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By email and Federal Express

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Dear Ms. McCarthy and Ms. Golightly-Howell:

Re: Complaint Under Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d, 40 C.F.R. Part 7

The North Carolina Environmental Justice Network, Rural Empowerment Association for Community Help ("REACH"), and Waterkeeper Alliance, Inc. ("Complainants") submit this complaint against the North Carolina Department of Environment and Natural Resources ("DENR") for issuing a general permit that allows industrial swine facilities in North Carolina to operate with grossly inadequate and outdated systems of controlling animal waste and little provision for government oversight, which has an unjustified disproportionate impact on the basis of race and national origin against African Americans, Latinos and Native Americans in violation of Title VI of the Civil Rights Act of 1964, 42 U.S.C. §§ 2000d to 2000d-7, and the United States Environmental Protection Agency's ("EPA") implementing regulations, 40 C.F.R. Part 7.

DENR currently allows more than 2,000 swine operations—with the collective capacity to raise more than 9.5 million swine in confinement—to operate within the state and,

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particularly, in the coastal plain in the eastern portion of the state.[1] The permitted swine facilities generate a staggering amount of waste that wreaks havoc on the health and well-being of neighboring communities and the environment. Under the permit, these facilities can continue to store urine and feces in open-air cesspools, called lagoons, before spraying the waste on fields with high volume spreaders. At all steps of this so-called waste management system, waste from the facilities can pollute the air and water and injure human health.

For years, Complainants and other community members in eastern North Carolina have complained to DENR about the adverse effects of the swine industry on their health and environment and have implored the agency to provide greater protection. The eastern portion of the state contains counties that have more industrial swine facilities, and are more densely populated by swine, than anywhere else in the country.[2] Study after study has documented that the swine industry pollutes the air and water, interferes with the enjoyment of property, causes property values to plummet, and takes a toll on human health. Despite the research, and repeated requests that the agency revise the permit program to protect communities, in March of this year, DENR failed to conduct an analysis of the potential disproportionate impact of the permit and issued a permit with essentially the same conditions as previous permits, conditions that proved woefully inadequate to protect the health and environment of the affected communities. DENR did not require facilities to do away with the polluting lagoon and sprayfield system, or to make modifications that would prevent waste from escaping from the confinement houses, the high volume sprayers, the lagoons, the waste application fields, or any other of the many conduits for pollution. DENR also failed to impose rigorous government inspection and oversight to ensure that the swine facilities meet the meager protections in the permit, and to monitor the ways in which the facilities affect the environment and human health.

The effects of the swine industry on the health and environment of communities in eastern North Carolina are all the worse given the growth of the poultry industry in this region, and the cumulative impact of swine and poultry waste. More must be done to protect these communities, yet at the same time, the state has cut the number of inspectors at DENR, limiting the agency's ability to enforce even existing permit terms.

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[1] The current general permit expires on September 30, 2014. At the time this complaint was written, DENR had not published notice of the facilities that are covered under the revised permit, but, as described in footnote 26, *infra*, the number of permitted facilities is not expected to change. Complainants will supplement this complaint when DENR makes available a new list of covered facilities.

[2] *See* Feedstuffs, Hog Density by County (May 24, 2010), *available at* http://fdsmagissues.feedstuffs.com/fds/PastIssues/FDS8221/fds14_8221.pdf and http://fdsmagissues.feedstuffs.com/fds/PastIssues/FDS8221/fds15_8221.pdf (showing that ten counties in eastern North Carolina have the highest density of swine of all counties in the country).

Complainants believe that but for the race and national origin of the impacted population, which is disproportionately African American, Latino, and Native American, DENR would be more responsive to the crying need for stronger permit conditions. Given the high burden required to prove claims of intentional discrimination, however, Complainants do not at this time allege that DENR intentionally discriminated against communities of color in issuing the general permit. Nonetheless, this complaint should be understood in the context of a dynamic where race and ethnicity continue to play a role in governance and DENR's failure to be responsive to the need for improvement in waste management at industrial swine facilities. North Carolina is the birthplace of the environmental justice movement. It is in North Carolina that, in the early 1980s, DENR designated a predominantly African American community to receive soil contaminated with polychlorinated biphenyls ("PCBs"), leading to the formation of the Warren County Citizens Concerned about PCBs. This group turned to acts of civil disobedience to have their voices heard.

Since the early 1990s, African American, Latino, and Native American community members have sought greater protection from the adverse impacts of industrial swine production, but time and again their requests have been unanswered. Complainants hope that in the year 2014, the Office of Civil Rights will enforce Title VI of the Civil Rights Act of 1964 and EPA's implementing regulations, and will respond with the full force of law—withdrawing DENR's funding, if need be—to protect communities of color from the injustice of being forced to live and work near inadequately regulated industrial pollution sources. Complainants request that EPA investigate the complaint and, upon finding discrimination, require that DENR conduct a disproportionate impact analysis and come into compliance with the law by overhauling the general permit to protect African Americans, Latinos, and Native Americans from the adverse disproportionate impacts of industrial swine facilities.

I. NATURE OF THE ACTION

1. This is a complaint for relief under Title VI of the Civil Rights Act of 1964, 42 U.S.C. §§ 2000d to 2000d-7, and the United States Environmental Protection Agency's ("EPA") implementing regulations, 40 C.F.R. Part 7, arising from DENR's decision to issue a permit that allows industrial swine facilities in North Carolina to operate with inadequate and outdated systems of controlling animal waste and little oversight to the detriment of neighboring African American, Latino, and Native American communities.

2. On March 7, 2014, DENR finalized a renewal of the Swine Waste Management System General Permit, AWG100000 (the "General Permit"). The General Permit should protect communities that live and work near the permitted swine facilities from the staggering amounts of waste that the facilities generate; it sets forth the standards that more than 2,000 industrial swine facilities in North Carolina must meet to operate legally within North Carolina. However, the General Permit falls far short of what is needed to protect human health and the environment. Permitted industrial swine facilities are allowed to store animal waste in open-air

pits, called lagoons, that can spill waste into surface waters and leach harmful pollutants into groundwater that feeds drinking water sources, and to spray that waste on fields with high volume spreaders that spew pollutants not only onto the fields, but also into nearby communities. Wastewater from the sprayfields can seep into groundwater or run off into nearby surface waters. The General Permit does not require rigorous government oversight, monitoring, and reporting that would allow the state and the public to understand the full extent to which pollutants from the facilities are getting into the air and water and making people sick.

3. Surface waters in North Carolina are polluted with waste from permitted swine facilities. Communities have lost streams and ponds that they had relied on for fishing and swimming to the runoff and water pollution that comes with the industrial swine industry. After catching fish with open sores and infections, people have had to abandon favorite fishing holes, losing not only a source of recreation but also a way of feeding their families.

4. Pollutants, including nitrates, phosphorus, bacteria, viruses, and parasites can leach from the earthen lagoons that are authorized under the permit into the groundwater. Polluted groundwater, in turn, can feed drinking water sources, including wells. Fearing that their well water is contaminated, people living near permitted industrial swine facilities have been forced to connect to municipal water supplies at personal expense.

5. Air pollution from the permitted swine facilities is a significant problem for human health and welfare. Gases, including ammonia, hydrogen sulfide, volatile organic compounds ("VOCs"), particles from feces, dander, feed, and dead microorganisms, and live bacteria and viruses are emitted from the confinement houses through mechanical ventilation or massive industrial fans. The lagoons and the sprayers that distribute the waste on to the fields also emit gasses into the air. Because of the terrible smell and harmful pollutants, people living near permitted industrial swine facilities experience difficulty breathing when the facilities are spraying. They suffer from asthma attacks, runny noses and eyes, and bronchitis. They have trouble sleeping. They avoid going outside and keep windows closed lest they be inundated with the overpowering smell of the waste and the flies that the waste attracts. Many community members no longer hang their clothes on the line to dry for fear that the clothes will be coated with manure.

6. The permitted swine facilities are located disproportionately in African American, Latino, and Native American communities, and African Americans, Latinos and Native Americans disproportionately bear the burden of the General Permit's failure to control the waste at the permitted swine facilities.

7. Title VI of the Civil Rights Act of 1964, and EPA's regulations, prohibit recipients of federal financial assistance, such as DENR, from taking action that disproportionately burdens persons on the basis of race. DENR's decision to reissue the General Permit without measures to protect African Americans, Latinos, and Native Americans living and working near

the swine facilities from the staggering amounts of pollution the permitted swine facilities generate violates the basic civil rights protections set forth in Title VI.[3]

II. PARTIES

8. Complainant North Carolina Environmental Justice Network ("Environmental Justice Network") is a statewide, grassroots-led organization made up of community members and other organizations that are working to fight environmental injustice. The Environmental Justice Network seeks to promote health and environmental equality for all people in North Carolina through organizing, advocacy, research, and education based on principles of economic equity and democracy for all. The Environmental Justice Network supports the communities that are most impacted by environmental injustice and has worked for over a decade to change the fact that industrial swine facilities in North Carolina are allowed to pollute low-income and African American communities. Declaration of (b) (6) - Privacy [redacted] attached as Exhibit 30 (b) (6) - Privacy [redacted]

9. Complainant Rural Empowerment Association for Community Help ("REACH") is an organization that seeks to address social, economic, and environmental inequities in Duplin, Sampson, and Bladen Counties. Through research and advocacy, REACH has worked to change the system that allows industrial swine facilities to pollute the environment and to destroy the health and welfare of the affected communities. Declaration of (b) (6) - Privacy [redacted] attached as Exhibit 16 (b) (6) - Privacy [redacted]

10. Complainant Waterkeeper Alliance, Inc. is a nonprofit organization that unites the more than 200 Waterkeeper organizations that patrol and protect the waterways in North Carolina, across the United States, and around the world. Waterkeeper Alliance's Pure Farms, Pure Waters Campaign recognizes that concentrated animal feeding operations, including swine facilities, and the rise of corporate controlled meat production have nearly destroyed the family farm and severely poisoned the nation's waters. As part of the Pure Farms, Pure Waters Campaign, Waterkeeper Alliance has worked with communities in eastern North Carolina to stop industrial swine facilities from destroying the waters and human health. Declaration of (b) (6) - Privacy [redacted], attached as Exhibit 6 (b) (6) - Privacy [redacted]

11. DENR is an agency of the State of North Carolina. N.C. Gen. Stat. § 143B-279.1. DENR is charged with protecting North Carolina's environment and public health, *id.* § 143B-279.2, and has the power to issue permits to carry out this mission. *Id.* § 143-215.1(a)-(b). The Environmental Management Commission ("EMC") of DENR, *id.* § 143B-282(a)(1)(a), has the authority to regulate animal waste management systems at swine facilities. *Id.* § 143-

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[3] This is not a siting case. Stated simply, DENR's decision to issue a permit that fails to control pollution from the permitted swine facilities has an unjustified disproportionate impact on African American, Latino, and Native Americans in violation of Title VI and its regulations.

215.1(a)(12) (requiring animal waste management systems to obtain a permit from the EMC of DENR); *id.* § 143-212(2).

III. JURISDICTION

A. DENR Is Subject to Title VI

12. Title VI of the Civil Rights Act of 1964 prohibits recipients of federal funds from discriminating against individuals on the basis of race, color, or national origin.

13. Title VI provides that "[n]o person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." 42 U.S.C. § 2000d.

14. Acceptance of federal funds, including EPA assistance, creates an obligation on the recipient to comply with Title VI and EPA's implementing regulations.

15. EPA's Title VI regulations provide that "[n]o person shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving EPA assistance on the basis of race, color [or] national origin." 40 C.F.R. § 7.30.

16. EPA's regulations provide the following specific prohibitions, at 40 C.F.R. § 7.35:

> (a) As to any program or activity receiving EPA assistance, a recipient shall not directly or through contractual, licensing, or other arrangements on the basis of race, color, [or] national origin . . . :
>
> > (1) Deny a person any service, aid or other benefit of the program or activity;
> >
> > (2) Provide a person any service, aid or other benefit that is different, or is provided differently from that provided to others under the program or activity;
> >
> > . . .
>
> (b) A recipient shall not use criteria or methods of administering its program or activity which have the effect of subjecting individuals to discrimination because of their race, color, [or] national origin, . . . or have the effect of defeating or substantially impairing accomplishment of the objectives of the program or activity with respect to individuals of a particular race, color, [or] national origin . . . .
>
> . . .

(d) This list of the specific prohibitions of discrimination do not limit the general prohibition of § 7.30.

i. DENR is a Program or Activity Covered by Title VI

17. DENR is a program or activity covered by Title VI. Title VI defines program or activity as "all of the operations of . . . a department, agency, special purpose district, or other instrumentality of a State or of a local government . . . ***any part of which*** is extended Federal financial assistance." 42 U.S.C. § 2000d-4a (emphasis added).

18. Under Title VI, if any part of a listed entity receives federal funds, the whole entity is covered by Title VI. *Ass'n of Mex.-Am. Educ. v. California*, 195 F.3d 465, 474-75 (9th Cir. 1999, *rev'd in part on other grounds*, 231 F.3d 572 (9th Cir. 2000) (en banc).

19. DENR is an agency of the state of North Carolina that, as shown in paragraphs 20 to 26 below, receives federal financial assistance from EPA. DENR, thus meets the definition of program or activity under Title VI and must comply with Title VI in implementing all of its programs, whether or not the particular portion of the program or activity itself specifically received EPA funding.

ii. DENR is a Recipient of EPA Assistance

20. EPA's Title VI regulations define a "[r]ecipient" as "any state or its political subdivision, any instrumentality of a state or its political subdivision, any public or private agency, institution, organization, or other entity, or any person to which Federal financial assistance is extended directly or through another recipient . . . ." 40 C.F.R. § 7.25.

