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The Primary Source of Environmental Concern: New Environmental Paradigm or Presumed Vested Interest Based on Area of Residence?

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THE PRIMARY SOURCE OF ENVIRONMENTAL CONCERN:
NEW ENVIRONMENTAL PARADIGM OR PRESUMED
VESTED INTEREST BASED ON AREA OF RESIDENCE?

A Thesis

Presented to

The Faculty of the Department of Sociology
The College of William and Mary, Virginia

In Partial Fulfillment

Of the Requirements of the Degree of
Masters of Arts

by

Scott C. Ramsey

1995

Approval Sheet

This Thesis is submitted in partial fulfillment of
the requirements for the degree of

Master of Arts

A handwritten signature in cursive script, appearing to read "Scott Ramsey", written over a horizontal line.

Approved, August 1995

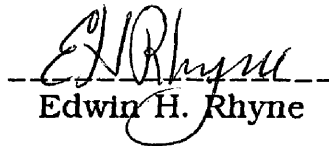
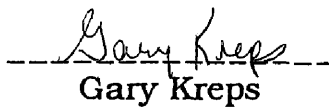
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Edwin H. RhyneA handwritten signature in cursive script, appearing to read "Gary Kreps", written over a horizontal line.
Gary Kreps

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ABSTRACT

In 1976, Dunlap and Van Liere conducted a survey to test a descriptive model concerning the behavioral impact of belief in a traditional social paradigm. They specifically measured the extent to which people in the state of Washington believed each of eight basic assumptions that are integrally associated with that paradigm. They hypothesized that there is a negative correlation between commitment to this paradigm and concern for the environment. Their results are generally cited in subsequent literature as evidence that environmental problems stem primarily from traditional values, beliefs and ideologies. Dunlap and Van Liere furthered research in this area and developed what they called a "New Environmental Paradigm," which represented a paradigmatic shift from the old dominant paradigm to a more ecological paradigm. These oft-quoted studies however, do not take into account the possible impact of economic, political factors or historical contexts.

This research is a similar study using their model and their instrumentation in a specific social context (the Lake Gaston, N.C. area) where economic and political events have provoked widespread disputes about environmental issues. The issue is the proposed Lake Gaston pipeline construction project. I conducted telephone interviews with 100 residents in Virginia Beach and 50 residents in the Lake Gaston area. Respondents were found through random sampling. My study did not yield a statistically significant correlation between ideology and decisions on the pipeline in such a context. Thus, Dunlap and Van Liere's assumption regarding the primacy of the social paradigm may be questioned. Since no such correlation was found here, the adequacy of the single-factor (ideological) model is called into question, and the import of the social context is demonstrated. The results suggest that area of residence and its assumed economic advantages and vested interest is the most important factor in determining whether the respondent will be for or against the pipeline construction.

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INTRODUCTION

BACKGROUND: THE LAKE GASTON PIPELINE PROJECT

The city of Virginia Beach is running out of drinking water. Its present suppliers no longer can fill the growing demand. The proposed solution has been the controversial Lake Gaston water pipeline project. The plans calls for the construction of a seventy mile pipeline to channel water from this lake, which straddles the Virginia– North Carolina border, to the “Resort City.” This multimillion dollar project has been held up by its opponents for over a decade. The struggle involves dozens of competing governmental agencies, conflicting rulings from federal, state and local courts, and a wide range of special interest groups. Generally, people in the Lake Gaston area are opposed to the pipeline as having a potentially detrimental effect on their region; and people in Virginia Beach see it as essential to their survival. Most of the debate has focused on such presumed local economic and political factors. Since the proposed pipeline will radically alter over a hundred miles of woods and fields, as well as the level of the lake itself, it also raises serious ecological considerations. The debate has pressed the Sierra Club of Virginia to join the battle against the construction of the pipeline.

