GROWTH MACHINE MEETS CONSERVATION: A STAKEHOLDER ANALYSIS

OF THE BLACK WARRIOR AND CAHABA RIVER WATERSHEDS

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VITA

John "Patrick" Carter-North, son of Jack and Sherri Carter-North, was born on August, 26, 1980, in Pine Hill, New Mexico. Patrick graduated from Talawanda High School, in Oxford, Ohio, in 1998. After graduating *magna cum laude* with a Bachelor of Arts degree in Sociology from Eastern Kentucky University in August of 2003, Patrick entered graduate school at Auburn University in the Department of Agricultural Economics and Rural Sociology.

THESIS ABSTRACT

GROWTH MACHINE MEETS CONSERVATION: A STAKEHOLDER ANALYSIS

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Results from a stakeholder analysis of two central-Alabama watersheds—the
Black Warrior River watershed and Cahaba River watershed—are presented in this
thesis. Stakeholder opinions, perspectives, concerns, interests and dynamics regarding
watershed issues were documented through the use of semi-structured interviews.
Stakeholder groups targeted include business and industry representatives, developers,
elected officials and government entities, environmental/watershed advocacy and
conservation organization representatives, and non-industrial private forest owners.
While much of the area encompassing both watersheds remains largely rural in makeup,

portions of both watersheds located in and around Birmingham are becoming highly urbanized and as such are experiencing increased threats from non-point source pollution largely associated with accelerated commercial and residential land development. This thesis documents the major threats and issues currently facing the tow watersheds; who the primary stakeholders are regarding these watershed issues; stakeholder opinions, perspectives, concerns, interests and dynamics relating to these issues; and an examination of stakeholder opinions and acceptability of existing or proposed watershed protection policies and/or programs.

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I. INTRODUCTION

Alabama's abundant natural resources have formed the basis of the state's prosperity throughout its history (Glenn et al. 2002). The expansive network of Alabama's waterways are no exception. The first governor of Alabama, William Wyatt Bibb, realizing the importance, promise and potential of the state's waterways, decided to display the primary rivers of Alabama when he designed the official state seal in 1817 (Keith 1998). Alabama is blessed with water: about one- twelfth of all the water that flows into the oceans from the continental U.S. makes its way through Alabama; the state has 77,000 miles of rivers and streams, 500,000 acres of standing water and more navigable channels (1,738 miles) than any other state in the nation (Bayne 1998). The history and future of Alabama is deeply rooted to its diverse and expansive water resources.

Importance of Water

The watersheds of Alabama and the waterways into which they drain are valuable in many contexts. From an economic standpoint Alabama's waterways are vital to many different industries, including the pulp and paper industry, agriculture, mining and utilities. Alabama's water resources are vital to the production processes of many industries, and also serve as a medium for the disposal of industrial and municipal wastes and other discharges. Tourism and recreation are also activities through which

Alabama's waterways bolster the state's economy. Alabama is renowned for its trophy fish-producing lakes and a vibrant tourism industry has developed around the state's rivers, which connect Alabama to cities such as Chicago, St. Louis, Cincinnati and Pittsburgh (Keith 1998). David Bayne notes that although it is difficult to quantify the economic importance of the state's surface waters, they generate billions of dollars in revenue each year from non-industrial uses alone (Bayne 1998). Alabama's waterways are also important in that they facilitate population growth and serve as drinking water sources and receiving bodies for municipal wastewater. From an ecologic standpoint, Alabama's waterways are extraordinary: Alabama is ranked fourth in the nation regarding the number of plant and animal species and its rivers are amongst the most biologically diverse in the world (Keith 1998). Thus, there are many different contexts in which Alabama's water resources are valued. The importance of Alabama's water resources to the state's economy, ecology, population and culture cannot be overemphasized.

Natural Resource Management

Water and other natural resources are used by different individuals and entities for different reasons. Competition for access to and use of water has the potential to pit one user versus another. According to natural resource scholars Julia Wondolleck and Steven Yaffee (2000) natural resource use and management is subject to conflict for a number of reasons: natural resource management decisions by one individual or group may generate effects far off-site that span across political and personal boundaries; natural resource management decisions are often controlled or influenced by those actors

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with the greatest access to power—marginalizing the influence and input of actors with less access to power; natural resources are subject to increased scarcity due to increases in demand and population and unequal distribution; and natural resources are used and defined symbolically in different ways by different actors, which often leads to competition over how the resource should be used and by whom (Wondolleck and Yaffee 2000).

Conflicts arising over water issues are commonplace, especially in the arid southwestern region of the United States. Although common in the West, where water resources are scarce, conflicts revolving around water rights and water allocation are becoming more frequent in the East, where water resources are relatively abundant. In both regions, continuous population growth and urban land development are often key factors contributing to water conflicts. The water-rich states of Alabama, Florida and Georgia are currently in the midst of a very complex and crucial conflict regarding the allocation of water from two river basins, the Alabama-Coosa-Tallapoosa (ACT) and Apalachicola-Chattahoochee-Flint (ACF) (Jehl 2002). This dispute, which is over a decade old, has Georgia (mainly Atlanta) pitted against Alabama and Florida. Georgia wants access to more water from both the ACT and ACF river basins to feed Atlanta's growing population while Alabama wants to ensure adequate supplies of water for its' own expanding towns and industries. Florida's primary concern focuses on the potential ecological and economic impacts of decreased water-flows to Apalachicola Bay, which is famous for its oysters (Jehl 2002).

The city of Birmingham, Alabama and surrounding municipalities are currently in the midst of their own struggles over water issues. Birmingham is located in two

adjacent watersheds, the Black Warrior River Watershed and the Cahaba River Watershed. Waterways in both watersheds are utilized in different ways by different people and entities. The Birmingham Water Works Board (BWWB) utilizes raw water sources from both watersheds to provide drinking water to nearly one million customers—almost one quarter of Alabama's entire population (Wade, Fowler and Llewellyn 2004). In addition to serving as sources of drinking water, waterways in both watersheds are valued for recreational and educational activities, biodiversity, industrial development, and as receiving waters for municipal and industrial discharges. Many of the water issues in and around Birmingham are related to current and future increases in urban growth and land development. These issues include the expansion of sewage systems to facilitate future growth (Bouma 2002a), locating potential drinking water sources for the future (Bouma 2002b), and various forms of pollution and impairment of area streams and rivers due to increased urban growth, land development and human activity (Wade et al. 2004). These water-related issues have stirred up controversy and conflict among local governments, businesses, community groups, and other residents (Bouma 2003).

The potential for conflict regarding natural resources such as water highlights the importance and need for effective natural resource management. In the United States and abroad, a new trend in natural resource management is developing (Jentoft, McCay and Wilson 1998; O'Neil and Thomas 1999; Sabatier et al. 2005; Schuett, Selin and Carr 2001; Selin, Schuett and Carr 2000; Taylor 1998; Wondolleck and Yaffee 2000). This new trend is based on the notion of collaboration and cooperation and stresses the importance of community inclusion and input regarding natural resource management

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decisions. Central to these more inclusive resource management processes is defining the essential stakeholders and determining their interests in the resource and issues at hand.

Objectives

This study aims to examine stakeholder attributes and natural resource management dynamics of two adjacent watersheds located in central Alabama: the Black Warrior River Watershed (BWRW), and the Cahaba River Watershed (CRW). Portions of each watershed exist in and around the city of Birmingham and surrounding municipalities. Many of these municipalities are growing quickly and depend on the same watersheds as Birmingham for continued growth. Surface water in both watersheds is utilized by many different individuals and entities for different purposes. A primary use of waterways in both watersheds is that Birmingham and surrounding municipalities rely on these waterways as sources of drinking water. Increasing demands are being placed on portions of both watersheds due to population growth and the accompanied residential and commercial growth and development. These watersheds are also experiencing negative consequences (pollution, habitat degradation) associated with urban growth and development.

The objectives of this study are carried out through the implementation of a stakeholder analysis (SA). The objectives of this study are: (1) identify, locate, contact and interview different stakeholders and representatives of stakeholder groups regarding water/watershed issues for both the BWRW and CRW; (2) document the authentic concerns, perspectives and interests of these particular stakeholders relating to watershed issues (3) identify and examine stakeholder acceptability of existing and/or proposed

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watershed protection/management policies/programs and (4) examine the attitudes of non-industrial private forest (NIPF) owners regarding proposed water quality service scenarios whereby the landowner would be subsidized in some form to either control certain land-use practices or implement and maintain riparian buffer zones (a.k.a. streamside management zones, filter strips) in order to reduce the amount of pollution entering local waterways and reduce water treatment costs.

Description of Study Areas

A watershed is the particular area of land that drains into a specific stream, river or waterway; every piece of land is in a watershed; every person lives in a watershed. Watersheds are sometimes referred to as drainage basins or river basins. In order to effectively understand and protect rivers and streams we must work to understand and protect the land through which moisture drains into these waterways. In Alabama there are three major river basins: the Tennessee Basin, the Mobile Basin, and the Gulf Basin (Keith 1998). These three river basins can be thought of as very large watersheds composed of several smaller watersheds and sub-watersheds. Both the BWRW and the CRW are found within the Mobile Basin, and are themselves composed of smaller watersheds and sub-watersheds. The BWRW and CRW are located adjacent to one another, with Birmingham sitting in portions of both watersheds. Waterways in both watersheds are utilized for various purposes by various people and entities, a primary use being that the city of Birmingham and surrounding municipalities draw drinking water from both watersheds. See APPENDIX 1 for a visual representation of both watersheds.

The Black Warrior

In north-central Alabama, tiny, trickling streams merge to form the Locust and Mulberry Fork Rivers; these two rivers join approximately 20 miles west of Birmingham to form the Black Warrior River (a.k.a. "Warrior River"). The Warrior River flows south for 175 miles before joining the Tombigbee River near Demopolis and eventually emptying into the Gulf of Mexico. While the Black Warrior and its tributaries flow through parts of 15 counties, the majority of the watershed is contained within seven counties: Winston, Cullman, Blount, Walker, Jefferson, Tuscaloosa, and Hale. The vast BWRW is the largest watershed entirely contained within the state, draining just less than 6,300 square miles of land that encompass a variety of geological regions (Lydeard, McLane, and Duncan 2003). The BWRW is divided into five main watersheds—the Sipsey Fork, Mulberry Fork, Locust Fork, the Upper Black Warrior and the Lower Black Warrior—which in turn are comprised of 76 smaller sub-watersheds (Black Warrior Clean Water Partnership 2003). Near the city of Tuscaloosa, the Black Warrior River flows across the Fall Line— a physiographic separation where the Appalachian Mountains end and the Coastal Plain begins (Keith 1997). The Fall Line serves as a basic topographic divide for the Black Warrior and many other rivers in Alabama, including the Cahaba River. Elevations in the BWRW above the Fall Line range from 600 feet to 1,100 feet and from 150 to 300 feet below the Fall Line (Rivers of Alabama 2004). Above the Fall Line much of the Black Warrior River and its tributaries flow through areas characterized by mountainous terrain, moderate to steep slopes and rocky shoals. Below the Fall Line, as elevations drop, the river slows down and flows through the

sediments of the upper Coastal Plain and is characterized by rolling hills and pasture land. The Black Warrior River ends within the Blackbelt, historically an agricultural area known for its rich, dark soils. With the exception of the cities and suburbs of Birmingham and Tuscaloosa, much of the land within the BWRW remains largely rural in makeup. Approximately 75% of the land within the BWRW is forested, 17% is agricultural and 2% is considered urban (Black Warrior Clean Water Partnership 2004.)

For millions of years the rivers and streams in the BWRW flowed freely and supported a healthy and diverse ecosystem (Lydeard et al. 2003). In the 17th and 18th centuries the Warrior River provided many resources and facilitated commerce and communication among Native Americans such as the Chickasaws, Creeks and Choctaws (Keith 1998.) In the early 1800's most of the Native inhabitants of the BWRW were forced to move west, opening up the area for settlers of European decent. It was around this time that coal was discovered and mined throughout the watershed (Rivers of Alabama 2004) and the fate of the Black Warrior River was changed forever (Black Warrior Riverkeeper n.d.). In the late 19th and early 20th centuries a series of locks and dams were constructed on the Warrior River to allow for commercial navigation, commerce and hydropower generation—the Warrior River was the first river in Alabama to be severely altered by dams (Black Warrior Riverkeeper n.d.). Subsequently, the natural river ecosystem was changed causing the loss of diverse habitat and several native fish and aquatic wildlife species (Lydeard et al. 2003). Between 1895 and 1915 there were 17 dams and 18 locks constructed on the Warrior River. Today, as a result of modernization efforts, the entire Warrior River consists of a series of five locks and dams with intervening reservoirs (Lydeard et al. 2003). Although dam construction was

detrimental to many native fish, plants and wildlife, the waters of the BWRW still contain a diverse range of fish and wildlife species, several of which are listed as threatened or endangered (Rivers of Alabama 2004).

The three main tributaries of the Black Warrior—the Sipsey Fork, Mulberry Fork and Locust Fork rivers—each possess extraordinary recreational attributes. Flowing south through much of Winston county, the Sipsey Fork consists of a multitude of spectacular waterfalls, canyons and bluffs, and supports many rare species and old growth forests (Keith 1998). Smith Lake, on the Sipsey Fork, is known for its deep, clear water and is frequented by the most serious of fishermen. The Mulberry and Locust Fork Rivers are the last remaining large free-flowing tributaries to the Warrior River (Lydeard et al. 2003). The Mulberry Fork begins near Marshall County and flows southwest forming the border between Blount and Cullman counties; its scenic beauty is valued by fishermen, canoeists, kayakers and others who find enjoyment amidst the water. The Mulberry Fork is the second longest free-flowing river in the state (i.e., not regulated by major dams). Of the Black Warrior's main tributaries, the Locust Fork may be the most renowned. Flowing through Blount and Jefferson counties, the Locust Fork is well known for its impressive whitewater, turbulent rapids and dangerously rocky bottoms; this wild and secluded river attracts some of the most brave and adventuresome canoeists and kayakers. The Locust Fork is the third longest free-flowing river in the state. While these main tributaries to the Black Warrior are known for their great recreational attributes, the Black Warrior itself is known in a somewhat different light.

The mighty Black Warrior River is known by many as a working river—it facilitates commerce via barge traffic, provides water vital to the production processes of

many different industrial facilities, generates hydroelectric power, functions as a repository for municipal and industrial effluent and provides drinking water to a multitude of Alabamians, including many of those living in and around Birmingham. While the Black Warrior provides many benefits, amenities and necessities such as those mentioned above, they do not come without costs. These costs may not always be as tangible as the benefits, but they do exist, mainly in the form of pollution and the loss of aquatic wildlife and habitat. The negative consequences associated with urban development—hydroelectric dams, failing septic systems, poorly functioning wastewater treatment plants, municipal and industrial discharges and agricultural runoff—all contribute to these sometimes ambiguous costs.

Water quality in the Black Warrior River and its tributaries is threatened by both point and non-point source pollution (Black Warrior Clean Water Partnership 2003; Lydeard et al. 2003; Rivers of Alabama 2004). Point-source pollution is pollution which is legally discharged by various municipal and industrial facilities at defined "points," which are usually pipes. In contrast, non-point source pollution (NPS) has no one, single point from which it originates, but rather is pollution that comes from numerous and often unidentifiable sources and is eventually washed off the land and into waterways via runoff. In Alabama, point source pollution and discharges are managed by the Alabama Department of Environmental Management (ADEM) through the National Pollutant Discharge Elimination System (NPDES) permitting process.

There are numerous point source discharges permitted by ADEM through the NPDES in the Black Warrior River and its tributaries, including effluent from municipal wastewater treatment facilities, industrial discharges, animal feeding operations and solid

waste disposal systems (Black Warrior Clean Water Partnership 2003). NPS in the Black Warrior River and its tributaries is a significant problem (Black Warrior River Clean Water Partnership 2003). While somewhat ambiguous, NPS usually originates from runoff (often stormwater runoff) associated with human activities such as residential and commercial development, construction, agriculture, mining and forestry, all of which are activities that take place within the watershed. NPS via runoff can transport sediment, nutrients, fertilizers, chemicals, pesticides, petroleum products and other contaminants to receiving waters (Black Warrior River Clean Water Partnership 2003). Unlike point source pollution, non-point sources do not originate from an easily identifiable "point" such as the end of a discharge pipe; thus NPS is harder to manage and control than point source pollution.

The Cahaba

The spring-fed Cahaba River originates in the southernmost foothills of Appalachia, atop of the 1,500 ft. Cahaba Mountain. The springs on Cahaba Mountain converge to form a small stream that gradually grows in size as it flows south for approximately 200 miles before emptying into the Alabama River near the city of Selma, Alabama. The CRW drains approximately 1,870 square miles and is found in portions of eight central-Alabama counties: St. Clair, Jefferson, Shelby, Tuscaloosa, Bibb, Perry, Chilton and Dallas. Approximately 65% of the CRW is forested, 16% is pasture/cropland and 15% is urban (Rivers of Alabama 2004). The Cahaba River and watershed are divided into two general but distinct physical regions: the Upper Cahaba

Watershed and the Lower Cahaba Watershed. Like the Black Warrior, the Cahaba River and watershed are divided by the Fall Line.

In the more mountainous Upper Cahaba region, above the Fall Line, the Cahaba is a fast moving river, flowing over rocky streambeds, and through steep banks, high bluffs and pine-dominated forests. Here, the Cahaba and its tributaries pass through and over areas marked by geological violence—places where, for ages, rock formations have collided, compressed and broken, forming many geological zones (Keith 1997). Below the Fall Line, near Centreville, the terrain flattens and the river becomes a gentle giant as it slows, grows deeper and widens as it meanders through the soft alluvial sands of the Coastal Plain. Here, sandbars replace rocky shoals, pastures line the river and the trees, no longer dominated by pine, are made up of several hardwood species including willow, birch, sycamore, poplar and ash (Keith 1997).

The Upper Cahaba region, closest to Birmingham, is an area experiencing tremendous increases in human population and the accompanying residential and commercial development. Many of the municipalities that are adjacent to Birmingham and compose the Upper Cahaba region—Trussville, Leeds, Mountain Brook, Hoover, Homewood, Vestavia Hills, and Pelham to name a few—are growing rapidly. Here, forestland and open space are quickly being replaced with subdivisions, roads, parking lots, shopping malls and other commercial developments. In contrast, the Lower Cahaba region remains largely rural and is made up mostly of older, smaller and sleepier towns—such as Brent, Jericho, Sprott, Marion, and Suttle—that have yet to experience the rapid growth taking place among many of the cities and towns in the Upper Cahaba region.

The Upper Cahaba Watershed is also an area where there is and has been a relatively large amount of concern and action taking place regarding water and watershed issues. There exist a multitude of organizations and citizen groups in the Upper Cahaba area that are concerned about the state of the Cahaba River and watershed. For instance, there is an ongoing Upper Cahaba Watershed Study (UCWS) which is a coordinated effort among county and municipal governments, and other public and private stakeholders in the Upper Cahaba Watershed on how to best create a balanced approach to watershed protection and development (Wade et al. 2004). The UCWS consists of several committees made up of elected officials, local business and industry representatives, technical experts, environmentalists and other stakeholders (Wade et al.2004). In addition to the UCWS, there is also the Cahaba River Basin Clean Water Partnership, which is part of the larger Alabama Clean Water Partnership, and is similar in its' structure and charter to the BWRCWP. While many citizens in the Lower Cahaba Watershed may be equally concerned with watershed conditions, there aren't any watershed protection efforts being implemented which focus solely on the Lower Cahaba that are similar in scale and structure to the UCWS.

While the Black Warrior River is known primarily as a working or industrial river, the Cahaba River is largely recognized for its rich biodiversity, scenic beauty, and rare fish, plant and wildlife species. The Cahaba River contains a greater number of fish species per mile than any other river in North America (Keith 1997). The CRW supports 69 rare and imperiled species, including 10 fish and mussel species that are listed under the federal Endangered Species Act (The Nature Conservancy 2005). In addition to the attention the Cahaba receives for its wealth of biodiversity, it is also known for being the

longest free-flowing river in Alabama. The Cahaba River is used by many people for recreational activities such as canoeing, kayaking, fishing, swimming and tubing. While the Cahaba River is known largely for it's wealth of biodiversity, rare plant and animal species, and recreational attributes, it also functions, like the Black Warrior, as a waste repository, and supplier of water for industrial processes. The Cahaba River also serves as a major drinking water supply—as the Birmingham Water Works Board relies on the Cahaba as a primary source of raw water which it processes and then sells to nearly one million Alabamians (Wade et al. 2004). The CRW also contains vast deposits of coal, which were mined heavily beginning in the late 1800's. Such mining declined dramatically in the 1930's and 1940's as electricity increasingly replaced coal as a power source (Keith 1997). Agriculture and forestry still take place within the CRW.

Like the BWRW, the CRW faces threats to water quality from both point and NPS (Rivers of Alabama 2004; Wade et al. 2004). Permit violations (exceeding permit pollutant parameters) of major industrial and municipal point source discharges make up much of the concern regarding point source pollution (Wade et al. 2004). Much of the concern regarding NPS focuses on increasing urban development in the Upper Cahaba Watershed in and around Birmingham. A report from the UCWS states that there are a multitude of water quality problems evident in the UCW and, while there is no single overwhelming problem, sedimentation has been identified near the top of a long list of relevant problems (Wade et al. 2004). Other problems that this report cites are suspended solids and turbidity, excess nutrients, pathogens, heavy metals, herbicides, pesticides and low dissolved oxygen levels (Wade et al. 2004). The report states that "In general, increasing human activity in the watershed is the root cause of these problems. With

more people living, working, shopping, driving and developing land in the watershed, the drainage of the land is being altered, more pollutants are available on the landscape, and greater discharges are seen from municipal and industrial wastewater treatment plants" (Wade et al. 2004:18). The Nature Conservancy of Alabama reports that impacts associated with encroaching development from the Birmingham metropolitan area have resulted in the disappearance or endangerment of much of the plant and animal life associated with the Cahaba (The Nature Conservancy 2004). Thus, both point and non-point pollution pose threats to water quality in the CRW.

Watershed Management in the Study Areas

In both the BWRW and CRW, there are organized watershed management activities taking place. Both watersheds have programs affiliated with the Alabama Clean Water Partnership (CWP). The Alabama CWP, an extension of the federal Clean Water Action Plan, is a state-wide program that was enacted in 1998, and is composed of a coalition of public and private individuals, companies, organizations and governing bodies working in conjunction to protect and preserve Alabama's water resources and aquatic ecosystems (Alabama Clean Water Partnership n.d.). The function of the Alabama CWP is to bring together representatives of these different stakeholders to coordinate individual efforts, share information and plan for more effective watershed protection and preservation (Alabama Clean Water Partnership n.d.). The Alabama CWP is formally composed of a board of directors, a technical committee, an education and outreach committee and a finance committee, which all meet on a quarterly basis (Alabama Clean Water Partnership n.d.). Funding for the Alabama CWP comes

primarily from the federal Environmental Protection Agency (EPA), with additional funding coming from other federal and state grants, and/or public and private foundations (Black Warrior Clean Water Partnership n.d.).

