

Red River Basin Groundwater Task

Derek W. Ryter, Ph.D., P.G.

U.S. Geological Survey Oklahoma Water
Science Center

Objectives

- Model the groundwater and surface-water system in alluvial aquifers that are connected to major streams in the Red River Basin upstream of Lake Texoma and Denison Dam; and
- Forecast effects of water use on available groundwater and streamflow in the upper Red River system.

Upper Red River Basin Model

- Include major alluvial aquifers in the upper Red River basin that are directly hydraulically connected to the stream system and have substantial effect on streamflow.
- Include ongoing and published hydrologic studies and models.
- Use results from other tasks (runoff, water use, etc.)
- Calibrate model and construct predictive simulations.

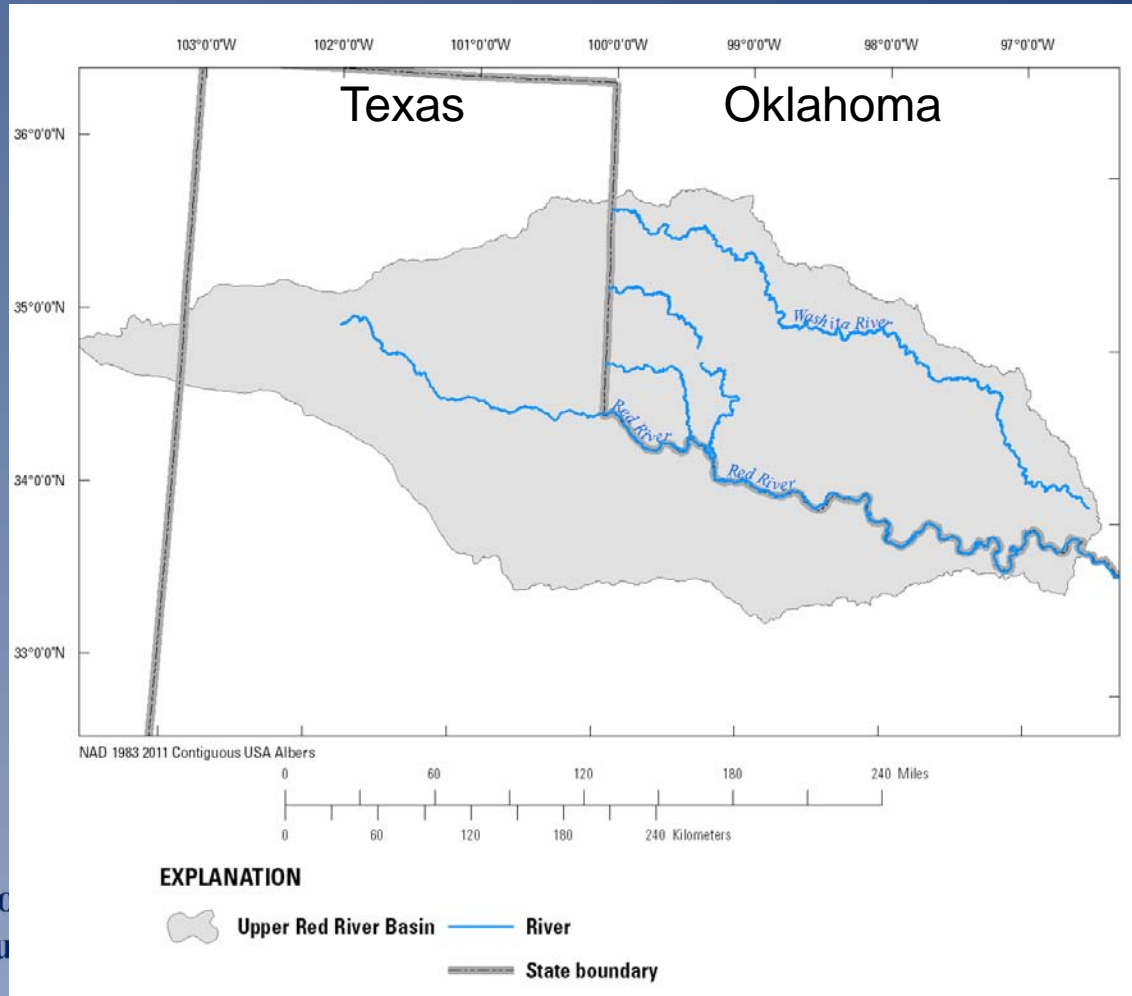
Work Plan

- 2016: background research, collect hydrogeologic, water-use, runoff and recharge data, and compile published models and reports.
- 2017: collect additional data, build and calibrate model.
- 2018: build and run predictive model scenarios, write and publish reports.

Personnel

- USGS staff at the Oklahoma Water Science Center
- State agencies such as the Oklahoma Water Resources Board

