

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Preliminary 2016 Effluent	)	Docket ID No. EPA-HQ-OW-2015-0665
Guidelines Program Plan	)	<i>Via regulations.gov</i>
81 Fed. Reg. 41,535 (June 27, 2016)	)	<i>July 27, 2016</i>

Comments on the Preliminary 2016 Effluent Guidelines Program Plan

The undersigned organizations present these comments on three aspects of the Preliminary 2016 Effluent Guidelines (ELG) Program Plan:

- EPA's continued study of Centralized Waste Treatment (CWT) facilities that currently accept or have in the past accepted oil and gas extracted wastewater.
- EPA's decision to request data and information on conventional wastewater originating from oil and gas extraction facilities sent to Publicly Owned Treatment Works (POTWs).
- EPA's decision to request information on the quantity, composition, and purpose of well treatment and workover fluids in produced water discharges

I. EPA Should Expedite the Centralized Waste Treatment Facility Study and Associated ELG Revision

Commenters strongly support EPA's current study of Centralized Waste Treatment facilities and treatment technologies. Finalizing this study will help address critical questions about drinking water quality and public health impacts of oil and gas wastewater discharges directly from CWT facilities and from CWTs to POTWs that are not covered under current ELGs.

Given the potential increase in oil and gas wastewater sent to CWTs as a result recently finalized *Effluent Limitations Guidelines and Standards for the Oil and Gas Extraction Point Source Category* related to unconventional oil and gas wastewater sent to POTWs, 81 Fed. Reg. 41,845 (June 28, 2016), EPA should expedite a revision to the relevant CWT ELGs, thus closing a gap in federal regulation and ensuring that surface waters are not left vulnerable to oil and gas pollution.

EPA memos indicate that many CWTs cannot adequately treat unconventional wastewater.¹ EPA stated that appropriate limits or pretreatment standards would need to be applied to CWTs because the current guidelines did not evaluate certain pollutants common in oil and gas wastewater, such as radionuclides.² Radioactive materials such as radium pose serious and persistent threats to public health and drinking water quality.

ELGs for CWTs are out of date. ELGs for Centralized Waste Treatment facilities were developed in 2000 and were last updated in 2003. These are inadequate to protect drinking water quality and public health from the potential threats of modern oil and gas extraction practices and the dramatic increases in

¹ EPA, *Natural Gas Drilling in the Marcellus Shale NPDES Program: Frequently Asked Questions* (2011), available at http://www.epa.gov/npdes/pubs/hydrofracturing_faq.pdf.

² *Id.*

produced water. Developments in oil and gas exploration, stimulation and extraction techniques have led to changes in pollutants associated with oil and gas wastewater that need to be incorporated into ELGs for CWTs accepting wastewaters from this sector.

II. Commenters Support EPA's Decision to Collect Data and Information on Wastewater Originating from Conventional Oil and Gas Extraction and Provide the Following Guidance

Commenters strongly support EPA's collection of data and information on known transfers of wastewater originating from conventional oil and gas extraction facilities to Publicly Owned Treatment Works (POTWs), given Commenters' past and continuing support for a zero-discharge effluent limitation for the practice. As Commenters provided in our 2015 comments on EPA's now finalized ELGs for the transfer of unconventional oil and gas wastewater to POTWs, studies have demonstrated that conventional and unconventional oil and gas wastewater have many constituents in common, including those that led EPA to set the zero-discharge standard for unconventional oil and gas wastewater. Unless EPA can identify substantial variations between the two types of wastewater, it should discontinue the subcategorization of wastewater types and apply the same zero-discharge ELGs to all oil and gas wastewater.³

A. Publicly Available State-Level Data and Information Demonstrate that Significant Transfers of Conventional Oil and Gas Wastewater are Occurring in Certain States

EPA has requested information on "the extent to which this practice is occurring, including the identification of conventional oil and gas facilities which discharge to POTWs" and "information on wastewater volumes transferred to POTWs." EPA, Preliminary 2016 Effluent Guidelines Program Plan, 81 Fed. Reg. 41,535, 41,536 (June 27, 2016). Commenters provide the following information and data, as well as recommendations for EPA's continued solicitation and collection.

