



## **ENVIRONMENTAL PROTECTION AGENCY**

**[FRL-9957-36-ORD]**

### **Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Notice of availability.

**SUMMARY:** EPA is announcing the availability of a final report titled, “Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States” (EPA/600/R/16/236F), which was prepared by EPA’s Office of Research and Development (ORD). This final report provides a review and synthesis of available scientific information concerning the relationship between hydraulic fracturing activities and drinking water resources in the United States.

**DATES:** This document was available on December 13, 2016.

**ADDRESSES:** The final report, “Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States” is available primarily via the internet on EPA-ORD’s hydraulic fracturing web site at [www.epa.gov/hfstudy](http://www.epa.gov/hfstudy). A limited number of paper copies are available from the Information Management Team, NCEA; phone: 703-347-8561; fax: 703-347-8691. If you are requesting a paper copy, please provide your name, mailing address, and the document title.

**FOR FURTHER INFORMATION, CONTACT:** Dayna Gibbons, Office of Research and Development; phone: 202-564-7983; or email: [gibbons.dayna@epa.gov](mailto:gibbons.dayna@epa.gov). For technical information, contact Dr. Jeffrey Frithsen, Office of Research and Development; phone: 703-347-8623; or email: [frithsen.jeff@epa.gov](mailto:frithsen.jeff@epa.gov).

**SUPPLEMENTARY INFORMATION:**

Information about the Document

EPA found scientific evidence that hydraulic fracturing activities can impact drinking water resources under some circumstances. The report identifies certain conditions under which impacts from hydraulic fracturing activities can be more frequent or severe, to include:

- Water withdrawals for hydraulic fracturing in times or areas of low water availability, particularly in areas with limited or declining groundwater resources;
- Spills during the handling of hydraulic fracturing fluids and chemicals or produced water that resulted in large volumes or high concentrations of chemicals reaching groundwater

resources;

- Injection of hydraulic fracturing fluids into wells with inadequate mechanical integrity, allowing gases or liquids to move to groundwater resources;
- Injection of hydraulic fracturing fluids directly into groundwater resources;
- Discharge of inadequately treated hydraulic fracturing wastewater to surface water; and
- Disposal or storage of hydraulic fracturing wastewater in unlined pits resulting in contamination of groundwater resources.

Data gaps and uncertainties limited EPA's ability to fully assess the potential impacts on drinking water resources locally and nationally. Because of these data gaps and uncertainties, it was not possible to fully characterize the severity of impacts, nor was it possible to calculate or estimate the national frequency of impacts on drinking water resources from activities in the hydraulic fracturing water cycle.

EPA's report advances the scientific understanding of hydraulic fracturing's impact on drinking water resources and can inform decisions by federal, state, tribal, local officials, industry, and communities to protect drinking water resources now and in the future.

Dated: December 15, 2016.

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for Environmental Assessment.

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