Aquifers in the Upper RR Basin



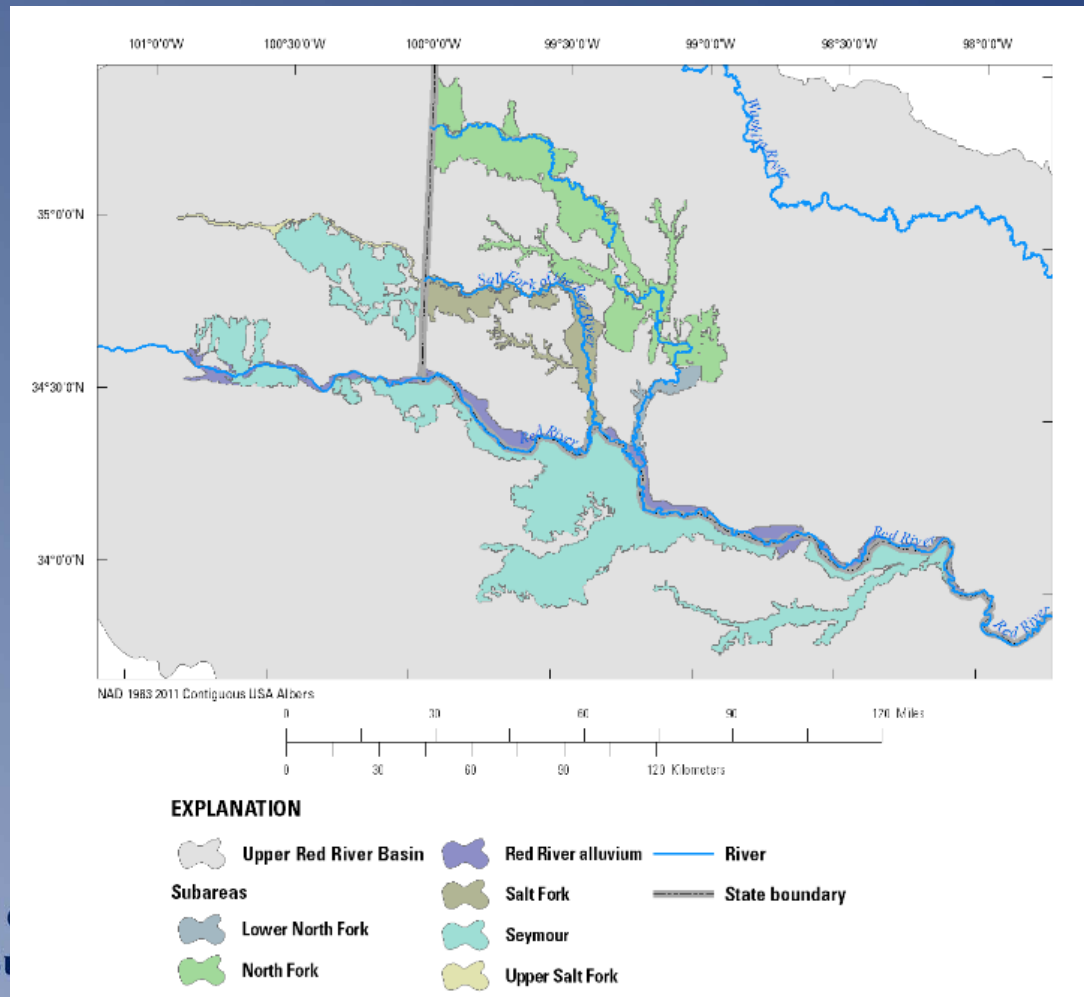
Aquifer Studies

Aquifer	Project dates (federal fiscal year)
Seymour aquifer	2004
North Fork Red River aquifer	2013-2016
Salt Fork Red River aquifer	2015-2018
Upper Washita aquifer	2015-2018
Lower Washita aquifer	2016-2019
Red River alluvial aquifer	Not scheduled
Red River Focus Area Study	2016-2018