Through the Alabama CWP, there have been programs established that focus on specific watersheds in Alabama. The Black Warrior River Clean Water Partnership, and the Cahaba River Basin Clean Water Partnership are both organizations embedded in the larger Alabama CWP, which focus on issues specific to each respective watershed. Like the Alabama CWP, these watershed-specific organizations are also composed of public and private stakeholders and rely primarily on federal funding. The Black Warrior River Clean Water Partnership began in 2002 and is divided into an Upper Sub-basin Action Committee, a Middle Sub-basin Action Committee, and a Lower Sub-basin Action Committee; each of these committees meets monthly to discuss watershed issues (Black Warrior River Clean Water Partnership n.d.). The Cahaba River Basin Clean Water Partnership also meets on a monthly basis and was formed in 2002 as a continuation of the Cahaba River Basin Project which was established in 1996 (Cahaba River Basin Clean Water Partnership n.d.). Both the Black Warrior River Clean Water Partnership and the Cahaba River Basin Clean Water Partnership have developed watershed management plans.

The Upper Cahaba Watershed Study (UCWS), formally initiated in 2002, is another organized watershed management program focusing, as its name implies, on the Upper Cahaba Watershed in and around Birmingham. The impetus for the UCWS grew out of widespread concern relating to increased population growth and increased land development within the Upper Cahaba Watershed (Upper Cahaba Watershed Study n.d.).

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The UCWS is a coordinated effort among local governments, businesses, citizen groups, city planners, landowners and other stakeholders to assess the current state of the Upper Cahaba Watershed and aid in the guidance and planning of future development so that the impacts to the watershed are minimized (Upper Cahaba Watershed Study n.d.). The UCWS is formally composed of a consortium (local mayors and county commissioners), a technical committee (technical and scientific experts), and an advisory committee (area citizens, businesses, environmentalists). The work of the UCWS is broken into two phases: phase one, which was completed in May of 2004, was implemented to ascertain the state of the Upper Cahaba Watershed, develop watershed management tools (e.g., computer models that predict impacts of development on the watershed) and land-development planning approaches (various development regulations); and phase two (currently ongoing), where these management tools and planning approaches are to be recommended by the consortium for local governments to potentially implement. Funding for the UCWS comes primarily from the local governments involved in the study (Upper Cahaba Watershed Study n.d.).

Although there are numerous watershed/environmental advocacy and conservation organizations that are active in addressing watershed issues within both the BWRW and CRW, these organizations tend to focus on specific portions or segments of each watershed, rather than on the entire watersheds themselves. The Clean Water Partnerships described above, and the UCWS, are the programs which seek to gain broad stakeholder involvement regarding watershed management on a watershed-level scale (or half of the watershed in the case of the UCWS).

II. STAKEHOLDER ANALYSIS

A stakeholder analysis (SA) is a tool used for gaining a broad and in-depth understanding of the dynamics within and between stakeholders regarding a particular issue, event, policy, program or situation. Other definitions of a SA include: "a holistic approach or procedure for gaining an understanding of a system, and assessing the impact of changes to that system, by means of identifying the key actors or stakeholders and assessing their respective interests in the system" (Grimble and Wellard 1997:175); and "a range of tools for the identification and description of stakeholders on the basis of their attributes, interrelationships, and interests related to a given issue or resource" (Ramírez 1999:102). Stakeholders can be defined as those individuals, groups, organizations or communities who affect and/or are affected by the outcome of an issue, event, policy, program or situation (Chevalier 2001; Grimble and Chan 1995; Grimble and Wellard 1997). In the context of natural resource management, stakeholders can be thought of as those who use and/or manage the natural resource at hand (Röling and Wagemakers 1998).

The origins of SA are found in business and managerial science (Chevalier 2001), but SA transcends several fields of study, including international relations, policy development, participatory research and natural resource management (Ramirez 1999). A SA can serve multiple functions: it is useful for discovering existing patterns of interaction, networks and power relations between stakeholders (Ramírez 1999); helping

predict, identify and circumvent potential conflicts between stakeholders (Grimble et al. 1995); helping assess the potential distributional and social impacts and trade-offs of decisions and policies on the different stakeholders involved (Grimble et al. 1995); and perhaps most significantly, a SA can serve to improve the formulation and effectiveness of policies created or adopted to address a particular issue (Grimble et al. 1995; Grimble and Wellard 1997; Ramírez 1999). Another reason a SA is useful is that it can be implemented for issues and stakeholders at different scales such as local, regional, and national. While a SA can serve multiple functions, and is useful in many respects, it should not be seen as a remedy or panacea to problems regarding natural resource management or development, nor should it be thought to guarantee stakeholder representation (Grimble and Wellard 1996; Ramírez 1999). It is worth noting that the term "stakeholder analysis" is sometimes used interchangeably with "situation assessment" or "conflict assessment" (L. Fisher, Senior Program Manager, U.S. Institute for Environmental Conflict Resolution, Tucson, AZ, Personal Communication, June 8, 2004).

The methodology for conducting a SA is rather flexible (Chevalier 2001; Grimble et al. 1995) and as such is viewed as poorly developed by some (Chevalier 2001). Stakeholder analyses are also subject to resource constraints, especially time and money; getting stakeholders to participate can also be challenging; the quality of a SA is also subject to the communicative and analytical skills of the person conducting the SA. While there isn't a specific recipe (think cookbook) or technique associated with conducting a SA, there are some general guidelines to help guide the process of conducting a SA. These include identifying the main purpose of the analysis (what are

you trying to do?); develop an understanding of the system and decision makers in the system; identify stakeholder characteristics and classify (rank) according to their levels of power, importance, influence, and involvement; identify patterns, similarities, differences, and interactions between stakeholders; and define or recommend options or strategies for management (Grimble et al. 1995). While these objectives can be met through both qualitative and quantitative methods, the use of informal semi-structured interviews is a common method used to identify stakeholder attributes (Bingham 2002; Grimble and Chan 1995). One common component of a SA is creating a stakeholder typology or matrix where stakeholders are listed on one axis and categorized by their respective characteristics, importance and influence on the other axis (Chevalier 2001; Grimble et al. 1995; Ramírez 1999). Stakeholder typologies and matrices can help categorize stakeholders into different groups (key stakeholders, secondary stakeholders, etc.) according to their importance and influence which in turn aid in identifying power relations, patterns, similarities and differences among the different stakeholders.

One reason for implementing a SA is that problems and conflicts often cannot be solved through scientific and technological means alone (Chevalier 2001); examining and understanding the social relations and dynamics between and among stakeholders involved in a particular issue can enhance the likelihood of bringing about an effective, long-term solution. One can think of a SA as being complimentary to scientific and technological means of addressing and solving problems and conflicts, especially in the context of natural resource management.

Much of the literature that exists on SA relates to issues of development, particularly in the context of sustainable development and natural resource management

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(Chevalier 2001; Grimble et al. 1995; Ramírez 1999). The multiple and often

incompatible uses and users of natural resources often leads to conflict over how the

resources are used and by whom. In the context of natural resource management, a SA

can help us to better grasp the objectives and interests of the various stakeholders

managing and using the particular resource in question which may help predict the

outcomes of decisions made and can facilitate informed policy-making (Chevalier 2001;

Grimble et al. 1995; Grimble and Wellard 1997;).

Examples of SA regarding natural resource management in the U.S.

include a case in New Mexico where the New Mexico Resource Advisory

Council and the Bureau of Land Management (BLM) hired a private consultant to

conduct a SA regarding conflicts over natural gas reserves around Otero Mesa in

Southern New Mexico (Bingham 2002). In this case, increased interest in oil and

gas leases prompted the BLM to come up with a draft resource management plan

that was met with opposition from numerous sources, including industry

representatives who felt the plan was too restrictive and environmentalists and

others who felt the plan was not restrictive enough. The BLM hired a consultant

to conduct a professional, neutral, SA exploring the feasibility of a mediated

process to develop a consensus-based preferred alternative for the BLM's

resource management plan for Otero Mesa, particularly for the management of oil

and gas resources (Bingham 2002). The consultant interviewed several

representatives from affected or interested parties. A consensus-based alternative

could not be reached, but the pros and cons of several different management

options were identified along with what the consultant felt were the major barriers

impeding consensus—which was useful information for the BLM.

Other examples of a SA regarding natural resource management include a dispute

over coalbed methane extraction in Wyoming's Powder River Basin (Straube and

Holland 2003) and a conflict revolving around the St. Croix River Bridge project

involving stakeholders from Minnesota and Wisconsin (Wofford and Keyes

2001). An example of a SA outside the United States involves competing

interests over forest resources and land-use in Cameroon, Africa (Grimble et al.

1995; Grimble and Wellard 1997).

III. RESEARCH METHODS

This chapter details the research methods employed throughout this project. The objectives of this study were carried out through qualitative research methods. In this chapter I will provide a brief description of qualitative methods and discuss the general approach taken in carrying out this research. This will be followed by a detailed methodology and some personal reflections on the whole process.

Qualitative Research Methods

There are multiple techniques used within the social sciences to explore and understand social phenomena. One major dichotomy within the social sciences is that between qualitative and quantitative research. The main differences between qualitative and quantitative research are that quantitative research relies heavily upon using numbers and statistics to describe the attributes of relatively large groups of people (Esterberg 2002), and emphasizes the measurement and analysis of causal relationships between variables (Denzin and Lincoln 2003). In contrast, qualitative research focuses on understanding social processes in context, and is better suited for revealing the meanings people ascribe to particular events or activities (Esterberg 2002). While quantitative research is useful for examining causal relationships between numerous variables within large datasets, qualitative research is better suited when there are only a small number of

cases (people) to be studied and/or when the researcher wants to understand the meanings that people hold about particular events, activities or occurrences (Esterberg 2002).

The objectives of this project were favorable to a qualitatively-based methodology because the stakeholders that were targeted were relatively small in number, and I was not specifically looking for any causal relationships; rather, I was looking for the processes and contexts through which these stakeholders came to hold their concerns, perspectives and interests regarding watershed issues.

Detailed Methodology

The methodology used in this study was qualitative, drawing upon secondary data collection and analysis, non-probability sampling techniques, and semi-structured interviews (Denzin and Lincoln 2003; Esterberg 2002; Ritchie, Lewis and Elam 2003). The initial stages of this study were spent reviewing academic literature on stakeholder analysis (SA) and by examining media accounts (mostly newspaper articles) on issues relevant to the Black Warrior and Cahaba watersheds. I spent two weeks during the end of May, 2004 and beginning of June, 2004 scanning past and present newspaper articles (both in print and online). By reviewing these media accounts I was able to familiarize myself with some of the watershed issues as well as identify some of the stakeholders involved with these issues. In addition to the media accounts, I spent time scanning websites of various watershed/environmental advocacy and conservation organizations that had information relating to watershed issues. For example, the Nature Conservancy of Alabama, the Cahaba River Society, and the Black Warrior Riverkeeper all have websites that highlight watershed issues in both the BWRW and CRW. Many of the

media accounts and websites I reviewed, for both the Cahaba and Black Warrior, highlighted issues relating to increasing urban development and growth and the consequences this growth had on watershed conditions. From these initial reviews, five general stakeholder groups were identified and categorized: elected officials and government entities, environmental and watershed advocacy and conservation organizations, business and industry representatives, developers, and non-industrial private forest (NIPF) owners. Stakeholders from these categories are who I targeted for interviews. One thing that all these stakeholders had in common is that they were all involved in, or had a stake in, issues relevant to the Black Warrior and Cahaba watersheds. In addition, one newspaper reporter who frequently covers environmental issues and was familiar with issues in both watersheds was interviewed.

After these initial reviews, when I felt I had a good idea what some of the watershed issues were and who some of the relevant stakeholders were, I began to look for an initial interviewee to begin semi-structured interviews—which was my primary data collection technique. Semi-structured interviews are often conducted in qualitative research where the interviewer wishes to "…explore a topic more openly [than a formal, or structured interview] and to allow interviewees to express their opinions and ideas in their own words" (Esterberg 2002:87) and where the interviewer may have only one chance to interview a particular person (Bernard 1995). The primary sampling methods employed in this study consisted of non-probability purposive and snowball sampling techniques. Non-probability sampling techniques are used in qualitative research where samples are deliberately selected based on certain characteristics and are not intended to be statistically representative (Ritchie et al. 2003). Purposive sampling is often used in

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qualitative research where the researcher chooses research participants for certain qualities or characteristics they have (Bernard 1995; Esterberg 2002; Schutt 1999). In this study I was not looking for a random sample of people or organizations living or operating in the watersheds. Rather, I targeted individuals and groups who were in some way actively involved in watershed issues relevant to the Black Warrior and Cahaba watersheds. Snowball sampling is a technique commonly used in qualitative studies whereby a researcher asks an informant or study participant to identify or recommend other individuals or groups who might be appropriate to interview, and thus the sample "snowballs" (Bernard 1995; Esterberg 2002; Schutt 1999). I employed the snowball technique at the end of each interview by asking the interviewees "who else they recommend I talk to in order to better understand these watershed issues." While useful, snowball sampling is prone to introducing bias into the sample, as people are likely to recommend others who they know, like and agree with (Ritchie et al. 2003). As a way to reduce this bias, I asked each interviewee if there "were any individuals or groups they could recommend I talk to who had divergent or opposing viewpoints and opinions."

In many of the newspaper articles I reviewed there was a particular watershed advocacy organization that was frequently cited; this organization seemed to be very involved in many of the watershed issues, especially those pertinent to the Cahaba watershed. I decided that an initial interview with a representative from this organization would be a good place to begin the process of interviewing stakeholders. Perhaps by coincidence, a professor that was aiding me in this study knew the director of this organization and agreed to contact this person and see if an interview could be arranged. It worked; I conducted my first interview in the middle of June of 2004. I found this

initial interview to be extremely useful as this person was extremely knowledgeable about watershed issues and stakeholders in the Cahaba. At the end of this initial interview I started the snowball sampling technique by asking the interviewee what other watershed stakeholders I should talk to, including those that might have different and/or opposing viewpoints. In response to this, the interviewee began naming off several organizations and individuals he/she thought would be useful to my study. Several of the names this individual mentioned were also mentioned in some of the media accounts that I initially reviewed. This initial interviewee was also somewhat familiar with issues in the Black Warrior watershed and offered the names of some people he/she thought I should try to interview to become more familiar with issues and stakeholders pertinent to that watershed.

After this initial interview I began trying to contact the people and organizations that had been recommended to see if they would be willing to sit down for an interview. I contacted all interviewees via phone or email and, while most of the stakeholders I contacted agreed to an interview, a few never returned my calls or emails. In an effort to be more efficient, I sought to coordinate interviews so that I could conduct several interviews in the same day or over the period of a few days. Many of the stakeholders I interviewed, especially those concerning the Cahaba watershed, had offices located in the numerous office buildings of downtown Birmingham, and this helped me concentrate my interviews and be more efficient. Needless to say, I learned to become quite adept at traversing the Birmingham metropolitan area. Not all interviews were conducted in offices; one was conducted at a restaurant, one inside a vehicle while the interviewee ran errands, and one took place at a construction job-site. In all, 49 individuals were

interviewed representing 36 different stakeholder entities within the five categories

mentioned above as well as one newspaper reporter. Eleven individuals representing the

business and industry community were interviewed; four developers were interviewed;

nine elected officials and governmental entity representatives were interviewed;

seventeen individuals representing environmental/watershed advocacy and conservation

organizations were interviewed; ten NIPF owners were interviewed; and one newspaper

reporter was interviewed. Two individuals representing environmental/watershed

advocacy organizations were also NIPF owners. Interviews ranged in time from 20

minutes to over two hours. All interviews were conducted face-to-face except for two,

which were conducted over the phone. My final interview took place in the beginning of

December, 2004. Although I did use an interview guide with some basic questions (see

APPENDIX 2 and 3), the interviewee's responses ultimately shaped the order and

structure of the interviews, thus allowing for an open exchange. Aside from the basic

questions I had on the interview script, many of my questions were tailored to each

specific stakeholder category. After each interview I would write down some of my

thoughts and comments while they were still fresh in mind. Most of the interviews were

tape-recorded. There were a few instances where I turned the tape-recorder off after

sensing that the respondents were uncomfortable giving an answer while the tape-

recorder was on. There were also a couple instances where the respondent specifically

asked me to turn off the tape recorder before answering a certain question, which I gladly

did. All interviews were transcribed and then coded to help me identify common and

divergent themes as they related to the concerns, perspectives and interests of the

stakeholders interviewed.

In addition to reviewing media accounts and conducting the semi-structured interviews, I also sat in on a few meetings aimed at getting stakeholders together to discuss watershed issues. Three of the meetings I attended were organized by the Birmingham Regional Planning Commission and focused on issues relating to the Upper Cahaba Watershed. These meetings were well attended, with a good range of stakeholders present. These meetings in particular offered me the opportunity to observe stakeholder dynamics in a group setting where multiple stakeholders were present. These meetings proved useful, as I was able to observe how different stakeholders interacted with each other, watch their body language, examine how they addressed one another, etc. Two meetings I attended were hosted by ADEM. One meeting was designed to obtain input from disgruntled citizens who were upset at the re-issuance of a discharge permit given to a particular facility which had a horrible track record of staying within compliance of their permit parameters and whose discharges were thought to be affecting the health of local human populations. The other meeting hosted by ADEM was a presentation of water quality research they had been doing for both the Black Warrior and Cahaba watersheds.

Reflections

My initial goal was to interview approximately the same number of stakeholders from within each of the five categories I created for both the Black Warrior and Cahaba watersheds. For a variety of reasons, this did not happen. Many of the stakeholders I wished to interview were extremely busy, especially those in the development community and those in the business and industry community. With a few exceptions,

landing interviews with stakeholders from these categories proved to be rather

challenging. Several commented that, while they would like to participate, they simply

didn't have the time to do so. Others simply didn't return my calls or emails. I suspect

that some stakeholders had questions about the intent and purpose of my study. On one

occasion I had a developer question the purpose of my study, asking "what kind of spin

are you going to put on this?" After stating that this research was simply an opportunity

for this person to voice their opinions and perspectives, and that "no spin" would be

involved, the developer politely said that he/she would "pass" on my offer. Although I

did not interview as many stakeholders from these two categories as I had hoped, I still

gained some useful information from the interviews I was able to conduct. By far, the

environmental and watershed advocacy and conservation organizations were the easiest

for me to contact and set-up interviews with; all stakeholders interviewed in this category

seemed eager to express their opinions, perspectives and concerns regarding watershed

issues and many of my longer-lasting interviews came from stakeholders within this

category.

While I was able to interview stakeholders regarding each watershed, a majority

of the interviews focused on the Cahaba watershed. This was due in part to the fact that

the BWRW covers a very large area and I simply didn't have the resources (namely time

and money) to traverse the entire watershed. Another reason that I ended up focusing

more on the CRW is that there seemed to be more watershed issues and stakeholder

activity regarding watershed issues in the Cahaba, particularly the Upper Cahaba—in

and around Birmingham. Many of the watershed issues in the Upper Cahaba related to

the increasing urban growth and development that is taking place in that general area.

While the Black Warrior certainly has watershed issues and stakeholders, there didn't appear to be nearly as much watershed-related activity going on in the Black Warrior. Perhaps a primary reason for this is that the Black Warrior is a very large and highly rural watershed which has yet to experience the many issues and attention that are associated with issues relating to increases in urban growth and development.   In contrast to the Black Warrior, the Cahaba is relatively small and almost one whole portion of it (Upper Cahaba) exists in a rapidly urbanizing area—in and around Birmingham. Some of the municipalities and communities just outside of Birmingham such as Vestavia Hills, Mountain Brook, Homewood, and Hoover, are very affluent areas where much concern is placed on local watershed conditions and many citizens are active in watershed and environmental advocacy organizations.

One of my main concerns regarding the interview process revolved around the concept of rapport. I wanted the respondents to be comfortable in expressing their opinions, concerns and perspectives with me and trust that I didn't have some hidden agenda, or that I was going to put some "spin" on what they said. In an effort to build rapport I clearly stated that I simply wanted to hear "their story" regarding watershed issues, that I had no ulterior motives, that their personal identities would remain confidential, and that the information gained through the interview would remain anonymous. Another way I sought to build rapport was to begin the interview with some "small talk"—telling them a little bit about myself, where I was from, my interest in the topic, etc., and asking them some questions about their backgrounds, their interests, and whether they rooted for Auburn or Alabama. I found that in many instances, after this "small talk," the respondents seemed more receptive to me; I noticed this in their body

language, their tone of voice, and their overall demeanor. After the "small talk," once I turned the tape recorder on and started the official interview, I made sure that I stayed "tuned in" to the respondent, maintaining eye contact, jotting down notes and asking questions. Toward the end of several interviews I noticed that the respondents began to get a little uncomfortable in their seats, and this was a good signal for me to ask any important questions that remained and wrap-up the interview.

One of the things I enjoyed most about this research was being able to get out and see different areas of each watershed. A couple times, after an interview, the interviewee offered to take me to a nearby waterway, to see particular creeks and portions of the main rivers for myself. Being out in the watersheds—driving around, taking pictures, having interviewees take me to certain locations—helped me capture the contextual essence of the watersheds; I was able to view and experience firsthand the cultural and historic underpinnings and values that were ascribed to these watersheds by certain stakeholders.

IV. THEORETICAL FRAMEWORK

This chapter provides a description of the theoretical framework(s) used in this study. In this thesis I draw upon three theoretical frameworks: Harvey Molotch's "growth machine" theory; Jürgen Habermas' concept of "legitimation crisis"; and the ideas andconcepts found in the extensive literature on collaboration in natural resource management. Molotoch's growth machine theory, as well as Habermas' concept of legitimation crisis, are fundamentally about conflict, while the collaboratively-based framework is fundamentally about finding grounds for consensus and negotiationregarding specific issues and problems. Stakeholder attributes and watershed management dynamics of the BWRW and CRW are viewed through a theoretical lens that draws upon concepts pertinent to each of the three theoretical frameworks mentioned above.

Growth Machine

Harvey Molotch's (1976) original theory of cities functioning as "growth machines" is useful for examining stakeholder attributes and watershed management dynamics as they relate to the BWRW and CRW. An examination of the central concepts and ideas behind the growth machine theory follows.

The basic premise of growth machine theory relates to the "idea that nested interest groups with common stakes in development use the institutional fabric, including

the political and cultural apparatus, to intensify land use and make money" (Molotch 1993:31). Molotch and Logan (1984:483) state that:

> The traditional system through which capital and place achieved their coordination was based in the fact that cities function, in effect, as growth machines. They compete with one another to attract capital and thereby intensify return on land, buildings, and related products and services. Local elites with practical interests in the use of land and buildings, such as developers, landlords, and savings and loan officials, build their own fortunes by managing urban governments and cultural institutions and promoting urban growth. In each locality, coalitions of these modern day "rentiers" prepare the ground for capital, providing it with the widest possible choice of sites under profitable conditions.

Thus, growth machine theory asserts that the political and economic essence of any city, or more generally any locality, is *growth* (Molotch 1976). Here, growth refers primarily to economic growth and urban development, where land is the key commodity, and those who own land or are associated with land-use intensification are the key actors. Growth machine theory holds that in any given city or locale there exist a group of local land-based elites who stand to profit through increasing intensification of land-use in the area in which they operate (Molotch 1976). While these pro-growth elites or "rentiers" may have divergent or competing interests outside of the growth arena, it is their common stake in growth that unites them. This coalition of pro-growth elites is made up of individuals and entities (individual landowners, large property holders, bankers, financial institutions, utility companies, developers, newspaper companies, universities, etc.) whose material well-being is anchored in growth. Those in the pro-growth coalition need and use the local government as a vehicle to pursue their material goals (Molotch 1993). Molotch states that "More than any other set of significant urban actors, the growth builders must interact with local government as part of their business routine. They need building permits, zoning changes, infrastructure development" (1993:32). The local

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government is also used to attract business and industry by maintaining a business-friendly atmosphere through favorable taxation, vocational training, law enforcement and good labor relations (Molotch 1976). The local government also plays a key role regarding growth in that governmental decisions affect the cost of access to markets and raw materials, and they also influence the cost of overhead expenses such as employee safety standards and pollution abatement requirements (Molotch 1976).

