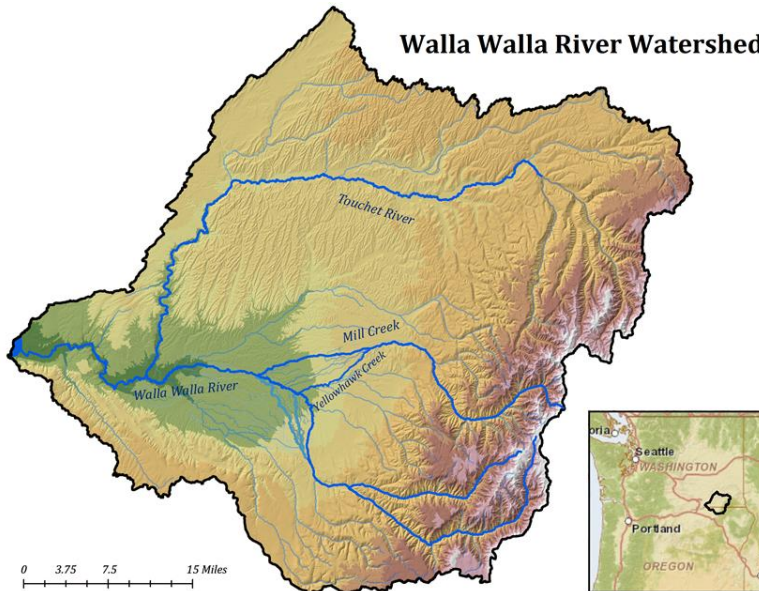


Managing Groundwater

Across the WA-OR Boundary in the Walla Walla Subbasin

May 3, 2019

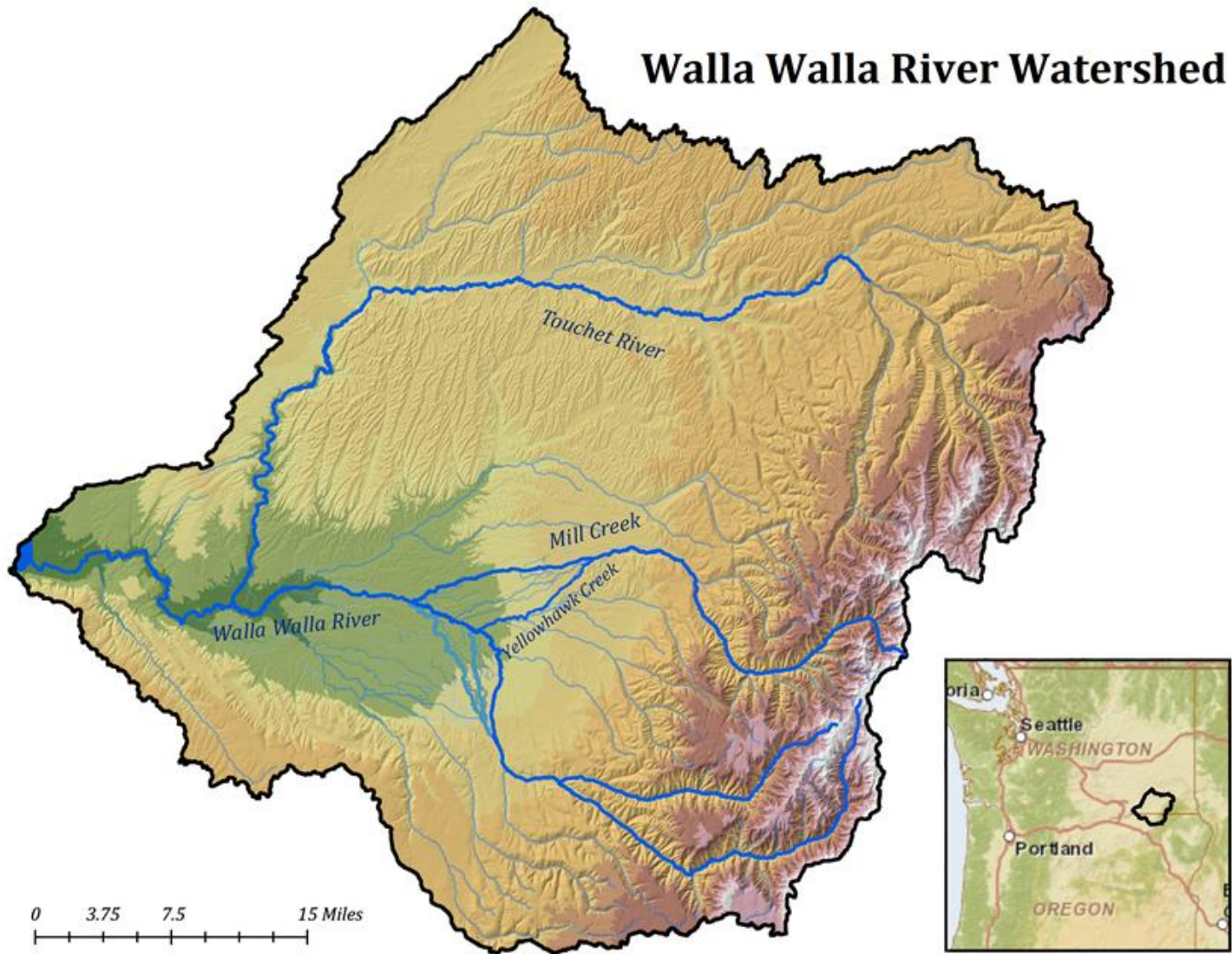
Walla Walla River Watershed



John Warinner, PE, CWRE
Associate Water Resources Engineer



Walla Walla Subbasin



Water Management Challenges

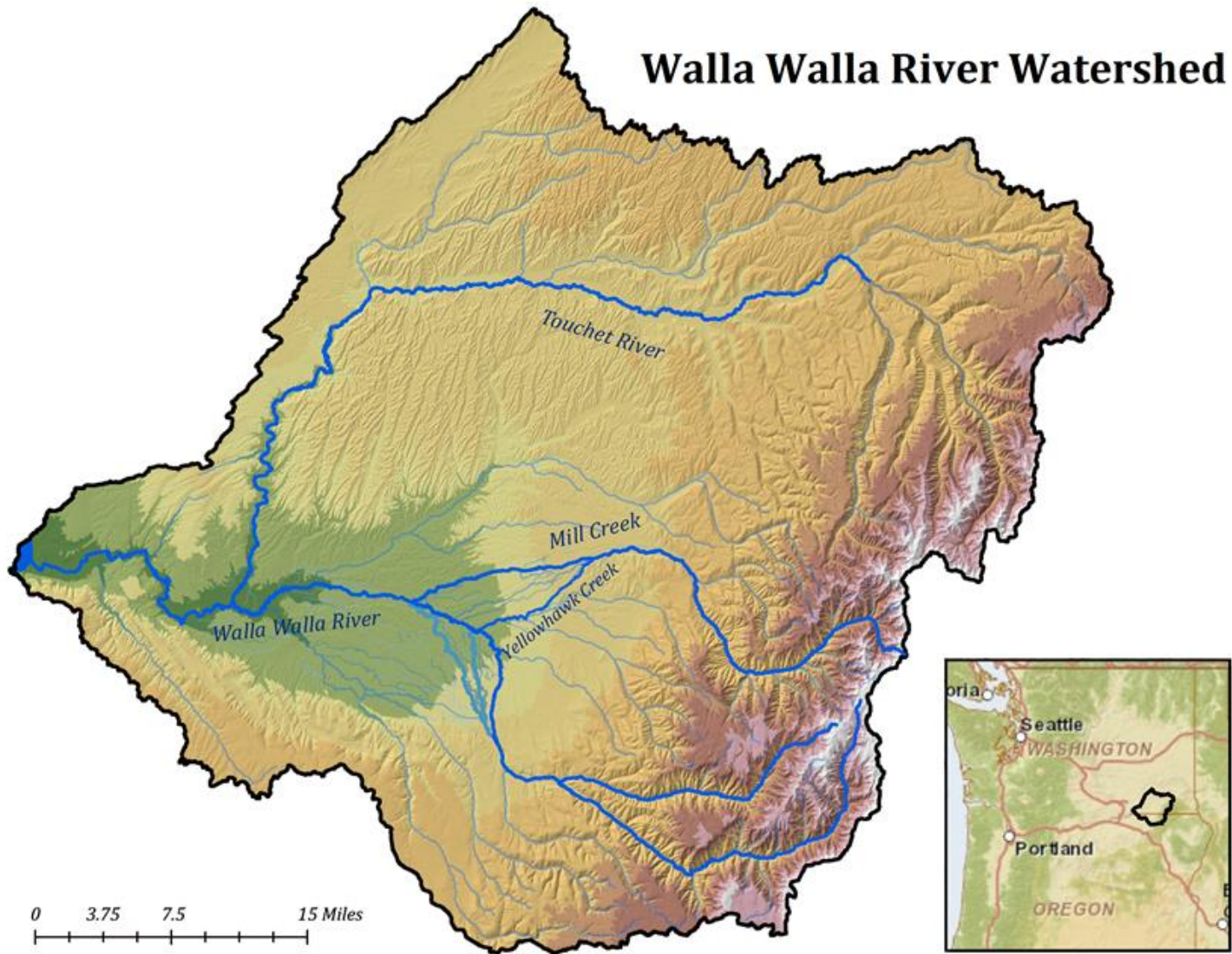
- **Surface Water**
 - **Insufficient flow during summer**
- **Groundwater**
 - **Declining water levels in two aquifers**
 - Sedimentary/alluvial surface aquifer
 - Basalt aquifer(s)

Summary

- **Surface water is challenging to manage**
- **Groundwater is **more** challenging to manage**
- **Boundaries present **additional** challenges**
- **Progress toward **sustainability** requires:**
 - **Integration of surface and ground water**
 - **Cross-boundary coordination**
 - *Possibly new forms of organization*
 - ***Trust, time, money, energy and patience!***

