

July 1, 2019

Mr. Jesse Pritts
U.S. Environmental Protection Agency
Office of Water (4303T)
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Submitted via email to: oil-and-gas-study@epa.gov and pritts.jesse@epa.gov

Re: Comments on Study of Oil and Gas Extraction Wastewater Management Under the Clean Water Act, No. EPA-821-R19-001

Dear Mr. Pritts:

On behalf of our members and supporters, Clean Water Action/Clean Water Fund appreciates the opportunity to provide input to US EPA on the Study of Oil and Gas Extraction Wastewater Management Under the Clean Water Act (Draft), No. EPA-821-R19-001 (hereinafter referred to as the “Draft Study”).

The Draft Study, insofar as it addresses the question of whether or not EPA should make regulatory changes to allow for greater discharges of produced water, indicates the need to increase protections, rather than changing regulations or undertaking non-regulatory activities that would facilitate additional discharge. The Draft Study itself does not fully explore this question but is rather a summary of limited stakeholder outreach conducted by the agency. It is not a pre-rulemaking review, does not evaluate the best available science, and does not comprehensively examine current discharges and possible impacts on water quality and quantity, nor human or environmental health. Although EPA has asked the public how it could facilitate greater discharge under the Clean Water Act, existing evidence supports more restriction on produced water discharge to surface waters, not less. EPA has documented impacts from produced water in both its study of Centralized Waste Treatment facilities,¹ and the study of Hydraulic Fracturing and Drinking Water.² Furthermore, a growing body of independent research³ and state regulatory

¹ U.S. Env'tl. Prot. Agency, *Detailed Study of the Centralized Waste Treatment Point Source Category for Facilities Managing Oil and Gas Extraction Wastes*, EPA-821-R-18-004 (May 2018), available at: https://www.epa.gov/sites/production/files/2018-05/documents/cwt-study_may-2018.pdf.

² U.S. Env'tl. Prot. Agency, *Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States*, EPA-600-R-16-236Fa (Dec. 2016), available at: www.epa.gov/hfstudy.

³ Warner, Nathaniel & A Christie, Cidney & B Jackson, Robert & Vengosh, Avner. *Impacts of Shale Gas Wastewater Disposal on Water Quality in Western Pennsylvania*, Environmental Science & Technology. (Oct 2013).

proceedings⁴ indicate water quality problems can arise from produced water discharge that should compel EPA and states to adopt additional, more stringent protections that would likely lead to LESS surface discharge, not more.

Additionally, on the question of reuse of produced water in and outside the oil field, regardless of whether it involved discharge under the Clean Water Act, we urge similar caution. The questions surrounding safety, due to data gaps and known hazards for water quality, must be considered for reuse as well, both for potential impacts on the actual reuse activity (for example chemical uptake in irrigated food crops), but also impacts on water resources that could arise from these activities. For example, irrigation with produced water may impact underlying groundwater, or present challenges with runoff into nearby waterbodies or onto adjacent cropland that could be harmed by the introduction of produced water. In California, the primary state where produced water is used for irrigation, we believe the activity was improperly permitted prior to state regulators fully understanding the safety implications. Currently a food safety panel is evaluating the practice, yet irrigation of food crops continues despite the panel having made no final determinations around the safety of the practice.⁵ EPA must not make that same mistake by encouraging reuse without a more complete understanding of the risks. EPA is concurrently asking for public comments on development of a draft National Water Reuse Action Plan. Oil and gas production is a featured category of potential reuse not restricted to use within the extraction process. As articulated in our comments to EPA on this matter, oil and gas wastewater is not adequately characterized to justify increased discharges under the Clean Water Act or expanded reuse activities.

This comment letter includes a section on the Draft Study itself combined with comments on the the state of knowledge on produced water. We also provide answers to the questions posed by EPA. Thank you for considering Clean Water Action's input on this issue.

Comments on the Draft Study

The methodology of the Draft Study is essentially a survey of stakeholder positions on questions regarding produced water reuse and discharge. As such, it provides some value; however, its scope is not adequate to demonstrate the need for regulatory changes that could lead to more discharge of produced water. As the study illuminates, there are significant knowledge and information gaps that, at a minimum, should give EPA pause before encouraging additional discharge and/or reuse of produced water. These gaps, along with known hazards, should also lead EPA to consider new, more protective limitations on discharge.

⁴ Cal. Reg'l Water Quality Control B.d Central Valley Region, Cease and Desist Order R5-2019-0045 for Valley Water Management Company McKittrick 1 & 1-3 Facility Kern County, adopted June 6, 2019, *available at*: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/kern/r5-2019-0045.pdf.