Much has been written about the proposed pipeline by engineers, biologists, journalists, lawyers and judges. Little, if anything has been written about it by social scientists, and it has not been investigated from a sociological perspective. This case is ideal for such an investigation, since it provides a real, vivid and widely debated case-in-point for examining the attitudes, values, beliefs and opinions of persons directly involved

in a major on-going environmental issue. Will peoples views be shaped more by perceived local vested interests or by an ideological belief system related to the environment?

A BRIEF OVERVIEW OF THE PROPOSED RESEARCH

Some people are deeply concerned about the quality of the environment; others are not. To explain the differences some commentators focus on the impact of demographic factors such as age, political orientation, occupation, residence (urban/rural), and education. Still others argue that environmental concern stems from perceived vested interest and economic advantage. Currently, the predominant theme in the literature is that environmental problems stem, in large part, from this society's traditional values, beliefs, and ideology. James Swan in his article, "Environmental Education: One Approach to Resolving the Environmental Crisis," argues that "at the root of the ecological crisis are the basic values which have built our society" (1971:225). According to this view, our belief in progress, our devotion to growth and prosperity and our values such as individualism and materialism are responsible for the widespread loss of environmental quality.

William Dunlap and Kent Van Liere developed attitudinal "paradigms," incorporating a set of internally consistent attitude statements to construct a profile of individuals' environmental orientation. It is their work that provides the structure for my research. Their framework provides the basis for a realistic and reliable measure of people's relative position or stance regarding the physical environment. The measurement of attitudes as paradigms demands the identification and definition of two mutually exclusive positions, for which Dunlap and Van Liere coined the terms "dominant social paradigm" (DSP) and the "new environmental paradigm" (NEP). The DSP characterizes the major cultural values and attitudes held by the society at large. Specifically, it

embodies dimensions such as faith in science and technology, material abundance and future prosperity, and support for economic growth, individual rights, laissez faire government, the status quo, and private property rights. The NEP on the other hand, embraces concepts such as “steady state economy,” limits to growth, the balance of nature, and spaceship earth. Commitment to either of these paradigms depends on the acceptance or rejection of a number of attitudes, values, and beliefs.

Dunlap and Van Liere argue that “the present DSP is no longer appropriate, and that ecological conditions favor the emergence of a new world view compatible with ecological scarcity” (1984:1015). They point out that there is now general agreement that growthism, individualism, faith in science and technology, and so on are important elements of American culture (Williams:1979). An increasing body of evidence suggests that commitment to those beliefs is associated with lower levels of environmental awareness and concern (Buttel and Flinn, 1976; Dunlap and Van Liere, 1984; Marsh and Christenson, 1977). The research data suggest that many individuals now accept environmental beliefs and values associated with the new environmental paradigm, such as limits to growth (Yankelovich and Lefkowitz, 1980; Milbrath, 1981), and these beliefs are positively associated with pro-environmental attitudes” (Dunlap and Van Liere:1978;1983:335).

Dunlap and Van Liere argue that the newly emerging environmental paradigm significantly challenges the central beliefs of the DSP. To test this they constructed a scale in 1978 to measure the extent to which people were embracing this new environmental paradigm. Although their NEP scale has been used by several investigators in a variety of places (Dunlap and Van Liere, Caron, Albrecht *et al*, Kuhn and Jackson, Steger *et al*, Pierce *et al*, and Noe and Snow), it has yet to be tested in a concrete social context where

regional competition and economic interests have been heightened by specific environmental issues.

The research proposed here intends to do precisely that. It will compare responses of the general public in the geographical regions surrounding Lake Gaston and the general public in Virginia Beach. It will compare how residents score on Dunlap and Van Liere's NEP scale, general environmental concern, as well as on specific questions dealing with their views about the Lake Gaston pipeline proposal and related environmental issues. The question is twofold: (a) to what extent are expressed views about the pipeline based on presumed regional economic and political vested interests; and (b) to what extent are they based on general doctrinal and ideological considerations?