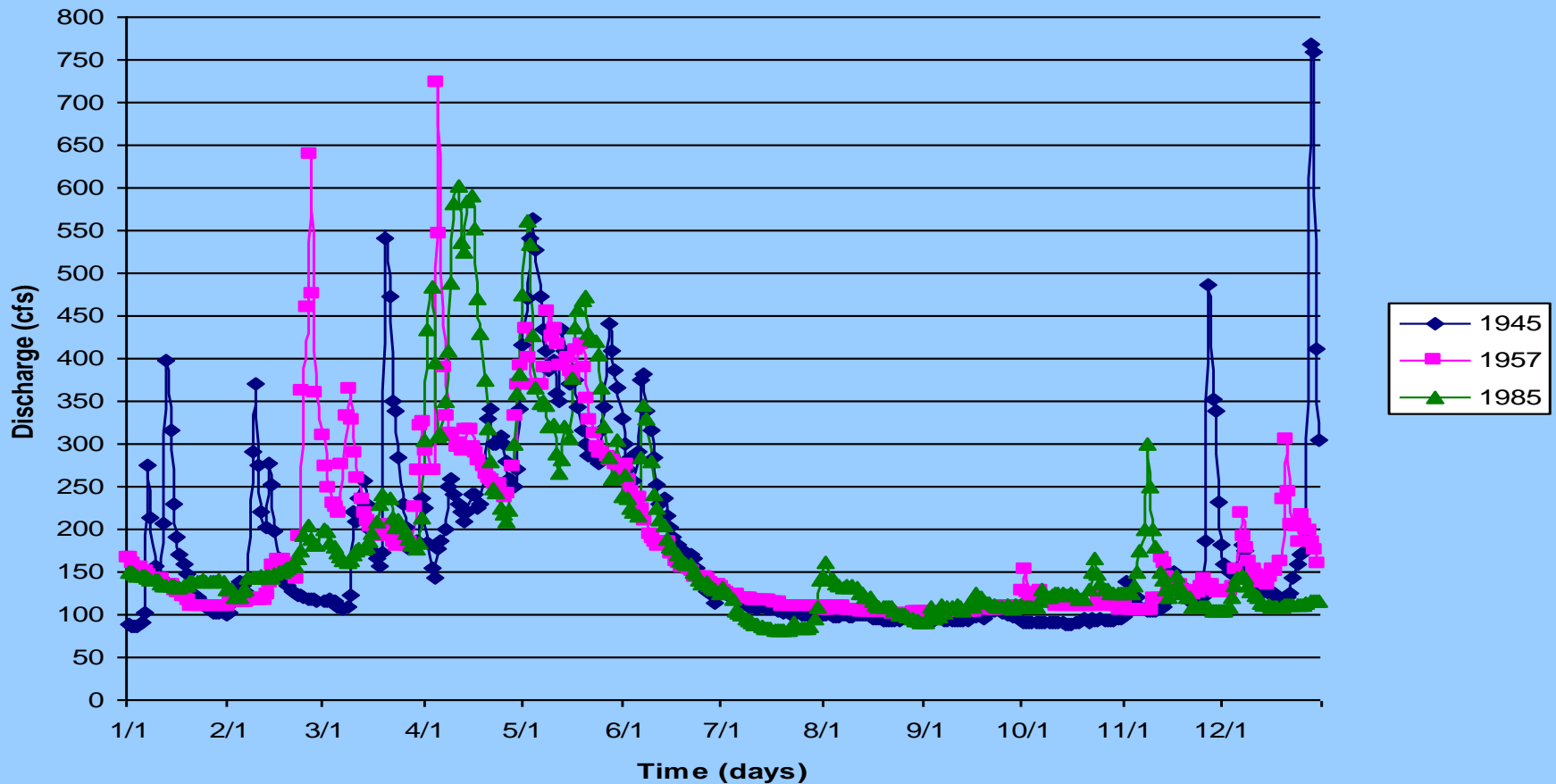
Subbasin Landscape

Walla Walla Subbasin

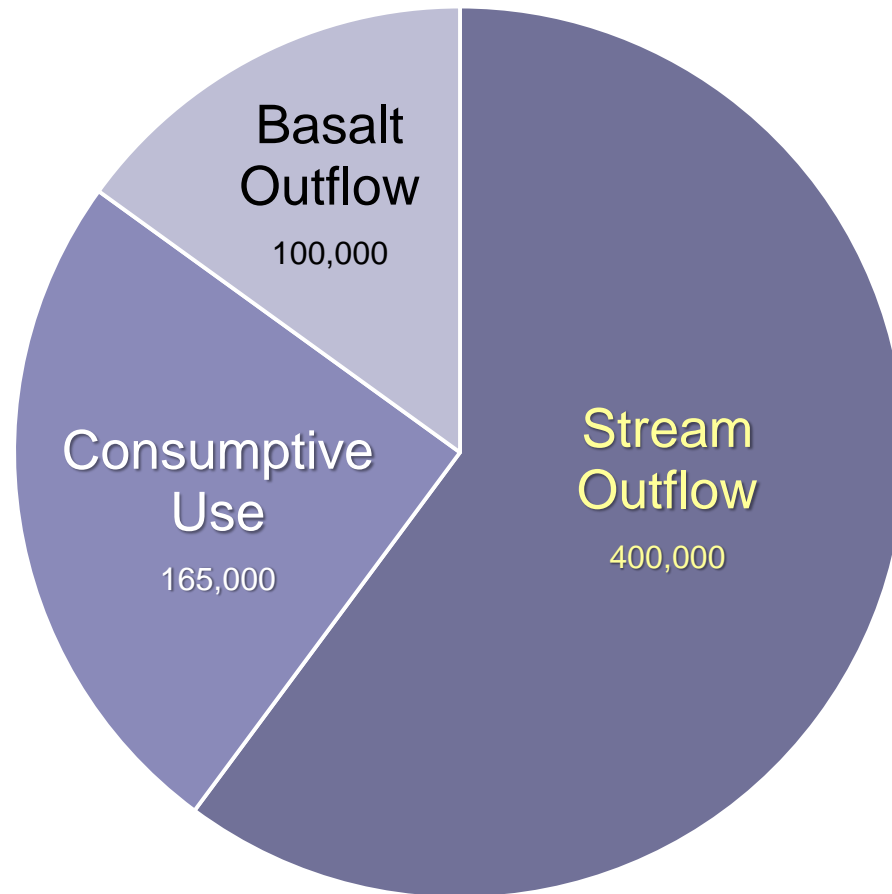


Hydrology

DAILY STREAMFLOWS FOR THREE TYPICAL YEARS
South Fork Walla Walla River Above Milton-Freewater Near Harris Park
USGS Gage No. 14010000



