PUBLIC PARTICIPATION IN WATERSHED MANAGEMENT: AN EVALUATION OF THE FALLS LAKE STAKEHOLDER PROJECT

by
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ABSTRACT

Public participation has become an increasingly important component of effective watershed management over the last twenty years. Conducted by the North Carolina Division of Water Quality, the Falls Lake Stakeholder Project is a collaborative stakeholder process that includes interested parties in drafting a federally mandated Nutrient Management Strategy. The Falls Lake Stakeholder Project worked to improve the stakeholder process by responding to issues recognized in a prior North Carolina Division of Water Quality project, the Jordan Lake Stakeholder Project.

This master's project evaluated the Falls Lake Stakeholder Project based on a set of predetermined factors – substantive, procedural, and outcome – to allow for cross-case comparison. Data analyzed was gathered through archival research, stakeholder meeting observation, stakeholder surveys, and convener interviews. The stakeholder survey and convener interview contained questions about five procedural evaluative criteria, including process design, process fairness, process execution, technical support, and predicted outcomes.

Results were based on fourteen returned stakeholder surveys and four convener interviews. Analysis of results indicated that technical support in the Falls Lake Stakeholder Project was the criterion with which stakeholders were least satisfied. Lessons learned from the Jordan Lake Stakeholder Project were applied in the Falls Lake Stakeholder Project and improved overall stakeholder experiences. Many of these aspects introduced in the process, including a technical advisory committee, subcommittees, and a wiki, may continue to be improved and applied to future North Carolina Division of Water Quality stakeholder processes.

ACKNOWLEDGEMENTS

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I. INTRODUCTION

With the environment undergoing constant change, both human-induced and natural, the field of environmental protection must adapt to meet the demands of those changes. Historically, water management began with a focus on sources at single locations – lakes, rivers, etc. (Sabatier et al. 2005). As the concept of water quality protection took on a more holistic view, focusing on water quality as a function of the entire watershed, management strategies adjusted in response. Although environmental management decisions historically have been notably undemocratic (Beierle and Cayford 2002), watershed management approaches have recently been restructured from a top-down to a bottom-up approach with the incorporation of public involvement (Sabatier et al. 2005). These collaborative management approaches are continuing to adapt to the ever changing needs of environmental protection.

The Falls Lake Stakeholder Project (FLSP) is a collaborative stakeholder process conducted by the North Carolina Division of Water Quality (NC DWQ), the Upper Neuse River Basin Association (UNRBA), and Triangle J Council of Governments (TJCOG). Falls Lake, located in the Upper Neuse River Basin of North Carolina, was placed on EPA's federal impaired waters list in 2008 (Huisman 2008a). NC DWQ convened the stakeholder project in order to develop the required Nutrient Management Strategy. The FLSP occurs on the heels of another public participation project, the Jordan Lake Stakeholder Project (JLSP), which was also convened by NC DWQ, and held from 2003 through 2004 (Wyman 2008). Due to both geographic proximity and similar water quality problems, aspects of the FLSP were intentionally developed to address – either to reinforce or avoid – several issues from the JLSP.

This Falls Lake case study evaluated the FLSP generally, as a collaborative approach to watershed management, and more specifically, in comparison with the JLSP. A comparative

analysis examined how the processes of the FLSP were modified in response to the JLSP, and how the FLSP may influence future stakeholder projects. Feedback developed from this master's project is intended to be useful to NC DWQ in assessing their approach to public participation in two ways – by identifying particular aspects of the project with (1) potential for improvement and (2) potential to be used with success in future projects. In part, this project contributed to the broader research effort of Dr. Lynn Maguire to compare several stakeholder processes, also conducted by NC DWQ over the last few years (Maguire 2003; Maguire and Lind 2003). Ultimately, the compilation of case studies provided critical feedback to the conveners, NC DWQ. Without feedback, methods and processes that were ineffective would go undetected and innovative solutions would not be developed. Evaluative feedback ensures the public participation processes are as effective as possible in protecting our nation's water resources.

II. BACKGROUND

Falls Lake, also known as the Falls of the Neuse Reservoir, is located in the Upper Neuse River Basin of North Carolina (Fig. 1 and 2).

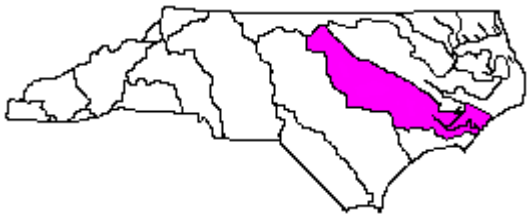


Figure 1. Map of North Carolina river basins. The Neuse River Basin in which the Falls Lake watershed is located is highlighted (USGS 2010).

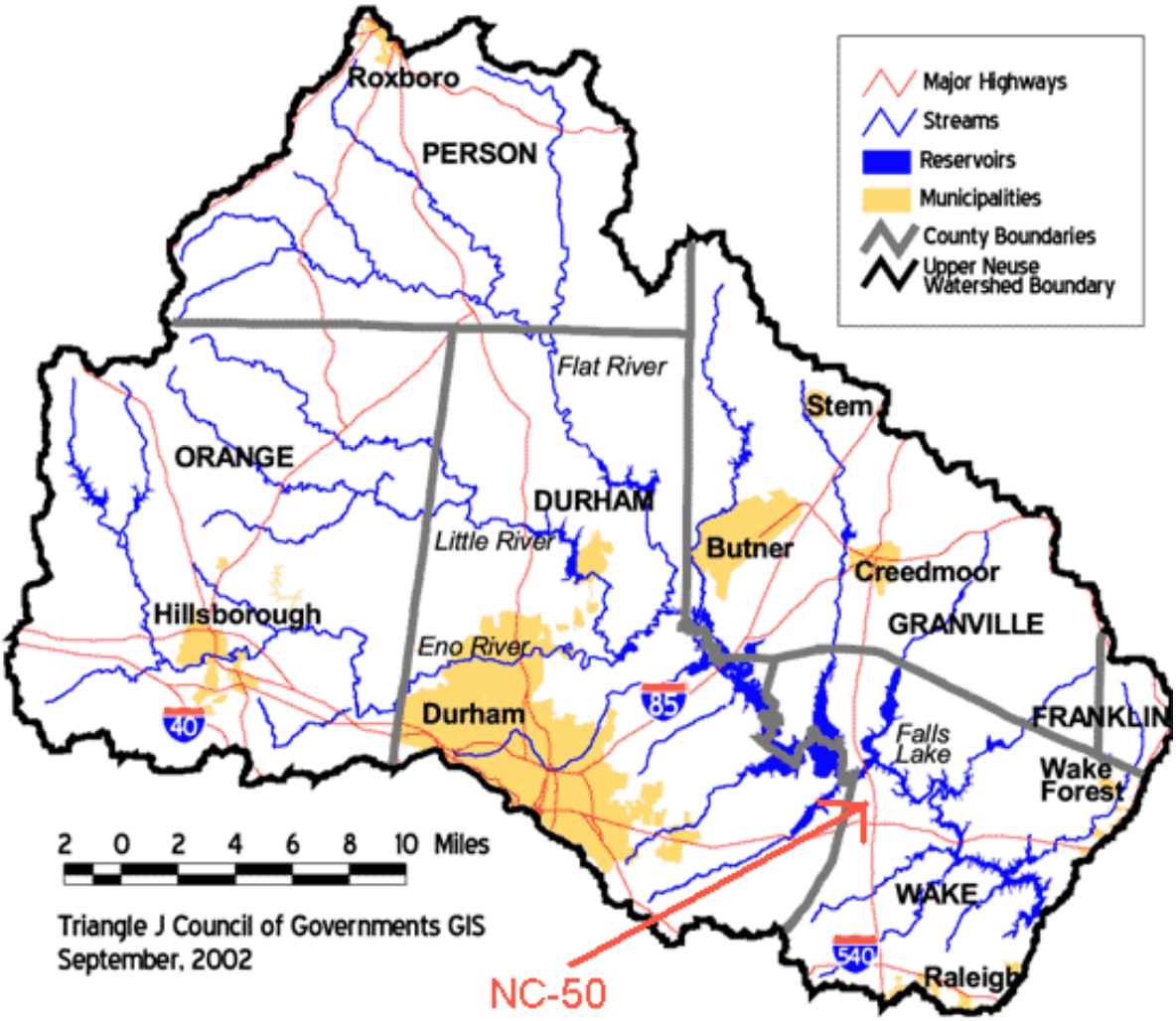


Figure 2. Map outlining the Upper Neuse River basin and depicting Falls Lake, highlighting NC-50 as the watershed division (UNRBA 2009).

Falls Lake is a 12,500 acre artificial reservoir (USACE 2009). In addition to serving as a regional recreational area, it provides drinking water to over 400,000 residents of Wake County (Wise 2009). In 2008, Falls Lake was listed on the EPA's federal impaired waters list for exceeding chlorophyll a standards and, in certain areas, turbidity standards (Schlegel 2008). Under Senate Bill 981 (SL 2005-190 /SL 2006-259), the Environmental Management Commission mandated that water bodies with drinking supply uses classified as nutrient sensitive waters have a Nutrient Management Strategy (Huisman 2008). The goal of the

stakeholder project, as stated by NC DWQ, was to meet these standards with the Nutrient Management Strategy in a way that was well-received by the general public. While most of Falls Lake is in Wake County, feeding tributaries are found in Orange, Person, Durham, and Granville counties, resulting in an assemblage of local governments, agencies, and citizens with varying interest in the strategy development (Wise 2009). Obstacles in the project included monetary cost and time, as well as public concern for cost of regulation implementation, funded by tax dollars. Furthermore, NC DWQ operated under a compressed timeline because some local authorities resisted extending the process.

Established by the Environmental Management Commission as part of the Department of Environment and Natural Resources, NC DWQ is the agency charged with protecting the state's surface water and groundwater resources (NC DWQ 2009). To do so, it develops all regulatory programs and regulations, including the Nutrient Management Strategy for Falls Lake. John Huisman, Environmental Senior Specialist for NC DWQ, acted as the lead for this strategy development. Partnered with Triangle J Council of Governments, the stakeholder project was assembled to support and assist NC DWQ with developing the Nutrient Management Strategy. Triangle J Council of Governments was established by the General Assembly in 1972 as a collection of municipal and county governments that support local governments in its region (TJCOG 2009). This organization operates in Region J of North Carolina, which includes Chatham, Durham, Johnston, Lee, Moore, Orange and Wake counties – many of the areas affected by the impairment of Falls Lake and the Nutrient Management Strategy implementation. Triangle J Council of Governments was asked by NC DWQ to serve as the facilitator in this project due to their working knowledge of the participants – people who would be potentially interested and/or affected by the rules. The FLSP facilitator was Mike Schlegel, Principal Water

Resources Planner for Triangle J Council of Governments. A third partner, the Upper Neuse River Basin Association, was the primary source of funding for the FLSP, in conjunction with NC DWQ. The Upper Neuse River Basin Association consists of local governments, agencies, communities, businesses, and citizens with the primary mission of protecting water quality in the Upper Neuse River Basin (UNRBA 2009). The Upper Neuse River Basin Association's commitment to its constituents made them an interested party and resulted in the role of an active stakeholder rather than a convener or facilitator.