According to growth machine theory, those in the pro-growth coalition legitimate their actions through "an ideology of value-free growth, the claim that development is a universal good" (Troutman 2004:611). Molotch and Logan (1984:483) explain the roots of this growth ideology:

> Ideologically, this system arose from forces which have shaped how people in the United States look at production and its use of place. The rise of the United States as the leading industrial power of the world, and the increases in the standard of living which resulted, promoted a consensus among U.S. citizens that economic growth was the best way to build profits and simultaneously benefit the masses.

Proponents of this ideology claim that growth is good for everyone in a city or community because it increases cultural opportunities for residents, expands the tax base, and, most importantly, it creates jobs (Troutman 2004). Growth is seen as a way to solve many urban problems—to increase job opportunities for local citizens, to lower local unemployment rates, to create housing, etc. Molotch claims, with supporting empirical evidence, that contrary to popular wisdom, growth machine systems are fiscally, socially and environmentally damaging, and that the benefits and costs of growth are not distributed equally to citizens of the particular locale (Molotch 1993). In truth, according to Molotch, only a few select residents enjoy the cultural benefits generated by growth.

Moreover, the costs of new infrastructure often exceed the additions to the tax base, and new jobs frequently go to outsiders (Logan and Molotch 1987). In addition, growth almost always brings with it the tangible problems of pollution (air, water, land), traffic congestion, and overtaxing of natural amenities (Molotch 1976).

Molotch states that while growth has been the dominant ideology in most localities in the U.S., there has always been a segment of the population who provided resistance (Molotch 1976). He states that this resistance is growing and that there is an emerging counter-coalition made up of environmentalists, middle-class professionals and others, who are increasingly becoming aware of the costs of growth (pollution, congestion, decline in natural amenities, sprawl, etc.) and are challenging the legitimacy of the value-free growth ideology.

Legitimation Crisis

Jürgen Habermas's notion of legitimation crisis is useful for examining particular aspects of stakeholder attributes and watershed management dynamics for the BWRW and CRW. A brief description of legitimation crisis follows.

According to Habermas (1975), advanced capitalist societies (such as the U.S.) can be viewed as a large system composed of three subsystems: the economic system (capital), the political administrative system (the State) and the socio-cultural system (shared traditions, norms, expectations, etc.). Each of these subsystems are interdependent, however it is the State that assumes a central and superordinate role (Habermas 1975). The political administrative system must provide "steering performances" (Habermas 1975:5) to the economic system which 'steer' the economy in

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such a way as to provide favorable conditions for economic growth, and it must also provide "social welfare performances" (Habermas 1975:5) (e.g., social, educational, and welfare services) to the socio-cultural system in order to maintain popular assent and "mass loyalty" (Habermas 1975:5). This is needed in order for the entire system to function. However, since the State is in the public sector, that is, since it is excluded from private production for profit, it relies on "fiscal skim-off" (Habermas 1975:5) (i.e., taxes) from the economic system to provide "social welfare performances" to the socio-cultural system. In providing these "social welfare performances" the State supports the ideology that legitimates the entire system. See APPENDIX 4 for a diagram of the subsystems of advanced capitalist societies.

Habermas contends that a crisis may occur if any one of the subsystems fails to produce the "requisite quantity" of what it contributes to the capitalist system as a whole (Habermas 1975). Accordingly, Habermas contends that there are four possible crisis tendencies: economic crisis, rationality crisis, legitimation crisis, and motivation crisis (Habermas 1975:45). For the purposes of this study I will limit my examination of these crises to Habermas' notion of legitimation crisis.

According to Habermas, a legitimation crisis may occur when the political-administrative system fails to maintain "requisite levels" of mass loyalty (Habermas 1975:46). The State maintains 'requisite levels" of mass loyalty by providing "social welfare performances" such as educational opportunities, public health and safety programs, environmental protection/conservation programs, etc. When these "social welfare performances" are hindered or not met, the state begins to lose legitimacy in the eyes of those it governs, and thus faces a legitimation crisis.

Habermas (1975:41) notes that there are certain problems brought about by the

growth of advanced-capitalist states:

> The rapid growth processes of advanced-capitalist societies have confronted
> world society with problems that cannot be regarded as crisis specific to the
> system, although the possibilities of dealing with these crises are specifically
> limited by the system. I am thinking here of disturbance to ecological balance,
> violation of the consistency requirements of the personality system (alienation),
> and potentially explosive strains on international relations.

It is the ecological disturbances that Habermas acknowledges that I wish to emphasize in

this study. Habermas (1975:41-42) notes that increases in production and human

populations, on a worldwide scale, are faced with two important material limitations:

> On the one hand, the supply of finite resources—the area of cultivable and
> inhabitable land, fresh water, foodstuffs, and non-regenerating raw materials
> (minerals, fuels, etc.); on the other, the capacities of irreplaceable ecological
> systems to absorb pollutants such as radioactive by-products, carbon dioxide, or
> waste heat.

Thus, ecological disturbances and problems can be viewed as by-products of the

capitalist mode of production. Environmental problems generated by capitalist

production processes are potentially harmful to both human and ecological health. When

citizens perceive the State as not adequately addressing these harmful ecological by-

products, the State suffers "legitimation deficits" (Habermas 1975:47), which have the

potential to accumulate into a full-blown legitimation crisis (Habermas 1975). The

State's dependency upon the economic system for tax revenue creates a contradiction

between providing 'social welfare performances' (environmental quality) and generating

revenue for the operation of the State. Where the State (or an instrument of the State,

such as a State agency) abandons social responsibilities in the favor of economic

incentives, it risks the emergence of a legitimation crisis.

Collaboration in Natural Resource Management

Another theoretical insight useful for examining stakeholder attributes and watershed management dynamics is through the ideas and concepts found in literature relating to collaboration. In this thesis, emphasis is placed on collaboration in the specific context of natural resource management. A detailed analysis of collaborative approaches to natural resource management follows, with special emphasis placed on co-management of natural resources, a form of collaboration.

In the United States and abroad, the management of natural resources such as forests, fisheries and watersheds is changing from a governmental top-down, bureaucratic, science-based approach to a more inclusive, collaborative approach aimed at gaining input and participation from all the resource users and pertinent stakeholders (Jentoft et al. 1998; O'Neil and Thomas 1999; Sabatier et al. 2005; Schuett et al. 2001; Selin et al. 2000; Taylor 1998; Wondolleck and Yaffee 2000). This "bottom up" style of natural resource management recognizes that while management decisions need to be anchored in sound science, technical factors are but one of many important considerations that need to be taken into account for effective natural resource management. Wondolleck and Yaffee (2000), note that while natural resource management decisions need to be based in good science, these decisions "…must acknowledge to a greater extent the human dimensions of management choices and the uncertainties and complexities in potential decisions, and build understanding, support and ownership of collective choices" (2000:14).

There are several approaches to natural resource management that emphasize collaboration. These approaches are sometimes labeled public-private partnerships, alternative dispute resolution, collaborative stewardship, co-management, community-based environmental protection, civic environmentalism and sustainable development (Wondolleck and Yaffee 2000). While collaborative-based approaches to natural resource management may differ in name and form, what they have in common is an emphasis on attaining better public participation and inclusiveness in natural resource management decisions and actions. There is now a general consensus among natural resource professionals that better public participation is needed to resolve increasingly complex natural resource issues (Jentoft et al. 1998; Schuett et al. 2001; Selin et al. 2000; Wondolleck and Yaffee 2000).

A primary reason for this new emphasis on collaborative natural resource management approaches is that past approaches to natural resource management have, in many instances, failed to secure resource sustainability and have excluded certain resource users from having input in management decisions (Jentoft et al. 1998; Taylor 1998; Wondolleck and Yaffee 2000). Many traditional approaches of managing natural resources held that it was necessary for some external authority, often the government, to manage the resource directly through a top-down, command and control style or to facilitate resource management through private-sector market-based solutions. This style drew heavily from Garrett Hardin's (1968) notion of the "tragedy of the commons" where communities are viewed as being unable to manage common-pool resources (such as water, forests, fisheries, pasture lands) in a sustainable fashion because they were

helpless to prevent individual users from overexploiting the resource (Hardin 1968;

O'Neil and Thomas 1999).

Collaboration scholar Barbara Gray defines collaboration as "a process through

which parties who see different aspects of a problem can constructively explore their

differences and search for solutions that go beyond their own limited version of what is

possible" (1989:5). Gray highlights some key contributions and benefits of collaboration

in addressing multiparty problems, including but not limited to: improving the quality of

possible solutions through a comprehensive analysis of the problem; diversifying

response capability; minimizing the risk of impasse; maximizing the opportunity for all

stakeholders to be heard; and improving relations between stakeholders. Gray argues that

collaborative participation enhances acceptance of potential solutions and mechanisms

for coordinating future actions among stakeholders (1989:21).

Much of the literature on collaborative natural resource management approaches

has identified factors or variables that aid successful collaborative natural resource

management efforts. Generally, inclusion of a broad representation of stakeholders

(Cestero 1999; Grimble and Chan 1995; Schuett et al. 2001; Selin et al. 2000), well

defined goals and objectives (Schuett et al. 2001; Selin et al. 2000), and thorough

communication, information exchange and shared decision making (Lampe and Kaplan

1999; Schuett et al. 2001; Selin et al. 2000) have been acknowledged as being very

important to the success of collaborative efforts in natural resource management.

Perceived consensus, community membership, group identity, legitimacy of authority and

adequate resources and time have also been identified as antecedents that enhance

cooperative and collaborative solutions between stakeholders involved in natural resource

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management (Bouas and Komorita 1996; Tyler and Degoey 1995; Rickenbach and Reed 2002; Schuett et al. 2001; Selin et al. 2000).

While there are factors that aid in successful collaborative natural resource management efforts there also are factors that can impair these efforts. Wondolleck and Yaffee (2000:51) note that:

> In practice, there are many obstacles to effective collaboration. Problems result from the institutional structure within which collaboration takes place, the ways that individuals and groups think about collaboration and each other, and the manner in which collaborative processes have been managed. These obstacles affect the willingness and capacity of people in all sectors to participate in collaborative activities.

Institutional and structural barriers to collaboration in natural resource management include a perceived lack of opportunities and incentives among stakeholders (Selin et al. 2000; Wondolleck and Yaffee 2000), conflicting goals or missions among stakeholders (Wondolleck and Yaffee 2000), inflexible policies and procedures (Wondolleck and Yaffee 2000), and constrained resources and time (Rickenbach and Reed 2002; Schuett et al. 2001; Selin et al. 2000, Wondolleck and Yaffee 2000). Barriers stemming from individual and group attitudes and perceptions include mistrust, negative inter-group attitudes, informal norms and culture and a general lack of support for collaboration (Wondolleck and Yaffee 2000).

Collaboration in natural resource management can be thought of as an atmosphere or environment in which inclusive and participatory-based natural resource management decisions can be fostered. The nuts and bolts of collaboratively-based natural resource management approaches—the specific processes, organizational characteristics, responsibilities, liabilities, etc.—can vary depending on particular circumstances. Thus,

collaboration can take different forms and shapes; it can be seen as a continuum in which these different factors operate. One form of collaboration in natural resource management is termed co-management.

Co-Management

Much literature exists pertaining to the co-management of natural resources, particularly within fisheries management. Co-management can be defined as "the formally organized, collaborative and participatory process of regulatory decision-making involving user-groups, government agencies and research institutions" (Jentoft 1998:9). The underlying premise of co-management is that natural resource management rights (power) and responsibilities are distributed among government agencies *and* local resource users (Jentoft 1998; Pinkerton 1992; Plummer and Fitzgibbon 2004). Co-management is not one thing, but rather, it exists on a continuum, from relatively weak to very strong local involvement.

In the context of natural resource management, collaboration in the form of co-management is thought to enhance the effectiveness of management efforts by acknowledging that resource users, through experience, possess knowledge that may compliment existing science and that participation of resource users in management decisions helps build a sense of shared ownership and responsibility for natural resources thus enhancing the legitimacy of the regulatory regime and therefore compliance (Jentoft et al. 1998; Wondolleck and Yaffee 2000). Collaborative co-management efforts in natural resource management can also help create relational networks among stakeholders thereby enhancing communication and understanding, foster

interdisciplinary learning and problem solving, and help administrative and regulatory agencies stay in touch with changing public values, opinions and knowledge (Wondolleck and Yaffee 2000).

Through extensive research on common-pool resources (such as water, pastures, forests, fisheries) it is now widely accepted that "…local communities are more likely than central governments or the commercial private sector to pay attention to the long-term consequences of resource use, precisely because they depend upon the sustainable harvesting of the resource for their livelihoods" (O'Neil and Thomas 1999:vii). Collaborative natural resource management approaches based on co-management recognize that conflicts over natural resource decisions cannot be solved by governments or communities alone, and stresses the importance of building bridges between communities and government agencies who handle natural resource issues (O'Neil and Thomas 1999). Natural resource management strategies based on collaboration and community inclusion (co-management) can better prepare agencies and communities for future resource challenges and lead to better decisions that are more likely to be implemented by building a sense of shared ownership, stewardship and responsibility for natural resources (Schuett et al. 2001; Wondolleck and Yaffee 2000).

Examples of Collaboration in Natural Resource Management

I now wish to provide some successful examples of collaborative natural resource management efforts. To begin with, some general examples of co-management in fisheries and forestry will be explored. I will then describe in greater detail some examples of collaboration in the context of watershed management.

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Fisheries

In the case of fisheries, recurrent crises and mismanagement leading to resource overexploitation have tarnished the top-down Leviathan (heavy handed government control) model of natural resource management. Jentoft et al. (1998:423) note that:

> Not only have governments frequently failed to prevent fish populations from overexploitation, but in many instances they have even exacerbated the problems through mismanagement. Increasingly, this has led to recognition that fisheries management needs to be reinvented, that new approaches must be tried out…resource users must become more involved in the management process…they must be allowed to participate in regulatory decision-making, implementation and enforcement.

Examples of successful collaboratively-based co-management efforts in fisheries are numerous (McCay 2000). One case study which I wish to highlight involves the successful co-management of arctic cod stocks off the Lofoten Islands in north Norway (Jentoft 1989). For hundreds of years the Lofoten fishery had attracted large numbers of fishermen from throughout the country; this high density of fishermen caused severe overcrowding problems which led to depleted stocks and frequent conflicts, particularly among fishermen using different kinds of gear, such as handlines, gillnets, longlines and seines (Jentoft 1989). Throughout most of the 19th century, various management systems were tried, none of which had much success in reducing the conflict among the fishermen using different gear, or improving the health of the arctic cod stock. In the late 1890s, co-management principles were introduced by the Norwegian Government by enacting legislation that delegated responsibility for the regulation of the fishery to the fishermen themselves (Jentoft 1989). This legislation enabled special district committees consisting of fishermen representing the different "gear groups" to be set up. These committees

were allowed to make the rules for the fishery: the fishermen were chartered to establish allowable fishing times, which gear groups were allowed on certain fishing grounds, and how much space would be allotted for certain gear groups. Certain fishermen were elected (by other fishermen) to serve as inspectors, and a public enforcement agency was established to assure that the rules initiated by the fishermen committees were being followed (Jentoft 1989). The effects of this co-management approach, which was still intact almost 100 years after being implemented, were that the regulatory measures established for the fishery were perceived as being more legitimate and equitable, conflict between fishermen using different gear declined substantially, and the cod stocks were improved dramatically (Jentoft 1989). In the case of fisheries management, the perceived legitimacy of regulatory measures among fishermen is positively correlated to regulatory compliance; as perceived legitimacy goes up, so too does compliance. Jentoft notes that legitimacy of regulatory measures increases when local resource users (fishermen in the case of fisheries) are allowed to have input in the content of the regulations, the distributional effect of the regulations, the making of the regulations and the implementation of the regulations (1989:139).

Other examples of successful co-management efforts in fisheries include stone-crab and shrimp fishermen in the Gulf of Mexico (Overbey 2000), lobster fishermen in Maine (Acheson 2000), and in several Philippine fisheries (Russell and Alexander 2000).

Forestry

The U.S. Forest Service is implementing more collaborative and participatory approaches to managing public lands and forests, with top administrators within the

agency strongly advocating the merits of partnerships, collaboration and co-management for U.S. national forests (Schuett et al. 2001). This forestry co-management approach is exemplified rather well in a recent case in the Camino Real Ranger District of northern New Mexico's Carson National Forest. In this example, "Environmentalists criticized grazing and timber taking, forest-dependent communities were angry about policies that curtailed their use of wood products and grazing allotments, and all the while the health of the forest deteriorated" (Baker 1999:18). One of the primary problems in this case was that the forest became overgrown due to fire suppression—advocated for by area environmentalists—thus eliminating the natural timber-thinning process (Baker 1999). Anxious to improve the situation and reduce hostility, District Ranger and forest biologist Crockett Dumas led a door-to-door survey conducted by Forest Service employees (Baker 1999). Dumas focused his efforts on obtaining input on management decisions from all the involved parties, including environmentalists, individuals in the forestry industry and citizens of local communities. Through compromise and negotiation, input from all of these stakeholders was incorporated into management decisions and the previous hostility that existed was curtailed. The efforts by Dumas and Forest Service employees to obtain input from the different stakeholders led to the creation of a jobs program that taught local community members how to cut trees selectively. These trees were then taken to a wood lot where local community members could use them for building materials and for heating and cooking (Baker 1999). Since the efforts by Forest Service employees to go door-to-door and obtain input from various stakeholders regarding management decisions, both the local economy and forest have improved (Baker 1999). The selective tree-thinning program, which was established by obtaining

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management input from diverse stakeholders, and carried out by area citizens, led to increased jobs for local citizens, improved the forests' health and also brought back habitat for various species, mainly Elk, which pleased many of the previously disgruntled environmentalists. "Gradually, tensions began to fade as Camino Real [Forest District] changed its management style from 'authoritarian and autocratic' as Dumas puts it, to one that is open. 'We're sharing the power and decision-making with the public,' he says" (Baker 1999:18).

Watershed Management

One case study which will be highlighted provides a good example of a successful collaborative watershed management approach. The case took place in New York State, and involved tensions between New York City and rural upstate communities in the Catskill and Delaware watersheds.

Recently NYC was involved in a major watershed management project focused on protecting the quality of the city's existing water sources (Ehlers, Pfeffer, and O'Melia 2000; Platt, Barten, and Pfeffer 2000;). NYC draws its drinking water from the upstate Catskill, Delaware and Croton watersheds which together encompass 1,970 square miles, contain 600 billion gallons of usable storage, provide up to 2 billion gallons of water per day and serve approximately 9 million people in the NYC area (Ehlers et al. 2000). Historically, NYC has relied on chlorine disinfection along with the natural purity of its hinterland water sources to provide high-quality water without filtration (Platt et al. 2000). This traditional approach was challenged in the 1990's due to national public health concerns about disinfection byproducts (DBPs), microbial pathogens and the

environmental protection agency's (EPA) 1989 Surface Water Treatment Rule (SWTR) which mandates that certain criteria must be met in order to forgo filtration, including the creation of a watershed management program (Ehlers et al. 2000; Platt et al. 2000). In accordance with the SWTR regulations, NYC opted to build a filtration plant for water drawn from the more heavily populated and developed Croton watershed which supplies approximately 10% of NYC's water supply, and is located east of the Hudson River (Ehlers et al. 2000). However, with the sparsely populated West of Hudson (WOH) Catskill and Delaware watersheds, which comprise approximately 90% of NYC's water supply, NYC embarked on a strategy of watershed management in order to forgo filtration (Ehlers et al. 2000). In the Catskill and Delaware watersheds, forests constitute 75% of the total land area and support a stable forest industry; in addition to forestry, agriculture is also another common land-use (Perrot-Maître and Davis 2001).

In order to efficiently manage the Catskill/Delaware watersheds, NYC proposed to acquire more land in these watersheds in order to control potentially harmful land-use practices (clear cutting, fertilizer/pesticide applications, etc.) and the siting of facilities that posed potential threats to water quality (i.e. wastewater treatment plants, landfills, underground storage tanks), thereby reducing potential contaminants. These attempts to acquire more land, initially done without the consultation of citizens and communities within the watersheds, were met with fierce opposition from WOH upstate communities and residents: "A major obstacle to the city's meeting EPA's conditions for filtration avoidance was the opposition of upstate interests to any expansion of the city's influence or control over land use in the WOH watersheds" (Platt et al. 2000:11). These upstate Catskill and Delaware watershed communities were concerned that if NYC gained

control of land-use practices, their opportunities for economic development would be severely hindered, property values would plummet and the local tax base would erode (Ehlers et al. 2000; Platt et al. 2000). Organized opposition from upstate WOH communities came with the formation of the Watershed Agricultural Council (WAC) and the Coalition of Watershed Towns (CWT) (Pfeffer and Wagenet n.d.—Forthcoming). Thus, efforts by NYC to acquire land to protect their drinking water supply, and efforts by rural upstate WOH communities to protect property values, keep the local tax base healthy, and secure future opportunities for economic development, led to conflict between countryside and city over the distribution of related responsibilities and rights (Pfeffer and Wagenet 1999).

In the face of this controversy the EPA and other parties urged the state to intervene to bring all stakeholders to the negotiating table (Platt et al. 2000). Through these negotiations and collaboration, a deal was struck between NYC and upstate watershed communities that would protect NYC's drinking water supply *and* secure economic development and property values in WOH communities:

> In May 1995, newly elected Governor Pataki ordered his chief counsel to mediate negotiations between the city, the Coalition of Watershed Towns, and EPA. Six months later, they reached an historic Agreement in Principle that embodied New York City's agenda for watershed protections and met the coalition's demand for fairness. While recognizing the city's need to acquire additional land and to regulate potential sources of contamination within the watersheds, the agreement also allowed for spending $350 million on infrastructure improvements and sustainable economic development programs in watershed towns and counties. Negotiations continued to hammer out the finer details of the Agreement in Principle, finally culminating in the signing of the 21 January 1997 Memorandum of Agreement" (Platt et al. 2000:12).

What happened in those six months between the time Governor Pataki called for action and reaching the Agreement in Principle was negotiation and collaboration, which

ultimately led to the signing of the Memorandum of Agreement. The Memorandum of Agreement (MOA) is a large and complex document with text and attachments comprising about 1,000 pages (Platt et al. 2000). The MOA established the rights, regulations and responsibilities of all parties involved. "Essentially, it specifies a long list of sticks and carrots, the former to protect the city's water sources and the latter to placate the watershed communities" (Platt et al. 2000:13).

Many of the responsibilities, or "sticks," that were established through the MOA were given to upstate WOH forest landowners, farmers and timber companies, while the incentives, or "carrots," were provided primarily by NYC. For example, the MOA established that NYC would be responsible for financing the brunt of the watershed management program through taxation, bonds and trust funds (Perrot-Maître and Davis 2001). NYC residents voted to allow the government to levy additional taxes on their water bills. New York City issued bonds for additional financing and established two trust funds benefiting WOH communities: a $60 million trust fund that provided loans and grants for environmentally sustainable projects in the Catskill watershed, and a $360 million trust fund for water quality and economic programs in the Catskill and Delaware watersheds (Perrot-Maître and Davis 2001). Additionally, NYC provided $40 million to dairy farmers and foresters who adopted recommended best management practices (BMPs). In return for improving forestry BMPs (i.e. adoption of low-impact logging), the timber industry was granted logging permits in areas where they had previously been denied access. Forest landowners willing to commit to a ten-year forest management plan, set up through the MOA, were eligible for an 80% reduction in local property taxes (Perrot-Maître and Davis 2001).