Hydrology... Manageable Water



Columbia River Basalt Group



Sedimentary Aquifer

Shallow Alluvial Aquifer

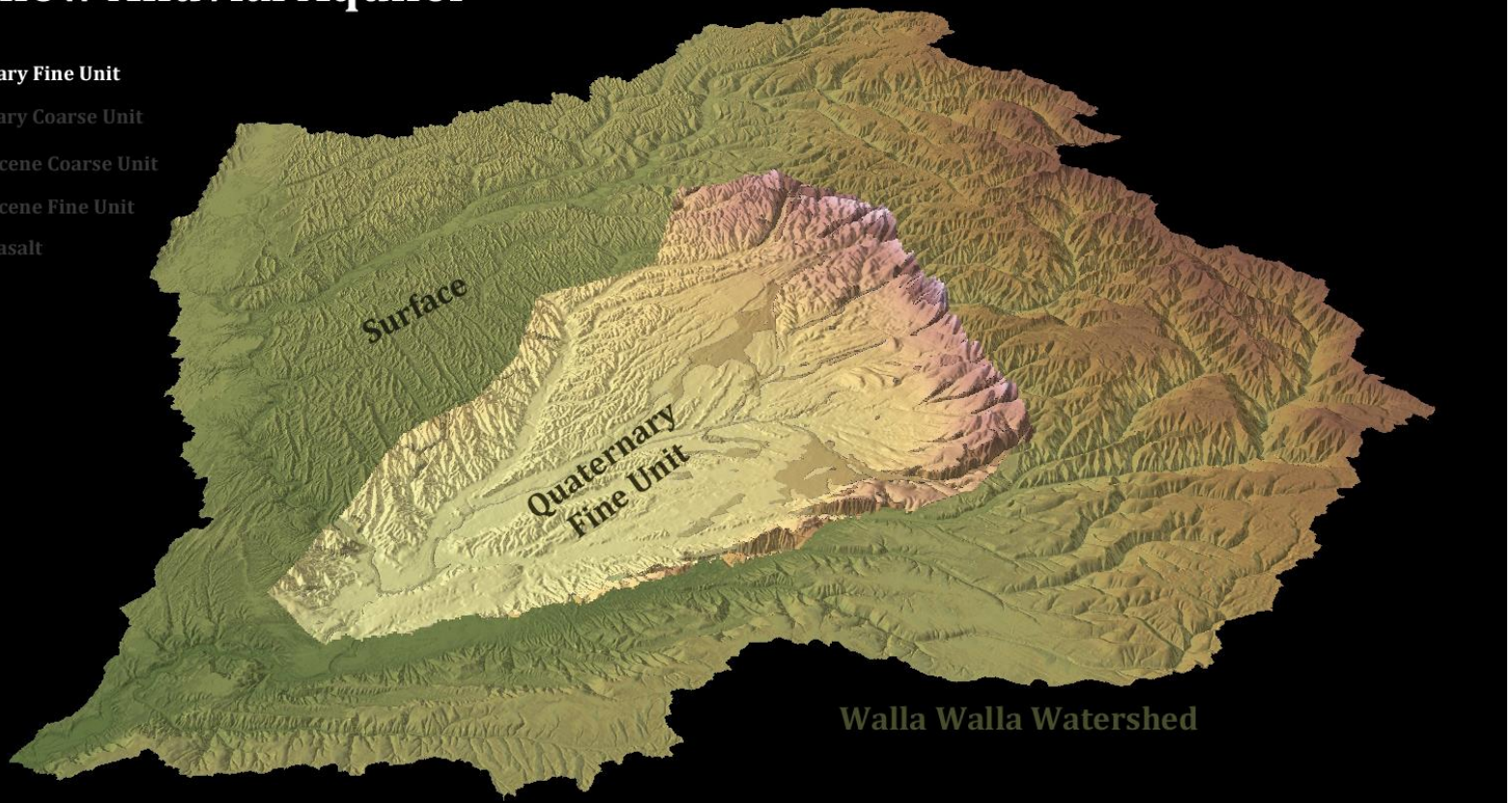
Quaternary Fine Unit

Quaternary Coarse Unit

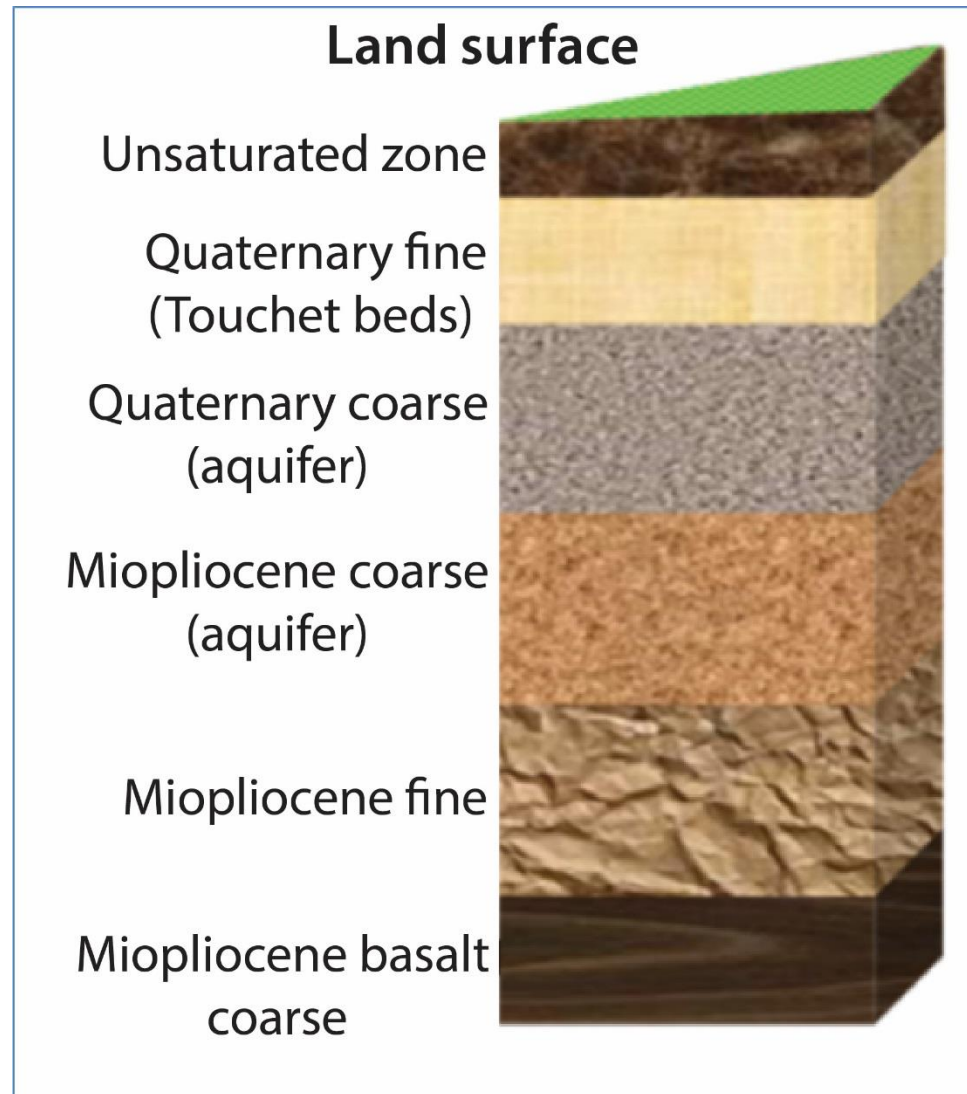
Mio-Pliocene Coarse Unit

