

# Hogwash: An Overview of Concentrated Animal Feeding Operations and Their Effect On the Environment And Communities In North Carolina

Benjamin T. Parker

## I. Introduction

Hurricane Matthew, a storm from the fall of 2016, reminded many environmentalists of a lingering hazard, concentrated animal feeding operations (“CAFOs”).<sup>1</sup> The facilities themselves raise a host of ethical questions,<sup>2</sup> but regardless of whether or not CAFOs should exist, they do. Because they do, natural disasters will continue to force many to acknowledge that CAFOs, by their sheer existence, are a substantial environmental hazard that the Clean Water Act (“CWA”) fails to adequately mitigate.<sup>3</sup>

This paper explores CAFOs in North Carolina. Part II provides a background on CAFOs. Part III focuses on the development of regulation such as the Clean Water Act (“CWA”) and tools such as National Pollution Discharge Elimination System (“NPDES”) permits. Part IV connects CAFOs to environmental racism and Part V concludes that with the possibility of worsening natural disasters, and the certainty of CAFOs’ inherent risk to the environment, more stringent regulation than the current NPDES permits is required.

## II. CAFOs

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<sup>1</sup> Arelis R. Hernández, Angela Fritz & Chris Mooney, *Factory farming practices are under scrutiny again in N.C. after disastrous hurricane floods*, THE WASH. POST (Oct. 10, 2016), <https://www.washingtonpost.com/news/capital-weather-gang/wp/2016/10/16/factory-farming-practices-are-under-scrutiny-again-in-n-c-after-disastrous-hurricane-floods/>.

<sup>2</sup> Mark Notaras, *The Shame of Concentrated Animal Feedlots*, OUR WORLD (Nov. 24, 2010), <https://ourworld.unu.edu/en/the-shame-of-concentrated-animal-feedlots>.

<sup>3</sup> Michele M. Merkel, *EPA And State Failures To Regulate CAFOs Under Federal Environmental Laws*, ENVTL INTEGRITY (Sep. 11, 2006), [http://environmentalintegrity.org/pdf/publications/EPA\\_State\\_Failures\\_Regulate\\_CAFO.pdf](http://environmentalintegrity.org/pdf/publications/EPA_State_Failures_Regulate_CAFO.pdf).

Industrial farming, in large part through concentrated animal feeding operations (“CAFOs”), produces the overwhelming majority of meat in the United States.<sup>4</sup> CAFOs are the epitome of industrial farming; they reduce the total number of operation sites while increasing the meat industry’s overall productivity.<sup>5</sup> CAFOs function by placing large quantities of animals—typically hogs, chickens, or cattle—into a compact area, pooling their collective waste into large pits, “lagoons” of manure.<sup>6</sup> Annually, CAFOs create over 300 million tons of manure in the United States.<sup>7</sup> CAFOs come in a variety of sizes (there are animal feeding operations (“AFOs”), medium CAFOs, and large CAFOs).<sup>8</sup> These distinctions are given through EPA mandated thresholds<sup>9</sup> and there is no upper limit for CAFO capacity, so it is frequently the case that CAFOs contain significantly more livestock than the minimum would suggest.<sup>10</sup> While the thresholds would indicate hundreds,<sup>11</sup> CAFOs are known to measure their populations by thousands of animals.<sup>12</sup>

There is an overwhelming body of legal and scientific research dedicated to the impacts of CAFOs on the environment and the communities around them.<sup>13</sup> CAFOs have been identified as sources of pollution and health hazards by innumerable non-profits, environmental

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<sup>4</sup> *Ending Factory Farming*, FARM FORWARD (2016), <https://farmforward.com/ending-factory-farming/>. Some studies have found the percentage of meat produced in factory farms to account for as much as 99% of total production. *Id.*

<sup>5</sup> US. DEP’T. OF AGRIC., 2012 CENSUS OF AGRICULTURE: POULTRY AND EGG PRODUCTION 1 (2012), [http://www.agcensus.usda.gov/Publications/2012/Online\\_Resources/Highlights/Poultry/Poultry\\_and\\_Egg\\_Production.pdf](http://www.agcensus.usda.gov/Publications/2012/Online_Resources/Highlights/Poultry/Poultry_and_Egg_Production.pdf).