III. PUBLIC PARTICIPATION IN ENVIRONMENTAL DECISION-MAKING

Public participation is defined as "the process by which public concerns, needs, and values are incorporated into governmental and corporate decision making" and it serves several purposes (Creighton 2005). Originally, public participation in administrative decisions provided accountability to government representatives in charge by adding non-governmental knowledge to the table, but it has since expanded to help shape the decisions and laws of the nation (Beierle and Cayford 2002).

a. Review of Watershed Management Approaches

Decision-making approaches in the United States have evolved over the last few decades, especially in the field of environmental management (Beierle and Cayford 2002). Until the mid-1900's, a managerial approach, in which government officials were solely responsible for determining and working toward the common public good, was the primary mechanism of decision-making. Recently, methods of managing watersheds have shifted away from managerial and toward collaborative approaches, where individuals representing different interests in the same decision work together for a solution (Sabatier et al. 2005). This shift was

due in part to the Administrative Procedure Act (APA) of 1946 (P.L. 79-404) that called for decision-making agencies to provide public notice as well as the opportunity for public comment on potential rules. In response to a series of environmental crises such as the Cuyahoga River fire, the Santa Barbara oil spill, and toxics in the Love Canal, a series of environmental regulations were passed to control water quality. In 1972 the Federal Water Pollution Control Act (33 U.S.C. §1251) was passed and later deemed not effective at controlling nonpoint source pollution. To pick up the slack, the 1987 Clean Water Act Amendments (P.L. 100-4) were added. In response to the Clean Water Act statute that mandated state and local government responsibility over the issue of nonpoint source pollution, EPA declared that it would be handled on a "watershed basis," giving rise to what is now referred to as the "Watershed Collaboration Era" (Sabatier et al. 2005). A popular technique of public participation used to manage watersheds is stakeholder involvement (Sabatier et al. 2005), where "interested and affected parties to an assessment or a decision" are gathered to provide input, often on a consensus-based standard (National Research Council 2008).

b. ***Importance of Collaboration in Watershed Management***

Due to the interdisciplinary nature of environmental problems, the need for collaborative decision-making has been particularly visible in the field of watershed management (Sabatier et al. 2005). As the task of managing water resources became more complex, it became increasingly necessary to include more players in the decision-making process. Knowledge held by different sectors may not overlap, and it is often most useful when combined; for example, federal officials have expertise regarding regulations, but local governments are often more in tune with the specifics of a problem (National Resource Council 2008). Although not definitively proven (Maguire and Steelman 2006), the ultimate intention of public participation

processes is to create a better solution to the problem in question than could have been produced without the input of the stakeholders (National Resource Council 2008). This improvement in quality comes from stakeholders with varying interests all gathering information, identifying alternatives and outcomes, and clarifying one common problem to reach a conclusion that benefits all parties (Sabatier et al. 2005). Furthermore, seeking consensus, general agreement, or public acceptance of the problem and/or the process in a public participation process improves the legitimacy of an agency decision.

Stakeholder concerns regarding public participation range from how their input will be used in the process to concern for environmental integrity (Borsuk et al. 2001). Specific concerns include sufficient representation of involved parties, time requirements, self-interest and/or trust, solution effectiveness, and permanence of the process (Sabatier et al. 2005). Procedural justice is another important component of collaborative processes related to stakeholder "perceptions of the processes by which the regulations were developed" (Maguire and Lind 2003). Acceptance of decisions made by authorities, like NC DWQ, is determined by several factors, including how stakeholders are treated by conveners and one another, and the belief that conveners are unbiased. As the inclusion of public participation in environmental, and more specifically watershed, management progresses, it is important to make modifications and improvements as necessary to maintain its legitimacy as a tool in these areas.

North Carolina has a relatively long history of using collaboration, specifically in the form of stakeholder participation, to develop watershed management policies (Maguire 2006). Using somewhat different approaches, stakeholder processes were used to develop rules for the Neuse and Tar-Pamlico watersheds, as well as the previously discussed Jordan Lake. In total, NC DWQ convened approximately 20 public participation processes (Maguire and Steelman

2006). The Jordan Lake Stakeholder Project convened in 2003 to develop a Total Maximum Daily Load for Jordan Lake, classified as a nutrient sensitive body of water. EPA approved the Total Maximum Daily Load standards in 2007. Unfortunately, the recommendations made by NC DWQ were not readily accepted by the public and stakeholders did not feel the Total Maximum Daily Load appropriately reflected their input (Wyman 2008). As stated by the FLSP convener (Huisman 2010), many aspects of NC DWQ-convened stakeholder processes, such as how the process is designed and executed, are "patterned after" previous projects. This makes evaluative feedback regarding projects critical, since repeating ineffective strategies and subsequently achieving less than desirable results may not otherwise be resolved.

IV. THE FALLS LAKE STAKEHOLDER PROJECT

a. Process Design

The purpose of engaging Falls Lake stakeholders, as defined by NC DWQ, was to represent "a wide range of interests in developing a Nutrient Management Strategy for the Falls Lake Watershed" (FLSP Online Wiki 2010). Given the public nature of the stakeholder process, the participants were chosen to represent their work place by their agency/company or were interested individuals willing to become involved. Stakeholder participants usually included (a) employees of a government agency, (b) employees of a company with a significant stake in the outcome of the process, or (c) particularly well-educated and concerned citizens. The Upper Neuse River Basin Association, Triangle J Council of Governments, and NC DWQ worked together to determine the list of stakeholders included in the process (Convener Interview 1 2009; Convener Interview 3 2009). Triangle J Council of Governments assisted in generating the stakeholder list by providing a list of people who had participated in the JLSP and the

organizations they represented (Convener Interview 1 2009). Additionally, convening parties noted that the list was generated by thinking of any organization that would be affected by implementation of the Nutrient Management Strategy; all of these were included in the process. After everyone to be included in the FLSP was identified, NC DWQ contacted organizations to notify them of the project (specifically its purpose, timeline, and goal) and request participation (Convener Interview 2 2009). Involving every member of an organization in the FLSP was not feasible, so organizations were asked to choose a representative to act on behalf of the whole organization's interests. In total, there were 281 total stakeholders identified from 84 non-government organizations (43% of participants), state and federal agencies (33% of participants), and local governments (24% of participants).

b. Timeline

Driving the FLSP was North Carolina Senate Bill 981 (SL 2005-190 /SL 2006-259), which provided the original deadline for the final Nutrient Management Strategy of July 2009 (Huisman 2008a). NC DWQ requested an extension for a July 2012 deadline (Convener Interview 1 2009), on which the FLSP meeting schedule was based (Schlegel 2009). Ultimately, however, the legislative session of 2009 only granted NC DWQ an extension until January 2011, at which point the Nutrient Management Strategy was required to be adopted by the Environmental Management Commission as final, effective rules. Although ten meetings were originally scheduled for August 2008 through October 2009 (Huisman 2008b), the reduced extension allowed for only nine meetings with the entire stakeholder group (Schlegel 2009). The final stakeholder meeting in January 2010 discussed all of the rules and requested feedback from stakeholders within eight days. The draft was then revised at NC DWQ's discretion to include stakeholder comments before going out for public comment in January 2010. The draft Nutrient

Management Strategy also received a fiscal analysis in February 2010 and proceeded to the Environmental Management Commission in March 2010.

The timeline of the FLSP was a contentious issue. Upper watershed stakeholders preferred a delay in legislation, while stakeholders in the lower watershed leaned toward faster action. The division between upper and lower lake and watershed stakeholders was defined using NC-50, a road that runs through the area (Huisman 2010) (Fig. 2). Lower watershed stakeholders preferred an earlier timeline because the lower lake area was more severely in violation of water quality standards than the upper lake and incurred more treatment costs to municipalities in that area (Convener Interview 1 2009). By cleaning up the lake sooner, costs to lower watershed stakeholders could be mitigated. Conversely, the upper portion of the lake maintained higher levels of water quality but incurred clean-up costs from the Nutrient Management Strategy implementation. The upper watershed stakeholders preferred delaying their expense by extending the deadlines.

c. Process Execution

At the onset of the stakeholder project, important logistic issues were addressed (Huisman 2008a). Firstly, the format of the meetings was agreed upon (e.g., refreshments and breaks). Stakeholders were informed of the project website and told that materials would be posted following each meeting. Secondly, the groundrules were presented, including speaking one at a time, staying on topic, and starting and ending meetings promptly. The facilitator defined the stakeholder role to the participants as providing input to NC DWQ, because it was NC DWQ's exclusive responsibility to draft the Nutrient Management Strategy. Interests of the stakeholders were solicited at the second meeting in September 2008 and updated as the process moved forward (Schlegel 2009). Stakeholders completed a worksheet of their interests and the

corresponding objectives using a point allocation weighting scheme that indicated importance (Huisman 2008b). All interests were put into one or more of thirty different categories, ranging from environmental quality to tax incentives to personal satisfaction with the process.

Conveners also introduced stakeholders to the Technical Advisory Committee at the first meeting (Huisman 2008a). Members of the Technical Advisory Committee were technically inclined stakeholders whose purpose was to provide input on the water quality models used to predict the consequences of nutrient management strategies, monitoring locations and frequencies, model selection, and confidence levels of the models (Convener Interview 1 2009). Although the Technical Advisory Committee was established and began work in 2005, well before the entire stakeholder group convened in 2008, the members were considered a subset of the whole stakeholder group.

In response to a compressed timeline, NC DWQ implemented two important components: the wiki website and the subcommittee meetings. The wiki was developed to provide stakeholders with the opportunity for continued discussion because when the meeting timeline became strained, unresolved issues remained. Subcommittee meetings were used to delve deeper into individual topics using a small subgroup of stakeholders (approximately 20). Subcommittees included: local jurisdictional approach, agriculture, new development, existing development and onsite wastewater, and point source (Huisman 2010). Two to three meetings were held for each subcommittee, beginning in September 2009 and ending December 2009 (Schlegel 2009). Each subcommittee provided input to NC DWQ on a specific section of the draft rules. Sections included in the draft rules that did not have subcommittees were "state and federal entities" and "trading rules;" these topics were discussed with the whole group rather than separate subcommittees (Huisman 2010). As with stakeholder meetings involving the

whole group, information from each subcommittee meeting was posted on the project website, with further discussion provided for on the wiki, to keep all stakeholders updated on the direction of the rules.