Since the Pipeline proposal directly affects residents from Gaston, North Carolina to Virginia Beach, Virginia, it provides a concrete case for examining both specific and more general attitudes and opinions about the kind of issues raised by its construction. The research intent is not to examine the Lake Gaston project itself, nor simply to describe stated opinions of the public. It is rather to discover the extent to which their ideas, levels of concern and specific attitudes represent local vested interests and more general cultural values about nature. The inquiry will attempt to discover the degree to which respondents hold traditional anthropocentric or new ecological paradigms regarding the reality, significance and value of the natural environment.

In exploring these dimensions, the research will draw heavily on the work of environmental sociologists such as William Catton, Riley Dunlap, and Kent Van Liere. Their research is generally cited in subsequent literature as evidence that environmental problems stem primarily from traditional values, beliefs and ideologies. Their oft-quoted

study does not take into account the possible impact of economic, political factors or historical contexts. I propose to conduct a comparable study using their model and their instrumentation in a specific social context (the Lake Gaston, N.C. area and Virginia Beach) where economic and political events have provoked widespread disputes about environmental issues. If the study yields a statistically significant positive correlation between ideology (i.e., support for the NEP) and concern for the environment in such a context, then Dunlap and Van Liere's assumption regarding the primacy of the social paradigm will receive further confirmation. For example, those who support the NEP, should be concerned for the environment and be against the proposed pipeline construction. Those, who do not support the NEP, should be less supportive of the environment and be for the pipeline construction. If no such correlation is found here, the adequacy of the single-factor (ideological) model will be called into question, and the import of the social context will be demonstrated.

I. THE THEORETICAL FRAMEWORK

THE DOMINANT SOCIAL PARADIGM AND THE NEW ENVIRONMENTAL PARADIGM

Dennis Pirages, using Kuhn's concept of paradigm, extends the argument that our belief in progress, our devotion to growth and prosperity and our values such as individualism and materialism are responsible for the widespread loss of environmental quality. He constructs a model and refers to it as a "dominant social paradigm (DSP)." He

argues that this DSP is a constellation of “common values, beliefs, and shared wisdom about the physical and social environment,” which constitute a society’s basic worldview. (1977:6) A DSP constitutes a world view “through which individuals or, collectively, a society interprets the meaning of the external world. (and) a mental image of social reality that guides expectations in a society” (Pirages and Ehrlich 1974:43–44). Paradigms are passed down from generation to generation via institutions, such as religion and education.

Several authors argue that the current American cultural paradigm, or world-view, is one that is strongly anchored in an anthropocentric tradition in which humans historically have been seen as being apart from nature and as somehow being immune from ecological constraints. Our orientation toward nature has been attributed to numerous factors, including European expansion into a “new world” of seemingly inexhaustible resources, Judeo–Christian beliefs about man’s superiority over other creatures, the flourishing of capitalism, the build up of scientific and technological capabilities, and a dedication to the continued perfectibility of man and society. These diverse factors have coalesced in American society to produce a set of beliefs and values that make up our “Dominant Social Paradigm.”

This paradigm (DSP) contains several key assumptions. First, it assumes that human beings are fundamentally different from all other creatures on earth and that we have dominion over them. Second, it assumes that people are the masters of their own destiny. They can choose their goals and learn to do whatever is necessary to attain them. Third, the context of society is assumed to be a vast natural world that provides unlimited opportunities for humans. Fourth, the history of humanity is seen as generally marked by continual progress.; for every problem there is a solution, and thus progress need never

cease. These assumptions articulated by Catton and Dunlap were later used by Dunlap and Van Liere who developed a way to measure this Dominant Social Paradigm.

