

August 26, 2015

The Hon. Gina McCarthy, Administrator
U.S. Environmental Protection Agency
Office of the Administrator, Mail Code 1101A
1200 Pennsylvania Avenue N.W.
Washington, D.C. 20460

Via Registered Mail, Return Receipt Requested, and Electronic Mail (mccarthy.gina@epa.gov)

Re: Notice of Intent to Sue for Violation of Nondiscretionary Duties under the Resource Conservation and Recovery Act with respect to Wastes Associated with the Exploration, Development, or Production of Oil and Gas

Dear Administrator McCarthy:

We write on behalf of the Environmental Integrity Project, Natural Resources Defense Council, Earthworks, Center for Health, Environment, & Justice, West Virginia Citizen Action Group dba West Virginia Surface Owners' Rights Organization, Responsible Drilling Alliance, and San Juan Citizens Alliance (Parties) to provide notice of the Parties' intent to sue the U.S. Environmental Protection Agency (EPA) and you in your official capacity as Administrator of EPA for failure to perform nondiscretionary duties required by the Resource Conservation and Recovery Act (RCRA).

First, EPA has failed to meet its duty under section 2002(b), 42 U.S.C. § 6912(b), to review and, if necessary, revise at least once every three years the Subtitle D criteria regulations, 40 C.F.R. Part 257, for wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy (hereafter "oil and gas wastes"). EPA last conducted a review of the Subtitle D regulations for oil and gas wastes in 1988, when it determined that it was necessary to revise the Subtitle D regulations to promulgate "tailored" regulations for oil and gas wastes. Since that time, nearly nine successive three-year deadlines have passed with no further review or revision of the regulations.

Second, EPA has failed to meet its duty under section 4002(b), 42 U.S.C. § 6942(b), to review its guidelines for state solid waste management plans, 40 C.F.R. Part 256, "not less frequently than every three years, and revise[] as may be appropriate." The last time EPA conducted a review and/or revision of the state plan guidelines for oil and gas wastes was in 1981, when it revised the state plan guidelines to include additional public participation provisions. Since that time, eleven successive three-year deadlines have passed with no further review or regulatory revision.

Both of these sets of regulations are outdated, contain generic provisions that do not specifically address issues relevant to the modern oil and gas industry, fail to adequately protect against potential harm to human health and the environment resulting from oil and gas operations, and urgently need review and revision by EPA.

Pursuant to section 7002(a)(2) of RCRA, citizens may bring suit against EPA “where there is alleged a failure of the Administrator to perform any act or duty under this Act which is not discretionary with the Administrator.” 42 U.S.C. § 6972(a)(2). Citizens must give such notice at least sixty days prior to commencing suit. 42 U.S.C. § 6972(c).

This letter serves as notice of our intent to file suit against EPA and you in your official capacity as Administrator of EPA under RCRA for failure to perform nondiscretionary duties as described herein. Parties may commence suit at any time after sixty days from your receipt of this notice.

I. BACKGROUND

A. Subtitle D Regulations for Oil and Gas Wastes

In 1980, Congress passed the Solid Waste Disposal Act Amendments, which amended RCRA in several specific ways. Pub. L. No. 96-482, 94 Stat. 2335 (Oct. 21, 1980). With respect to oil and gas wastes, the relevant amendment is what has been called the “Bentsen Amendment,” *id.* § 7, which exempted oil and gas wastes from regulation pursuant to RCRA’s hazardous waste provisions under Subtitle C, 42 U.S.C. § 6921(b)(2)(A). The Bentsen Amendment conditionally exempted the wastes until such time as EPA completed three actions:

1. Conduct and transmit a Report to Congress considering, among other things, the human health and environmental effects of oil and gas wastes, the adequacy of existing measures to prevent and mitigate these effects, and the alternatives to such measures, along with their costs;
2. Based on this Report, make a Regulatory Determination either to promulgate regulations under the hazardous waste provisions of Subtitle C for oil and gas wastes *or* that such regulations were unwarranted, and
3. Transmit the Determination to Congress.

42 U.S.C. §§ 6921(b)(2)(B), (C), 6982(m).

On July 6, 1988, EPA published its Regulatory Determination that oil and gas wastes *did not* require regulation under Subtitle C of RCRA. *See* EPA, Regulatory Determination for Oil and Gas and Geothermal Exploration, Development and Production Wastes, 53 Fed. Reg. 25,446, 25,447-48 (July 6, 1988). In making this determination, EPA considered three primary factors that it drew from its Report to Congress: (1) “the adequacy of existing State and Federal regulatory programs for controlling these wastes”; (2) “[t]he characteristics, management practices, and impacts of [the] wastes on human health and the environment”; and (3) “the economic impacts of any additional regulations on the exploration for, and development of” oil and gas. *Id.* at 25,454.

EPA gave great weight in particular to the adequacy of state and federal regulatory programs. *Id.* With respect to state programs, EPA found most such programs to be “generally adequate,” but specifically noted gaps in enforcement, gaps with respect to certain types of wastes and disposal practices (e.g., associated wastes and storage pits), and in some cases relaxation of state controls. *Id.* at 25,447, 25,455.

With respect to the federal regulatory program, EPA noted several key gaps. *Id.* at 25,456. For example, RCRA’s Subtitle D program included “general environmental performance standards applicable to the disposal of any solid waste.” *Id.* at 24,456. However, “[b]ecause the programs’ criteria are aimed principally at municipal solid waste, EPA believes they *do not now fully address oil and gas waste concerns.*” *Id.* (emphasis added). For this reason, EPA stated that it possessed “authority under Subtitle D to tailor requirements appropriate for the disposal of oil and gas wastes.” *Id.*

To rectify these issues, EPA stated that it would implement a “three-pronged approach toward filling the gaps in existing State and Federal programs that regulate the management of wastes from the crude oil, and natural gas, industries.” *Id.* at 24,456. This approach would include working with the states to improve the strength and uniformity of their programs, working with Congress to secure additional statutory authority, and, most importantly and prescriptively, improving federal authorities under the Clean Water Act, the Safe Drinking Water Act’s Underground Injection Control (UIC) program, and Subtitle D of RCRA, 40 C.F.R. Part 257. 53 Fed. Reg. at 24,456.

In particular, EPA laid out an extensive plan for how it would “tailor” these Subtitle D regulations. *Id.* at 24,457-58. EPA flagged certain examples of gaps that the tailored Subtitle D regulations would address, including the broad category of “associated wastes” and the management practices and facilities used for “large-volume wastes” (e.g., wastewater), such as road-spreading, land-spreading, and waste impoundments. *Id.* at 24,457.