V. OBJECTIVES

My evaluation of the FLSP was a case study of public participation in watershed management. It specifically contributed to the larger research effort of Maguire and Steelman (2006) to develop an evaluative framework for NC DWQ public participation processes. The objectives of the case study were as follows:

(1) Draw comparisons between the JLSP and FLSP methods, including aspects of the FLSP motivated by concerns raised by the JLSP, to see if changes made addressed the concerns.

Comparative analysis examined the changes made in the FLSP to avoid similar problems in the JLSP and evaluated whether or not these changes accomplished their intended goal. For example, one procedural difference between the two projects was the inclusion of a Technical Advisory Committee in the FLSP. My evaluation addressed whether or not this change improved the FLSP compared to the JLSP.

(2) Evaluate the project's procedure using four criteria – process fairness, process design, process execution, and technical support.

Procedural evaluation revolved around stakeholder surveys and stakeholder, convener, and facilitator interview responses to questions about the fairness of the process. This question of fairness was evaluated based on factors such as stakeholder comprehension of technical information, if the stakeholders felt their input was sufficiently considered, and that they were

given equal opportunity to participate. More specific evaluative measures are discussed in the next section.

(3) Provide feedback to convening parties based on the evaluation, including ways future water quality planning stakeholder processes may be improved.

Feedback to NC DWQ, Triangle J Council of Governments, and Upper Neuse River Basin Association was based on my analysis of stakeholder survey responses, stakeholder comments, convener interview responses, stakeholder meeting observations, and public participation literature. As such, it included information and conclusions drawn from objectives numbers one and two above. For example, the incorporation of subcommittee meetings and an online wiki were intended to address certain issues, but also resulted in the development of new problems. My evaluation addressed both the strong and weak aspects of such tools and suggested ways to further improve these individual aspects of the process, as well as the process as a whole.

VI. METHODS

a. Data Collection

Collection of data to be analyzed consisted of background literature research, archival document review, stakeholder meeting attendance/observation, stakeholder survey responses, and decision-maker interviews. Due to the involvement of human subjects, research activity was pre-approved by Duke University Office of Research Support. At the scheduled meetings, I took notes as an observer rather than as an active participant. The majority of stakeholder observation in the meetings focused on the different community facets represented in the meetings, the types

of direct interaction among stakeholders that represented different organizations (ex. respectful, formal, casual, etc), and the clarity and comprehension level at which information was presented.

To gather more extensive information, I distributed a survey to all 281 stakeholders via email (Appendix A) and conducted interviews with all three facilitators/conveners of the FLSP as well as one JLSP convener (Appendix B). The survey and interview guide contained questions designed to obtain information about substantive, procedural, and outcome factors. To allow cross-case comparisons, the survey and interview questions were modeled after those used by Wyman (2008) during research on the JLSP. The facilitator of the FLSP agreed to distribute an email that introduced my research and the survey with hope of improving the return rate. I distributed two follow-up emails to stakeholders who had not yet responded. Additionally, I made surveys available in hard copy at the final stakeholder meeting. An informed consent document accompanied all surveys (Appendix A). The survey contained questions that solicited participants' opinions on primarily procedural factors, but also substantive factors and predicted outcomes. Questions in the survey asked how the participant felt about the neutrality of the conveners, the validity of the technical information, and the future success of the FLSP. Participants were asked to respond to each statement based on a scale of agreement, ranging from "strongly agree" (1) to "strongly disagree" (5), with the option of "unsure." Some open-ended follow-up questions were asked, such as a request for further explanation if there was disagreement with a particular statement.

The interviews were based on a set guide of questions including standardized open-ended questions, with follow-up questions as deemed necessary (Rossman and Rallis 2003). Questions were asked regarding all three factors of the evaluative framework (discussed in the next section), such as the representation of stakeholders, which aspects of the FLSP resulted directly

from the JLSP, and opinions on stakeholder acceptance of technical information. Notes taken during the interviews were supplemented by listening to the interview recordings to ensure that the notes were accurate and thorough.

b. Evaluative Framework

Data analysis was based on three predetermined factors in order to determine strengths and weaknesses of the FLSP. Criteria for the three different factors – substantive, procedural, and final outcomes – are listed below (Beierle and Cayford 2002). Evaluation criteria for the FLSP followed the same protocol as specified for the NC DWQ analysis (Maguire and Steelman 2006) (Table 1).

Table 1. Evaluative framework for the Falls Lake Stakeholder Project case study (Maguire and Steelman 2006).

FACTOR	**CRITERIA**	**INDICATOR**
Substantive	Participant Claims	Stakeholder interests and desired outcomes of the process.
	Strategic Behavior	Attempts to manipulate the process, i.e., timeline.
Procedural	Process Fairness	Stakeholder representation; neutrality of meeting locations.
	Process Design	Stakeholder purpose definition; convener/facilitator roles
	Process Execution	Ground rules; meeting timeliness
	Technical Support	Model validity; acceptance of technical information by stakeholders
Outcome	Participant Experience	Stakeholder satisfaction
	Public Acceptance	Public perception of the process

(1) Substantive: participant claims, strategic behavior

Participant claims consisted of information such as the goals of the stakeholder for the stakeholder process and the resulting rules, stakeholders' perceptions of their individual roles in the process, and their own reasons for participation. Strategic behavior included any action intended to manipulate the process, such as attempts to change the timeline for personal gain (e.g., upstream polluters prefer more time without enforceable rules).

(2) Procedural: process fairness, process design, process execution, technical support

Examples of procedural factors were providing the opportunity for all affected parties to participate, providing all participating parties equal consideration, presenting technical information in a manner understandable to the majority of stakeholders, and enforcing helpful groundrules in the meetings. Stakeholder evaluation of facilitator neutrality, meeting location and times, etc., were also elicited in order to examine the FLSP procedure.

(3) Final outcomes: participant experiences, public acceptance

The category of final outcomes was not the primary focus of my study because the FLSP was not completed until after my research concluded. For this analysis, final outcomes included stakeholders' feelings regarding how their input would be incorporated into the rules and their current perceptions of the process. Methods that were not well-received by stakeholders were identified; in addition, alternative methods that may have resolved the problems were identified from a literature review and from analyses of previous stakeholder projects.

b. Data Analysis

Results from the surveys were analyzed primarily quantitatively by determining the number of responses (i.e., "strongly agree" to "strongly disagree") to each question. The number of responses were counted for each question and analyzed for agreement, disagreement, or

ambivalence. All survey comments were compiled by category (e.g., process fairness) and analyzed for common themes (e.g., discontent).

A coding scheme, based on the factors included in the evaluative framework, was developed to analyze interview responses. Coding is a form of analysis that "links data to a conceptual issue" and is often used in qualitative research (Rossman and Rallis 2003). Notes from each of the four interviews were analyzed and coded based on conceptual issues. For example, one coding category was "lessons from Jordan Lake," so all notes that referenced that topic were coded as such. Coding the interviews also revealed general themes and underlying issues by identifying topics that were discussed in-depth and those that were discussed more superficially. Although the survey and interviews required the collection of identifiable information, it will be kept strictly confidential during my research and subsequently given to Dr. Lynn Maguire to maintain until the overall project is complete.

I used the JLSP to conduct further analysis by drawing comparisons between the two projects based on procedural factors, such as whether the addition of a wiki webpage and subcommittees improved or hindered the project's success. Comparisons were drawn based on information obtained in convener interviews, including which specific aspects of the FLSP were direct responses to JLSP problems (e.g., timeline, subcommittees, etc.) and if conveners thought these aspects improved the overall process. Since the convener and facilitator, NC DWQ and Triangle J Council of Governments, were the same for both projects, they were capable of providing information on how feedback from the JLSP influenced their management of the FLSP. Stakeholder survey responses were also analyzed to determine an overall level of satisfaction, which was compared with that of the JLSP stakeholders (Wyman 2008).

VII. RESULTS

Types of results included in this analysis were quantitative and qualitative. Quantitative results were based on the fourteen stakeholder surveys received (Appendix A). The majority of respondents were affiliated with local government (43%), followed by state agencies (29%), then non-profit organizations (14%) and an "other" category (14%). Only one member of the Technical Advisory Committee returned a survey. Although some of the answers were not in a numerical format (i.e., responses like "more" or "several" to number of meetings attended), the approximate average number of meetings attended was 4.7, ranging from 1 to 9. The average subcommittee meeting attendance was 3.8 with a range of 0 to 10. Qualitative results were based on interview responses of four conveners with NC DWQ, Triangle J Council of Governments, and the Upper Neuse River Basin Association. Results were organized by the factors and criteria in Table 1, with stakeholder and convener results presented separately.

a. Stakeholder Results

Substantive Factors

Strategic behavior and participant claims were criteria used to evaluate substantive factors. The timeline issue will be discussed in more depth in later sections, but this was an area of strategic behavior. While DWQ was seeking an extension, the City of Raleigh directly approached the legislature to oppose an extension and requested a foreshortened implementation strategy if an extension was granted (Convener Interview 3 2009). This was strategic behavior in the form of a stakeholder attempt to manipulate the timeline. The timeline was not only a source of contention between conveners and stakeholders, but also among stakeholders. Blatant divisions in preferences for the timeline created mistrust among stakeholders by fostering beliefs

that upper versus lower watershed stakeholders were not being transparent and were trying to manipulate the timeline to better suit their individual needs.

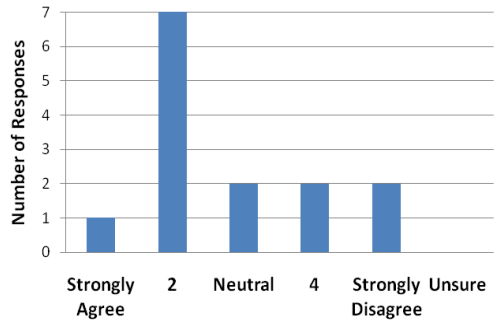
Distrust among stakeholders and policy officials creates "vigilance" in the form of "participating to protect their interests" (Sabatier et al. 2005). This vigilance was seen in the subcommittee meetings, discussed more thoroughly in later sections. Stakeholders who were not part of a certain subcommittee attended those meetings to ensure their own interests were not being sabotaged (Convener Interview 1 2009). This was an example of both strategic behavior and participant claims, because the actions taken by the participants supported their desired outcomes and specific interests, but were also very strategic. Additionally, lawyer representation of stakeholders began earlier in the FLSP than in the JLSP, which added a third step in the FLSP discussions – convener information relayed to lawyer, from lawyer to stakeholder, and finally the stakeholder response to convener. While this type of strategic behavior may have resulted from the legal problems in the JLSP, it was a sign of mistrust in the FLSP.

