IDAHO Department of Water Resources

Groundwater Model Development for the Wood River Valley

Presented by Sean Vincent, P.G.
March 19, 2013

IDWR

Talking Points

- Why do we need a model?
- What is the scope of work?
- Who will do it?
- How long will it take?
- Who pays for it?
- Transparency

Not Talking Points

- Looming water crisis
- Water rights administration
- Water District expansion/creation
- Filling out NCAA tournament brackets

Why 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 gw/sw interaction
- GW flow model is tool of choice for planning, water resource management, and conjunctive administration

Pre-modeling activities

- Sponsored 4 new USGS gages in 2010 (North Fork, East Fork, Trail Creek, Warm Springs)
  - http://waterdata.usgs.gov/id/nwis/current?type=flow
- Expanded IDWR monitoring well network
- Developed and began executing work plan w/ budget and schedule

What is the project scope?

- 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

What is the 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

Big Wood River @ Glendale Bridge (8/2/2012)

What is the 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

Who will do the work?

- Collaboration between IDWR and USGS
  - USGS has recent work history in Wood River Valley
  - USGS is neutral party w/ expertise/experience
  - IDWR involvement allows customization of tool for IDWR and IWRB uses
  - USGS and IDWR have history of successful collaboration (e.g., SVRP model)

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USGS
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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

Who will do the work? (cont'd)

- USGS primarily responsible for model construction and report preparation
  - Jim Bartolino, Ph.D. = lead investigator
  - Jason Fisher, Ph.D. = lead modeler

- IDWR will perform GIS work and lead calibration effort using PEST software
  - Mike McVay, P.E, P.G., Jennifer Sukow, P.E., P.G. and Allan Wylie, P.G., Ph.D. = modelers
  - Helen Harrington, P.G. and Neeley Miller = project coordination, public outreach, planning

When will it happen?

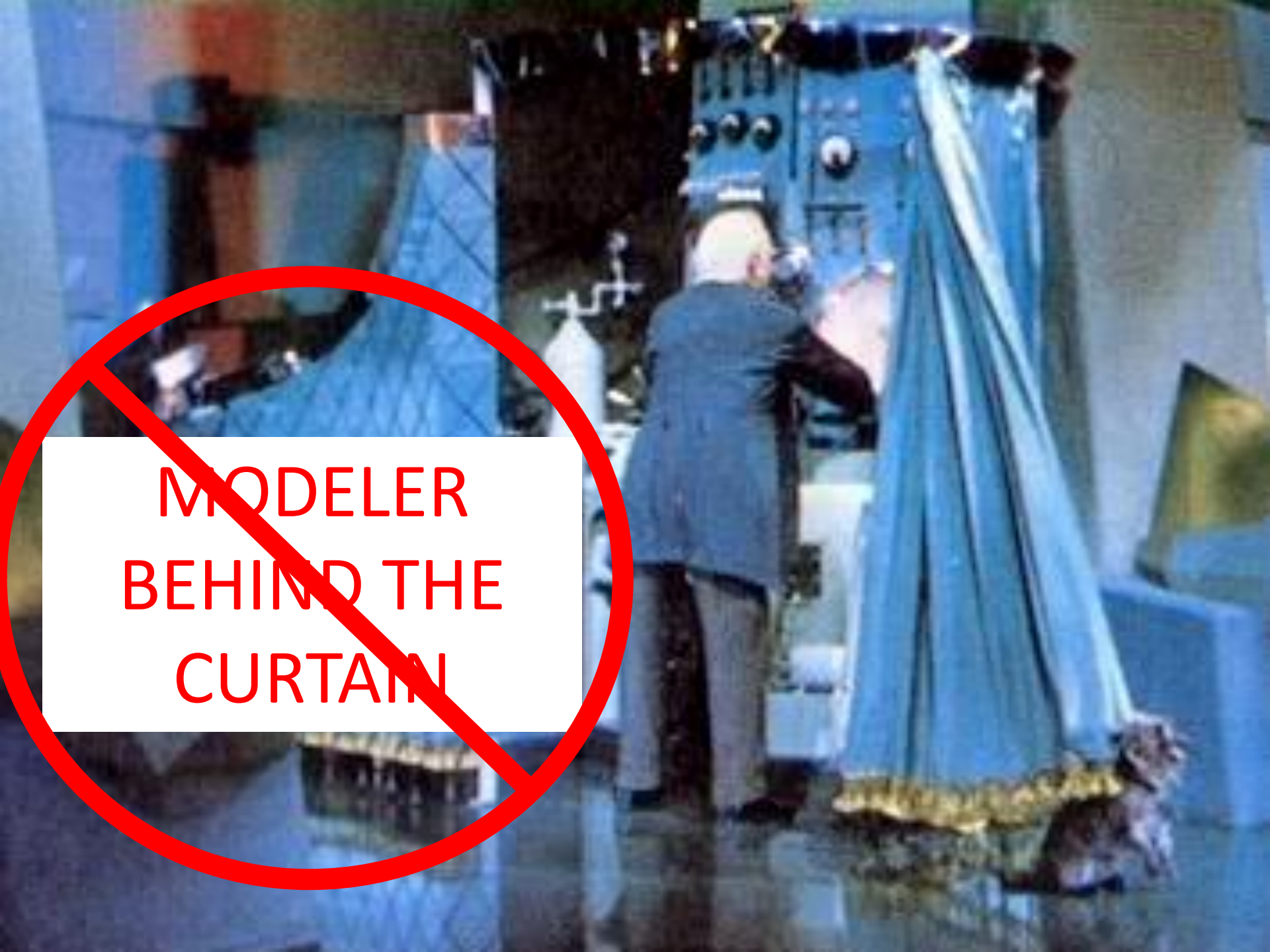
- Project is funded and underway
- Timing excellent because USGS has laid the groundwork for model development
  - Water Budget report in 2009
  - Hydrogeologic Framework report in 2012
  - IDWR thanks USGS and USGS cooperators
- Model rollout scheduled for late 2015 (end date constrained by budget)

Who pays for it?

- State of Idaho financing from Aquifer Planning and Management Fund
- USGS federal matching funds
- IDWR labor costs from operating budget

Transparency

- Public domain model and software (MODFLOW)
- Documentation
  - USGS scientific report, design objectives document, meeting summaries, etc.
- IDWR website to disseminate data, documents, model files, etc.
- Semi-annual public meetings
- Modeling Technical Advisory Committee (MTAC)


MODELER
BEHIND THE
CURTAIN

Modeling Technical Advisory Committee (MTAC)

- Forum for data sharing and discussion of modeling methodology
- Provides for transparency and is vehicle for *technical* stakeholder input
  - Technical experts (e.g., hydrogeologists, hydrologists, water managers, and modelers)
- Voluntary membership
  - Encourage representation from interested parties (e.g., USGS cooperating organizations, municipalities, private industry, water user entities, agencies)
- Bi-monthly meetings
  - 1st meeting is April 11 in Conference Room 200 @ Community Campus in Hailey

Further Information

Wood River Valley Groundwater Modeling Project →

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

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