In their article, “Commitment to the Dominant Social Paradigm and Concern for Environmental Quality,” Dunlap and Van Liere discovered via factor analysis, the following eight dimensions of the DSP: 1) commitment to limited government, 2) support for free enterprise, 3) devotion to private property rights, 4) emphasis upon individualism, 5) fear of planning and support for the status quo, 6) faith in the efficacy of science and technology, 7) support for economic growth, and 8) faith in future abundance. They argue that, “these eight factors represent the critical DSP dimensions which have been widely implicated as major sources of our nation’s environmental problems” (1984:1017). In their study they found, “in sum, the results of the bivariate and multivariate analyses indicate not only that *commitment to the DSP is negatively related to environmental concern, as hypothesized, but that commitment to the DSP appears to be a major factor influencing environmental concern*” (1984:1018). Their results suggest, “that the traditional values and beliefs constituting our society’s dominant social paradigm are important sources of opposition to environmental protection” (1984:1025). Pierce *et al* argue that, “this broadly shared belief system [DSP] is widely believed — with the benefit of hindsight — to have contributed to what many environmentalists consider to be a shameful history of ecological and natural resource degradation” (1987:56).

This DSP, several authors suggest, was formed during a bygone era of extraordinary abundance and is no longer adequate in an era of ecological limits (Pirages, 1977, Catton, 1980, Ophuls, 1977, Rifkin, 1980, and Robertson, 1978). Don Albrecht *et al* argue that, “despite the tenacity with which Americans have embraced the Dominant Social Paradigm, *the recent environmental quality movement has spawned an alternative,*

and competing, set of beliefs and values” (1982:39). Consequently, there is a call for a new paradigm, one with a more ecologically benign worldview. This position is nicely summarized by Nash, who argues that what lies at the heart of the environmental crisis is: “[Man’s] failure to accord to all life and to the environment itself an ethical status comparable to that which he normally accords to his fellow man. It follows that any meaningful, long-term corrective to environmental abuse depends on ethical evolution, People have to grow up, ethically, to the realization that the concepts of right and wrong do not end with man-to-man relationships” (1974:142-143). Such a “new” paradigm has been constructed by Dunlap, Catton and Van Liere.

The term New Environmental Paradigm (NEP) originated with Dunlap and Van Liere in 1978. They used the NEP concept to describe, “new ideas [which] have emerged in recent years which represents a direct challenge to [the] DSP” (1978:10). Van Liere and Dunlap argue that “recent experiences with ecological scarcities are inconsistent with the DSP, and air and water pollution, shortages of energy and other natural resources, and even inflation and economic recession are increasingly being interpreted as challenges to dominant social beliefs” (1983:335). They believe that “these anomalous experiences have encouraged the development of new beliefs about the environment. The configuration of these beliefs has been referred to as the New Environmental Paradigm” (1983:334).

The NEP is best captured by the “spaceship earth” metaphor. It asserts the desirability of restricting growth, of protecting the integrity of ecosystems, and of securing more harmonious relationships between man and nature. (Albrecht *et al*:1982) In contrast to those who embrace the DSP, Lester Milbrath describes those who accept the NEP worldview as those who have a: “high valuation of nature, their sense of empathy which generalizes to compassion toward other species, other peoples and other generations, their

desire to carefully plan and act so as to avoid risks to humans and nature, their recognition that there are limits to growth to which humans must adapt, and their desire for a new society that incorporates new ways to conduct our economic and political affairs” (1984:21).

At the core of this New Environmental Paradigm is a set of basic assumptions. The NEP concedes that humans are an exceptional species, but stresses that they should nonetheless be viewed as one among many interdependent species (depending on any other species for food, and competing for food, space, water, and so on with other species). Also, while acknowledging that human affairs are heavily influenced by social and cultural forces, the NEP stresses that human social life is also influenced by the biophysical environment, often as a reaction to human action (in the form, for example of buildings, pollution, and climate). Thirdly, the NEP calls attention to the constraints on human affairs posed by their biophysical context (e.g., human health and physical survival are possible only under certain environmental conditions).

Finally, the DSP implies limitlessness and expectations that social and technological developments will lead to perpetual progress. Catton and Dunlap note that in contrast, “the NEP recognizes that no matter how inventive humans may be, their science and technology cannot repeal ecological principles such as the laws of thermodynamics; thus there are ultimate limits to the growth of human societies” (33). In sum, the essential image of the human societies provided by the NEP is fundamentally different from that provided by the DSP.