21. EPA's regulations define "EPA assistance" to mean "any grant or corporative agreement, loan, contract . . . , or any other arrangement by which EPA provides or otherwise makes available assistance in the form of funds," among other means. 40 C.F.R. § 7.25.

22. DENR was a recipient of EPA assistance as of March 7, 2014, the time of the alleged discriminatory action, as shown in Exhibit 1.A (EPA award of federal funds to DENR in fiscal year 2014) and Exhibit 1.B (EPA awards of federal funds to DENR extending into fiscal year 2014 and thereafter).

23. USASpending.gov is a searchable website operated by the Office of Management and Budget, which provides the public with information about federal awards, including the name of the entity receiving the award and the amount of the award.

24. According to USASpending.gov, as of August 27, 2014, EPA had awarded DENR at least $19,282,355 in federal funds for fiscal year 2014.[4] Of this amount, $14,899,454 was given as continuations of awards given in previous fiscal years, and $4,382,901 was given to fund new projects. For example, $4,340,904 was earmarked for "Water Pollution Control State, Interstate, and Tribal Program Support," a program that received more than $7 million across five of the disbursements in fiscal year 2014. In fiscal year 2014, EPA also earmarked $3.1 million for "State Public Water System Supervision," $2.2 million for "Hazardous Waste Management State Program Support," and $2.2 million for "Leaking Underground Storage Tank Trust Fund Corrective Action Program."[5] *See* Exhibit 1.A (EPA award of federal funds to DENR in fiscal year 2014) (compiling awards for fiscal year 2014).

25. As of August 27, 2014, 22 of DENR's programs had received or were receiving EPA assistance for programs that extended into 2014 and beyond.[6] *See* Exhibit 1.B (EPA awards of federal funds to DENR extending into fiscal year 2014 and thereafter).

26. Because DENR is a department of the State of North Carolina that receives EPA grants and funding, DENR is subject to Title VI.

B. **The Complaint is Timely**

27. DENR issued the General Permit on March 7, 2014. This complaint is timely as it is filed within 180 days of the discriminatory action, DENR's approval of the General Permit. 40 C.F.R. § 7.120(b)(2).[7]

C. **The Complaint Meets Other Jurisdictional Criteria**

28. This complaint meets all other jurisdictional criteria: it is in writing; it identifies DENR as the entity that allegedly performed the discriminatory act and describes the acts that violate EPA's Title VI regulations; and, should EPA so require, it is also filed by groups that are

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[4] Fiscal year 2014 began on October 1, 2013 and ends on September 30, 2014.

[5] USA Spending, http://www.usaspending.gov (enter "809785280" then select "Environmental Protection Agency" under "By Agency" and "2014" under "By Fiscal Year").

[6] This data reflects only that which is available on usaspending.gov. It is possible that data from some awards made by EPA to DENR were omitted from the data on usaspending.gov, and thus are not included in Exhibits 1.A and 1.B.

[7] In addition, OCR has authority to waive the time limit for good cause, 40 C.F.R. § 7.120(b)(2), and has affirmative authority to conduct post-award compliance reviews when it has "reason to believe that discrimination may be occurring." *Id.* § 7.115(a).

authorized to represent people who were discriminated against in violation of EPA's Title VI regulations.[8]

IV. FACTUAL BACKGROUND

A. The Industrial Swine Industry and the Development of the State Permitting Program

29. The North Carolina swine industry has "changed dramatically since the 1980's from the small farm raising a few hogs to large confinement type operations."[9] In 1982, more than 11,000 swine farms raised approximately 2 million animals.[10] By 1997, the number of farms had dropped to fewer than 3,000, while the swine population had ballooned to nearly 10 million.[11]

30. In 1995, a disaster at a swine lagoon brought the growing industry into the public eye. In the summer of 1995, a lagoon at a swine facility in Jacksonville, North Carolina burst, spilling 28.5 million gallons of swine waste into a tributary to the New River.[12]

31. The spill focused attention on the swine industry, and its significant potential to threaten human health and welfare. Following the spill, in 1995, the North Carolina General Assembly created the Blue Ribbon Study Commission on Agricultural Waste to study "[t]he

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[8] *See* EPA, Draft Revised Guidance for Investigating Title VI Administrative Complaints Challenging Permits (Draft Revised Investigations Guidance), 65 Fed. Reg. 39,667, 39,672 (June 27, 2000) (listing jurisdictional criteria applicable to Title VI complaints).

[9] N.C. Dep't of Agric. & Consumer Servs., Agricultural Overview – Commodities, http://www.ncagr.gov/stats/general/commodities.htm (last visited Aug. 28, 2014); *see also* Chris Hurt & Kelly Zering, *Hog Production Booms in North Carolina: Why There? Why Now?*, *in* Dep't of Agric. Econ., Purdue Univ., Purdue Agric. Econ. Report 11 (1993), *available at* http://www.agecon.purdue.edu/extension/pubs/paer/pre_98/paer0893.pdf; Pew Commission on Industrial Farm Animal Production, Putting Meat on the Table: Industrial Farm Animal Production in America (2008), *available at* http://www.ncifap.org/_images/PCIFAPSmry.pdf, attached as Exhibit 46 [hereinafter, Pew, Putting Meat on the Table] (describing the rise of industrial animal production in America and the effects on public health and the environment); Pew Commission on Industrial Farm Animal Production, Environmental Impact of Industrial Farm Animal Production 1-2 (2008), *available at* http://www.ncifap.org/_images/212-4_EnvImpact_tc_Final.pdf, attached as Exhibit 45 [hereinafter, Pew, Environmental Impact] (same).

[10] U.S. Dep't of Agric., Census of Agriculture 30 tbl. 32 (1987), *available at* http://usda.mannlib.cornell.edu/usda/AgCensusImages/1987/01/33/3/Table-32.pdf.

[11] U.S. Dep't of Agric. 1997 Census of Agriculture – Highlights of Agriculture: 1997 and 1992 North Carolina, http://www.agcensus.usda.gov/Publications/1997/Census_Highlights/North_Carolina/ncst.txt (last visited Aug. 28, 2014).

[12] JoAnn M. Burkholder et al., *Impacts to a Coastal River and Estuary from Rupture of a Large Swine Waste Holding Lagoon*, 26 J. Envtl. Qual. 1451, 1452-53 (1997), attached as Exhibit 2 to Exhibit 14, Declaration of Dr. JoAnn Burkholder [hereinafter, Burkholder, *Lagoon Rupture*].

effect of agriculture waste on groundwater, drinking water, and air quality and any other environmental impacts of agriculture" and "[m]ethods of disposing of and managing agriculture waste that have fewer adverse impacts than those methods currently in use in this State, including positive commercial and noncommercial uses of agriculture waste," among other things.[13]

32. The Blue Ribbon Commission proposed a number of recommendations to reduce the impact that swine facilities have on water, air quality, and human health. The Commission recommended that the State replace the then-existing regulatory system, which deemed swine facilities permitted under the law if they met certain conditions, with a requirement that facilities apply for and obtain a permit to control waste. The general permit was intended to ensure more direct oversight and control.[14]

33. The Blue Ribbon Commission also recommended that the State do more to protect communities against odors from swine facilities,[15] enact programs to monitor swine facilities to prevent heavy metal and phosphorus pollution,[16] work to develop alternatives to the system of storing waste in open air lagoons,[17] and study the impacts that lagoons have on groundwater quality.[18]

34. In 1996, the North Carolina legislature required that the State develop a general permit program to prevent the discharge of waste from animal operations, including swine operations with 250 or more swine.[19]

35. DENR began issuing general permits for controlling swine waste management systems on January 1, 1997.[20] In 2003, the General Assembly extended the expiration date of all general permits until October 1, 2004.[21]

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[13] N.C. Sess. Law 1995-542, sec. 4.1(1), (3) (eff. July 29, 1995), *available at* http://www.ncga.state.nc.us/EnactedLegislation/SessionLaws/HTML/1995-1996/SL1995-542.html; *see also* Blue Ribbon Study Commission on Agricultural Waste, Report to the 1995 General Assembly of North Carolina, 1996 Regular Session 1 (1996), *available at* http://ncleg.net/Library/studies/1996/st10736.pdf, attached as Exhibit 38 [Blue Ribbon Study Commission].
[14] *Id.* at 24-25.
[15] *Id.* at 16.
[16] *Id.* at 19.
[17] *Id.* at 29.
[18] *Id.* at 29-30.
[19] N.C. Sess. Law 1996-626, sec. 1 (codified as amended at N.C. Gen. Stat. §§ 143-215.10A through .10*I*) (eff. as provided at sec. 19), *available at* http://www.ncga.state.nc.us/EnactedLegislation/SessionLaws/HTML/1995-1996/SL1995-626.html.
[20] Senate Bill 1217 Interagency Group, Ninth Senate Bill (SB) 1217 Interagency Group Guidance Document 7-1 (Sep. 25, 2009), *available at* http://www.ncagr.gov/SWC/tech/documents/9th_Guidance_Doc_100109.pdf.

36. DENR has since issued revised general permits, first on June 4, 2004, and again on February 20, 2009. These permits were effective from October 1, 2004 until September 30, 2009 and from October 1, 2009 until September 30, 2014, respectively.

B. Finalization of the General Permit and DENR's Failure to Conduct a Disparate Impact Analysis

37. In 2013, DENR published draft state permits to control animal waste, including AWG100000, the Swine Waste Management System General Permit.

38. Since at least the mid 1990s, when North Carolina charged the Blue Ribbon Commission with studying the effects of swine facilities, the State has been on notice that these operations generate massive amounts of waste that threaten the health and environment of communities that are forced to live nearby.

39. Myriad scientific articles describe the ways in which the swine facilities pollute the environment and wreak havoc on human health.[22]

40. Citizens have told DENR, through meetings with the agency and formal complaints, that swine facilities are polluting their waters and air, causing them to feel sick, and preventing them from sitting outside and enjoying their property. (b) (6) - Privacy (b) (6) - Privacy Declaration of (b) (6) - Privacy attached as Exhibit 17 [(b) (6) - Privacy]; (b) (6) - Privacy (b) (6) - Privacy

41. Citizens, and nonprofits working with them, have demanded stronger controls to protect them from the water and air pollution these facilities generate. *See* (b) (6) - Privacy (b) (6) - Privacy

42. DENR has been invited to attend the Environmental Justice Network's annual summit, where representatives from DENR have sat on a "Community Speak Out and Government Listening" panel that allows the citizens to voice concerns about industries that affect their health and welfare, including the industrial swine industry. (b) (6) - Privacy (b) (6) - Privacy

43. Despite repeated protests about the failures in the general permit program, DENR proposed permit terms that were largely the same as the permit that came before it. The draft offered nothing to correct the failures and protect neighboring communities from harmful pollution from permitted swine facilities.

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[21] *See* N.C. Sess. Law 2003-28, sec. 1.

[22] *See* paragraphs 74 to 128, *infra*; *see generally* Pew, Putting Meat on the Table, *supra* note 9, at 96-105 (references); Pew, Environmental Impact, *supra* note 9, at 38-44 (references).

44. On December 6, 2013, (b) (6) - Privacy (b) (6) - Privacy the University of North Carolina – Chapel Hill School of Public Health, submitted comments to DENR, raising the "large body of evidence documenting the negative health impacts of industrial swine operations," and calling on DENR "to reduce off-site pollution and increase transparency about animal production activities." Exhibit 2 at 1. This letter called upon DENR to modify the state general permit to prohibit "1) the management of swine waste using lagoons and spray fields, 2) the non-therapeutic use of antibiotics in livestock production, and 3) the location of animal confinements and animal waste storage in flood plains" as "the minimum required to preserve the health and well-being of rural residents near swine operations." *Id.* at 5.

45. Complainants Environmental Justice Network and Waterkeeper Alliance, along with others, also submitted comments to DENR on December 6, 2013, asking DENR to modify the proposed general permit to come into compliance with Title VI. The Comments are attached as Exhibit 3. The Comments made clear that "DENR's failure to require robust waste management technologies as a condition of the permit disproportionately impacts communities of color" and indicated that "the program must be redrawn to avoid this result." *Id.* at 2.

46. These Comments called on DENR "to assess the racial and ethnic impact of the permitting program" before finalizing the general permit and to "adopt measures that protect communities from pollution from the swine facilities." *Id.* at 6. The Comments pointed out that although swine facilities have historically had a disproportionate impact on the basis of race, "there is no evidence that DENR took steps to analyze the disparity its permitting program creates or attempted to address the disparity in any way." *Id.* at 15.

47. On March 7, 2014, DENR finalized the most recent renewal of the general permit. North Carolina, Environmental Management Commission, Department of Environment and Natural Resources, Swine Waste Management System General Permit, Permit No. AWG100000 [General Permit].

48. DENR issued the General Permit with inadequate provisions to protect human health and the environment, after nearly two decades of concern and complaints about the inadequate regulation of swine facilities.

49. On information and belief, DENR finalized the permit without analyzing the potential for disproportionate health or environmental impacts on African Americans, Latinos,

and Native Americans, as required by Title VI and EPA implementing regulations. DENR should have conducted a disproportionate impact analysis but failed to do so.[23]

C. **The Swine Waste Management System General Permit**

50. The General Permit is effective from October 1, 2014 until September 30, 2019. General Permit at 1.

51. The General Permit regulates animal waste management systems at swine facilities in North Carolina that meet the definition of animal operations, which involves 250 or more swine. 15A N.C. Admin. Code § 2T.1304; N.C. Gen. Stat. § 143-215.10B(1). Under North Carolina law, a person must have a permit to construct or operate an animal waste management system. N.C. Gen. Stat. § 143-215.1(a)(12); 15A N.C. Admin. Code § 2T.1304.

52. Animal waste management systems are defined by statute as the "combination of structures and nonstructural practices serving a feedlot[24] that provide for the collection, treatment, storage, [and] land application of animal waste." N.C. Gen. Stat. § 143-215.10B(3).

