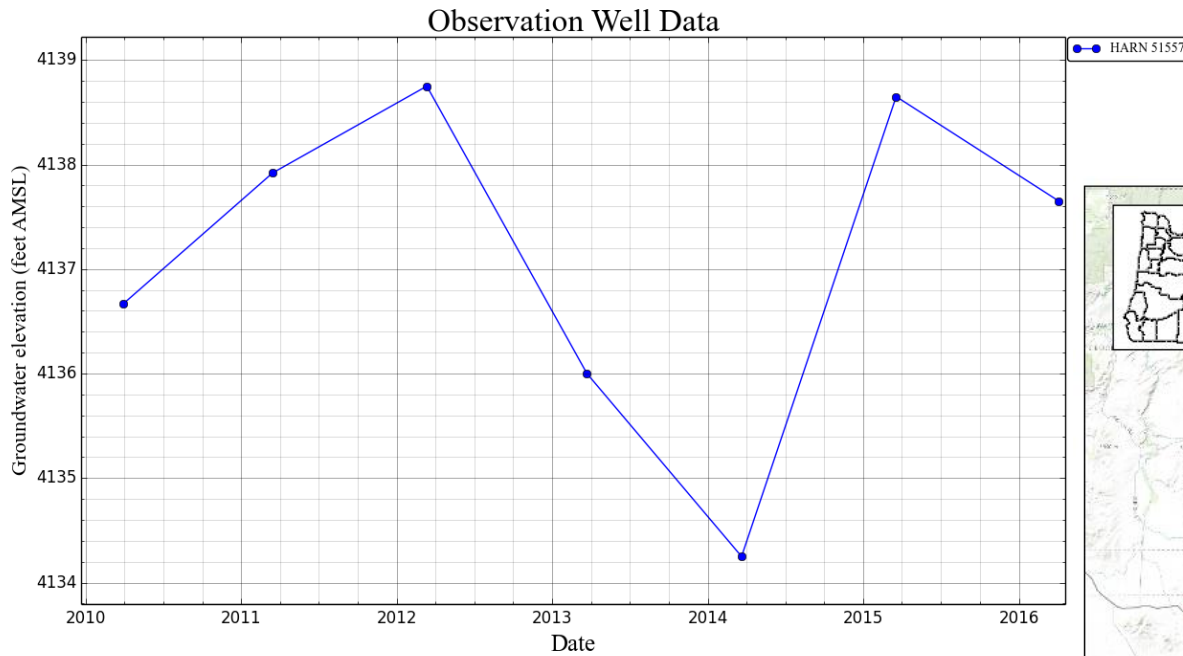
Hydrographs – permit condition data



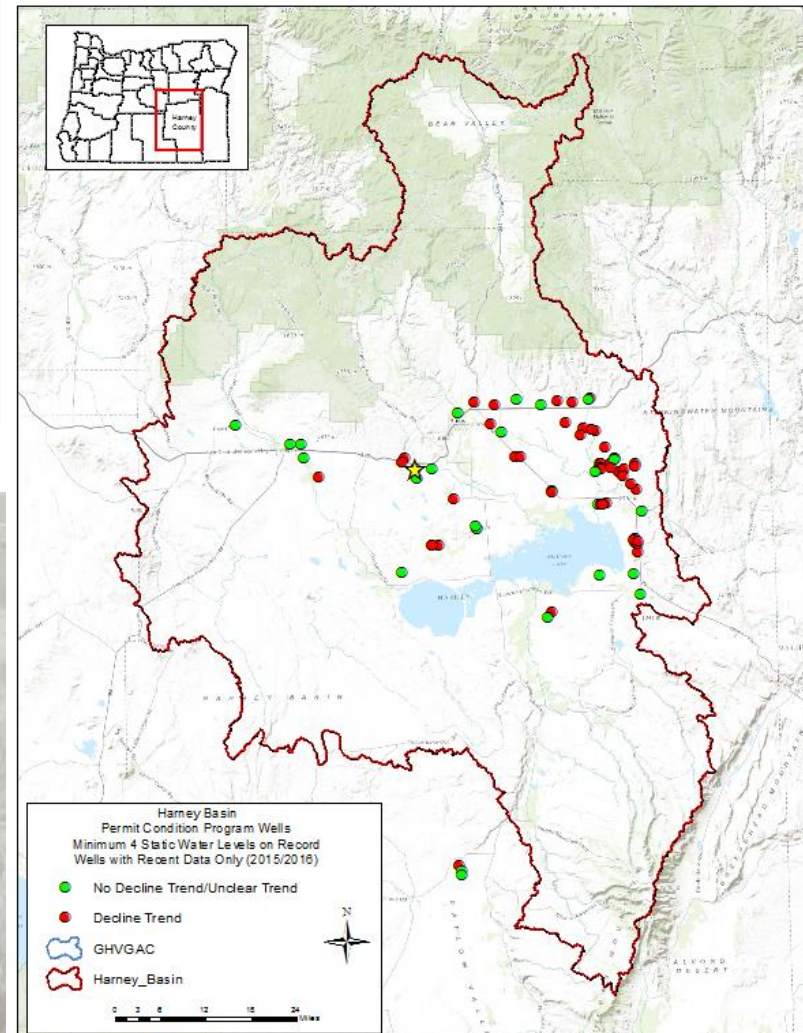
The yellow star on the map indicates the location of the well corresponding to the hydrograph



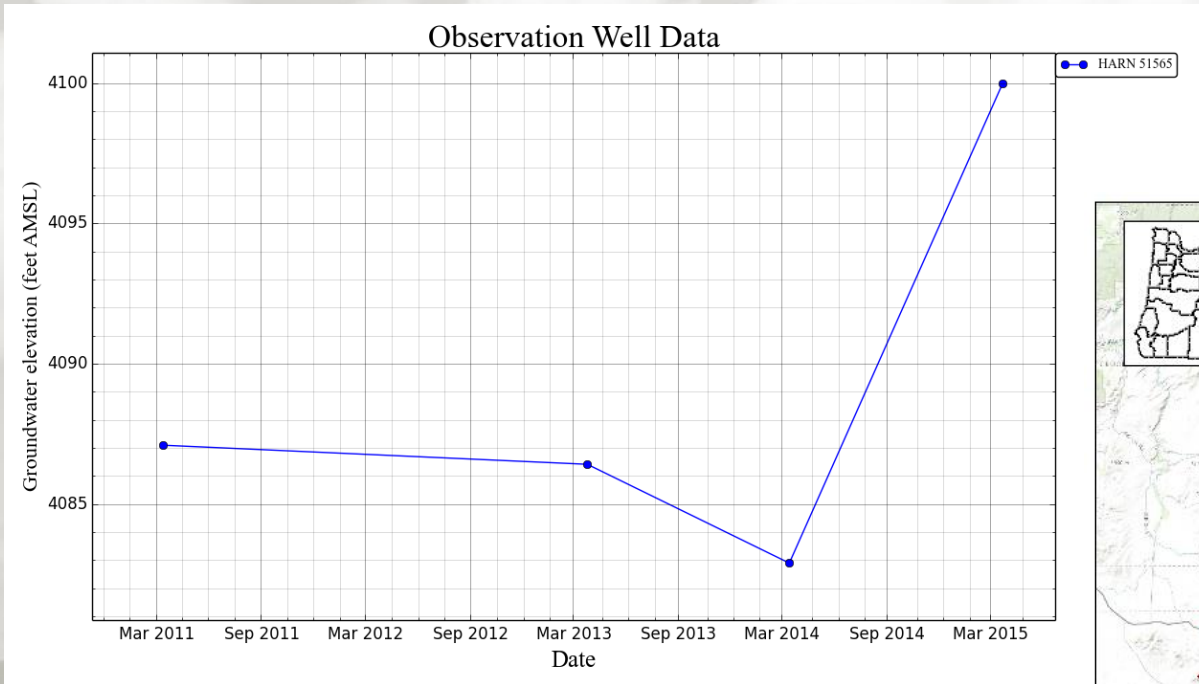
Hydrographs – permit condition data



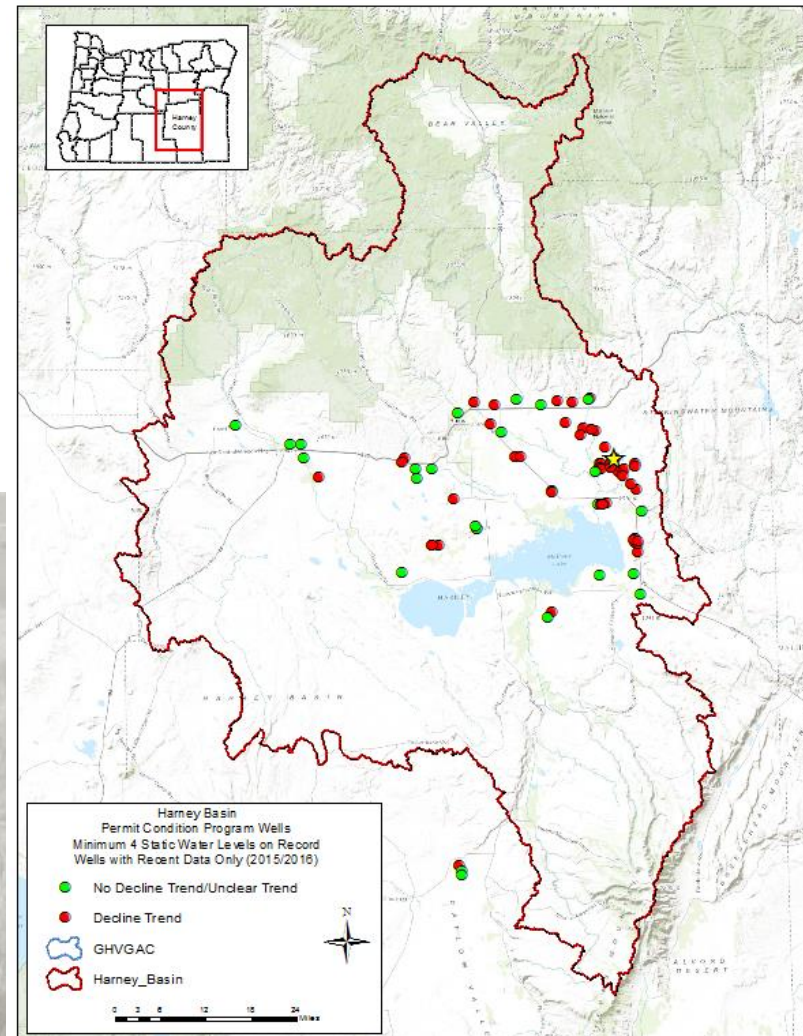
The yellow star on the map indicates the location of the well corresponding to the hydrograph