Mio-Pliocene Fine Unit

Top of Basalt



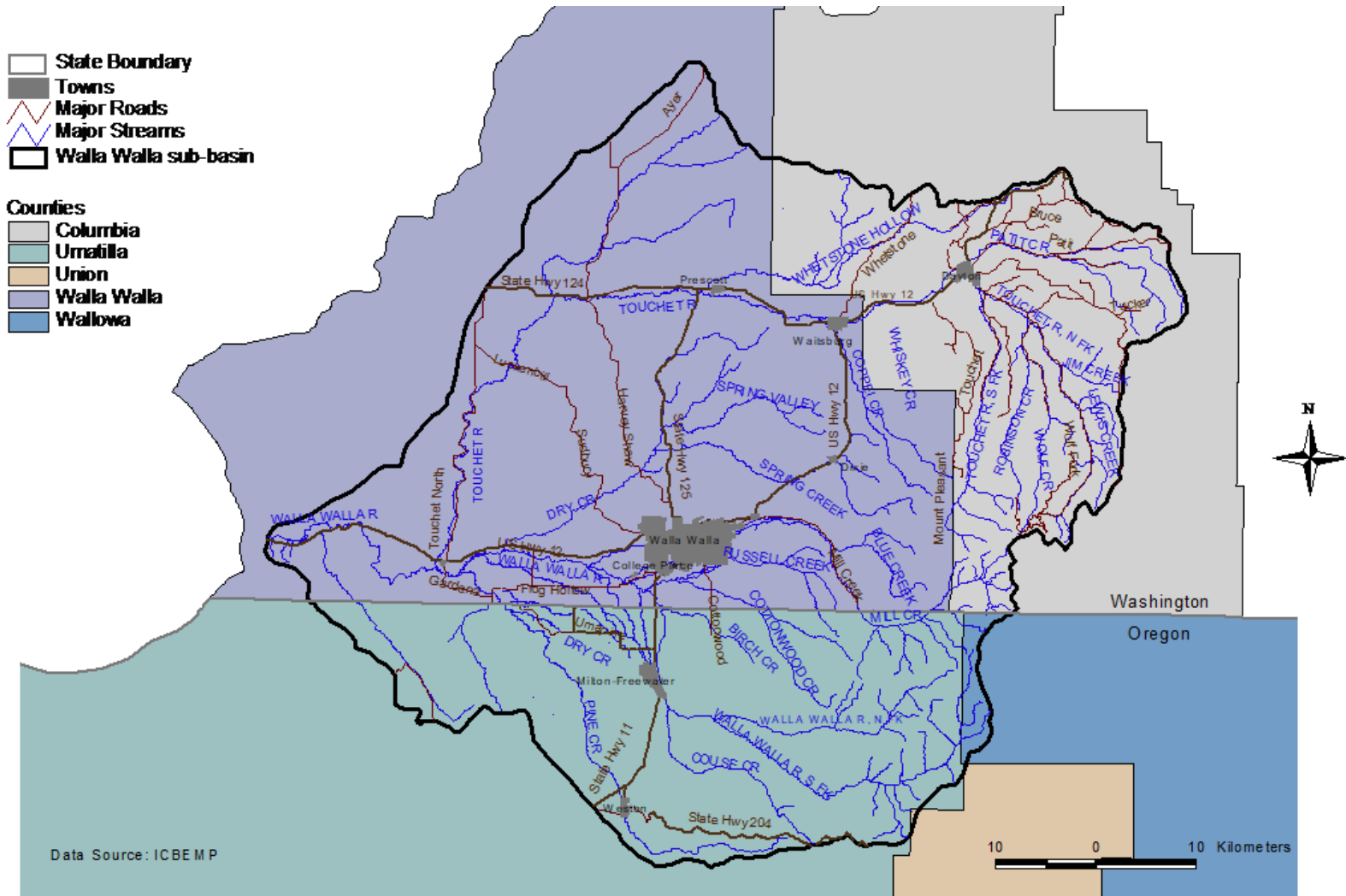
Geological Framework



Tribal Ceded Lands

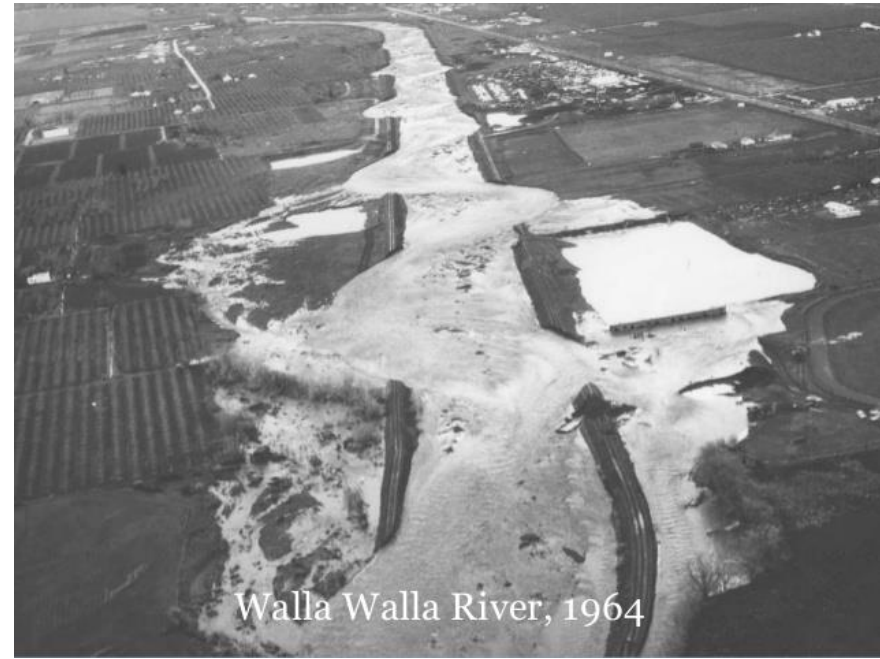


Jurisdictional Boundaries

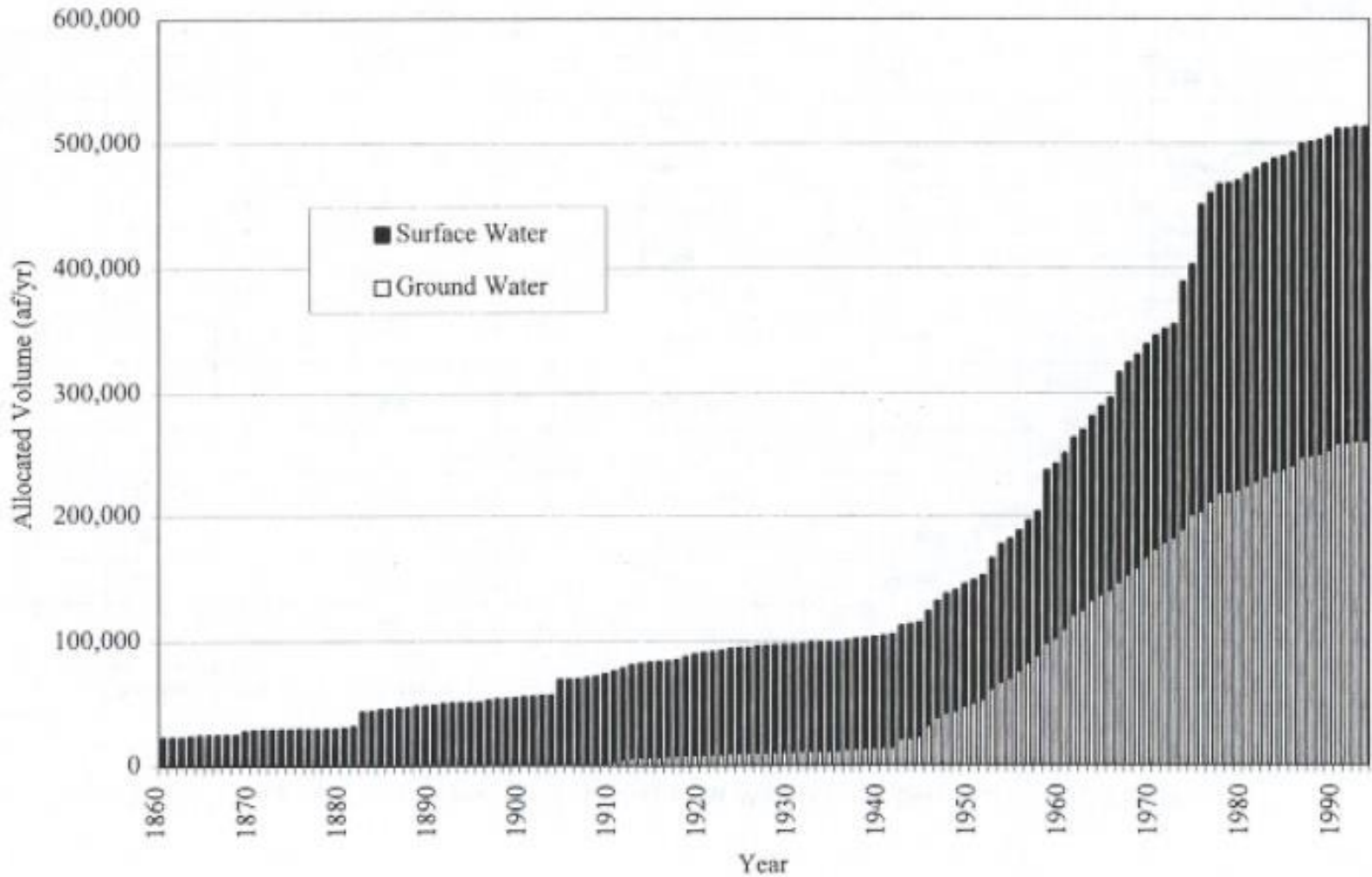


Water Management