THE NEW ENVIRONMENTAL PARADIGM (NEP) SCALE

Dunlap and Van Liere, who devised scales to measure the DSP, have gone on to developed a related instrument intended to measure how people feel about nature and man's relationship to it. Their NEP Scale is, "designed to measure the extent to which persons accept premises of the New Environmental Paradigm as compared to those of the Dominant Social Paradigm" (40). They note that the "NEP items were carefully constructed by the researchers...to include items reflecting all of the crucial aspects of the NEP: limits to growth, balance of nature, anti-anthropocentrism, etc. In obtaining a representative set of items we were guided by our reading of the NEP literature and consulted several environmental scientists and ecologists at our university" (1978:12).

Dunlap and Van Liere's work provides a measurement of the NEP that is consistent as well as *unidimensional*. The consistency of the NEP is critical. If this is indeed an emerging paradigm or world view, then we should expect a fair amount of internal consistency among responses to the various aspects of the NEP. Their research results indicate that there is such consistency. The results also indicate that the, "NEP scale does have an acceptable degree of predictive validity" (1978:16). Dunlap and Van Liere tell us that, according to their results: "the NEP Scale has predictive, construct and content validity. Consequently, we conclude that it represents a valid instrument for measuring the New Environmental Paradigm" (1978:16-17).

The explanation that environmental problems stem from values and beliefs suggests that two sets of potentially conflicting beliefs compete for the loyalty of individuals. Socialization into American culture would lead most people to an acceptance

of the DSP. However, those who have been exposed to information supporting a new world view emphasizing limits to growth, the balance of nature, and antianthropocentrism are more likely to support the NEP. Thus, as Van Liere and Dunlap note, “individuals face the task of organizing these two sets of conflicting beliefs into a consistent cognitive framework that balances past social learning and present experience” (1983:334).

The research suggests that the DSP and the NEP are “intrinsically related and contradictory, although individuals may not recognize the interrelationships” (1983:335). We should expect then that many people will believe parts of each of these paradigms, trying to integrate them and using a variety of strategies for reducing the potential cognitive dissonance. We might also expect to find that some people hold firmly and consistently to one or the other. Whatever the degree of integration, the beliefs involved has significant behavioral consequences. When held in isolation, these two general belief systems provide conflicting bases for attitude and action. As one researcher has put it: “The DSP and NEP are important because they form a foundation for more specific environmental attitudes and behaviors. They act as criteria for evaluating the desirability of social and environmental phenomena” (Williams:1979).

Although the NEP scale was introduced in 1978, it has received relatively little attention outside the field of environmental sociology. Within the field, however, the NEP scale has been widely applied in a variety of social situations. It has been administered in cross cultural studies seemingly without problems in translation (Pierce *et al.* 1987; Carson 1983; Scott 1982). The reliability of the instrument has been examined and different scale dimensions have been more clearly specified since its introduction (Geller *et al.*, 1985; Noe *et al* 1989).

The original NEP scale was developed and used by Riley Dunlap and Kent Van Liere in 1978. The NEP scale was administered to samples of two populations in the state of Washington: a general population and the members of a prominent environmental group. The twelve items in the scale were shown to have acceptable reliability for both populations. Through use of factor analysis, the NEP scale was shown to be unidimensional, seemingly tapping a common attitudinal dimension.

Using the same data gathered from the Washington state study, Dunlap and Van Liere (1983) examined the relationship between the NEP scale and the DSP. They argued that the DSP and NEP suggest two sets of beliefs that are intrinsically related and contradictory, although individuals may not recognize the interrelationship. They found that the more individuals who demonstrate consistency in their acceptance of NEP and rejection of the DSP, demonstrate greater consistency in their environmental attitudes and behavior.