⁵ Cal. Reg'l Water Quality Control B.d Central Valley Region, Food Safety Panel. https://www.waterboards.ca.gov/centralvalley/water_issues/oil_fields/food_safety/

Both in the Draft Study and elsewhere are key knowledge and information gaps that EPA should work to fill.

Chemical information

Significant data gaps exist pertaining to chemicals used in oil and gas production and/or present in produced water. Stakeholders cited in the Draft Study identified this problem and the resulting uncertainty around safety issues with produced water. First, required disclosure of chemical additives is wholly lacking. Not a single state in the country requires comprehensive reporting of the identities of all chemicals used in oil gas wells for such purposes as drilling, routine maintenance and enhanced recovery. Only one state (California) requires reporting of the identities of all chemicals used in well stimulation treatments regardless of trade secret claims.⁶

For both added and naturally occurring chemicals, there are major challenges to evaluating hazards and risks. Many chemicals commonly used in oil and gas wells or found in produced water lack established analytical methods, and the high salinity of produced water creates additional challenges in characterizing constituents.⁷ Furthermore, toxicity data for numerous commonly found chemicals in produced water is incomplete or absent.⁸

In addition to constituents identified in the Draft Study and elsewhere for heightened concern, such as TENORM and bromide, several sources have documented that PFAS and PFOS may be used in enhanced oil recovery operations.⁹ According to a Stockholm Convention report, “PFOS derivatives may be used as surfactants in the oil and mining industry to enhance oil or gas recovery in wells.”¹⁰ Several materials disseminated by EPA include reference to use in the oil and gas industry.¹¹ However, lack of transparency and reporting requirements for enhanced recovery and other operations prevent the public and/or regulators from obtaining data about the presence and quantity of these contaminants in produced water discharges and other uses outside the oil and gas industry. In light of EPA’s ongoing effort to address PFAS chemicals in the environment and drinking water, as outlined in the PFAS Action Plan,¹² further examination into the potential for

⁶ Calif. Public Resources Code § 3160

⁷ Groundwater Protection Council. (June 2019). *Produced Water Report: Regulations, Current Practices and Research Needs* p. 106. Available at: <http://www.gwpc.org/sites/default/files/files/Produced%20Water%20Full%20Report%20-%20Digital%20Use.pdf>

⁸ Stringfellow WT, Camarillo MK, Domen JK, Shonkoff SBC. (2017) *Comparison of chemical-use between hydraulic fracturing, acidizing, and routine oil and gas development*. PLoS ONE 12(4): e0175344. <https://doi.org/10.1371/journal.pone.0175344>

⁹ Karydas, A. (1990). *U.S. Patent No. 4,921,619*. Washington, DC: U.S. Patent and Trademark Office. Available at: <https://patentimages.storage.googleapis.com/0c/a2/eb/4091ebf58f32c6/US4921619.pdf>

¹⁰ Jensen, Allan. (2010). Draft guidance document on alternatives to perfluorooctane sulfonate and its derivatives. 10.13140/RG.2.1.4628.6489. Available at: https://www.researchgate.net/publication/299238731_Draft_guidance_document_on_alternatives_to_perfluorooctane_sulfonate_and_its_derivatives/citation/download

¹¹ U.S. Env'tl. Prot. Agency. *Basic Information on PFAS*. <https://www.epa.gov/pfas/basic-information-pfas>

¹² U.S. Env'tl. Prot. (Feb 14, 2019) Agency. *PFAS Action Plan*. https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf

these chemicals to be present in produced water is warranted and in line with existing goals. Prior to conducting any activities that could lead to an increase in the presence of PFAS in the environment, EPA must evaluate this risk.

Existing discharges

EPA lacks a comprehensive public inventory of produced water discharges to surface waters. The agency has not systematically catalogued all relevant activities nor examined their downstream impacts. The public, including researchers, in order to gather information on existing dischargers, would need to conduct a tedious search through EPA and state-issued permits, which are not uniformly organized nor categorized. It does not appear that EPA has taken this basic step, which would be necessary to begin to evaluate the effectiveness of existing permits in protecting water quality. Expanding the practice without fully understanding existing relevant activities and their impacts would be premature. Such an inventory would have been an appropriate section to include in the Draft Study. We urge EPA to amend the study to include this inventory.

Lack of protections from conventional wastewater

EPA has not established pretreatment standards for conventional oil and gas wastewater despite the possible presence of the same or similar chemicals as unconventional wastewater.¹³ The distinction between conventional and unconventional wastewater is arbitrary and not based on water quality, but rather formation characteristics. Excluding conventional wastewater from safeguards such as the POTW discharge prohibition is therefore also arbitrary and opens up waters to pollution.