In spite of EPA’s bold announcement of its intent to strengthen and tailor a flexible program for the regulation of oil and gas wastes under Subtitle D, EPA appears to have taken no action in the intervening twenty-seven years. No efforts to seek comments, collect data, or propose changes to the criteria at 40 C.F.R. Part 257 appear in the Federal Register or elsewhere. In fact, the only other time EPA addressed oil and gas wastes specifically, it merely “clarified” the scope of oil and gas wastes exempted from Subtitle C by the 1988 Regulatory Determination. *See* EPA, Clarification of the Regulatory Determination for Wastes from the Exploration, Development and Production of Crude Oil, Natural Gas, and Geothermal Energy, 58 Fed. Reg. 15,284 (March 22, 1993).¹

¹ Furthermore, not only has EPA failed to strengthen the protections under the Clean Water Act and the Safe Drinking Water Act as part of its “three-pronged approach,” but these authorities are now significantly weaker than when EPA made its 1988 Regulatory Determination due to Congress’ amendments under the Energy Policy Act of 2005. *See* 42 U.S.C. § 300h(d); 33 U.S.C. §§ 1362(6)(B), 1342(l)(2).

Even though EPA had found revision of Subtitle D regulations *necessary* to its Regulatory Determination, it did not accomplish their revision within the required three years—or even, by this point, twenty-seven years later.

B. State Plan Guidelines for Oil and Gas Wastes

As enacted in 1976, Section 4002(b) of RCRA requires EPA to “promulgate regulations containing guidelines to assist in the development and implementation of State solid waste management plans.” 42 U.S.C. § 6942(b). These guidelines must include “methods for the disposal of waste which are environmentally sound,” while also encouraging recycling and resource conservation. 42 U.S.C. § 6941. RCRA directs that state guidelines also should reflect a number of other considerations, including:

- Circumstances that may require different solid waste practices “to insure the reasonable protection of the quality of the ground and surface waters from leachate contamination, the reasonable protection of the quality of the surface waters from surface runoff contamination, and the reasonable protection of ambient air quality;”
- The “characteristics and conditions of collection, storage, processing, and disposal operating methods, techniques and practices;”
- “[M]ethods for closing or upgrading open dumps for purposes of eliminating potential health hazards;” and
- A variety of other considerations related to specific industry types in question, waste constituents, and the geography and populations around facilities.

42 U.S.C. § 6942(c).

As stated above, these guidelines are meant to assist states in developing and implementing solid waste management plans. States that elect to implement these guidelines are subject to EPA oversight, which gives an additional level of assurance that the state plans are capable of implementing and enforcing the solid waste provisions of Subtitle D, including the prohibition on open dumps. 42 U.S.C. § 4007(a). For this reason, EPA has referred to the state solid waste management plans as the “centerpiece” of the Subtitle D program. EPA, Guidelines for Development and Implementation of State Solid Waste Management Plans, 44 Fed. Reg. 45,066 (July 31, 1979).

On July 31, 1979, EPA promulgated the original version of these guidelines. 44 Fed. Reg. at 45,066. But rather than promulgate guidelines that considered the eleven mandatory factors laid out by Congress, *see* 42 U.S.C. § 6942(c), EPA issued guidelines that largely just repeated those factors and delegated the actual consideration of the factors to the states.

For example, section 4002(c)(1) provides that EPA’s guidelines shall consider “the varying regional, geologic, hydrologic, climatic, and other circumstances under which different solid waste practices are required.” 42 U.S.C. § 6942(c)(1). Similarly, section 4002(c)(3) requires EPA’s guidelines to consider “methods for closing or upgrading open dumps for purposes of eliminating health hazards.” 42 U.S.C. § 6942(c)(3). EPA’s guidelines under 40

C.F.R. Part 256 merely rephrase Congress's language and recommend that state plans account for "climatic, geologic, and other relevant characteristics of the State," and advise states to "take steps necessary to eliminate health hazards and minimize potential health hazards." 40 C.F.R. §§ 256.22(a)(3), 256.23(d).

Similarly, section 4002(c)(2) and (10) requires that EPA consider "characteristics and conditions of collection, storage, processing, and disposal operating methods" and "types of resource recovery facilities and resource conservation systems which are appropriate." 42 U.S.C. § 6942(c)(2), (10). EPA's guidelines simply restate these factors and pass the duty of consideration on to the states: "[t]he State plan shall consider the following aspects of solid waste management (i) Resource conservation; (ii) Source separation; (iii) Collection; (iv) Transportation; (v) Storage; (vi) Transfer; (vii) Processing (including resource recovery); (viii) Treatment; and (ix) Disposal." 40 C.F.R. § 256.02(a)(2).

In other words, EPA did not apply the factors set out by Congress to develop and provide detailed, useful guidelines for the states, but rather opted to comply with the duty by merely restating the factors and delegating the responsibility to develop actual guidelines to the states. As the legislative history makes clear, Congress expected *EPA* to incorporate these statutory factors into the development of guidelines, and not simply restate them:

In promulgating the minimum requirements *the Administrator* is required to consider regional, geographic, hydrologic conditions, the protection of the quality of ground and surface waters from leachate and runoff, the characteristics and conditions of collection, storage, processing and disposal, the location of facilities, and the nature of the materials to be disposed of. *The Administrator's guidelines* should include methods of closing or upgrading open dumps

H.R. Rep. No. 94-1491, at 35 (1976) (emphases added).

Since that time, EPA has not corrected this failure to implement a significant statutory duty. To date, the only revision of the guidelines occurred in 1981, when EPA modified them slightly to allow for expanded public participation in the planning process and expedited approval of certain portions of state plans. EPA, Guidelines for Development and Implementation of State Solid Waste Management Plans and Criteria for Classification of Solid Waste Disposal Facilities and Practices, 46 Fed. Reg. 47,048 (Sep. 23, 1981).

C. The Current Wastes and Disposal Practices in the Oil and Gas Industry

The oil and gas industry generates a large amount and wide variety of liquid and solid wastes throughout its processes. The industry stores and disposes of these wastes in pits and impoundments, underground injection wells, landfills, water treatment facilities, road and land spreading, and through other practices and facilities.