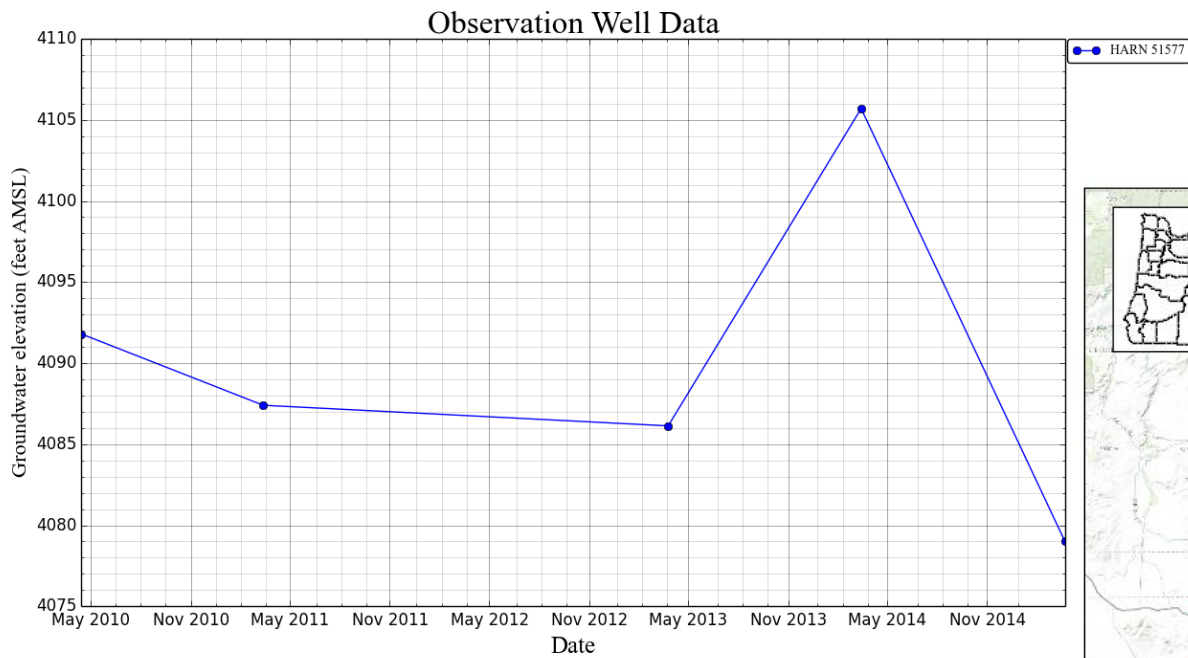
Hydrographs – permit condition data



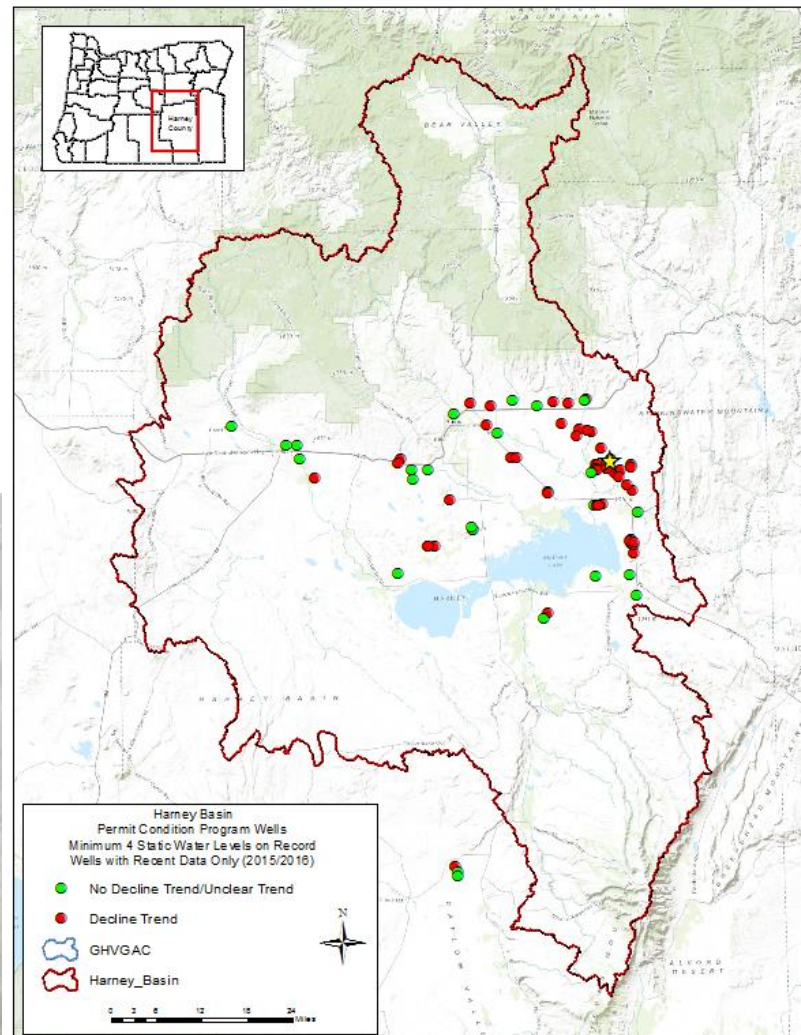
The yellow star on the map indicates the location of the well corresponding to the hydrograph



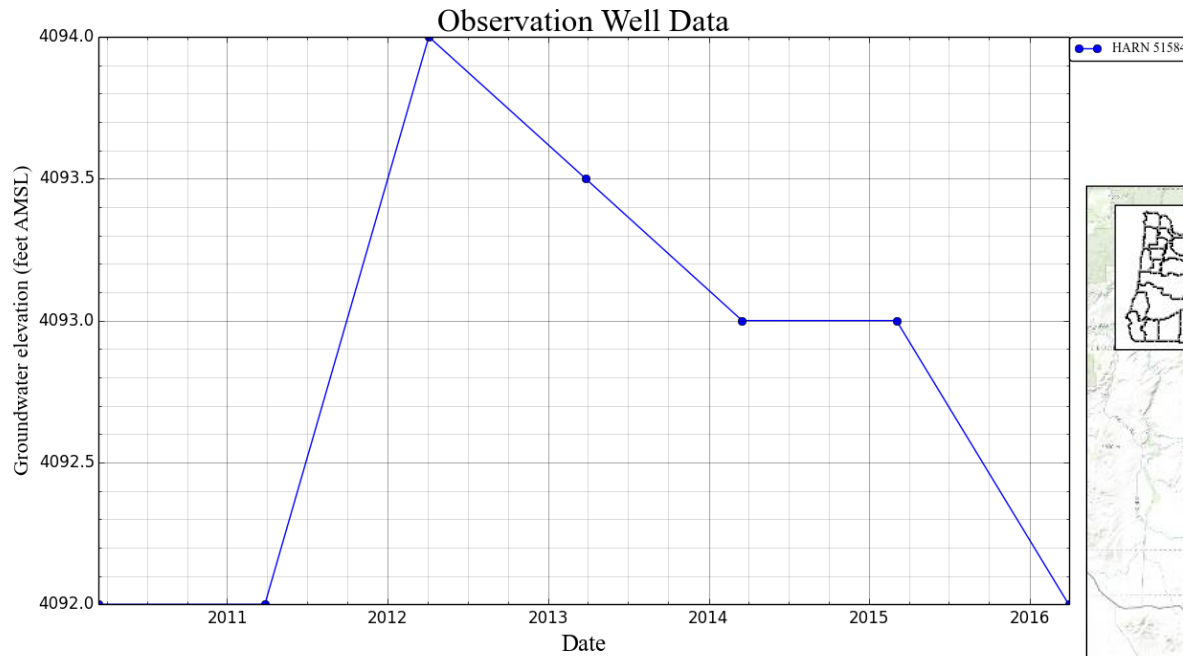
Hydrographs – permit condition data



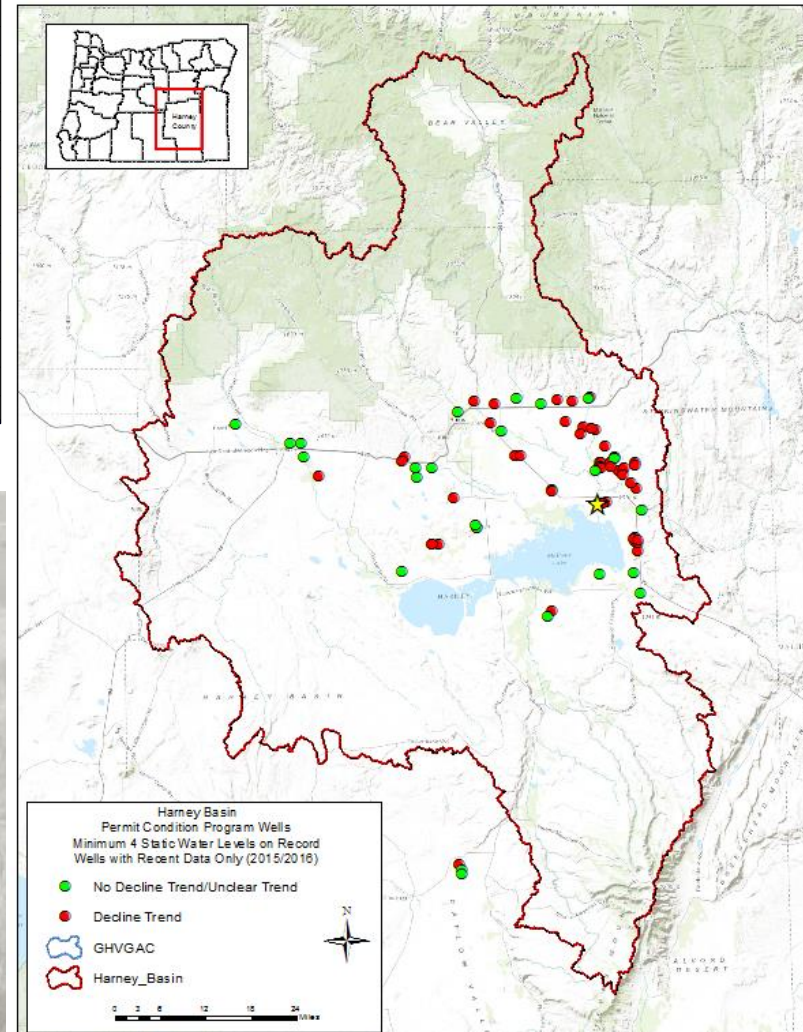
The yellow star on the map indicates the location of the well corresponding to the hydrograph