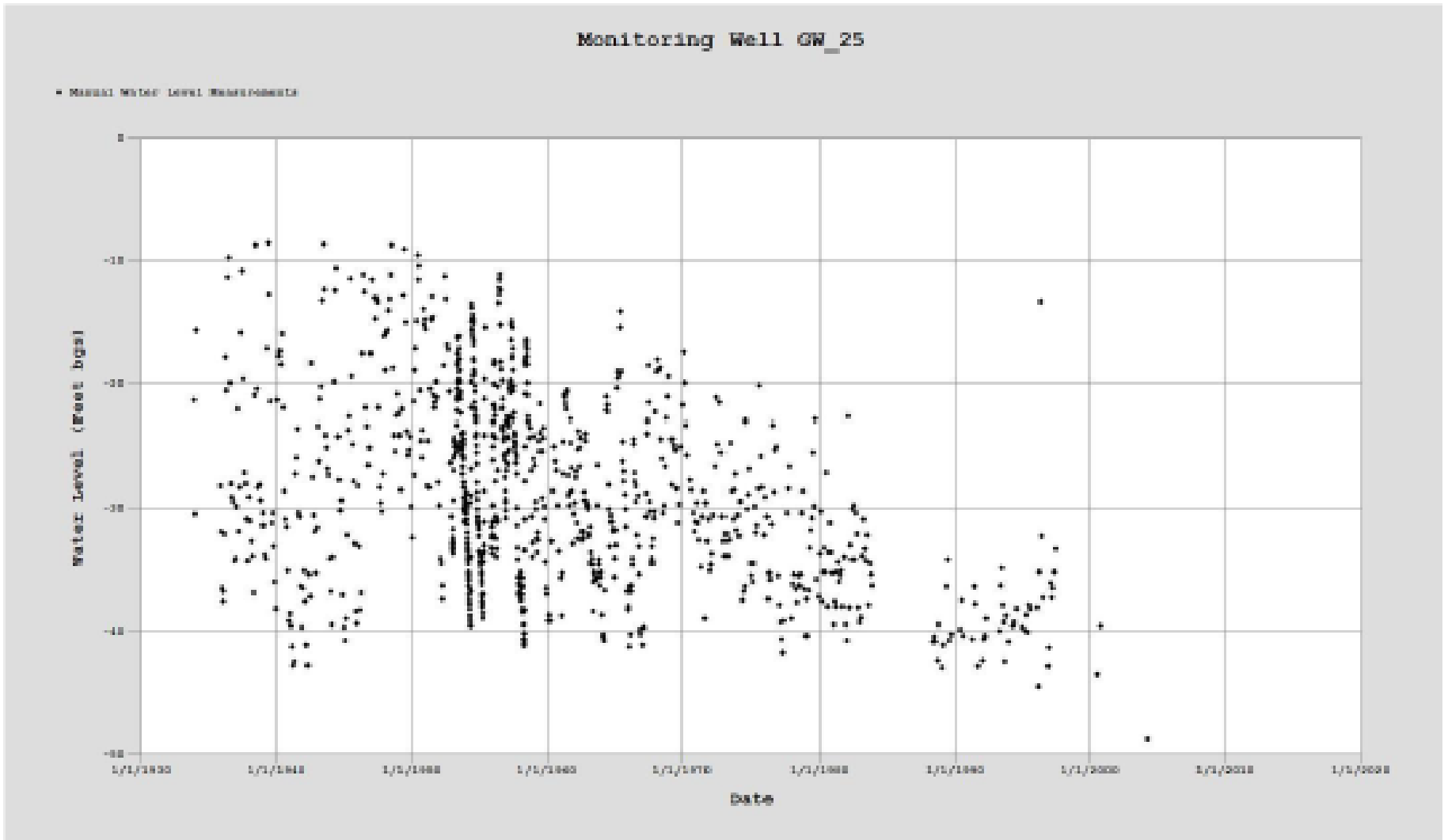
Historical Water Management



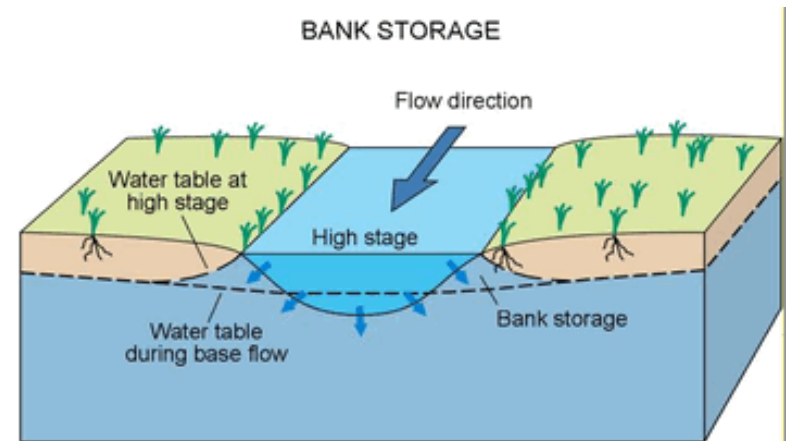
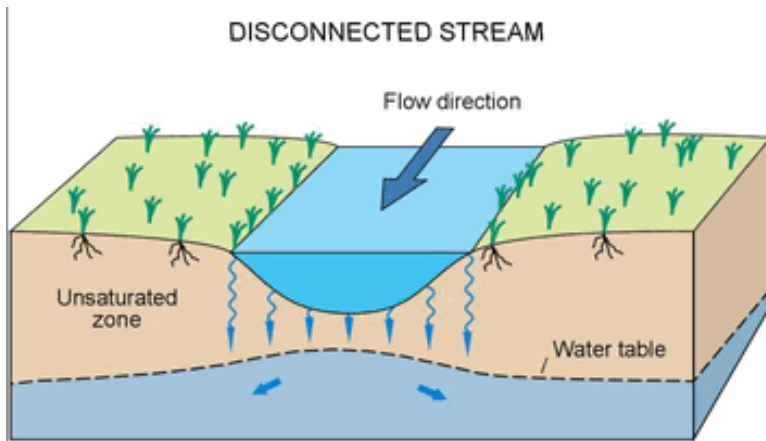
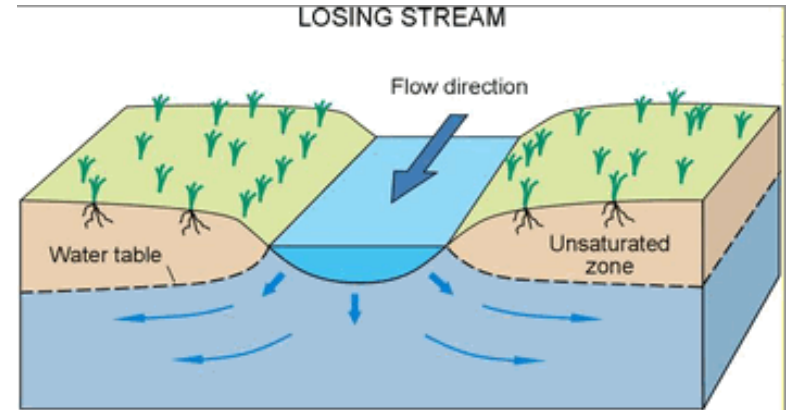
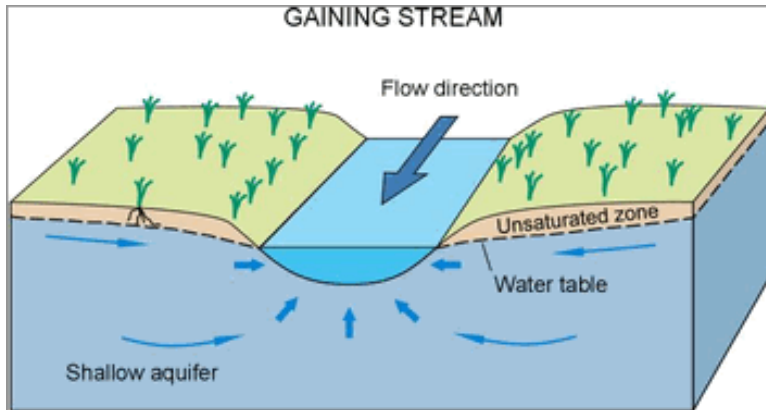
Allocation of Water Rights