The two main categories of oil and gas wastes are wastewater and the more-solid wastes, though there can be a degree of overlap between the two. The main components of the wastewater category are drilling wastewater, which is the liquid separated from recovered

drilling fluids, and produced water, which is the water that returns to the surface from the well's downhole and includes the water existing in the formation, injected water, and any added hydraulic fracturing fluids.² Produced water is by far the largest component of wastewater by volume and can be further broken down into two additional categories: flowback, which is the water that returns to the surface upon completion of a well, and long-term produced water, which continues to flow to the surface from the formation after the flowback phase and throughout the life of the well.³ All types of wastewater include the constituents added by well operators during drilling and hydraulic fracturing.⁴

The types of more-solid wastes fall into primarily three categories: drill cuttings, which are the pieces of formation cut away and returned to the surface during the drilling phase; drilling muds, which are the fluids used for a variety of purposes during drilling; and fracturing sand, which is the fine silica used to “prop” open the fractures generated during hydraulic fracturing to allow the flow of gas to the surface.⁵

As EPA has extensively detailed, the Subtitle C exemption for oil and gas wastes applies to a wide variety of other waste categories, including:

- Sediment, water, and other tank bottoms from storage facilities;
- Accumulated materials such as hydrocarbons, solids, sands, and emulsion from production separators, fluid treating vessels, and production impoundments;
- Pit sludges and contaminated bottoms from storage or disposal of exempt wastes;
- Workover wastes;
- Spent filters, filter media, and backwash; and
- Pipe scale, hydrocarbon solids, hydrates, and other deposits removed from piping and equipment prior to transportation.⁶

² See EPA, *Technical Development Document for Proposed Effluent Limitations Guidelines and Standards for Oil and Gas Extraction* 37-38 (2015) [hereafter EPA, *TDD*]; see also Earthworks, *Wasting Away: Four States' Failure to Manage Gas and Oil Field Waste from the Marcellus and Utica Shale* 6-7 (2015), available at https://www.earthworksaction.org/library/detail/wasting_away_full_report

³ EPA, *TDD*, *supra* note 2, at 37, 45-46.

⁴ *Id.* at 37.

⁵ See *id.*; Earthworks, *supra* note 2, at 7-8.

⁶ See EPA, *Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations* 10-11 (2002), available at <http://www.epa.gov/osw/nonhaz/industrial/special/oil/>; see also Letter from Robert Dellinger, EPA, to Michael Freeman, Earthjustice (Sep. 15, 2010) (clarifying that spent pit liners are not exempt oil and gas wastes, as “they are not intrinsic to or uniquely associated with operations associated with the exploration, development, or production of crude oil and natural gas”) (on file with Parties).

Each of these types of waste contains a range of toxic and harmful constituents. In the wastewater category, information on these constituents comes from self-reported submissions on the fluids added by operators during hydraulic fracturing and sampling of the wastewater itself. For example, based on a recent EPA review of self-reported submissions by oil and gas operators from 2011 to 2013, the twenty most frequently reported constituents used in hydraulic fracturing fluids are as follow:

Table 1: Most Frequently Reported Constituents Used in Hydraulic Fracturing Fluid (FracFocus, 2011-2013)⁷

Constituent	CAS Number	Number of Reported Uses (Gas Wells / Oil Wells)
Hydrochloric acid	7647-01-0	12,351 / 10,029
Guar gum	9000-30-0	3,586 / 9,110
Phenolic resin	9003-35-4	-- / 3,109
Hydrotreated light petroleum distillates	64742-47-8	11,897 / 10,566
Ethylene glycol	107-21-1	5,493 / 10,307
Potassium hydroxide	1310-58-3	-- / 7,206
Methanol	67-56-1	12,269 / 12,484
Ethanol	64-17-5	6,325 / 3,536
Saline	7647-14-5	3,608 / 3,692
Sodium hydroxide	1310-73-2	4,656 / 8,609
Glutaraldehyde	111-30-8	5,635 / 5,927
Peroxydisulfuric acid, diammonium salt	7727-54-0	4,618 / 10,350
Solvent naphtha, petroleum, heavy aromatic	64742-94-5	3,287 / 3,821
2-Butoxyethanol	111-76-2	3,325 / 4,022
Isopropanol	67-63-0	8,008 / 8,031
Acetic acid	64-19-7	3,563 / 4,623
Citric acid	77-92-9	4,832 / 3,310
2,2-Dibromo-3-nitropropionamide	10222-01-2	3,668 / --
Naphthalene	91-20-3	3,294 / --
Propargyl alcohol	107-19-7	5,811 / 5,599

When added to the base fluid and injected during hydraulic fracturing operations, these constituents mix with drilling fluids and the chemicals already present in the oil and gas formations, thereby resulting in the overall composition of the produced water that returns to the surface during flowback and over the life of the well. Because the nature of this combined wastewater and the varying chemicals differs in each oil and gas formation, there is no definitive source on the exact composition of the wastewater. This information comes from a variety of

⁷ See EPA, *TDD*, *supra* note 2, at 43; see also Minority Staff, Comm. on Energy & Commerce, U.S. House of Representatives, *Chemicals Used in Hydraulic Fracturing* 6 (2011), available at <http://democrats.energycommerce.house.gov/sites/default/files/documents/Hydraulic-Fracturing-Chemicals-2011-4-18.pdf>.

sources and studies, many of which were collected and analyzed by EPA in its recent Proposed Effluent Limitations Guidelines and Standards for Oil and Gas Extraction rulemaking.⁸

EPA specifically categorized wastewater constituents in five categories: classical and conventional (e.g., total dissolved solids, total suspended solids, chlorides, sodium, and pH), organic (e.g., benzene, toluene, ethylbenzene, and xylene), metals (e.g., barium, strontium, and magnesium), radioactive constituents (e.g., radium-226 & -228), and other (e.g., guar gum and microorganisms).⁹ EPA’s data on the constituents of most concern for human health and the environment, such as organics and metals, demonstrates the hazards of oil and gas wastewater:

Table 2: Concentrations of Select Organic Constituents in Unconventional Oil and Gas Produced Water¹⁰

Parameter	Range (µg/L)	Median (µg/L)
1,2,4-trimethylbenzene	0.54 - 4,000	5.0
1,3,5-trimethylbenzene	0.64 - 1,900	5.0
Acetone	5.9 - 160,000	40
Benzene	0.99 - 800,000	8.5
Carbon disulfide	5.0 - 7,300	5.0
Chlorobenzene	0 - 500	5.0
Chloroform	0 - 500	5.0
Ethanol	1,000 - 230,000	10,000
Ethylbenzene	0.63 - 8,900	5.0
Isopropylbenzene	0.53 - 500	5.0
Methanol	3,200 - 4,500,000	10,000
Methyl chloride	2.0 - 500	5.0
Naphthalene	0.50 - 1,400	5.0
Phenol	0.70 - 460	2.0
Pyridine	1.1 - 2,600	86
Tetrachloroethylene	5.0 - 5,000	5.0
Toluene	0.91 - 1,700,000	6.0
Xylenes	3.0 - 440,000	15

⁸ See EPA, *TDD*, *supra* note 2, at 55-74.