Procedural Factors

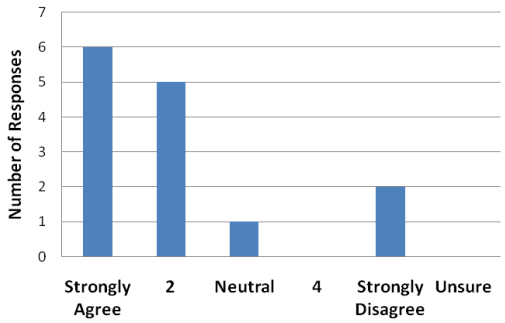
Process Fairness

Generally, the majority of stakeholders indicated that the process was fair. Although most respondents did not disagree with the questions about process fairness, two respondents each strongly disagreed that all parties were represented and allowed equal participation (Fig. 3a and 3b). Respondents generally agreed that conveners treated stakeholders with respect (Fig. 3c), a stark contrast to the disagreement that stakeholders treated each other with respect, which was the lowest scoring statement regarding process fairness (Fig. 3d). Two stakeholders strongly disagreed that the wiki was fair to all parties, although the majority of respondents agreed that it

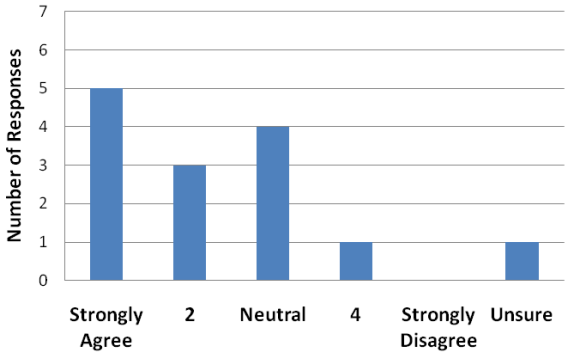
was fair (Fig. 3e). The statement that solicited the most agreement in the category of process fairness was the usefulness of subcommittee meetings (Fig. 3f).



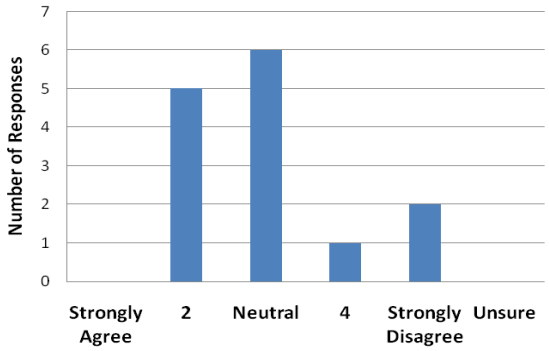
(a) All of the interested parties are represented in the discussions.



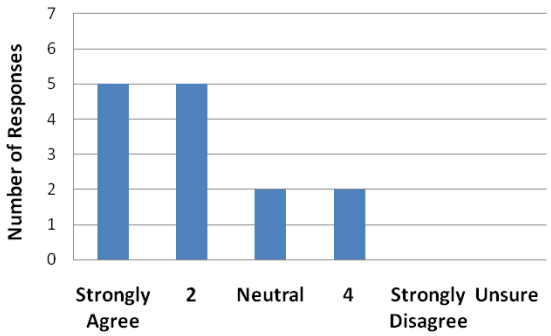
(b) The facilitators and conveners allowed all parties to participate equally.



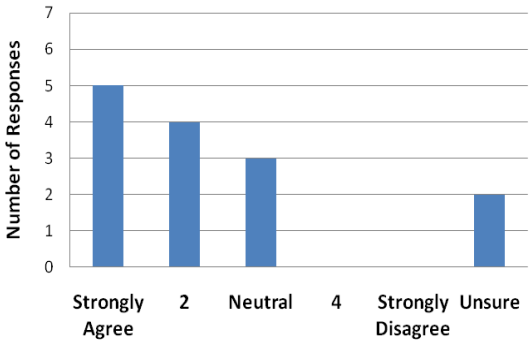
(c) The facilitators and conveners of the FLSP treat all stakeholder's claims and positions with equal respect.



(d) Other stakeholders of the FLSP treat all stakeholder's claims and positions with equal respect.



(e) The FLSP *wiki* website is a fair (i.e. accessible to all participants) means of communication for the stakeholder process.



(f) The FLSP subcommittee meetings are consistent with the goals of the project.

Figure 3. Stakeholder survey results regarding process fairness.

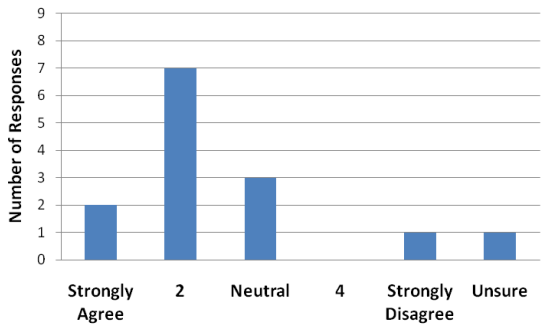
Although the majority of respondents believed that representation was sufficient (Fig. 3a), stakeholder comments provided insights from those that felt it was not. Parties that some felt should have been included and were not were homeowners/landowners, septic tank owners, environmental health staff, soil and water staff, elected officials, the City of Creedmoor, and Granville County. One person felt that DWQ relied too heavily on "literature" to obtain "data" and should have put more emphasis on information provided by stakeholders. Respondents also noted that not all "key stakeholders" were "consistently involved," but this cannot be attributed directly to convener fault because the parties may have chosen not to participate consistently.

Although stakeholders did not feel that they were treated with respect by one another (Fig. 3d), comments suggested that most of this contention could be attributed to the high emotions involved in the process. Possibly because of the disrespect stakeholders felt, they did not feel comfortable sharing opinions in writing and the wiki was not as useful as it might have been. As an example, many comments about the fairness of wiki discussion referred to how contributors were identified. One person stated that if "the wiki was set up to permit users to submit information without the users being identified…it would have been used more." A similar sentiment was expressed in other comments that questioned who the comments represented – the individual or the organization they represented – which was not made clear by DWQ when introducing the wiki.

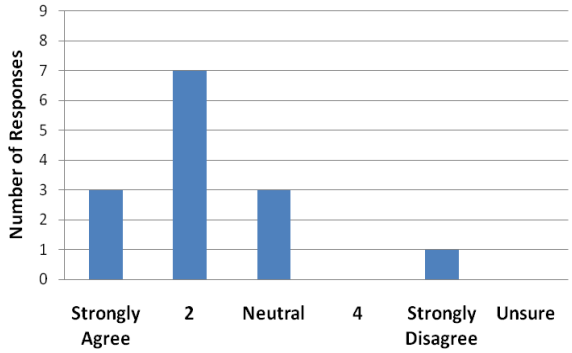
Process Design

Overall, respondents did not have problems with how the process was designed. Most respondents agreed that the purpose of the FLSP and DWQ's role in the process were defined, although there was one "strongly disagree" response for each statement (Fig. 4a and 4b). The

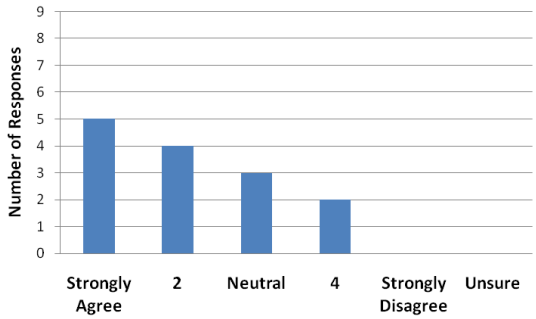
majority of respondents agreed that the conveners were neutral throughout the FLSP, although the issue did elicit some disagreement (Fig. 4c). Respondents generally felt that they understood



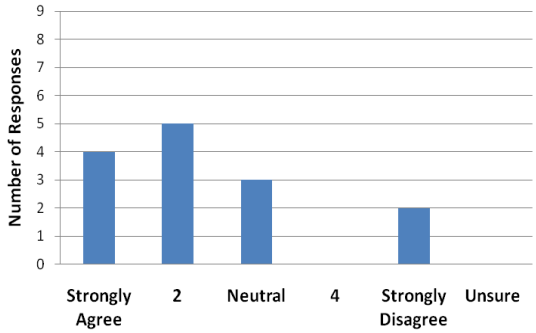
(a) The intended purpose of the FLSP has been clearly defined to all stakeholders.



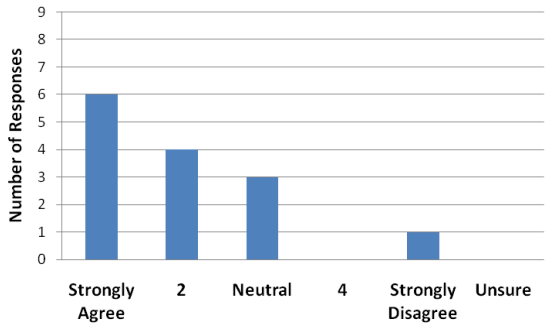
(b) The Division of Water Quality's (DWQ) role within the FLSP has been clear up to this point in the process.



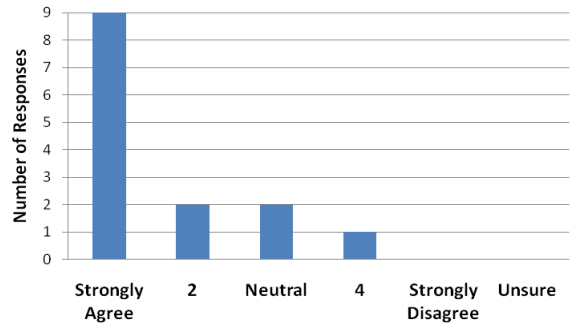
(c) TJCOG and the UNRBA have been neutral facilitators throughout the duration of the FLSP.



(d) I understand my role within the FLSP.



(e) From the onset of the process, conveners informed me of the time commitment participating in the FLSP would require.



(f) The stakeholder process could have benefited from an extended deadline.

Figure 4. Stakeholder survey results regarding process design.

their role in the project, although two strongly disagreed and three were neutral on the topic (Fig. 4d). The statement that solicited the least overall agreement was that conveners informed stakeholders of the time commitment required by the FLSP beforehand, although most respondents agreed that they had been informed (Fig. 4e). There was overwhelming agreement that the process could have benefited from an extended deadline (Fig. 4f).

In the survey (Appendix A), stakeholders were asked to define the goal of the FLSP in their own words (Fig. 4a). There were a range of responses, from "create a strategy to restore and preserve the Falls Lake water quality" to "get the best outcome for the city of Raleigh and still make those in the area still feel like they had a chance for input." Contentions about the deadline, stemming from the opposing views of upstream versus downstream stakeholders, were evident in a comment that listed one of the goals as to "expedite" the rule-making process. Another comment indicated a goal as "to achieve, or at least strive for, consensus" on the rules, although DWQ was adamant that not only was the goal not consensus, but that consensus was never expected and would not be necessary to proceed with drafting the rules.

