

Meadow Creek Water Management Plan
(Technical Report)

**Assessing the Morality of Syngenta in the Production and Distribution of Atrazine Using
Care Ethics**
(STS Research Paper)

An Undergraduate Thesis Portfolio

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Socio-technical Synthesis: Green Infrastructure and the Ethics of Atrazine

My technical project and STS research are loosely related by the ideas of sustainability and environmentalism. The technical portion of my capstone focused on the implementation of green infrastructure in the Meadow Creek watershed. Green infrastructure improves water quality and reduces runoff, which helps prevent erosion and sedimentation of waterways. The technical project also looks at social factors related to the inequitable distribution of green infrastructure. My STS research focused on the morality of Syngenta in their production and distribution of the chemical atrazine. The widespread usage of pesticides is of concern to many environmentalists who suggest we make decisions using the precautionary principle because we don't know all the damage these pesticides may cause in the environment. Both projects consider sustainability and environmentalism while incorporating fresh perspectives, whether it be the role of socioeconomic factors in the implementation of a technology or the consideration of ethics in scientific decision-making.

My technical project involved an analysis of technical and social factors in the Meadow Creek watershed to determine where green infrastructure is most needed and would have the greatest impact. The social factors analysis was primarily conducted using Geographic Information Systems and US Census data, and the technical factors through the use of land use data and SWMM modeling. Our team helped develop code that produced the monetary cost and reductions of volume, peak flow, and pollutants for different green infrastructure implementation scenarios. This data allowed us to determine which area of the watershed would be best to create a detailed design for. The final detailed design shows the placement of green infrastructure on the selected site and section views of each type of green infrastructure we proposed.

My STS research explores the morality of Syngenta in their production and distribution of the chemical atrazine using the ethical framework of care ethics. Atrazine is the main ingredient in a pesticide aimed to kill weeds, but it is harmful to wildlife and persistent in the environment. The Environmental Protection Agency has questioned the safety of atrazine, but has never banned its use in the United States. I claim that Syngenta has not acted morally because it has not provided proper care to people and the environment. The goal of my research is to show that examining ethics in the decision-making process is important and that science alone cannot provide a complete picture.

Working on these two projects in tandem led to a more thoughtful consideration of both topics than I would have had working on either project alone. The idea of environmental justice came up in my exploration of both the inequitable distribution of green infrastructure and the morality of atrazine. Even though my projects did not have environmental justice as the main focus, it is a really important idea to explore so that our society can work towards a better future. Furthermore, I was able to think about the inequitable distribution of green infrastructure from a care ethics perspective. Specifically, I considered the relationships between engineers, developers, local governments, and community members, and questioned who is responsible for meeting the needs of disadvantaged communities and providing competent care. I would not have thought about these ideas and questions if I hadn't done my STS research using the care ethics framework. Working on these projects simultaneously was definitely beneficial for facilitating thoughtful consideration of both topics and connections between them.