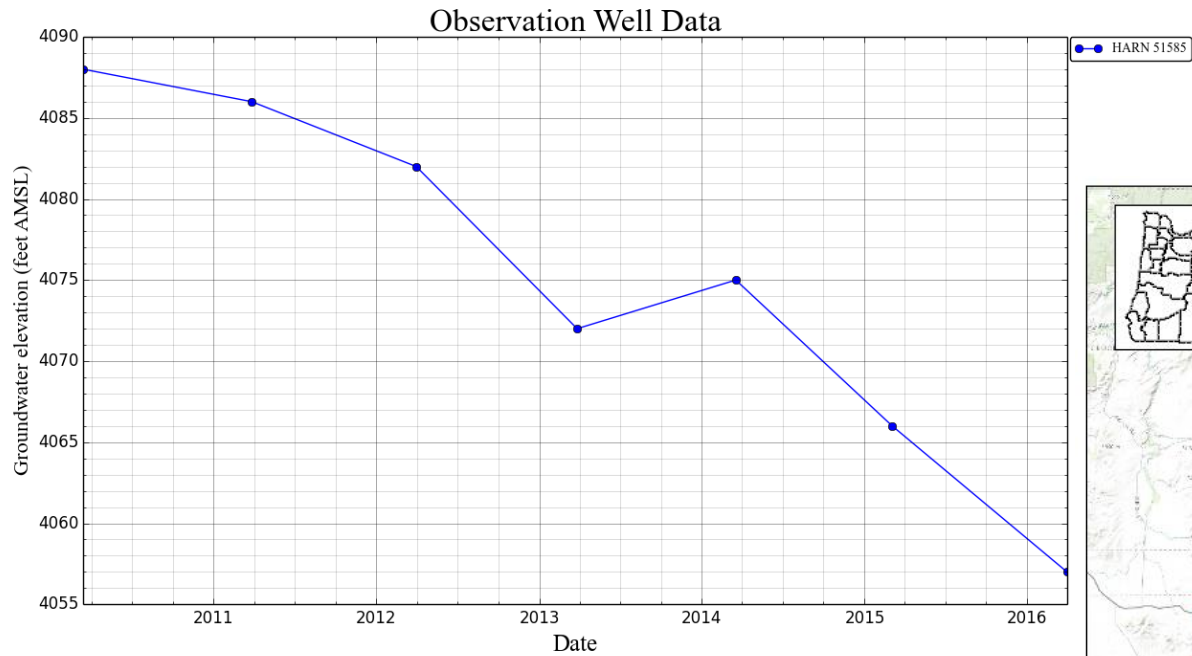
Hydrographs – permit condition data



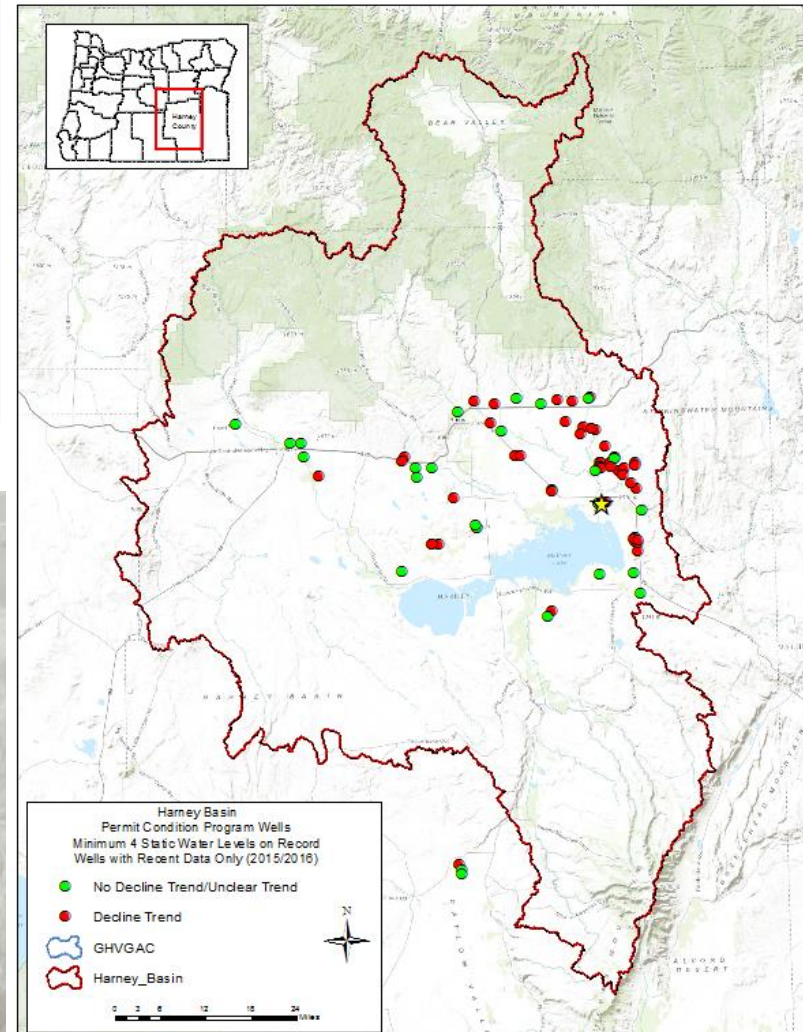
The yellow star on the map indicates the location of the well corresponding to the hydrograph



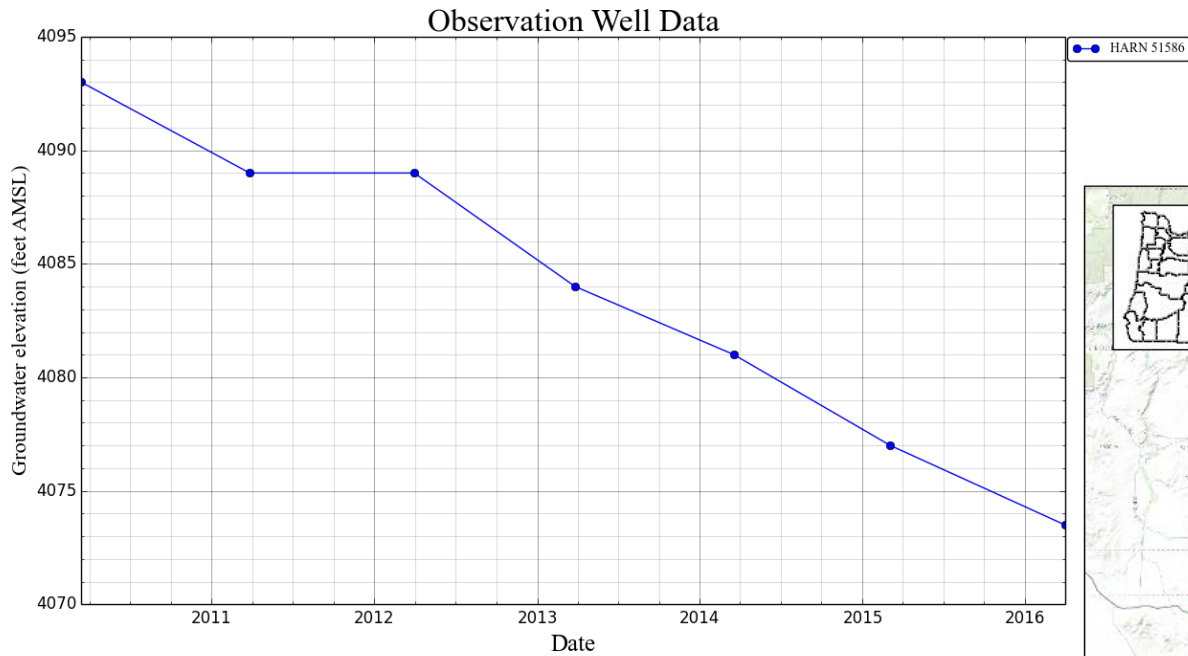
Hydrographs – permit condition data



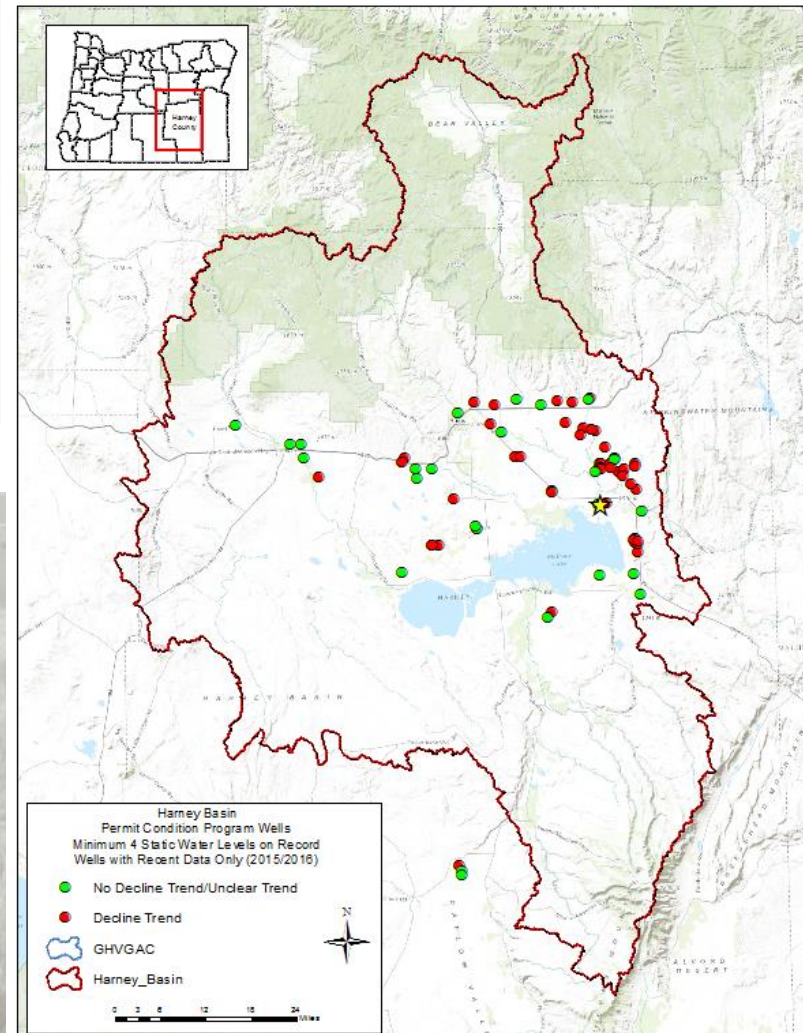
The yellow star on the map indicates the location of the well corresponding to the hydrograph



