

# THE SITING OF CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOs): INFORMATION GAPS FOR ACHIEVING ENVIRONMENTAL JUSTICE

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*REFERENCE:* *Proceedings of the 1999 Georgia Water Resources Conference*, held March 30-31, 1999, at the University of Georgia. Kathryn J. Hatcher, editor, Institute of Ecology, The University of Georgia, Athens, Georgia.

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**Abstract.** Concentrated animal feeding operations (CAFOs) are permitted, large-scale animal agricultural facilities that have the potential to negatively affect the environment, human health, and the economic structure of surrounding communities. This study examines whether the Georgia Environmental Protection Division (EPD) has sufficient location information to ensure environmental justice when they permit these facilities. The goal of this study was to use geographic information system technology to create an accurate coverage of the ten permitted dairy operations in the state using the EPD's location data. This coverage must be precise enough to apply demographic data to ask questions about the proportional risk to low-income and minority communities. The study indicates that the EPD does not have, or is not making available to the public, adequate geographic data about its permitted operations. Therefore, the Environmental Protection Division's ethical obligation to ensure environmental justice for all of Georgia's citizens may be compromised.

## INTRODUCTION

The specific purpose of this paper was to determine whether current data collection techniques related to the locations of permitted concentrated animal feeding operations (CAFOs) allow the government or private citizens to ensure environmental justice. Not only does the quality of location information affect the ability of the government to ensure environmental justice, but this information also has important ramifications in terms of water resources management in Georgia. For example, by knowing precisely where CAFOs are located, more water quality monitoring can be performed to ensure that this permitted activity does not lead to water quality degradation, available land for nutrient distribution can be verified, and a voluntary private well monitoring system can be established. CAFO location information is vital to the United States Environmental Protection Agency (EPA), the Georgia

Environmental Protection Division (EPD), the United States Department of Agriculture's Natural Resources Conservation Service (NRCS), the United States Fish & Wildlife Service, resource managers, local governments, and private citizens. This information should be an integral part of watershed management and decision-making, as well as fostering compliance with the spirit of Executive Order 12898.

## BACKGROUND

### Environmental Justice

**What is Environmental Justice?** The goal of the environmental justice movement is to prevent the inequitable distribution of environmental hazards on low-income or minority communities (Bunyavanich et al, 1998; Office of Enforcement and Compliance Assurance, 1998). A growing body of evidence shows that people of color are subjected to a disproportionately large number of health and environmental risks in their neighborhoods and on the job. Examples include childhood lead poisoning and exposure to pesticides in farm workers (Bullard, 1993).

**Actions by the Federal Government.** On February 11, 1994, President Bill Clinton signed Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The purpose of this executive order was to ensure environmental justice by mandating that each Federal agency identify and address, as appropriate, "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations" (Exec. Order No. 12898).

**Importance of Adequate Data.** Research, data collection, and analysis were a major emphasis in this Executive Order. In Section 3-302, each agency must not only assess and compare environmental and human

health risks borne by various populations, but must also maintain and analyze information on the race, national origin, income level, etc. for areas surrounding facilities that are expected to have a substantial environmental, human health, or economic effect on the surrounding populations. Furthermore, each Federal agency is supposed to share information and eliminate unnecessary duplication through the use of existing databases and cooperative agreements among Federal agencies and with state, local, and tribal governments (ibid).

### **Concentrated Animal Feeding Operations (CAFOs)**

#### **Why are CAFOs an Environmental Justice Issue?**

CAFOs can certainly have environmental, human health, and economic impacts on communities surrounding these facilities. For example, in North Carolina, 10% of the wells near CAFOs have abnormally high levels of nitrates in drinking water (Rudo, 1998). These high nitrate levels can have human health impacts, as well as environmental impacts. Studies have also shown that nearby residents of CAFOs have increased psychological stress due to frequent exposures to intense odors (Schiffman, 1998). Workers in CAFOs can have increased asthma and illnesses, such as toxic dust syndrome (Donham and Thu, 1995). Proponents and opponents of CAFOs agree that these operations have an economic impact on the surrounding community, although there is disagreement over whether the economic impact is positive or negative. These few examples show that concentrated animal feeding operations fit the criteria to determine when a facility should be considered for evaluation under the President's Environmental Justice Executive Order.