<sup>6</sup> DOUG GURIAN-SHERMAN, UNION OF CONCERNED SCIENTISTS, CAFOs UNCOVERED: THE UNTOLD COSTS OF CONFINED ANIMAL FEEDING OPERATIONS 3 (2008).

<sup>7</sup> *Id.*

<sup>8</sup> 40 C.F.R. §122.23(4)(6) (2016).

<sup>9</sup> *Id.*

<sup>10</sup> Gurian-Sherman, *supra* note 6, at 2. The EPA thresholds follow a unique “EPA animal units” measurement. Robert I. Kellogg, Profile of Farms with Livestock in the United States: A Statistical Summary, Natural Resources Conservation Service, USDA (Feb. 4, 2002), [https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/nri/?&cid=nrcs143\\_014121](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/nri/?&cid=nrcs143_014121).

<sup>11</sup> 40 C.F.R. §122.23(4)(6) (2016).

<sup>12</sup> Daniel Imhoff, CAFO, Introduction *xiv* (2010) [http://www.cafothebook.org/download/CAFO\\_Introduction.pdf](http://www.cafothebook.org/download/CAFO_Introduction.pdf).

<sup>13</sup> See, e.g., *Raising a Stink: Air Emissions from Factory Farms*, ENVTL INTEGRITY PROJECT, [http://www.environmentalintegrity.org/pdf/publications/CAFOAirEmissions\\_white\\_paper.pdf](http://www.environmentalintegrity.org/pdf/publications/CAFOAirEmissions_white_paper.pdf) (last visited Jan. 3, 2017).

organizations, scientists, and universities across the nation, despite claims from the industry that CAFOs have no impact, or a negligible one, on the environment and communities.<sup>14</sup>

CAFOs generally store the waste of their livestock in open-pit lagoons, and one common strategy for dealing with excess manure is to “pump[] liquefied manure onto spray fields” this is referred to as “land application.”<sup>15</sup> In fact most manure produced by CAFOs is applied to land eventually.<sup>16</sup> Pooling manure has inevitable risks; there have been several instances of lagoon “breaches,” which cause millions of gallons of concentrated manure to spill across land, seeping into waterways.<sup>17</sup>

Similarly, instances of heavy rainwater flooding coastal areas causes the manure to be assimilated with the storm water and spread over vast areas.<sup>18</sup> In the past, manure released under similar circumstances has been blamed by environmental advocacy groups for an entire host of environmental damages, such as pollution of waterways, and health risks to communities, such as increased presence of fecal coliform bacteria in drinking or recreational water sources.<sup>19</sup>

### **III. The Clean Water Act and NPDES Permits**

In 1972, Congress enacted the Clean Water Act (“CWA”) to “restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and

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<sup>14</sup> See generally, WATERKEEPER ALLIANCE, *Hog Industry's Assertion that Black River is Clean Doesn't Stand Up to Scrutiny* (2016), <http://waterkeeper.org/hog-industrys-assertion-that-black-river-is-clean-doesnt-stand-up-to-scrutiny/> [hereinafter Waterkeeper Alliance]; Susanna G. Von Essen & Brent W. Auvermann, *Health Effects from Breathing Air Near CAFOs for Feeder Cattle or Hogs*, 10(4) J. OF AGROMEDICINE (2005), <http://agriflifecd.n.tamu.edu/envsys/files/2016/03/Von-Essen-and-Auvermann-2005.pdf>; Gurian-Sherman, *supra* note 6, at 4.

<sup>15</sup> Carrie Hribar, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, NATIONAL ASSOCIATION OF LOCAL BOARDS OF HEALTH (2010), [https://www.cdc.gov/nceh/ehs/docs/understanding\\_cafos\\_nalboh.pdf](https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf).