Don Albrecht *et al* (1982), used the NEP scale to examine samples of farmers and metropolitan residents of Iowa. They used it because it “is made especially appealing in that it has been subjected to systematic testing for reliability and validity” (1982:40). After applying the NEP scale to both samples, they found that although both samples scored “surprisingly” high, urban residents scored higher than farmers. They also found, after submitting the scale to factor analysis, that three sets of items emerged for both populations. They found the “balance of nature,” “limits to growth” and “man over nature,” were the three distinct environmental orientations that the NEP scale was measuring. These results indicate that it is possible to accept some parts of the paradigm and reject others. Albrecht *et al* conclude that, “it seems that persons can fully endorse some elements of the New Environmental Paradigm, while at the same time rejecting other

elements. The possibility of a 'mixed' response to the paradigm's constituent parts (as versus the wholesale rejection or acceptance of all parts) is an important consideration in the future use and interpretation of the NEP scale" (42).

Jack Geller and Paul Lasley used the NEP scale in a 1985 study that utilized data gathered by Albrecht *et al* and data collected from a survey conducted in Missouri in 1980. Their study compared findings on general population samples of rural and urban residents.. It examined the dimensionality of the NEP scale, but they were unable to confirm its dimensionality. They did however confirm the dimensionality of a three factor model using nine items from the original scale. Similar to Albrecht *et al*, their work suggests that there are at least three attitudinal levels of meaning within the twelve items; "balance of nature," "limits to growth" and "man over nature." This factor pattern for their scale was not only similar across similar samples, but was also similar to the three factor model found by Albrecht *et al*.

Noe and Snow applied the NEP scale to two survey populations in south Florida to determine whether differences in ethnic background influenced preference toward the environment. The researchers used both the mail survey and telephone survey techniques to measure the possible effects of ethnicity on environmental attitudes. They choose the NEP scale because they "needed a measurement tool with a unidimensional scale that could probe an underlying general environmental perspective while avoiding narrow, issue-limiting alternatives," and the NEP scale "fulfilled these requirements" (1989:28). During a pre-test, they eliminated two items because the respondents either did not understand the questions or became confused over their terminology and specialized language. Noe and Snow concluded that "there is more than one dimension to the NEP scale" (1989:33). In the words of Noe and Snow, "the major dimensions of supporting a belief in the ecological

model forms one set of NEP beliefs, and another forms around man being created to rule over nature, with plants and animals existing for his use. The third dimension relates to the limitations of spaceship earth and a steady-state economy” (33).

The National Park Service social scientists have applied the NEP scale in a variety of parks to measure shifts in environmental concern among park visitors. In describing this research, Noe and Snow tell us that, “because the NEP was specifically designed to be tested in diverse social and cultural situations, the scale was added to five visitor surveys in southeastern parks to determine how national park visitors would respond to the scale items” (1990:21). Noe and Snow were particularly interested in examining the issue of the scale’s unidimensionality, as a follow-up of Geller *et al* (1985) and Pierce *et al* (1987). They hypothesized that rather than a single unified scale dimension, there may be one or more clusters of cognitive beliefs that are associated with some of the items constituting the NEP scale. Their research found that the scale is multidimensional, so Noe and Snow argue that, “at this point, it may be best to continue using the 12-item NEP scale and not to expect a single dimension” (1990:24). They conclude their study by “recommending use of all the scale item in the original NEP scale” (1990:24).

Judi Anne Caron used the NEP scale to compare results from urban black residents and white residents in southeastern Virginia. Like Noe and Snow, Caron found that wording of the item number 7 was potentially confusing to those persons with limited education and/or limited knowledge of ecology. The original item 7 reads: “To maintain a healthy economy we have to develop a ‘steady-state’ economy where industrial growth is controlled.” The revised question reads: “In the past 300 years, the U.S. economy and industry have been expanding and growing - building more and more new factories, stores, etc., and using more and more natural resources. In the future we will have to change, and

limit or reduce the amount of growth.” Caron found “moderate” support for the NEP among southern blacks. She also found that “these results may not be tapping a unidimensional dimension with the present black Virginia respondents” (1989:24). Caron did not offer an explanation into what these multiple dimensions could be.