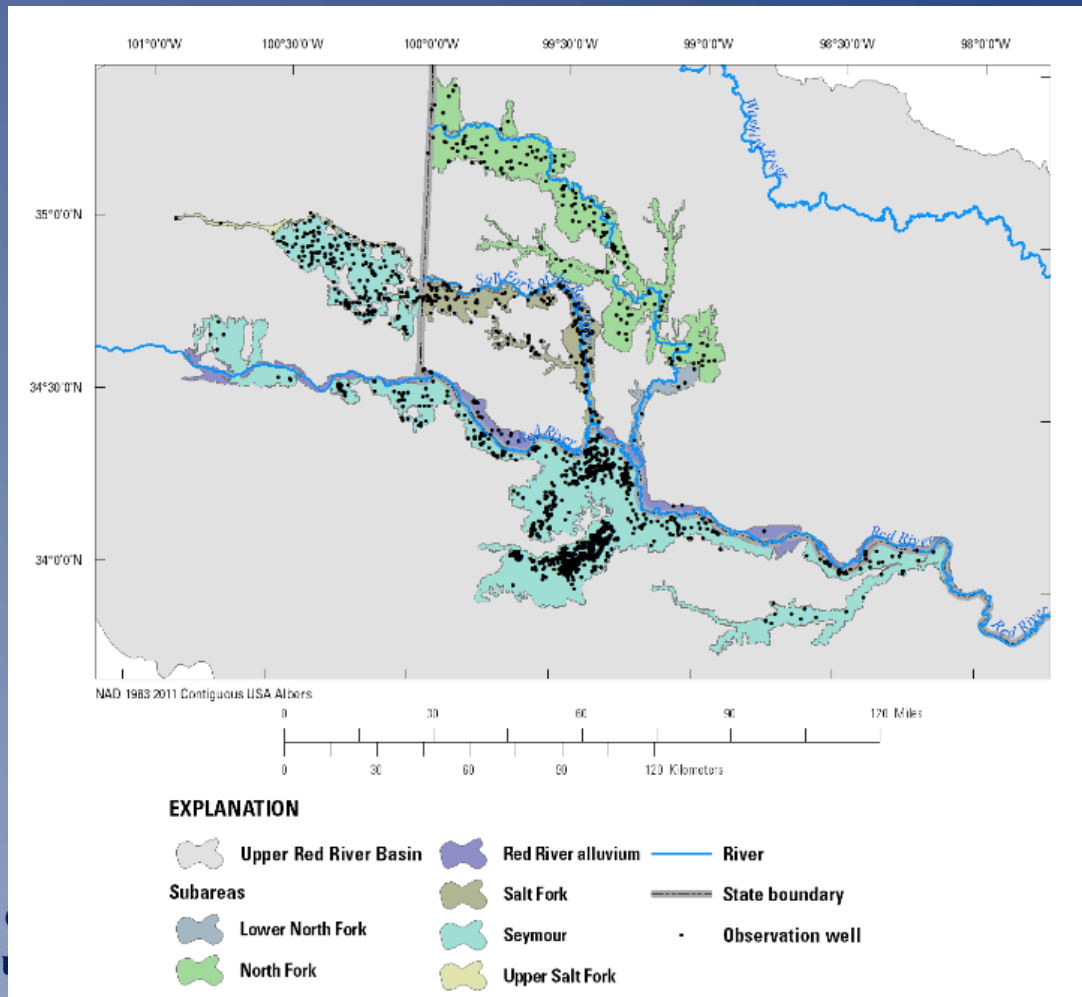
Aquifer Studies

Aquifer	Project dates (federal fiscal year)
Seymour aquifer	2004
North Fork Red River aquifer	2013-2016
Salt Fork Red River aquifer	2015-2018
Upper Washita aquifer	2015-2018
Lower Washita aquifer	2016-2019
Red River alluvial aquifer	Not scheduled
Red River Focus Area Study	2016-2018