53. Animal waste management systems refer to the complete system for controlling waste the animal facility generates, from the time the waste is produced until it is utilized.[25]

54. Swine facilities obtain a certificates of coverage to operate under the General Permit.

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[23] 40 C.F.R. § 7.80(a)(1) provides, "Applicants for EPA assistance shall submit an assurance … stating that, with respect to their programs or activities, they will comply with the requirements of this part," Nondiscrimination in Programs or Activities Receiving Federal Assistance from EPA. If assurances are to be at all meaningful, this obligation requires recipients to analyze whether they are complying with Title VI and EPA's implementing regulations and, particularly, whether their programs and activities have an unjustified disproportionate impact. *See* Draft Title VI Recipient Guidance, 65 Fed. Reg. at 39,657.

[24] Under North Carolina law, the term feedlot "means a lot or building or combination of lots and buildings intended for the confined feeding, breeding, raising, or holding of animals and either specifically designed as a confinement area in which animal waste may accumulate or where the concentration of animals is such that an established vegetative cover cannot be maintained. A building or lot is not a feedlot unless animals are confined for 45 or more days, which may or may not be consecutive, in a 12-month period. Pastures shall not be considered feedlots for purposes of this Part." N.C. Gen. Stat. § 143-215.10B(5).

[25] Natural Res. Conservation Serv., USDA, Pt. 651: Agric. Waste Mgmt. Field Handbook 9-1 (2011), *available at* http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=31493.wba (defining animal waste management systems as "planned system[s]" designed "to control and use by-products of agricultural production in a manner that sustains or enhances the quality of air, water, soil, plant, animal, and energy resources").

55. Currently, more than 2,000 swine facilities hold certificates of coverage to operate under the existing general permit, which expires on September 20, 2014. The number of facilities holding a permit is not expected to change significantly under the renewal.[26]

56. The General Permit will not prevent degradation of North Carolina's ground and surface water or air, and will not protect the health of people living, working, and attending school in proximity to permitted swine facilities. (b) (6) - Privacy Declaration of (b) (6) - Privacy (b) (6) - Privacy attached as Exhibit 14 (b) (6) - Privacy

57. Moreover, inadequate enforcement measures all but ensure the meager protections—such as the prohibition against spraying waste in the rain or on oversaturated fields—can go unheeded. (b) (6) - Privacy The dwindling number of state inspectors, and lack of overtime staffing, exacerbate enforcement issues. (b) (6) - Privacy

D. The General Permit Does Not Require Robust Waste Management Technologies or Other Provisions to Control Pollution from Permitted Swine Facilities

58. Chief among the failures in the current General Permit is that it continues to allow permitted swine facilities to use a lagoon and sprayfield system to control disposal of

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[26] At the time this complaint was written, DENR had not published notice of the facilities that are covered under the General Permit, however the number of permitted facilities is not expected to change significantly. In 1997, North Carolina enacted moratorium against the construction and operation of new and expanded swine facilities. *See* N.C. Sess. Law 1997-458, sec. 1.2 *available at* http://www.ncga.state.nc.us/EnactedLegislation/SessionLaws/HTML/1997-1998/SL1997-458.html. The moratorium was extended and changed over the years. *See, e.g.*, N.C. Sess. Law 1998-188, sec. 3 (amending N.C. Sess. Law 1997-458 § 1.2) (eff. Oct. 12, 1998), *available at* http://www.ncga.state.nc.us/EnactedLegislation/SessionLaws/HTML/1997-1998/SL1998-188.html; N.C. Sess. Law 1999-329, sec. 2.1 (amending N.C. Sess. Law 1997-458 § 1.2) (eff. July 20, 1999), *available at* http://www.ncga.state.nc.us/EnactedLegislation/SessionLaws/HTML/1999-2000/SL1999-329.html. Under the current law, DENR "shall not issue or modify a permit to authorize the construction, operation, or expansion of an animal waste management system that serves a swine farm that employs an anaerobic lagoon as the primary method of treatment and land application of waste by means of a sprayfield as the primary method of waste disposal." N.C. Gen. Stat. § 143-215.10I(b). Thus, new lagoons and sprayfield systems, which would otherwise be controlled under the General Permit, are prohibited. DENR may issue a permit for the construction, operation, or expansion of an animal waste management system serving a swine facility if it meets certain performance standards designed to protect the environment, *id.*, however the standards in essence prohibit lagoons and sprayfields. Moreover, any new or expanded facility would be required to meet these standards under an individual permit. Thus, the facilities operating under the current general permit represent the upper bound of facilities that will be permitted under the renewal. The number of permitted facilities will decline if an operation closes. Complainants will supplement this complaint when DENR makes available a new list of facilities covered by the General Permit.

animal waste. The lagoon and sprayfield system is a blunt instrument for controlling the staggering amount of waste generated each year at the permitted facilities. Lagoons can spill, threatening surface and groundwater, and leach pollutants into groundwater. The high volume sprayers generate a mist of manure that drifts off the fields, inundating homes, streams, and anything in its path with harmful gases and pathogens and an overwhelming smell.

59. The General Permit also does not ensure that all permitted swine facilities are meeting standards to control phosphorus pollution, focusing instead on those facilities that are "sensitive to nutrient enrichment," General Permit at 2 (Condition I.5). This condition fails to recognize that, in large part because of the swine industry, many of North Carolina's waters are oversaturated with nutrients and are sensitive to nutrient enrichment. (b) (6) - Privacy & Exs. 12-17.

60. The General Permit allows permitted swine facilities to land apply waste as close as 100 feet from a well, General Permit at 3 (Condition 1.8). Far greater setbacks are required to protect drinking water sources from the waste that drifts off the sprayfields. Nitrate from swine facilities, for example, has been found to travel up to 100 meters from swine facilities, and nitrate in water can cause methemoglobinemia, or blue baby syndrome. (b) (6) - Privacy
(b) (6) - Privacy

61. The General Permit provides permitted swine facilities with up to two days to incorporate manure and sludges into bare soil, unless rainfall events are predicted, General Permit at 3 (Condition II.7). For two days, then, manure and sludges are allowed to sit on the ground, where they could run into nearby waters, all the while giving off a terrible smell.

62. The General Permit allows permitted swine facilities to "temporarily lower lagoon levels" in times of drought or wet weather without first obtaining approval and oversight from DENR, General Permit at 6 (Condition II.27). Facilities, thus, can spray additional manure from the lagoon without ensuring that the land can incorporate the additional waste. Without oversight and control, this provision all but ensures that waste will run off the sprayfields and into any nearby streams and leach into groundwater. The additional spraying generates additional manure mist that blankets the community with harmful gasses and pathogens whose presence is known with the putrid smell. *See, e.g.*, (b) (6) - Privacy
(b) (6) - Privacy

E. The General Permit Does Not Require Sufficient Oversight and Control of Permitted Swine Facilities

63. The General Permit does not require rigorous oversight and reporting to ensure that permitted swine facilities are not polluting the surface and groundwater, as well as air, to the detriment of human health and welfare.

64. The General Permit does not specify the practices, beyond mere visual inspection, that must be used to ensure that the waste collection, treatment, and storage structures and the runoff control measures in place at permitted swine facilities are in proper working order and are not leaking or otherwise discharging pollutants, General Permit at 6 (Condition III.1).

65. The General Permit does not uniformly require best practices to monitor the lagoons, such as automated lagoon or storage pond waste level monitors and recorders, General Permit at 6-7 (Condition III.2(b)). Only those facilities that have been found to violate requirements to maintain proper lagoon levels for two consecutive years are subject to this heightened requirement. All facilities should rigorously monitor lagoon levels to prevent catastrophic outcomes, like spills in the event of North Carolina's frequent heavy rainfall events.

66. The General Permit does not require permitted swine facilities to submit an amendment to the Certified Animal Waste Management Plan to DENR for approval, and does not publish other major changes and revisions for public review, General Permit at 2 (Condition I.3). DENR, thus, is not carefully monitoring the waste management plans to ensure that swine facilities are subject to best practice.

67. The General Permit does not require rigorous microbial analysis of swine waste that is applied to the fields to provide the state, the scientific community, and the public with sufficient information to understand the scope of impacts in the event of a discharge event, or to assess problems arising from normal operation. (b) (6) - Privacy [redacted] Within 60 days of land applying waste, the facility must analyze "a representative sample of animal waste" for nitrogen, phosphorus, zinc, and copper. General Permit at 8 (Condition III.5). The lag time between land application and testing does not ensure that DENR, the scientific community, or the public will have accurate information about the content of animal waste in the event of a discharge. The limited microbial analysis also will not provide enough information to evaluate and respond to citizen complaints and monitor and predict potential problems.

68. The General Permit does not require groundwater monitoring in the event of a "massive burial of animals," but rather makes such monitoring discretionary, General Permit at 4 (Condition I.10). Animal burial is a significant threat to surface and groundwater quality, especially in recent years, as the emergence of the porcine epidemic virus ("PED") threatens to wipe out herds of animals. (b) (6) - Privacy [redacted]

69. The General Permit does not require public notice of a number of events that threaten human health—including failure of the waste management system causing a discharge to ditches, surface waters, and wetlands; failure of the waste management system that prohibits the system from receiving, storing, or treating additional waste; spills of waste or sludge; deterioration or leaks in the lagoon; failure to maintain storage capacity in the lagoon or below designated freeboard levels; waste application in violation of the animal waste management

plan or that results in runoff to a ditch, surface water, or wetlands; and discharge to ditches, surface waters, or wetlands, General Permit at 9-10 (Condition III.13).

70. The General Permit does not require sufficient public notice in the event of a discharge of more than 1,000 gallons of waste, and even up to 1 million gallons, and does not require rigorous testing of the waste source, the receiving water body, and the soil sediment to determine the potential impact on human health, General Permit at 10-11 (Conditions III.15-17). The permit does not ensure that the waste will be sampled close enough to the discharge event to enable the agency and the public to assess the severity of the threat and the potential impacts to human health. (b) (6) - Privacy

71. The General Permit establishes a system of self-monitoring, where the permitted swine facilities create, but do not submit to DENR for review nor make available to the public, the following records:

- Records of inspection of the land application site, General Permit at 5 (Condition II.17)
- Records of testing and calibration of the land application equipment, General Permit at 6 (Condition II.24)
- Records of the waste level in each lagoon, General Permit at 6 (Condition III.2);
- Records of precipitation events, General Permit at 7 (Condition III.3(a));
- Records concerning irrigation and land application events, General Permit at 8 (Condition III.6);
- Records of transfers of waste between waste structures on the same site not typically operated in series, General Permit at 8 (Condition III.7); and
- Monthly stocking records, General Permit at 8 (Condition III.8).

DENR and the public need access to these records to understand and evaluate the extent to which the swine facilities are impacting human health and the environment. (b) (6) - Privacy
(b) (6) - Privacy

72. DENR does not have sufficient inspectors to visit the permitted swine facilities and ensure compliance with the minimum standards to protect the environment and human

health. On information and belief, North Carolina has cut approximately 131 employees from DENR, including inspectors and other regulators, since January 2013.[27]

73. DENR's decision to issue the General Permit without adequate measures to control, dispose of, and monitor the significant amounts of animal waste and pollutants that these facilities generate threatens to pollute the state's water and air. This pollution, in turn, contributes to serious health problems among those in neighboring communities, prevents people from enjoying their land and property, and contributes to declining property values.

V. ADVERSE IMPACTS

A. Swine Facilities Permitted by DENR Contribute to Surface Water Pollution that Adversely Affects Human Health and Welfare

74. The General Permit allows permitted swine facilities to use a lagoon and sprayfield system to dispose of waste.

75. Lagoons are prone to acute pollution problems, including ruptures and spills, which impair surface water quality.[28] Such contamination is also capable of harming human health. (b) (6) - Privacy

76. Hurricanes in eastern North Carolina have led to severe flooding of industrial swine facilities, the rupture of lagoons, and the overflow of waste into North Carolina's creeks, rivers, and streams.[29]

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[27] Andrew Kenney & Craig Jarvis, *Cuts to DENR Regulators Jarring in Wake of Dan River Spill, News & Observer*, Mar. 7, 2014, http://www.newsobserver.com/2014/03/07/3683762/cuts-to-denr-regulators-jarring.html.

[28] *See* Michael A. Mallin & Lawrence B. Cahoon, *Industrialized Animal Production—A Major Source of Nutrient and Microbial Pollution to Aquatic Ecosystems*, 24 Population & Env't 369, 371 (2003), attached as Exhibit 41; Burkholder, *Lagoon Rupture*, *supra* note 12, at 1463 (rupture of lagoon at a facility in Jacksonville, North Carolina in 1995, releasing more than 28.5 million gallons of untreated swine waste in the New River, to the detriment of water quality); Mallin & Cahoon at 371 (in 1995, a poultry lagoon breach and a large swine lagoon leak were suspected of causing algal blooms, fish kills, and microbial contamination in North Carolina's Cape Fear River Basin).

[29] *See* Burkholder, *Lagoon Rupture*, *supra* note 12, at 1463 (in 1996, "Hurricane Fran led to severe flooding of [confined animal operations] located in coastal river floodplains, and to rupture of various lagoons in several major watersheds"); Steve Wing, et al., *The Potential Impact of Flooding on Confined Animal Feeding Operations in Eastern North Carolina*, 110 Envtl. Health Perspectives 387, 387 (2002), *available at* http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240801/pdf/ehp0110-000387.pdf (describing how the 15-20 inches of rain dropped by Hurricane Floyd turned eastern North Carolina into a fecal flood zone). The flooding following Hurricane Floyd was not an isolated incident. *Id.* ("In 1996, 22 fecal waste pits were reported to have been ruptured or inundated following flooding from Hurricane Fran, and one major spill was reported following Hurricane Bonnie in 1998.").