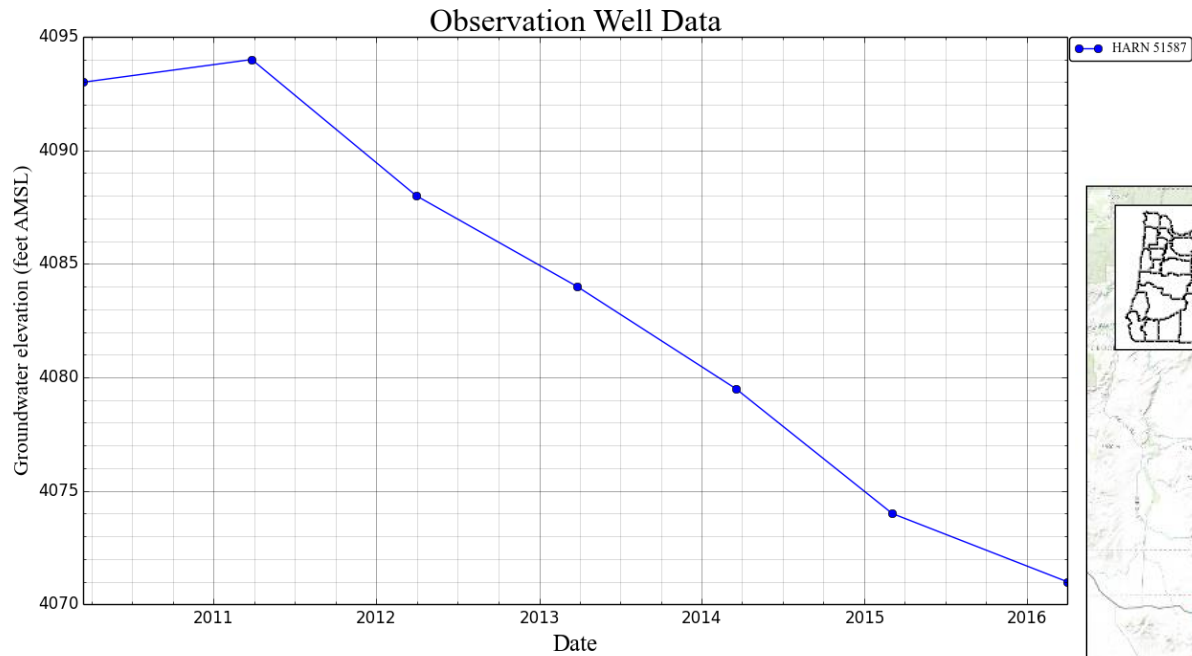
Hydrographs – permit condition data



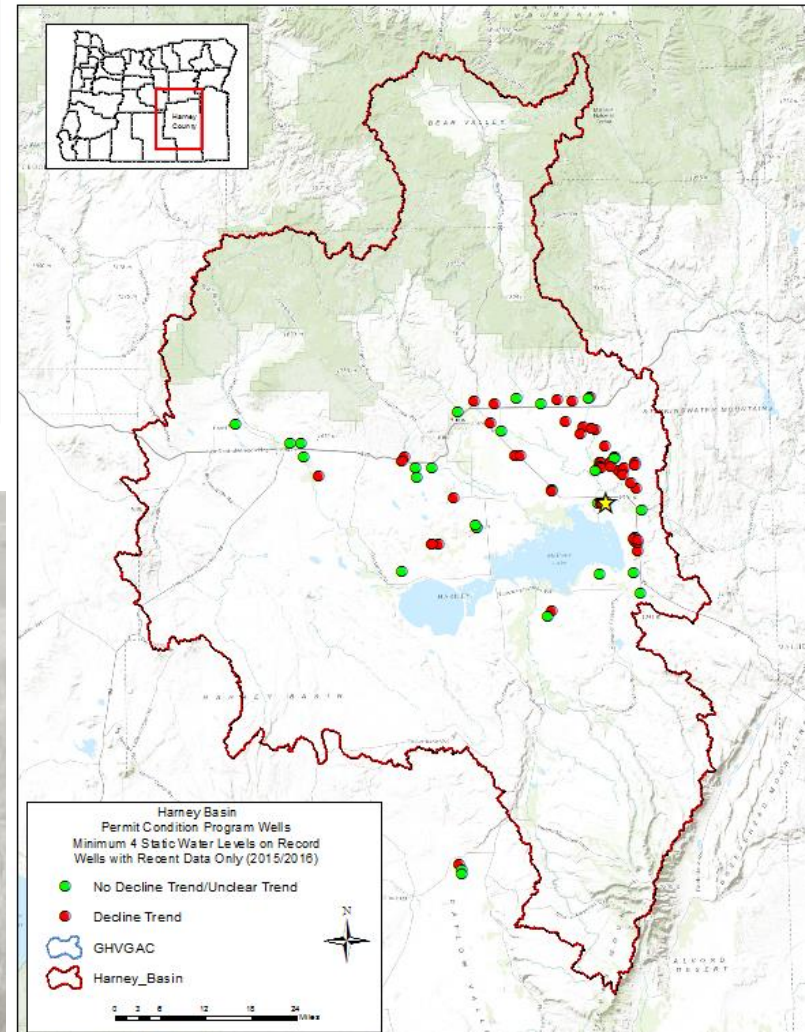
The yellow star on the map indicates the location of the well corresponding to the hydrograph



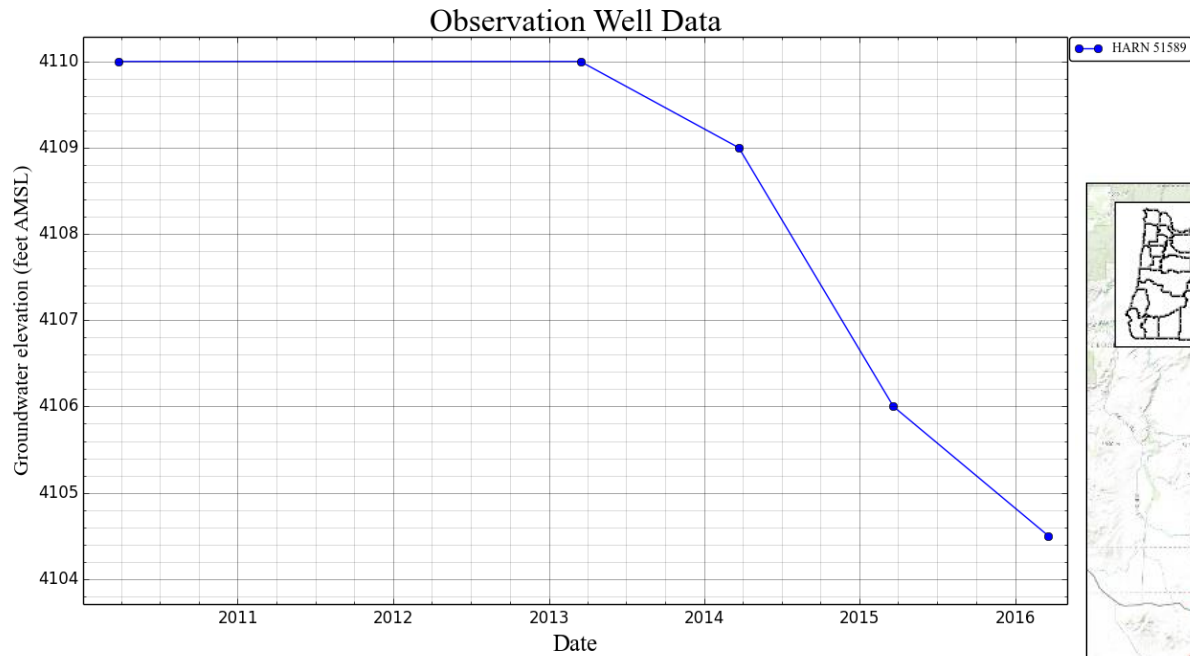
Hydrographs – permit condition data



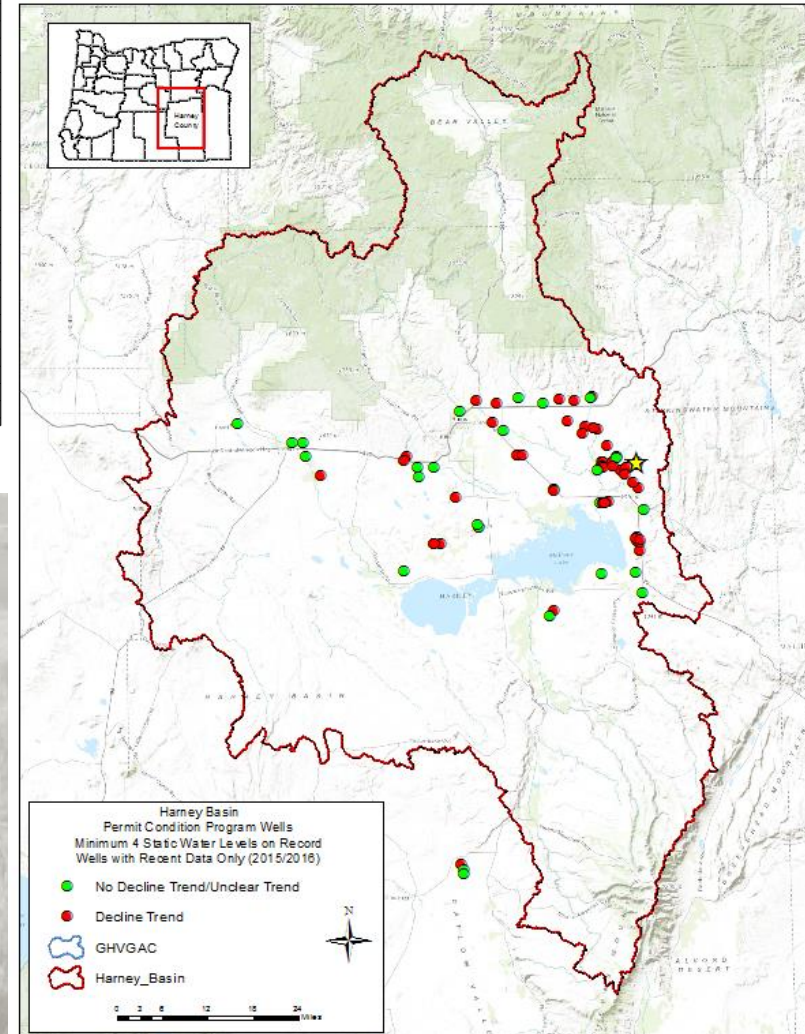
The yellow star on the map indicates the location of the well corresponding to the hydrograph