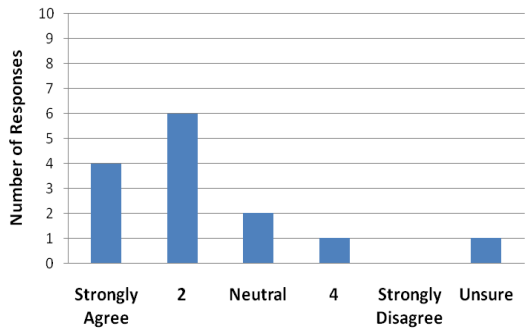
Most comments indicated an understanding of DWQ's role in the process (Fig. 4b), simply defined by one stakeholder as "rule-maker." Comments identified DWQ as the "lead agency" with the responsibility of "developing the new rules" and no contention was detected in any of the comments. The same was generally true regarding the neutrality of facilitators, who respondents stated "did a good job." Respondents also stated, however, that some stakeholders speculated that conveners had members of their organization participating as stakeholders, which could have ultimately biased the process. On the other hand, one comment stated that "Without the leadership of both TJCOG and DWQ this stakeholder process would have failed."

One of the most contentious issues of the FLSP was the timeline (Fig. 4f). As previously discussed, lower watershed stakeholders preferred an early legislative deadline, while upper watershed stakeholders preferred a delay. As one stakeholder noted, "I support deadlines. Stakeholder processes without deadlines drag on forever." The majority of comments, however, were not as supportive of deadlines. Stakeholders observed that the deadlines "shortened" the opportunity for stakeholder input and that the time needed for such a process to be successful was "taken away." Likewise, a respondent expressed the opinion that moving up the deadline "removed sound science and data analysis from the process." There was also concern about the lack of time for economic analysis and how the feasibility of the rules would be impacted by how "cost-effective" they would prove to be in practice.

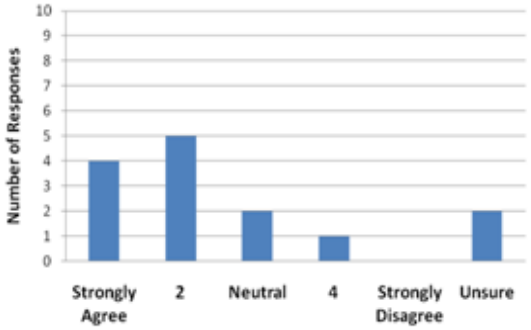
Process Execution

Based on the responses provided, stakeholders were content with how the FLSP was executed. There were no "strongly disagree" responses (Fig. 5). Many responses indicated ambivalence towards the statements regarding process execution. Overall, respondents agreed that the groundrules were useful and that the meetings began and ended promptly (Fig. 5a and 5b), although there was less agreement that time limits set within the meetings were honored (i.e., how much time would be spent on various topics) (Fig. 5c). Respondents generally agreed that the meeting times and locations were convenient and neutral for stakeholders, although there were several that were unsure or disagreed (Fig. 5d and 5e). The majority of responses indicated that the project website was a useful tool (Fig. 5f), but were less sure about the effectiveness of the wiki (Fig. 5g), although most said that the wiki was useful.

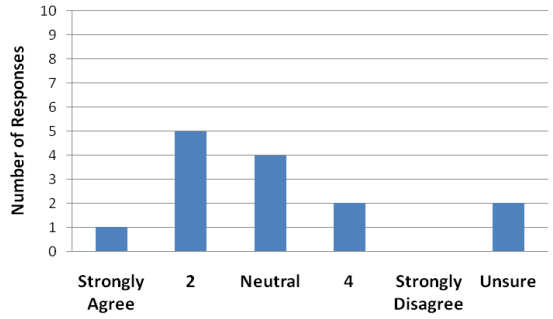
The most popular topic of comments regarding process execution involved the use of the wiki (Fig. 5g). One comment indicated that by implementing the wiki, there was a "false



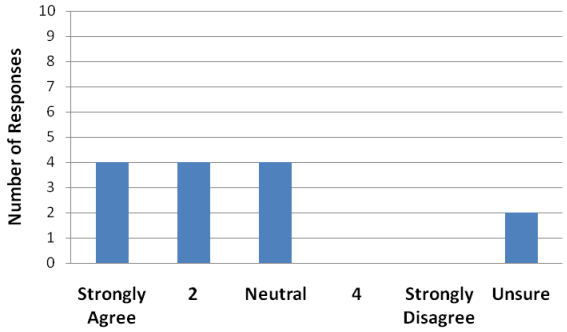
(a) The established groundrules have helped the meetings run smoothly.



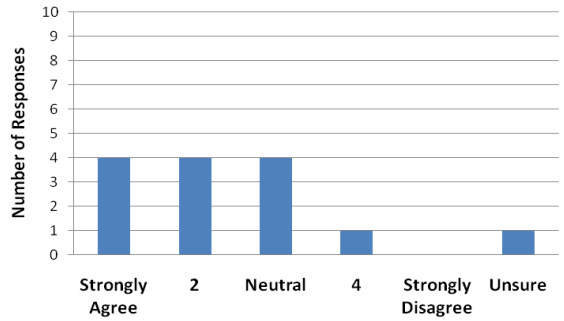
(b) Meetings begin and end on time.



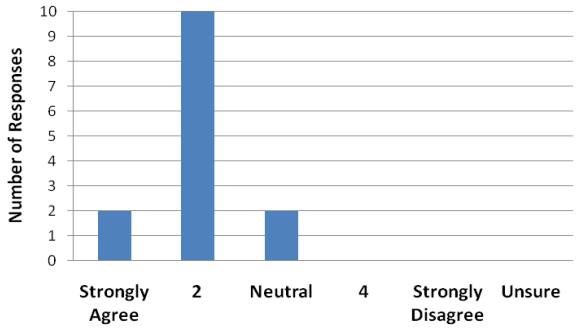
(c) Time limits set within the meetings are honored.



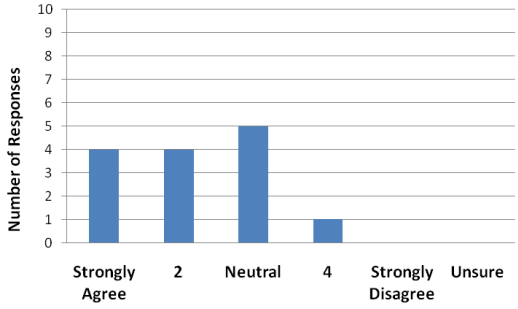
(d) The meeting times and locations are convenient for stakeholders to participate.



(e) The meetings are held in a neutral location.



(f) The project website is a useful tool.



(g) The *wiki* website is a useful tool.

Figure 5. Stakeholder survey results regarding process execution.

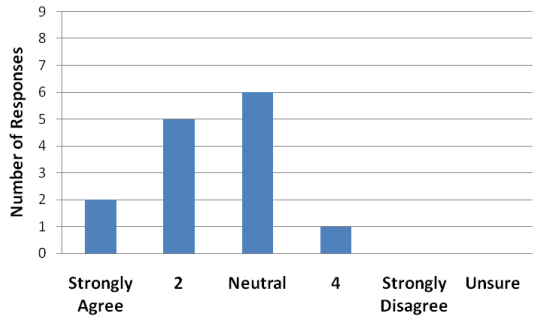
assumption" that "everyone is comfortable with using these types of tools from a technical sense." There was also a reiteration of the importance of anonymity, both on the wiki and in press reports regarding discussions that took place in the meetings. Overall, it was deemed a "nice innovation" and a "great tool" that was not "used much." Many comments alluded to the impression that it could have been more useful under the right circumstances, such as defined groundrules and a thorough explanation of its purpose at the project's onset.

Technical Support

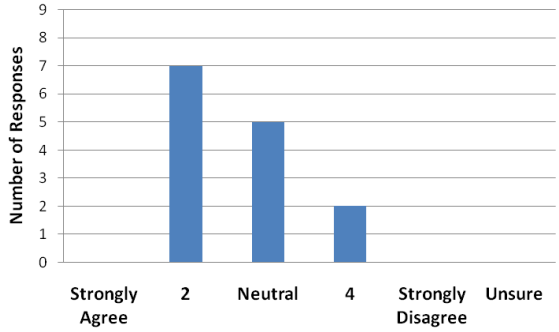
Technical support was the criterion that solicited the least agreement from stakeholders (Fig. 6). The most widespread agreement regarding technical support was that it was presented in a way that the respondent could understand (Fig. 6a). Interestingly, respondents agreed more strongly that they could understand the technical information presented than that the group of stakeholders as a whole could understand the technical information (Fig. 6a and 6b). Approximately half of the respondents felt stakeholders were given the opportunity for education regarding technical information, while the other half were neutral, unsure, or disagreed with the statement (Fig. 6c). There were strong beliefs that stakeholders did not accept the validity of the technical information, which was the technical support statement that solicited the least agreement (Fig.6d). Respondents did generally agree that technical parties were recognized as experts by themselves and other stakeholders (Fig. 6e), but ultimately disagreed that there was enough technical information to make an appropriately informed decision (Fig. 6f).

Respondents expressed several recurring issues regarding the technical aspect of the FLSP. Firstly, as has been an underlying theme of the comments, stakeholders commented that the technical aspect of the FLSP had been negatively impacted by deadlines. As a result, some stakeholders believed that there were insufficient data (i.e., monitoring/sampling data) to

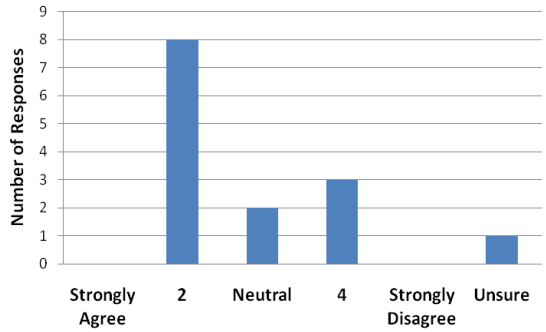
appropriately determine how to manage water quality, making it impossible to draft an effective Nutrient Management Strategy (Fig. 6f). Additionally, dissatisfaction was expressed with the



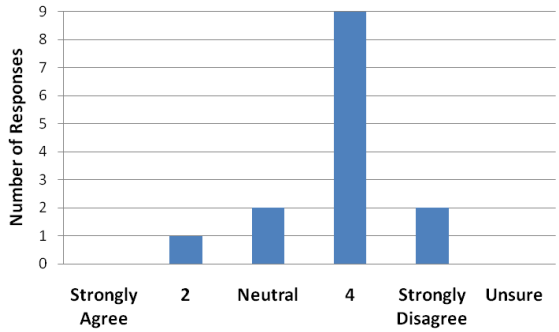
(a) Technical information was presented in a manner that I could understand.