77. Waste spilled from overflowing lagoons and runoff from application of the waste to fields has been linked to outbreaks of harmful pathogens, such as salmonella and *E. coli* in the environment[30] has led to major freshwater fish kills, and has contributed to toxic algae outbreaks.[31] *See, e.g.*, [(b) (6) - Privacy]

78. The General Permit allows permitted swine facilities to use sprayfields to disperse the waste stored in their lagoons. Sprayfields also contribute to water quality impacts by introducing various pollutants, including those described in the preceding paragraph, to the water column. For example, waste can run off fields when over-applied, or when it is applied to ground that is already saturated or frozen and cannot absorb the waste.[32] [(b) (6) - Privacy] [(b) (6) - Privacy] *see also* Declaration of [(b) (6) - Privacy] attached as Exhibit 7 [[(b) (6) - Privacy] (reporting improper spraying); Declaration of [(b) (6) - Privacy] attached as Exhibit 28 [[(b) (6) - Privacy]]. Contaminants from swine waste also reach receiving waters through runoff and leach through permeable soils to vulnerable aquifers even when the waste is applied at recommended application rates. [(b) (6) - Privacy] Permitted swine facilities have been reported to apply waste to ditches that lead to surface waters. [(b) (6) - Privacy] [(b) (6) - Privacy] Finally, waste from the sprayers can blow directly into the surface waters. [(b) (6) - Privacy] [(b) (6) - Privacy]

79. Over-applying the waste or applying the waste to saturated or frozen ground would violate the General Permit and the associated animal waste management plans, however, many facilities are reported to engage in such practices. Without provisions requiring frequent DENR inspections of the permitted facilities in the General Permit and rigorous self-monitoring and reporting to DENR and the public, combined with increases in DENR staff to handle the additional responsibility, DENR and the public are not in a position to find and prohibit the unlawful waste application practices that threaten water quality. [(b) (6) - Privacy]

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[30] Michael Greger & Gowri Koneswaran, *The Public Health Impacts of Concentrated Animal Feeding Operations on Local Communities*, 33 Farm Cmty. Health 11, 13 (2010); Carrie Hribar, Nat'l Ass'n of Local Bds. of Health, Understanding Concentrated Animal Feeding Operations and Their Impact on Communities, Environmental Health 4 (2010), *available at* http://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf, attached as Exhibit 40.

[31] JoAnn M. Burkholder et al., *Impacts of Waste from CAFOs on Water Quality*, 115 Envtl. Health Perspectives 308, 309 (2007), *available at* http://dx.doi.org/10.1289/ehp.8839, attached as Exhibit 3 to [(b) (6) - Privacy] [hereinafter, Burkholder, *Impacts of CAFO Waste*]; *see also* Michael A. Mallin et al., Ctr. for Marine Science Research, Univ. of N.C. at Wilmington, Effect of Organic and Inorganic Nutrient Loading on Photosynthetic and Heterotrophic Plankton Communities in Blackwater Rivers (1998), *available at* http://repository.lib.ncsu.edu/dr/bitstream/1840.4/1880/1/NC-WRRI-315.pdf; Michael A. Mallin et al., *Factors Contributing to Hypoxia in Rivers, Lakes, and Streams*, 51 Limnology & Oceanography 690, 699-700 (2006).

[32] Hribar, *supra* note 30, at 4.

80. Ammonia that is volatilized from the sprayers or the confinement houses at permitted swine facilities also degrades water quality. The airborne ammonia returns to the surface near permitted facilities, where it can land in surface waters or wash into the waters via ditches.[33] (b) (6) - Privacy For example, researchers found that industrial swine facilities contributed to ammonia pollution in the lower Neuse estuary. (b) (6) - Privacy

81. High ammonia concentrations can lead to algal blooms that are harmful to aquatic life. (b) (6) - Privacy The algae themselves produce toxins that degrade water quality and impact human health. (b) (6) - Privacy For example, cyanobacteria make toxins that cause liver hemorrhaging as well as neurological and psychological impacts. (b) (6) - Privacy Cyanotoxins can cause burning eyes and skin irritation, and can even promote tumor growth. *Id.* The Cape Fear River, which is impacted by many swine facilities, has experienced highly toxic cyanobacteria blooms (b) (6) - Privacy Scientists at the University of North Carolina, Wilmington recorded levels as high as 390 micrograms of the toxin per liter in Cape Fear, a level that far exceeds the 1 microgram per liter standard for safe drinking water put forward by the World Health Organization. *Id.*

82. Waste from permitted swine facilities has polluted waterways, forcing people to abandon favorite swimming holes and fishing ponds. In some instances, the low dissolved oxygen seen in waters oversaturated with swine waste causes the fish to suffocate, ruining a water body as a potential fishing source. (b) (6) - Privacy *ee also* (b) (6) - Privacy People have reported catching fish with skin infections, visible sores, and abrasions that may have been caused by water pollution from the industrial swine facilities.[34] Declaration of (b) (6) - Privacy (b) (6) - Privacy attached as Exhibit 36 (b) (6) - Privacy Declaration of (b) (6) - Privacy (b) (6) - Privacy attached as Exhibit 26 (b) (6) - Privacy

83. Parasites, bacteria, viruses, nitrates, and other components of liquid waste from permitted swine facilities pose threats to human health.[35] Steve Wing & Jill Johnston, Industrial

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[33] *Id.; see also* Marion Deerhake et al., *Atmospheric Dispersion and Deposition of Ammonia Gas, in* RTI Int'l, Benefits of Adopting Environmentally Superior Swine Waste Management Technologies in North Carolina: An Environmental and Economic Assessment, at 2-32 to 2-34 (2003), *available at* http://www.cals.ncsu.edu/waste_mgt/smithfield_projects/phase1report04/appendix%20c-RTI.pdf, attached as Exhibit 47 (modeling rates of ammonia deposition by county). "The greatest deposition occurs in Sampson and Duplin counties." *Id.* at 2-33.

[34] *See* JoAnn M. Burkholder & Howard B. Glasgow, *History of Toxic Pfiesteria in North Carolina Estuaries from 1991 to the Present*, 51 Biosci. 827, 833 (2001) ("During acute [Pfiesteria] exposure, fish commonly hemorrhage or develop skin lesions that are diffuse or nonfocal, as well as deep, localized or focal, bleeding sores or ulcerations.").

[35] Burkholder, *Impacts of CAFO Waste, supra* note 31; *see also* Dana Cole et al., *Concentrated Swine Feeding Operations and Public Health: A Review of Occupational and Community Health Effects*, 108 Envtl. Health Perspectives 685 (2000), *available at* http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1638284/pdf/envhper00309-0041.pdf, attached as Exhibit 39.

Hog Operations in North Carolina Disproportionately Impact African-Americans, Hispanics and American Indians 2 (Aug. 2014), attached as Exhibit 4 [Wing & Johnston Report].

B. Swine Facilities Permitted by DENR Contribute to Groundwater Pollution that Adversely Affects Human Health and Welfare

84. The lagoon and sprayfield system contributes to groundwater pollution that adversely affects human health and welfare.

85. Many of the lagoons in North Carolina were built in the 1990s, before standards requiring that lagoons be lined with plastic and compacted clay were in place.[36] (b) (6) - Privacy (b) (6) - Privacy Lagoons have been shown to leach wastewater into the soil where

[36] When the swine industry in North Carolina expanded, lagoons were not required to have synthetic liners, allegedly because of the largely unproven assumption that the lagoons would develop a seal. R.L. Huffman, *Seepage Evaluation of Older Swine Lagoons in North Carolina*, 47 Trans. Am. Soc'y Agric. Eng'rs 1507, 1507 (2004) ("[L]agoons were expected to develop a seal at the liquid-soil interface that would impede seepage."); *see also* Danny McCook, Discussion of Background Considerations in the Development of Appendix 10D to the Agricultural Waste Management Field Handbook 1 (2001), *available at* https://prod.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs141p2_024282.pdf ("Prior to about 1990, NRCS engineers commonly assumed that the accumulation of manure solids and the bacterial action resulting from a sludge interface would effectively reduce seepage . . . to an acceptable level."). Assumptions about the effectiveness of natural sealing were inaccurate or overstated. *See* McCook, *supra* at 1 ("[R]esearch . . . demonstrated that . . . manure sealing . . . was not as complete as formerly believed."); *see also* Natural Res. Conservation Serv., USDA, Part 651: Agricultural Waste Management Field Handbook 10D-1 (2009), *available at* ftp.wcc.nrcs.usda.gov/wntsc/AWM/handbook/ch10.pdf ("A rule of thumb supported by research is that manure sealing is not effective unless soils have at least 15 percent clay content for monogastric animal generated waste . . . ."). The General Assembly has prohibited the construction, operation, or expansion of new anaerobic lagoons, stating that DENR is prohibited from "issu[ing] or modify[ing] a permit to authorize the construction, operation, or expansion of an animal waste management system that serves a swine farm that employs an anaerobic lagoon as the primary method of treatment and land application of waste by means of a sprayfield as the primary method of waste disposal. *See* N.C. Gen. Stat. § 143-215.10*I*(b). Furthermore, the performance standards that apply to new or expanded animal waste management systems at swine facilities specify that the system "be designed and constructed with synthetic liners to eliminate seepage." 15A N.C. Admin. Code § 2T.1307(b)(1)(A).

it can reach groundwater.[37] (b) (6) - Privacy [redacted] Studies from eastern North Carolina have shown that lagoons at swine facilities can and do contaminate shallow groundwater with antibiotic-resistant *E. coli*[38] and nitrate,[39] and ammonia.[40]

86. Liquid waste that is applied to the fields can also percolate through the sandy soils in North Carolina and into shallow groundwater. (b) (6) - Privacy [redacted]

87. Permitted facilities are allowed to operate without proper liners unless and until DENR requires their replacement.[41]

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[37] *See, e.g.*, J.P. Murphy & J.P. Harner, *Lagoon Seepage Through Soil Liners*, *in* Swine Day 1997, at 1, 3 (Kans. State Univ. Agric. Experiment Station & Coop've Ext. Serv.), *available at* http://www.asi.k-state.edu/doc/swine-day-1997/srp795.pdf; *see also* Carol J. Hodne, Iowa Policy Project, Concentrating on Clean Water: The Challenge of Concentrated Animal Feeding Operations 8 (2005), *available at* http://www.iowapolicyproject.org/2005docs/050406-cafo-fullx.pdf. 2005docs/050406-cafo-fullx.pdf (identifying "seepage from earthen manure storage structures" as typical pathway for nitrates entering groundwater); Jerry L. Hatfield et al., Chapter 4: Swine Manure Management, *in* Agric. Research Serv., USDA, Agricultural Uses of Municipal, Animal, and Industrial Byproducts 78, 82 (1998), *available at* http://infohouse.p2ric.org/ref/43/42647.pdf (describing "leakage" as a "major environmental concern").

[38] *See* M.E. Anderson & M.D. Sobsey, *Detection and Occurrence of Antimicrobially Resistant* E. coli *in Groundwater on or near Swine Farms in Eastern North Carolina*, 54 Water Sci. & Tech. 211, 217 (2006), attached as Exhibit 37 ("Overall, the results of this study demonstrated that antibiotic-resistant E. coli were present in groundwaters associated with commercial swine farms that have anaerobic lagoons and land application systems for swine waste management.").

[39] *See* Melva Okun, Envtl. Res. Program, UNC School of Public Health, Human Health Issues Associated with the Hog Industry (1999), *available at* http://www.bape.gouv.qc.ca/sections/mandats/prod-porcine/documents/SANTE5.pdf (discussing 1996 NC DHHS well testing program, which found exceedances of 10 ppm nitrate standard in 9.9% and 22.5% of wells in Duplin and Sampson Counties, respectively); Wendee Nicole, *CAFOs and Environmental Justice: The Case of North Carolina*, 121 Envtl. Health Perspectives A182, A186 (2013), attached as Exhibit 44 ("Even without spills, ammonia and nitrates may seep into groundwater, especially in the coastal plain where the water table is near the surface.").

[40] R.L. Huffman & Phillip W. Westerman, *Estimated Seepage Losses from Established Swine Waste Lagoons in the Lower Coastal Plain of North Carolina*, 38 Trans. Am. Soc'y Agric. Eng'rs 449-453 (1995); Phillip W. Westerman et al., *Swine-Lagoon Seepage in Sandy Soil*, 38 Trans. Am. Soc'y Agric. Eng'rs 1749-1760 (1995); J.M. Ham & T.M. DeSutter, *Toward Site-Specific Design Standards for Animal-Waste Lagoons: Protecting Groundwater Quality*, 29 J. Envtl. Qual. 1721, 1721-32 (2000). Even lagoons that feature liners built to NRCS standards leach some amount of waste into nearby soils. *See* NC-NRCS, Conservation Practice Standard: Waste Treatment Lagoon (Code 359), at 5 (2009) (allowing seepage of up to "1.25×10^{-6} cm/sec (0.003 ft/day)"); McCook, *supra* note 36, at 4 (observing that "clay liners obviously allow some seepage").

88. Burial methods allowed under the General Permit also threaten groundwater. Permitted facilities often bury dead animals in pits on-site. Groups monitoring North Carolina's waters have reported seeing facilities burying animals close to waters of the state and in deep ditches containing groundwater, practices that threaten to contaminate groundwater sources. (b) (6) - Privacy & Exs. 10 & 11. The recent spread of PED threatens to increase the mortality rate at permitted swine facilities. Greater animal deaths create a need for additional burial sites, each of which could leach pollutants and disease from the decomposing animals into groundwater. (b) (6) - Privacy

89. Groundwater pollution threatens human health in communities that rely on groundwater wells for drinking water.[42] (b) (6) - Privacy A study of the North Carolina swine industry completed in 2000 found that "[a]lmost half of all hog CAFOs are located in block groups where > 85% of households have well water."[43] High nitrate levels found in contaminated groundwater, for example, are hazardous to human health, as they contribute to methemoglobinemia, or blue baby syndrome. *See, e.g.*, (b) (6) - Privacy (noting studies that have shown that the area near lagoons can be contaminated with levels of high nitrate and high ammonia, and discussing the impact on human health and the environment).

