Community Engagement for Integrated Stormwater Management Implementation

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Traditional systems of moving stormwater away from development can mitigate flooding, but not without creating unintended consequences. The rapid conveyance of urban stormwater through networks of pipes can transport large volumes of untreated stormwater into receiving waters, which poses a threat to current environmental standards and the health and safety of downstream communities. Some jurisdictions are augmenting this traditional approach with parcel level stormwater management practices that utilize green infrastructure. Green infrastructure seeks to reduce and treat stormwater at its source and includes stormwater control measures such as rain gardens, cisterns, green roofs, permeable pavers, bioswales, and wetlands.

However, the effective and efficient implementation of green infrastructure in an urban setting necessitates the placement of stormwater control measures on private property, and thus, requires significant community buy-in. This study investigates the role of community engagement in the successful implementation of green infrastructure on private property. Public participation within planning processes is associated with benefits such as the cultivation of social networks and social capacity, increased trust among government, institutions, and community members, and higher rates of plan and policy implementation (Burby, 2003; Innes, 1996; Laurian & Shaw, 2008).

The overreaching question guiding this research is: does the quality of planning inputs and the magnitude and type of community engagement help explain variation in the implementation of green infrastructure projects on private property? Using a case study design, we content analyzed Chapel Hill plans relevant to stormwater management with a particular focus on the Bolin Creek Restoration Plan and conducted semi-structured interviews in the Chapel Hill and Durham area. We began with established best practices to guide the analysis of a plan's structure and content. The Bolin Creek Restoration Plan does include the nine recommended elements of watershed planning. It, however, did not tie those elements to action. The importance placed on decentralized stormwater management within the plan's narrative was incongruent with the plan's recommendations, which prioritized the implementation of large-scale, centralized solutions in some of the watershed's most socio-economically sensitive regions.

To examine the magnitude, type, and reception of community engagement activities around stormwater management, we conducted interviews in the Bolin Creek watershed of Chapel Hill

and the Ellerbe creek watershed in Durham. Bolin Creek was selected as a pilot site due to the mixture of rural and urbanized land uses as well as sociodemographic variation. A limited number of interviews were conducted in Durham to learn more about their Rain Catchers program, which included, among other programming, a reverse auction to secure the participation of community members in stormwater management on private property.

In total, twenty-seven interviews have been completed with the project. These interviews range from 30 minutes to roughly 90 minutes and cover topics such as structure, frequency and type of community engagement projects, relationships with and between town agencies, and willingness to implement a range of stormwater management practices on private property. Some of the emerging themes include:

Quality of Communication and Trust. While some interviewees mention a positive shift in the quality of engagement with town agencies, previous restoration projects have been met with community resistance. This resistance does not appear to be linked to stormwater management itself, but to past resident-town interactions that did not build trust. For example, interviewees state that they are heard but not listened to. In other words, current engagement activities gather community input, but that input does not seem to guide subsequent actions. The concerns about implementation were echoed by town officials who revealed that the majority of information regarding the success or failure of past community engagement events is conveyed informally if at all.

Data and Design. A number of community interviewees endorsed the goal of improved water quality associated with green infrastructure, but expressed doubts about whether their property was large enough to contribute to the water quality issues at the scale of Jordan Lake. In some cases, interviewees stated they would like to see if and how much stormwater was coming off their individual parcel before agreeing to learn more about stormwater control measures on their property. Data is necessary to convince residents decentralized stormwater management is necessary, and that design consultation will ensure the aesthetics of the stormwater control measure will not detract from property values.

Funding. Not surprisingly, the source of funding for decentralized stormwater management was a recurring theme. Both town officials and residents question how projects would be funded and how prioritization would take place.

Each of these preliminary research findings fits into the larger Nutrient Study. First, the quality of communication and past lack of trust can derail restoration projects. A new project proposed by a new person does not occur in isolation of past community distrust. In the same vein, there are possibilities to build on existing community networks to gain community entrée and craft appropriate, community-endorsed strategies. Some communities will demand highly specialized, parcel level data to understand their stormwater contribution and that data may need to be in place before they are willing to engage in the design process. Finally, innovative strategies like the reverse auction may help inform lower cost strategies by clarifying residents' willingness to pay as part of program outreach.

As a future step, the project will continue interviewing in Chapel Hill and Durham with an emphasis on community members especially residents from economically marginalized areas. The project will also expand and replicate the content analysis and interviewing in three jurisdictions within the Jordan Lake watershed: Apex, Cary, and Morrisville.