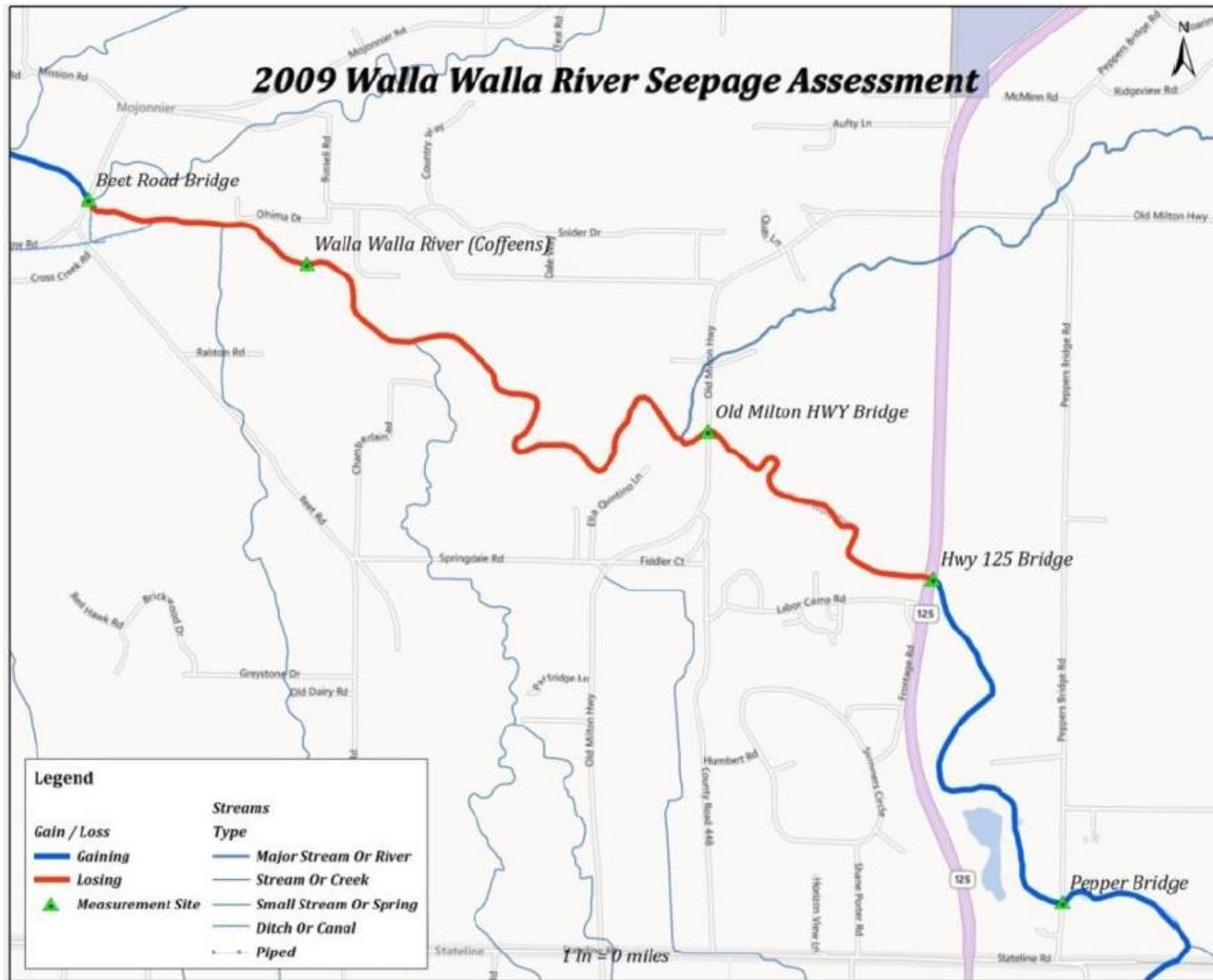
Well Level Declines



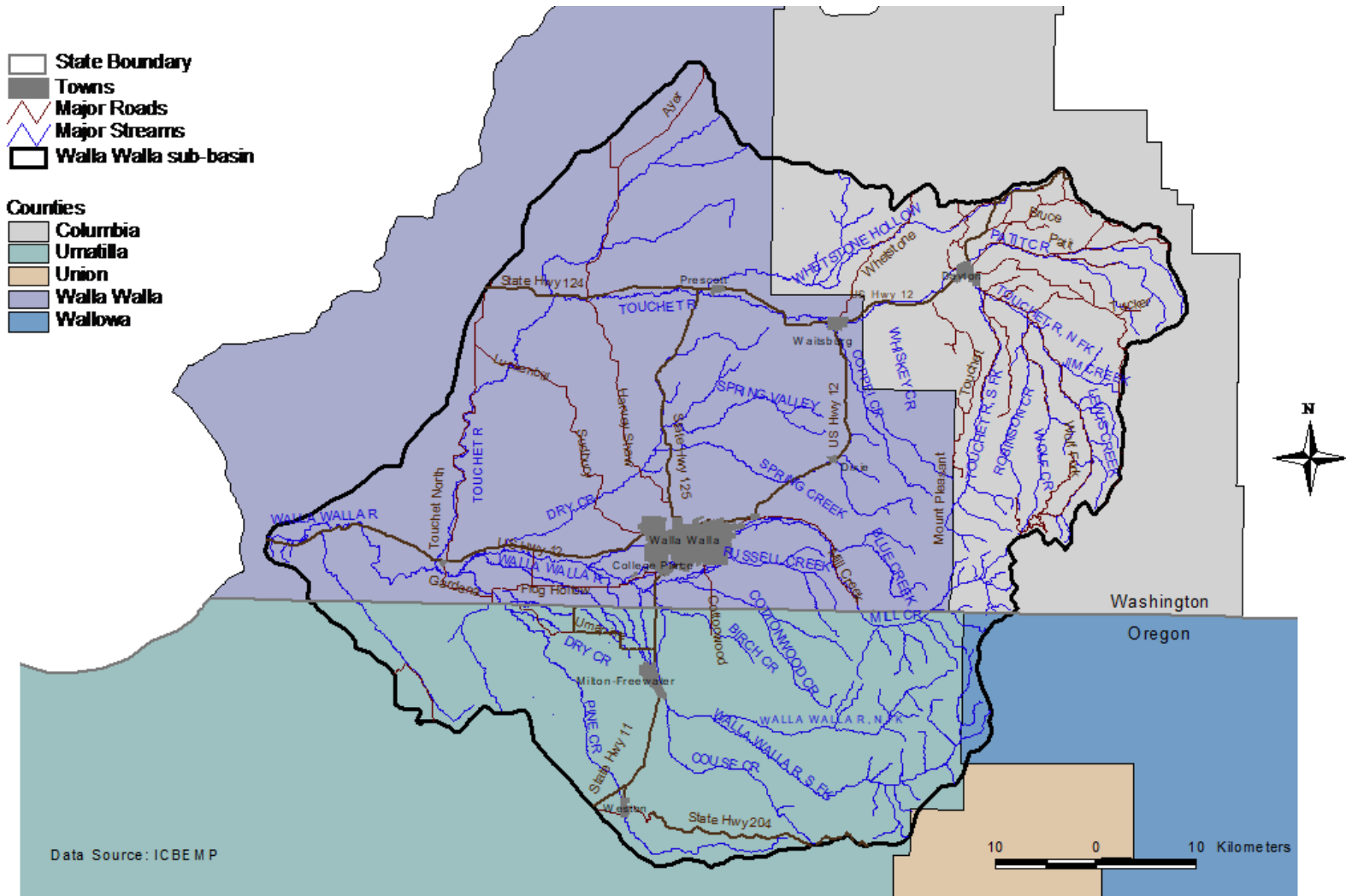
Water Interactions



Gaining and Losing Reaches



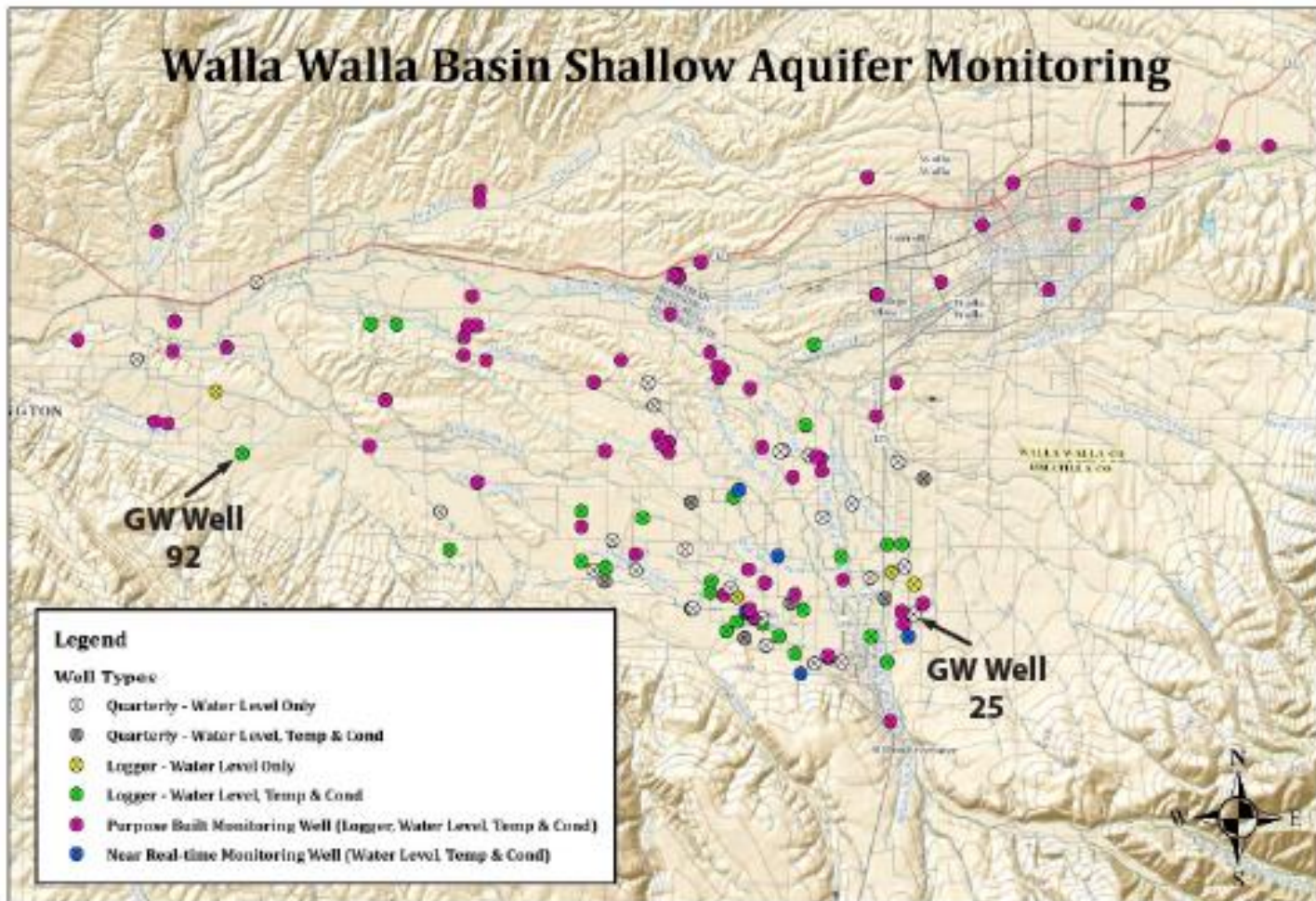
Jurisdictional Boundaries



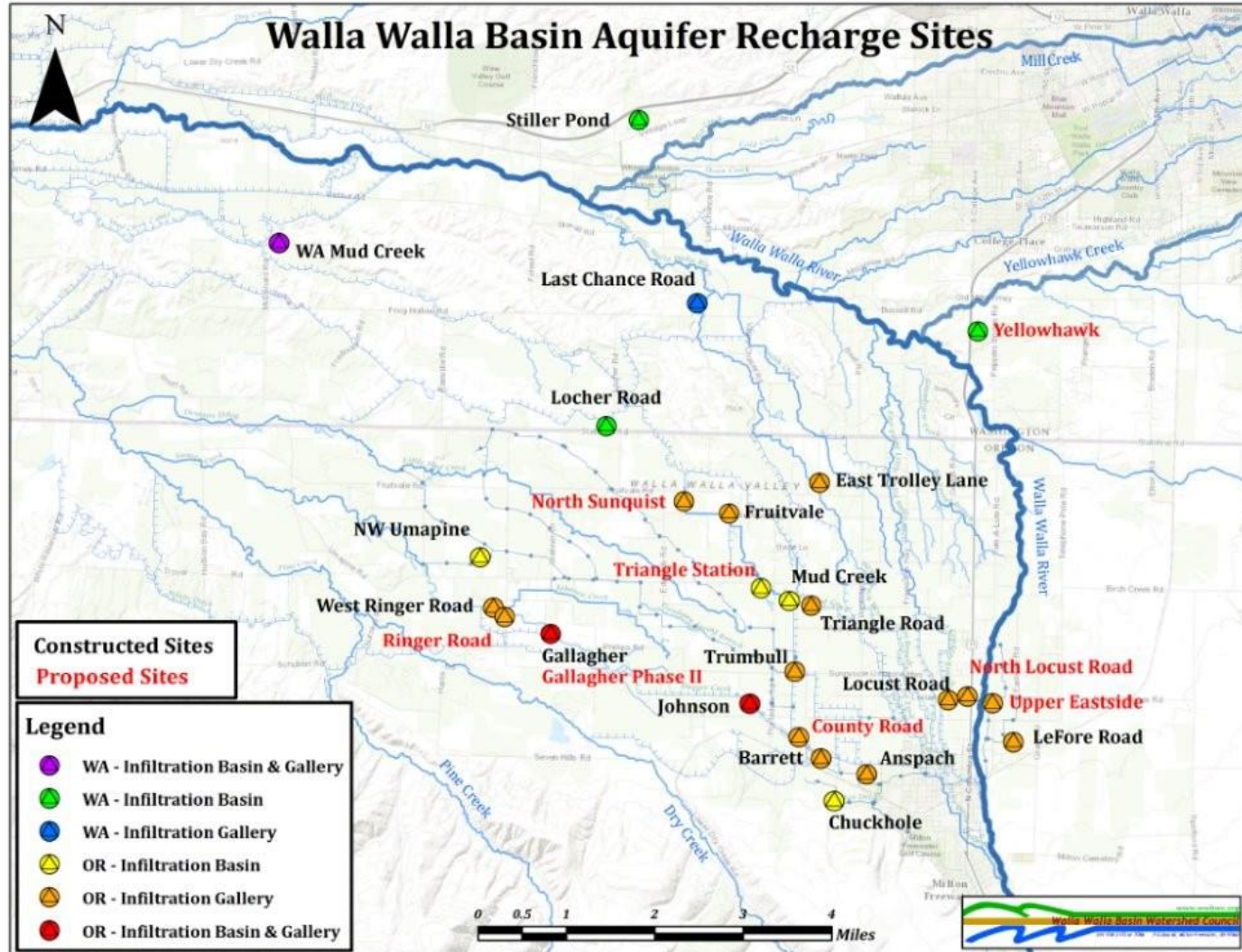
Cross-Boundary Challenges

- **Oregon “surplus” = Washington “supply”**
 - **Water flow not “trusted” or “protected”**
 - **Water conserved in OR diverted in WA**
- **Walla Walla Basin Watershed Council (OR)**
 - **Operating across state line boundary**
 - **Dependent on grant funding**
 - **“Fragile system”**