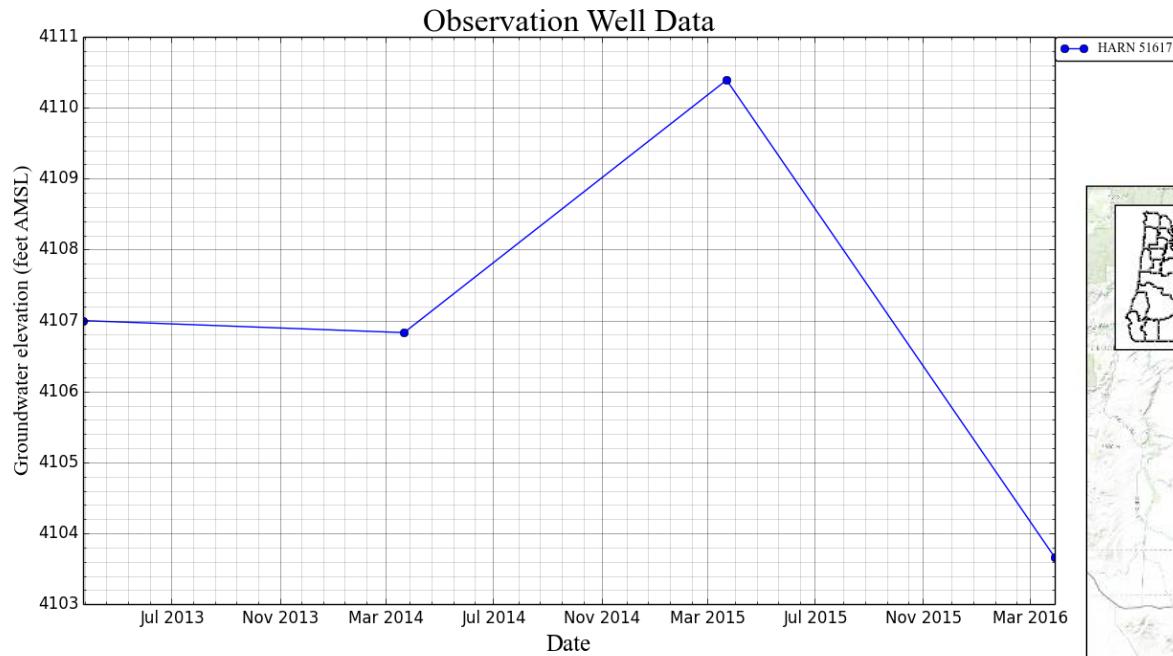
Hydrographs – permit condition data



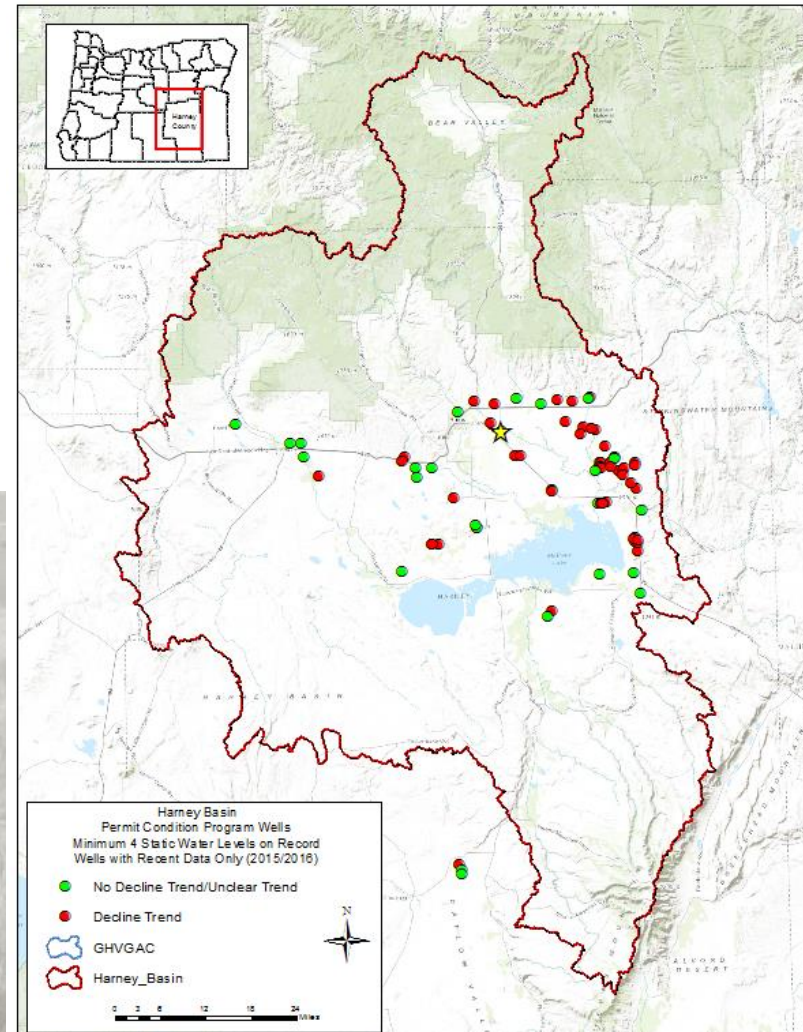
The yellow star on the map indicates the location of the well corresponding to the hydrograph



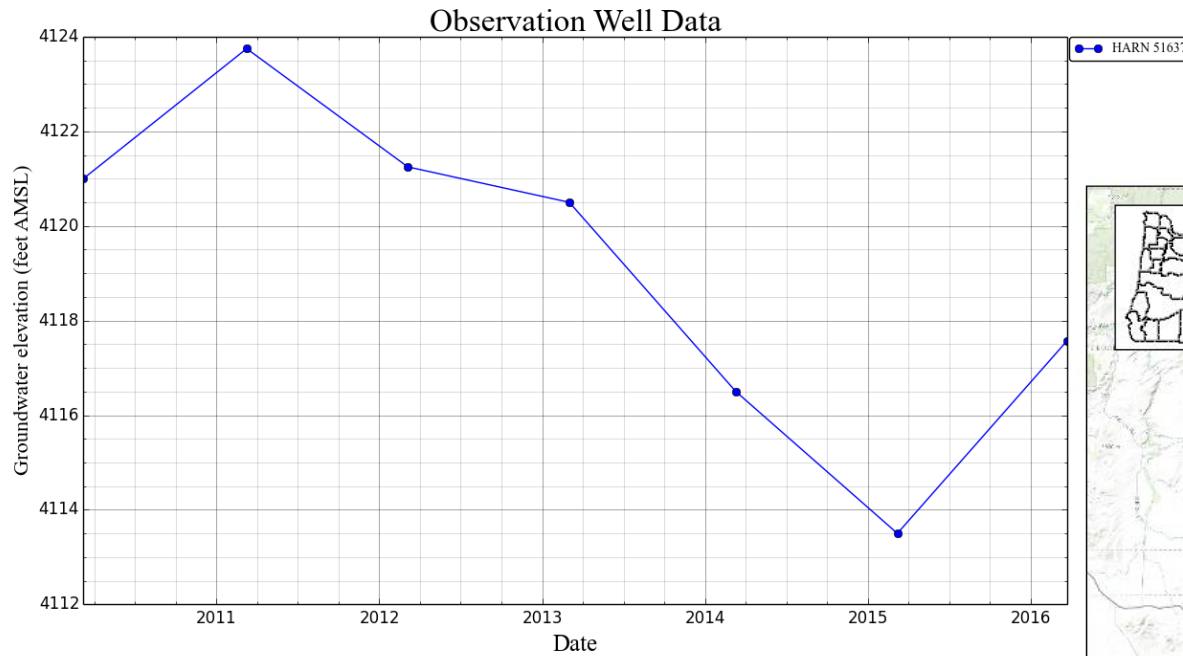
Hydrographs – permit condition data



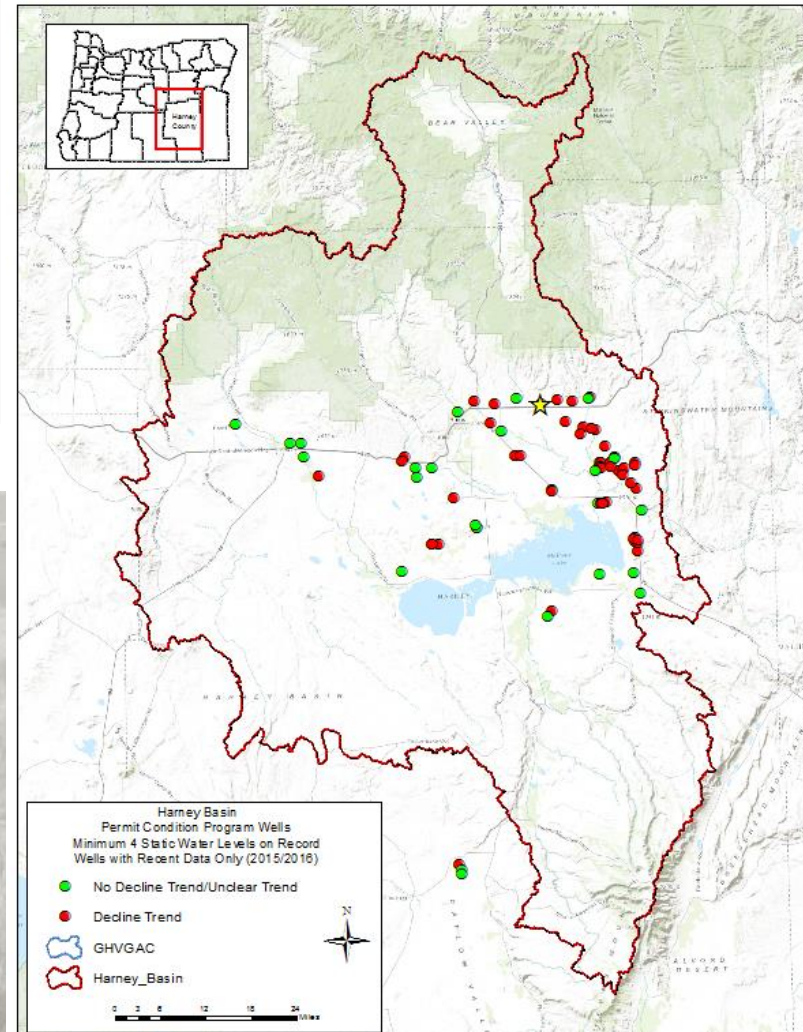
The yellow star on the map indicates the location of the well corresponding to the hydrograph