<sup>16</sup> *Id.*

<sup>17</sup> Hernández, Fritz, & Mooney, *supra* note 1.

<sup>18</sup> *Id.*

<sup>19</sup> See generally, Jen Horton, *Health effects from breathing air near CAFOs for feeder cattle or hogs*, NAT'L INST. FOR BIOTECHNOLOGY INFO. (2005), <https://www.ncbi.nlm.nih.gov/pubmed/16702123>; Gurian-Sherman, *supra* note 6.

nonpoint pollution sources”<sup>20</sup> and “made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained.” The Environmental Protection Agency (“EPA”) controls pollution entering America’s waterways through the National Pollution Discharge Elimination System (“NPDES”) permit program, often issued via smaller, state agencies (for example the Department of Environmental Quality “DEQ”) which then monitor states’ compliance with EPA regulation.<sup>21</sup> Point sources such as “industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.”<sup>22</sup> The permit limits discharge and monitors it closely to “ensure that the discharge does not hurt water quality or people’s health.”<sup>23</sup>

CAFOs operate via what is essentially a “pay-to-play” system, whereby they are allowed to function as long as the site has been issued a National Pollution Discharge Elimination System (“NPDES”) permit.<sup>24</sup> CAFO discharges include “discharges of manure, litter, or process wastewater from land application areas under control of the CAFO that *are not exempt as ‘agricultural stormwater discharges’*” (italics added).<sup>25</sup> Agricultural stormwater discharges are “a precipitation-related discharge of manure, litter or process wastewater from land areas under the control of a CAFO.”<sup>26</sup> This means that CAFOs, as long as they are in compliance with their NPDES permit, are not held responsible for waste that is sprayed over fields, and then washed

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<sup>20</sup> EPA, HISTORY OF THE CLEAN WATER ACT, <http://www2.epa.gov/laws-regulations/history-clean-water-act> (last updated June 1, 2015).

<sup>21</sup> EPA, NPDES STATE PROGRAM INFO., <https://www.epa.gov/npdes/npdes-state-program-information> (last updated on Feb. 19, 2016).

<sup>22</sup> EPA, SUMMARY OF THE CLEAN WATER ACT, <https://www.epa.gov/laws-regulations/summary-clean-water-act> (last updated Sep. 8, 2016).

<sup>23</sup> EPA, NPDES PERMIT BASICS, <https://www.epa.gov/npdes/npdes-permit-basics> (last updated on Nov. 29, 2016).

<sup>24</sup> 40 C.F.R. § 122.23(d)(1) (2016).

<sup>25</sup> EPA, IMPLEMENTATION GUIDANCE ON CAFO REGULATIONS – CAFOs THAT DISCHARGE OR ARE PROPOSING TO DISCHARGE (May 28, 2010), [https://www3.epa.gov/npdes/pubs/cafo\\_implementation\\_guidance.pdf](https://www3.epa.gov/npdes/pubs/cafo_implementation_guidance.pdf).

<sup>26</sup> 40 C.F.R. § 122.23(d) (2016).

away by rain towards the nearest waterways.<sup>27</sup> As noted by several researchers, “[g]roundwater can be contaminated by CAFOs through runoff from land application of manure, leaching from manure that has been improperly spread on land, or through leaks or breaks in storage or containment units.”<sup>28</sup>

#### **IV. Environmental Racism**

Environmental racism is defined by former NAACP Executive Director Dr. Benjamin Chavis as “the deliberate targeting of communities of color for toxic waste facilities, the official sanctioning of the presence of life threatening poisons and pollutants for communities of color, and the history of excluding people of color from leadership of the environmental movement.”<sup>29</sup> It is a term that has been circulated, in part, through an effort to identify instances of low-income populations and communities of color disproportionately suffering the effects of environmental hazards.<sup>30</sup> Environmental racism points to the trend of corporations taking advantage of communities which lack in economic or political clout in order to operate environmentally hazardous facilities that a wealthier or more privileged neighboring community would not tolerate.<sup>31</sup> This concern has gained significant traction of the past several decades,<sup>32</sup> and has been used to help explain the ongoing water crisis in Flint, Michigan.<sup>33</sup>

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<sup>27</sup> See *Alt v. U.S. E.P.A.*, 979 F. Supp. 2d 701, 711-712 (N.D.W. Va. 2013).