The major protection activities included in the MOA include land acquisition, watershed regulations and upgrading agricultural and wastewater facilities (Platt et al. 2000). Land acquisition was carried out in several ways: through outright purchases (voluntary) of hydrologically sensitive lands (land near reservoirs, wetlands, riparian areas); the acquisition and transfer of development rights, where NYC purchases development rights on sensitive lands at market price, while still allowing the landowner to sell development rights in non-sensitive areas; and through conservation easements (Perrot-Maître and Davis 2001). Conservation easements are voluntary agreements between a land-owner and a secondary party (often a government agency or non-profit organization) where a legally binding contract is established to restrict development or certain land-uses in order to protect or conserve land. The easement can be voluntarily donated or sold by the land-owner; however the title to the land remains with the original land-owner.

Regulations established through the MOA will limit the location of specific water quality threats within the watersheds such as wastewater treatment facilities, landfills, junkyards, hazardous substances, petroleum storage tanks and pesticides (Platt et al. 2000). Also, "new impervious surfaces of any kind…are not permitted within 100 feet of any water course or wetland, or within 300 feet of a reservoir" (Platt et al. 2000:12).

Land acquisition is a key element of the NYC watershed management program and was the source of major concern from WOH residents (Ehlers et al. 2000; Platt et al. 2000). The MOA designates that land acquisition operates under a willing buyer/seller principle and that all land acquisition occur in consultation with affected towns and communities (Platt et al. 2000). In addition to the conservation easements, New York

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will pay taxes in accordance with the assessed value of the properties thereby negating potential loss of tax revenues on land purchased by the city—which was a major concern expressed by WOH watershed residents (Platt et al. 2000).

The MOA that was established between NYC, the EPA and the Coalition of Watershed Towns demonstrates the ability of stakeholders to reach a mutually acceptable plan of agreement regarding the management of natural resources through collaboration and cooperation. The success of the NYC watershed project and the MOA did not come about easily. Historically distrustful upstate communities mobilized serious opposition. It took ongoing negotiations between all stakeholders to finally reach an agreement. "The MOA, which is signed by 48 separate entities, is testimony to the importance of involving stakeholders in watershed management planning" (Ehlers et al. 2000: 468A).

Examples of Watershed Management in Alabama

Watershed management projects and activities do exist in Alabama, and vary in structure and intensity (Mullen and Allison 1999). Accordingly, "these projects can be grouped according to the following characteristics: (1) top-down versus grassroots or bottom-up approach and (2) the diversity and intensity of stakeholder involvement and interest" (Mullen and Allison 1999:655). Mullen and Allison suggest that four watershed management models can be generated using various combinations of these two factors and present case studies for each model. Mullen and Allison (1999:661) note that:

> All can produce short term improvements in water quality as long as funding is available. However, few can assure the long-term maintenance of resultant water quality improvements if they lack the broad-based stakeholder or community involvement and support to assure that watershed management activities will continue after federal and state funding is reduced or eliminated"

Model 1, referred to as the "Top-Down Agency-Led Watershed Management Approach" (Mullen and Allison 1999:655) represents the oldest model of watershed management in Alabama. With this model "…an agency (or agencies) design(s) and install(s) a set of management actions to address a water quality problem with little to no input from the watershed stakeholders prior to announcement of the project" (Mullen and Allison 1999:655). The Bear Creek Watershed Project and Phase I of the Sand Mountain Lake Guntersville Watershed Project (SMLGP-I) utilized this top-down agency led approach (Mullen and Allison 1999). In Bear Creek "…no locally-led watershed organization has emerged as a result of the project. Thus, if water quality problems reappear in the watershed, it will almost certainly require external initiative and resources to eliminate them" (Mullen and Allison 1999: 656).

The SMLGP started as a top-down project led by the Tennessee Valley Authority but has since become coordinated through the Clean Water Act (CWA) 319 Program (Mullen and Allison 1999). When the SMLGP became a CWA 319 Program project (SMLGP Phase-II), a watershed coordinator was hired and a Watershed Conservancy District was formed but stakeholder involvement was limited to mainly farmers and as such does not constitute a true community-based organization. Mullen and Allison state that "the lack of a true community based organization and ownership by a broad cross-section of stakeholders makes it doubtful whether the project will be effective in the long term as CWA 319 Program funds are reduced or eliminated" (Mullen and Allison 1999: 656).

The "Agency Coordinated Watershed Management Model," Model II, "represents the process in which funds from CWA 319 Program grants and funds from other agencies are utilized to hire a watershed coordinator at the watershed level" (Mullen and Allison 1999:657). Most of the watershed projects initiated in Alabama utilize this model at the present time (Mullen and Allison 1999). Examples include Phase II of the SMLGP, the Flint Creek Watershed Project (FCWP) and the Weeks Bay Watershed Project (WBWP). The FCWP and WBWP have broader stakeholder involvement than does the SMLGP. The WBWP "…appears to be one of the strongest, if not the strongest, watershed projects supported by the CWA 319 Program in Alabama" (Mullen and Allison 1999:657). With the WBWP "Stakeholders have formed an active organization and have developed a very detailed and comprehensive watershed management plan…The watershed organization has perhaps the most diverse stakeholder base of any watershed project in Alabama" (Mullen and Allison 1999:657).

A third "Watershed Management Authority Model" is represented in Alabama by the Choctawhatchee-Pea and Yellow Rivers Watershed Management Authority (CPYRWMA). This approach includes a broad representation of stakeholders and is funded through state appropriation agencies, the local government, universities and landowners (Mullen and Allison 1999: 657).

A fourth model is characterized as a "Locally-Led, Community Based Model" (Mullen and Allison 1999:658). Mullen and Allison (1999) note that there are no watershed management examples currently in Alabama that fit this model. Accordingly, a watershed management approach that could be categorized by this model would be initiated, organized, led and largely funded at the local community or watershed level;

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such an approach would require enduring financial support from local governments as well as local citizens. Mullen and Allison state that "…only if this level of interest in water resources exists will meaningful, ongoing watershed management efforts take place" (Mullen and Allison 1999:658).

These models can be thought of as forms of co-management, where each model represents different degrees or levels on a continuum of stakeholder involvement in watershed management. Mullen and Allison agree that bottom-up or community based approaches that include diverse and intense stakeholder involvement stand the best chance of long-term success.

V. FINDINGS

In this chapter the findings of this research will be presented. First, some fundamental similarities and differences between the BWRW and CRW will be highlighted. An examination of stakeholder attributes—their concerns, perspectives and interests—as they were expressed in the semi-structured interviews will then follow. Stakeholder attributes will be presented in alphabetical order according to the five stakeholder categories that were selected for this study. Rather than covering every single concern, perspective and interest that was expressed by stakeholders and stakeholder representatives, I will focus on the underlying stakeholder attributes, the attributes that were brought up by a majority of the stakeholders in each respective category. I will conclude this chapter with a discussion regarding these findings.

Fundamental Similarities and Differences

The BWRW and CRW have a couple of fundamental similarities: they are located adjacently to one another and they share many watershed issues, especially those associated with non-point source pollution (NPS). Both watersheds have significant problems with non-point source pollution associated with urban growth and development, agricultural runoff, forestry and acid mine drainage. However, stakeholders generally placed more emphasis on NPS associated with agricultural runoff, forestry and acid mine drainage in the BWRW than they did in the CRW. In contrast, a majority of the NPS

issues in the CRW were thought to be associated with increased urbanization, especially in the Upper Cahaba Watershed, in and around Birmingham. This is not to say that the BWRW doesn't have NPS issues associated with increased urbanization, or that the CRW doesn't have NPS issues associated with agriculture, forestry and acid mine drainage. The point is that each watershed has significant NPS issues.

Although the BWRW and CRW are adjacently located, and while they have in common certain watershed issues, there are a few fundamental differences between the BWRW and CRW which are important to note. First, the BWRW is more than three times the size of the CRW. This is important because watershed management efforts in the BWRW must encompass a larger land area than in the CRW, and also because stakeholders in the BWRW are dispersed over a greater land area. Second, there is much more of an industrial presence on waterways in the BWRW than in the CRW. Commerce, barge traffic and hydroelectric power generation all take place on waterways in the BWRW, especially on the main stem of the Warrior River. Agriculture, forestry, mining and other industries have more of a presence in the BWRW than the CRW. This is not to say that there isn't an industrial presence in the CRW, only that it's not nearly as strong as it is in the BWRW. Third, the BWRW is primarily a rural watershed, with portions of it located in urban or urbanizing areas such as Birmingham, Tuscaloosa, Jasper and Cullman, while an entire half of the CRW—the Upper Cahaba Watershed— can be characterized as an urban watershed. This is important to note because many of the watershed issues that were identified throughout this study, in both watersheds, seem to be concentrated in urban and/or urbanizing areas such as those mentioned above. This does not mean that there aren't any watershed issues in the rural portions of each

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watershed, only that a majority of the watershed issues brought up through the semi-structured interviews are associated with increasing urban growth and development.

Stakeholder Concerns, Perspectives and Interests

Business and Industry Representatives:

Eleven individuals were interviewed from this category representing nine entities: Alabama Coal Association, Alabama Gas Corporation (ALAGASCO), Alabama Power, Balch and Bingham, Birmingham Water Works Board, Business Council of Alabama, Coalbed Methane Association of Alabama, Gulf States Paper and International Paper. Each of these entities has operations or represents entities that operate in both the BWRW and CRW. Landing interviews with stakeholders in this category proved to be rather challenging, as many had extremely busy schedules. There were a few instances where interviews had to be scheduled months in advance because that was the earliest available opportunity. In some cases efforts to schedule interviews were unsuccessful, where industry representatives never responded to the phone calls and emails. Building rapport was very important in many of these interviews, as many expressed reservations about the nature of my research, what it was for, how it would be used, and whether they could see the final product or not. On one occasion an industry representative insisted that a company lawyer be present for the interview. While this didn't discourage me from conducting the interview, it was somewhat intimidating and spoke volumes about the importance, delicacy, concern, liability and potential negative financial consequences associated with bad publicity that these stakeholders held regarding environmental and watershed issues.

In several of the interviews I was able to conduct, especially at the start of the interview, I felt like I was getting the "company line" and not necessarily the view of the respondent. The interview would begin with them handing me a very large folder which contained numerous documents regarding their companies' environmental policies, their involvement in environmental education and awareness programs, etc. In these instances it felt as if I were an auditor of some sort, and that they wanted desperately to get rid of me by showing me all these documents which verified that they were concerned and active with watershed and environmental issues. In many instances, however, after the first few minutes of the interview, when they had a better understanding of my background and what I was trying to accomplish, I felt like they opened up, that they gave me less of the company line and offered more of their personal opinions, which is what I was after.

A few underlying themes regarding watershed issues became apparent through the interviews conducted with stakeholders in this category. The first theme was that a majority of these stakeholder representatives stressed that the companies they represented were made up of regular people who valued clean drinking water, and more generally a clean and healthy watershed/environment, just as much as anyone else. This theme is expressed well in an excerpt taken from an interview with an industry representative:

> *When you think of a corporation as a faceless entity, and don't think of the people that are there, you're overlooking a crucial fact. The employees of every corporation in the state live in the community; they fish the streams, swim, backpack, rock climb. You know, we enjoy a clean pristine environment. When I come here I want to see that our operations are done in a way that minimizes impacts as much as possible, not only for the sake of the environment, the watershed, the rivers, but for the sake of our employees, their families, for myself, my family.*

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Many of the stakeholders from this category made statements similar to the quote listed

above. They all stated that they were interested in having clean drinking water and a

clean watershed/environment in general because their employees all valued and depended

on these things. The fact that a majority of stakeholders in this category expressed this

can lead one to infer that the negative public image that many businesses and industries

have regarding watershed/environmental issues was something that many of these

business and industry representatives were concerned about.

The second major theme that became apparent from interviews with these

business and industry representatives regards the great deal of mistrust that is held

between many of those in the business and industry community and many of the

individuals and organizations in the environmental community. Many industry

respondents stated that they didn't trust many of those in the local environmental

community because the environmental community often used misinformation and the

media to portray business and industry in a negative light. A couple excerpts taken from

interviews with business and industry representatives provide good examples of this

mistrust:

> *Birmingham probably has the highest concentration of different environmental organizations. Some of them are very very much advocates, some of them are advocates for a niche, some of them are more general advocates. I think by and large, what our folks try to do is what a lot of the environmental groups want, and that is to lessen the impact on the environment, to use the latest techniques and technologies so that development and environmental protection can coexist. You always have some folks that shoot from the lip, they like to get in the newspaper. They make outrageous comments that aren't founded in any facts or science, they just say them because they get put in the newspaper, and these are counter-productive all the way around…There are people in some environmental groups who use environmental issues and regulations and hysteria as a way to take peoples' private property away from them, and they've got to understand that in America, the fifth amendment to the U.S. Constitution prohibits a taking of your*

property, and when you try to use any environmental law to tell someone they can't do something on their property, you know, the best way to achieve your goal is to buy the property from them and then you do with it what you want…I really believe that what we used to see as the big socialist-communist movement, I think its found a new home in some of the more radical environmental groups. I'm not necessarily talking about any in Alabama, but your Earth First, your Greenpeace, and some of these others that are way out there on the edge, I think they have the old communist-socialist-Marxist-Leninist stuff in them, and they're doing what they're doing through those organizations.

Another industry representative, speaking to the local environmental community, stated:

I think they speak with forked tongues…When a developer, for example, comes to them, sits down and says 'this is what I want to do, and here's the kind of things that I want to do to minimize the impact that I might have on the river' and they [environmentalists] work with and embrace that, and pull information and work with them and tell them 'what you're doing is good' then, at the last minute he reads an article in the paper slamming him. If I come to you and lay my cards on the table and ask you to comment, and you give me very encouraging comments, but then at the last minute I read an article in the paper where it says 'oh, look what he's done.' If I'm discussing things with you, and we're trying to resolve issues about something like an ordinance, then I found out that you've gone behind everybody's back and said bad things, then it doesn't matter what you say, it doesn't matter what your demands are, it's a matter of can I trust you?

This acute sense of mistrust was expressed by a majority of the business and industry representatives that were interviewed. Many stated things similar to the excerpts given above. This mistrust was also voiced by many as being a major hindrance to effective communication and dialogue, and ultimately, to effective watershed management.

A third underlying theme that became apparent through interviews with business and industry representatives had to do with watershed/environmental policy implications, particularly the economic implications associated with these policies. All of these stakeholder representatives stated that they were concerned with watershed issues such as drinking water quality, loss of aquatic habitat and fish, plant and wildlife species. But through the interviews it became obvious that most business and industry respondents

were focused primarily on the policy implications of watershed issues, especially the economic impacts associated with watershed protection regulations and policies. Many stated that they were concerned about the strength and uniformity of watershed regulations such as construction stormwater permitting, Total Daily Maximum Loads (TMDLs), and various municipal and county ordinances such as riparian buffer zone ordinances, flood-plain ordinances, and conservation subdivision ordinances. In many of these interviews I was informed of the significant costs associated with regulatory compliance. Several respondents noted that those in the environmental community often were ignorant to how these costs affected the day to day operations and procedures of those in the business and industry community.

All of these stakeholder representatives expressed frustration with the complex, fragmented and bureaucratic process that exists regarding watershed/environmental regulations. Several of these stakeholders expressed that they didn't mind following the rules, but only wished that they were applied consistently and uniformly. A few business and industry representatives made the case that they would like to see ADEM play a larger role in regulation and enforcement.

Two quotes taken from interviews with business and industry representatives capture this sentiment for ADEM playing a bigger role in watershed/environmental regulation, and also demonstrate their frustration associated with the fragmented regulatory approach that exists in Alabama, particularly around the Birmingham area:

> *Watersheds do not follow political boundaries. The only way you can address watershed issues would be more at the state level, because then you don't have the burden of geo-political boundaries. So, you have right now, a fragmented approach and cumbersome bureaucratic permitting processes with numerous agencies, that really don't clean water, all they do is cause a lot of headaches...At*

the state level you typically have, at ADEM, you would have degreed biologists, degreed engineers, professionals dealing with issues, and at a local level you basically have people who issue building permits and building inspectors and very rarely at the local level do you have the money, the resources, the expertise to address things, permitting issues, that you certainly can have at the state level. At the state level you can have the consistency too. You have a Pandora's Box as you move around the state and deal with those issues at the local level. Sometimes it's just viewed as a money making opportunity; environmental permitting and what might be presumably looked at as a means to improve a stream or water quality can quickly turn into just a permitting program, another opportunity to make money at the local level and not really do anything other than require a permit that doesn't really affect any stream quality changes.

An excerpt taken from an attorney representing several businesses and industries in

Alabama put it this way:

I think that there's probably a perception that ADEM doesn't do enough from the environmental community and I'm not sure if that is true, however the funny thing is, the folks that are down lobbying for more funding for ADEM are your business folks...ADEM is grossly under-funded and until you get them the dollars they can't do their job. I think a lot of businesses and industries would like to see that, because then you have consistency throughout the state. My clients don't mind following the rules, just apply them consistently and know what's going on as opposed to having ADEM, and then say Jefferson County, then a municipality and then something like the Storm Water Management Authority each having their own ordinances, their own limitations and guidelines etcetera. What we have is a very layered bureaucracy of permitting and things that you have to get done before you accomplish something. If ADEM could get the funding I think that their willingness and their ability to do a good job is there.

The public image of these businesses and industries, the great sense of mistrust

held against the environmental community and concerns regarding

environmental/watershed protection regulations and policies were identified as the major

underlying themes that became apparent through the semi-structured interviews Many of

the business and industry representatives interviewed also expressed pro-growth

sentiments, although some more overtly than others. Some interviewees plainly stated

that it was in the financial interest of their companies to have growth, while others

expressed that while not all growth was good, growth was inevitable, and that many of the "anti-growth" or "no-growth" sentiments expressed by some of those in the environmental community weren't realistic. One industry representative very clearly stated his/her opinion about growth: *"We are a stakeholder because we serve the people that need and want [companies' product]. Our business is to grow, so development in general is something that is good for us."* In a less direct fashion, another industry representative expressed his/her opinion about growth:

> *Growth is a mixed bag. Some types of growth are bad, I would not dispute that. However, the fact is, growth is going to happen, it's inevitable. People need houses to live in. They need various goods and services provided to them. Some folks have a hard time accepting this, they don't want to see growth, they are no-growth proponents. They want to live in their house, which was of course a new development at some point in time, and look out and see fields and open space, or the river, they don't want to see rooftops as far as the eye can see. I can empathize with them, but they have to understand that they can't take away other peoples' rights to come in and live next to them.*

The pro-growth sentiments expressed by many of the business and industry representatives demonstrate that growth is perceived to be in the best interest of many of the companies and businesses these interviewees represent. Drawing on Molotoch's growth machine theory, these businesses and industries represent one of the nested interest groups having common stakes in development.

Developers

Four individuals were interviewed in this category representing four different entities: three development firms and one association involved in the development industry. Due to the limited number of stakeholders interviewed in this category, the names of the companies they represent are withheld to preserve anonymity. All of these

entities operate in and around the Birmingham area. While it was not intended, interviewees from this category were under-sampled compared to interviewees from the other categories. A few of the developers I was able to contact stated that they simply didn't have the time for an interview; a few others simply did not return any of my calls or emails. Needless to say, more interviews with developers would have added depth and insight into this study; however, the information obtained from the developers that were interviewed does provide some insight into the concerns, perspectives and interests held by developers regarding watershed issues.

Each of the developers I interviewed seemed to express a genuine concern for having clean drinking water and a clean environment in general. At the same time, however, each developer mentioned that making money was a primary motivation and objective of developers, and that developing land was how they earned their living. Some common concerns and interests emerged through the interviews conducted with developers. The first is that there exists a great deal of mistrust between developers and many in the local environmental community. This heightened sense of mistrust was expressed by each of the developers I interviewed. The second set of common concerns or interests the developers expressed regarded the lack of incentives that exist for developers to think, plan and develop in environmentally sensitive ways in both the short-term and long-term. The fact that building codes and requirements differ depending on what municipality or political jurisdiction a developer may be working in was mentioned as a contributing factor to the lack of incentives for developers to plan developments in an environmentally conscious manner. The third set of common concerns and interests that emerged is that developers were very concerned about the potential for future

development regulations (e.g., flood plain ordinances) to cause major headaches as well as negatively impact their ability to earn a living. They expressed specific concern regarding ordinances and regulations that would limit the amount of land that could potentially be developed.

In order to shed more light on these common concerns and interests I would like to share some excerpts from interviews with the developers that were interviewed. The first two excerpts bring to light the great deal of mistrust that is held by developers for many of those in the environmental community:

> *There are [development] companies that have been out there doing what they do for decades. Gradually these grassroots environmental groups have come in and started trying to exert pressure, and I'm not saying that it's either side's fault, but both sides are incredibly frustrated with one another because the developers were not changing their ways nearly fast enough, and that was incredibly frustrating to the environmental groups, so they brought forth lawsuits and slung mud in the papers, which was incredibly frustrating to the developers. So now there's just kind of bad blood, a lot of mistrust, a lot of the developers think that the environmental groups are going to exaggerate or tell falsehoods, and vice versa. That's really the problem right now, is that there is not good communication, because each side is so afraid that the other side is going to do something irrational…Say you have a guy who's trying to develop 200 acres. He's got all this silt fence up, he's got all his berms and his throw bails, and some huge rain comes through and blows out a silt fence and you get a ton of silt into a creek, and the next morning the Cahaba River Society is there with a digital camera. The guy was following the rules, he didn't mean for that to happen, but it happened anyway. That's a good example of how that can be interpreted two different ways, and a lot of animosity between the two sides comes into that.*

Another developer stated:

> *There's a bad stigma associated with developers, that we're out to rape, pillage and plunder. Why do we have this stigma? Are we really evil, bad people who don't care about the environment, the watershed? Or is it a result of environmentalists using the newspapers to portray us as that? You know, sometimes best management practices fail. A storm might come in, it will flood, the wind will be very strong, and maybe it knocks down a silt fence. Did I have control of that? It's really beyond my control. But, the next morning, there's a good chance that some of these environmental folks will be out there with a*

digital camera or whatever, and the next day there might be an article in the newspaper with the title "Developer puts silt in the Cahaba." Did we mean for that to happen? But now, you're average Jane or Joe reads that article and thinks developers are horrible, evil people. That's not a good thing, it's not honest and it certainly doesn't promote trust. Frankly, it makes me see red. Any respect I may have had for these people goes right out the window when I read an article like that, and I've seen plenty of them. The other thing many of them don't understand is people need places to live, growth is going to happen, and this is simply how we earn our living.

The fact that the two developers quoted above both mentioned environmental groups using 'digital cameras' and similar phrasing to portray negative images of developers to the public suggests that the use of the media by environmentalists is something that raises concern amongst developers; it may also suggest that developers meet periodically to discuss these concerns, so that they respond in similar fashion when certain questions are posed.

The mistrust that was articulated by business and industry representatives, developers, and environmental/watershed advocates (as we will see), was one of the re-occurring themes throughout the entire interview process. This acute sense of mistrust is significant because, as noted in the literature on collaboration, mistrust can serve as a formidable barrier to establishing and maintaining effective and enduring collaborative efforts at watershed management.