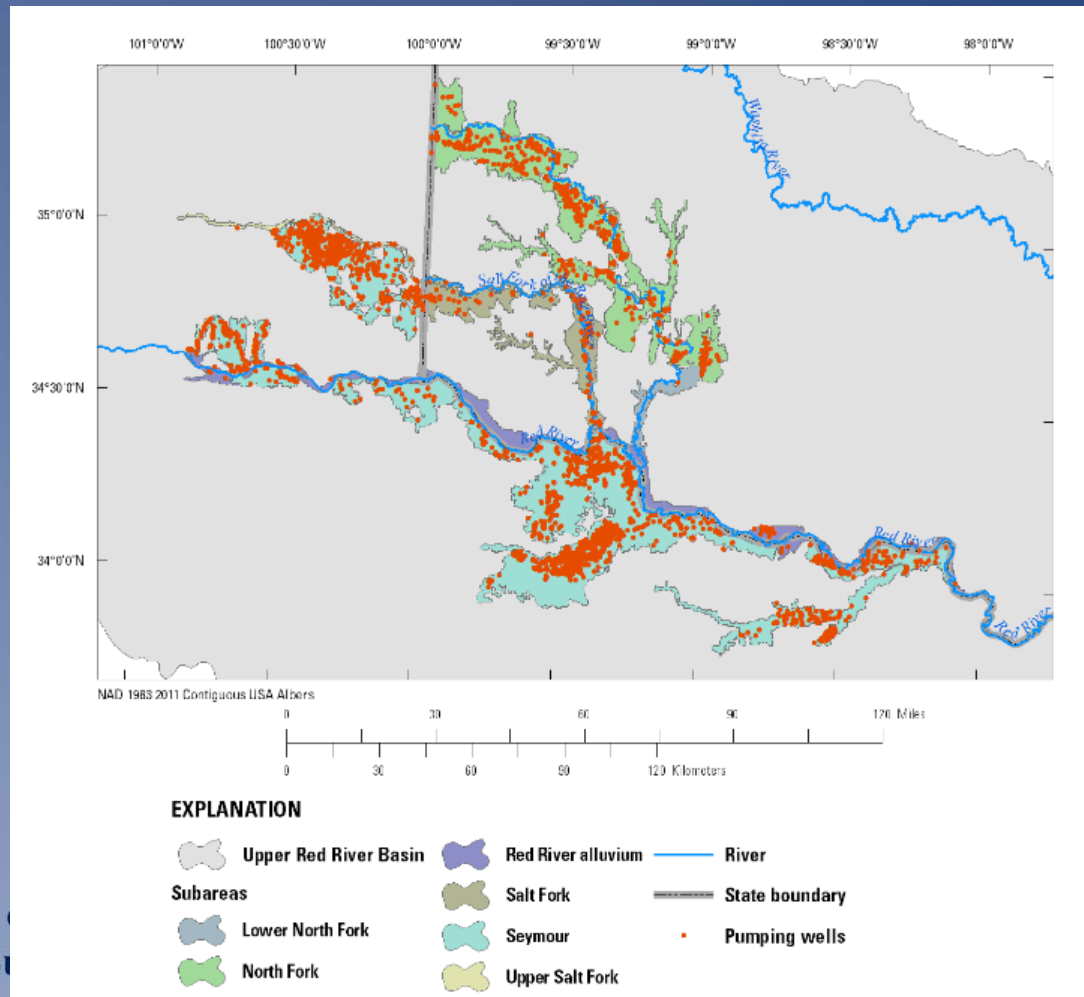
Aquifers included



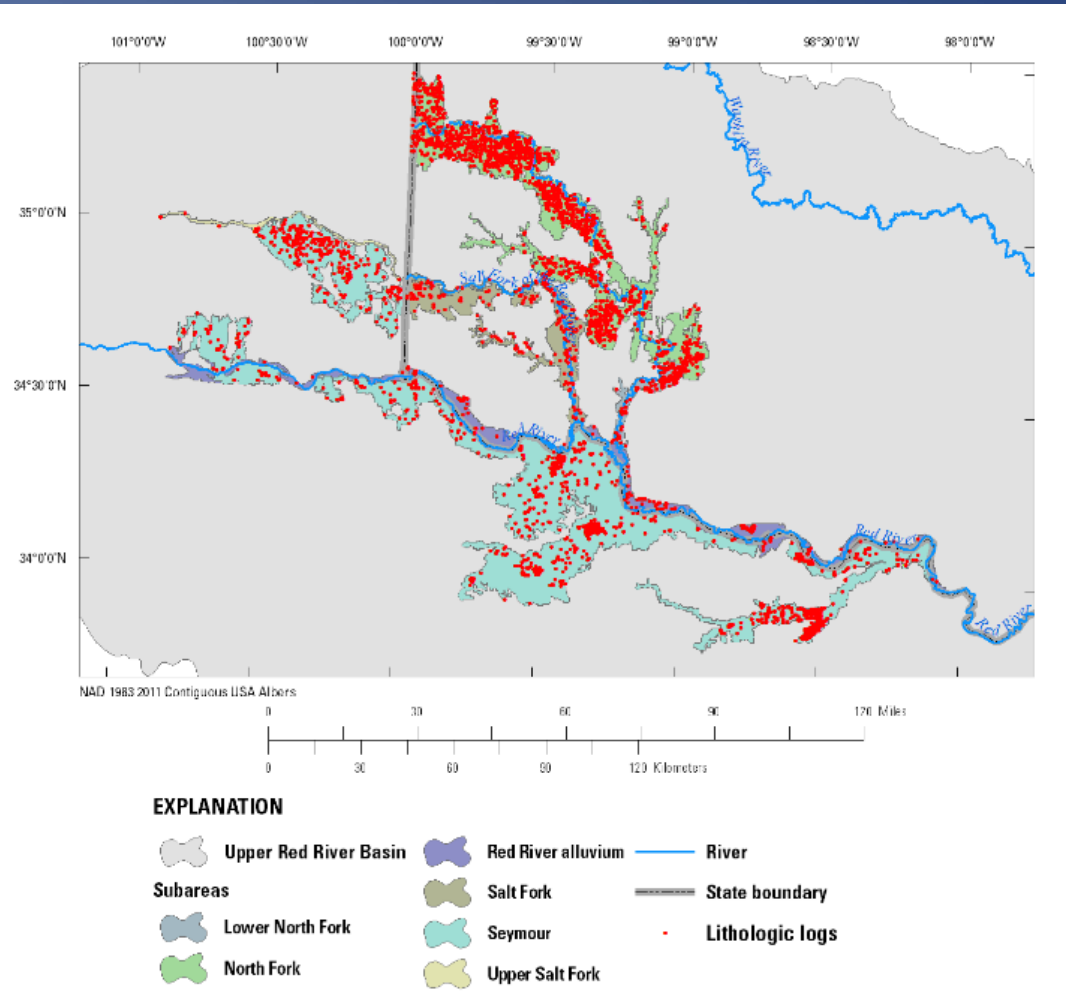
Water levels



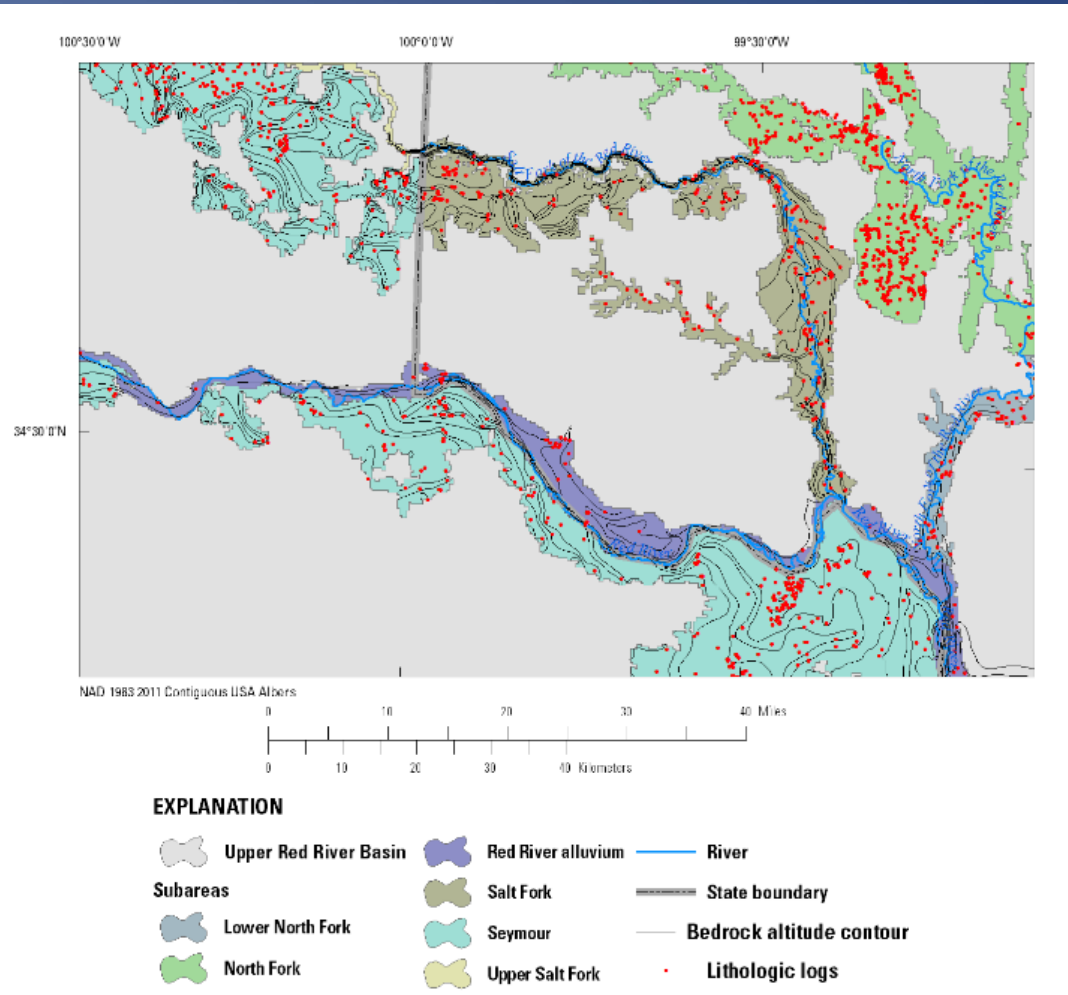
Groundwater use



Lithology



Refined aquifer base



The coming year

- Start building the model and developing water management predictive scenarios
- Work with other tasks and ongoing projects to get water-use, runoff and hydrogeologic data.
- Complete and calibrate model

Any questions?

Contact information

Derek Ryter, dryter@usgs.gov

USGS Oklahoma Water Science Center
202 NW 66th Street, Building 7
Oklahoma City, OK 73116