

**THE SWINE FLOODPLAIN BUYOUT PROGRAM:
A PROPOSED SOLUTION TO FLOOD-RELATED HOG LAGOON POLLUTION**

Jasmine Brodie Washington

I. INTRODUCTION

Animal Feed Operations (“AFO”), and their larger counterparts Concentrated Animal Feeding Operations (“CAFOs”), have been criticized by environmentalists, health professionals, community members, and others for decades.¹ Hurricane Florence and fears of hog lagoon flooding, along with new state legislation and nuisance lawsuits,² have continued the discussions on the risk that these operations pose to the public. In the aftermath of Hurricanes Matthew and Florence, concerned groups are paying new attention to the environmental risk posed by lagoons located in the low-lying areas of eastern North Carolina.³ This attention has led to new funding for a program to buy out hog feeding operations and convert the land into natural space through permanent conservation easements.

This paper will discuss Phase 5 of the Swine Floodplain Buyout Program (“buyout program”). First, an overview of the current state of AFOs and hog lagoons in North Carolina is given. Next, a brief history of the buyout program, and its renewed funding. Eligibility, the application process and selection are then evaluated, followed by the program’s supporters and an example of similar a program.

¹ See e.g. Carrie Hribar, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, NATIONAL ASSOCIATION OF LOCAL BOARDS OF HEALTH (2010), https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf; see also Michael Greger, Gowri Koneswaran, *The Public Health Impacts of Concentrated Animal Feeding Operations on Local Communities*, 33 *FAM COMMUNITY HEALTH* 373, 373-382 (2010); Adam Skolnick, *The CAFO Industry’s Impact on the Environment and Public Health*, SIERRA MAGAZINE (Feb. 23, 2017) <https://www.sierraclub.org/sierra/2017-2-march-april/feature/cafo-industrys-impact-environment-and-public-health>; Travis Fain, *Third hog farm trial starts in Raleigh, pitting pork against property rights*, WRAL (July 11, 2018) <https://www.wral.com/third-hog-farm-trial-starts-in-raleigh-pitting-pork-v-property-rights/17691051/>.

² Anne Blythe, *Hog Farmers Win New Protections as Lawmakers Override Roy Cooper’s Veto*, THE NEWS & OBSERVER (June 27, 2018), <https://www.newsobserver.com/news/politics-government/article213914154.html>.

³ Tyler Dukes, *What we know so far about Florence’s environmental impact*, WRAL (Oct. 4, 2018), <https://www.wral.com/what-we-know-so-far-about-florence-s-environmental-impact/17872392/>.

The renewed funding for an additional phase of the buyout program is not sufficient to close all hog lagoons that are in the 100-year floodplain, however it may be a small solution to the environmental threats posed by hog lagoons.

II. ANIMAL FEEDING OPERATIONS IN NORTH CAROLINA

Since 1992, the North Carolina Department of Environmental Quality (“DEQ”), formerly known as the North Carolina Department of Environmental and Natural Resources, has overseen the AFO Program.⁴ The AFO Program regulates “animal operations,” which are defined by section 14-215.10B of the North Carolina General Statutes⁵ as “any agricultural feedlot activity involving 250 or more swine, 100 or more confined cattle, 75 or more horses, 1,000 or more sheep, or 30,000 or more confined poultry with a liquid animal waste management system.”⁶

Many of these animal operations use anaerobic lagoons to manage their liquid waste.⁷ These lagoons are earth basins that are several feet deep, where animal waste and water are collected in order to break down the feces.⁸ These lagoons are not “aerated, heated or mixed.”⁹ Once the contents within a lagoon have sat for the necessary period of time, the contents are removed from the lagoon and typically sprayed as fertilizer on local crop fields.¹⁰

⁴ *AFO Program Summary*, N.C. DEP’T OF ENVTL. QUALITY, <https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/animal-feeding-operation-permits/afo-program-summary> (last visited Jan. 4, 2018).

⁵ *Id.*

⁶ N.C. GEN. STAT. §143-215.10B(1) (2013).

⁷ *Hog Farms & Hurricanes: A Primer on Lagoons and Flooding*, NC PORK COUNCIL (Sep. 11, 2018), <https://www.ncpork.org/primer/> [hereinafter *Hog Farms & Hurricanes*].

⁸ Wynne Davis, *Overflowing Hog Lagoons Raise Environmental Concerns in North Carolina*, NPR NEWS (Sep. 22, 2018), <https://www.npr.org/2018/09/22/650698240/hurricane-s-aftermath-floods-hog-lagoons-in-north-carolina>

⁹ *Wastewater Technology Fact Sheet: Anaerobic Lagoons*, UNITED STATES EPA 1, 3 (September 2002), <https://www3.epa.gov/npdes/pubs/alagoons.pdf>.