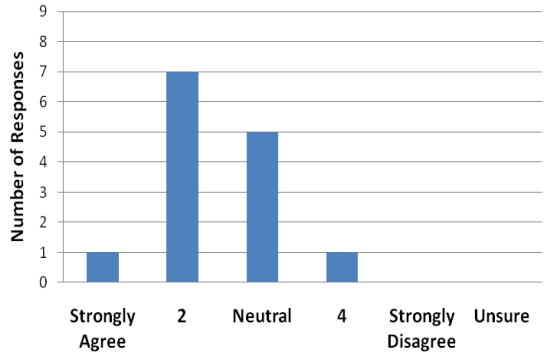
(b) Technical information was presented in a manner that the majority of stakeholders could understand.



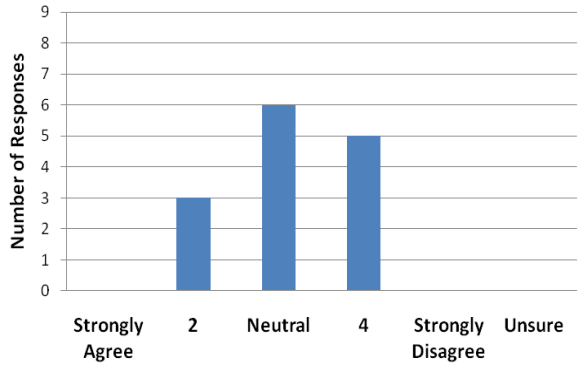
(c) When needed, stakeholders were given the opportunity to be educated on unfamiliar technical information.



(d) Stakeholders accepted the validity of the data presented.



(e) Stakeholders recognized technical parties as experts in their field.



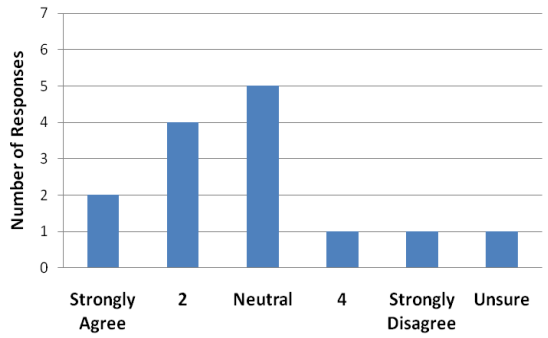
(f) There was sufficient technical information to make informed decisions.

Figure 6. Stakeholder survey results regarding technical support.

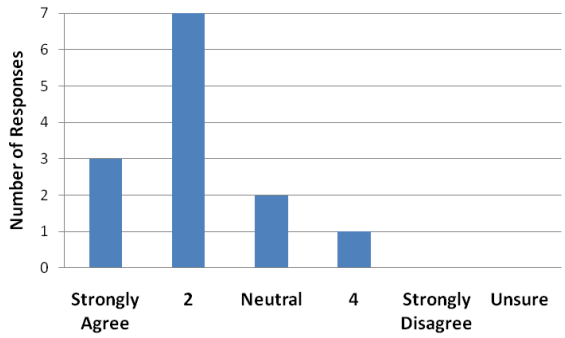
age of the data, stating in open-ended comments that it was "almost a decade old," making it inappropriate for the intended uses. Another problem with technical information was the lack of useful explanation. One comment stated "Communicating science and science-based models is often difficult for scientists. I felt DWQ under-explained some aspects of the model and over-explained other aspects leading to confusion…" Others thought that "DWQ could have better utilized the members of the Technical Advisory Committee to help translate this information and maintain credibility in the model," suggesting that lack of understanding of the model may have jeopardized stakeholders' trust that the process would be an effective one.

Predicted Outcomes

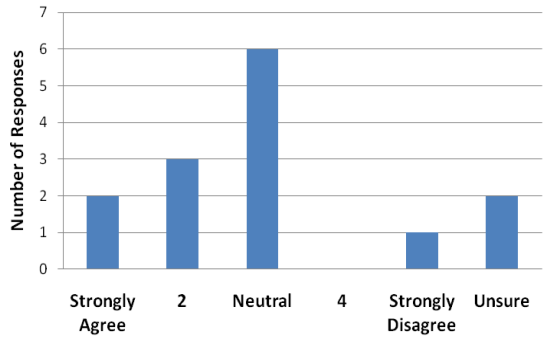
Stakeholders had a wide range of opinions on the FLSP outcomes; three of the five questions had at least one response in all six categories ranging from "strongly agree" to "unsure" (Fig. 7). One important item to note was the general agreement, or at least neutrality, that DWQ would give stakeholder input sufficient weight in the final rules (Fig. 7a). This was an improvement over the Jordan Lake Stakeholder Project, where the primary concern was lack of stakeholder input in the rules, and ultimately showed stakeholders' optimistic predictions for the FLSP. Most respondents also agreed that they became more educated about stakeholder processes by participating in the FLSP (Fig. 7b). Respondents generally either agreed or were neutral that their experience with the FLSP would change their participation in other stakeholder projects (Fig. 7c). Half of the respondents felt that the Nutrient Management Strategy would benefit from the FLSP and only two stakeholders disagreed that this would be the case (Fig. 7d). Although over half of the respondents were neutral to favorable about the possibility of the FLSP being a "success," over 40% were unsure or did not think this would be the outcome (Fig. 7e).



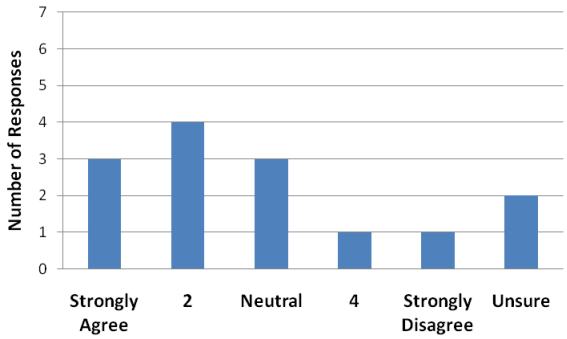
(a) DWQ will give sufficient weight to stakeholder input in drafting the Nutrient Management Strategy.



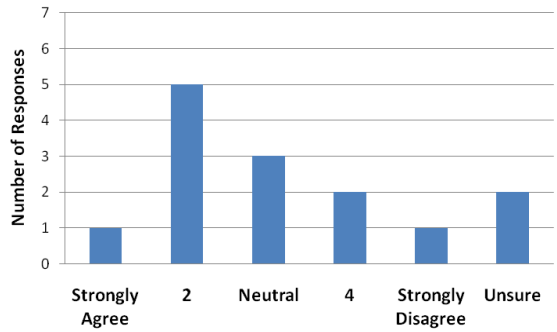
(b) By participating in the FLSP, I became more educated on the state's regulatory process.



(c) Because of my experience with the FLSP, I have adjusted the way that I participate in state-convened stakeholder projects



(d) The Falls Lake Nutrient Management Strategy will benefit (i.e. effectiveness, fairness, etc.) because of the stakeholder process.



(e) The FLSP has been a "success" based on the goals defined for the project.

Figure 7. Stakeholder survey results regarding predicted outcome.

When asked about how they would participate in future stakeholder projects based on their experiences with the FLSP (Fig. 7c), one person stated that "I had never participated before but now I will make sure I do." Most, however, said that they did not plan to adjust their

participation, and one stated that they would consider the "source" of information "before accepting statements as facts."

Most respondents felt that the "success" of the FLSP could not be evaluated without first reviewing the final rules (Fig. 7f). Since many of the project's goals concerned how stakeholder input would be incorporated into the implementation of the rules, the respondents generally made statements such as "the jury is still out" and commented that they would be able to answer the question only after reviewing the rules. Although one comment stated that the FLSP was "a great process," the respondent added that "I hope that it can hold up through the formal rule-making process," which also indicated the primary indicator of success was the final Nutrient Management Strategy. Conversely, others expressed the belief that the process was already unsuccessful due to lack of "in-depth" analysis and not enough time.

b. Convener Results

Process Fairness

Conveners tended to believe that the process was fair in regard to representation. A direct lesson from the JLSP was to include the NC Department of Transportation, which was included from the onset of the FLSP. Stakeholders that conveners felt were "inadvertently missed," although none were "purposely omitted" from the process, were the NC Department of Environmental Health and the NC Division of Air Quality. Of those organizations involved in the process, most had "regular representation," although a charter and more firm groundrules might have ensured a firm commitment from the stakeholders and avoided some back-tracking of discussion due to missed meetings or late involvement. The conveners all agreed that they and their peers were neutral in leading the process and that both the timing and location of meetings were fair for all participants.

Process Design

As with stakeholder survey responses, convener interview responses agreed that deadlines were an issue in the FLSP. The fact that deadlines were being determined while the stakeholder process was taking place introduced "barriers" in the middle of the FLSP that "created challenges in the process." These challenges primarily consisted of DWQ not getting the extension requested, which inhibited the productivity of discussions and negotiations simply by providing less time than they had anticipated. Conveners acknowledged, however, that some form of a deadline is crucial to the completion of a stakeholder project, because discussions could "continue indefinitely." The idea of continuing stakeholder involvement through implementation of the rules was mentioned as the ideal situation.

Other than preferring more predictable deadlines, one convener would have liked to change the sequence of events in the project, most importantly, not convening the stakeholders before the model results were available. Early in the process, conveners were not able to provide stakeholders with "meaningful answers" because they did not have results from the model. Conveners believed that the model results were a "game-changer" because they showed that drastic reductions in nutrient loads were needed to improve water quality; consequently, time was wasted early in the process on proposals that would not meet water quality goals. Additional delays in presenting the models to the stakeholders were due to the amount of time the Technical Advisory Committee needed to review them, which conveners said will be taken into account when planning future projects.

Process Execution

Unlike the stakeholder respondents, conveners unanimously agreed that the wiki was a "valuable tool," and could have been even more effective with more stakeholder use. They did

acknowledge, however, that there was some feeling of "aversion to thoughts on paper," based on the perception that written thoughts are more "set in stone" than those verbalized. Conveners believed that an upfront disclaimer about who the postings would represent – the individual and not the organization he/she represented – could have reduced stakeholders' hesitation to use the wiki.

Subcommittee meetings were also considered a very useful tool by all conveners, and they planned to use them in future projects. They noted, however, that there was some mistrust of conveners and fellow stakeholders alike by some stakeholders because many of the subcommittee meetings were "cross-pollinated" by stakeholders "looking out for their own interests." One convener thought that the open format of the subcommittee groups resulted in large groups and the "cross-pollination." Consequently, there were too many people involved to keep the discussion on the specified topic, which limited productivity in the meetings. For the future, conveners believed that limiting the number of participants in the subcommittee groups would increase "efficiency and productivity."