90. The threat of contaminated groundwater also injures human welfare. Many people have switched from well water to municipal water sources for fear that their wells were polluted by industrial swine facilities.[44] Where municipal water is not yet available or

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[41] A lagoon for which a permit was issued prior to 2007 "may continue to operate under . . . that permit, including any renewal [thereof]." *See* N.C. Sess. Law 2007-523, sec. 1(b) (eff. Sep. 1, 2007), *available at* http://www.ncga.state.nc.us/EnactedLegislation/SessionLaws/HTML/2007-2008/SL2007-523.html. Grandfathering is also accomplished via DENR regulations. *See* 15A N.C. Admin. Code § 2T.1304(a)(1) (requiring animal waste management systems to meet "all applicable state statutes and rules *at the time of development or design*") (emphasis added). Where DENR is willing to acknowledge that these lagoons threaten water quality and the environment, it may require facilities to obtain an individual permit, which must remedy that threat. *Id.* § 2T.0111(h)(7) (indicating that DENR can require a facility whose lagoon "has been allowed to deteriorate or leak such that it poses an immediate threat to the environment" to obtain an individual permit).

[42] Hribar, *supra* note 30, at 3-4 (discussing the risk of well water contamination for facilities near industrial animal operations, and explaining that high nitrate levels could harm infants, who are susceptible to blue baby syndrome).

[43] Steve Wing et al., *Environmental Injustice in North Carolina's Hog Industry*, 108 Envtl. Health Perspectives 225, 228 (2000), attached as Exhibit 52 [Wing, *Environmental Injustice*].

(b) (6) - Privacy

affordable, people are forced to purchase bottled water.[45] Others, however, have stayed on well water and, despite attempts at filtering the water, are forced to deal with water that smells of eggs, a hallmark of sulfur pollution that could be caused by industrial swine facilities.[46]

C. Swine Facilities Permitted by DENR Contribute to Air Pollution that Adversely Affects Human Health and Welfare

91. Permitted swine facilities contribute to air pollution that adversely affects human health and welfare. The confinement houses at swine facilities are equipped with industrial fans that draw in air from outside and vent out air containing hundreds of pollutants, including harmful gases, aerosols, and "particles consisting of swine skin cells, feces, feed, bacteria, and fungi."[47]

92. Decomposing waste in lagoons contributes to air pollution. As the waste sits in the lagoon, it gives off malodorous or toxic gases, including ammonia,[48] nitrous oxide, and other VOCs.[49] Studies have estimated that over time, approximately 70% of the nitrogen in the lagoon will escape to the atmosphere.[50]

93. The range of air pollutants emitted from industrial swine facilities includes hydrogen sulfide, ammonia, a wide array of other VOCs, and bioaerosols including endotoxins

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[45] Declaration of (b) (6) - Privacy attached as Exhibit 9 [(b) (6) - Privacy]; Declaration of (b) (6) - Privacy ¶ 10, attached as Exhibit 20 [(b) (6) - Privacy]; Declaration of (b) (6) - Privacy attached as Exhibit 27 (b) (6) - Privacy; Declaration of (b) (6) - Privacy attached as Exhibit 34 (b) (6) - Privacy

[46] Declaration of (b) (6) - Privacy attached as Exhibit 21 [(b) (6) - Privacy]; Declaration of (b) (6) - Privacy attached as Exhibit 32 [(b) (6) - Privacy]; *see also* Declaration of (b) (6) - Privacy attached as Exhibit 10 [(b) (6) - Privacy.] (reporting a general concern with well water); Declaration of (b) (6) - Privacy attached as Exhibit 15 [(b) (6) - Privacy] (concern over well water); Declaration of (b) (6) - Privacy attached as Exhibit 19 (b) (6) - Privacy.

[47] Cole et al., *supra* note 35, at 685; *see also* Hribar, *supra* note 30, at 5-6.

[48] *See, e.g.*, John T. Walker et al., *Atmospheric Transport and Wet Deposition of Ammonium in North Carolina*, 34 Atmospheric Env't 3,407 (2000); Jennifer K. Costanza et al., *Potential Geographic Distribution of Atmospheric Nitrogen Deposition from Intensive Livestock Production in North Carolina, USA*, 398 Sci. Total Env't 76, 77 (2008); Matias B. Vanotti & Patrick G. Hunt, Ammonia Removal from Swine Wastewater Using Immobilized Nitrifiers, *in* Proceedings of the 8th Int'l. Conf. of the FAO ESCORENA Network on Recycling of Agricultural, Municipal and Industrial Residues in Agriculture, Rennes, France 427, 428 (1998), *available at* http://www.ramiran.net/doc98/FIN-ORAL/VANOTTI.pdf.

[49] *See* James A. Zahn et al., *Air Pollution from Swine Production Facilities Differing in Waste Management Practice* 3, Proceedings of the Odors and Emission 2000 Conference (2000) (listing all types of "emissions released from stored swine manure" mentioned above).

[50] C.A. Rotz, *Management to Reduce Nitrogen Losses in Animal Production*, 82 J. Animal Sci. E119, E129 (2004).

and other respiratory irritants.[51] *See* Wing & Johnston Report at 2; (b) (6) - Privacy (discussing ammonia and hydrogen sulfide pollution). These emissions create "zones of exposure . . . for human populations who live near industrial hog operations in Eastern [North Carolina]."[52]

94. High levels of ammonia are a public health concern, as ammonia readily forms fine particulate matter,[53] which "strong epidemiological evidence . . . link[s] . . . with cardiovascular-related and lung cancer mortality."[54]

95. One recent study of the impact of industrial swine operations on adults living in eastern North Carolina found that the odor and chemicals emitted from the operations, including hydrogen sulfide and endotoxins, lead to acute eye, nose, and throat irritation, increased incidents of difficulty breathing, increased wheezing, chest tightness, and nausea.[55]

96. Studies have shown that people living near an industrial swine facility in North Carolina suffered elevated rates of respiratory and gastrointestinal problems, mucous membrane irritation, headaches, runny nose, sore throat, excessive coughing, diarrhea, and

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[51] Cole et al., *supra* note 35, at 686-88; Susan S. Schiffman et al., *Quantification of Odors and Odorants from Swine Operations in North Carolina*, 108 Agric. & Forest Meteorology 213 (2001); Ana M. Rule et al., *Assessment of an Aerosol Treatment To Improve Air Quality in a Swine Concentrated Animal Feeding Operation*, 39 Envtl. Sci. & Tech., 9649, 9649 (2005).

[52] Sacoby M. Wilson & Marc L. Serre, *Examination of Atmospheric Ammonia Levels Near Hog CAFOs, Homes, and Schools in Eastern North Carolina*, 41 Atmospheric Env't 4977, 4985 (2007), attached as Exhibit 49; *see also* Sacoby M. Wilson & Marc L. Serre, *Use of Passive Samplers to Measure Atmospheric Ammonia Levels in a High-density Industrial Hog Farm Area of Eastern North Carolina*, 41 Atmospheric Env't 6,074 (2007).

[53] *See* Marion Deerhake et al., *Generation of Ammonium (NH_4^+) Salt Fine Particulate Matter*, *in* RTI Int'l, *supra* note 33, at 3-2 to 3-3.

[54] EPA, National Ambient Air Quality Standards for Particulate Matter, 78 Fed. Reg. 3,086, 3,103 (Jan. 15, 2013).

[55] Leah Schinasi et al., *Air Pollution, Lung Function, and Physical Symptoms in Communities Near Concentrated Swine Feeding Operations*, 22 Epidemiology 208, 208 (2011), attached as Exhibit 48 (measuring pollutants levels and effect on 101 adults living near hog CAFOs in 16 eastern North Carolina communities); *see also* K.M. Thu, *Public Health Concerns for Neighbors of Large-Scale Swine Production Operations*, 8 J. Agric. Safety & Health 175 (2002) (synthesizing research regarding public health concerns for neighbors of industrial swine facilities, including respiratory issues associated with air pollution).

burning eyes as compared to residents in the control group that did not live near industrial livestock operations.[56]

97. Children going to school near swine facilities report more doctor-diagnosed asthma and more symptoms of wheezing than populations that are not exposed to swine facilities.[57] Adults living near swine facilities also have reported increased incidence of asthma.[58]

98. Children who attend schools where livestock odor is reported at least two times per month experience more wheezing symptoms than children who attended schools where no livestock odor was reported.[59]

99. Living near livestock production facilities has been linked to increased infant mortality due to respiratory disease.[60]

100. People living and working near permitted swine facilities have confirmed the scientific findings above. They have complained about frequent sinus problems, and bronchitis. They have trouble breathing and have suffered through frequent raw throats, runny noses, persistent, hacking coughs, burning or water eyes, and allergy attacks, issues that often

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[56] Steve Wing & Susanne Wolf, *Intensive Livestock Operations, Health, and Quality of Life Among Eastern North Carolina Residents*, 108 Envtl. Health Perspectives 233, 233 (2000), attached as Exhibit 53; *see also* Cole et al., *supra* note 35 (reviewing literature on health effects associated with swine industrial agriculture); Susan S. Schiffman et al., *Symptomatic Effects of Exposure to Diluted Air Sampled from a Swine Confinement Atmosphere on Healthy Human Subjects*, 113 Envtl. Health Perspectives 567 (2005) (finding that those exposed to diluted swine air for two 1-hour sessions were more likely to report headaches, eye irritation, and nausea than the control group that was exposed to clean air); *see also* Hribar, *supra* note 30, at 6-7 & Table 1.

[57] Maria C. Mirabelli et al., *Asthma Symptoms Among Adolescents Who Attend Public Schools That Are Located Near Confined Swine Feeding Operations*, 118 Pediatrics e66 (2006), attached as Exhibit 42 (finding students aged 12 to 14 who attended North Carolina public schools within 3 miles of industrial swine facilities reported increased asthma-related symptoms, more doctor-diagnosed asthma, and more asthma-related medical visits compared to peers at other schools); James A. Merchant et al., *Asthma and Farm Exposures in a Cohort of Rural Iowa Children*, 113 Envtl. Health Perspectives 350 (2005) (finding children living on swine farms, including large facilities with more than 500 head, experienced increased rates of asthma compared to non-exposed children; results more pronounced where swine facilities added antibiotics to feed); *see also* Wing & Johnston Report at 2; *see also* (b) (6) - Privacy [redacted] Declaration of (b) (6) - Privacy [redacted] attached as Exhibit 35 (b) (6) - Privacy

[58] (b) (6) - Privacy [redacted] (b) (6) - Privacy [redacted] Declaration of (b) (6) - Privacy [redacted] attached as Exhibit 18 [redacted] (b) (6) - Privacy (b) (6) - Privacy [redacted] Declaration of (b) (6) - Privacy [redacted] attached as Exhibit 31 [redacted] (b) (6) - Privacy [redacted]

[59] Mirabelli, *supra* note 57.

[60] Stacy Sneeringer, *Does Animal Feeding Operation Pollution Hurt Public Health? A National Longitudinal Study of Health Externalities Identified by Geographic Shifts in Livestock Production*, 91 Am. J. Agric. Econ. 124, 130 (2009).

worsened when they are near swine facilities. Colds seem to last longer for those exposed to air pollution from swine facilities. The smell of the waste is nauseating.[61]

D. **Swine Facilities Permitted by DENR Depress Quality of Life**

101. The overpowering smell associated with swine facilities greatly degrades the quality of life for people living and working in the shadow of these facilities.

102. The smell from the permitted swine facilities is often unbearable. Individuals who live near swine facilities frequently are not able to open their windows, sit outside their homes on their porches or in their yards, have cookouts, or otherwise engage in routine activities because of the intense and putrid odor from the swine facilities.[62] They hold their breaths and cover their mouths if they have to go outside when the facilities are spraying. They plan walks and recreation to avoid the raw, stinking smell. They avoid cooking when the facilities are spraying, because the thought of eating when smelling takes away their appetite. They no longer hang the laundry out to dry for fear that the smell will sink into their clothes. The smell even wakes them up at night.[63]

103. There's no telling when a facility will choose to spray its waste, and neighbors receive no advance notice. Some people who live near permitted swine facilities have resigned themselves to the fact that the spraying might interrupt an outdoor gathering with friends and family, while others have given up on the idea of planning events outside entirely. Without certainty about when a facility will spray, people living near permitted facilities explain that

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[62] *See, e.g.*, Steve Wing et al., *Air Pollution and Odor in Communities Near Industrial Swine Operations*, 116 Envtl. Health Perspectives 1362 (2008), attached as Exhibit 50 (study participants living within 1.5 miles of swine factory farm reported altering or ceasing normal daily activities when hydrogen sulfide concentrations, and associated hog odor, were the highest) [Wing, *Air Pollution and Odor*]; Wing & Wolf, *supra* note 56; Hribar, *supra* note 30, at 7-8.