¹⁰ *AFO Program Summary*, *supra* note 4.

A. The State of AFOs and Hog Lagoons in North Carolina

Research has shown that AFOs and hog lagoons pose a risk to human and environmental health.¹¹ Studies have shown the negative effects that AFOs and CAFOs can have on ground water, surface water, and air quality.¹² A recent study from Duke University found that “North Carolina communities located near hog CAFOs had higher all-cause and infant mortality, mortality due to anemia, kidney disease, tuberculosis, septicemia, and higher admissions/[emergency department] visits of [low birth weight] infants.”¹³ While the study also states that these findings do not “establish causality,”¹⁴ it comes on the heel of several lawsuits against pork manufacturers in North Carolina.

In November of 2017, there were twenty-six cases with pending motions comprising the NC Swine Farm Litigation.¹⁵ In April of 2018, the jury in a federal case returned a verdict for ten neighbors of hog CAFOs and awarded them each \$75,000 in compensatory damages and fifty million dollars in punitive damages.¹⁶ The amount of punitive damages awarded was later reduced by the judge to \$250,000 per defendant.¹⁷ The suit was brought against Murphy-Brown, a subsidiary of Smithfield Foods, not against the farmers themselves, and focused on the industry’s use of anaerobic lagoons.¹⁸ The neighbors complained of the nuisance created by the

¹¹ See Hribar, *supra* note 1, at 3-9.

¹² *Id.* at 3-5.

¹³ Julia Kravchenko et al., *Mortality and Health Outcomes in North Carolina Communities Located in Close Proximity to Hog Concentrated Animal Feeding Operation*, 79 N.C. MED. JOURNAL 278, 278 (Sep-Oct 2018).

¹⁴ *Id.* at 286.

¹⁵ See *In re NC Swine Farm Nuisance Litig.*, No. 5:15-CV-00013-BR, 2017 WL 5178038, at *1 (E.D.N.C. Nov. 8, 2017).

¹⁶ *McKiver v. Murphy-Brown LLC*, No. 7:14-CV-180-BR, 2018 LEXIS 76286, at *2 (E.D.N.C. May 7, 2018).

¹⁷ *Id.* at *5.

¹⁸ See Blythe, *supra* note 2.

odor, flies, and noise from the operations.¹⁹ Later in 2018, damages were awarded to plaintiffs in two additional cases against Murphy-Brown.²⁰

The influx of lawsuits led the North Carolina legislature to pass the NC Farm Bill of 2018, which now greatly restricts the circumstance in which nuisance action may be filed against hog farmers, and other agricultural operations.²¹ The bill was ratified on June 15 and vetoed by Governor Roy Cooper on June 25.²² Two days later, the General Assembly overrode the veto in a 74-45 vote in the North Carolina House, and 37-9 vote in the North Carolina Senate.²³

In the aftermath of Hurricanes Mathew and Florence, national attention turned to the flood risks associated with hog lagoons. By design, lagoons are meant to sustain heavy rainfall and flooding.²⁴ Lagoons and animal production housing are constructed on the highest point of elevation on the property.²⁵ Lagoons must also have buffers of at least nineteen inches to minimize the risk of overflow or inundation during severe weather.²⁶ Due to their elevation and buffers, lagoons and production housing are the only structures above water at times after severe storms or flooding.²⁷

¹⁹ *Id.*

²⁰ *See* McGowan v. Murphy-Brown, LLC, No. 7:14-CV-00182-BR, 2018 LEXIS 215967 (E.D.N.C. Dec. 26, 2018). *See also* Katherine Tovar, *An Update on North Carolina Nuisance Lawsuits*, IOWA STATE UNIV. CTR. FOR AGRIC. LAW AND TAXATION (Aug. 31, 2018), <https://www.calt.iastate.edu/article/update-north-carolina-nuisance-lawsuits>.

²¹ An Act to Make Various Changes to the Agricultural Laws, 2018 N.C. SESS. LAWS 7-9.

²² *NC Farm Act of 2018*, N.C. GEN. ASSEMBLY, <https://www2.ncleg.net/BillLookup/2017/s711> (last visited Jan. 6, 2019).

²³ *Id.*

²⁴ *Hog Farms & Hurricanes*, *supra* note 7.