Of the information currently available to the public, the most detailed comes from the Pennsylvania Department of Environmental Protection (PA DEP). PA DEP's "Oil & Gas Reporting Website" provides data reported by operators of both conventional and unconventional oil and gas extraction operations, including the volume of wastewater generated and sent to POTWs.⁴ In 2015, 30,389 conventional wells reported to PA DEP's reporting website. Of those wells, 3,254 (or 10.7 percent) reported that they sent wastewater to POTWs.⁵

In volume, these wells sent a total of 1.1 million barrels (or roughly 46 million gallons) of wastewater to POTWs. This constitutes about 15 percent of all wastewater reported by conventional wells in

³ See Comments of Clean Water Action and Environmental Integrity Project on Effluent Limitations Guidelines and Standards for the Oil and Gas Extraction Point Source Category, Docket No. EPA-HQ-OW-2014-0598, at 11, 13 (July 17, 2015) [hereafter *2015 ELG Comments*].

⁴ See PA DEP, Oil and Gas Reporting Website, <https://www.paoilandgasreporting.state.pa.us/publicreports/Modules/DataExports/DataExports.aspx> (last visited July 25, 2016).

⁵ See PA DEP, Oil and Gas Well Historic Waste Report (2015), *attached as Exhibit A*.

Pennsylvania in 2015 and makes POTWs the third-most common disposal method by volume, behind reuse and centralized waste treatment facilities (each of which received over 2 million barrels of wastewater from conventional wells).⁶

Operators sent this wastewater to five POTWs in Pennsylvania. In descending order of volume of wastewater accepted in 2015, these POTWs are:

1. Brockway Area Wastewater Treatment Plant (PA0028428): 923,935 bbl. produced water accepted;
2. Ridgway Borough Sewage Treatment Plant (PA0023213): 77,153 bbl. produced water and 2,100 bbl. fracking fluid waste accepted;
3. Alcosan Sewage System (PA0025984): 54,190 bbl. produced water accepted;
4. Reynoldsville Sewage Treatment Plant (PA0028207): 44,769 bbl. produced water accepted; and
5. Punxsutawney Borough Sewage Treatment Plant (PA0020346): 370 bbl. produced water accepted.⁷

The continuing use of POTWs for conventional oil and gas wastewater disposal in Pennsylvania and the large volume of wastewater transferred to POTWs in 2015 support EPA's further investigation of the issue, especially for data and information that may not be readily available to the public. These transfers to POTWs are also noteworthy, given that one of the reasons underlying EPA's recent revision of effluent limitation guidelines for unconventional oil and gas wastewater transferred to POTWs was the contamination of waters—including the Monongahela River as a source of drinking water—due to such transfers. *See, e.g.,* EPA, Effluent Limitations Guidelines and Standards for the Oil and Gas Extraction Point Source Category, 80 Fed. Reg. 18,557, 18,573 (April 7, 2015). As Commenters demonstrated in comments on that proposed rule—and with further updates below—conventional oil and gas wastewater contains many of the same constituents as unconventional oil and gas wastewater, including those that lead to the “pass-through” of pollutants and the formation of harmful disinfection by-products.⁸ EPA should continue to solicit and collect all required information to assess this issue fully and then promptly revise the effluent limitation guidelines for conventional oil and gas wastewater.

With respect to the transfer of conventional oil and gas wastewater to POTWs in states other than Pennsylvania, there is little information available to the public. Whether this is due to the states' lack of public information in general, lax reporting requirements, or the fact that such transfers are uncommon in those states is not clear. To get a complete picture of these practices, EPA should use its full information-collection tools to obtain the information from state authorities and operators. Based on Commenters' review, examples of the information EPA should collect include the following:

⁶ *See id.*

⁷ *See id.*; *see also* EPA, ECHO Reports (2016), *attached as* Exhibit B.

⁸ *See 2015 ELG Comments, supra*, at 11 (citing Jennifer S. Harkness et al., *Iodide, Bromide, and Ammonium in hydraulic fracturing and oil and gas wastewaters: Environmental implications*, 49 *Envtl. Sci. & Tech.* 1,955-63 (2015)).

- **West Virginia** has the following potential sources of information:
 - Operators of wells that use more than 300,000 gallons of water for hydraulic fracturing (whether the formation is conventional or unconventional) must submit a report to the West Virginia Department of Environmental Protection (WVDEP).⁹ The form requires the reporting of flowback only (defined as 50 percent of original injected water or water recovered during first 30 days of flowback, whichever occurs first). The form's instruction booklet requires operators to report a disposal method, including UIC wells, land application, reuse, and "treatment."¹⁰
 - Under a 2014 rule, operators in West Virginia who withdraw more than 210,000 gallons in any 30-day period must keep track of detailed information, including the quantity of flowback and produced water and the method and location of disposal of the water. See W. Va. Code R. § 35-8-9.1.b.3. However, the information only needs to be recorded and maintained by the operator for three years, and "shall be available for inspection by the department," as opposed to directly submitted to WVDEP and therefore available to the public. EPA should request these documents directly from the operators.
 - A 2010 guidance document issued by WVDEP states that operators considering the transfer of oil and gas wastewater to POTWs must notify the Department via a permit "application addendum," in order that WVDEP can "ensure that the treatment facility can handle the flow and the quality of the waste" and evaluate any necessary permit issuances or modifications necessary for the POTW "before approval of the discharge to the facility is allowed."¹¹ While these permit addendums are not readily available online, EPA should obtain them from WVDEP, along with any information from the permittees.