Stakeholder input analysis:

Stakeholders in all categories in the Draft Study raised concerns that should cause EPA to proceed with extreme caution and increase its oversight, rather than taking any steps to encourage discharge or reuse of produced water.

State agencies identified several reasons NOT to pursue increased discharge of produced water, including:

- Concern around health impacts of discharge.
- A lack of standards for produced water chemicals.
- The inability of states to adequately oversee activity based on a lack of expertise in their agencies.
- A recommendation to prioritize other solutions such as improved reporting and transparency to better manage other disposal options such as injection.

Tribes also expressed concerns. According to the Draft Study, many are not supportive due to health concerns, and those that are supportive of more discharges want clear water quality standards, which, based on the currently available information and data, are not possible to establish.

¹³ Stringfellow WT, Camarillo MK, Domen JK, Shonkoff SBC.

Academic stakeholders identified significant knowledge gaps that align with our understanding of produced water science related to:

- Chemical composition of produced water.
- Transformation of chemicals.
- Analytical methods for chemicals that may be present in produced water.
- The lack of adequate reporting requirements.
- High cost of treatment.
- Issues with residuals from treatment.

Even one major oil and gas operator indicated that expanded reuse of produced water is not appropriate due to a “lack of science around treatment.”¹⁴

Additionally, some key stakeholders are conspicuously absent from the Draft Study. Notably the drinking water sector is not listed. As key downstream users of surface waters, who provide an essential public health function to society, drinking water utilities must be consulted on how produced water discharges could impact their ability to provide clean drinking water. The American Water Works Association (AWWA)’s written comments on the Draft Study are informative of the feedback that EPA would have received if this stakeholder group had been consulted.

Response to questions:

In considering the questions that EPA is asking of the public, we submit the following comments. However, we believe that based on the draft study, answering these questions is premature as the draft study has not attempted to answer them with the rigor needed to make these determinations.

What non-regulatory steps should EPA take to encourage re-use/recycle of produced water?

EPA should not encourage reuse/recycling of produced water. EPA should focus on its mandate to enforce the laws that Congress has passed. The scope of the Draft Study pertains to discharges under the Clean Water Act. EPA should focus on enforcing the Act and ensuring the protection of waters of the US.

Considering the cost of transporting and treating produced water, would revising 40 CFR Part 435 to allow for broader discharge of produced water shift the manner in which produced water is currently handled?

The findings of the stakeholder outreach indicate that changing the requirements of 40 CFR Part 435 to facilitate greater discharges would be reckless and put water quality at risk. Stakeholders identified significant knowledge and information gaps that would need to be addressed before considering any changes that result in more discharge. Instead, based on

¹⁴ Draft Study. p. 24

the feedback of the Draft Study, and the body of public evidence, EPA should take steps to provide greater protections from produced water discharges in at least four areas:

1. Increasing protections for discharges to Centralized Waste Treatment (CWT) facilities. The agency's study on CWTs identified several shortcomings in the regulation that call for enhanced protections.
2. Expanding the prohibition of discharges to POTWs from conventional as well as unconventional waste. The justification for prohibiting discharges from unconventional waste originates from the inability of POTWs to ensure adequate treatment of chemicals in unconventional waste. However, the distinction between conventional and unconventional wastewater is arbitrary as the two categories share many of the same or similar characteristics, such as chemical additives used in exploration and production, as well as naturally occurring chemicals in produced water.
3. Applying Zero-Discharge limitations to Subcategory F, Stripper subcategory, which applies to low producing wells. The stripper well category is not based on water quality. The same chemicals that are present in produced water in higher producing wells may be present in low producing wells. As such, having a less protective standard for those discharges would put water quality at risk.
4. Establish a national requirement for full reporting of all chemical additives used in oil and gas exploration and production, including drilling, routine maintenance and enhanced recovery, and characterization of wastewater. Without comprehensive data based on uniform reporting, there is no way for EPA nor state agencies to ensure the safety of produced water management.

Should EPA continue to distinguish between discharges from onshore oil and gas facilities located East and West of the 98th meridian or establish a national policy irrespective of geographic location?

The Draft Study did not address this question. However, our view is that water quality must be protected everywhere, and that the current regulatory regime that allows for direct discharge in some places is not adequate to ensure protection. Produced water on both sides of the 98th meridian is likely to contain harmful constituents that threaten the environment and human health. Location relative to this arbitrary line does determine the quality of produced water nor the ability of receiving waters to accept discharge. As such, we recommend a national policy that is more protective than either of the geographic designations.

What steps could EPA take that might incent re-use of produced water within and outside of the oilfield?