Groundwater Monitoring



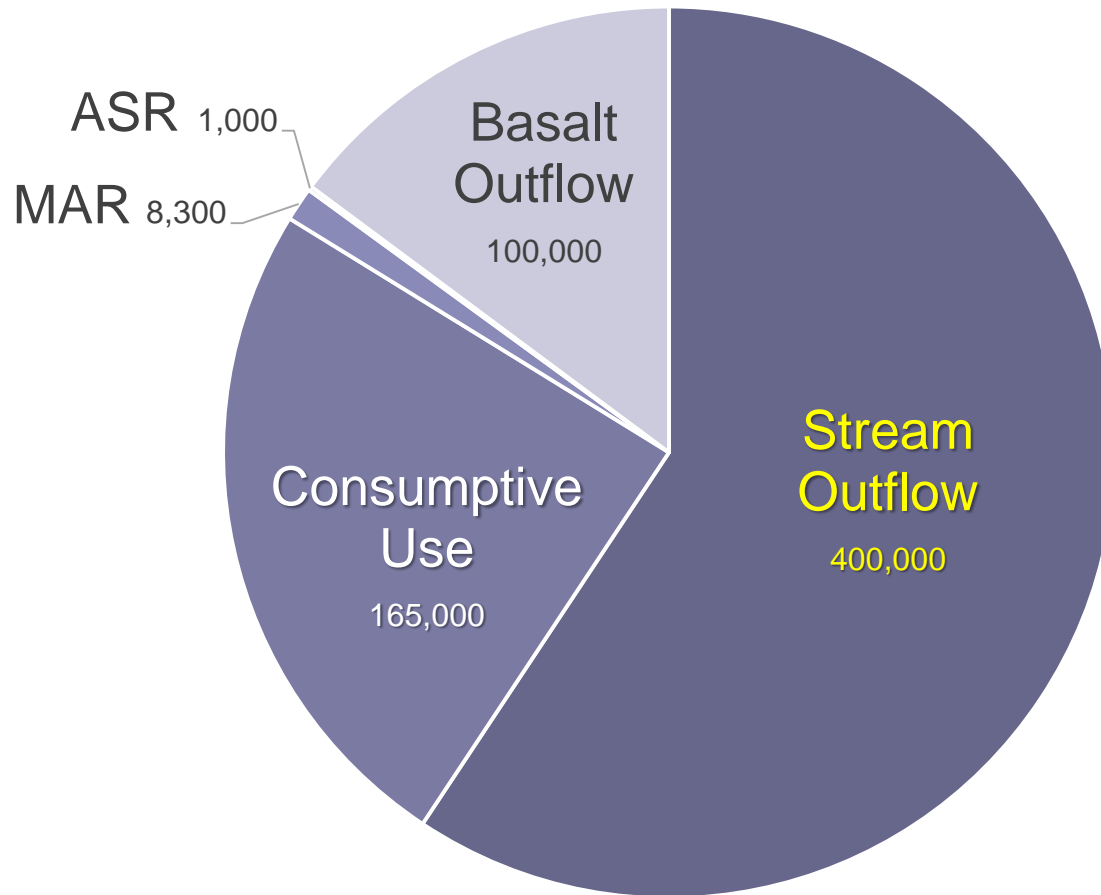
Managed Aquifer Recharge



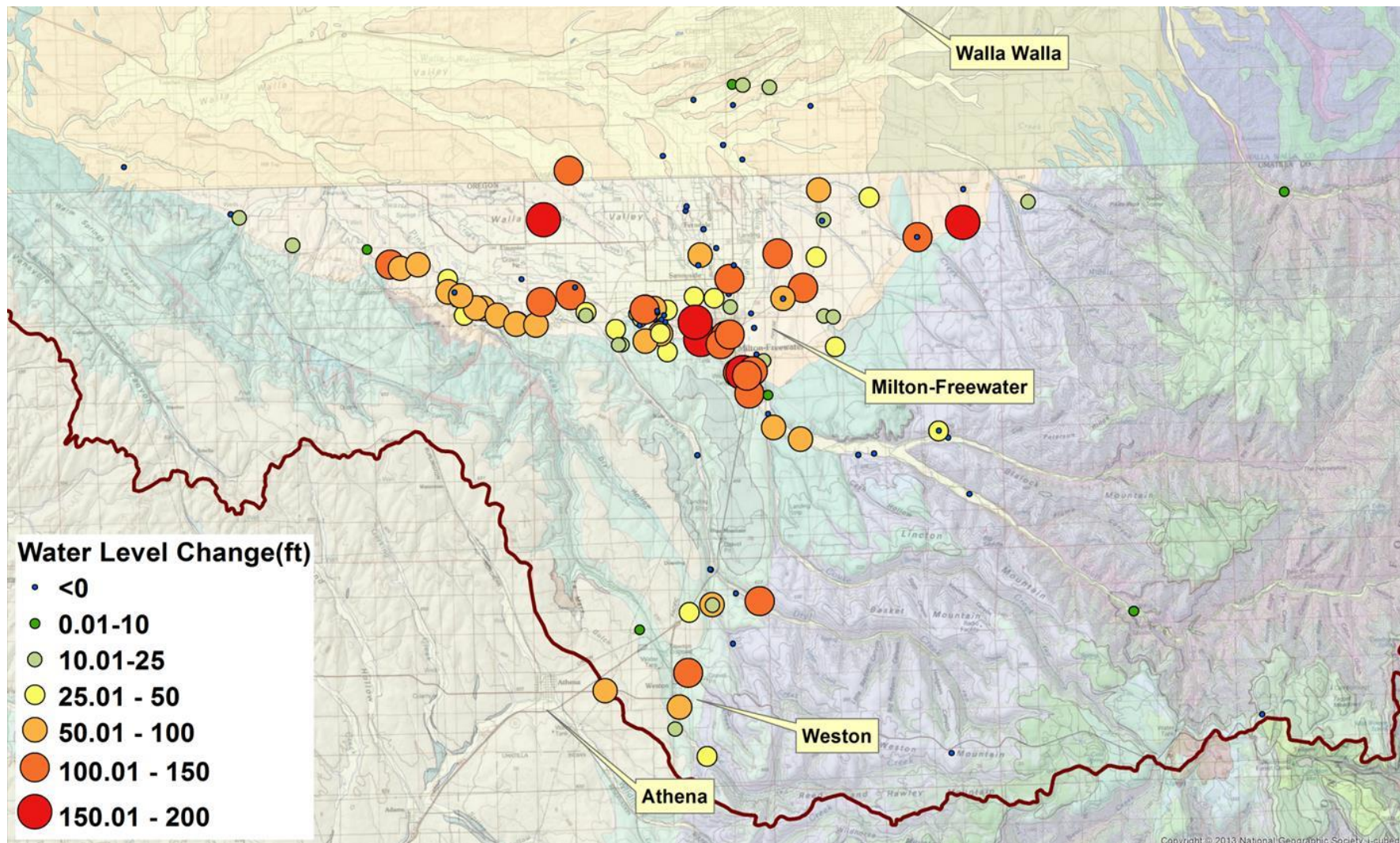
Artificial Aquifer Recharge

- **Managed Aquifer Recharge (MAR)**
 - **16 active sites**
 - 12 sites in OR
 - 4 sites in WA
 - **8 proposed sites**
 - 7 sites in OR
 - 1 site in WA
- **Aquifer Storage and Recovery (ASR)**
 - **1 active site (two wells)**
 - **Several studying feasibility/design**