⁹ *Id.* at 55 Tbl. C-9.

¹⁰ *Id.* at 66 Tbl. C-15.

Table 3: Concentrations of Select Metal Constituents in Unconventional Oil and Gas Produced Water¹¹

Parameter	Range (mg/L)	Median (mg/L)
Aluminum	0.048 - 47	0.45
Antimony	0.0089 - 0.5	0.047
Arsenic	0.004 - 0.5	0.057
Barium	0 - 16,000	19
Beryllium	0.0009 - 420	0.04
Boron	0.018 - 150	14
Cadmium	0 - 1.2	0.0086
Calcium	13 - 130,000	6,700
Chromium	0.0066 - 260	0.3
Cobalt	0.0045 - 25	0.5
Copper	0 - 4.2	0.14
Iron	0.95 - 810	39
Lead	0 - 5	0.03
Lithium	0.5 - 430	52
Magnesium	3 - 27,000	670
Manganese	0.12 - 43	1.7
Mercury	0 - 0.3	0.0002
Molybdenum	0.003 - 13	0.038
Nickel	0.007 - 4	0.12
Potassium	0 - 8,500	3,100
Selenium	0.0043 - 0.5	0.05
Silver	0.00073 - 0.5	0.05
Sodium	64 - 430,000	39,000
Strontium	0 - 8,000	750
Thallium	0.0049 - 1	0.1
Tin	0.0038 - 3	1
Titanium	0 - 8	0.19
Vanadium	0.063 - 40	0.63
Zinc	0 - 250	0.2

Although EPA’s data solely examined wastewater from unconventional oil and gas operations—that is, the development of oil and gas from tight, low-permeability geologic formations, such as shale—a recent study examining ammonium and halide constituents in both conventional and unconventional wastewater found no significant difference in the concentrations between the two categories of operations.¹²

¹¹ *Id.* at 66 Tbl. C-17.

¹² See Jennifer S. Harkness et al., *Iodide, Bromide, and Ammonium in Hydraulic Fracturing and Oil and Gas Wastewaters: Environmental Implications*, 49 *Envtl. Sci. & Tech.* 1,955-1,963 (2015)

Beyond wastewater, oil and gas operations also generate a large amount of solid and semi-solid wastes with similarly wide ranges of toxic constituents. For example, the muds used in the drilling process are primarily liquid, but they are separated into their solid and liquid components or otherwise solidified prior to disposal in landfills and other facilities.¹³ One of the most common ingredients in drilling muds is barite, which contains primarily barium sulfate but also a host of toxic metals, such as mercury, cadmium, and chromium.¹⁴ A recent study of drilling muds conducted for regulators in West Virginia found that “with the exception of arsenic, mercury, nitrate and selenium, the average concentrations of the primary and secondary drinking water parameters in drilling muds were in excess of all of the inorganic drinking water standards,” as well as drinking water standards for benzene and surfactants.¹⁵

With respect to drill cuttings, an average well will bring hundreds of tons to the surface, depending on the well’s depth and horizontal laterals. Estimates range from 500 to 1,000 tons per well.¹⁶ These cuttings are typically coated with the chemicals used in the drilling fluids and additionally contain chemicals that are already present in the formation, such as lead, arsenic, barium, chromium, uranium, radium, radon, and benzene.¹⁷ Drill cuttings can also contain naturally occurring radioactive materials (NORMs), which have proven to be a problem for the disposal of these wastes in landfills not capable of handling them.¹⁸

The final main category of solid wastes is hydraulic fracturing sand, which is a fine silica sand treated with chemicals.¹⁹ Each well uses an average of 4.2 million pounds of sand, and the proportion of sand used has increased in recent years up to 20 percent of an average well’s hydraulic fracturing fluids.²⁰ In Pennsylvania, sand disposal increased 200 percent between 2011

¹³ See Earthworks, *supra* note 2, at 8.

¹⁴ See EPA, *Development Document for Proposed Effluent Limitations Guidelines and Standards for Synthetic-Based Drilling Fluids and other Non-Aqueous Drilling Fluids in the Oil and Gas Extraction Point Source Category VII-4, VII-6* (1999).

¹⁵ See Earthworks, *supra* note 2, at 8; W.Va. Water Research Institute, *Assessing Environmental Impacts of Horizontal Gas Well Drilling Operations* 5 (2013), available at <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/legislative-studies/Documents/Project%20Overview%20-%20Water%20and%20Pits%20and%20Impoundments%20Feb%2015,%202013%20submitted%20Feb.%2020,%202013.pdf>.

¹⁶ See Earthworks, *supra* note 2, at 7.

¹⁷ See *id.*; Ronald E. Bishop, Ph.D., CHO, *Chemical and Biological Hazards Posed by Drilling Exploratory Shale Gas Wells in Pennsylvania’s Delaware River Basin: Report for the Delaware River Basin Commission Exploratory Well Hearing 9-11* (2010) (on file with Parties).

¹⁸ See, e.g., Anya Litvak, *Marcellus Shale waste trips more radioactivity alarms than other products left at landfills*, Pittsburgh Post-Gazette, Aug. 22, 2013, available at <http://www.post-gazette.com/local/marcellusshale/2013/08/22/Marcellus-Shale-waste-trips-more-radioactivity-alarms-than-other-products-left-at-landfills/stories/201308220367>.

¹⁹ See Earthworks, *supra* note 2, at 7.

²⁰ See Sergio Chapa, *Demand for Sand: Frac sand use per well goes up amid low oil prices*, San Antonio Business Journal, June 30, 2015, available at

and 2013, with most headed to landfills.²¹ In spite of this rapid growth of sand in the waste stream, very little is known about the chemical constituents of hydraulic fracturing sand waste. Given its injection along with the hydraulic fracturing fluids, one can assume that the sand returning to the surface will contain the hydraulic fracturing constituents described above.