- **Colorado** has the following potential sources of information:
 - The Colorado Oil and Gas Conservation Commission (COGCC) requires operators to submit monthly operating reports on Form 7, which are publicly available on a well-by-well basis. The form requires the reporting of information such as the formation (from which one could determine whether the operation is conventional or unconventional), well status, production information, and a code for method of water disposal. These method codes include: commercial disposal facility, central disposal pit or well, onsite pit, onsite injection, and surface discharge. There is no specific code listed for POTWs, and reporting the location of disposal is not required.¹²

⁹ See WVDEP, Frac Water Reporting Form, <http://www.dep.wv.gov/WWE/wateruse/Pages/FracWaterReportingForm.aspx> (last visited July 25, 2016).

¹⁰ See WVDEP, *Hydrofracturing Water Use Reporting Instructions* 8, available at <http://www.dep.wv.gov/WWE/wateruse/Documents/HydrofracturingWaterUseReportingInstructions.pdf>.

¹¹ WVDEP, *Industry Guidance: Gas Well Drilling/Completion Large Water Volume Fracture Treatment* 4 (Jan. 8, 2010), available at <http://www.dep.wv.gov/oil-and-gas/GI/Documents/Marcellus%20Guidance%201-8-10%20Final.pdf>.

¹² See COGCC, Form 7, Monthly Report of Operations (Production), http://cogcc.state.co.us/reg.html#/forms/form7_new (last visited July 25, 2016).

- The 2015 annual report by COGCC suggests that discharge to POTWs may not be a common method of disposal in the state. According to the report, “approximately 50% of water co-produced with oil and gas is disposed of or used for enhanced recovery by underground injection,” with much of the remainder “disposed in evaporation and percolation pits or discharged under Colorado Discharge Permit System (CDPS) permit,” as well as some road-spreading for dust suppression and reuse.¹³

B. Data and Information Demonstrate that Conventional Oil and Gas Wastewater Contains Harmful Constituents and Other Pollutants

As Commenters noted above and in our comments on the proposed ELG revisions for the transfer of unconventional oil and gas wastewater to POTWs, conventional oil and gas wastewater contains many of the same constituents as unconventional oil and gas wastewater, including those that make transfer to POTWs infeasible and dangerous.¹⁴ That is, EPA’s same concerns and conclusions in setting the zero-discharge standard for unconventional oil and gas wastewater also apply to conventional oil and gas wastewater. Commenters flag one article in particular cited in our 2015 comments, along with several additional publications that support this point and should be included in EPA’s data collection:

- As Commenters raised in our 2015 comments, the 2015 article by Jennifer S. Harkness et al. found that produced water from conventional wells on Appalachian formations is characterized by high chloride, bromide, iodide, and ammonium. While the study found characteristics often varied between different geological formations, they found “there were no differences in halides and ammonium concentrations between [oil and gas wastewater] originating from hydraulic fracturing and conventional oil and gas operations.” The article also references several studies that found iodide and ammonium concentrations to be higher in conventional oil and gas produced water than in unconventional oil and gas produced water.¹⁵
- A January 2016 article by James W. Weaver et al.—conducted as part of EPA’s Study of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources—also reports produced water from both unconventional and conventional oil and gas wells can contain high concentrations of bromide. As EPA is aware, high bromide concentrations can lead to elevated levels of disinfection byproducts in water treated by POTWs.¹⁶

¹³ COGCC, *2015 Annual Report 9* (2015), available at <https://www.colorado.gov/pacific/sites/default/files/SB181arCOGCC2015.pdf>.

¹⁴ See, e.g., *2015 ELG Comments*, *supra*, at 11 (citing Jennifer S. Harkness et al., *Iodide, Bromide, and Ammonium in hydraulic fracturing and oil and gas wastewaters: Environmental implications*, 49 *Envtl. Sci. & Tech.* 1,955-63 (2015)).