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

There are currently over 3,700 permitted hog lagoons in the state of North Carolina.²⁸ Analyses have shown that there are at least forty-five active North Carolina farms that are located in the 100-year²⁹ and 500-year floodplains.³⁰

According to DEQ, a lagoon is “inundated” when “surface water is surrounding and flowing into the lagoon.”³¹ A lagoon “discharges (overtopping)” when “material is or was leaving the lagoon.”³² Fifty-five hog lagoons were inundated with floodwater during Hurricane Floyd in 1999.³³ Fourteen lagoons were inundated during Hurricane Matthew in 2017.³⁴ During Hurricane Florence, ten lagoons were inundated, thirty-three were discharged, and six lagoons sustained structural damage.³⁵

III. THE FLOODPLAIN BUYOUT PROGRAM

A. Program Overview

The Swine Floodplain Buyout Program (“buyout program”) is a “program to purchase permanent conservation easements on properties within the 100-year floodplain that are currently used for swine production.”³⁶ The purpose of the program “is to reduce the potential for pollution from active animal operations by purchasing an owner’s certification to operate a

²⁸ *List of Permitted Animal Facilities*, N.C. DEP’T OF AGRIC. & CONSUMER SERVS. (Jan. 26, 2018), https://files.nc.gov/ncdeq/List_of_Permitted_Animal_Facilities%201-26-2018.xls?SdODtHdc46AxmSgSZ0z_o0dLzRFbNgZs.

²⁹ According to the Federal Emergency Management Agency (FEMA) the 100-year floodplain are the areas with a 1-percent annual change of flooding. *Flood Zones*, FEMA DEP’T OF HOMELAND SEC. (Sep. 14, 2018), <http://www.fema.gov/flood-zones>.

³⁰ Michael Biesecker & Gary Robertson, *Pollution Fears: Swollen rivers swamp ash dumps, hog farms*, THE ASSOCIATED PRESS (Sep. 17, 2018), <https://www.apnews.com/86d46161f59946cfa0e53636d879724c>.

³¹ *DEQ Dashboard*, N.C. DEP’T OF ENV. QUALITY (Oct. 9, 2018), <https://deq.nc.gov/news/deq-dashboard#animal-operations---swine-lagoon-facilities>.

³² *Id.*

³³ *Hog Farms & Hurricanes*, *supra* note 7.

³⁴ *Id.*

³⁵ See *DEQ Dashboard*, *supra* note 31; see also *Dukes*, *supra* note 3.

³⁶ *Swine Floodplain Buyout*, N.C. DEP’T OF AGRIC. & CONSUMER SERVS. <http://www.ncagr.gov/SWC/easementprograms/SwineFloodplainBuyout.html> (last visited Jan. 6, 2019).

feedlot within the 100-year floodplain.”³⁷ The buyout program is currently being run by the North Carolina Department of Agriculture and Consumer Services (“NCDA&CS”), in partnership with the USDA Natural Resource Conservation Service (“NRCS”).³⁸

The buyout program was created in November of 1999, following the devastation of Hurricanes Floyd, Irene, and Dennis.³⁹ Since then, the Clean Water Management Trust Fund Board of Trustees has authorized four grants, allocating \$18,699,500 for the NCDA&CS Soil & Water Conservation Division to manage the buyout programs.⁴⁰ In these four phases a total of 138 producers applied for the program, and forty-three were accepted.⁴¹

Phase 1 of the buyout program facilitated the closure of seventeen hog operations, with \$5.7 million in funding.⁴² Phase 2 began in 2002, and bought out a total of eighteen hog operations, with \$6.1 million.⁴³ Phase 3 began in 2004, and bought out five hog operations, with \$3.8 million.⁴⁴ Phase 4 began in 2007 and bought out three operations with \$3 million in funding.⁴⁵ Within these forty-three operations, there were 106 lagoons, and 1,218 acres of that were converted into conservation easements.⁴⁶

Research by the NCDA&CS Emergency Programs Division has shown that thirty-two of the forty-three hog farms that have been closed through the buyout program would have likely

³⁷ *AFO Program Summary*, *supra* note 4.

³⁸ *See id.*

³⁹ *Update on the Program to Acquire Conservation Easements on Swine Operations in the 100-Year Floodplain*, N.C. DEP’T OF AGRIC. & CONSUMER SERVS., <http://www.ncagr.gov/SWC/easementprograms/documents/SwineBuyoutOverview-3-17.docx> (last visited Jan. 6, 2018) [hereinafter *Update on the Program to Acquire Conservation Easements*].

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² *NC secures funding to continue program to close hog farms located in 100-year floodplain*, NC PORK COUNCIL (Apr. 17, 2018), <http://www.ncpork.org/nc-secures-funding-continue-voluntary-program-close-hog-farms-located-100-year-floodplain/>.