With respect to the disposal and storage of these wastes, one of the main practices of concern is the increasing use of open-air pits and impoundments. These pits and impoundments are used for the storage of oil and gas wastewater and solid wastes, as well as freshwater and reused wastewater for use as a hydraulic fracturing base fluid.²² Although the primary function of these pits and impoundments is for storage, they are effectively methods of disposal, given the evaporative loss of volatile chemicals to the air, frequent instances of spills and leaks to groundwater, and practices in which operators close out well sites by draining and burying the pits and impoundments—along with any settled solids they still contain and sometimes the used pit liners—on site.²³

The number of pits and impoundments across the nation demonstrate the extent of this problem. For example, there are currently 13,379 oil and gas waste “pits” in Colorado, 3,183 of which the state lists as “active” (though over half the total number of pits are listed with no status at all).²⁴ As of 2013, there are 529 pits at oil and gas production sites in Pennsylvania. Due to the lack of reliable data on pits collected and retained by Pennsylvania’s environmental agency, the organization SkyTruth reviewed aerial photographic surveys between 2005 and 2013 to determine the number of pits over the years and their sizes:

Table 4: Oil and Gas Waste Pits in Pennsylvania, 2005-2013²⁵

Year	Pits	Average Area (m ²)	Median Area (m ²)
2005	11	608.9	344.9
2008	237	1,040.9	558.8
2010	581	3,416.9	2,001.6
2013	529	7,552.8	6,209.7

<http://www.bizjournals.com/sanantonio/blog/eagle-ford-shale-insight/2015/06/demand-for-sand-frac-sand-use-per-well-goes-up.html>.

²¹ See Earthworks, *supra* note 2, at 7

²² *Id.* at 14.

²³ *Id.* at 17.

²⁴ See Colo. Oil & Gas Conservation Comm., COGIS – Facility Inquiry (database accessed Feb. 23, 2015; data on file with Parties).

²⁵ See SkyTruth, SkyTruth Releases Map of Drilling-Related Impoundments across PA, <http://blog.skytruth.org/2014/10/PA-drilling-impoundments-2005-2013.html> (last visited June 16, 2015).

The data reveals that not only have the number of pits vastly increased since 2005, but the average pit has grown much larger in that time period, now over 7,500 square meters—or nearly two acres—per pit.²⁶

Data from Arkansas demonstrates a similar increase of active pits over the past five years. According to the Arkansas Department of Environmental Quality’s facility and permit database, the agency has issued 1,622 permits for “reserve pits”—that is, pits “used to store Drilling Fluids or to contain fluids generated during drilling operations,” including cutting, drilling fluids, and produced water—between 2011 and 2015.²⁷ Of those permits, 457 are currently active:

Table 5: Permits Issued to Oil and Gas Reserve Pits in Arkansas, 2011-2015²⁸

Year	Total Permits Issued	Currently Active	Currently Voiced
2011	322	19	303
2012	439	65	374
2013	398	83	315
2014	439	192	247
2015	91	75	16
Total	1689	434	1255

With the expansion of oil and gas development and the increasing number of larger pits and impoundments serving multiple wells, failures, accidents, and leaks have become an increasingly common issue. For example:

- A 2011 investigation of groundwater contamination connected to oil and gas development in Ohio found that faulty construction and/or maintenance of pits was the top cause, accounting for almost 44 percent of incidents.²⁹
- A 2012 study commissioned by the West Virginia Department of Environmental Protection concluded that inadequate standards and oversight can result in the construction of larger pits and impoundments than allowed by permits, thereby resulting in safety and stability concerns.³⁰

²⁶ *Id.*

²⁷ See Arkansas Dep’t of Env’tl. Quality, Rule B-17(c)(21) (2010), *available at* <http://www.sos.arkansas.gov/rulesRegs/Arkansas%20Register/2010/Nov10Reg/178.00.10-001.pdf>.

²⁸ See Arkansas Dep’t of Env’tl. Quality, ADEQ Facility and Permit Summary (accessed Aug. 6, 2015) (on file with Parties).

²⁹ See Earthworks, *supra* note 2, at 14 (citing Scott Kell, Ground Water Protection Council, *Groundwater Investigations and their Role in Advancing Regulatory Reforms: A Two-State Review* (2011)).

³⁰ *Id.* (citing John Quaranta et al., W.Va. University, *Assessing Environmental Impacts of Horizontal Gas Well Drilling Operations: Pits and Impoundments Final Report* (2012)).

- In 2014, the Pennsylvania Department of Environmental Protection reached a consent order with the operator Range Resources in connection with violations at six centralized wastewater impoundments.³¹ The consent order would require the closure of five “football-field-sized impoundments,” and upgrade of operations at two others, and a then-record fine of \$4.15 million.³²
- Less than one month later, the Pennsylvania Department of Environmental Protection filed a complaint against EQT Production Company seeking a record \$4.5-million penalty for leaks and discharges from its six-million-gallon impoundment to surrounding groundwater and streams over the course of a year. Although the impoundment was only permitted for the storage of freshwater, EQT used it to store flowback water. This wastewater leaked to the surrounding soil and groundwater from 75 to 100 holes in the impoundment’s liner.³³

Certain states have responded to this increasing problem by restricting or banning the use of open pits and impoundments for the storage and disposal of wastewater. For example, Pennsylvania recently proposed revisions to its oil and gas regulations under which it would prohibit unconventional well operators (though not conventional operators) from storing waste in open pits.³⁴ And although Maryland has yet to encounter the large-scale oil and gas development driven by hydraulic fracturing, it is the first state in the nation to propose regulations prohibiting waste storage and treatment in open pits and impoundments.³⁵ Other states have a patchwork of requirements with varying protections, demonstrating the need for EPA to revise its Subtitle D regulations and set clear requirements for this growing practice.

Another main practice of concern is the use of underground injection wells for the disposal of oil and gas wastewater. Nationwide, there are more than 170,000 “Class II” underground injection wells, which are specifically designated to inject “fluids associated with oil and natural gas production” and which accept at least two billion gallons liquids from oil and gas production every day.³⁶ About twenty percent of Class II wells are used exclusively for the disposal of oil and gas wastewater.³⁷ Traditionally, Class II wells tended to exist in western states, such as Texas, California, Oklahoma, and Kansas, but they have rapidly proliferated in Ohio in the past few years due to its proximity to Marcellus shale hydraulic fracturing

³¹ *Id.* at 15 (citing consent order).