An excerpt taken from another developer provides a good example of the lack of incentives that exist for developers to think, plan and develop in environmentally sensitive ways in the short and long-term:

I think long-term planning is what needs to be done, rather than short term. We need to look at the environment from a long-term perspective, and plan out what needs to be accomplished…I think a long-term look at planning and protecting the environment is going to be good for everyone. I think that approach has to be done realistically, it has to be based on scientific fact and evidence, it shouldn't

be based on unsubstantiated scare-tactic type approaches, whether it's from one side or the other…I think there're very few incentives right now for developers to think in an environmentally conscious way in the long-term. I don't think there's any incentives from an immediate and short-term standpoint, economic or tax incentives. There can be some developed though…For instance, there's a lot of things that are in your typical municipal code that are incentives to develop things the wrong way. So, the code has to be influenced. I think there could be tax incentives to plan and develop for the environmental long-term as well as the economic long-term…The municipal codes need to be changed for environmentally sensitive areas. A lot of our code is designed around, for instance, take parking spaces, increasing the parking spaces instead of sharing parking spaces, pervious materials should be used from an environmental standpoint instead of impervious materials, things of that nature. So, there's a lot of things about the codes in the different municipalities that could be changed to help environmentally. Some of those could provide economic incentives to developers as well.

Another developer stated:

It's not so much that company X is the bad guy and company Y is doing it right. I think it's much more of a fundamental belief in the governmental system, where somebody who has the developer's hat on says 'alright, I want to be a developer, and in order for me to come up with a plan, you've got to tell me the ground rules.' Lots of well-intentioned people from the industrial revolution through today, in the planning profession, have come up with these zoning regulations, you know, 'you can't mix-uses, you can't do this, and that.' The problem is, the way that the zoning regulations are set up right now makes building a Wal-Mart with a big asphalt ocean out in front and one tree per acre or whatever the ratio is, that's easy, it's well defined, the developer says 'alright, I'm building a Wal-Mart, this is how you do it' and it's easy to do. But if somebody wants to come in and say 'well you know, we want to have a shop downstairs, and living space upstairs, or we want to try to have a more pedestrian-friendly neighborhood, more sidewalks, or a school in the middle, or less vehicular traffic, or allow for an integration of uses, so people can walk to school or walk to work or whatever, that's really hard to do because of the current zoning regulations and rules that exist regarding development, there' s not much room for innovation and flexibility…I think there's a frustration within the industry, of 'what rules are we playing by today? The rules keep changing, and we're just trying to follow this original set of rules we all agreed to' but with environmental groups putting more pressure on the politicians and the everything, they're changing the rules, and the development industry gets really frustrated with the environmental groups, and don't feel like they're being reasonable, or they feel like 'well, you live in a house somewhere that somebody developed, why can't we earn a living doing what we do, which is developing new houses for others to live in?' I think there's a leap that has to occur within the industry as a whole, to adopt new rules and

guidelines that still allow for companies to go in and be profitable and successful, but at the same time, honestly take into consideration a lot of the environmental concerns that are coming out these days.

This lack of incentive for developers to think and operate in environmentally sensitive ways serves as an institutional barrier in the form of inflexible policies and procedures, as noted in the literature on collaboration, thus hindering opportunities for establishing effective collaborative efforts to watershed management. Perhaps if more incentives were established for developers to think and operate in environmentally friendly ways, the bad stigma many developers have as being people who are out to 'rape, pillage and plunder' would be diminished, thus alleviating much of the mistrust and hostility (another barrier) that is found between developers and many in the environmental community.

The third set of concerns and interests that became apparent relate to developers concerns regarding the potential of future development policies and regulations to increase development costs and potentially limit the amount of land that can be developed, which in turn hinders a developers' opportunity at earning a living. A couple excerpts taken from interviews with developers make this point:

> *An increase in regulations—of any type—equals an increase in costs for developers, in safety costs, in building costs. Any time regulations come to the table developers stand a chance at losing money.*

Another developer stated:

> *I'm going to be honest with you and get right down to it. Making money is our priority, it's what we do, it's what the business of developers is all about. Everybody has to earn a living somehow, right? Sure, we want to do the right thing, we want our projects to pose minimal damage to the environment, to the watershed, but the bottom line is the bottom line. Of course we're going to be interested in any type of policies or regulations that may hurt our ability to develop land, because it directly affects our ability to earn a living. Some of the bigger guys, they can handle it better, they can absorb things better, they have the resources to make it work. But a lot of the smaller guys, it really hurts us.*

This quote demonstrates that the scale of operation that a development company may operate at is important. Typical to any business, the bigger the company, the more resources they have, thus allowing them to "absorb" changes in policy or operating procedures, costs, and the like, much more so than a small firm with limited resources. This also may have important implications for collaboration, as these bigger firms would, presumably, be in much better position to negotiate, make certain concessions to other stakeholders, and experiment with innovative environmentally conscious operating procedures.

One relatively young developer expressed the view that developers in his generation were more in touch with watershed/environmental issues than some of the older developers:

> *I think there's the old guard that has been developing in sort of a haphazard way ever since the white flight from the cities, and the suburban sprawl, the advent of the automobile. Things have just kind of gone more or less unchecked from that point. You got a lot of the maturation of the Earth Day group, and a lot of environmental groups and a lot of people are becoming more aware of environmental concerns. When you get that old guard 'we've been developing like this for fifty years, how dare you tell us we've got to do this or that' then you have the 'this land doesn't belong to us, it belongs to our grandkids, and we're going to sue you if you try to do this' you know, that friction has got to go away, and there's got to be a dialogue, an honest conversation needs to happen…You know, I'm a child of the 1970's, I didn't quite make the first Earth Day, but coming up through the schools, and I know this is true with my son, he's much more aware of habitats and ecosystems. I think that succeeding generations, that we're moving in that direction. I think there's the scarred, kind of old guard that's at the top right now, that will probably never make it into a full embracing of the environmental stuff. But they're all going to retire pretty soon, and I think that people in my generation, in your generation, are going to be able to communicate and work stuff out better. That might not seem fast enough for some people, but I kind of feel that's kind of how it's going to work out.*

The age of developers, and therefore other pertinent stakeholders, may also have implications for collaborative efforts at natural resource management. As was noted in the quote above, environmental issues and environmental awareness does seem to be more ingrained in younger individuals, and perhaps younger generations are also more adept at communicating and seeing issues and problems from different viewpoints. Although this sentiment that younger developers are more aware and sensitive to environmental issues was only articulated by one of the developers that I interviewed, all of them stated that they generally felt that environmental issues were becoming more commonplace and more ingrained in the consciences of the public in general—including developers.

Like the business and industry representatives interviewed, each of the developers interviewed expressed pro-growth sentiments; growth, in essence, is what enables developers to earn a living. Drawing on growth machine theory, developers are also one of the nested interest groups with common stakes in development. Rules and regulations regarding development, created and enacted via local governments and elected officials, are of primary concern with developers. Thus, developers *need* and use the local government as a vehicle to secure and manipulate the development groundwork so that it's favorable to their material interests. This link between local governments and developers was expressed in one of the interviews conducted with a developer. I cannot provide a direct quote regarding this link, as I was asked to turn off the tape-recorder before this individual articulated this connection between local governments and developers. Essentially, the point was that monetary campaign contributions to various individuals running for local offices were used as leverage to negotiate and have input in

decisions regarding development protocol or regulations that might be made by these elected officials. This is a good example of how developers need and use local governments as vehicles to pursue their material goals.

Elected Officials and Governmental Entity Representatives

Nine individuals were interviewed in this category representing eight different entities. A majority of the interviews with elected officials related to watershed issues in the CRW. Of the nine, five were elected officials including two Mayors representing two municipalities in the Birmingham area, one Jefferson County Commissioner, a Probate Judge, and a municipal Director of Development. Four non-elected officials were interviewed representing three governmental entities: the Alabama Department of Conservation and Natural Resources, the Birmingham Regional Planning Commission, and the Jefferson County Storm Water Management Authority (SWMA).

In general, most of the individuals interviewed in this category stated that their primary concern or interest in watershed issues was trying to balance watershed protection and conservation interests with economic growth and development interests. Competition for economic growth and development among various municipalities and governmental jurisdictions was expressed as a major issue that often led to negative impacts on local waterways and watersheds. Educating the general public about watershed/environmental issues was also noted by a majority of stakeholders in this category as being a major concern.

All of the elected officials stated that they viewed their role regarding watershed issues as that of a mediator between those having interests in economic growth and

development and those who're more interested in environmental protection and
conservation. As one elected official put it:

> *You will always have opposing interests regarding watershed issues. Always.
> Absolutely. Mostly it's the business community and the environmentalists who
> are at opposite ends of the spectrum, and those of us who represent the
> governments I guess are the middle voices. But we have to have the input from
> both of the sectors and then make the best decisions and recommendations that
> we can make within the circumstances. They are always going to be at odds, and
> the business community obviously would prefer to have no regulations
> [laughing], but I think that we're going to be able to get to a point where if each
> of those sides dislikes us about equally, we must have been successful.*

While all mentioned that finding this balance was possible, they all stated that it is very

difficult. All of the stakeholders interviewed in this category voiced the opinion that

watershed protection efforts are actually long-term investments that benefit both the

economic and community well-being of any locality. Many stated that having a clean

watershed and environment in general served as a way to increase local property values

and that having a clean place to live, work and recreate in was one of the primary factors

influencing the decisions of businesses and industries to locate in a given area. Many

also noted that the short-term costs of incorporating environmentally sound policies and

regulations often dwarf the long-term costs associated with not incorporating them. One

respondent phrased this sentiment well:

> *Are there impacts of doing smarter development? Sure, there's definitely some
> things associated with that. It does influence the cost of development, and it does
> influence the cost of an area, but what the long-term potential costs are, the long-
> term cost/benefit analysis has showed us time and time again that your investment
> in the now can save you dollars in the long run. Environmental cleanups are
> incredibly difficult, and incredibly expensive, especially on a watershed scale. It
> takes an enormous amount of effort to undo damage after it's done, so when we
> come to things that are water sources, that are unique within the context, or
> habitat, we especially in those instances have to look at what the potential
> implications are and what the long-term costs are. We can do a more cost
> effective job if we invest in the long-term. These are just lessons over the last*

couple of decades that have been taught to us repetitiously. We've spent a lot of time cleaning up from the 60's and 70's...and if we don't learn from history we will repeat it, and that will only happen so many times before we've done damage that's potentially irreversible.

Another watershed issue that was brought up through interviews with elected officials and governmental entity representatives related to the inconsistency and differences regarding development regulations and requirements. Many of the municipalities in and around Birmingham have different development requirements and regulations and this was expressed by all the elected officials as being a source of contention between various municipalities who compete with one another for economic growth; it was also mentioned as being a major reason why development activities were having such an impact on watershed conditions. As one elected official put it:

One of the issues is with development regulations and multiple jurisdictions and trying to apply the same regulations across those jurisdictions. Each municipality, each jurisdiction has an interest in promoting economic growth, plain and simple. In an area like this, where you have so many little cities and towns right next to each other, having different regulations is going to affect the amount of economic growth and development that takes place in a given locale. Every city wants their piece of the pie. The problem is, when you have a city who truly wants to protect the river, and has fairly stringent development requirements, a developer can simply say 'well I can go over here, next door, in a different jurisdiction, and not have to meet all these requirements.' That really complicates things. It has happened before in other areas, where all of the cities and counties in a given area will adopt the same or more stringent regulations, so we know that we can do it. It takes a lot of work, but the goal is always to get at least the minimum that the government is willing to impose and then others can go beyond that if they want.

Another elected official stated that:

I think one generic ordinance to cover generic type of things, so that inspections and the enforcement from city to city, from county to city are the same, and everybody is playing by the same rules, is good. Now, if the cities want to be more restrictive, they want to do more in protection, then they're able to do that. But at least with minimum requirements a developer can't come in and tell you 'I can build it this way over there and it will cost me less money because you all are

more restrictive.' What we're trying to do is protect the watershed. It gets really complicated when you factor in the competitive nature of all these cities. Everyone should be entitled to enhancing economic growth, but when you throw in the mix all these different regulations it really muddies the water so to speak.

Another respondent from this category stated:

One of the most important things that I feel you need to have in order to effectively manage watersheds, especially urbanizing watersheds, is you have to have absolute uniformity in implementation of whatever it is. That is a different way of thinking from what we've done historically and I think that we're learning that political boundaries don't follow water boundaries or natural boundaries, and moving beyond that mindset is absolutely crucial. If we don't have uniform implementation we will have continual problems, regardless of how good and technically sound the policies are.

Educating the general public and increasing public awareness and participation in watershed issues was also expressed by a majority of the elected officials and governmental entity representatives as being a vital component to watershed management. One interviewee in this category articulated this point rather well:

Public involvement is absolutely crucial. One of the major components in the context of general education and specific education is we have to have a well educated, affluent and active community within the watershed. That is crucial, and that part is difficult, but one of the ways it has to be done is, beginning long before public service announcements and public education campaigns, it has to be integrated into the schools. Children are brought up to understand the implications of their actions, and it becomes practice.

One elected official stated this regarding educating the public to watershed issues:

Having better public access to our rivers and streams is vital. I think until people can actually experience it, they don't know what it is that we need to save or protect. Having more nature trails, canoe launches, things of that nature can serve to enhance the community and also serve as an educational tool that will raise awareness and hopefully it will translate into a more active public. The more they're out there, the more they'll care about these issues, because then it's not some abstract idea that politicians or environmentalists are whining about, it's something that they know, that they've experienced.

It became apparent to me through the interviews that some of the elected officials were clearly partial to certain interests over others. For example, one elected official, when asked to name off the stakeholders involved in local watershed issues began by naming off municipalities and counties in the general area, followed by certain businesses and industries, then landowners and at the very end stated *environmentalists*. Although in text this may not appear noteworthy, the demeaning tone and manner in which this individual mentioned "environmentalists" was very revealing. Throughout the interview this individual emphasized the importance of economic growth and development, spoke very little about the importance of watershed protection, and seemed to express an overall lack of respect for "environmentalists." This partiality that can and does exist among elected officials is also demonstrated in another quote, albeit not as strong as the previous quote, where an elected official was asked what common ground they saw existing between the diverse stakeholders:

> *I don't think there really is much common ground beyond basic necessities, like having good drinking water. Because when you get a true environmentalist or tree-hugger or whatever you want to call them, for a lot of them there's nothing you can do to make them happy. Bottom line is, you're not going to make the Cahaba River pristine, I don't care what you do. We're going to have pollution, to be able to control the amount of pollution would be good…We do need to get our heads together and work together, no question about that, but we have extremes on both sides that are so far extreme that I don't know if that will ever take place or not.*

In contrast, another elected official I interviewed, whose office was decorated with several paintings and pictures of "critters" found in local waterways, emphasized the importance of watershed protection not only for community improvement but also for the sake of the fish, wildlife and plant species. This individual clearly articulated watershed protection as a long-term investment in the local economy. An excerpt taken from an

interview with this elected official demonstrates the partiality that can and does exist among elected officials regarding topics such as watershed protection and economic development:

> *I view the rare and endangered species that are found in the river and the natural communities along the banks of the river as being stakeholders. The problem is that these stakeholders cannot voice their interests, their concerns in all these matters. Somebody has to be their voice. This area is the most developed stretch of the river and that is why it is white, most of the silt and sediment is here. As you get down to the undeveloped areas you find all the mussels and the fish, so it seems pretty clear to me that development and how it is done matters a lot. See this little guy, this snail, he's on I-55 and he's the reason that the interstate bridge has never been widened [laughing], because he's there…Economic growth is important, but there are ways of incorporating environmental protection into development plans, ways of minimizing the impacts of development on the natural communities…Unfortunately I feel that most people, whether you're a developer, a local business, elected officials or the public in general, feel like economic growth is more important than watershed protection…We take a lot of things for granted, like clean drinking water, that shouldn't be taken for granted. I believe that developers can, and maybe naively, be persuaded that the river can be an asset to them, that their property is more valuable if they take care of this resource and make it part of their marketing…I believe that you can balance economic prosperity with environmental quality and community well-being, and we've adopted that as our philosophy of development, but when the rubber hits the road it doesn't always work out that way, unfortunately.*

Thus, just like every person, the viewpoints and ideologies that elected officials possess affect their actions and decisions regarding various issues and problems, including watershed/environmental issues. The underlying themes that became apparent through interviews with elected officials and governmental entity representatives were that balancing economic growth and development interests with environmental/watershed protection interests is a primary objective among many elected officials, that the competitive nature of different municipalities and political jurisdictions adds complexity to addressing and handling watershed issues and that increased efforts at educating the public about watershed issues and processes needs to take place.

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All of the elected officials interviewed expressed that development—specifically, enhancing economic development—was one of the fundamental aspirations held by most elected officials. Many also stated that development was inevitable. Thus, elected officials and local governments can be seen from the growth machine perspective as belonging to the group of nested interests with common stakes in development. While all of the elected officials interviewed had the opinion that environmental/watershed protection and conservation was also a major component of what they do, I got the sense that these protection and conservation aspirations were generally secondary to the aspirations of economic development. Striking a balance between economic development and environmental protection/conservation was expressed by all of the elected officials as being difficult yet necessary.

Environmental and Watershed Advocacy and Conservation Organizations

Seventeen individuals were interviewed in this category representing fifteen different entities: ADEM Reform Coalition, Alabama Environmental Council, Alabama Rivers Alliance, Black Warrior-Cahaba Rivers Land Trust, Black Warrior Riverkeeper, Cahaba River Authority, Cahaba River Society, Cahaba Trace Commission, Forever Wild, Friends of Hurricane Creek, Friends of Locust Fork, Friends of Rural Alabama, Friends of Shades Creek, The Nature Conservancy of Alabama, and the Village Creek Human and Environmental Justice Society. Landing interviews with stakeholders in this category proved to be the least challenging, as all seemed eager to participate and have their opinions heard.

Respondents in this category all expressed concern over degrading watershed conditions. Concern was placed on the impacts of development and various forms of pollution upon the actual watersheds and the various species of plants, fish and wildlife that occupy waterways within the watershed. Many of the individuals interviewed in this category seemed rather pessimistic about the future as it relates to the health and integrity of local watersheds. All of the respondents in this category felt that unchecked urban growth and poor planning for growth were major issues having negative impacts on local waterways and watersheds. Many of the interviewees in this category said that better public education efforts were needed to raise public awareness and participation regarding watershed issues.

One of the underlying themes that became apparent from interviews with advocacy group representatives was that a vast majority of them expressed a great deal of anger, criticism and mistrust for ADEM, local governments, developers and for many of those in the local business and industry community. Many of the advocacy organization representatives felt ADEM was in the pocket of special interests, like the agricultural, timber and utility industries. An excerpt taken from an interview with an advocacy group representative provides a good example of the criticism that many stakeholders in this category expressed towards ADEM:

> *ADEM is the biggest threat facing [local waterway]. They issue permits that are un-enforceable, they don't try to enforce them when they are enforceable. They don't regulate the logging industry the way they should, and because of ADEM and their irresponsible practices, we have the largest number of extinct species of any state in the nation. We have the largest number of polluted waterways of any other state, and this is all directly related to ADEM's permits division…Right now industry is just thumbing their noses at us because they know ADEM isn't going to do anything…ADEM has actually made the comment, and this came from the Director, at the very top, and I've also heard this from their permits chief, I've*

heard both these men stand up and state, publicly, that they are not compelled to enforce the CWA, that they are compelled to issue permits.

Another advocacy organization representative stated:

The state agency here, ADEM, is seriously under-funded. However, on top of that it's a dysfunctional agency, totally controlled by special interests. ADEM's mindset is that their clients are the business community, not the public. That is their attitude, their mindset, they have a very inadequate program to say the least.

Most of the advocacy group representatives had similar things to say about ADEM, and the opinion that ADEM is ineffective as an environmental protection agency was a primary concern expressed in a majority of the interviews conducted with the advocacy group representatives. In addition to the harsh criticism of ADEM, many of the advocacy group representatives expressed frustration and mistrust for developers, for many local businesses and industries, and for many local governments. As one advocacy group representative stated:

Right now, the way things operate in Birmingham and Alabama, the industries, the developers and the businesses decide what they want, what they pay to live with, as it relates to federal law. They do everything they can to meet federal law, as far as the letter of the law, so they have certain requirements in place. But everyone seems to know that in Alabama the way things operate, the way the enforcement is done in Alabama is not going to meet the spirit of the law, it's not going to protect the rivers, the streams, it's not going to have the results we're looking for…We have a lot of water issues and habitat issues that need to be protected so therefore the minimum standard set by someone in Atlanta or in D.C., or from EPA may not be minimum enough for Alabama…The problem is you have different governments, and you have a micro-economy in Birmingham where you have individual governments, a city of five or ten thousand people who feel a need to compete with the city of Birmingham with 250,000 people for one bit of tax revenue. There's no cost sharing, there's no tax revenue sharing, it's every man for himself, every city for itself. Each city wants their piece of the pie. They don't want anything, any ordinances that will limit the amount of development they can have because they want to be able to compete with the Hoovers, the Pelhams, the Mountain Brooks, all these cities in the Upper Cahaba…The developer sees 'okay, I build this place and in ten years I'm going to make a profit on it, the amount of rental revenue and that type of thing I get in, at that point I will have made my profit, I will sell it off and I will leave.' The

government sees 'we give this group a tax break, but in five years it will pay us back and we will have sustained revenue for 20 years of a million dollars from this retail center.' What the river sees is 'we're going to have trees cut down, more impervious surface cover, more people using the bathroom, more cars, etcetera, and that will go on in perpetuity. That's not a short- term thing, but the developers are seeing it in the very short-term, the government is seeing it in kind of a medium short-term and the river is seeing it in the long term. It just goes back to the me, me, me, society…Government is like 'get the river clean enough so we meet standards and get the public off our back' business is like 'lets get it clean enough so we meet standards but it doesn't cut into our bottom line.

Another interviewee representing an advocacy organization stated:

We've tried to listen, we do listen, we talk, we know that we have to make compromises and come to agreement, but there've been so many instances where a developer says he's going to do X, Y, Z to protect the river. Then, we find out that he only did X, or Y, or none at all. They just seem to always want to cut corners, to minimize their costs regardless of any negative impacts it might have on the river. If it were up to them there wouldn't be any regulations. It's hard to take their word anymore, it really is. I don't trust them when they say 'we're going to do this and this.' Now, there are exceptions, there're some good, responsible developers who truly want to minimize their impacts, but they're few and far between. Most of them want to maximize their profit margin at the expense of the river. Ultimately, in the long run, it's really at the expense of not only the river but of the public in general and anyone who enjoys the river.

While many of the advocacy group representatives expressed much criticism for ADEM, local governments, developers, and the business and industry community, all of the individuals representing the conservation organizations articulated that they were not advocacy organizations, that they were not confrontational and that they had good working relationships with many of the entities that the advocacy groups expressed criticism towards. An excerpt taken with an individual representing a watershed conservation organization makes this point:

Sometimes you see conflict between the environmental groups, the more advocacy oriented groups, and a lot of the folks associated with the business and industry community and the development community. Our group is very non-confrontational, we buy land, have a very clear mission and we try to not be an advocacy type organization, we're an organization that brings people together.