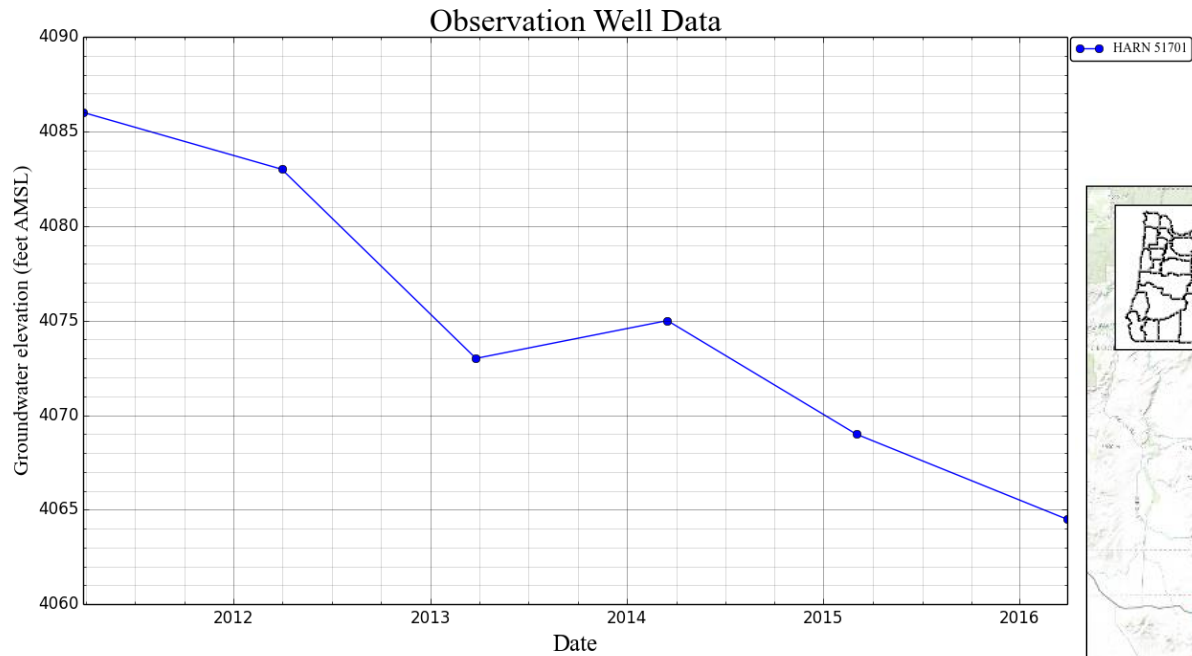
Hydrographs – permit condition data



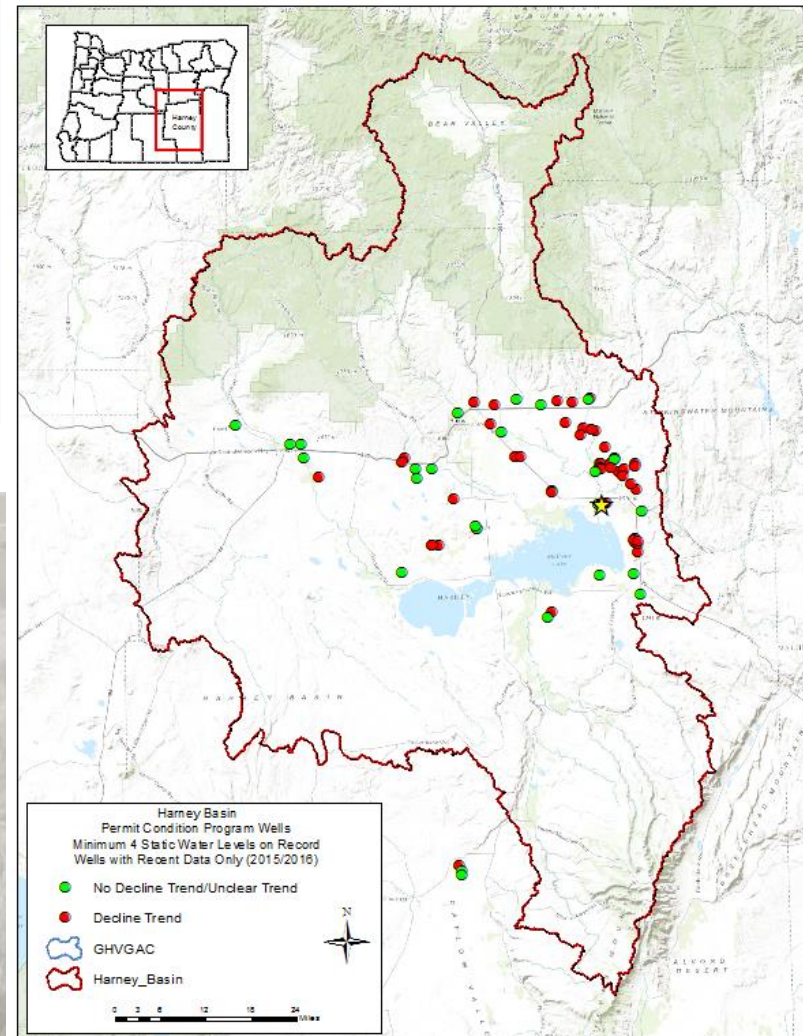
The yellow star on the map indicates the location of the well corresponding to the hydrograph



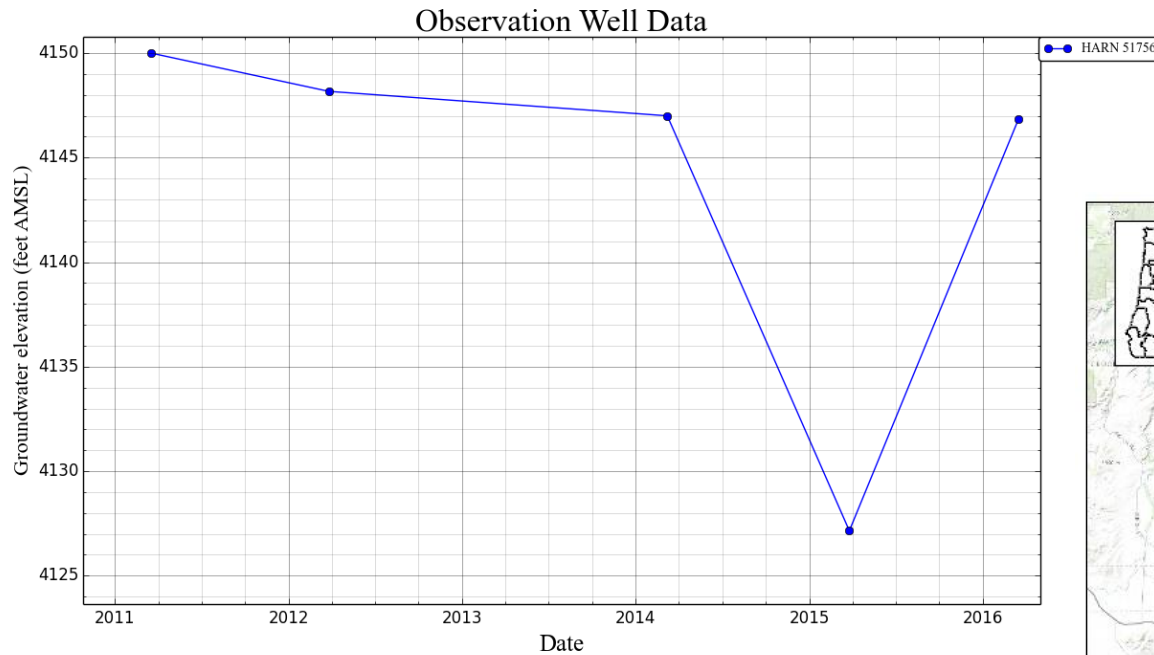
Hydrographs – permit condition data



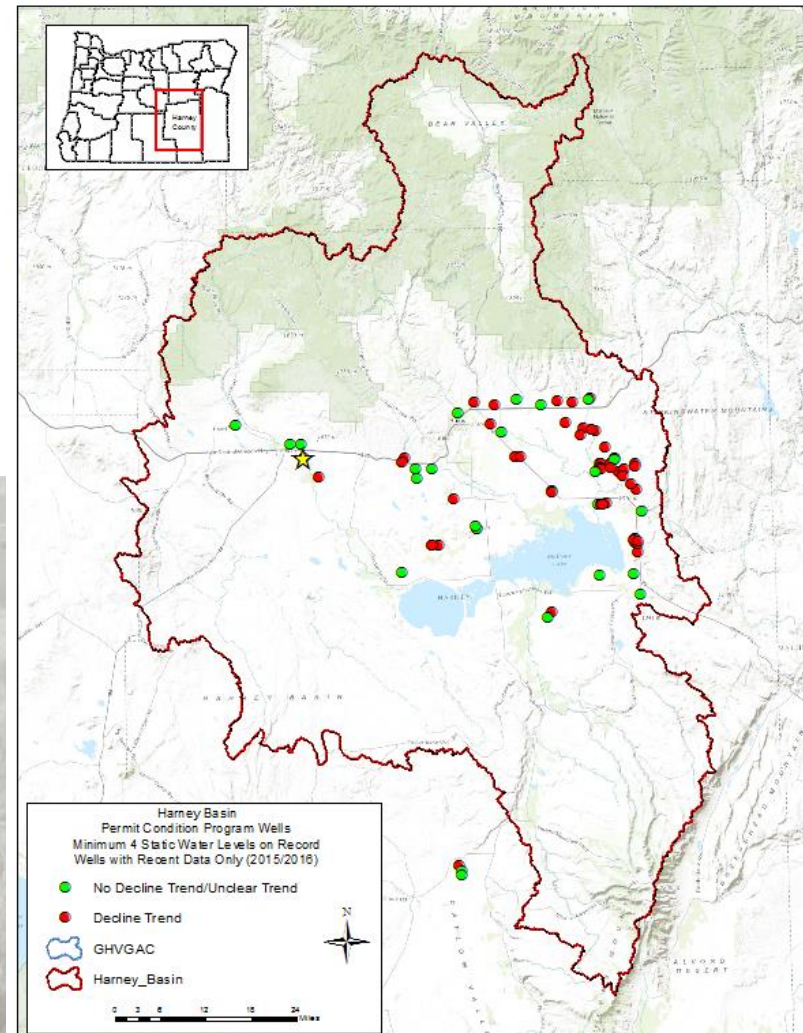
The yellow star on the map indicates the location of the well corresponding to the hydrograph