[63] [redacted]

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they have to leave the windows up, or else face the possibility of returning home to a house that stinks of swine waste.[64]

104. People who are elderly, have disabilities, are sick or recovering from illness, and children are among the most affected of those who are forced to live and work near permitted swine facilities. People who are elderly or recovering from illness have been forced to stay inside, even on hot days, either because they are bedridden or because their doctors have recommended that they avoid breathing in the swine waste. People using crutches have difficulty covering their nose and mouth and thus find it difficult to go outside, even just to get the mail, when the facility is spraying and the smell is overpowering.[65] Families keep their children inside because do not want them exposed to the smell and pollution from industrial swine facilities.[66] Children complain that they would like to be outside, playing in their yards, but they simply can't bear the smell.[67] Children who live near permitted swine facilities, or whose parents work in permitted swine facilities, have been forced to suffer the embarrassment and humiliation of attending school reeking of swine waste.[68] The stench of swine waste can sink into a person's clothes and stay there for days.[69]

105. The smell from the facilities is embarrassing for those forced to live near a permitted swine facility. People who live near permitted swine facilities complain that friends and family who live farther away from the facilities refuse to come and visit because of the smell. If friends and family happen to visit on a day when the smell is particularly bad, their complaints or visible discomfort is humiliating, and the visits are short-lived.[70]

106. The waste from the permitted swine facilities not only smells, it also interferes with the quality of life. Droplets of waste from the automated sprayers form a fine mist that coats everything in its path, from clothes lines, cars parked near the sprayfield or driving by, bedroom windows and sides of homes, playing fields, and even the people themselves. Student athletes have been forced to practice sports near the sprayfields, and breathe in the terrible odor.[71]

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107. People living near permitted swine facilities have abandoned their favorite pastimes, like hunting or fishing, because the smell near the swine facilities is simply too much to bear, or the waters are clogged with algae. Others have are concerned that the animals they catch might not be safe to eat because they, too, might be suffering from the pollution.[72]

108. Swine facilities attract bugs and other pests, from flies to buzzards, which swarm to the waste piles and boxes of decomposing animals at swine facilities. The flies make it make it unpleasant to have gatherings outside.[73]

109. For communities impacted by swine facilities, there is little escape. People living and working near permitted swine facilities have complained that they can smell the odor in their cars as they approach a sprayfield, even if their windows are tightly rolled up. In hot summer months, they race to turn off their air conditioning, in an often futile attempt to prevent the putrid air from getting into the car and making it hard to breathe.[74]

110. People attending church or community meetings, too, experience the overpowering smell. Just as at home, people must work to avoid the smell from nearby swine facilities, keeping doors and windows closed, and gathering inside for community celebrations and meetings.[75]

111. The trucks that transport animals between different confinement houses and ultimately to slaughter also interfere with quality of life. Industrial swine operations "grow" their animals in stages until they reach slaughter weight. Some operators grow swine in three stages, "farrow to wean," "wean to feeder," "feeder to finish," while others progress the animals from "farrow to feeder" and "feeder to finish," each with a new confinement house.[76] Often the animals are moved via tractor-trailers that are open to the air in places to prevent suffocation. The open air design, however, allows dust, dander, and other waste to escape, and people living nearby breathe it in. Like the odor from the waste pits and sprayers, the smell of

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[76] *See, e.g.*, NCDENR, Animal Feeding Operations, List of Permitted Animal Facilities (showing facilities permitted to manage waste from swine facilities at the different stages of operation) (b) (6) - Privacy

the trucks is overpowering. The trucks rumble through communities at all times of day, disturbing people as they try to sleep and enjoy their lives.[77] .

112. Dead boxes, a descriptive term for the dumpsters that permitted swine facilities use to collect mortalities before their ultimate disposal, are another nuisance. Many facilities leave their dead boxes open or ajar, inviting buzzards, other scavengers, and flies, and giving off a powerfully bad smell. Even closed dead boxes smell terrible and invite pests. Many dead boxes are not well sealed and leak a smelly, potentially harmful liquid containing fluids from the decomposing animals and moisture from the environment.[78] The smell from trucks carrying dead animals is another assault on the community's senses.[79]

113. The swine industry divides communities, often pitting those employed by the swine industry who are afraid or unwilling to speak out against friends and family who want better.[80] The swine industry is a constant weight on the community, a frequent topic of conversation among those who wonder why they are forced to fight for basic rights.[81]

114. It should come as little surprise, then, given the many problems described above, that scientists have found that those living near swine facilities report more tension, more depression, more anger, less vigor, more fatigue, and more confusion than control subjects who were not exposed to industrial animal production.[82]

115. Hydrogen sulfide concentrations near swine facilities also have been associated with increased stress and anxiety,[83] as well as acute elevation of systolic blood pressure.[84]

E. **Proximity to Swine Facilities Permitted by DENR Depresses Property Values**

116. Studies across the country, including from North Carolina, have demonstrated a statistically significant relationship between proximity to a swine facility and declining property

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[81] (b) (6) - Privacy [redacted]
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[82] Susan S. Schiffman et al., *The Effect of Environmental Odors Emanating from Commercial Swine Operations on the Mood of Nearby Residents*, 37 Brain Research Bull. 369 (1995); *see also* Wing, *Air Pollution and Odor*, *supra* note 62 (finding that when hog odor was the strongest, study participants more frequently reported feeling stressed, gloomy, angry and unable to concentrate).

[83] Rachel Avery Horton et al., *Malodor as a Trigger of Stress and Negative Mood in Neighbors of Industrial Hog Operations*, 99 Am. J. Pub. Health Suppl., S610 (2009).

[84] Steve Wing et al., *Air Pollution from Industrial Swine Operations and Blood Pressure of Neighboring Residents*, 121 Envtl. Health Perspectives 92 (2013), attached as Exhibit 51.

values.[85] Research suggests that property values decline with increasing proximity to a swine facility, and with the increasing number of swine at a facility.[86]

117. Individuals in North Carolina fear that the value of their property has declined and that they will not be able to sell their property and move away because of neighboring industrial swine facilities.[87]

F. Swine Facilities Permitted by DENR Can Spread Antibiotic Resistant Bacteria, which Threatens Human Health

118. Many swine facilities use antibiotics to promote growth and to preemptively ward off the threat of disease.[88] The overuse of antibiotics in livestock production is linked to emergence of antibiotic-resistant bacteria that make infections in humans more difficult to treat. *See* Wing & Johnston Report at 2.[89]

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[85] *See* Raymond Palmquist et al., *Hog Operations, Environmental Effects, and Residential Property Values*, 73 Land Econ. 114 (1997) (studying relationship between swine factory farms and property values in nine southeastern North Carolina counties and finding that effect on price depended on number and distance of nearby factory farms); Katherine Milla et al., *Evaluating the Effect of Proximity to Hog Farms on Residential Property Values: A GIS-Based Hedonic Model Approach*, 17 URISA J. 27 (2005) (finding that values of Craven County, North Carolina homes decreased with increasing local hog populations and decreasing distances from homes to factory farms); Jungik Kim & Peter Goldsmith, *A Spatial Hedonic Approach to Assess the Impact of Swine Production on Residential Property Values*, 42 Envtl & Res. Econ. 509 (2009) (estimating decline in Craven County home property values on per hog basis); Joseph Herriges et al., *Living with Hogs in Iowa: The Impact of Livestock Facilities on Rural Residential Property Values*, 81 Land Econ. 530 (2005).
[86] *See* Palmquist et al., *supra* note 85; Milla et al., *supra* note 85.
[87] (b) (6) - Privacy
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[88] James M. MacDonald & William D. McBride, USDA, The Transformation of U.S. Livestock Agriculture: Scale, Efficiency, and Risks 32-35 (2009), *available at* http://www.ers.usda.gov/media/184977/eib43.pdf.
[89] *See* EK Silbergeld & LB Price LB, *Industrial Food Animal Production, Antimicrobial Resistance, and Human Health*, 29 Ann. Rev. of Pub. Health 151 (2008).

119. Antibiotic-resistant bacteria capable of causing human disease have been found in air emissions from industrial swine facilities.[90]

120. Antibiotic-resistant bacteria associated with industrial livestock production also can be transmitted through water. A recent water quality study found that samples taken near industrial animal facilities were more likely to contain multi-drug resistant bacteria than water sampled elsewhere.[91]

121. Studies have found a specific strain of methicillin-resistant *Staphylococcus aureus* ("MRSA") in both swine and people who work in the swine industry.[92] In addition, a recent study of medical records in Pennsylvania showed that people living near industrial swine

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[90] Amy Chapin et al., *Airborne Multidrug-Resistant Bacteria Isolated from a Concentrated Swine Feeding Operation*, 113 Envtl. Health Perspectives 137 (2005) (finding multidrug-resistant *Enterococcus*, coagulase-negative staphylococci, and viridans group streptococci in the air of an industrial swine operation at levels dangerous to human health); Shawn G. Gibbs et al., *Airborne Antibiotic Resistant and Nonresistant Bacteria and Fungi Recovered from Two Swine Herd Confined Animal Feeding Operations*, 1 J. Occupational & Envtl. Hygiene 699 (2004) (finding multidrug-resistant bacteria inside and downwind of industrial swine operations at levels previously determined to pose a human health hazard); Julia R. Barrett, *Airborne Bacteria in CAFOs: Transfer of Resistance from Animals to Humans*, 113 Envtl. Health Perspectives A116 (2005) (reviewing literature on cross-species transfer of antibiotic-resistant bacteria); Jochen Schulz et al., *Longitudinal Study of the Contamination of Air and of Soil Surfaces in the Vicinity of Pig Barns by Livestock-Associated Methicillin-Resistant* Staphylococcus aureus, 78 Applied Envtl. Microbiol. 5666 (2012) (detecting MRSA 300 feet from a barn in which animals, air, and workers' plastic boots tested positive for MRSA); Shawn G. Gibbs et al., *Isolation of Antibiotic-Resistant Bacteria from the Air Plume Downwind of a Swine Confined or Concentrated Animal Feeding Operation*, 114 Envtl. Health Perspectives 1032 (2006).

[91] Bridgett M. West et al., *Antibiotic Resistance, Gene Transfer, and Water Quality Patterns Observed in Waterways Near CAFO Farms and Wastewater Treatment Facilities*, 217 Water Air Soil Pollution 473 (2011).

[92] Tara C. Smith et al., *Methicillin-Resistant* Staphylococcus auereus *(MRSA) Strain ST398 Is Present in Midwestern U.S. Swine and Swine Workers*, 4 PLoS One e4258 (2009); Tara C. Smith et al., *Methicillin-Resistant* Staphylococcus aureus *in Pigs and Farm Workers on Conventional and Antibiotic-Free Swine Farms in the USA*, 8 PLoS One e63704 (2013); Jessica L. Rinsky et al., *Livestock-Associated Methicillin and Multidrug Resistant* Staphylococcus aureus *Is Present Among Industrial, Not Antibiotic-Free Livestock Operation Workers in North Carolina*, 8 PLoS One e67641 (2013); Xander W. Huijsdens et al., *Community-Acquired MRSA and Pig-Farming*, 5 Annals Clinical Microbiol. & Antimicrobials 26 (2006) (Netherlands); Ingrid V.F. Van den Broek et al., *Methicillin-Resistant* Staphylococcus aureus *in People Living and Working in Pig Farms*, 137 J. Epidem. & Infection 700 (2009) (Netherlands); Oliver Denis et al., *Methicillin-Resistant* Staphylococcus aureus *ST398 in Swine Farm Personnel, Belgium*, 15 Emerging Infectious Diseases 1098 (2009) (Belgium); T. Khanna et al., *Methicillin Resistant* Staphylococcus aureus *Colonization in Pigs and Pig Farmers*, 128 J. Veterinary Microbiol. 298 (2008) (Canada).

facility liquid waste application sites received treatment for more skin and soft tissue infections and infections caused by MRSA than people who lived further away from application sites.[93]

122. The emergence and proliferation of new strains of antibiotic-resistant bacteria is a significant threat to human health. Each year more than 2 million people in the United States acquire a serious infection that is resistant to antibiotics, and at least 23,000 people die each year as a result of those infections.[94] Among those infections, "MRSA infections can be very serious and the number of infections is among the highest of all antibiotic-resistant threats."[95]

G. Pollution from Swine Facilities Permitted by DENR Adversely Affects Sensitive Populations That Are Exposed to Other Waste Sources

123. Swine facilities are often located in communities that are overburdened with other polluting livestock operations, including poultry operations.[96]

124. Poultry operations are of significant concern for the community. Many poultry operations use a dry waste management system, as opposed to the wet lagoon system favored by the swine industry. The confinement houses are lined with bedding that absorbs the waste. The bedding is stored in piles before it is land-applied as fertilizer. Poultry confinement houses emit significant amounts ammonia and fine particles consisting of bits of manure-laden bedding, animal dander, dust, and feathers.[97] These emissions contribute to the health and welfare problems described above.

125. These same poultry facilities also attract houseflies, which may contribute to the dispersion of drug resistant bacteria.[98]

126. For people living near these facilities, the way the poultry facilities store and apply the waste is a particular concern. Often, facilities store the dry litter waste outside and uncovered, where it can drift or leach pollutants into the soil. In one study, researchers found chemicals from an uncovered litter pile at a turkey facility in the soil up to two feet below the

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[93] Joan A. Casey, *High-Density Livestock Operations, Crop Field Application of Manure, and Risk of Community-Associated Methicillin-Resistant* Staphylococcus aureus *Infection in Pennsylvania,* 173 J. Am. Med Ass'n: Internal Med. 1980 (2013).

[94] Ctrs. for Disease Control, U.S. Dep't of Health and Human Servs., Antibiotic Resistance Threats in the United States, 2013, at 6 (2013), *available at* http://www.cdc.gov/drugresistance/threat-report-2013/pdf/ar-threats-2013-508.pdf.

[95] *Id.* at 20.

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[97] (b) (6) - Privacy

[98] National Association of Local Boards of Health, Understanding Concentrated Animal Feeding Operations, at 8 (2010), *available at* http://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf.

surface.[99] Ammonium concentrations in the soil were 62 times higher beneath the litter pile than in the soil outside of the litter pile footprint. Arsenic concentrations were also elevated.[100] Soils near industrial swine facilities also can be polluted with metals,[101] thus the comingling of the operations increases the burden on the environment.