<sup>28</sup> CARRIE HRIBAR, NAT’L ASS’N OF LOCAL BDS. OF HEALTH, UNDERSTANDING CONCENTRATED ANIMAL FEEDING OPERATIONS AND THEIR IMPACT ON COMMUNITIES 3 (2010), [https://www.cdc.gov/nceh/ehs/docs/understanding\\_cafos\\_nalboh.pdf](https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf).

<sup>29</sup> Glossary of Terms, ELLA BAKER CENTER FOR HUMAN RIGHTS, 1, [http://ellabakercenter.org/sites/default/files/downloads/RTF\\_Glossary.pdf](http://ellabakercenter.org/sites/default/files/downloads/RTF_Glossary.pdf)

<sup>30</sup> ENERGY JUSTICE NETWORK, <http://www.ejnet.org/ej/> (last visited Jan 12, 2017).

<sup>31</sup> *Id.*

<sup>32</sup> Renee Skelton and Vernice Miller, *The Environmental Justice Movement*, NATURAL RESOURCES DEFENSE COUNCIL (Mar. 17, 2016), <https://www.nrdc.org/stories/environmental-justice-movement>.

<sup>33</sup> John Eligon, *A Question of Environmental Racism in Flint*, N.Y. TIMES (Jan. 21, 2016), <https://www.nytimes.com/2016/01/22/us/a-question-of-environmental-racism-in-flint.html>.

Furthermore, in the case of CAFOs, the affected populations have been tied to shockingly specific areas, almost always correlating to areas which had high populations of enslaved African Americans.<sup>34</sup> As a symptom of economic immobility,<sup>35</sup> the rural poor suffer the greatest impacts from CAFOs and from industrial pollutants in general.<sup>36</sup>

## V. CAFOs in North Carolina

Eastern North Carolina is frequently identified as an area which suffers many of the harmful effects associated with CAFOs.<sup>37</sup> Yet, CAFOs are immensely profitable, annually generating roughly three billion dollars in profits in North Carolina alone.<sup>38</sup> This immense revenue is achieved by externalizing costs,<sup>39</sup> onto the environment, rural communities, and future generations.<sup>40</sup>

Not a decade after the CWA, a North Carolina hog farmer—and future North Carolina House Representative—named Wendell Murphy integrated the CAFO model of farming into his

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<sup>34</sup> Laura Orlando, *The Legacy of Slavery: What Inequality and Industrial Hog Operations Have in Common* (2015), <http://inthesetimes.com/rural-america/entry/17771/what-industrial-hog-operations-and-inequality-have-in-common>.

<sup>35</sup> “Economic mobility is a measurement of how capably a participant in a system can improve (or reduce) their economic status.” *Defining and Measuring Economic Mobility*, BOUNDLESS ECONOMICS, <https://www.boundless.com/economics/textbooks/boundless-economics-textbook/income-inequality-and-poverty-17/defining-and-measuring-inequality-mobility-and-poverty-89/defining-and-measuring-economic-mobility-335-12432/> (last updated Aug. 8, 2016).

<sup>36</sup> Orlando, *supra* note 34.

<sup>37</sup> Christina Cooke, *North Carolina’s Factory Farms Produce 15,000 Olympic Pools Worth of Waste Each Year*, CIVIL EATS (2016), <http://civileats.com/2016/06/28/north-carolinas-cafos-produce-15000-olympic-size-pools-worth-of-waste/>.

<sup>38</sup> *Exposing Fields of Filth*, ENVTL WORKING GRP, <http://www.ewg.org/research/exposing-fields-filth> (2016).