Kuhn and Jackson constructed a 21-item scale, which combined and modified the NEP and the DSP, that they used in two surveys in Edmonton and Calgary. Their objective was to investigate the ability of this scale to measure dimensions of environmental attitudes consistently. They found that the entire scale exhibited a strong degree of internal consistency. They also found that their scale was multidimensional. Four distinct clusters of questions emerged that focused their own research results: the consequences of growth and technology, the quality of life, relationships between mankind and the natural environment, and limits to the biosphere. They conclude that “the results suggest that our twenty-one-item modification of Dunlap and Van Liere’s ‘new environmental paradigm’ and ‘dominant social paradigm’ scales can be used in future research in which attempts are made to replicate the present investigation or to generate data for comparative purposes (1989:31).

Mary Ann E. Steger *et al* (1989) used the NEP scale to investigate the relationship between it and “postmaterial values” in Canada (Ontario) and the United States (Michigan). Steger *et al* used a subset of six of the twelve items found in the original inventory developed by Dunlap and Van Liere and found that their version of the NEP scale is reliable and valid, as well as multidimensional. They also found that some variance in responses between the respondents from Canada and the United States due to cultural differences.

In a similar study, Pierce *et al.*, (1987) used the NEP scale to examine the link between postmaterial values and the new environmental paradigm between respondents from Japan (Shizuoka Prefecture) and the United States (Spokane, Washington). Pierce *et al.* used the same subset of six of the original twelve and found evidence that the original 12-item scale could be reduced and still not lose precision. The results from their study also provided supporting evidence for the view that NEP is culturally based and yields differing results from country to country.

The question of dimensionality is important in the interpretation of the NEP scale scores. On the one hand, if the NEP scale is unidimensional, then a low scale scores can be interpreted as a rejection of this new environmental paradigm. On the other hand, as Geller and Lasley recognize, “if the NEP scale is multidimensional, then it is possible to interpret low scale scores as either a total or partial rejection of a single dimension” (1985:10). For my purposes, the scales multi-dimensions will be of little concern. The fact that some people do not accept the entire 12 items does not constitute evidence that there has not been a shift in paradigms from the DSP to the NEP. It is unlikely that any new paradigm will suddenly and completely be adopted by the general population. We should expect vestiges of the old and continuities with the past, even when new forms are being adopted. In terms of the scale itself, some items appear to be more easily accepted by the public than others; some concepts such as “steady-state economy” are more difficult to understand — especially for those with limited knowledge about such issues and/or limited knowledge of ecology.

The NEP and the scales used to measure its acceptance have clearly been useful in empirical research, and provide a sound theoretical grounding for further investigation. Although several of the projects dealing with the NEP scale have questioned the

dimensionality of the scale, it has however, continued to be seen as a reliable and valid measure of this new paradigm shift. For example, even though Albrecht *et al* found evidence to show the scale was measuring multiple dimensions, they note that, “the use of the NEP scale is made especially appealing in that it has been subjected to systematic testing for reliability and validity (1982:40).

The NEP scale thus far has not been applied to any specific environmental issues. This is an important omission in the knowledge of environmental attitudes and concern for environmental quality. It is quite possible that general beliefs such as those identified by the NEP are firm guides to social behavior in ordinary circumstances, but become less predictive when quite practical economic issues or collective vested interests are introduced. The general assumption that people act primarily in terms of the dominant paradigm that organizes their general perspective is an assumption that needs to be tested in concrete contexts where environmental issues are more than abstract and general matters.