127. The facilities land apply the waste, but, because the waste is dry, it can drift off the fields, and over to neighboring houses.[102] The proximity of poultry and swine facilities to one another also raises the risk that land will be oversaturated with applications of swine manure and dry litter.

128. Processing and packaging plants, rendering plants, and slaughterhouses add to the burdens borne by communities near permitted swine facilities. The smell from these facilities is another injury foisted on communities living in near industrial swine facilities.[103]

VI. DISPROPORTIONALITY

A. Permitted Swine Facilities Disproportionately Affect African Americans, Latinos, and Native Americans

129. In North Carolina, permitted swine facilities adversely affect a disproportionate number of African Americans, Latinos, and Native Americans as compared to the general population.[104]

130. More than 2000 swine facilities hold a certificate of coverage allowing them to operate their waste management systems. These certificates were issued under the current swine waste management system general permit, which expires on September 30, 2014. The number and location of swine facilities is not expected to change significantly with this new permitting cycle.

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[99] N.C. Coop. Ext., Poultry Waste Stockpiling Methods: Environmental Impacts and Their Mitigation 4 (2013), *available at* https://www.bae.ncsu.edu/extension/ext-publications/air_quality/ag-788w-waste-stockpiling-shah.pdf.

[100] *Id.*

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[103] (b) (6) - Privacy

[104] *See* Wing & Johnston Report; *see also* Maria C. Mirabelli et al., *Race, Poverty, and Potential Exposure of Middle-School Students to Air Emissions from Confined Swine Feeding Operations*, 114 Envtl. Health Perspectives 591, 595 (2006), attached as Exhibit 43 (finding that North Carolina's swine facilities are located closer to schools enrolling higher percentages of non-white and economically disadvantaged students); Wing, *Environmental Injustice, supra* note 43 (finding that North Carolina's intensive hog confinement operations are located disproportionately in communities with higher levels of poverty, higher proportions of non-white persons, and higher dependence on wells for household water supply).

131. Analyses based on a study area that excludes the state's five major cities and western counties that have no presence of this industry show that the proportion of people of color[105] living within 3 miles of an industrial swine facility is 1.52 times higher than the proportion of non-Hispanic Whites. *See* Wing & Johnston Report at 5, 14 (Table 3). The proportions of African Americans,[106] Latinos,[107] and Native Americans[108] living within 3 miles of an industrial swine facility are 1.54, 1.39, and 2.18 times higher, respectively, than the proportion of non-Hispanic Whites. *Id.* These disparities are statistically significant. *Id.*

132. Analysis of the population statewide yields consistent results. The proportions of African Americans, Latinos, and Native Americans statewide living within 3 miles of an industrial swine facility are 1.4, 1.26, and 2.39 times higher than the percentage of non-Hispanic Whites, respectively. Wing & Johnston Report at 6, 13 (Table 2). These disparities are also statistically significant. *Id.*

133. As shown in the following figure, which depicts the relationship of industrial swine facilities to the racial and ethnic composition of North Carolina, swine facilities are clustered in communities of color. *See* Wing & Johnston Report at 7, 12 (Figure 3).

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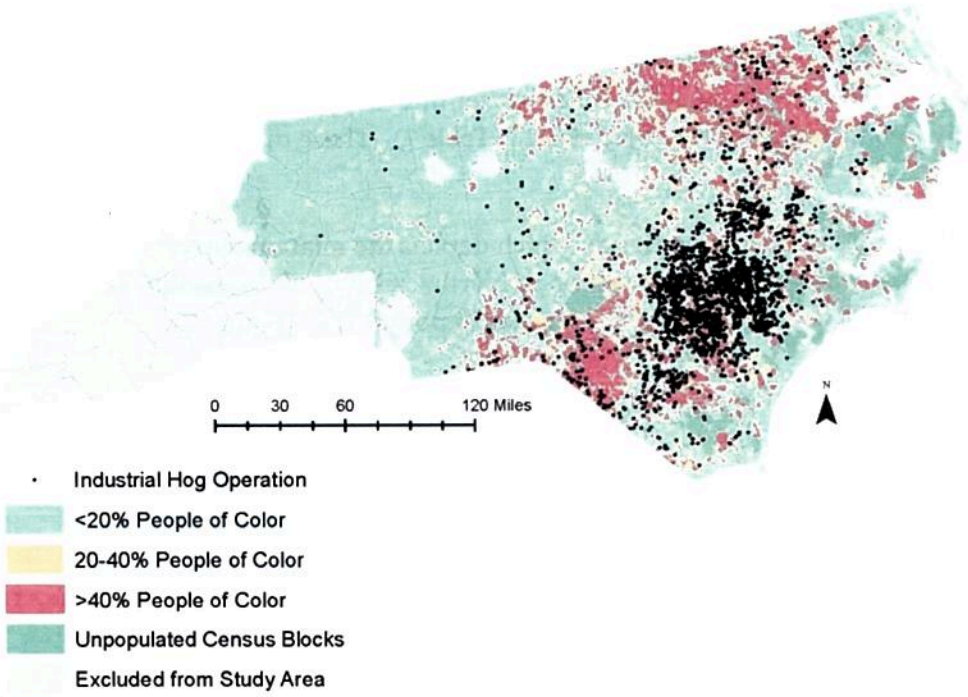
[105] In the Wing and Johnston Report, the term people of color referred to all people who identified as other than non-Hispanic white in the 2010 census data. Wing & Johnston Report at 4.

[106] The term African American used herein corresponds to the term Black as used in the Wing and Johnston Report. In the Report, the Black racial category referred to those who identified as African American or black without any other race in the 2010 census data. Wing & Johnston Report at 4.

[107] The term Latino used herein corresponds to the term Hispanic as used in the Wing and Johnston Report.

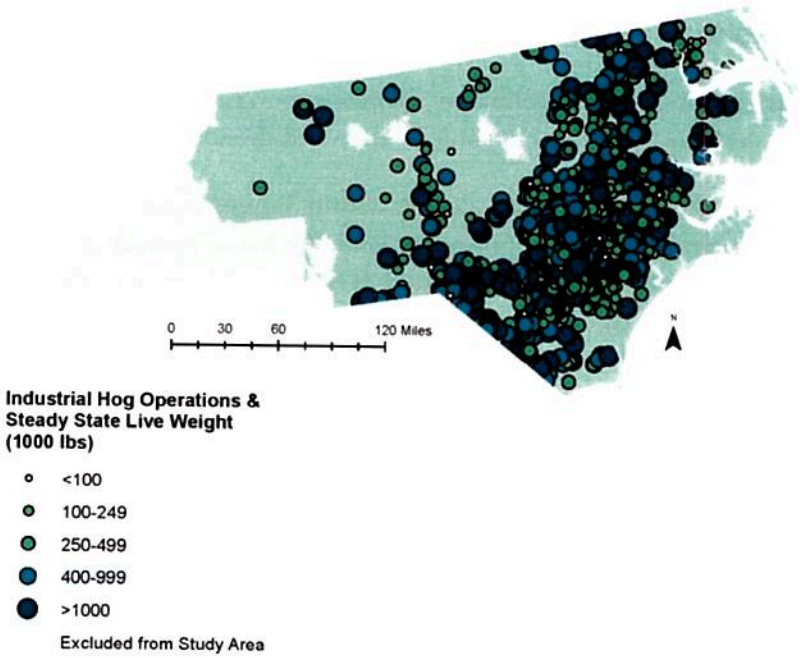
[108] The term Native American used herein corresponds to the term American Indian as used in the Wing and Johnston Report. In the Report, the term American Indian referred to those who identified themselves as American Indian without any other race in the 2010 census data. Wing & Johnston Report at 4.

Racial Composition of Census Blocks and the Locations of NC Industrial Swine Facilities Operating Under the General Permit, 2014



134. Moreover, the amount of swine waste is also greater in communities of color. Wing & Johnston Report at 6-7, 16 (Table 7). Each permitted facility is allowed to house a certain number and type of swine, and based on these factors, some facilities can be expected to produce more feces and urine than others. Steady state live weight is an indicator of the amount of waste a facility is likely to produce. The following figure depicts the distribution of steady state live weight across the state.

Industrial Swine Facilities by Steady State Live Weight



135. The swine industry's disproportionate impact on communities of color has long been known and documented. A study examining the relationship between race and the spatial concentration of swine waste in eastern North Carolina between 1982 and 1997 found evidence that "minority communities and localities lacking the political capacity to resist are shouldering

the bulk of the adverse economic, social, and environmental impacts of the pork industry restructuring."[109]

136. A later study found that there were more than seven times more industrial swine facilities in areas where there was more poverty and high percentages of non-white people.[110]

137. Research on school distribution in North Carolina also has shown that swine facilities overburden communities of color. The research has found that schools in lower income areas with a larger non-white population are more likely to be sited near an industrial livestock operation than other schools in the state.[111]

B. **African Americans**

138. African Americans in North Carolina are disproportionately adversely impacted by permitted swine facilities compared to non-Hispanic Whites and the total population.

139. The proportion of African Americans living within 3 miles of an industrial swine facility is 1.54 times higher than the proportion of non-Hispanic Whites in a study area that excludes the state's five major cities and western counties that have no presence of this industry. Wing & Johnston Report at 5, 14 (Table 3).

140. Statewide, the proportion of African Americans living within 3 miles of an industrial swine facility is 1.40 times higher than the proportion of non-Hispanic Whites. Wing & Johnston Report at 6, 13 (Table 2).

141. The ratios of African Americans living within 3 miles of an industrial swine facility as compared to non-Hispanic Whites in the study area and statewide area are statistically significant. Wing & Johnston Report at 5-6.

142. African Americans make up a larger proportion of the population living in proximity to industrial swine facilities than the proportion of the population living more than 3

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[109] Bob Edwards & Anthony E. Ladd, *Race, Class, Political Capacity and the Spatial Distribution of Swine Waste in North Carolina*, 1982-1997, 9 N.C. Geographer 51, 51 (2001).
[110] Wing, *Environmental Injustice, supra* note 43, at 225.
[111] Maria C. Mirabelli et al., *Race, Poverty, and Potential Exposure of Middle-School Students to Air Emissions from Confined Swine Feeding Operations*, 114 Envtl. Health Perspectives 591 (2006) (finding schools in North Carolina with white student population less than 63% and subsidized-lunch eligible population greater than 47% were more likely to be located within 3 miles of a factory farm than were schools with high-white or high-socioeconomic status populations); Paul B. Stretesky et al., *Environmental Inequity: An Analysis of Large-Scale Hog Operations in 17 States, 1982-1997*, 68 Rural Soc. 231 (2003) (finding that between 1982 and 1997 large-scale hog operations in North Carolina were more likely to be sited in areas with a disproportionate number of black residents).

miles away from any facility. The disparities are statistically significant. Wing & Johnston Report at 13 (Table 2).

143. In addition, as more African Americans are represented in a community, it is more likely that all members of the community will be exposed to swine facilities permitted by DENR. For every ten percent increase in the population of African Americans in a community, the proportion of people living within 3 miles of an industrial swine facility increases on average by 9.4%. This relationship between race and living near a facility is statistically significant. Wing & Johnston Report at 6, 15 (Table 6).

144. Adjusted for population density takes into account the fact that African Americans live in less rural areas than non-Hispanic Whites and are therefore less exposed to agricultural operations than they would be if they were more rural. With this adjustment, areas that are more than 80% African American, the proportion of people living within three miles of an industrial swine facility is more than three times the proportion in areas that have no African Americans. This disparity is statistically significant. Wing & Johnston Report at 6, 15 (Table 5).

145. The amount of hog waste in a community also increases as the percent of African Americans in the community increases. Adjusted for population density, areas with more than 40% African American residents have an excess steady state live weight compared to areas with no African American residents—they have between 493,000 and 620,000 more pounds of swine within 3 miles than areas with no African American residents. Wing & Johnston Report at 7, 16 (Table 8). The disparity is statistically significant. *Id.* Adjusted for population density, the steady state live weight of swine within 3 miles of a community increases, on average, over sixty four thousand pounds for every ten percent increase in the percentage of African Americans in a community. Wing & Johnston Report at 7, 16 (Table 9). The larger or more numerous the swine, the more waste they generate. Thus, African American communities are exposed to more detrimental operations than other communities.

C. **Latinos**

146. Latinos in North Carolina are disproportionately adversely impacted by permitted swine facilities compared to non-Hispanic Whites and the total population.

147. Latinos, on average, are more likely to live within three miles of a permitted swine facility than non-Hispanic Whites. Analyses based on a study area that excludes the state's five major cities and western counties that have no presence of this industry show that the proportion of Latinos living within 3 miles of a permitted swine facility is 1.39 times higher than the proportion of non-Hispanic Whites within the same distance of a permitted swine facility. Wing & Johnston Report at 5, 14 (Table 3).

148. Statewide, the proportion of Latinos living within 3 miles of an industrial swine facility is 1.26 times higher than the proportion of non-Hispanic Whites. Wing & Johnston Report at 6, 13 (Table 2).

149. The ratios of Latinos living within 3 miles of an industrial swine facility as compared to non-Hispanic Whites in the study area and statewide area are statistically significant. Wing & Johnston Report at 5-6.

150. Latinos make up a larger proportion of the population living in proximity to industrial swine facilities than the proportion of the population living more than 3 miles away from any facility. The disparities are statistically significant. Wing & Johnston Report at 13 (Table 2).

151. In addition, as more Latinos are represented in a community, it is more likely that all members of the community will be exposed to swine facilities permitted by DENR. For every ten percent increase in the population of Latinos in a community, the proportion of people living within 3 miles of an industrial swine facility increases on average by 8.5%. This relationship between race and living near a facility is statistically significant. Wing & Johnston Report at 6, 15 (Table 6).