Technical Support

Following the technical problems of the JLSP, including questionable data and lack of stakeholder education, the FLSP conveners worked to eliminate these aspects of conflict. Regardless, conveners agreed with stakeholders that technical aspects of the FLSP, namely the models, were sources of contention in the process, although not to the extent they were in the Jordan Lake project. Even with the Technical Advisory Committee that was implemented in the FLSP as a direct lesson from Jordan Lake to cultivate stakeholder trust and understanding of the model, there were still questions about model uncertainty throughout the process. Even with a "moderate level of understanding," some stakeholders opposed the model results for the duration

of the FLSP. Conveners thought, however, that regardless of whether or not stakeholders accepted the results, the model was considered "scientifically valid" by most, which was largely attributable to the Technical Advisory Committee. One convener believed that, despite steps forward in the FLSP, future processes needed to better educate stakeholders on the "limitations of scientific data," because models do have some inherent error.

Predicted Outcomes

Conveners thought that the FLSP would ultimately be successful. Some conveners acknowledged that the JLSP was not viewed as a success because many stakeholders and members of the public thought it excluded stakeholder comments and suggestions from the rules. However, conveners believed that FLSP stakeholders felt the conveners were being open and responsive to their comments, which was a sign of improvement. Ultimately, whether or not the project would be a success depended on the definition of success being used. As one convener stated:

> If by success we mean that people, organizations, and stakeholders in general, were able to participate in the development of the rules, were able to give input that ultimately shaped the rules, and were better informed on the rules and various implications, and better educated about the process of arriving at those rules, I think, yeah, the project is definitely going to be a success. If by success we mean that the stakeholders all agree on the best course of action, then no.

All conveners agreed that the definition of success was not the latter, although it was somewhat unclear if stakeholders were as convinced. Another convener stated that including all

stakeholder suggestions in the rules was "impossible because they will naturally contradict each other." There was fervent agreement among conveners that the goal of the project was not consensus and, to some dismay from stakeholders, no voting was involved. Conveners stated that DWQ's ultimate responsibility to draft the Nutrient Management Strategy could not be delegated to anyone else and that the purpose of the FLSP was to "engage stakeholders." By doing so, DWQ received "great input" on stakeholder preferences and became aware of issues that may not have been dealt with without the stakeholder project, including the cost-effectiveness and practicality of various solutions.

c. Jordan Lake Comparison

Many lessons learned in the JLSP were acknowledged in the convener interviews, as well as lessons to be carried forward from the Falls Lake project to future processes. Timeline was one important factor – the FLSP was completed while the Nutrient Management Strategy was being drafted and the JLSP was finished before drafting began. Participants in the FLSP were more trusting that their input would be included in the draft rules, which may have been a direct result of changing the timeline so that the drafting and stakeholder processes were completed simultaneously (Wyman 2008). Another important lesson from the JLSP was the inclusion of the Technical Advisory Committee. Although the technical aspects of the FLSP still proved to be areas of contention for the project, the overall discontent was less than in the JLSP (Wyman 2008). This may be attributable to having a Technical Advisory Committee that was used with the purpose of decreasing the "us versus them" mentality and providing a more collaborative attitude. Technical Advisory Committee members were known as a subset of stakeholders and were generally acknowledged as experts in their fields. This fostered some trust among stakeholders that improved the process. As with the Jordan Lake project, the Falls Lake project

also had some issues about defining success – primarily the use of the term consensus. For future projects, both stakeholders and conveners agreed that the role of stakeholders and conveners and the definition of success should be articulated clearly and early in the process.

Several aspects of the FLSP were new (not included in the JLSP), and conveners stated they would be used in future projects. Two of the most prominent were the subcommittee meetings and the wiki. Conveners approved of both tools as useful and central to discussion, but stakeholders were less sure of this. Stakeholder uncertainty, however, stemmed from lack of explanation for how each, especially the wiki, would be used by DWQ in the rule-making process. These issues could be easily solved if conveners explained the tools at the onset of the project.

VIII. DISCUSSION

One important item to note was convener satisfaction with the FLSP compared to stakeholder satisfaction. Simply by leading the process, conveners were not always aware of issues that were occurring, and were more satisfied with the process and optimistic for the project's success than stakeholders (Leach 2000). Without being aware of aspects in the project that did or did not achieve their purpose, conveners had no means of improving the stakeholder process for future projects. This makes feedback to conveners a critical component of the public participation process by providing the means for improvement.

As with nearly any collaborative process, the FLSP being no exception, trust was both an issue in the project and an indicator of procedural legitimacy (National Resource Council 2008). Revealed by convener interviews and stakeholder surveys, various types of trust occurred in the FLSP, including social (stakeholders' trust with each other) and official (stakeholders' trust of

conveners) (Sabatier et al. 2005). Levels of trust also shaped the types of stakeholder interactions in the process. Distrust of stakeholders for each other and conveners led to defensive participation, evident from what conveners referred to as "cross-pollination" of subcommittee meetings in an attempt to guard individual interests. There were also stakeholders who trusted conveners and other stakeholders and were cooperative in the stakeholder process (e.g., allowing DWQ to lead the process and not forcing involvement beyond their defined roles). Ultimately, trust in the FLSP improved from the JLSP. Reasons for this improvement included the previously discussed inclusion of a Technical Advisory Committee, stakeholder education (as a result of the JLSP), and/or earlier engagement of stakeholders in the rule-making process.

Although conveners felt that consensus was not necessary, most stakeholder projects are defined by their effort to achieve consensus (Sabatier et al. 2005). Consensus is one criterion proving legitimacy of stakeholder processes, but the degree of public agreement on agency decisions in collaborative processes can vary (Beierle and Cayford 2002). One motivating factor for participation in public processes is the amount of influence one will have in the decisions; by making a decision via consensus, stakeholders feel that the influence they have in the decision is high (e.g., if one person does not agree with a decision, it cannot be made). Having clear and direct communication about the level of agreement needed to reach a decision is important, as was shown in stakeholders' responses to open-ended survey questions that always considered transparency of the "rule-makers" a good thing.

Having a Technical Advisory Committee in the stakeholder process had a positive impact on stakeholder experience. Although technical support was the criterion soliciting the least agreement in the survey, there were fewer technical issues in the FLSP than in the JLSP, which did not have a Technical Advisory Committee. Early stakeholder participation in model

development is one aspect of stakeholder processes thought to improve stakeholder experience by providing stakeholders with "a sense of ownership over the results" (Maguire 2003). In addition to early involvement in model development, which the Technical Advisory Committee provided, direct interaction of the scientists and the stakeholders is another way to improve stakeholder experience. NC DWQ also used the Technical Advisory Committee in this respect, by having members of the Technical Advisory Committee present the models to the stakeholder group and address their questions and concerns directly.

The online wiki was a tool that improved communication, a factor involved in determining the effectiveness of a public participation process (Selin et al. 2000). While conveners found the wiki valuable, stakeholders did not take full advantage of the tool. Conclusions by Voinov and Costanza (1999) suggest that stakeholders are often unfamiliar with technology-based tools, such as an online wiki, and convener instruction is inadequate for stakeholders' level of understanding. These conclusions resonated with comments from stakeholder survey respondents suggesting that NC DWQ made the "false assumption" that "everyone is comfortable with using these types of tools from a technical sense." Potential for the usefulness of online wikis and other technology-based tools to the field of watershed management, however, is very high (Conroy and Gordon 2008; Voinov and Costanza 1999). Conroy and Gordon (2008) highlight watershed management as a field particularly conducive to technology-based approaches (i.e., the world wide web), noting that the incorporation of technological approaches (i.e., an online wiki) with traditional approaches (i.e., stakeholder meetings) into a public participation process increases effectiveness of the process (Conroy and Gordon 2008).

Overall, the FLSP was less contentious than the JLSP, especially near the beginning of the project. Conveners noted that after the deadline for the Nutrient Management Strategy implementation was set for January 2011, tension increased between upper and lower watershed stakeholders and contention escalated. Conveners suggested that having model results sooner would have allowed for more productive discussions earlier in the process, so that changes to the timeline later would not have impacted the process as severely. Additionally, earlier implementation of both the wiki and the subcommittees, with a clear explanation of rules and how each will be used by DWQ in drafting the rules, would have improved efficiency of the stakeholder process and, potentially, stakeholder morale. On the same note, an articulated definition of the stakeholder role (i.e., consensus was not expected) and an explanation of exactly how input would be used in the Nutrient Management Strategy would have benefited the entire process. This could have increased transparency of the convener role, giving stakeholders a better sense of the project and how they could realistically contribute.

A primary limitation of this study was the small sample size. With only fourteen survey respondents, results do not necessarily represent the views of all FLSP stakeholders. Small sample size may be attributed to the sheer amount of time required by participating in the FLSP. Being informed of the time commitment before the project onset was the question that solicited the least agreement in process design. It is possible that stakeholders were unwilling to commit any more time to the process by filling out surveys or being interviewed.

IX. FINAL RECOMMENDATIONS AND CONCLUSIONS

I found three important components that improved the stakeholder process and could be modified further for continued improvement in future processes. The first was the Technical

Advisory Committee. This component of the project improved stakeholder acceptance of technical and scientific information, although it did not solve all problems in this area. Technical support was still the area where stakeholders were least satisfied with the project, which conveners could have improved with better explanations of the models. As suggested by a convener, having the models completed before the larger stakeholder group convened would have provided more time for stakeholders' questions and concerns regarding technical information to be addressed.

A second tool introduced in the FLSP was an online wiki. Conveners and stakeholders alike agreed that the wiki was valuable and could have been more so with more stakeholder use. A couple of factors led to under-use of the wiki, including its introduction in the middle of the project and lack of clear explanation to stakeholders. Introducing the wiki at the onset of the project, with clear guidelines on how posted information will be used by the conveners and to whom individual posts will be attributed, could help curb aversion to putting thoughts on paper and increase use.

Subcommittee meetings proved unanimously useful to both stakeholders and conveners. However, one issue reducing the success of subcommittees was the "cross-pollination" of meetings that resulted in less productivity. This was a defensive action taken by stakeholders motivated by lack of trust for either conveners, stakeholders, or both. Setting a limit on number of participants and moving to a closed meeting format could reduce defensiveness in these meetings. If conveners were to do this, however, they must clearly explain why they were doing it and be adamant about disclosing all information from each subcommittee meeting for all stakeholders' access. Cooperation with subcommittee meetings may have also been improved by introducing the subcommittees at the project onset, either stating that they will be

implemented at a certain point in the project or having the subcommittees throughout the larger stakeholder process.