Another conservation organization representative stated:

> *You have to understand that we're not an advocacy organization. Many of the environmental advocacy groups in the area seem to be in conflict with developers, with various industries, but we're not like that. We utilize partnerships, we're neutral, we're not on one side or the other.*

The fact that the conservation organization representatives I spoke with were less critical of other stakeholders highlights a fundamental difference between the more advocacy-oriented groups and the groups focusing more on conservation. While advocacy and conservation organizations may have the same ultimate objectives in mind (e.g., to protect and conserve natural resources) advocacy organizations, as the name implies, focus much of their efforts on pleading or arguing for their cause(s) in the public eye; they seek to raise public awareness and support for protecting rivers, streams, habitat, plant and animal species, etc., and often times they articulate criticism towards activities (e.g., development) and stakeholders they perceive as being associated with many of the problems and issues they aspire to resolve. Conservation organizations, in contrast, focus more of their efforts on actually getting out and working on tangible projects such as buying and conserving land, establishing wildlife refuges, restoring eroded streambanks, planting trees and things of that nature. It is often necessary for conservation organizations to establish partnerships with stakeholders who own land, such as private landowners, businesses and industries, and developers in order to carry out their efforts. Being publicly critical of such stakeholders decreases conservation organizations' opportunities for initiating and maintaining the types of on the ground projects they are involved in. In a sense, advocacy organizations can be seen as a mouthpiece for environmental/watershed issues, while the more conservation-oriented organizations are

actually out in the field, involved in concrete projects aimed at protecting the environment/watershed. This does not mean there aren't any advocacy organizations involved in concrete on the ground projects, nor that conservation organizations never voice criticism at other stakeholders, only that the primary focus of the two types of organizations differ.

Many of the individuals representing advocacy groups stated that they had given up on relying on state and federal assistance regarding watershed issues; that they were looking to mobilize the citizenry to sway local elected officials to make local watershed issues a priority that must be addressed. This lack of faith in state and federal help is expressed rather well in an excerpt taken from an interview with an advocacy organization representative:

> *So for us, what it comes down to, what our major strategy is now, we're not looking to the law to help us, we're looking to citizen power, voter power, that can affect local elected officials. It can get mayors and city council members to understand that water quality protection is something that is a local matter, the state's not going to help us, the feds are not helping us, if we want water quality we have to do it here. That's what scares the developers so much and the business community because they don't want a different set of regulations of each local government, they want one set of rules, and they need that, they need one set of rules, its hard enough to figure out one set of rules with water quality protection and best management practices. However, they also want it being centralized in ADEM because they can keep ADEM weak, they can starve them for money, they can keep them really weak. They have a hard time controlling city by city and keeping the enforcement weak.*

This opinion that developers and those in the business community want to have environmental/watershed regulations centralized at ADEM was also articulated by several business and industry representatives. However, the reason these industry representatives gave for wanting ADEM to take on a larger role was so that there would be more professionalism and consistency in any regulatory measures exercised. The

environmental advocate from which the above quote was taken obviously had a different

take on the underlying motivation (to keep ADEM weak) for why those in the business

and industry community wished to see ADEM take on a larger role.

One of the strategies that many of these advocacy organizations have adopted to

mobilize the public is by using the local media to voice their concerns and interests. This

strategy was articulated rather well by one advocacy group representative:

> *Environmental groups can be seen as 'oh just some environmental crazies' and people think we're just 'crying wolf', that there's something we're upset about and we want the newspaper to do a story about it. What we have found is that if we are persistent they will pick it up. If we are consistent with our message, if we learn ways in which to get that media hook, if we're able to present ourselves in a logical, objective way to the best of our ability, obviously we have our slant and our interests, then we do get media support. We're finding more and more that when those on the industry side screw up, when ADEM screws up or when we see governments making decisions that are self-interested and not so much for the greater good of the community, the media is stepping up and saying 'hey, this doesn't make sense here, maybe the environmentalists or the citizens have something right to say about this. So we have been getting that momentum…We've seen from media support and coverage, some county commissioners and different government leaders who five years ago are telling us 'don't bother me with that environmental stuff, I don't care about it, we're about jobs and economic development,' now sound like born-again environmentalists, and we know that's because they're hearing it from the citizens, they're hearing it from us, and they're getting it reinforced through the media and they realize this is an issue and this is something they better tune into and be campaigning on and be educated on or "I may be out of a job the next go around." That's the democratic system and we're using it to our advantage.*

Another thing that was discovered through interviews with

environmental/watershed advocacy and conservation organizations is that in Alabama,

especially in and around Birmingham, you have some environmental groups who focus

more on environmental protection for the sake of human health than for the sake of the

environment per se. These groups are often associated with the environmental justice

movement, which holds that many of the landfills and other locally unwanted land-uses

are found predominantly in low-income and/or minority communities. Many of the environmental advocacy group representatives noted that there are coordinated efforts taking place in Alabama and the Birmingham region in particular to try and unite these two different strands of environmental organizations.

Many of the opinions and concerns expressed by several of the individuals interviewed representing environmental/watershed advocacy organizations can be viewed in the context of Jürgen Habermas' notion of a 'legitimation crisis.' This is particularly so regarding the severe mistrust and skepticism articulated by many of the individuals representing advocacy organizations toward Alabama's primary environmental agency, ADEM. Many of these individuals view ADEM, a state agency, as having little to no legitimacy as an environmental protection agency. This perceived illegitimacy was brought about by the many instances where these individuals felt ADEM was acting in the interests of Alabama's business and industry community, rather than in the interests of all the Alabamians who place primacy on the value of a clean river, watershed and environment.

The important points to note about stakeholders in this category are that: they are primarily concerned about watershed issues and watershed protection for the sake of the actual watersheds and the various species of fish, plant and wildlife that inhabit these watersheds; that many of the advocacy organizations feel a great sense of anger, frustration, and mistrust towards ADEM, local governments and many of those in the business and industry community; that they are using the power of the media to try and meet their objectives; and that many of them view ADEM as an illegitimate agency

acting on the behalf of special interests rather than on the behalf of Alabamians as a collective whole.

Non-Industrial Private Forest Owners

Ten NIPF owners were interviewed. All of these landowners were identified through implementing the snowball sampling technique. Two of these individuals were also representatives of local watershed advocacy organizations. In addition to general watershed-related questions, landowners were queried regarding a potential water quality service program whereby private landowners would be subsidized by a state entity or non-governmental organization (NGO) to retain forest-land (i.e., riparian buffer zones) or control specific types of land-use. The rationale behind this water-quality service scenario is that the amount of pollution entering waterways and water treatment costs would be reduced by controlling potentially harmful land-use practices and/or implementing riparian buffer zones (also known as stream-side management zones) which would serve as filter strips, thereby absorbing and reducing the amount of pollutants entering waterways.

Each of the NIPF owners interviewed owned forest-land in either the BWRW or CRW, with two individuals owning land in portions of both watersheds. Six of the ten landowners relied on their land as a primary source of income, with several using their land in various ways, including silviculture (forestry), and agriculture. The ages of these landowners ranged from 28 to 73; the amount of land owned ranged from 15 acres to 2,000 acres, with all but two owning over 100 acres. Most of the land that these individuals owned was located in rural areas, with two landowners possessing land in

areas becoming highly developed near Birmingham. Seven of the landowners interviewed were male, three were female; all were white. All but three of the landowners interviewed lived on the forest-land that they owned.

All of the NIPF owners expressed a genuine desire to see the local watershed protected—many stated that it was in their interest and the interest of their families to protect their land and the watershed. All expressed a great deal of pride regarding the land they owned, with many stating that their land held sentimental value because it had been in the family for several generations. Three of the landowners stated that they were considering selling portions of their land to be developed. All of the landowners interviewed expressed a strong sense of private property rights, with many stating that they were mistrustful of "the government" stepping in and telling them how to manage and use their land. This general mistrust for government, as well as a strong sense of landowner pride permeated a majority of the interviews conducted with NIPF owners.

Regarding the water-quality scenario, all but one landowner stated that they would be willing to participate in such a program, depending on the specifics of the contract. The one individual who stated that he/she would not participate said that the reason he/she would not participate was because they already managed their land in ways that protected the watershed, including the use of riparian buffer zones, that they didn't need any monetary incentives to manage their property the "right" way, and that they didn't want to be burdened with other people attempting to manage their land. All stated that they were familiar with riparian buffer zones, with eight stating that they already had buffer zones on the areas of their land that were adjacent to waterways. All of the NIPF

owners interviewed expressed the opinion that most other NIPF owners probably would be willing to participate in such a program, as long as it was voluntary.

Several issues were brought up when I asked these landowners about what factors (specifics) would influence their decision whether to participate or not: how long, what type of subsidy (direct payment, tax credit) and for how much, what entity they would have to work with, what they wouldn't be allowed to do with their land, who would be responsible/liable for management and maintenance, who else was participating, and whether or not it would actually work.

When asked how much of a subsidy they would expect, most of these landowners said they were not sure, that they would have to think it over, but that it would be something reasonable or near the fair market value. All (except for the one who stated they would not participate) stated that they would be comfortable with a renewable 5-10 year contract. All stated that a direct payment would be preferable, but a tax credit might suffice depending on how much it was for. Each landowner stated they would prefer to work with an entity they were familiar with and trusted, preferably a NGO. All expressed caution about what rights/activities they would have to forfeit should they agree to participate as well as what additional responsibilities and liabilities they would have to take on. A majority of the NIPF owners interviewed stated that whether or not other landowners in the area would participate, including corporate/industrial landowners, would influence their decision; these landowners said that they would be more likely to participate if they knew other landowners were participating. Lastly, all of these landowners mentioned that having tangible evidence or proof that what they would

be doing would actually help protect the watershed would influence their decision whether to participate or not.

In addition to interviewing ten NIPF owners, questions regarding their attitudes about participating in the aforementioned water-quality service scenario were included in a survey that was administered by an Auburn University graduate student in the School of Forestry and Wildlife Sciences (Rawls 2005) This survey was sent out to1,840 individuals: 1,500 individuals living in the CRW as well as all (340) of the County Commissioners in Alabama. The response rate to this survey was 5.9 % (n=109).

Of the 109 respondents, 64 (approximately 60%) either owned land adjacent to waterways, or stated they were interested in owning land adjacent to waterways. Of these, 58 (91%) stated they would be willing to participate in a program where they would be subsidized to implement and retain riparian buffer zones on their property. Twenty-five per cent of the 58 individuals who either owned or were interested in owning land adjacent to waterways stated they would participate in such a water-quality service scenario without being subsidized; 20% stated they would expect to be compensated somewhere between 0-5% per year of the fair market value of the timber they would agree to leave as part of the riparian buffer zone; 27% stated they would expect 6-10% per year of the fair market value; 23% stated they would expect 11-15% of the fair market value per year; five per cent did not respond to this question. Eighty-one percent of the 58 individuals who either owned or were interested in owning land adjacent to waterways stated they would be willing to take a tax credit in lieu of a direct payment. See TABLE 1 for a summary of the results obtained from the NIPF owner questions that were included in this survey.

Role of Religion

Throughout the interview process several respondents made reference to religion and/or God; it became apparent that respondents' religious views and perceptions affected how they viewed environmental/watershed issues and problems. Some expressed very anthropocentric viewpoints, where humans hold dominion over nature and nature exists for the exploitation of man, while others expressed more of a stewardship role as mandated by God. A couple of quotes taken from respondents demonstrate the role religion plays in affecting one's perceptions and opinions regarding watershed/environmental issues. An industry respondent, when asked what he/she felt were obstacles to effectively addressing and resolving watershed issues, stated:

> *I would say first of all, as a Christian, first of all I believe that God created our environment, our earth, and that humans were given a responsibility mandated by God to be wise stewards of this creation. Sometimes groups that have different philosophies on that can come into conflict.*

Another quote, taken from a NIPF owner, also captures the sentiment that humans are chartered by God to be good stewards of the land:

> *A lot of landowners find pride in managing their land the right way. We're connected to our land. The rivers, the lilies, the fish, that's all God's handy work, not man's, God's, and what a gift it is…We're supposed to be good stewards with his creations. When I'm out walking my property I almost feel the presence of God. It's unreal how it makes you feel, the chills run down your neck and back…Mother Nature is stronger than man, I'm sorry, but when Mother Nature gets going, when a big rain comes, you're not going to stop her. But some of the bad things that man does, he can stop that, if he thinks. Some businesses don't have the stewardship mentality, they're not connected like we are, they're in if for the money more than anything else It's the almighty dollar, and I know it's a cliché, but it's the truth. It's funny that money is made out of paper, out of trees, isn't it?*

An individual representing an environmental advocacy group had this to say about

religion:

> *People look at things differently. I look at the rivers and creeks as a place for recreation, for fishing, for things like that. Other people see the river as a source to water their sod-farm, as a place to dump their by-products, as a way to generate energy. Some people see the world more as a thing to be utilized for their benefit. Other people see the world not only as something to utilize but also as something to which they belong and do not have dominion over necessarily. I think a lot of these issues boil down to folks having different perspectives in that regard. It's really a spiritual issue, and people are in different places in that respect.*

A more anthropocentric viewpoint was articulated by an industry representative and is

quite different from the viewpoints demonstrated in the previous quotes:

> *You know some people get all concerned about various species and such. Well, the Dodo bird, since the Dodo bird became extinct life has gone on fairly well. That would lead me to believe that there are some species out there that aren't necessary for the continuation of man. Man is supposed to have dominion over nature. It's his job to control the animals of the earth. I would think that's a pretty important point there, and I'm not necessarily the person qualified to say 'that species right there, we can do without that one' but I know that many of the species some of the environmentalists get all worked up about really aren't needed. Plus, there's so many of them, we have people complaining about species X, Y, Z, being threatened, or 'may be threatened' and often times there's no good, scientific data to support their arguments.*

More research examining exactly how peoples' religious beliefs and affiliations affect

their attitudes and opinions regarding environmental issues would surely add depth and

insight to this study. Nonetheless, through the interviews it became apparent to me that

one's religious beliefs play a role in how they see environmental issues and problems,

and how they feel these issues and problems should be addressed (or not). However

interesting, a thorough exploration of religion is outside the immediate objectives of this

study.

Discussion

Stakeholders and stakeholder representatives expressed varied concerns, perspectives, and interests regarding watershed issues and watershed management. Many of the watershed issues that were first identified through the review of media accounts and online searches were mentioned as being relevant issues in a majority of the semi-structured interviews conducted. These include the many issues associated with increasing urbanization (i.e. non-point source pollution, flooding, erosion, sedimentation, nutrient loading, stormwater runoff, expansion of sewer systems, finding potential drinking water sources for the future). However, there were some watershed issues brought up in interviews that were not identified in the preliminary stages of this study. Alabama's state environmental agency, ADEM, was brought up in many interviews and was a topic over which much contention was held by many of the stakeholders who were interviewed. Another set of issues which were brought out through the interviews, and which many stakeholders expressed concern over, were those regarding the complicated, fragmented, and bureaucratic regulatory approaches that exist in both watersheds but particularly in and around the Birmingham area.

Non-point source pollution (NPS) was thought to be a primary issue in both watersheds by a majority of the stakeholders and stakeholder representatives interviewed. In the BWRW, there are many NPS concerns related to agricultural runoff, particularly in the northern part of the watershed in and around Cullman County where agriculture is a significant land-use. The presence of concentrated animal feeding operations (CAFOs) was voiced by many stakeholders as being a significant contributor to NPS in the

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BWRW. The BWRW also has NPS problems with acid mine drainage from abandoned coal mines, forestry and increased urban growth and development. In the CRW, NPS associated with urban growth and development was voiced by a majority of stakeholders as being a primary issue, particularly in the Upper Cahaba Watershed—in and around Birmingham. Fewer issues were reported by stakeholders in the largely rural Lower Cahaba Watershed, save for occasional flooding or low-flow periods in the dry summer months, and occasional point source pollution violations. In general, the primary issues voiced by a majority of the stakeholders regarding both watersheds were those that relate to NPS .

Some concerns, perspectives and interests were shared by all of the interviewees. However, many of these shared attributes were generic in the sense that they were held by all of the respondents at a very general level. For example, all of the stakeholders interviewed stated that they were concerned about having high-quality drinking water, and more generally about having a clean and healthy watershed and environment to live, work and recreate in. When asked "What common ground, if any, do you feel these stakeholders share?" almost all the interviewees responded the same way—that all stakeholders wanted to have good drinking water and that they all wanted and enjoyed having a clean environment. While all of the interviewees shared a general concern for water quality and the environment in general, the degree of their concerns, and the degree to which the policies and regulations enacted in order to ensure clean drinking water and a clean environment, were areas where stakeholders had divergent opinions. A majority of the stakeholders also felt that more efforts needed to be taken to educate the general public about the intricacies and dynamics of environmental and watershed processes. A

majority also held the view that watershed protection and management efforts are hindered by the inherent complexities that exist due to the fact that political boundaries do not follow watershed boundaries. Poor planning for urban development was expressed by a majority of stakeholders as being a significant contributor to many of the watershed issues. The necessity of an integrated approach to watershed management was also articulated by a majority of stakeholders as being necessary for effective, successful watershed management. Beyond these, many stakeholders expressed divergent concerns relating to watershed issues and watershed management.

In a broad sense, the stakeholders that were interviewed appeared to have "stakes" in watershed issues and watershed management for one of two reasons: either for the sake of the watershed itself—the streams, rivers, the plant, fish and wildlife species and their habitat—or for how watershed management regulations and policies would affect their own agendas, their day-to-day operations, their livelihoods, their costs, their economies. For instance, many of the watershed advocacy and conservation organization representatives that were interviewed were concerned primarily with certain species of fish, plants and wildlife that might be experiencing negative consequences associated with urbanization, with NPS and pollution in general. These respondents seemed to stress the importance of "protecting the river for the rivers sake" and spoke about the importance of biodiversity, aquatic habitat and things of that nature. In many of the interviews with watershed/environmental advocacy and conservation stakeholders, I was given pamphlets or shown pictures of various threatened and endangered species within local waterways. These individuals no doubt also had personal stakes tied into watershed issues, as many rely on advocating for watershed protection as a part of their job; their

status and personal identity is also associated with being watershed/environmental advocates.

In contrast, many of the developers and business and industry representatives that I spoke with voiced concern about how watershed management regulations and policies might impact their day-to-day operations, how these policies and regulations would impact the time, energy and resources needed to stay compliant with these regulations, and how it might impact their ability to earn a living. While a majority of these stakeholders seemed to express genuine concern for drinking water quality, and more generally for environmental protection, they seemed to place much more emphasis on how watershed protection regulations and policies would affect them. Some of the regulations and policies they were concerned about were things like land-acquisition (to preserve open space) and various watershed protection ordinances (i.e. flood-plain ordinances, riparian buffer zone ordinances, conservation subdivision ordinances), which could potentially reduce the amount of land that can be developed.

In addition to policies and regulations aimed at conserving land to protect waterways, there are also regulations like Total Daily Maximum Loads (TMDLs) which come down from the federal level under the Clean Water Act through the EPA and are implemented on streams on the 303d list—streams which fail to meet their designated uses such as public water supply, fish and wildlife, recreation, and industrial. The rationale behind TMDLs is to cap or limit the "daily load" of a given pollutant on a particular waterway that is not meeting its designated use classification. Complying with TMDLs can be very difficult, time consuming and expensive. One industry representative, speaking to the potential impacts of TMDLs stated:

The way that TMDLs are developed is a very significant issue. There have been examples of TMDLs developed in this area where they were poorly developed. One in particular, EPA used a reference stream in a totally different watershed, and it was a very pristine stream and then they added a factor of safety on to the conditions there, and were going to impose that as the TMDL for a Birmingham stream in a totally different watershed, different geology, different physiological characteristics, which is inappropriate.

In this instance, the parameters established in this TMDL were based on a relatively clean stream and it would be very difficult to comply with these parameters for a "Birmingham stream" because conditions in that stream were, presumably, much worse than the reference stream. The point is that watershed regulations and policies have the potential to impact the time, energy, costs and day-to-day operations of many different businesses and industries and these potential impacts appeared to be a primary concern and interest among the business and industry representatives and developers that were interviewed.

There was variation found among the primary concerns voiced by the elected officials that were interviewed. All of the elected officials interviewed stated they viewed watershed/environmental protection as an investment in the local economy, as well as in the community's well being. However, some directly stressed the importance of economic development more than the importance of watershed protection, while others seemed to emphasize protecting the watershed primarily for the sake of the watershed, and secondarily for the sake of the economy and community.

In a general sense, the stakeholders who were interviewed seemed to be primarily concerned with either the implications of watershed/environmental policies and regulations on their day-to-day activities or on how well these policies and regulations would actually protect the watersheds, the various plant, fish and wildlife species and their habitat.

VI. MAJOR THEMES

A few overarching themes emerged from the semi-structured interviews regarding stakeholder attributes as they relate to water and watershed issues in the BWRW and CRW. Some of these overarching themes were convergent in that a majority of stakeholders were in agreement regarding these themes, while other overarching themes were divergent in that many of the stakeholders were in disagreement regarding these themes. See TABLE 2 for a breakdown of stakeholder opinions regarding these overarching themes.

The convergent themes that were identified are: mistrust; public education and awareness; weak regulation and enforcement; poor planning for development; the complex nature of political boundaries; a desire to have a clean watershed and environment; and the necessity of an integrated approach for effective watershed management. The divergent themes that emerged were: the degree to which the watersheds are impaired; the effectiveness of stakeholder processes and the degree of stakeholder communication and dialogue; and the integrity and role of ADEM. An in-depth discussion regarding these themes is warranted.

Areas of Convergence

One of the overarching themes that became apparent through the semi-structured interviews was that many of the stakeholders expressed a great sense of mistrust for other

stakeholders involved in watershed issues and watershed management. This sense of mistrust seemed particularly strong between those stakeholders representing the environmental/watershed advocacy organizations and those representing business, industry and developers.

Many of the business and industry representatives, as well as developers, stated that they were mistrustful of many of the groups and individuals in the local environmental community because these groups and individuals would often use the media to portray those in the business, industry and development communities as "bad actors" who were only concerned about making money and could care less about the rivers, the streams and the environment in general. They voiced concern that these negative media portrayals had the potential to sway public perception of local businesses, industries and developers in a negative light as well as influence elected officials and other decision makers.

In contrast, many of the environmental/watershed advocacy group representatives expressed elevated levels of mistrust for ADEM for not effectively protecting the watershed and environment, and for local businesses, industries and developers for cutting corners, not sticking to their word, and for operating out of compliance with many of the existing watershed/environmental regulations and policies. Some of the elected officials I spoke with also expressed reservations about the effectiveness of ADEM, although they weren't nearly as critical as many of the advocacy organization representatives.

Several of the NIPF owners that were interviewed expressed a general sense of mistrust towards government in general, particularly relating to governmental

intervention in private property matters. Phrases like "I know how to manage my land better than the government does" were not uncommon in many of the interviews conducted with NIPF owners.

This mistrust is significant in that it poses a major obstacle toward building collaborative relationships among stakeholders, which has serious implications for the effectiveness of watershed management efforts. When stakeholders have such strong feelings of mistrust it is very difficult to create and maintain healthy working relationships, and it weakens the chances for bringing about effective communication and dialogue. However, acute mistrust among stakeholders can be overcome, as was demonstrated in the NYC case. In that case, communities upstate from NYC were mistrustful of the intentions of NYC to acquire land and control land-use practices. Through negotiation, sharing responsibilities and providing incentives, this mistrust was overcome.

Another overarching theme was that greater and better efforts need to be taken to educate the public and increase awareness about watershed issues and processes. Many interviewees expressed that, in addition to general education about watershed issues (e.g., "pollution is bad"), there needed to be more efforts aimed at educating the public to specific watershed/environmental processes (e.g., how impervious surface cover affects flooding and stormwater runoff). While this was a concern articulated by a majority of interviewees, one developer and one industry representative mentioned that not only does there need to be more and better public education efforts, but that these efforts need to be carried out in a balanced way by competent and qualified teachers. Two excerpts taken from interviews with these two individuals bring to light their concerns:

Public education is a critical component to all these issues. However the type of education and the people teaching this stuff is something we should be concerned about. Sometimes teachers will say 'oh, we want to do a section on the environment, let's just call that local environmental guy that stomps up and down the river all the time.' Well he might come in there and just, it goes way in this direction, or say a teacher says 'we're going to call in a plant manager out from so and so,' and he comes in and does it a totally different way and the teacher has no idea who's balanced and who's not. Some of the environmental programs that aren't advocacy programs, they're trying to bring what is and what isn't into the classroom, while some of these other programs are obviously slanted to the agendas of the more advocacy-type organizations.