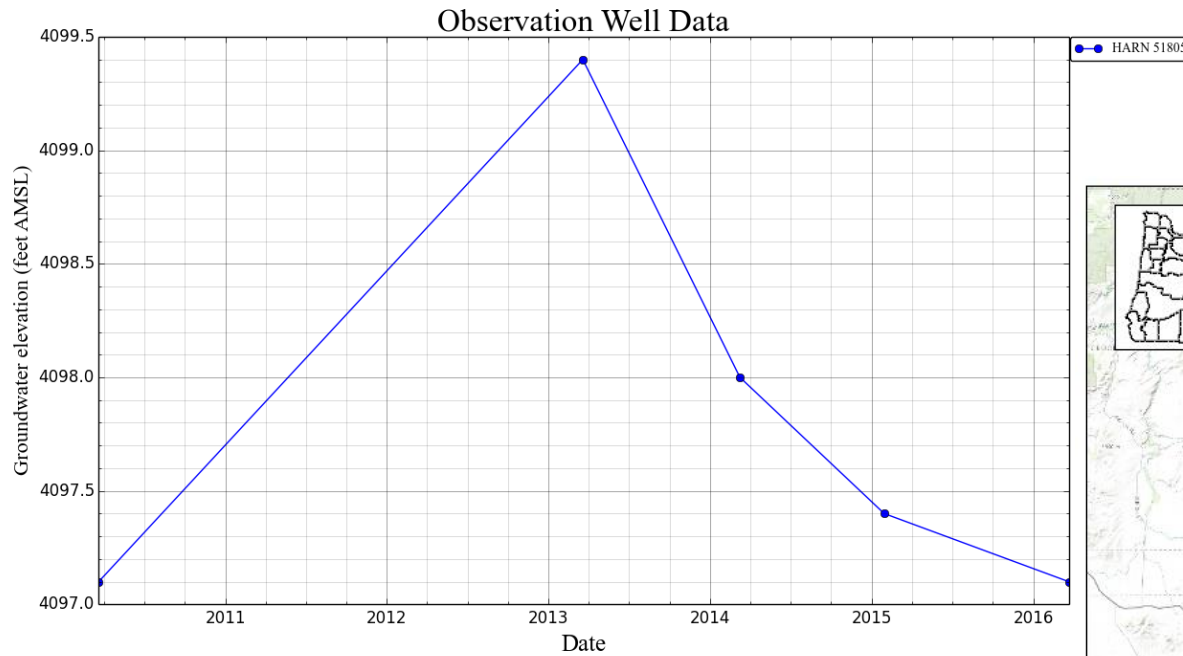
Hydrographs – permit condition data



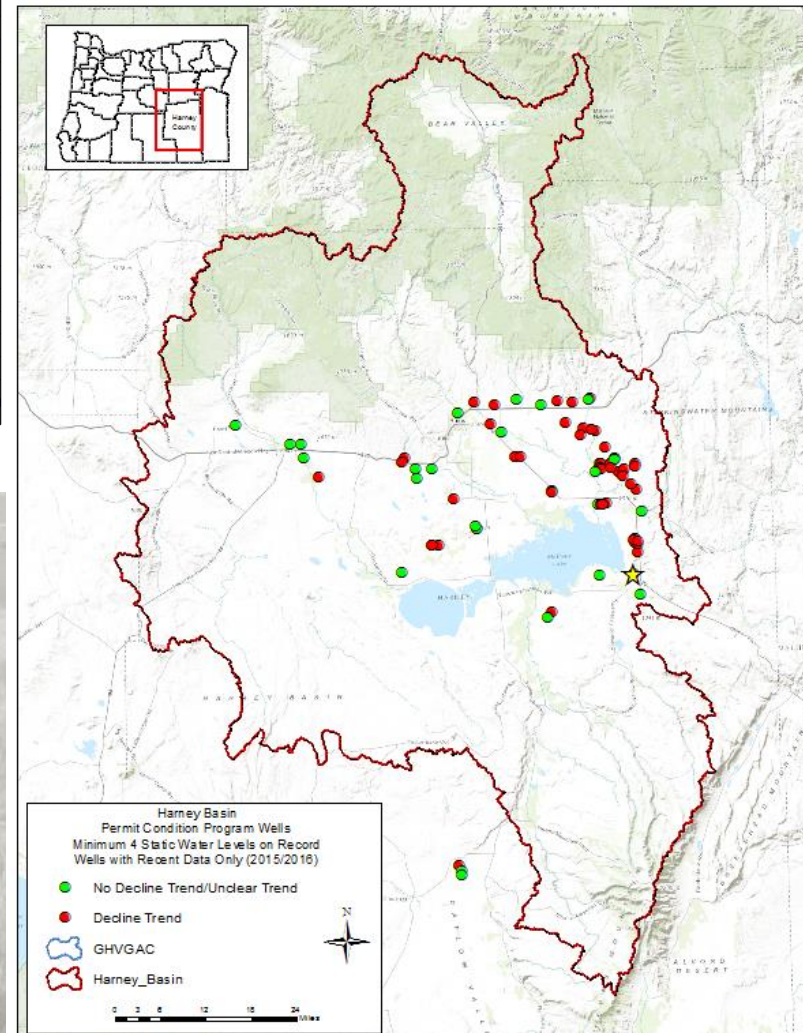
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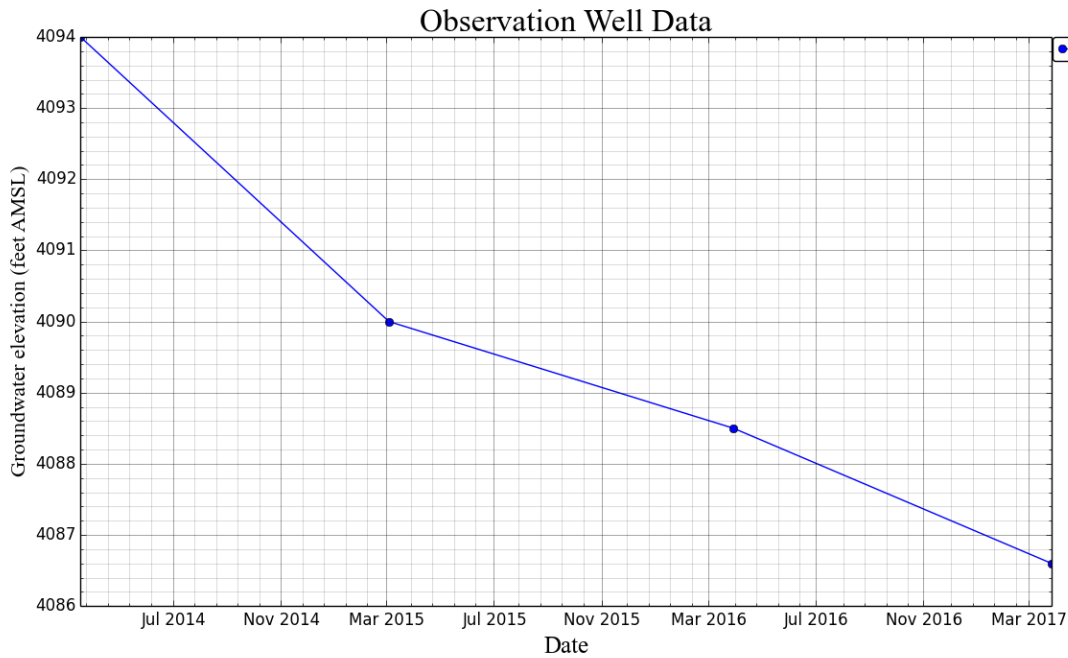
Hydrographs – permit condition data



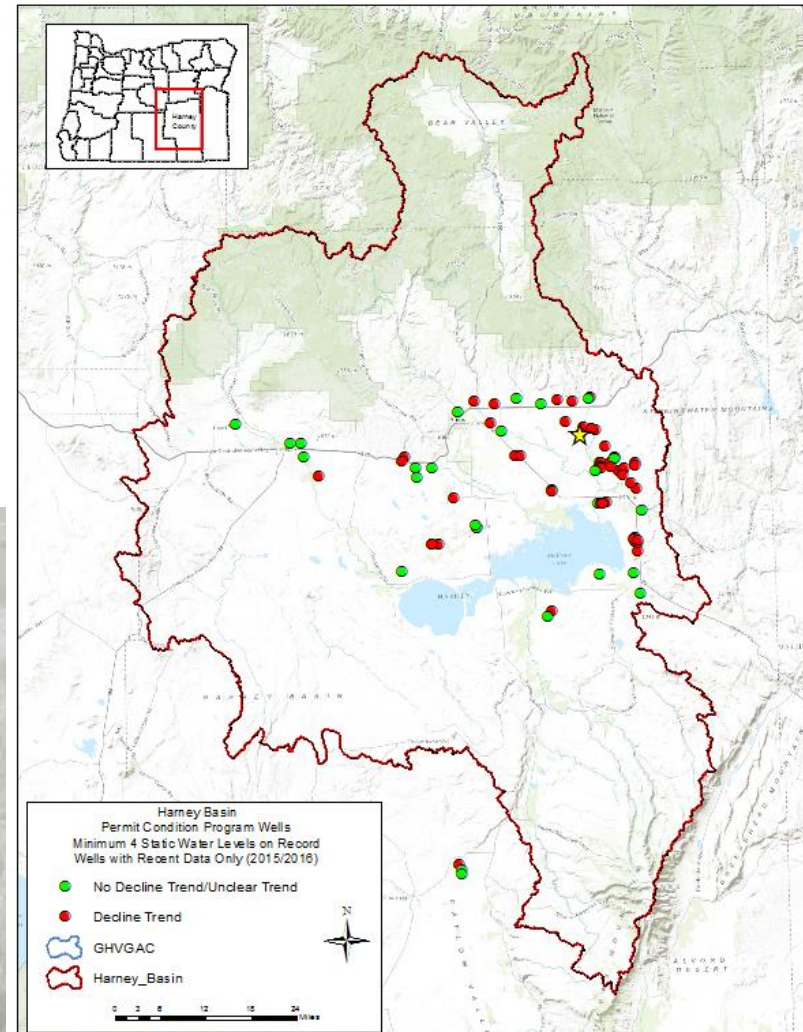
The yellow star on the map indicates the location of the well corresponding to the hydrograph