¹⁵ Jennifer S. Harkness et al., *Iodide, Bromide, and Ammonium in hydraulic fracturing and oil and gas wastewaters: Environmental implications*, 49 *Envtl. Sci. & Tech.* 1,955-63 (2015).

¹⁶ See James W. Weaver et al., *Scenario Analysis of the Impact on Drinking Water Intakes from Bromide in the Discharge of Treated Oil and Gas Wastewater*, 142 *J. Env'tl. Eng'g* 04015050 (2016), available at <http://ascelibrary.org/doi/abs/10.1061/%28ASCE%29EE.1943-7870.0000968>; see also EPA, *Scenario Analysis of the Impact on Drinking Water Intakes from Bromide in the Discharge of Treated Oil and Gas Wastewater*, <https://www.epa.gov/hfstudy/scenario-analysis-impact-drinking-water-intakes-bromide-discharge-treated-oil-and-gas> (last visited July 25, 2016).

- A 2014 article by Stephen W. Almond et al. found the radioactive flux of flowback fluid was higher per-unit of energy for conventional oil and gas production than for shale gas development.¹⁷
- A June 2015 article by Rebecca S. Rodriguez et al. similarly reports that conventional wells produce about 35 percent more waste per unit of gas than unconventional wells.¹⁸

EPA should include these articles in its information collection and follow up on them to further assess the constituents in conventional oil and gas wastewater and its safety and compatibility with POTWs. Based on Commenters' review of the existing research, conventional oil and gas wastewater does not appear to be appreciably safer or more appropriate for transfer to POTWs than unconventional oil and gas wastewater. EPA should conduct a full information collection to properly assess these constituents and promptly revise the ELGs as necessary.

III. EPA's Decision to Collect Information and Data on Well Treatment and Workover Fluids in Produced Water Discharges

Commenters support EPA's decision to collect data on produced water discharges from the oil and gas industry as it relates to 40 CFR part 435, subpart E. However, EPA must expand the scope of quantity, composition, and purpose research beyond the narrow subset of fluids labeled as "well treatment fluids" and "workover fluids."

This should include naturally occurring and other constituents included in all produced water brought to the surface along with all potential chemical additives put down hole in various drilling and well completion practices. This includes but not limited to drilling maintenance, hydraulic fracturing, enhanced recovery, matrix acidizing, acid fracturing and gravel packing.

Common water treatment technologies are unlikely to be able to remove all well stimulation additives. EPA's research is critical to understand the potential threats imbedded in the discharges from evolving oil and gas practices. There appears to be no clear rationale to limit the information collection to a narrow slice of potential additives when all fluids and produced water pose credible threats to water quality.

As a further matter, EPA has solicited information on these fluids to the extent that they are contained in produced water that is "used for wildlife or livestock watering or other agricultural uses, and are actually put to such use during periods of discharge." 81 Fed. Reg. at 41,536. Commenters provide the following information to EPA and take the position that based on existing information and acknowledgement of current data gaps, produced water is inappropriate for agricultural uses, including wildlife or livestock watering.

The health effects of at least some well treatment and workover fluids in produced water are still likely to be unknown. It is also likely that at least some of the substances with unknown effects pose serious

¹⁷ See Stephen W. Almond et al., *The flux of radionuclides in flowback fluid from shale gas exploitation*, 21 *Env'tl. Sci & Pollution Research Int'l* 12,316-24 (2014).

¹⁸ See Rebecca S. Rodriguez & Daniel J. Soeder, *Evolving water management practices in shale oil & gas development*, 10 *J. Unconventional Oil & Gas Res.* 18-24 (2015).

health risks. A recent investigation by Partnership for Policy Integrity of EPA's regulation of new drilling and fracking chemicals found that the agency expressed health concerns about 88 of 105 chemicals reviewed and regulated under the New Chemicals program between 2009 and 2014.¹⁹ The concerns ranged from developmental toxicity and neurotoxicity to irritation to skin, mucous membranes, and lungs. Yet EPA allowed almost all of the chemicals to be commercially manufactured without receiving or asking for health testing data, and many of the chemicals were in fact manufactured. A search for a sample of nine chemicals in FracFocus and California's well stimulation chemical disclosure database found that companies used five of the chemicals in a total of 67 wells in California, Colorado, Kansas, Oklahoma and Texas. Four of the chemicals could not be located.²⁰ EPA does not track where the chemicals are used, and it may be difficult for the public or regulators to identify when and where they are used due to chemical manufacturers' confidentiality claims that often extend to the chemical's names, Chemical Abstracts Services numbers, and trade names.