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Update on the Program to Acquire Conservation Easements*, *supra* note 39.

flooded during Hurricane Matthew.⁴⁷ For over ten years the buyout program lacked the funding necessary to continue. New funding was announced in 2018 for the buyout program.⁴⁸ The NCDA&CS reports that the buyout program has received \$2.5 million in funding from the USDA's Regional Conservation Partnership Program grant.⁴⁹

B. Eligibility and Restrictions

In order to be eligible for the buyout program, the operation must be located within the 100-year floodplain, be “subject to the requirements for obtaining a Certificate of Coverage under the Swine Waste Operation General Permit,” and “must have been in active use for animal production on or since October 8, 2016.”⁵⁰ Overall participants in the program are agreeing to “relinquish” their facility’s permits and “allow a permanent conservation easement on the land containing [their] production facilit[y].”⁵¹ Continued agricultural use of the permanent easement is allowed, but comes with restrictions and requirements.⁵² The easement would:

- Prohibit feedlots within the portion of the tract(s) covered by the easement. . . . The easement would specifically allow continued use of the site for other agricultural production operations such as pasture-based beef production, row-crop/hay production and vegetable farming, but it would prohibit use of the easement area as a spray field for swine waste.
- Prohibit non-agricultural development of the portion of the tract included in the easement area.
- Require development and implementation of a soil and water conservation plan for the area within the 100-year floodplain. NCDA&CS and NRCS will provide cost share to reimburse the landowner for a portion of the cost of installation of best management practices included in the plan.
- Require implementation of a permanent 50-foot wide forested riparian buffer on all perennial and intermittent streams and a 35-foot grassed filter strip on all field ditches located within or immediately contiguous to the tract(s) covered by the easement, where technically feasible. NCDA&CS will reimburse the landowner for 100% of the cost of installing the buffer.

⁴⁷ *NC secures funding to continue program to close hog farms located in 100-year floodplain, supra* note 42.

⁴⁸ *Id.*

⁴⁹ *Swine Floodplain Buyout, supra* note 36.

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² *Id.*

- Restrict the location of hazardous materials storage (to include fuel and fertilizer) and mixing areas to minimize water pollution potential from leaks, spills and flooding.⁵³

Since participants are required to give up their permits and waste management plan certification, they are barred from relocating their facility and continuing existing operations.⁵⁴ They are not barred from operating a new swine facility outside of the floodplain.⁵⁵ Participants are allowed to use the permanent easements for agricultural production; however, new production must be “low intensity.”⁵⁶ Production housing can be used for things such as hay storage or a greenhouse, but not for the confinement of animals.⁵⁷ Lagoons can remain in use as irrigation or fish ponds, but they “may not be used for intensive aquacultural production.”⁵⁸ There are also additional restrictions for the easement buffers.⁵⁹

C. The Application and Selection Process

The buyout program is voluntary, and producers must apply and be selected to participate.⁶⁰ Interested producers must submit an application in which they must list “an offer to NCDA&CS for the total dollar amount they are willing to accept as compensation for ceasing production . . . and allowing a permanent conservation easement to be place on their property.”⁶¹ The application can be found on the NCDA&CS website. Among other things, the two-page application asks producers to detail the number of times the property was flooded prior to 2016,

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Program to Acquire Conservation Easements on Swine Operations within the 100-Year Floodplain Frequently Asked Questions*, N.C. DEP’T OF AGRIC. & CONSUMER SERVS., 3 (2018) [hereinafter *FAQ*], <http://www.ncagr.gov/SWC/easementprograms/SwineFloodplainBuyout.html>.

⁵⁶ *Id.*

⁵⁷ *Id.* at 9.

⁵⁸ *Id.* at 4.

⁵⁹ *Id.* at 2-8.

⁶⁰ *Swine Floodplain Buyout*, *supra* note 36.