<sup>39</sup> “An external cost occurs when producing or consuming a good or service imposes a cost upon a third party. If there are external costs in consuming a good (negative externalities), the social cost will be greater than the private cost.” Tevjan Pettinger, *External costs*, ECONOMICS HELP BLOG (last modified Nov. 28, 2012), [www.economicshelp.org/blog/glossary/external-costs/](http://www.economicshelp.org/blog/glossary/external-costs/).

<sup>40</sup> TONY DUTZIK, ET AL., ENVTL AMERICA RESEARCH & POLICY CTR., *CORPORATE AGRIBUSINESS AND AMERICA’S WATERWAYS: THE ROLE OF AMERICA’S BIGGEST AGRIBUSINESS COMPANIES IN THE POLLUTION OF OUR RIVERS, LAKES AND COASTAL WATERS*, (2010). In fact, some studies have shown that no industries are actually profitable if their externalized costs are taken into account and subtracted against their reported profit margin. *See, e.g.*, Michael Thomas, *New UN Report Finds Almost No Industry Profitable if Environmental Costs Were Included*, EXPOSING THE TRUTH, <https://www.exposingtruth.com/new-un-report-finds-almost-no-industry-profitable-if-environmental-costs-were-included/> (last updated Apr. 9, 2015).

own livestock operation.<sup>41</sup> Industrial hog operations (“IHOs”) began to dominate the eastern counties of North Carolina.<sup>42</sup> By 1997, an estimated 95% of North Carolina’s IHOs were located in the eastern coastal plains of the state.<sup>43</sup> Just over a decade later, in 2008, “some 7.5 million hogs in five eastern North Carolina counties produced an estimated 15.5 million tons of waste.”<sup>44</sup> In one year, a single 80,000-head facility could create 1.5 times the waste of the city of Philadelphia.<sup>45</sup> Furthermore, IHOs seem either unaware of, or intentionally obscure, the magnitude of their impact.<sup>46</sup> In the case of the Black River, which runs through eastern North Carolina’s “hog country,” industrial hog producers from the area lauded the waterway as “pristine.”<sup>47</sup> However, when activists tested the water, they found that “every sample taken exceeded the state standard for fecal coliform bacteria.”<sup>48</sup>

Historically, the lagoon breaches caused by Hurricane Floyd in 1999 sparked controversy over industrial farming practices in North Carolina, ultimately resulting in a moratorium (which became law in 2007)<sup>49</sup> which banned the construction of any new IHOs and of expansions to existing IHOs.<sup>50</sup> This prompted the hog industry giant Smithfield to fund a number of projects developing environmentally superior technologies (“ESTs”) to manage and repurpose hog waste

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<sup>41</sup> Wendee Nicole, *CAFOs and Environmental Justice: The Case of N.C.*, 121(6) ENVTL HEALTH PERSPECTIVES A 182, A 185 (2015).

<sup>42</sup> *Id.*, at A 186.

<sup>43</sup> *Id.*

<sup>44</sup> *Id.*

<sup>45</sup> *Id.*

<sup>46</sup> John Ikerd, *Impacts of CAFOs on Rural Communities*, <http://web.missouri.edu/ikerdj/papers/Indiana%20--%20CAFOs%20%20Communities.htm> (last visited Jan 18, 2016).

<sup>47</sup> Waterkeeper Alliance, *supra* note 14.

<sup>48</sup> *Id.* Fecal coliform bacteria, of which *Escherichia coli* (E. coli) is a strain, is “released in the wastes produced by animals” and exposure to water with high levels of fecal coliform bacteria raises the likelihood of contracting illnesses such as “typhoid fever, hepatitis, gastroenteritis, dysentery, and ear infections.” Sheila Murphy, *General Information on Fecal Coliform*, CITY OF BOULDER/USGS WATER QUALITY MONITORING, <http://bcn.boulder.co.us/basin/data/FECAL/info/FColi.html> (last updated Monday April 23, 2007).