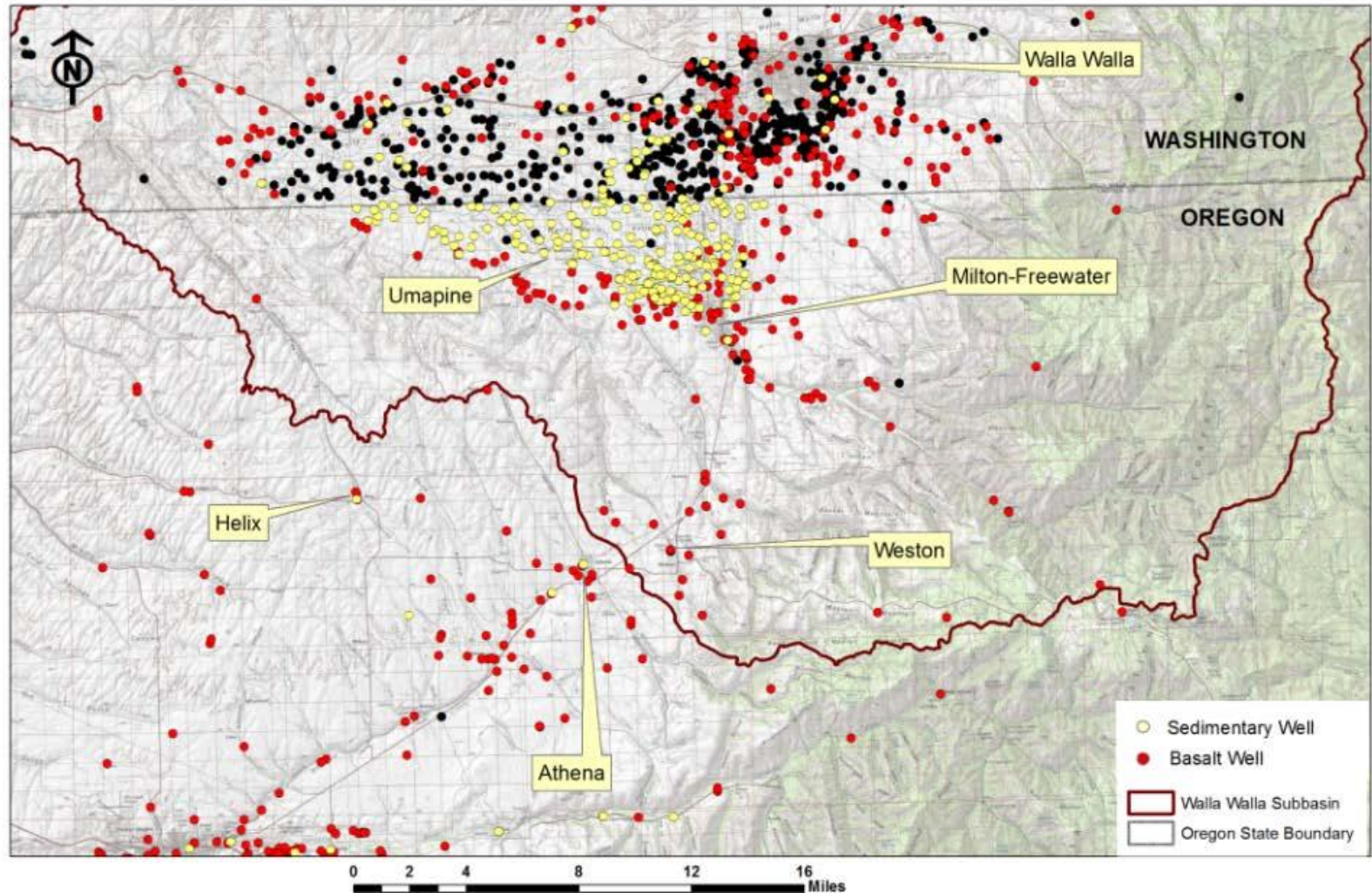
Managing Water



Basalt Water Level Declines



SWMPA



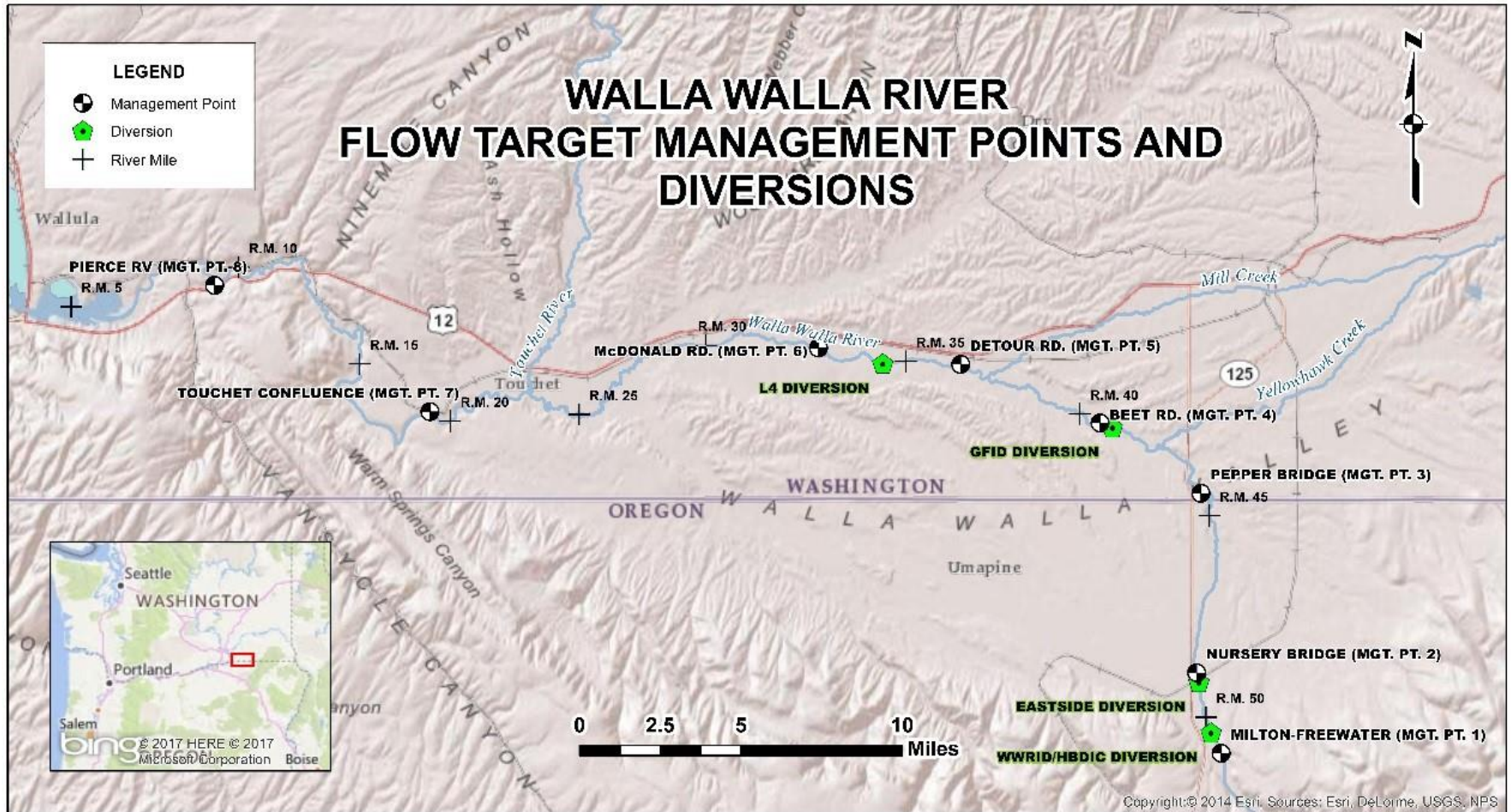
Walla Walla Flow Study

Stated Objective

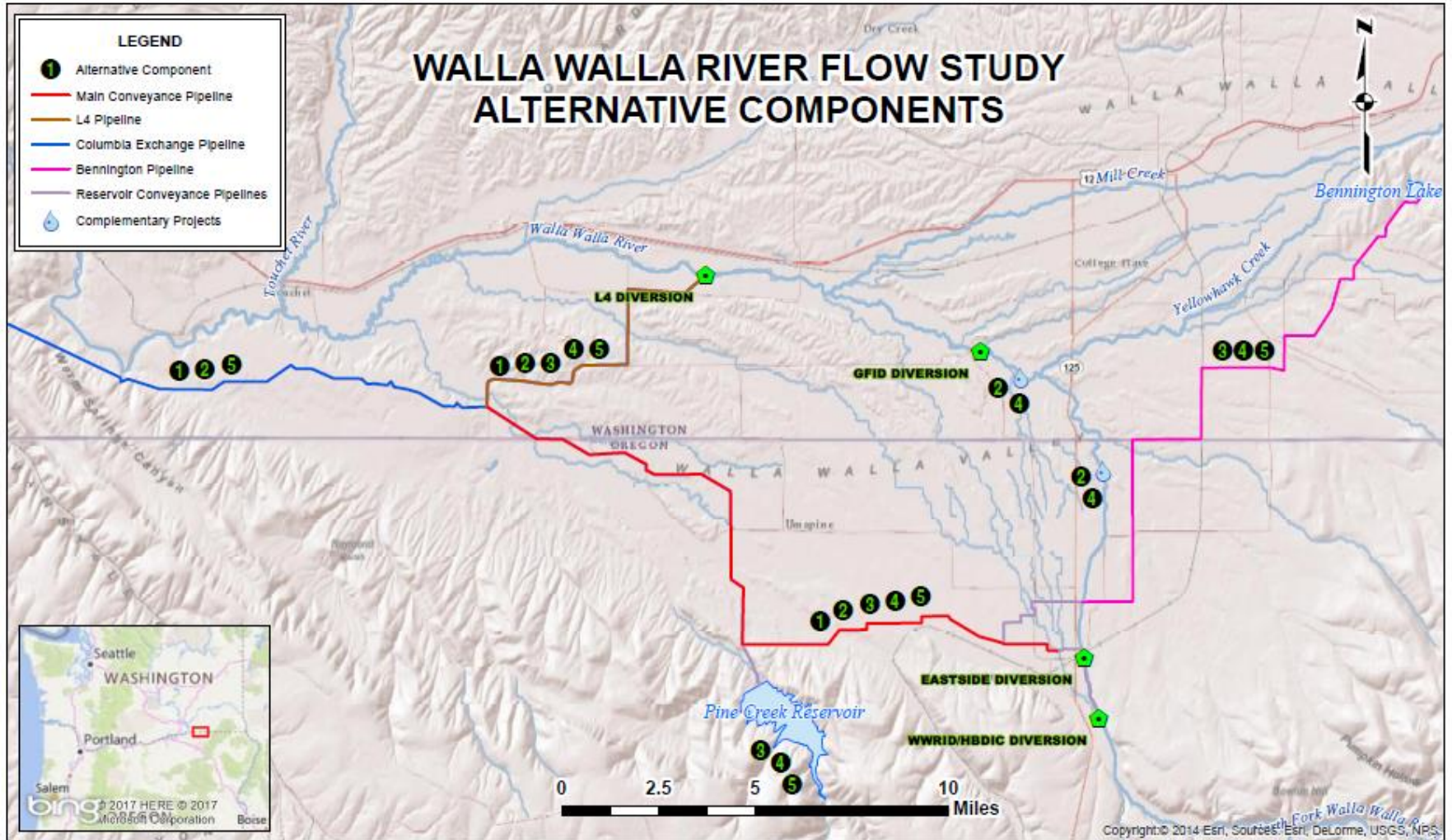
Identify and evaluate strategies to increase stream flows in the Walla Walla River... for native fish, while maintaining the long-term viability of and water availability for irrigated agriculture, residential, and urban use.

- Walla Walla Basin Integrated Flow Enhancement Study (2014-present)

Walla Walla Flow Study



Walla Walla Flow Study



Challenges

- How much “surplus” water is **available**?
- How should we manage **flood** flows?
- Should we divert the “surplus” water from the **Walla Walla River**... or the **Columbia**?

Three Water Challenges

- **Surface Water**
 - **Insufficient flow during summer**
- **Groundwater**
 - **Declining water levels in two aquifers**
 - Sedimentary/alluvial surface aquifer
 - Basalt aquifer(s)

Challenges

- Whose job is **surface** water sustainability?
- Whose job is **ground** water sustainability?
- Can we effectively manage **surface** and **ground** waters as separate resources?
- Can we equitably manage **Oregon** water and **Washington** water as separate resources?
- How will we **define** “surplus” water?
- How will we **allocate** “surplus” water?

Summary

- **Surface water is challenging to manage**
- **Groundwater is **more** challenging to manage**
- **Boundaries present **additional** challenges**
- **Progress toward **sustainability** requires:**
 - **Integration of surface and ground water**
 - **Cross-boundary coordination**
 - *Possibly new forms of organization*
 - ***Trust, time, money, energy and patience!***

Questions and Comments



John Warinner PE CWRE

jwarinner@aspectconsulting.com

541.306.3614