Yeah, education is important. But I tell you what, some of the stuff that my kid comes home saying is ridiculous. I have to remind him that he's only getting one side of the story. One time he came home and said 'Dad, my teacher told me that development was bad for the environment.' Good grief, that's absolutely ridiculous. So, yeah education is very important, but we have to make sure that the education that's being put out there, especially for the kids, is fair, that it's not biased and that it covers all the angles and viewpoints.

A majority of the stakeholders interviewed said that they would like to see more public education efforts carried out to raise awareness about watershed/environmental issues. Some respondents expressed concern that education efforts can be slanted and that these education efforts need to be balanced and based on science. Thus, one thing that might emerge as a focal point for collaborative watershed management efforts in the BWRW and CRW is developing and institutionalizing an environmental curriculum into schools as well as other public education/outreach activities.

One of the issues brought up by a majority of interviewees was that the primary state environmental regulatory agency, the Alabama Department of Environmental Management (ADEM) does not have adequate resources to effectively carry out its mandate. An overwhelming number of the stakeholders representing environmental/watershed advocacy organizations expressed a great deal of mistrust, criticism and skepticism regarding the effectiveness of ADEM at enforcing regulatory

measures aimed at protecting watersheds and the environment in general. Some of these stakeholders felt as though ADEM was partial to special interest groups, namely big business and industry. Many of these stakeholders and the organizations they represent are part of a coalition of environmental groups—the ADEM Reform Coalition—who are trying to bring reform to ADEM.

In contrast, many of the developers and business and industry representatives expressed that while ADEM may be short on resources—namely manpower and money—they were doing the best job possible with their limited resources. Several of these stakeholders defended ADEM in light of the harsh criticism the agency receives from the environmental community in Alabama. A majority of the elected officials and governmental entity representatives that were interviewed had the opinion that ADEM lacked vital resources, but also felt that ADEM could do a better job enforcing certain regulations with the resources they have. Most of the NIPF owners that were interviewed didn't have much to say about ADEM, except that they knew the agency was frequently criticized by many in Alabama's environmental community.

A few excerpts taken from interviews with stakeholders in four of the designated stakeholder categories (excluding NIPF owners) shed more light on the concerns, perspectives and interests many of the stakeholders expressed regarding ADEM. I will begin with excerpts taken from interviews with stakeholders in the watershed/environmental advocacy and conservation category, as they were the most critical of ADEM. One stakeholder representing an advocacy group in the BWRW stated:

If ADEM was doing their job, we would not have the kind of pollution that's going on, in any of the bodies of water across the state. If ADEM was doing their job, I mean, none of the state regulatory agencies are very good, but ADEM is notorious as one of the worst ones in the country. They're sometimes referred to as the poster child for the capture syndrome, that the agency has been captured by industry, and they do anything that industry tells them to do. If they were doing their job there would be no need for our organization.

Another advocacy group representative stated:

The biggest issue for me is having a state environmental agency that's basically a permitting agency. There are some good people down there but basically their job is to permit pollution and not protect streams, creeks and people. It seems to me like they have their priorities backwards.

An attorney employed by a state-wide environmental advocacy organization stated:

Well, ADEM has what they call a graduated enforcement action response policy. When a violation of your permit is noticed they will send you a letter, well first they'll tell you 'hey, that's not right' then follow up with a letter, and the letter has to be initiated by the field office that conducted the inspection, which could be in Decatur, Birmingham, Mobile or Montgomery. That letter has to be approved by the Montgomery division, then sent to the violator. So there's at least a two-week time span where there's still pollution occurring on the site, where it's already been identified that there's a problem. If no corrective action is taken, the next time the ADEM inspector comes out they may or may not issue another notice of violation, which will take the same amount of time…so by the time that any fines associated with non-compliance happen, either the sites been stabilized by construction, or the pipe is continuing to discharge an overabundance of pollutants. If they had more funding for more inspectors, if they could actually adopt a written penalty policy and enforcement policy, it would be better public policy that could be initiated. But right now it's just a pretty lousy, flimsy system, and it's often times more affordable for the developers or polluters to go ahead and work beyond their permit regulations and just pay a small fine…the current director of ADEM has been there a while, has no environmental background, and he will openly tell you that ADEM is a permitting agency and not an environmental protection agency, and that's a bit scary.

A member of a conservation organization that works with issues in both watersheds

stated:

If people were in compliance and following guidelines, I don't think we'd have nearly as big a problem with these issues. But ADEM is very weak in the state, and our regulations are very weak, and the fines are so cheap, that sometimes it's

cheaper to pollute and pay the fine than it is to put the environmental measures in place. I think that is a significant contributor to all the degradation that we see, especially in the Black Warrior Watershed.

Several of the elected officials were also very opinionated about ADEM. While they were not as critical as many of the stakeholders interviewed in the watershed/environmental advocacy and conservation category, many expressed that ADEM could do a better job at enforcing environmental regulations. One elected official stated this about ADEM:

> *ADEM has not been good on enforcement. As an example, there was a chicken processing plant up near Trussville that was secretly dumping chloroform and chicken parts in the river, and ADEM gave them a slap on the wrist. And there are plenty more examples like this. I just feel that ADEM has not been effective as an enforcement agency, they could surely do a better job.*

Another elected official stated:

> *I think ADEM has a different goal in mind from what we think their interests should be. They have a different perspective, they interpret the law a little differently. A prime example is that if a development is on one or more acres you have to get a permit from ADEM. You pay your money, fill out all the paperwork, turn in your plan. Chances are, nobody comes out and looks at your plan, they wait until an event happens, or they get a complaint, then they come out and check. Well, if you're a developer, and you put up the skimpiest thing you can put up, and then those silt fences come down and the mud and silt hits the river or lakes, all ADEM requires that developer to do is come back out and clean up the silt fence and put it back up again. I don't see that ADEM's role should be that way. They should at least look at the guy's BMP plan, and they should try and come out and make sure the guy puts his stuff up, and that it's put up right. Now, are they under-funded? I don't know. I really think they could probably be more efficient with what they have. It's like any other state bureaucracy, they probably don't have enough manpower to do what they're obligated to do, or have the authority to do, so they get spread really thin with those that they do have. They could possibly be under-funded but I just think they need to change their attitude in how they perform their job.*

Many of the business and industry representatives I spoke with, as well as some developers, also had opinions about ADEM and their role as a state regulatory agency.

Many of them felt that ADEM was under-funded, and under-staffed, but that in general they were doing the best job they could. Many of them defended ADEM, stating that the criticism the agency receives from some of those in the environmental community is unfounded. Some excerpts from interviews with stakeholders in these categories provide good examples of this. One industry representative stated that:

> *The largest problem I have with almost all of the environmental groups in Alabama is their relentless demonization of ADEM, for not doing this good enough or that good enough. Yet when it comes time for ADEM to be budgeted by the legislature, they're nowhere to be found helping with that, and one of the biggest problems that ADEM has is the legislature doesn't give them enough money to do the job that they're mandated to do. They have done an excellent job in light of these budget issues, but it doesn't do any good when you have people that are pounding on them all the time about not doing their job, yet they're not willing to help get the money they need to do their job. It's just disingenuous to me, and disappointing. The other problem I see with some environmental groups is they don't argue what the laws and regulations actually are, they try to argue what they think the laws and regulations ought to be, and that's why you see a big disconnect when you hear them criticizing ADEM for not doing it's job. Well, ADEM is doing it's job, according to all the major laws, the Clean Water Act, the Safe Drinking Water Act, the Resource Conservation and Recovery Act, all of these laws, otherwise the EPA would take the programs away from them. What they should really be honest with people with is when they say that ADEM is not doing their job, they should say 'well ADEM is not doing the job we think they should do if the laws were changed this way' So, I think it's very, it's the height of intellectual dishonesty to criticize someone for not doing a job that isn't the job that the law says it's supposed to do, and it leads a false light in the public eye, the public can easily be stirred up by basically misinformation and misdirection from people. Now, having said that, I would not say that all the criticism that ADEM receives is unfounded. The basic root problem is they have a large mandate and a small resource base to carry out that mandate.*

Another business and industry representative put it this way:

> *I certainly think that there are things ADEM could do better. I think they've been under-funded and under-staffed for a number of years, their budget continues to decline every year. But I think you have a very good group of people working out there, who try their best to do their job. I'm in contact with one or more of them almost every day on different issues, and I know they try to do a good job, and I know how much work is involved. That's something people don't understand, is how much work that ADEM actually does do. There are those who will yell 'the*

sky is falling' the first time something bad happens that they don't like, but as far as the agency goes, I think a better approach is to try and work with them to try and improve things rather than fighting them.

A developer had this to say about ADEM:

There are charges against ADEM from some of those in the environmental community that the agency is controlled by special interests, by business, by industry. I surely don't see that at all. I think surely they have budget constraints, just like every other governmental entity. I think a lot of people mistake what they're supposed to do, and like any government bureaucracy, there's certain things they can and cannot do, and some people want them to do more than they do, obviously. So, that's part of the problem, I guess, perception. They are supposed to work for the long-term and sometimes that gets some people mad in the short-term. Staffing wise, they can't go to every possible polluting site or construction site to inspect it, they don't have the staff to do that, so I think that's probably a genuine concern, so they need to have more funding from that standpoint. But, I think, generally, the things they, they have a multitude of tasks, a lot of areas to work in, and I think in general they're doing a good job.

Another developer stated:

I know that some of the, and I hate to use all these labels, but I know some of the environmentalists that I'm friends with feel like ADEM is a farce. But I also know that we've had to pay some pretty steep fines that ADEM has imposed on us if something has slipped though the cracks.

While a majority of stakeholders felt that ADEM was short on resources, namely manpower and finances, many disagreed regarding the role that ADEM plays in watershed protection and more generally environmental protection.

It is worth noting here that the former Director of ADEM was fired in October of 2004; his termination as Director was very controversial. The Environmental Management Commission (EMC), the governing board which oversees ADEM, voted to terminate the Director from his position. The EMC is composed of seven individuals who are appointed by the Governor. Four of the seven individuals on this commission voted to terminate the former director of ADEM. Relatively soon after this, two of those

four individuals had lawsuits brought against them from individuals associated with two of Alabama's most powerful industries—the Timber and Agricultural industries. The basis for these lawsuits was that these two individuals were not qualified to sit on the EMC. One can only speculate as to why individuals associated with two of Alabama's most powerful industries, industries that are regulated by ADEM, filed lawsuits against these two individuals so soon after they voted to oust the former Director of ADEM; it certainly could lead to the assertion that these individuals and the industries they're associated with have special stakes in who leads ADEM. It would come as no surprise if these actions only reaffirmed the negative convictions that many of those in Alabama's environmental community have towards ADEM as being partial to many of the powerful businesses and industries that operate in Alabama.

A majority of stakeholders interviewed, especially those speaking to watershed issues in and around Birmingham, stated that they felt that there had been poor planning for development, that development had gone on haphazardly, and that this poor planning and development were major contributors to many of the watershed issues. Many expressed frustration with current zoning regulations, stating that they encouraged poor development and failed to take into consideration environmentally sensitive areas and discouraged developers and businesses from being environmentally conscious with their development plans and procedures.

A majority of the stakeholders interviewed expressed concern and frustration regarding the "fragmented" regulatory system that exists in and around Birmingham regarding things like construction stormwater permitting and other types of permitting and watershed/environmental regulations. Several of the developers as well as business

and industry representatives stated that their jobs were made more difficult due to the patchwork of different building/operating regulations that exist depending on what municipality or political jurisdiction they might be working in on any given day. Many of the elected officials and environmental advocacy group representatives that were interviewed also commented on the fragmented regulatory approach associated with different municipalities, viewing this as a hindrance to smarter development, which would minimize many of the negative impacts on watershed conditions associated with urban growth and land development.

While a majority of the stakeholders said that they would like to see more uniformity in development regulations, the strength of these regulations was an area of disagreement, with many of the environmental/watershed organization representatives expressing concern that current and future regulations would not be strong enough, while a majority of the business and industry representatives and developers expressed concern that the current and future regulations would be too restrictive.

One difference among some of the stakeholders regarding the fragmented regulatory approach was that many of the business and industry representatives said that they would like to see ADEM take on a larger role regarding regulatory issues and that the local municipalities and political jurisdictions should be more hands-off. In contrast, many of the environmental advocacy organization representatives and some of the elected officials that were interviewed had the opinion that instead of having ADEM take on a larger role, they would like to see local municipalities adopt common development ordinances and regulations and take on stronger and more active roles in enforcing those regulations. These stakeholders were somewhat pessimistic about the integrity and

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ability of ADEM to take on a larger role in regulating and enforcing watershed protection measures, even if ADEM did have adequate resources.

All of the stakeholders interviewed want to have a clean watershed and environment. Stakeholders in all of the respective categories stated that they were concerned with having clean drinking water and having a clean, healthy environment for their families and their employees to live, work, and recreate in. Several of the business and industry representatives and developers stated that many people have a negative viewpoint of big business and industry, that business and industry were often portrayed as being "bad actors" solely concerned with increasing profits and could care less about protecting watersheds and the environment. Many of these stakeholders made a point to mention that their co-workers, their employees, their bosses, all valued a clean watershed and environment because they all live, work and recreate in the same areas that other stakeholders did, including those in the environmental community.

All of the stakeholders and stakeholder representatives interviewed stated that watershed issues are very complex and that there was no silver bullet, no *one* way in which to bring about effective watershed management or to resolve many of the watershed issues. Most stated that in order for many of the watershed issues to be resolved it would take a culmination of various efforts, such as more/better public education and participation in watershed issues, balanced and transparent stakeholder processes, sound science, good planning, proper enforcement and regulation of watershed protection policies and ordinances, and adequate funding to see that all these activities are carried through.

Areas of Divergence

While all of the stakeholders agreed that there were important issues facing the BWRW and CRW, and that certain waterways within both watersheds were impaired, the actual state of the watersheds and severity of the conditions of waterways within the watersheds was an area in which stakeholders had divergent opinions. Generally, those stakeholders representing environmental/watershed advocacy and conservation organizations held that watershed conditions were more severe than what many of the other stakeholders perceived. While many of the business and industry representatives, developers and elected officials stated that certain waterways within both watersheds were impaired and degraded, they didn't seem to express the sense of urgency and immediacy that many of the environmental/watershed group representatives did.

Many of the stakeholders and stakeholder representatives interviewed are participants in various stakeholder processes that have been formed in order to bring stakeholders together to try and address and resolve watershed issues. The aforementioned Alabama Clean Water Partnership (CWP), Black Warrior River Clean Water Partnership, Cahaba River Basin Clean Water Partnership, and Upper Cahaba Watershed Study (UCWS) are examples of these stakeholder processes. Several of the stakeholders interviewed in this study represent entities that are participating in one or more of the aforementioned stakeholder processes. Those stakeholders interviewed who are active in the CWP indicated that they were generally satisfied with the level of stakeholder communication and dialogue occurring through the CWP, and were optimistic about the eventual effectiveness of the CWP. In contrast, many interviewees who were involved in the UCWS voiced concern about the degree of stakeholder

communication and dialogue taking place through the UCWS and had reservations about the effectiveness of the UCWS as a stakeholder process. It is in the context of the UCWS that many stakeholders voiced concern regarding the degree of stakeholder communication and dialogue. Many of the business and industry representatives and environmental/watershed advocacy organization representatives felt there is a lack of stakeholder communication and dialogue taking place via the UCWS. Some respondents indicated that certain individuals leading the UCWS and serving as facilitators in many of the meetings that have been held were themselves stakeholders who had their own agendas and interests.

In order to shed more light on the concerns regarding the UCWS, some excerpts taken from interviews will be presented. One industry representative, when asked "Do you feel there is good stakeholder communication taking place through the Upper Cahaba Watershed Study?" responded:

> *No. There is a lot of dialogue, and that may be too strong of a word. There's a lot of talk. In terms of true communication, the issues that need to be addressed have got to balance. If I look at the current ongoing effort, there's something called the Upper Cahaba Consortium, and that consortium is basically the governments, the municipal and county governments. While we have participation in that process, along with a lot of other stakeholders, it's sort of being driven like 'okay, you can come and you can say' but you almost get the feeling that a group of people have made up their minds, and that what they're going to push through for a final consideration is not going to really be effective. There's things like, 'you have a week to comment on this, and oh, by the way, we're already going to change it' well, why the hell am I spending my time commenting on it if you already know you're going to change it? Am I then going to have a week after you make all these changes to comment? 'Well, we don't know?' It's like a bureaucratic process trying to superimpose on that process this thing called participation. The two things are just not compatible...Stakeholder processes can be very efficient and effective, but it takes a framework, it takes rules, and the people participating need to know what that framework is, they should have a chance to participate in that framework and feel like the framework doesn't favor one side over the other; you have to have someone acting as a*

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facilitator that is not viewed as a member of one delegation or another…What I'm seeing right now, with the current effort, is a bureaucratic process that some folks seem to think is driving the ship, and the bureaucratic process is not something that everyone agreed to, so the progress that we're going to make is going to be limited…The technical committee meeting that I went to, the two people that ran the meeting are both bureaucrats, one of them is a person that represents Jefferson County, and they have a particular set of interests and responsibilities and then there's another person who ran the meeting who represents a local municipality. These two people both represent stakeholders in this whole process…A real effective process has got to have a facilitator who is there who doesn't come with a pre-agenda…When the people trying to run these meetings are major representatives of the people that are stakeholders, then it's very difficult to get any kind of consensus, any kind of worthwhile communication.

Another industry representative had this to say about the UCWS:

In my mind, the number one thing, if you're going to put together a stakeholder group that's going to get input from all sides, that's fairly balanced, is you have to have transparency. Transparent is the word I'll use over and over, and what I mean by transparent is that whatever is being done, it has to be done so that everyone who's participating knows exactly what's going on, how information is being used, how comments that are submitted will be used. If you by-pass that, and any group believes that things are happening that are not transparent, you begin to lose peoples' willingness to participate, and without everyone participating you will never reach consensus on anything, and anything that comes out of that process will end up being rejected and attacked by the groups who feel this lack of transparency…The Upper Cahaba Watershed Study is not transparent…What I have seen in this study, and I've participated pretty extensively, is you have a few people at the top who are running the show, and they'll come out with a draft ordinance and say 'give us your comments and we'll talk about this later.' Well everybody submits their comments and then those one or two people at the top, using some glass ball or other methodology that neither side is aware of, will come out with an ordinance that neither side is happy with…You have the people at the top that are resolving the comments, the business community will say 'black' the environmental community will say 'white' and then somebody at the top draws a gray line somewhere. In my mind, it's a lot better if that gray line is drawn from the discussions between the two sides, and that's not happening.

An individual representing an environmental advocacy group had this to say about the

UCWS:

I think it's good and bad. It's good in that people are getting together, discussing these issues, trying to work things out. It's bad in that the people who seem to be

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in charge have their own agendas. One individual specifically, [individuals name] seems to be running the show, and [individual] has always been pro-development so it's hard for me to trust [individual], heading up such an important study. The other thing is, development has gone on just as it had before this study was underway, which leads me to question whether this study will really affect anything in the end anyway…It could definitely be improved, I think having someone who's not so clearly biased in favor of the business community heading the study would have been one way.

In contrast, a majority of the elected officials and government entity

representatives that were interviewed were more optimistic regarding the UCWS. By and

large, these stakeholders felt that there was good stakeholder communication and

dialogue occurring through the UCWS, and that the UCWS was an effective stakeholder

process. An elected official of a Birmingham-area municipality had this to say about the

UCWS:

> *I think that this study will be effective. We have in place a process that is bringing various interest groups together to discuss these things in a rational manner, and I believe progress will be made. I know that there are people who are criticizing it, there are those who don't feel like it's really going to amount to anything. A part of that, I think, is that there've been lots of other studies done here in the Upper Cahaba where nothing resulted from them. So they're probably people who don't think anything is going to come out of this one either. It's understandable. We haven't stuck to the schedule very well, which has not been helpful, so elected officials think they have to get on with things, and make the best decisions possible in the meantime.*

Another elected official stated this about the UCWS:

> *I do think it will be effective. We've been developing greenprints, identifying sensitive areas, proposing ordinances, developing models which tell us what the impacts of certain developments will be. We've spent a lot of money on this project, and it's been shared by most of the major entities that are participating. We've had input from all the sides; some of those people on the margins, way on the left, or way on the right, they've been unhappy with some of the proposals, but most everyone, from what I can tell, is pleased with the work we've accomplished through this study. We will eventually have a master plan in place, and all this stuff needs to be done according to a long-range plan, a long-range vision, and that's where we are.*

An individual representing a Birmingham-area governmental entity stated:

> *I'm very optimistic about the Upper Cahaba Study and its chances for success. I think something that is external, something that was completely optional, something that's been taking place due to interests, not due to mandate, is a major step forward. The fact that there has been, regardless of what caused it, public outcry, just interests, education, influence, whatever the case may be, to kind of culminate in an effort that is voluntary and incorporating actual government entities, is a major step forward. It's a rarity within this state, probably within the nation, to see programs that are going to be some semblance of a cost burden, maybe not intentionally, but a cost burden regardless, taken on voluntarily, it doesn't happen much. So, that leads me to some semblance of optimism.*

Thus, many of the stakeholders interviewed had divergent opinions regarding the effectiveness of stakeholder processes like the UCWS, and the degree of stakeholder communication and dialogue that the UCWS has initiated.

The integrity and role of the Alabama Department of Environmental Management (ADEM) was an issue brought up in many of the semi-structured interviews that were conducted. A majority of the stakeholders interviewed agreed that ADEM could use more resources, namely more manpower and more money.

While a majority of all the stakeholders and stakeholder representatives interviewed expressed that ADEM lacked resources, many of the individuals interviewed representing environmental/watershed advocacy organizations went further, stating that they felt ADEM did a horrible job regulating and enforcing environmental laws and policies, and that the agency was basically a permitting agency partial to special interests, namely those of the business and industry community.

Many of the business and industry representatives interviewed defended ADEM in light of the harsh criticism the agency receives from many in Alabama's environmental community, with many expressing that while ADEM lacked adequate funding, the

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agency was doing a good job in light of their limited resources. Several individuals interviewed from the business and industry category stated that many of those in the environmental community criticized ADEM for what *they* thought ADEM *ought* to be doing, and not with what ADEM is mandated to do.

All of the elected officials and government-entity representatives who were interviewed stated that they felt ADEM lacked resources, but also that ADEM could do a more effective job at enforcing various regulations and laws with the limited resources they did have.

Linking Theory to Findings

Through the semi-structured interviews with stakeholders and stakeholder representatives, one can begin to draw linkages between the theoretical frameworks described previously and the findings of this study. Molotch's growth machine theory, Habermas' notion of a legitimation crisis, and the theoretical underpinnings of collaboration in natural resource management are all relevant frameworks which help make sense of watershed management dynamics in the BWRW and CRW.