<sup>49</sup> *Hog Farming*, NORTH CAROLINA IN THE GLOBAL ECONOMY (2009), <http://www.ncglobaleconomy.com/hog/public.shtml>.

<sup>50</sup> LEARN N.C., *Key Industries: Hog Farming* (2016), <http://www.learnnc.org/lp/editions/nchist-recent/6257>.

(into biofuel or fertilizer), because the moratorium placed no limits on hog farms which used approved ESTs.<sup>51</sup> Even with Smithfield's financial support of the project, ESTs have been a costly and largely unsuccessful investment.<sup>52</sup>

In October 2016, Hurricane Matthew echoed the devastation from Hurricane Floyd and has caused similar environmental impacts, particularly the “threatening of the delicate ecosystems of tidal estuaries and bays.”<sup>53</sup> This demonstrates that, although the number of operations has not been allowed to increase, the concentration of IHOs in North Carolina's eastern coastal plains continues to create high risks, as these areas are prone to flooding from storms and heavy rainfall. Many scientists agree that climate change will result in storms becoming more frequent and more severe,<sup>54</sup> therefore more serious reform than the 2007 moratorium will be required to avoid this lingering hazard to the environment and to the communities closest to CAFOs.

Duplin and Sampson counties, two counties in the eastern coastal plains of North Carolina, boast the highest concentration of hog CAFOs in the United States, and Duplin county has the highest concentration in the entire world.<sup>55</sup> Non-coincidentally, nearly 30% of the population in these counties lives below the poverty line.<sup>56</sup> The citizens eastern North Carolina

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<sup>51</sup> *Id.*

<sup>52</sup> *Hog Farming*, NORTH CAROLINA IN THE GLOBAL ECONOMY (2009), <http://www.ncglobaleconomy.com/hog/public.shtml>.

<sup>53</sup> Hernández, Fritz, & Mooney, *supra* note 1.

<sup>54</sup> EPA, UNDERSTANDING THE LINK BETWEEN CLIMATE CHANGE AND EXTREME WEATHER, <https://www.epa.gov/climate-change-science/understanding-link-between-climate-change-and-extreme-weather> (last updated on Oct 19, 2016).

<sup>55</sup> Lily Kuo, *The World Eats Cheap Bacon at the Expense of North Carolina's Rural Poor*, QUARTZ (2015), <http://qz.com/433750/the-world-eats-cheap-bacon-at-the-expense-of-north-carolinas-rural-poor/>.

<sup>56</sup> Cooke, *supra* note 37, at A 185.

have been active in protesting waste disposal methods, evidenced by the almost 600 complaints filed in the month of July alone, back in 2013.<sup>57</sup>

The concentration of CAFOs and IHOs in eastern North Carolina can be explained several ways. It may be a coincidence of time and place, as many industrial blooms have been, or industrial farmers may have drawn to this region by lower property costs.<sup>58</sup> Whatever the reason behind it, CAFOs in North Carolina represent a near-perfect example of “environmental racism, because it is disproportionately the case that low-income populations and communities of color are subject to living and working in close proximity to CAFOs, throughout eastern North Carolina.<sup>59</sup>

## **VI. Conclusion**

CAFOs are a powerful economic engine, the epitome of industrial agriculture. However, that economic virility comes with the displaced cost of environmental damage. CAFOs dominate the meat industry in the United States. North Carolina displays the highest concentration of CAFOs in the world. While NPDES permits do effectively regulate CAFOs, the mere operation of such facilities invites the certainty of pollution seeping into waterways. The effects of such pollution are ultimately shouldered by the environment, by the rural poor, and by future generations. With the potential for natural disasters to become more frequent and more severe as a consequence of global warming,<sup>60</sup> more stringent regulatory measures are required.

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<sup>57</sup> *Hog Farming*, North Carolina in the Global Economy, <http://www.ncglobaleconomy.com/hog/public.shtml> (2009).

<sup>58</sup> Nicole, *supra* note 41, at A 182.

<sup>59</sup> *Id.*

<sup>60</sup> EPA, *supra* note 54.