³² See Don Hopey, *Range Resources to pay \$4.15M penalty*, Pittsburgh Post-Gazette, Sep. 18, 2014, available at <http://www.post-gazette.com/local/2014/09/18/DEP-orders-Range-Resources-to-pay-4-million-fine/stories/201409180293>.

³³ See Press Release, Pa. Dep’t of Env’tl. Prot., *DEP Seeks \$4.5 Million Penalty from EQT Production Company for Major Pollution Incident in Tioga County*, Oct. 7, 2014.

³⁴ Earthworks, *supra* note 2, at 17.

³⁵ *Id.*

³⁶ See Earthworks, *supra* note 2, at 31; EPA, Class II Wells - Oil and Gas Related Injection Wells (Class II), <http://water.epa.gov/type/groundwater/uic/class2/> (last visited Aug. 21, 2015).

³⁷ EPA, Class II Wells - Oil and Gas Related Injection Wells (Class II), <http://water.epa.gov/type/groundwater/uic/class2/>.

operations.³⁸ For example, a 2009 survey of Ohio injection wells found that most accepted wastewater in quantities of tens of thousands to hundreds of thousands barrels per year, with the total amount injected across all Ohio injection wells as 4,467,913 barrels—or 187,652,346 gallons.³⁹ In 2014, by contrast, Ohio’s injection wells accepted 22 million barrels of waste, or 693 million gallons—over 3.5 times the 2009 amount.⁴⁰ As of August 2015, Ohio has about 200 Class II wells.⁴¹ Table 6 demonstrates the increased amount of wastewater disposed at injection wells in Ohio and Pennsylvania between 2011 and 2014.

Table 6: Volume of Oil and Gas Wastewater Sent to Injection Wells (in barrels), Ohio and Pennsylvania, 2011-2014⁴²

	2011	2012	2013	2014	Increase, 2011-2014
Ohio	12.6 million	14.1 million	16.4 million	22 million	75%
Pennsylvania	2.8 million	4.3 million	3.5 million	4 million	43%

These new injection wells not only accept more fluids than prior wells, but they are also deeper and with larger-diameter bores.⁴³ A side effect of this increasing use of injection wells—and one that is illustrative of the connection and interchangeability among the various environmental media of release—is the occurrence of earthquakes in the vicinity of the wells due to “induced seismicity.”⁴⁴ In fact, after a series of earthquakes near Ohio injection wells outside of Youngstown, the state instituted a moratorium on injections in a seven-mile radius of one well pending further study.⁴⁵ This cessation followed a similar moratorium by Arkansas in 2010 and an earlier study on Texas wells and earthquakes.⁴⁶ And Oklahoma recently took action to address the nearly 600 earthquakes of magnitude 3.0 or greater that have occurred in the past year, ordering companies to plug wells that were drilled too deep and to reduce the volume of injected fluids.⁴⁷

³⁸ See *id.*; Scott Detrow, *Explaining Pennsylvania’s Link To Ohio Earthquakes*, NPR StateImpact, April 4, 2012, <http://stateimpact.npr.org/pennsylvania/2012/04/04/pennsylvanias-link-to-ohio-earthquakes/>.

³⁹ *Water Management Technologies* at 16-17, Tbl. 1.

⁴⁰ See Earthworks, *supra* note 2, at 34.

⁴¹ See *Am. Water Mgmt. Servs., LLC v. Div. of Oil & Gas Res. Mgmt.*, Appeal Nos. 889 & 890, at 11 (Ohio Oil & Gas Comm. 2015).

⁴² See Earthworks, *supra* note 2, at 34 Tbl.1.

⁴³ *Id.*

⁴⁴ *Id.* at 4.

⁴⁵ *Id.* at 4 n.2; see also Daniel Gilbert, *Ohio Shuts Wells Following Quakes*, Wall St. J., Jan. 3, 2012, available at <http://online.wsj.com/article/SB10001424052970203462304577136920749123772.html>.

⁴⁶ *Id.*

⁴⁷ See Mike Lee, *Okla. Gov. Fallin defends state response to seismic events*, E&E EnergyWire, Aug. 5, 2015, <http://www.eenews.net/energywire/2015/08/05/stories/1060023015> (last visited Aug. 21, 2015).

In addressing one operator's challenge to an order suspending injection operations at wells in the Youngstown area, the Ohio Oil and Gas Commission rejected the challenge, noting in particular that "the industry has out-paced its regulatory authority" and that "to a certain extent, both the industry and the Division [of Oil & Gas Resources Management] are 'working with their eyes closed.'"⁴⁸

Beyond these incidents and concerns related to open pits and impoundments and underground injection wells, other recent examples of oil and gas waste disposal and handling practices, accidents, and effects to human health and the environment further demonstrate the extent of the current issue and the need for Subtitle D regulations and state plan guidelines tailored to the oil and gas industry:

- A March 2015 *Newsweek* article highlighted the increasing prevalence of the disposal of oil and gas wastewater by "road-spreading," ostensibly for the purposes of deicing and dust suppression, on roads in New York and Pennsylvania.⁴⁹ Both states currently consider the road-spreading of conventional oil and gas wastewater (i.e., from oil and gas production of shallower, non-shale formations) to be a "beneficial use" and allow it with certain conditions. As discussed above, however, the constituents of conventional oil and gas wastewater are not appreciably safer than unconventional wastewater. In 2014 alone, over 3 million gallons of untreated oil and gas wastewater were spread in northwest Pennsylvania. New York's volume of spreading is more difficult to assess, given scant reporting requirements. The state issued permits for road-spreading of production wastewater in at least twenty-three municipalities in seven western New York counties and for road-spreading of natural gas storage brine in ten municipalities in two additional western New York counties.⁵⁰
- On February 18, 2015, a coalition of environmental organizations contacted the U.S. Coast Guard's Sector Ohio Valley, requesting a criminal investigation and a "cease and desist" order related to a company's possible barging of oil and gas production wastewater on the Ohio River and Mississippi River.⁵¹ The Coast Guard has not finalized the necessary rules for transporting such wastewater by barge, including the definition of what constitutes "shale gas extraction wastewater" and the proper constraints on transportation. The company conducting the barging has taken advantage of this lack of regulatory clarity, stating that it will continue transporting oil and gas wastewater by barge until the Coast Guard finalizes the

⁴⁸ See *Am. Water Mgmt. Servs., LLC*, Appeal Nos. 889 & 890, at 12.