⁶¹ *Id.*

and the “number of acres offered for inclusion in the conservation easement.”⁶² Applications must also include a map “depicting the tract containing the swine operation and illustrating the area being offered for inclusion in the easement area.”⁶³ The tract must contain at least twenty-acres within the 100-year floodplain, as this is the minimum acreage that the easement must cover.⁶⁴ The proposed area for the easement must also include all “streamside lands on the tract that receive surface drainage from the swine production houses or lagoon(s).”⁶⁵

NCDA&CS and NRCS advise applicant producers to consider several factors, including opportunity cost and current debts, when preparing their bids.⁶⁶ Participants in the buyout program are responsible for closing their lagoons “in accordance with established standards of NRCS.”⁶⁷ The cost for lagoon closure, implementing the conservation plan, implementing buffers, and “necessary surveys” are not part of the bid, because 100 percent of these cost will be reimbursed to participant producers.⁶⁸ For Phase 5, applications must be submitted between October 10 and November 30, 2018.⁶⁹

In the first four phases of the buyout program, the NCDA&CS Division of Soil & Water Conservation created an advisory panel with representatives from multiple institutions with vested interest in North Carolina swine production, including the NC Pork Council, NC Cooperative Extension Services, and the Conservation Council of North Carolina.⁷⁰ This advisory panel determined which bids would be accepted by assigning point values to six water

⁶² *Application for Swine Facility Buyout*, N.C. DEP’T OF AGRIC. & CONSUMER SERVS., <http://www.ncagr.gov/SWC/easementprograms/SwineFloodplainBuyout.html>.

⁶³ *FAQ*, *supra* note 55, at 1.

⁶⁴ *Swine Floodplain Buyout*, *supra* note 36.

⁶⁵ *Id.*

⁶⁶ *FAQ*, *supra* note 55 at 5.

⁶⁷ *Swine Floodplain Buyout*, *supra* note 36.

⁶⁸ *FAQ*, *supra* note 55, at 4.

⁶⁹ *Id.*

⁷⁰ *Update on the Program to Acquire Conservation Easements*, *supra* note 39.

quality criteria, and weighing those points against the applicant's bid price.⁷¹ These criteria included structural conditions, lagoon dike elevation, production house elevation, flood history, distance to protected bodies of water, and the "applicant's willingness to install a 100 foot buffer (instead of the minimum 50' buffer) adjacent to all blue line streams in the easement area."⁷²

For Phase 5, the NCDA&CS will offer acceptance to applicants that "provid[e] the greatest overall water quality value."⁷³ They will consider the bid price in relation to the facility's susceptibility to flooding, "the size of the operation," "the structural conditions of the lagoon," and "downstream water uses."⁷⁴ Eligible applicants will then be assigned to one of three priority groups: High Priority Sites (Group A), Medium Priority Sites (Group B), and Low Priority Sites (Group C).⁷⁵ The program will offer participation to applicants in Group A first, followed by Group B, then C.⁷⁶

D. Supporters

The North Carolina Pork Council, the Farm Bureau, North Carolina Cooperative Extension Programs, the Conservation Council and members of the General Assembly have expressed support for the buyout program. Steve Troxler, North Carolina Agriculture Commissioner, called the program "a successful approach to reducing the number of swine operations at risk of flooding in future storm events [that] gives farmers options."⁷⁷ The NCDA&CS reports that Phase 5 of the program is being funded by federal resources.⁷⁸

⁷¹ *Id.*

⁷² *Id.*

⁷³ *FAQ*, *supra* note 55, at 6.

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *NCDA&CS Announces Fifth Phase of Voluntary Floodplain Swine Buyout Program*, N.C. DEP'T OF AGRIC. & CONSUMER SERVS. (Oct. 11, 2018), <http://www.ncagr.gov/paffairs/release/2018/NCDACSNewsNCDACSannouncesfifthphaseofvoluntaryfloodplainswinebuyoutprogram.htm>.

⁷⁸ *Swine Floodplain Buyout*, *supra* note 36.

The Swine Floodplain Buyout Program is not the only program of its kind. With \$6 million in funding, the N.C. Foundation for Soil and Water Conservation's Inactive Animal Waste Lagoon Closure Program facilitated the closure of 226 inactive animal waste lagoons.⁷⁹ This program ran from 2002-2010, and remediated over 277 million gallons of waste.⁸⁰

IV. CONCLUSION

If past numbers are any indication of future buyout cost per operation, then the \$2.5 million in funding will facilitate the closure of 1-3 operations. This will leave dozens of hog farms and lagoons susceptible to structural damage in the next hurricane or severe weather event. It should also be remembered that the buyout program only funds the closure of hog lagoons. As of January 2018, there were over 4,200 permitted animal waste lagoons across the state of North Carolina.⁸¹ For now, the Swine Floodplain Buyout Program may be one small solution to the environmental issues that swine AFOs bring.

⁷⁹ *Inactive Animal Waste Lagoon Closure Program*, NORTH CAROLINA SOIL & WATER CONSERVATION, <http://ncsoilwater.org/programs/animal-waste-lagoon-closure/> (last visited Jan. 4, 2019).

⁸⁰ *Id.*

⁸¹ *List of Permitted Animal Facilities*, *supra* note 28.