Other recent studies and articles have demonstrated that there are currently too many uncertainties and not enough testing of constituents to deem produced water safe for agricultural uses. For example, one of the key findings of a December 2015 report by the Pacific Institute was that "health and food safety impacts of [using oil and gas wastewater for agricultural uses] are poorly understood."²¹ The report's recommendations to address this included that California "should establish uniform and science-based water quality criteria and monitoring requirements"; operators providing wastewater for agricultural uses "should be required to provide a list of all chemicals used in the drilling, stimulation (if applicable), maintenance, and production process"; and "EPA should conduct a scientific analysis to re-examine whether the requirement that oil-field wastewaters for wildlife and agricultural uses must not have more than 35 mg/L of oil is sufficiently protective of the food supply, farmworkers, and the environment."²²

Similarly, the Environmental Working Group considered the issue in a June 2016 post on its website, noting that "only two limited and flawed studies have been conducted to date," and that "[f]rom limited testing, no egregious levels of pollutants that have drinking water standards have been found. But there may be additives used in drilling that aren't tested."²³ Part of the uncertainty arises from the fact that operators of wells that are not hydraulically fractured need not disclose the type and amount of chemicals used in those wells.²⁴ To that end, Clean Water Action and the Environmental Working Group submitted a letter to the Central Valley Regional Water Quality Control Board, urging the Board "to stop

¹⁹ See Dusty Horwitt, Partnership for Policy Integrity, *Toxic Secrets: Companies Exploit Weak US Chemical Rules To Hide Fracking Risks* 4 (April 7, 2016), available at <http://www.pfpi.net/toxic-secrets-companies-exploit-weak-us-chemical-rules-to-hide-fracking-risks>.

²⁰ *Id.* at 19-20, 29-35.

²¹ See Matthew Heberger & Kristina Donnelly, Pacific Institute, *Oil, Food, and Water: Challenges and Opportunities for California Agriculture* 5 (2015), available at http://pacinst.org/app/uploads/2015/12/PI_OilFoodAndWater_.pdf.

²² *Id.* at 5-6.

²³ Bill Allayaud & Tasha Stoiber, Env'tl Working Group, Concern Over California Crops Irrigated With Oil And Gas Wastewater, <http://www.ewg.org/enviroblog/2016/06/concern-over-california-crops-irrigated-oil-and-gas-wastewater> (last visited July 26, 2016).

²⁴ *Id.*

allowing irrigation of food crops with oil and gas wastewater and conduct a comprehensive long-term study to determine the health, environmental and occupational impacts.”²⁵ Due to these uncertainties and risks, Commenters believe that produced water is inappropriate for wildlife or livestock watering or other agricultural uses, and EPA should not allow such uses.

IV. EPA Should Expedite Its Revision of ELGs Associated with Coalbed Methane Extraction

EPA should expedite a parallel ELG update for coalbed methane extraction. Commenters believe that EPA’s decision to delist CBM from the definition of unconventional oil and gas was premature and that EPA should reconsider this proposal in light of inevitable shifts in gas prices, demand, and costs of wastewater treatment.

Coalbed methane extraction produces large volumes of wastewater characterized by the presence of numerous contaminants at potentially high concentrations. Inadequate treatment and discharge of these wastes jeopardizes the integrity of surface water, can lead to increased public health risks from drinking water, threatens fish and wildlife and causes other negative environmental impacts.

The Congressional intent underlying the Clean Water Act’s Effluent Guidelines and Limitations-setting process included prevention of “pollution havens.” Coalbed methane extraction ELG’s are necessary and affordable treatments are available to avoid this outcome in places where coalbed methane extraction is occurring.²⁶

V. Conclusion

Thank you for the opportunity to submit and your consideration of these comments. EPA’s solicitation and collection of data and information on these topics is an important undertaking, and the agency should ensure that this collection gathers as full a picture of the practices and constituents as possible, in order that it can make all necessary revisions to the ELGs promptly and better protect the public and our nation’s waters from harmful pollutants. If you have any questions in regard to these comments, please do not hesitate to contact us at jnoel@cleanwater.org or akron@environmentalintegrity.org.

²⁵ *Id.*

²⁶ See Docket ID No. EPA-HQ-OW-2010-0824: Comments on Preliminary 2012 Effluent Guidelines Program Plan: Coalbed Methane Extraction and Shale Gas Wastewater Treatment (comments submitted by nonprofit organizations and other environmental and public health advocacy groups).

Sincerely,

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