⁴⁹ See Zoe Schlanger, *Gas Industry's Solution to Toxic Wastewater: Spray It on Roads*, *Newsweek*, March 2, 2015, available at <http://www.newsweek.com/oil-and-gas-wastewater-used-de-ice-roads-new-york-and-pennsylvania-little-310684>.

⁵⁰ *Id.* (citing Riverkeeper, *New York's Fracking Waste Problem*, <http://www.riverkeeper.org/fracking/new-york%E2%80%99s-fracking-waste-problem/> (last visited June 16, 2015)); see also FracTracker, *Road-spreading of brine derived from oil and gas wells (2009-2013)*, <http://maps.fractracker.org/latest/?appid=eb1904df42c848ed967a48c52e873c91> (last visited June 16, 2015).

⁵¹ See Letter from Teresa Mills et al. to Capt. Richard Timme, U.S. Coast Guard (Feb. 18, 2015), available at <http://ohvec.org/groups-demand-coast-guard-protect-ohio-river/>.

necessary rules. Revised Subtitle D regulations that address storage and transportation would undoubtedly help to resolve this regulatory vacuum.

- In July 2011, a wastewater pipeline serving a well operated by Petro Harvester leaked over 2 million gallons of wastewater, damaging twenty-four acres of private land in Bottineau County, North Dakota.⁵² Although the spill is likely one of the largest oil and gas wastewater spills in North Dakota history, the initial estimates (which still remain uncorrected in the official record) were much lower: just 12,600 gallons. It was only when the company hauled away over 2 million gallons of wastewater that it became clear the spill was much larger than reported and estimated. The handling, storage, and disposal of oil and gas wastewater is a large and growing issue for North Dakota; in 2013, operators produced 15 billion gallons of wastewater, and the spill rate is currently twice as high as 2006. Yet the state agency responsible is not properly recording or tracking these wastewater spills, particularly those that occur once the wastewater is transported from the well pad.⁵³
- A waste disposal company recently proposed to use 400,000 tons of treated drill cuttings to extend the runway of a northcentral Pennsylvania airport by 600 feet. Local residents have raised concerns over the fact that the runway is atop a steep embankment adjacent to Pine Creek Gorge, an important natural area in the state. The company has already “processed” 172,000 tons of drill cuttings by mixing them with concrete and has disposed of them in other parts of the state through a special disposal permit.⁵⁴
- A March 2014 article in *Boulder Weekly* described the prevalence of one particular waste stream—technologically enhanced naturally occurring radioactive material (TENORM)—in the context of oil and gas wastes’ exemption from regulation under Subtitle C of RCRA.⁵⁵ Specifically, the article discussed the experiences of one man’s employment with a technology firm that provides and refurbishes mechanical pipeline seals for oil and gas operations. The employee was responsible for sand-blasting the seals of the TENORM-containing “scale” that accumulated over the course of their operation. Based on EPA’s own data, a single oil or gas well can produce several tons of scale, which accumulates in pipes, tank bottoms, and elsewhere. According to the employee, the pulverized scale “was vented directly from the sand-blasting machine into the air outdoors via a vent of the roof of the

⁵² See Emily Guerin, *State Officials Misrepresent North Dakota’s Spill Problem*, Inside Energy, Feb. 16, 2015, <http://insideenergy.org/2015/02/16/state-officials-misrepresent-north-dakotas-spill-problem/>.

⁵³ As the article notes, this lack of transparency on wastewater spills is not unique to North Dakota. Wyoming and Pennsylvania both fail to provide spill reports, databases, or statistics online, and Colorado’s comprehensive spill database is less searchable than North Dakota’s. *Id.*

⁵⁴ See Marie Cusick, *Project would bring 400,000 tons of drilling waste to PA’s ‘Grand Canyon’*, StateImpact Pennsylvania, July 13, 2015, available at <https://stateimpact.npr.org/pennsylvania/2015/07/13/project-would-bring-400000-tons-of-drilling-waste-to-pa-s-grand-canyon/>.

⁵⁵ See Jefferson Dodge & Joel Dyer, *America’s dirtiest secret: How billions of barrels of toxic oil and gas waste are falling through regulatory cracks*, *Boulder Weekly*, March 13, 2014, available at <http://www.boulderweekly.com/article-12516-american-dirtiest-secret.html>.

building without being filtered.”⁵⁶ TENORM from the oil and gas industry may contain Radium-226 or Radium-228, and a single inhaled particle “can lodge in the lungs and cause damage to tissue for the rest of a person’s life.”⁵⁷

As these incidents and data demonstrate, the oil and gas boom has generated an increasing amount of wastes over the past decade, and proper handling, transportation, storage, and disposal are necessary to protect human health and the environment. Without strong Subtitle D rules tailored to the oil and gas industry and matching state plan guidelines, requirements and records will be a state-by-state patchwork, leading to situations in which operators may take advantage of the regulatory vacuum and protections for communities and the environment will vary depending on their location. For this reason, it is vital that EPA finally meet its duty to review and revise the Subtitle D regulations and state plan guidelines for oil and gas wastes.

II. EPA HAS FAILED TO PERFORM NONDISCRETIONARY DUTIES

A. EPA Has Failed to Review and, Where Necessary, Revise the Subtitle D Regulations for Oil and Gas Wastes No Less Frequently Than Once Every Three Years

Section 2002(b) of RCRA places on EPA a continuing duty that “[e]ach regulation promulgated under this chapter shall be reviewed and, where necessary, revised not less frequently than every three years.” 42 U.S.C. § 6912(b). This duty is clear and nondiscretionary, and cannot be circumvented. *See, e.g., Natural Res. Def. Council v. EPA*, 966 F.2d 1292, 1300 (9th Cir. 1992) (“EPA does not have the authority to ignore unambiguous deadlines set by Congress.”); *Sierra Club v. Leavitt*, 355 F. Supp. 2d 544, 550 (D.D.C. 2005) (“[i]t is rudimentary administrative law that discretion as to the substance of the ultimate decision does not confer discretion to ignore the required procedures of decisionmaking.”) (quoting *Bennett v. Spear*, 520 U.S. 154, 172 (1997)).

Moreover, inherent in the duty is a *required action*; EPA must make a “formal decision to revise or not to revise.” *Envtl. Def. Fund v. Thomas*, 870 F.2d 892, 900 (2d Cir. 1989). Determining that revision is necessary does not satisfy or toll the deadline, thereby allowing EPA boundless time to make its revision. Rather, “Congress mandated that review *and any revisions* should occur at [the prescribed] intervals.” *Am. Lung Ass’n v. Browner*, 884 F. Supp. 345, 349 (D. Ariz. 1994) (emphasis added).