Through the interviews it became apparent that certain stakeholders and stakeholder representatives had specific opinions and concerns about development. Many of the business and industry representatives, developers, and elected officials expressed support for continued economic and land development. In Molotch's terms, these individuals and the entities they represent are a part of the coalition of pro-growth elites, the nested set of interest groups having common stakes in development to further their own material well-being. In contrast, many of the stakeholders interviewed

representing environmental/watershed advocacy organizations expressed strong reservations about the benefits of growth. While none of these individuals overtly stated they were "anti-growth" or proponents of "no-growth," a majority expressed dissatisfaction with the way previous and current development was taking place and articulated resistance to the prospects of similar growth in the future. Thus, from a growth machine perspective, these individuals and the organizations they represent can be viewed as what Molotch terms the emerging counter-coalition (Moltoch 1976). This counter-coalition, according to Molotch, is often composed of environmentalists, middle-class professionals and others who are increasingly becoming aware of the costs of growth, such as pollution, congestion, declining natural amenities and sprawl (Molotch 1976). In the context of this study, the 'counter-coalition' consists primarily of environmental/watershed advocacy individuals and organizations who see the degradation of area waterways and aquatic habitat as costs which outweigh the benefits of growth; hence, they become active in addressing these costs and attempting to mobilize public support.

Jürgen Habermas' notion of a legitimation crisis is particularly useful for understanding the great deal of mistrust and anger that was articulated by many of the individuals representing environmental/watershed advocacy organizations towards ADEM, Alabama's primary environmental protection agency. The common perception among these individuals—that ADEM is beholden to special interest groups, namely big business and industry, and not to the collective interests of environmental protection held by many Alabamians—results in incremental "legitimation deficits" (Habermas 1975:47) for ADEM, and hence the State. From a Habermasian perspective, ADEM, being a state

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agency, must balance "steering performances" to the economic system with "social welfare performances" to the socio-cultural system in order to maintain "requisite quantities" of mass loyalty from the masses which make up the socio-cultural system. Habermas contends that when the State loses mass loyalty from the public, problems of legitimacy arise.

In the context of watershed management dynamics in the BWRW and CRW, the legitimacy of ADEM, and hence the State, among certain individuals (i.e., environmental advocates) is being eroded due to the failure of ADEM to provide "requisite quantities" of "social welfare performances." Here, the by-products of pollution and habitat degradation generated by our capitalist modes of production are perceived as not being adequately addressed by ADEM, by the State. Thus, the "requisite quantities" of environmental protection (social welfare performance), are not being met in the eyes of these individuals, and incremental withdraws of legitimation (legitimation deficits) and mass loyalty result. While this would not be characterized as a full-scale legitimation crisis, these legitimation deficits could potentially accumulate over time resulting in an all out legitimation crisis for the State. It is worth noting that these perceptions of ADEM as an illegitimate State agency may also extend to other state and Federal environmental protection agencies in the U.S., such as the EPA, the U.S. Fish and Wildlife Service (USFWS), the U.S. Forest Service, etcetera.

The theoretical underpinnings of collaboration in natural resource management are also useful for examining watershed management dynamics in the BWRW and CRW. Much of the literature pertaining to collaboration in natural resource management has identified factors which either aid or hinder collaboratively-based efforts at natural

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resource management. In the context of watershed management in the BWRW and CRW, some factors which contribute to successful collaborative efforts appear to be present, while the presence of other factors is questionable. On the positive side of this spectrum, watershed management efforts via the Clean Water Partnership (CWP) programs and the Upper Cahaba Watershed Study (UCWS) have included a broad range of stakeholders, public and private, small and large; these programs also have very clear goals and objectives, as stated in their respective websites. From the interviews conducted in this study it also appears that a majority of the stakeholders involved genuinely want to see the watersheds and environment protected, thus this is an area where consensus already exists. However, exactly what measures are taken to see that the watersheds are protected, and to what degree the watersheds should be protected, remains an area in which stakeholders have divergent opinions.

Two key factors which accommodate successful collaboration are the legitimacy of authority and adequate resources and time. Several interviewees (from various categories) expressed reservations about the legitimacy of certain individuals playing the role of mediator/facilitator in the aforementioned watershed management programs, particularly with the UCWS. Many felt that the individuals serving as mediators/facilitators were themselves stakeholders, having their own specific stakes or agendas relating to watershed management. Therefore, any decisions or actions resulting from these programs risk being perceived as biased in favor of the agendas belonging to these individuals, undermining the legitimacy of the entire collaborative stakeholder process, and therefore the chances of these programs successfully addressing and managing the resource issues at hand. This highlights the importance of having

individuals serving in leadership positions (e.g., mediator, facilitator) who are perceived as being neutral or objective and not having direct stakes in the issue/problem at hand.

Having adequate resources, namely time and money, is also crucial to the success of any collaborative natural resource management approach. In the case of the CWPs, which were brought about ultimately through federal initiatives, funding is provided primarily from the federal level, and is therefore subject to the pitfalls of budget restraints and cuts, and to the ideals of whatever administration may be in charge at any given time. One promising characteristic of the UCWS, in contrast, is that it was brought about not through mandate, but through the voluntary actions of local and diverse stakeholders who had various concerns relating to the Upper Cahaba watershed. Time constraints also pose barriers to successful watershed management, as many of the individuals participating in the CWPs and the UCWS, including those individuals playing leadership roles, have other full-time jobs which they rely upon to earn a living, and which consume significant amounts of both time and energy.

Other barriers hindering successful collaborative efforts were also identified through this study, most notably the great deal of mistrust that was expressed by several interviewees. The mistrust that was expressed was particularly strong between certain individuals and organizations in the environmental/watershed advocacy category and those in the business and industry, and developer categories. This mistrust is significant because there is no technical solution or quick fix to reduce this sense of mistrust; alleviating this mistrust must be accomplished through these diverse and sometimes oppositional stakeholders working together, establishing rapport and sacrificing the time and energy to see things from outside one's own perspective; people must be willing to,

as the saying goes, think outside the box and view various issues and problems from the standpoints of those they disagree with.

Another barrier to collaboration that was identified, particularly in and around Birmingham, relates to the lack of incentives that exist for developers to do their job in environmentally conscious ways. Developers argued that current zoning regulations and building codes could be made more flexible and allow for some innovation, rather than having a cookbook-style code that encourages asphalt oceans and fails to take into account the many intricacies and variations that exist in topographically diverse settings found in places in and around Birmingham. Certain tax breaks, credits and other financial incentives could also be incorporated into policies that reward developers who do their jobs in environmentally-friendly ways.

While there are certain barriers to bringing about effective collaboration regarding the management of the BWRW and CRW, the mere existence of the CWPs and UCWS demonstrate that there are opportunities for collaborative watershed management efforts to take hold, and that, at the very least, there are multiple and diverse stakeholders who realize the potential merits of collaboration and who are willing to participate in collaboratively-based watershed management efforts.

VII. CONCLUSION

Alabama is blessed with an abundance of water resources. Alabama's waterways are directly linked to the state's prosperity throughout its history (Glenn et al. 2002) as well as its future. Aside from an economic standpoint, the state's waterways are valued by many in a traditional and cultural context. Alabama's waterways also facilitate population growth, serving both as drinking water sources and as places to dispose of municipal and industrial waste. Thus, the importance of Alabama's water resources to the state's economy, ecology, population and culture cannot be overemphasized.

The BWRW, CRW and the rivers and streams they feed are relied upon by a multitude of different individuals and entities, for different reasons. Several watershed issues are present in both the BWRW and CRW, many of which are related to increases in human populations and the accompanying urbanization and land development. In the BWRW and CRW, increased urban growth and land development have led to issues such as locating future drinking water supplies, expanding sewer systems, and dealing with various forms of pollution and watershed impairment and degradation.

Through the implementation of a stakeholder analysis, stakeholders and stakeholder representatives expressed varied concerns, perspectives and interests. Some of these attributes were shared by a majority of stakeholders interviewed while others were not. Generally, stakeholders were found to be primarily interested in watershed management activities for the policy implications (e.g., on operating procedures and

costs, development prospects), or for the sake of the watersheds, rivers, streams and various plant and animal species themselves.

All of the stakeholders interviewed stated they wanted to have clean drinking water and desired a clean watershed and environment to live, work and recreate in; albeit superficial, this was the common ground that was identified to which these stakeholders can use to build effective, enduring collaborative relationships vital to successful watershed management. A majority of interviewees also expressed that more and better public education efforts need to be taken to raise awareness on the specifics of watershed processes and issues; a majority also voiced frustration with the fragmented regulatory approach inherent to the fact that political boundaries don't follow watershed boundaries; poor planning for urban development was also articulated by a majority of interviewees as being a significant contributor to many of the watershed issues that were mentioned; lastly, a majority of stakeholders acknowledged that in order for effective watershed management to occur, an integrated approach is needed, drawing upon public education and participation, balanced and transparent stakeholder processes, sound science and planning, effective enforcement of regulations and watershed protection policies, and adequate funding to see that these activities are carried out and institutionalized.

One area in which stakeholders expressed divergent opinions related to the perceived role and integrity of Alabama's chief environmental protection agency, ADEM. Generally, a majority of stakeholders agreed that ADEM could use more resources, especially financial resources. However, many of the stakeholders disagreed about the role and integrity of ADEM; many watershed/environmental advocacy respondents held the opinion that ADEM functioned more as a permitting agency than as

an environmental protection agency, with many stating that they felt ADEM looked out for the interests of big business and industry rather than for the interests of protecting human and environmental health. All of the business and industry representatives interviewed disagreed with that sentiment, with many noting instances where ADEM had imposed costly fines on the companies they represented or other businesses and industries they were aware of. Stakeholders also expressed divergent opinions regarding the degree to which the watersheds were impaired; generally, those stakeholders in the environmental/watershed advocacy and conservation categories articulated a stronger sense of urgency and importance in protecting and restoring current watershed conditions than did stakeholders in the other categories. Lastly, the effectiveness of stakeholder processes and the degree of meaningful stakeholder communication and dialogue was also an area where stakeholders held divergent views.

Harvey Molotch's (1976) growth machine theory, Jürgen Habermas' concept of a legitimation crisis, and the extensive literature on collaboration in natural resource management help to make sense of the findings of this study. From growth machine theory we're able to discern that certain interest groups (e.g., developers, the business and industry community, elected officials, landowners) have common stakes in development, while others are resistant to development; this was brought out through the interviews with different stakeholder groups. This pro-growth/anti-growth divide reflects fundamental differences among the interests held by stakeholders in the BWRW and CRW.

Jürgen Habermas' notion of a legitimation crisis helps to understand the acute mistrust, frustration and anger that many of the environmental/watershed advocacy

representatives expressed towards ADEM; in their eyes, ADEM is not a legitimate agency, but rather an agency looking after economic imperatives (or steering mechanisms, in Habermas' words) and the special interests of big business and industry. If this perceived illegitimacy of ADEM only affected individuals belonging to environmental/watershed advocacy organizations, it would not pose a significant legitimacy issue for the State. However, through media coverage of various protests and criticisms brought by environmental groups, and the use of pictures (e.g., from 'digital cameras') in newspapers documenting poor development practices or faulty BMPs, these perceptions have the potential to take hold among a larger population, which, in turn, poses greater, more significant risks to the State as it relates to legitimacy. This, in turn, results in recognition that traditional top-down methods of natural resource management are particularly subject to failure. Thus, collaboratively-based approaches to natural resource management, including co-management, have emerged. The literature on co-management clearly points out failures of top-down management as a practical matter, so that co-management and collaboration are generally considered as rational alternatives to previous top-down methods of management. But little attention is paid to the fact that failures in top-down management approaches are associated with de-legitimation—the view that the State is not a neutral actor and that it may act against the collective interests of the people. This is remarkable given that urban growth and land development are associated with negative impacts on the environment and watershed, which, in turn, spurs those who are highly concerned about these consequences to question the legitimacy of those individuals and entities who are supposed to protect the environment and

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watershed. Does or can this perceived illegitimacy, in turn, serve as an impetus to building collaborative relationships aimed at effective watershed management?

Legitimacy underlies authority; in the absence of legitimacy, ADEM, still possessing raw regulatory and enforcement power, will continue to be met with opposition. Not only does this perceived lack of legitimacy foster dissent, anger and mistrust towards ADEM, but it also makes it difficult for ADEM to convince people that they're a 'good' agency and that they're trying to perform their job to the best of their ability. This lack of perceived legitimacy poses a significant barrier to establishing and maintaining effective watershed management programs that involve ADEM.

The literature on collaboration helps to identify factors that both aid and hinder collaborative efforts, and allows one to superimpose these factors in the context of watershed management in the BWRW and CRW. Many of the factors that aid in successful collaboration are in place in the BWRW and CRW via the CWPs and the UCWS. These frameworks are inclusive to a broad range of stakeholders and they have well defined goals and objectives. However, certain characteristics of these specific frameworks function as barriers to effective collaboration. The perception that certain individuals who occupy leadership roles in these frameworks are stakeholders themselves, with their own interests, hinders the collaborative effort. A perceived lack of transparency in decision making relevant to watershed management is also a hindrance to effective collaboration. These are structural barriers, which can be reduced and/or eliminated through organizational and technical changes. In contrast, the acute sense of mistrust expressed in many interviews takes the shape of more individual and group barriers, for which there is *no* organizational or technical solution.

Stakeholders involved in watershed management in the BWRW and CRW will always have different and sometimes oppositional concerns, opinions and perspectives; they will never be concordant in this respect. However, there are certain frameworks that can be adopted to facilitate better communication among stakeholders and better transparency in decision making. These frameworks, to a large extent, already exist in the BWRW and CRW, in the form of the CWPs and the UCWS. However, maintaining adequate resources, namely finances, and reducing the heightened sense of mistrust expressed by a majority of stakeholders pose significant barriers to reaching and maintaining effective collaborative efforts. For this mistrust to be eroded, the individuals themselves must be willing to go out on a limb and temporarily drop their 'agendas,' reach out to those they mistrust, engage in constructive dialogue and communication, and incrementally earn the trust of other stakeholders through not only their words, but their actions.

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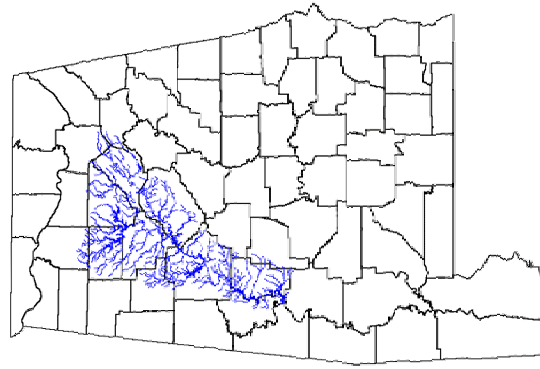
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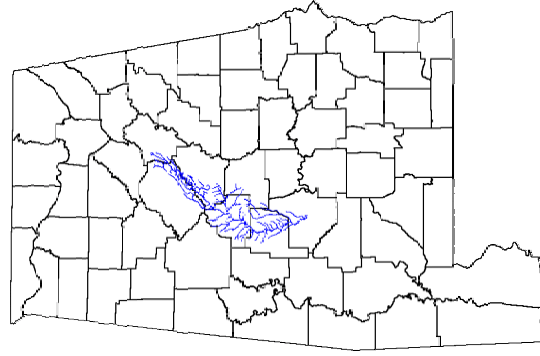
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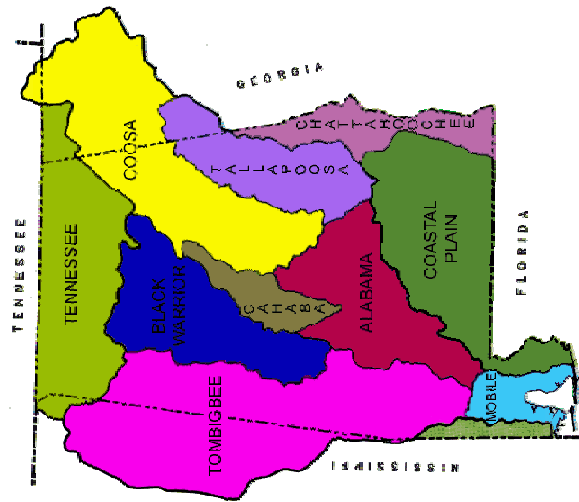
Black Warrior Watershed

Cahaba Watershed

Alabama Watersheds

Source: Rivers of Alabama 2004.

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APPENDIX 2.

General Interview Questions for All Stakeholder Categories

Personal/Background

> Q: What is your occupation? What do you do?
>
> Q: How long have you worked here? How long have you lived in this area?

Watershed

> Q: What are your feelings about the quality and conditions of local waterways and watersheds?
>
> Q: Are there any water or watershed issues in this area? Any problems or threats facing the watershed?
>
> Q: What do you feel the major watershed issues are? Water quality? Quantity?
>
> Q: How did these issues come about? Do you feel these issues are important and/or warrant consideration and action?
>
> Q: When we speak of water and watershed issues, who are the major actors or stakeholders (individuals and organizations) involved? What are there respective interests in these issues?
>
> Q: Do you consider yourself as a stakeholder regarding these issues?
>
> Q: What are your interests in watershed management and in having a clean watershed?
>
> Q: Are any of these stakeholders aligned with or working with other groups or individuals regarding these watershed issues? Are any of these stakeholders in conflict with others regarding these issues? Why?
>
> Q: In your opinion does there seem to be good stakeholder participation and communication taking place regarding these issues? Are there any stakeholder groups (downstream, upstream) who aren't involved, or whose interests aren't being taken into account? Minority community? Lower-class? Rural areas?

Q: Do you feel like there are any particular obstacles to cooperation or agreement amongst the involved parties?

Q: What common ground, if any, do you feel all these stakeholders share?

Q: When we talk about these stakeholders, are there any that seem to have more power or influence regarding the processes and outcomes of measures taken to address these issues? Are there any stakeholders whose interests seem to be put aside?

Q: Are there any communities downstream of the Birmingham-area who are voicing concern over watershed issues?

Q: All things remaining the same, how do you see the watershed looking in 10-20 years? Are you optimistic about the future of local watersheds?

Policy / Program

Q: How do you think these issues might be resolved? Are you aware of any watershed conservation or protection policies or programs that currently exist or that are being proposed? Land acquisition? Land-use control? Regulations/ordinances? Facility upgrades? Buffer zones?

Q: Do you have any problems or objections regarding these policies/programs?

Q: Are the current efforts that are in place going to be effective? How could they be improved?

Q: How do you feel non-industrial private landowners in the watershed would feel about being subsidized to control or limit certain land-use practices (clear cutting, pesticide/herbicide/fertilizer applications, etc.) in order to reduce the amount of pollution entering local waterways? What factors do you think would influence their decision?

End Questions

Q: What other stakeholders, individuals or organizations would you recommend for me to talk to in order to better familiarize myself with these watershed issues? Business and Industry? Developers? Elected Officials? Environmental? Landowners?

Q: Are there any stakeholders who might have divergent or opposing opinions or perspectives from your own?

APPENDIX 3.

NIPF Owner Questions

1) How much land do you own?
2) What type of land is it? (Forest/Timber, Agriculture, etc.)
3) How long have you owned this land?
4) Do you receive any income from your land? If so, what percent of total income?
5) Generally speaking, do you feel the local natural environment is of good quality?
6) Are there any threats that you know of currently facing the local environment or local rivers, creeks, streams?
7) What interests do you have in having a clean, healthy local environment? (Soil, water, watershed, forest, etc.) How important is a clean environment to you?
8) Are you a member of any environmental, conservation, or forestry organizations?
9) Have you ever worked with any forestry or agricultural extension agents or officials?
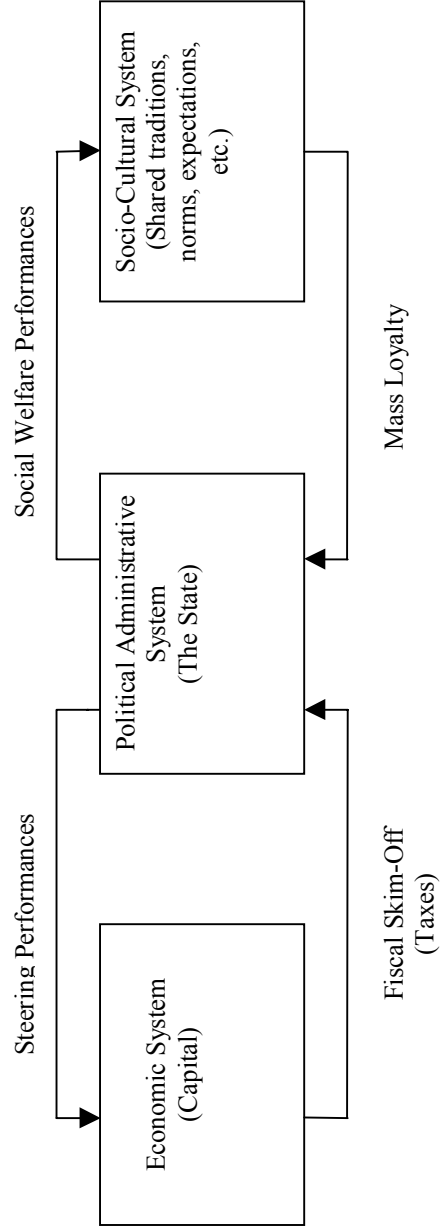10) What are your thoughts/feelings about government involvement in private property matters?

(Explanation of water quality services proposition)

11) How much money would you expect to receive, if any, if you agreed to participate? Fair Market Value? Total amount of lost opportunistic income?

11) Would you participate if the amount you were subsidized was less than fair market value?

12) Would you be willing to take a tax credit or tax deduction in place of a direct payment?

13) Would your decision to participate depend on whether or not the entity approaching you was a governmental organization or a NGO? If so, what entity would you prefer to work with?

14) How long would you be willing to participate? What would be an appropriate time period in your mind?

15) What are some of the factors that come into your mind that would influence your decision whether or not to participate in such a program?

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16) Are there any other factors that might influence your decision to participate in such a program?

17) Do you think that other private landowners in your area or that you know would be willing to participate?

18) Do you know of any landowners who might react or feel differently about participating from the way you feel? Why?

19) Do you know of any other landowners who might be willing to talk with me?

APPENDIX 4.

Sub-systems of Advanced Capitalist Societies

| Economic System (Capital) | Steering Performances → | Political Administrative System (The State) | Social Welfare Performances → | Socio-Cultural System (Shared traditions, norms, expectations, etc.) |

Fiscal Skim-Off (Taxes)

Mass Loyalty

Source: Pusey 1987

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TABLE 1.

Summary of Landowner Opinions Regarding Water Quality Service Scenario From Parallel Study

Individuals Owning or Interested in Owning Property Adjacent to Waterways (n=64)

Decision to Participate Influenced By:	Agree / Strongly Agree	Neither Agree Nor Disagree	Disagree / Strongly Disagree	No Response
Amount of Compensation	52%	36%	11%	1%
Duration of Agreement	66%	27%	6%	1%
Controls/Restrictions	80%	14%	5%	1%
Cost of Restoration	78%	20%	1%	1%
Adminstering Agency	64%	31%	4%	1%
Tangible Evidence of Improved Water Quality	86%	13%	0%	1%
Participation of Other Landowners (Including Corporate Landowners)	59%	31%	9%	1%

Source: Rawls 2005

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TABLE 2
Summary of Overarching Themes

Stakeholders	Themes (Number of Responses)							
	Fragmented Regulatory Approach a Problem	More/Better Public Education	Desire for Clean Watershed	Necessity of an Integrated Approach	Mistrust of Other Stakeholders	ADEM Needs More Resources	ADEM Partial to Special Interests	Poor Planning for Development
Business and Industry Representatives (n=11)	11	11	11	11	7	7	0	7
Developers (n=4)	4	4	4	4	4	2	0	3
Elected Officials/Govt. Representatives (n=9)	9	9	9	9	2	9	1	7
Environmental Groups (n=17)	17	17	17	17	12	17	9	17
Non-Industrial Private Forest Owners (n=10)	8	10	10	10	7	2	2	4

Source: Primary Data