

Peer Review Summary Document

(7/30/2012)

Peer Review Plan

http://www.usgs.gov/peer_review/docs/groundwater_quality_fayetteville_shale.pdf [17 KB PDF].

Title and Authorship of Information Product Disseminated

Investigation of Shallow Groundwater Quality and Geochemistry in the Fayetteville Shale Gas Production Area, North-Central Arkansas, By Timothy M. Kresse.

Peer Review Expertise and Credentials

Peer Reviewer #1: Hydrologist earned undergraduate and graduate degrees from Penn State. For over 30 years has studied the hydrogeology of upstate New York with the U.S. Geological Survey's (USGS) New York Water Science Center at Ithaca, and also serves as the studies section chief. Current activities include studying the movement of natural brine to Onondaga Lake at Syracuse, NY; mudboil (mud-volcano) activity in the Onondaga Creek Valley; landslides in upstate New York; and carbonate aquifer studies in western New York. Coordinates USGS study efforts related to shale-gas development in New York and works with other Water Science Centers across the Marcellus 'Play' - West Virginia to New York. A member of a National interdisciplinary working group of USGS scientists to conduct a temporal and spatial analysis of surface-water and groundwater quality in areas of unconventional oil and gas development at the John Wesley Powell Center for Analysis and Synthesis.

Peer Reviewer #2: Supervisory Hydrologist with the USGS Utah Water Science Center. Completed Masters of Science degree in structural geology, and has worked on projects examining all forms of water—from effects of climate and atmospheric deposition on Rocky Mountain glaciers to groundwater flow and geochemistry. Recently completed field research study on methane transport in streams. A member of a National interdisciplinary working group of USGS scientists to conduct a temporal and spatial analysis of surface-water and groundwater quality in areas of unconventional oil and gas development at the John Wesley Powell Center for Analysis and Synthesis.

Charge Submitted to Peer Reviewers

The reviewers were asked to make an objective evaluation of the research, with particular emphasis on the geochemical section, interpretation, and discussion of results. The reviewers were notified that the subject matter could receive attention on a nationwide scale and be scrutinized at a high level of detail.

Summary of Peer Review Comments

Peer Reviewer #1: Thought the report was an excellent summary of the groundwater work in the Fayetteville Shale gas production area, that it was informative and timely, and had only minor editorial suggestions. Not being familiar with Arkansas geology, the reviewer thought that the geology figure needed a cross section for readers to be able to clearly discern the relation of shallow aquifers from the deeper Fayetteville Shale, which is the gas producing zone in central Arkansas.

Peer Reviewer #2: Thought that the overall report was nicely done, well written, and technically sound. Similar to Reviewer #1, Reviewer #2 was confused about the shallow geology with particular emphasis on the shallow flow system, length of flow paths, relation to well depth, and suggested expanding the hydrogeology section to describe the shallow flow system in greater detail.

Summary of USGS Response to Peer Reviewer Comments

Almost all editorial revisions suggested by the reviewers were accepted by the author, which strengthened the overall report and readability of it. A geologic cross-section was added to the geology map as suggested by Reviewer #1. In response to Reviewer #2's comments, added new paragraphs describing the shallow flow system to the Hydrogeology section and revised text to clarify some of the geochemical interpretation.

The Dissemination

The published information product will be released as a USGS Scientific Investigation Report and will be available at <http://pubs.er.usgs.gov/>.