### **EXPERIMENTAL DESIGN**

The hypothesis is that the Georgia Environmental Protection Division has appropriate, precise location information in their permitting files to input CAFOs into a geographic information system (GIS), which could then be used to determine whether there is a disproportionately high number of CAFOs in minority or low-income communities. The experimental design included obtaining available location information for the ten permitted dairies in Georgia from the EPD. In addition, other publicly available sources, such as the United States Geological Survey, NRCS, and the University of Georgia, were consulted to see if they had

access to this information. The hypothesis would be rejected if I were unable to construct an accurate GIS coverage using the EPD's location information and other publicly available data layers to cross-reference the location of the CAFOs. This data layer would have to be precise enough to be able to compare the CAFO's location to demographic data collected by the U.S. Census Bureau in order to be effective in determining environmental justice.

### **METHODS**

This project used geographic information system (GIS) technology, including ESRI's Arc/Info and ArcView software. Methods included downloading Georgia Department of Transportation digital maps from the World Wide Web and correcting the coordinate systems and projections to a standard UTM projection in Arc/Info. I then opened these individual maps on top of statewide county and town coverages and verified that the coordinate system conversions were successful in ArcView. By designing queries to find certain roads, I attempted to pinpoint correct locations of the permitted dairies, based on the location information given to me from the Environmental Protection Division.

### **CONCLUSIONS**

The Environmental Protection Division does not have adequate location information on their permitted dairies. I felt relatively confident that the locations of two of the ten permitted dairies were accurate, at least to the voting precinct level. Even these two positions, however, were not completely accurate, because one was based on a road intersection and one was based on a set number of miles from a town. Thus, these points would be ineffective for use in other water resource management applications. The other eight permitted dairies were not identified with any certainty. Thus, the hypothesis is rejected.

### **DISCUSSION**

The implications from this conclusion are striking. The Environmental Protection Division and other governmental agencies, water resource managers, local governments, and citizens do not have the information necessary to ensure environmental justice. Perhaps the

EPD does not have a specific mandate to comply with Executive Order 12898. However, it could certainly be argued that if the U.S. EPA delegates a program that includes permitting facilities that have the potential to adversely affect the environmental, human health, or economic conditions of surrounding communities, they must also delegate the responsibility of ensuring environmental justice in these permit decisions. Furthermore, in the Enforcement and Compliance Assurance Plan submitted by the EPD in October, 1998, the EPA required that targeting of inspections be based on a scheme which included environmental justice as one of the variables (Office of Enforcement and Compliance Assurance, 1998). The EPD's plan did not address this requirement.

In North Carolina, GIS technology was used to show environmental injustice in the siting of large swine operations, as well as inequitable enforcement of the environmental laws related to swine farms, with less enforcement in minority communities (Raine, 1998). By having the information to do a study of this type, the North Carolina Department of Environment & Natural Resources has the opportunity to improve their service to citizens in low-income and minority communities. In Georgia, the information necessary to determine how our Environmental Protection Division is performing in this regard is not available. This lack of information makes improvements in environmental management unlikely in these communities. Ethically, the EPD has an obligation to ensure environmental justice, but without adequate information, they can not possibly accomplish this task.

## RECOMMENDATIONS

The Board of the Georgia Department of Natural Resources, which oversees the Environmental Protection Division, should insist that we obtain the information necessary to guarantee environmental justice in government actions, including permitting CAFOs. While this information could probably be obtained from the U.S. Department of Agriculture or the State Veterinarian, if these entities will not share this information, the EPD should obtain it during its routine on-site inspections. This data must be collected for use in total maximum daily load (TMDL) calculations, but it should be collected immediately using global positioning systems, which can then be used in geographic information systems. In addition, no new CAFOs should be permitted until a thorough environmental justice analysis has been conducted.

## ACKNOWLEDGMENTS

I would like to thank Mr. Mike Creason with the Georgia EPD for providing me with the available location data. Dr. E. Lynn Usery, John Paul Schmidt, and Brian Toth provided me with valuable assistance with the GIS component of the project. Rob Strangia, of the University of Georgia Reapportionment Project, and Dr. Charles Bullock, of the University of Georgia Political Science Department, provided demographic data and advice. Finally, I would like to acknowledge Supinda Bunyavanich, Chris Stephens, Ryan Space, Marina Vishnevetsky, Jeremy Anderson, and the Harry S. Truman Foundation for their support and assistance with environmental justice issues.

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