EPA should not take steps to incent re-use of produced water within and outside of the oil field. Based on the feedback collected in the Draft Study and evidence available elsewhere, neither EPA nor state regulators have the information needed to ensure safety of produced water reuse. Instead, EPA should work to ensure protection of water quality by increasing protections from produced water discharges. See recommendations listed above.

EPA should require oil and gas operators to better account for water limitations in their business models, rather than supporting expansion plans and weakening oversight and protections.

Finally, we offer an alternative path forward for how EPA should consider these issues. The assumptions baked into the questions seem to indicate that EPA views its job as that of helping the oil and gas industry solve produced water management challenges. Recent research has revealed that in many shale basins, water use per well increased up to 770% from 2011-2016. Produced water volumes generated within the first year of production increased 1440%.¹⁵ Water use in the Permian Basin has already “risen six-fold since the start of the shale oil boom, from more than 5 billion gallons in 2011 to almost 30 billion gallons in 2016. Water demand is projected to double to 60 billion gallons in 2018 and more than triple by 2020 to almost 100 billion gallons.”¹⁶ Water management challenges in the Permian and other regions have been identified by industry as a constraint that could hinder its unlimited expansion.¹⁷

Industry actors intend for the Draft Study to create an opening to repeal the zero discharge standard from POTWs as well as loosening other protections, which have limited their ability to discharge directly to surface waters. The Independent Petroleum Association of America (IPAA) Executive Vice President Lee Fuller sent a request to roll back the POTW rule as a direct request to EPA Chief of Staff Ryan Jackson in an email on April 6, 2017.¹⁸ The American Petroleum Institute (API) submitted a list of deregulatory requests to EPA on April 26, 2019 that would weaken both 40 CFR Sec 435 and 40 CFR Sec 437.¹⁹ These regulatory changes are an attempt to remove a barrier to expanded drilling and fossil fuel production, at the expense of water quality, and must be rejected.

EPA’s mandate is not to help the industry cope with ecological and regulatory limitations that arise from changing practices and resource availability. Instead, EPA must uphold its statutory mandates under the Clean Water Act and Safe Drinking Water Acts to protect surface and groundwater. The responsibility should fall on industry operators to better manage their operations to fit in the limits of our water and climate constrained realities.

¹⁵ Kondash, Andrew J, Nancy E. Lauer, Avner Vengosh. (Aug 2018) “The intensification of the water footprint of hydraulic fracturing”. *Science Advances*.: EAAR5982.

<http://advances.sciencemag.org/content/4/8/eaar5982>

¹⁶ Smith, Rodney (Feb 2018) *Looking Forward: Importing Institutional Concepts from the Water World*.

<https://static1.squarespace.com/static/5a31381c80bd5e7f0cbb98c4/t/5a9d50569140b7602dd58af6/1520259159113/D3-S1-Looking-Forward+Importing+Institutional+Concepts+from+the+Water+Wo...pd>

¹⁷ Rassenfoss, Stephen. (June 12, 2018) *Rising Tide of Produced Water Could Pinch Permian Growth*. Journal of Petroleum Technology. Available at: <https://www.spe.org/en/jpt/jpt-article-detail/?art=4273>

¹⁸ Fuller, Lee. Email to Ryan Jackson, Former EPA Administrator Chief of Staff on April 6, 2017. Available at:

https://archive.org/stream/EPA-FOIA-Sierra-Club/Epa-hq-2017-008402sierraClub_partdravis_djvu.txt

¹⁹ American Petroleum Association. Letter to Jan Matuszko, US EPA. (April 26, 2019). *Potential Regulatory Approaches for Increasing Reuse of, and Expanding Management Options for, Produced water from the Onshore Oil and Natural Gas Industry*. Available at: <https://www.axpc.org/wp-content/uploads/2019/04/04-25-19-API-APXC-produced-water-letter-to-EPA.pdf>

In light of persistent drought conditions in many of the top oil and gas producing states, and shifting precipitation and population trends, EPA should work with state water boards and water agencies to develop new strategies to mitigate industry wastewater conflict and potential contamination by prioritizing drinking water and ecological needs. These policies must step beyond the industry's preferred route of loosening protections in order to improve extraction economics. Instead, regulatory agencies, including EPA must develop policies to bring oil and gas production back in line with water acquisition and disposal capacity limits. If operators are having problems with existing legal authorities and disposal options utilized for decades – that is their problem and EPA must not aid in the weakening of standards to enable their flawed business model. To protect public health and the environment, as is EPA's mission, the Agency must resist acquiescing to industry requests that undermine environmental safeguards.

Thank you for considering our feedback. We look forward to continuing to engage on this issue.

Sincerely,

A handwritten signature in black ink, appearing to read "A. Grinberg". The signature is fluid and cursive, with a long horizontal stroke at the end.

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