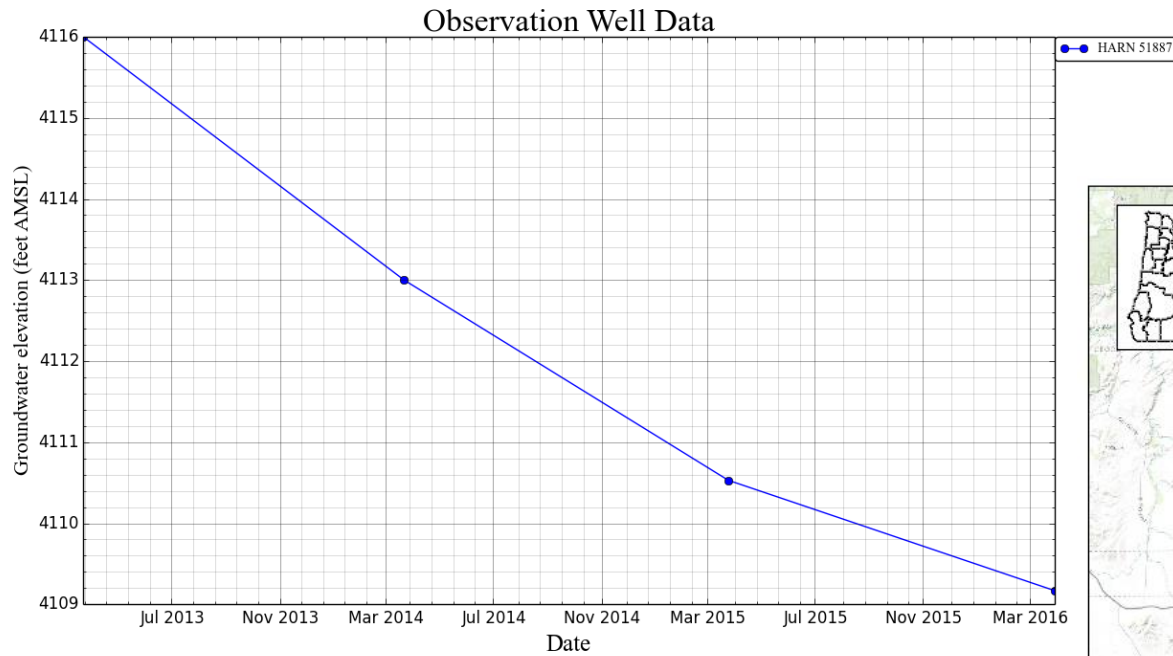
Hydrographs – permit condition data



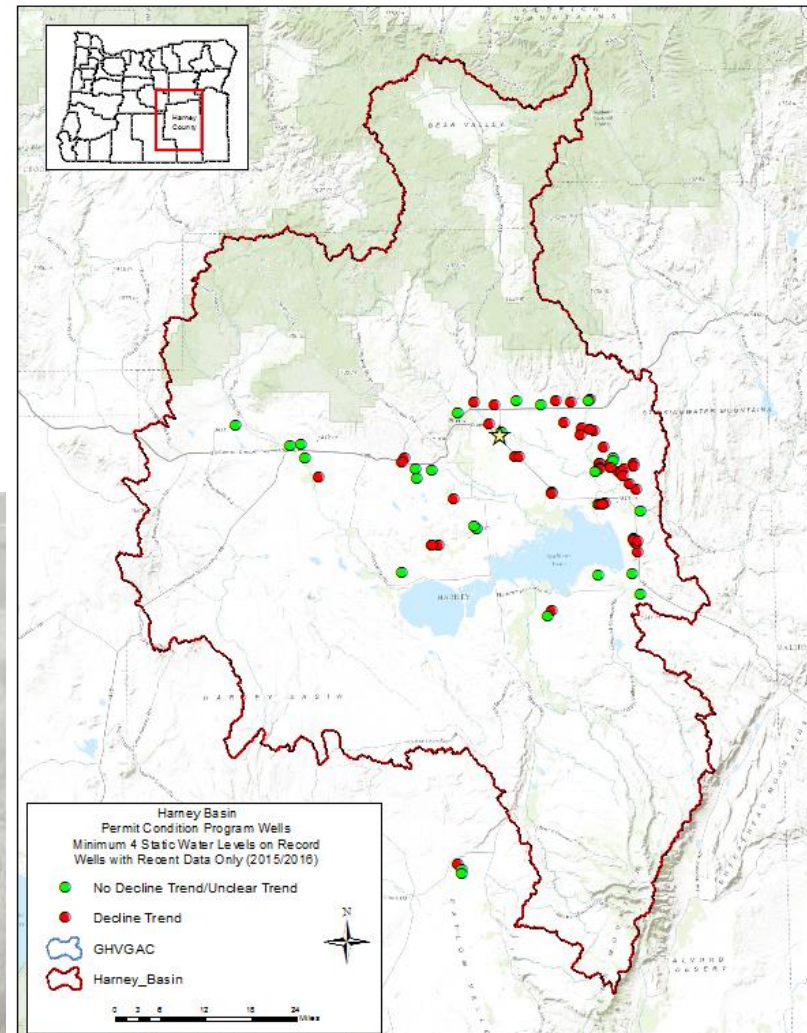
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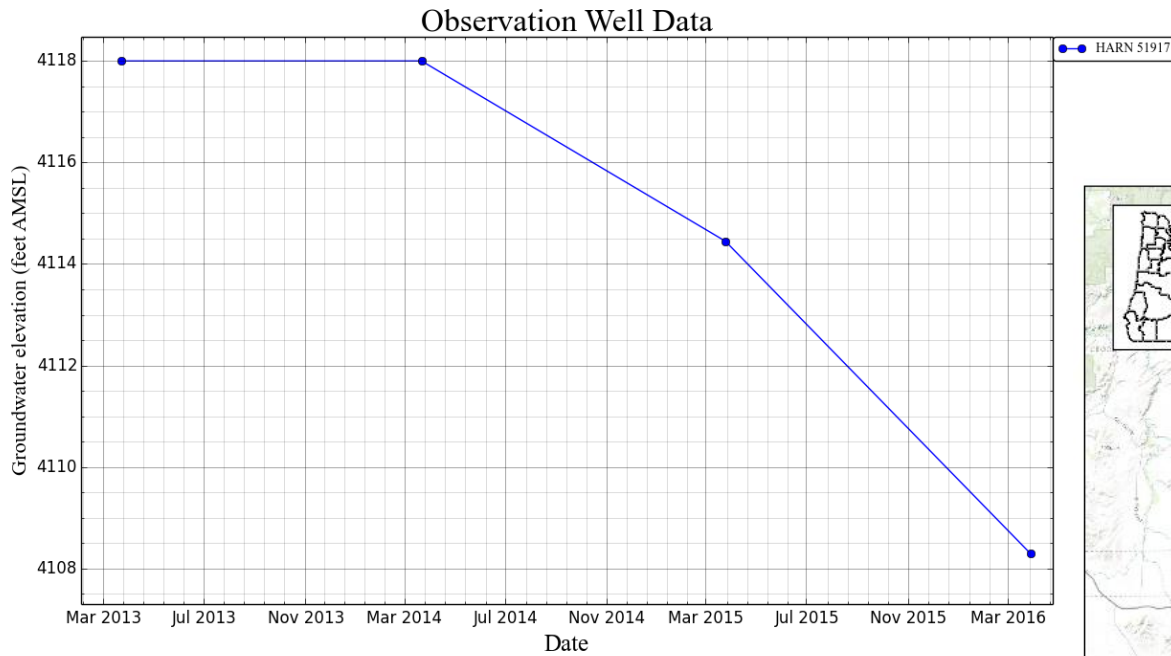
Hydrographs – permit condition data



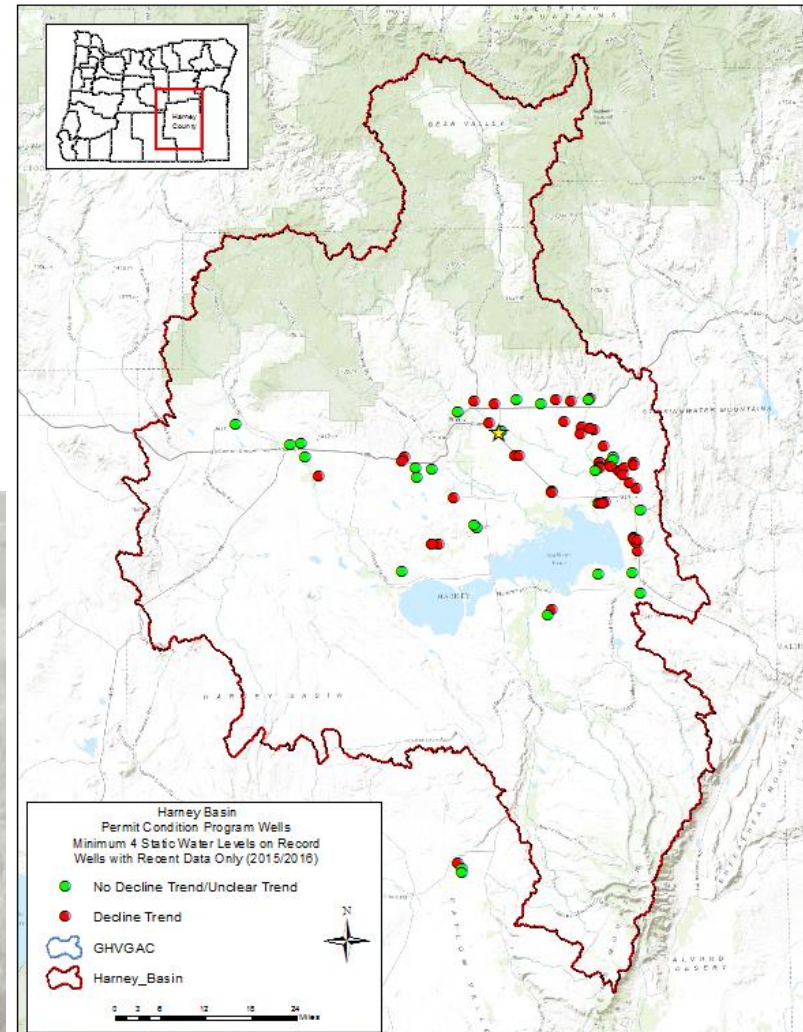
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Hydrographs – permit condition data



The yellow star on the map indicates the location of the well corresponding to the hydrograph



Thank You

Darrick E. Boschmann, RG | Hydrogeologist – Groundwater Section

Oregon Water Resources Department
725 Summer ST. NE., Suite A Salem OR 97301

| Phone: 503-986-0853
| Fax: 503-986-0902