152. The amount of swine waste in a community also increases as the percent of Latinos increases. Adjusted for population density, the steady state live weight of swine within 3 miles of a community increases, on average, over two hundred and forty two thousand pounds for every ten percent increase in the percentage of Latinos in a community. Wing & Johnston Report at 7, 16 (Table 9). This relationship is statistically significant. The larger or more numerous the swine, the more waste they generate. Thus, Latinos communities are exposed to more detrimental operations than other communities.

D. **Native Americans**

153. Native Americans in North Carolina are disproportionately adversely impacted by permitted swine facilities compared to non-Hispanic Whites and the total population.

154. Native Americans, on average, are more likely to live within three miles of a permitted swine facility than non-Hispanic Whites. Analyses based on a study area that excludes the state's five major cities and western counties that have no presence of this industry show that the proportion of Native Americans living within 3 miles of a permitted swine facility is 2.18 times higher than the proportion of non-Hispanic Whites within the same distance of a permitted swine facility. Wing & Johnston Report at 5, 14 (Table 3).

155. Statewide, the proportion of Native Americans living within 3 miles of an industrial swine facility is 2.39 times higher than the proportion of non-Hispanic Whites. Wing & Johnston Report at 6, 13 (Table 2).

156. The ratios of Native Americans living within 3 miles of an industrial swine facility as compared to non-Hispanic Whites in the study area and statewide area are statistically significant. Wing & Johnston Report at 5-6.

157. Native Americans make up a larger proportion of the population living in proximity to industrial swine operations than the proportion of the population living more than 3 miles away from any facility. The disparities are statistically significant. Wing & Johnston Report 13 (Table 2).

158. In addition, as more Native Americans are represented in a community, it is more likely that all members of the community will be exposed to swine facilities permitted by DENR. For every ten percent increase in the population of Native Americans in a community, the proportion of people living within 3 miles of an industrial swine facility increases on average by 16.2%. This relationship between race and living near a facility is statistically significant. Wing & Johnston Report at 6, 15 (Table 6).

159. The amount of swine waste in a community also increases as the percent of Native Americans increases. Adjusted for population density, the steady state live weight of swine within 3 miles of a community increases, on average, over ninety two thousand pounds for every ten percent increase in the percentage of Native Americans in a community. Wing & Johnston Report at 7, 16 (Table 9). The larger or more numerous the swine, the more waste they generate, and there are greater quantities of this waste in communities with more Native Americans.

VII. LESS DISCRIMINATORY ALTERNATIVES

160. DENR should exercise its authority to require permitted swine facilities to install and operate waste management systems that protect communities from pollution and include sufficient monitoring and public reporting to ensure that the goals of protecting public health and the environment are met.[112]

161. DENR is charged by state law to protect the environment and human health from pollution from the swine industry. N.C. Gen. Stat. § 143-215(a)(12) (requiring animal waste management systems to obtain a permit from the EMC of DENR for construction and

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[112] *See generally* Doug Gurian-Sherman, Union of Concerned Scientists, CAFOs Uncovered: The Untold Costs of Confined Animal Feeding Operations (2008), *available at* http://www.ucsusa.org/assets/documents/food_and_agriculture/cafos-uncovered.pdf (discussing the substantial cost of confined animal feeding operations and discussing alternatives).

operation).[113] In particular, the North Carolina legislature intended to "establish a permitting program for animal waste management systems that will protect water quality and promote innovative systems and practices." *Id.* § 143-215.10A.

162. DENR has authority to condition the permitting program to achieve the broad purposes of the air and water conservation laws, including "conserv[ing] ... [the state's] air and water resources," "maintain[ing] for the citizens of the State a total environment of superior quality," "protect[ing] human health," "prevent[ing] damage to public and private property," and "secur[ing] for the people of North Carolina, now and in the future, the beneficial uses of [the State's] great natural resources." N.C. Gen. Stat. § 143-215.1(b)(4)(a) (authority to condition permits to achieve the goals of Article 21, water and air resources); *id.* § 143-21(a)-(c) (declaring the goals of Article 21); *see also* 15A N.C. Admin. Code § 02T.0108(b)(1) (same).

163. Among its powers, DENR has the authority to "require any monitoring and reporting (including but not limited to groundwater, surface water or wetland, waste sludge, soil, lagoon/storage pond levels and plant tissue) necessary to determine the source, quantity, quality, and effect of animal waste upon the surface waters, groundwaters, or wetlands." 15A N.C. Admin. Code § 02T.0108(c).

164. DENR should condition the operation of swine facilities on practices that are consistent with the protection of public health and the environment.[114] For example, DENR has the authority to require facilities to install controls on the confinement houses that filter the air, which is laden with dust particles consisting of swine skin cells, feces, feed, fungi, gases, and (often antibiotic-resistant[115]) bacteria, before it is emitted to the ambient air.[116] Air pollution is a large byproduct of these animal systems that should be addressed under a comprehensive program to address animal waste.[117]

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[113] The statute requires animal waste management systems to obtain a DENR-issued permit. *See* N.C. Gen. Stat. § 143-212(2); *id.* § 143B-282(a)(1)(a) (creating the EMC of DENR). DENR's regulations further require all animal waste management systems that meet the definition of animal operations, including swine facilities with more than 250 swine, to obtain a state-issued permit. *See* 15A N.C. Admin. Code § 2T.1304; N.C. Gen. Stat. § 143-215.10B(1) (defining animal operation).

[114] *See* Exhibit 3 (list of less discriminatory alternatives to the proposed general permit offered by Complainants Environmental Justice Network and Waterkeeper Alliance, Inc., as well as Southern Environmental Law Center, in December 6, 2013 Comments to DENR).

[115] *See generally* paragraphs 118 to 122, *supra*.

[116] *See* Natural Res. Conservation Serv., USDA Conservation Practice Standard: Air Filtration and Scrubbing (Code 371), at 3 (2010) (describing various "device[s] or system[s] for reducing [air] emissions . . . from a structure via interception and/or collection").

[117] DENR has the authority to control pollutants that are emitted first into the air that later are washed into waters under laws designed to protect water quality. *Rose Acre Farms, Inc. v. NC Dep't of Env't & Natural Res.*, 12-CVS-10, slip op. at 8-9 (Hyde Cnty. Sup. Ct. Jan. 7, 2013).

165. DENR also has the authority to require facilities to improve their waste collection systems by avoiding consolidation of solid and liquid swine waste, which creates harmful ammonia gas.[118] Manure conveyor belts or other systems that drain the urine from the feces have proven effective as retrofits to existing barns.[119]

166. In addition, DENR has the authority to require improvements to waste storage systems. At a minimum, DENR could require facilities to cover existing lagoons to prevent gases from volatilizing.

167. DENR has the authority to require facilities to use alternative treatment methods more appropriate than open-air lagoons.[120]

168. DENR has the authority to prohibit the use of high pressure spray guns, which create fine droplets and aerosols that can drift and cause odor problems, in favor of drip irrigators, or other irrigation mechanisms that do not rely on sprayers.[121] (b) (6) - Privacy

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[118] A.L. Elliott et al., *Best Management Practices (BMPs) for Ammonia Emissions Reductions from Animal Feeding Operations: A Colorado Case Study*, 7 W. Nutrient Mgmt. Conf. 124, 124 (2007) ("[U]rea nitrogen in urine combines with the urease enzyme in feces and rapidly hydrolyzes to form ammonia gas. The reaction is quick, taking anywhere from 2 to 10 hours for ammonia volatilization to peak after mixing of urine and feces."); Pius M. Ndegwa et al., *A Review of Ammonia Emission Mitigation Techniques For Concentrated Animal Feeding Operations*, 100 Biosys. Eng'g 453, 465 (2008) (assessing several urine-feces segregation methods, all of which "reduced [ammonia] emissions from livestock barns by about 50% compared to the conventional manure handling system").

[119] Ndegwa, *supra* note 118, at 455-56.

[120] *See, e.g.*, Kelsi Bracmort, Cong. Research Serv., Anaerobic Digestion: Greenhouse Gas Emission Reduction and Energy Generation (2010), *available at* http://nationalaglawcenter.org/wp-content/uploads/assets/crs/R40667.pdf (describing digester types and basic operating parameters); Wendy J. Powers & Robert T. Burns, Energy and Nutrient Recovery from Swine Manures 1-3 (2007), *available at* http://www.pork.org/filelibrary/Energy%20and%20Nutrient%20Recovery%20from%20Swine%20Manures.PDF (listing superior efficiency and environmental benefits of digester technologies, compared to lagoons); Philip W. Westerman et al., *Struvite Crystallizer for Recovering Phosphorus from Lagoon and Digester Liquid* (2009), *available at* https://www.bae.ncsu.edu/extension/ext-publications/waste/animal/ag-724w-struvite-westerman.pdf (discussing successful application of "continuous-flow cone-shaped struvite crystallizer" to capture slow-release mineral fertilizer from swine lagoon effluent); Nathan O. Nelson et al., *Struvite Precipitation in Anaerobic Swine Lagoon Liquid: Effect of pH and Mg:P ratio and Determination of Rate Constant*, 89 Biores. Tech. 229, 230 (2003) (reporting success of laboratory batch experiments precipitating struvite from "[a]naerobic swine lagoon liquid . . . collected from two active farms in North Carolina").

[121] *See, e.g.*, Karl A. Shaffer & Sanjay Shah, NCSU Coop. Ext., SoilFacts: Reducing Drift and Odor with Wastewater Application 2 (2008), *available at* http://www.soil.ncsu.edu/publications/Soilfacts/AG439-69W.pdf; Ndegwa, *supra* note 118, at 455-56.

169. DENR has the authority to require improved monitoring, including groundwater monitoring, and reporting, which is critical in light of recent cutbacks in DENR personnel, to ensure that facilities are meeting standards.

VIII. RELIEF

As established above, DENR issued a General Permit that fundamentally fails to protect the health and environment of residents living in proximity to permitted swine facilities, disproportionately affecting African Americans, Latinos, and Native Americans. Despite years of documentation demonstrating how these facilities—and particularly the dense concentration of swine facilities in communities in the eastern portion of the state—have polluted the water and air and affected the daily life of area residents, DENR issued a permit that contains essentially the same conditions as the last permit. This is entirely unacceptable and contrary to federal law.

First, to obtain funds, DENR must offer EPA the assurance that it will not undertake any action that violates Title VI, but DENR issued the General Permit without conducting an analysis of the potential for disproportionate health and environmental impacts on the basis of race and national origin. Complainants request that OCR investigate DENR's failure to satisfy the prerequisites for obtaining EPA funding and require DENR to complete a disproportionality analysis of its permitting program. Complainants further request that EPA require that DENR, in any future consideration of a permit program for industrial animal production in the state, conduct a robust analysis of disproportionate impact on the basis of race and ethnicity, including cumulative impacts from other nearby facilities, to ensure compliance with Title VI and its regulations.

Second, Complainants request that OCR conduct an investigation to determine whether DENR also violated Title VI and EPA's implementing regulations by issuing the revised general permit for swine waste management system in light of its grossly inadequate protections for the health and environment of people living in proximity to swine facilities, a permit that will have a statistically significant disproportionate impact on African Americans, Latinos and Native Americans. The General Permit simply fails to include conditions to prevent these facilities from continuing to injure human health and pollute the water and air. Study after study has shown that permitted swine facilities using the lagoon and sprayfield system in ways that are allowed by the General Permit spew pollution on surrounding communities, degrading air and water quality, injuring human health, and impacting quality of life. People living in proximity to industrial swine facilities, and particularly to multiple operations, have switched from using well water for fear that their water is contaminated with swine waste. They have given up fishing and hunting because they worry about the effect of pollution on the environment and surface water quality. They have complained that the pollution and overwhelming odor from these facilities makes it difficult to breathe, aggravates their allergies, and contributes to respiratory problems. People living in the shadow of permitted swine facilities are careful to

avoid spending time outside when the smell from the facilities is at its worse. They fear that their property values have declined because of proximity to the odors and other effects of swine facilities. Moreover, these long documented adverse effects of DENR's permitting program disproportionately affect African Americans, Latinos, and Native Americans, and they cannot be justified. DENR has alternatives, but has refused to exercise its authority to protect communities who for years have been struggling with the adverse effects of industrial swine facilities.

Community members have long asked why their way of life has been assaulted day in and day out by feces and urine from this industry, why so many industrial swine facilities were allowed to locate, densely packed, on the low lying coastal plain of the state, where soils are sandy and shallow and cannot absorb the massive amounts of waste that the industry creates. As journalist Wendy Nicole wrote in an article appearing in 2013 in Environmental Health Perspectives:

> The clustering of North Carolina's hog CAFOs in low-income, minority communities – and the health impacts that accompany them – has raised concerns of environmental injustice and environmental racism. As one pair of investigators explained, "[P]eople of color and the poor living in rural communities lacking the political capacity to resist are said to shoulder the adverse socio-economic, environmental, or health related effects of swine waste externalities without sharing in the economic benefits brought by industrial pork production."[122]

Today, however, Complainants are focusing on what DENR can do – indeed, has the legal obligation to do -- to protect them, and ask EPA to require, at a minimum, that DENR revise the General Permit to condition the operation of facilities on protections, including the installation and operation of waste management systems to prevent pollution, improved monitoring, and public reporting, among other things, to bring DENR into compliance with Title VI and EPA's regulations. Should DENR fail to come into compliance voluntarily, Complainants request that EPA initiate proceedings to suspend or terminate EPA funding to DENR in accordance with Title VI and 40 C.F.R. §§ 7.115(e), 7.110(c), 7.130(b).

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[122] Nicole, *supra* note 39 (quoting B. Edwards B & AE Ladd, *Race, Poverty, Political Capacity and the Spatial Distribution of Swine Waste in North Carolina*, 1982–1997, 9 North Carolina Geogr 55–77 (2001)).

Sincerely,

Dated: September 3, 2014

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