Looking squarely at this same provision in EPA’s promulgation of Subtitle D regulations for coal combustion waste, EPA conceded and the U.S. District Court for the District of Columbia agreed that “§ 2002(b) creates a nondiscretionary duty requiring the EPA to undertake a review and, if necessary, revision of each regulation promulgated under the RCRA at least every three years.” *Appalachian Voices v. McCarthy*, 989 F. Supp. 2d 30, 54 (D.D.C. 2013).

⁵⁶ *Id.*

⁵⁷ *Id.*

Under the most generous reading of the statutory deadline provision, EPA was required to have completed these necessary revisions for oil and gas wastes by July 6, 1991, at the latest. 42 U.S.C. § 6912(b); *Envtl. Def. Fund*, 870 F.2d at 900 (“Congress mandated that review and any revisions should occur at [3]-year intervals.”). However, twenty-seven years later—indeed, nine successive deadline cycles later—it appears that EPA has not taken a single action to implement or even begin these revisions. At no time in these twenty-seven years has EPA attempted to revise or even review the Subtitle D regulations with respect to oil and gas wastes.

B. EPA Has Failed to Review the State Plan Guidelines Not Less Frequently Than Every Three Years, and to Revise the Guidelines as Appropriate

Section 4002(b) of RCRA places on EPA a duty to review its guidelines for state solid waste management plans “not less frequently than every three years, and revise[] as may be appropriate.” The last time EPA conducted a review and/or revision of the state plan guidelines for oil and gas wastes was in 1981, when it revised the state plan guidelines to include additional public participation provisions. 46 Fed. Reg. at 47,048. Since that time, eleven successive three-year deadlines have passed with no further review or revision.

Although EPA occasionally has published studies and technical manuals dealing with solid waste disposal and criteria for classification of disposal facilities, these documents are not formal state plan guidelines and do not satisfy EPA’s statutory requirement to review the guidelines at least once every three years. These documents simply do not reflect any effort to review the existing part 256 state plan guidelines, evaluate their effectiveness, and formally determine whether additional revisions are needed.⁵⁸ In other words, the documents do not make the required “formal decision to revise or not to revise.” *Envtl. Def. Fund*, 870 F.2d at 900.

For both of these deadline provisions, EPA is in long-standing violation of its duties to review and if necessary revise its regulations. 42 U.S.C. §§ 6912(b), 6942(b). In fact, “EPA has not merely missed a deadline, it has nullified the congressional scheme for a fixed interval review and revision process.” *Am. Lung Ass’n*, 884 F. Supp. at 348.

C. Parties May Sue EPA for These Failures to Perform Nondiscretionary Duties

RCRA provides citizens with the ability to commence a civil action “against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this chapter which is not discretionary with the Administrator.” 42 U.S.C. § 6972(a)(2). Both the requirements under section 2002(b) and section 4002(b), 42 U.S.C. §§ 6912(b), 6942(b), are mandatory and nondiscretionary. For these reasons, EPA must act promptly to rectify these violations.

⁵⁸ For example, EPA’s 1988 report to Congress, *Solid Waste Disposal in the United States*, mentions part 256 only once, and does not indicate whether the state plan requirements are being reviewed or whether EPA has determined that revision is needed. See EPA, *Report to Congress: Solid Waste Disposal in the United States* (Oct. 1988). A later technical manual, *Guide for Industrial Waste Management*, does not mention part 256 or state plan guidelines at all. EPA, *Guide for Industrial Waste Management* (1999).

III. PARTIES GIVING NOTICE

The names, addresses, and telephone numbers of the parties giving notice are:

Environmental Integrity Project 1000 Vermont Ave. NW Suite 1100 Washington, DC 20005 (202) 296-8800	Natural Resources Defense Council 40 West 20th Street New York, NY 10011 (212) 727-2700	Earthworks 1612 K St. NW Suite 808 Washington, DC 20006 (202) 887-1872
Center for Health, Environment, & Justice 105 Rowell Court, 1st Floor Falls Church, VA 22046 (703) 237-2249	West Virginia Surface Owners' Rights Organization 1500 Dixie Street Charleston, WV 25311 (304) 346-5891	Responsible Drilling Alliance P.O. Box 502 Williamsport, PA 17703 (888) 332-1244

San Juan Citizens Alliance
P.O. Box 2461
1309 East 3rd Ave., Suite 5
Durango, CO 81302
(970) 259-3583

Adam Kron and Jared Knicley are the counsel representing these parties. Their addresses and telephone numbers can be found in the signature blocks below.

IV. CONCLUSION

Pursuant to section 2002(b) of RCRA, EPA has a nondiscretionary duty to ensure that “[e]ach regulation promulgated under this chapter shall be reviewed and, where necessary, revised not less frequently than every three years.” 42 U.S.C. § 6912(b). Since 1988, EPA has failed to revise the Subtitle D criteria regulations with respect to oil and gas wastes or to review or revise the Subtitle C exemption of such wastes. Such review and revision is long overdue, particularly in light of the recent dramatic changes to the industry.

Pursuant to section 4002(d) of RCRA, the state plan guidelines “shall be reviewed from time to time, but not less frequently than every three years, and revised as may be appropriate.” 42 U.S.C. § 6942(b). EPA’s last review or revision of the state plan guidelines occurred in 1981, nearly thirty-four years ago.

If EPA fails to cure its noncompliance with these statutory mandates under RCRA, Parties intend to file suit in federal court seeking declaratory relief, injunctive relief, and litigation costs, as appropriate.

If you have any questions regarding this notice or would like to discuss this matter further, please do not hesitate to contact us.

Respectfully submitted,

Adam Kron
Attorney
Environmental Integrity Project
1000 Vermont Avenue NW, Suite 1100
Washington, DC 20005
(202) 263-4451
akron@environmentalintegrity.org

Jared Knicley
Litigation Fellow
Natural Resources Defense Council
1152 15th Street, NW, Suite 300
Washington, DC 20005
(202) 513-6242
jknicley@nrdc.org

Attorneys for Environmental Integrity Project, Natural Resources Defense Council, Earthworks, Center for Health, Environment & Justice, West Virginia Surface Owners' Rights Organization, Responsible Drilling Alliance, and San Juan Citizens Alliance

cc: Loretta E. Lynch, Attorney General
U.S. Department of Justice
950 Pennsylvania Avenue, NW
Washington, DC 20530-0001