



## Groundwater Model Development for the Wood River Valley

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## Talking Points

- Why build a groundwater flow model?
- Scope of work
- Roles and responsibilities
  - USGS, IDWR, IWRB, MTAC
- Project timeline
- Model design objectives

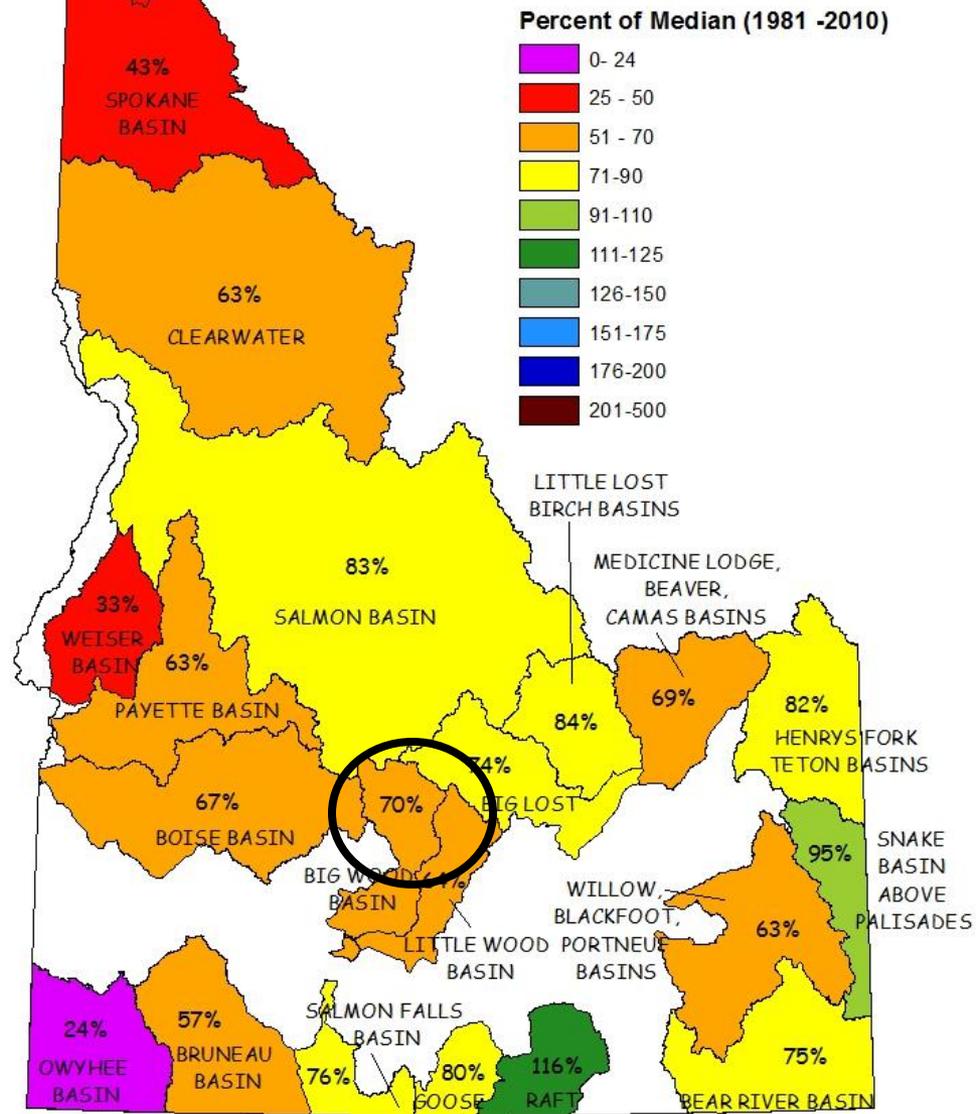
# Why build a groundwater flow model?

- Big Wood River upstream from Magic Reservoir fully appropriated (1980)
- Groundwater and surface water are hydraulically connected (1991)
- Need to be able to evaluate/quantify gw/sw interaction
- GW flow model is tool of choice for planning, water resource management, & conjunctive administration

# Mountain Snow Water Equivalent

As of Monday, March 16, 2015.

Idaho Snow Survey SNOTEL Data



## Scope of Work

- Task 1 - Additional data collection
  - Water level synoptic in October 2012 = snapshot of aquifer
  - Seepage surveys in August 2012, October 2012, and April 2013
- Task 2 – Fact sheet preparation and publication
  - Summarizes current understanding of groundwater/surface water interaction
  - Describes IDWR/USGS collaborative modeling project

## Scope of Work (cont'd)

- Task 3 – Construct a numerical groundwater flow model
  - Task 3.1 – Compile and update existing data
    - New water level, pumping, and reach gain data
  - Task 3.2 – Construct & calibrate a steady state model
    - Update aquifer water budget
    - Discretize model (cut up model area into small pieces)
    - Parameterize (assign hydraulic properties to the pieces)
    - Calibrate (adjust parameters until simulated and observed flows/water levels match)
  - Task 3.3 – Convert SS to transient/time-dependent model
  - Task 3.4 – Apply model for evaluation of scenarios

## Scope of Work (cont'd)

- Task 4 – Prepare report summarizing model construction and results
  - Publish as USGS Scientific Investigation Report and release model to public

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Prepared in cooperation with the  
IDAHO DEPARTMENT OF WATER RESOURCES  
WASHINGTON STATE DEPARTMENT OF ECOLOGY  
UNIVERSITY OF IDAHO  
WASHINGTON STATE UNIVERSITY



# Ground-Water Flow Model for the Spokane Valley-Rathdrum Prairie Aquifer, Spokane County, Washington, and Bonner and Kootenai Counties, Idaho



## Roles and Responsibilities

- USGS primarily responsible for model construction and report preparation
  - Jim Bartolino, Ph.D. = lead investigator
  - Jason Fisher, Ph.D. = lead modeler
- IDWR is leading the calibration effort using PEST and providing modeling support
  - Mike McVay, P.E, P.G., Jennifer Sukow, P.E., P.G. and Allan Wylie, P.G., Ph.D. = modelers
  - Neeley Miller (IWRB staff) = project coordinator
    - Project planning, public outreach, etc.

# USGS/IDWR modeling team



Jason Fisher  
USGS



Mike McVay  
IDWR



Jennifer Sukow  
IDWR



Allan Wylie  
IDWR



Jim Bartolino  
USGS



Neeley Miller  
IDWR



Sean Vincent  
IDWR

## Roles and Responsibilities (cont'd)

- IWRB is anticipated end user of model and is providing project financing via the Aquifer Planning and Management Fund

# Roles and Responsibilities (cont'd)

- MTAC
  - Stakeholder group representatives
  - Vehicle for technical stakeholder input
    - Data sharing
    - Input on modeling methodology
    - Peer review of work products
  - Forum for exchange of data/ideas → provides transparency

## Project Timeline

- Kickoff meeting - March 2013
- First bimonthly MTAC meeting - April 2013
- Initial model construction - April 2014
- Model calibration – in progress
- Model rollout - end of 2015

# WRV Model Design Objectives

1. Provide a basis for conjunctive administration
  - Quantify impacts on surface water of groundwater pumping, pumping curtailment, mitigation measures, & POD transfers
2. Accurately represent/quantify aquifer recharge, groundwater flow, and aquifer discharge
3. Improve understanding of river/aquifer system and guide future investigations
4. Provide tool for long-term planning (50 yrs)
5. Be accessible, well documented, and defensible in litigation



## Wood River Valley Groundwater Model Project Webpage

<http://www.idwr.idaho.gov/WaterInformation/Projects/woodriver/>

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