Using public participation in watershed management is a learning process. There are many techniques available for use in stakeholder projects, but even given the amount of information that exists on the topic, no one technique is identified as the most appropriate (National Resource Council 2008). The National Resource Council (2008) recommends using "best practice techniques" which are determined by the situation. The adaptation of DWQ to different needs that were presented in the FLSP and other stakeholder processes is indicative of their implementation of these best practices. Furthermore, conveners were eager to apply lessons learned in the JLSP to the FLSP, and were open to learning from the FLSP for future projects. The fact that the FLSP seemed to be considered an overall improvement from Jordan Lake encourages the belief that NC DWQ-convened processes will continue to be modified and refined for future projects. Especially when taking into consideration that the literature has not yet defined any one best practice, I think DWQ's willingness to learn from projects and adapt to situations through innovation makes the project a success and ensures continued improvement in future processes.

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APPENDIX A – STAKEHOLDER SURVEY

Dear Falls Lake Stakeholder Project Participant,

I am a Masters of Environmental Management Student at Duke University's Nicholas School of the Environment. For my master's research project, I am researching the use of stakeholder participation in watershed management and am conducting an evaluation of the Falls Lake Stakeholder Project. I intend to evaluate the success of the Falls Lake Stakeholder Project on the basis of your perceptions of the process. State officials can then use this information in determining when and where stakeholder collaboration processes are appropriate in other watershed management situations.

Your feedback on the stakeholder process, through the attached survey, will be extremely useful. The survey is a series of statements which you are asked to rate. In addition, there are several open-ended questions where you can provide further comments. The survey will take 15-25 minutes. Instructions for completing and returning the survey in either hard copy or digital format are provided on the next page. You are under no obligation to participate. If you choose to participate, you may halt completion of the survey at anytime and you may choose not to answer any questions. If you prefer, you may complete the survey by phone by contacting me at the phone number or email below. I am requesting that the surveys be returned by **December 18**.

The information provided in this survey will assist me in drawing conclusions on the success of the FLSP. I will present my conclusions in a final report at the Nicholas School Masters Project Symposium in April of 2010. I will also share these conclusions with Triangle J Council of Governments, the NC Division of Water Quality, and the Upper Neuse River Basin Association. Additionally, the results of my evaluation will be included in a larger project conducted by Dr. Lynn Maguire, Duke University, and Dr. Toddi Steelman, North Carolina State University. Their project will evaluate the success of participatory processes completed by the NC DWQ.

I will hold the results of this survey in strict confidence. Reports utilizing data from the surveys will not reveal which respondents provided which answers. No one but my advisor, Dr. Lynn Maguire, and her research assistant, Lee Tuggle, will have access to the completed surveys. I will retain the surveys until the project is completed in May 2010. At that time, I will hand over the surveys to my advisor. She will retain possession of these materials until the completion of the project she is conducting with Dr. Toddi Steelman.

Should you have questions or require additional information, please feel free to contact me, Brooke Gray ((859) 797-0465, bcg6@duke.edu), or Dr. Lynn Maguire, Duke Professor and primary advisor to this project ((919) 613-8034, lmaguire@duke.edu).

Sincerely,

Brooke Gray

Introduction

The purpose of this survey is to gain a better understanding of your experience with the Falls Lake Stakeholder Project and your perceptions on the process up to this point. The survey is comprised of a series of statements regarding the project. Please indicate your agreement or disagreement on a scale of 1-5, with 1 being that you strongly agree with the statement, 3 being neutral, and 5 being that you strongly disagree with the statement. In addition, there are several open ended questions where you are asked to provide your own answer.

Depending on your preference, you may submit your responses to me either in electronic or hard copy form. If you prefer to complete the form digitally, please mark your responses directly within this document and email the document to me at bcg6@duke.edu. Or if you prefer to complete a hard copy of this survey, please print out the survey to complete it and fax your completed survey to me at (919) 684-8741. Please submit responses by December 18. If you have any questions or wish to complete the survey by phone, please feel free to contact me at bcg6@duke.edu or (859) 797-0465.

Background Information

1. Name: _____
2. Affiliation: _____
3. Which of the following types of organizations bests describes the organization you represented in the FLSP? (Please choose one)

Local Government	_____	Industry	_____
State Government	_____	Non-profit	_____
Federal Government	_____	Other	_____

4. Did you have the authority to make commitments for your group? Yes_____ No _____
5. Are you a member of the Technical Advisory Committee (TAC)? Yes _____ No _____
6. How many regular meetings did you attend between August 2008 and December 2010? _____
7. Did you attend any subcommittee meetings? Yes _____ No _____

   If yes, how many? _____

   If yes, which subcommittee? _____
8. Have you participated in any other stakeholder projects? Yes_____ No _____

   If yes, please list the projects: _____

Survey

Please indicate your agreement or disagreement with the following statements using a scale of 1 to 5. One meaning you strongly agree with the statement, 3 meaning you are neutral on the statement and 5 meaning you strongly disagree with the statement.

Process Design	**Strongly Agree** 1	2	**Neutral** 3	4	**Strongly Disagree** 5	**Unsure**
1. The intended purpose of the FLSP has been clearly defined to all stakeholders.						
a. In your own words, what is the goal of the FLSP?						
2. The Division of Water Quality's (DWQ) role within the FLSP has been clear up to this point in the process.						
a. What is the role that DWQ plays?						
3. Triangle J Council of Governments (TJCOG) and Upper Neuse River Basin Association (UNRBA) have been neutral facilitators throughout the duration of the FLSP.						
a. If you do not agree that TJCOG and UNRBA are neutral facilitators please explain why.						
4. I understand my role within the FLSP.						
5. From the onset of the process, conveners informed me of the time commitment participating within the FLSP would require.						
6. The stakeholder process could have benefited from an extended deadline.						

Process Design, continued.

a. Please elaborate on how you feel the stakeholder process was impacted by legislative deadlines.
7. Additional comments.

Process Fairness	Strongly Agree 1	2	Neutral 3	4	Strongly Disagree 5	Unsure
1. All of the interested parties are represented in the discussions.						
a. If you do not agree that all interested parties are represented, please list those groups who you feel were left out of the process.						
2. The facilitators and conveners allowed all parties to participate equally.						
a. If you do not agree that the facilitators and conveners allowed all parties to participate equally, please explain why.						
3. The facilitators and conveners of the FLSP treat all stakeholder's claims and positions with equal respect.						
a. If you do not agree that the facilitators treat all stakeholders' claims and positions with equal respect, please explain why.						

Process Fairness, continued	**Strongly Agree** 1	2	**Neutral** 3	4	**Strongly Disagree** 5	**Unsure**
4. Other stakeholders of the FLSP treat all stakeholder's claims and positions with equal respect.						
a. If you do not agree that stakeholders treat one another's claims and positions with equal respect, please explain why.						
5. The FLSP *wiki* website is a fair (i.e. accessible to all participants) means of communication for the stakeholder process.						
a. If you do not agree that the FLSP *wiki* website is a useful means of communication, please explain why.						
6. The FLSP subcommittee meetings are consistent with the goals of the project (discussed in the first question of the survey).						
a. If you do not agree that the FLSP subcommittee meetings are consistent with the goals of the project, please explain why.						
7. Additional comments.						

Process Execution	Strongly Agree 1	2	Neutral 3	4	Strongly Disagree 5	Unsure
1. The established ground rules have helped the meetings run smoothly.						
2. Meetings begin and end on time.						
3. Time limits set within the meetings are honored.						
4. The meeting times and locations are convenient for stakeholders to participate.						
5. The meetings are held in a neutral location.						
6. The project website is a useful tool.						
7. The *wiki* website is a useful tool.						
8. If you disagree with any of the statements (1-7) above, please explain why.						
9. Additional comments.						

Technical Support	Strongly Agree 1	2	Neutral 3	4	Strongly Disagree 5	Unsure
1. Technical information was presented in a manner that I could understand.						
2. Technical information was presented in a manner that the majority of stakeholders could understand.						
3. When needed, stakeholders were given the opportunity to be educated on unfamiliar technical information.						
4. Stakeholders accepted the validity of the data presented.						

Technical Support, continued.	Strongly Agree 1	2	Neutral 3	4	Strongly Disagree 5	Unsure
5. Stakeholders recognized technical parties as experts in their field.						
6. There was sufficient technical information to make informed decisions.						
a. If you disagreed with any of the statements (1-6) listed above, please elaborate.						
7. Additional comments.						

Predicted Outcomes	Strongly Agree 1	2	Neutral 3	4	Strongly Disagree 5	Unsure
1. DWQ will give sufficient weight to stakeholder input in drafting the Nutrient Management Strategy.						
2. By participating in the FLSP, I became more educated on the state's regulatory process.						
a. Please elaborate why you did or did not become more educated on the state's regulatory process.						
3. Because of my experience with the FLSP, I have adjusted the way that I participate in state-convened stakeholder projects.						
a. If you adjusted the way you participate in stakeholder projects please elaborate.						
4. The Falls Lake Nutrient Management Strategy will benefit (i.e. effectiveness, fairness, etc.) because of the stakeholder process.						
5. The FLSP has been a "success" based on the goals defined for the project.						

Predicted Outcomes, continued.	Strongly Agree		Neutral		Strongly Disagree	Unsure
	1	2	3	4	5	

a. If you do not believe the FLSP has been a "success" based on the goals defined for the project, please elaborate.

6. Additional comments.

Thank you for your time and assistance with this project. Please either email your responses to bcg6@duke.edu or fax at (919) 684-8741.

Follow-up interviews will be conducted with some stakeholders. If you are interested in participating, please contact Brooke Gray at (859) 797-0465 or bcg6@duke.edu.

APPENDIX B – CONVENER INTERVIEW

Convener Interview

Name:
Organization:

Initial Perceptions

1. What was the rationale for using a stakeholder project to develop the nutrient management strategy?
2. Prior to the project beginning, what was your perception of the project?
3. Did you have any reservations?
4. How did stakeholders react to your invitations to participate?

During the Process

5. What was your individual role during the process?
6. What was your role in the JLSP?
7. Were any stakeholders omitted from the discussions (or the whole process)? How did this affect the legitimacy of the discussions?
8. What was the level of interaction among different types of organizations (ie., Developers and non-profit organizations) during the process?
9. How well do you think stakeholders understood technical information? What steps were taken to ensure comprehension?
10. Do you think stakeholders accepted the validity of the technical information?
11. Were there changes made in the FLSP specifically to address issues in the JLSP? Were they effective?
12. How do you think this project compares to JLSP?

Current Perceptions and Recommendations

13. Do you think the FLSP will be successful in achieving its goals?
14. What aspects of the FLSP would you change for future projects?
15. What aspects of the FLSP would you retain for future projects?
16. What kind of an effect, if any, do you think the project has or will have on future collaboration projects initiated by the state?