Consequently, I propose to investigate how the NEP scale applies to a specific social context where there is a clear and immediate environment issue. The specific context will be the regions directly affected by the construction of the Lake Gaston water pipeline. The focus will be to determine the extent to which opinions of residents in the Lake Gaston region and in the City of Virginia Beach are shaped by general beliefs, and the extent to which those opinions reflect presumed regional economic issues and environmental concerns. **This research will test whether a commitment to an ideological construct has more to do with an individual’s concern for the environment than sociodemographic factors and/or vested interests and supposed local advantages.**

THE LAKE GASTON PIPELINE ISSUE

In the last decade, the city of Virginia Beach has begun to run out of water. It had been purchasing water from Norfolk and Chesapeake, but these cities can no longer meet their own demands as well as those of the growing resort town. In 1982, Virginia Beach made a proposal to build a pipeline to extract water from Lake Gaston. Lake Gaston straddles the Virginia-North Carolina border. The pipeline would extend some seventy-six miles and would cost an estimated 219 million dollars. The pipeline would enter Southampton at the Sussex County border near Joyner and cross farmland to Burdette at the Isle of Wight County border on the east. The route would extend through the villages of Sebrell and Sedley, where the 100-foot right of way widens to as much as 200 feet to provide a buffer to residences and businesses. The pipeline would extract an estimated 60 million gallons a day. by the year 2030. Forty-eight million gallons of the water is earmarked for Virginia Beach, 10 million gallons for Chesapeake, 1 million gallons for Franklin, and 1 million gallons for Isle of Wight County.

Because this pipeline proposal has attracted much debate about the potential affects on the environment, several environmental impact statements have been made and hotly contested. Several environmental groups have joined to fight against the pipeline construction. The whole project has become a battle between lawyers and bureaucratic organizations. The agencies involved in this battle include the Bush and the Clinton White House Staffs, the U.S. Department of Justice, the U.S. Department of Commerce, the U.S. Department of the Interior, the Environmental Protection Agency, the Army Corps of Engineers and a host of other regulators who have been pulled into the fight. To date, Virginia Beach has invested about \$25 million in consultants' fees, construction contracts and other expenses.

Currently, Virginia Beach is trying to gain control of the a four acre plot of land around the lake and bypass the Federal Energy Regulatory Commission (FERC). Virginia Beach is asking the State's permission to condemn the land, which is located in Brunswick County. Virginia Power operates Lake Gaston as a hydroelectric project. The entire lake bed and shoreline is owned by Virginia Power. The utility is however, regulated by FERC which must approve any changes in Virginia Power's operation.

Virginia Pilot "Beacon" news reporter Lisa Ortner wrote an article in January 1993 entitled: "Wrangling Over Water: A Decade of Controversy Clogs Up the Gaston Pipeline Project." In it she summarizes the issue: "the name Lake Gaston, long associated with bass fishing, is now linked with a huge, confusing bureaucratic tangle of regulation, deregulations, and litigations that have plagued the pipeline project for a decade.

II. A BRIEF CHRONOLOGY OF LAKE GASTON EVENTS

Early 1980's

Virginia Beach seeks to identify a pipeline route of least resistance along the 80-mile path to Lake Gaston, a reservoir that straddles the North Carolina - Virginia border.

1982

Virginia Beach officials choose to develop the pipeline as a water source for the 1990s, when the city is expected to outgrow its current water allocation from Norfolk.

February 1983

The cities of Norfolk, Chesapeake, and Franklin joined in a partnership to obtain water

from Lake Gaston. The three localities agreed to help pay for the engineering work on the pipeline.

Mid 80's

Thirty-nine governors, 200 corporations and nearly 5,000 people in Virginia and North Carolina form the Roanoke River Basin Association, a organization designed to fight the pipeline proposal. Lawsuit filed by North Carolina to halt the pipeline.

1985

The Virginia Resources Research Center studied the pipeline and recommended a special commission to evaluate and settle all Virginia water disputes.

1988

North Carolina Rep. Walter B. Jones launches a \$1 million study of striped bass. The study recommended a "moratorium on discharges and withdrawals" for the entire Albermarle-Roanoke system, including Lake Gaston.

October 1990

Jones leads a revision of the Coastal Zone Management Act to make it easier for North Carolina to protest issuing permit for construction. The National Oceanic Atmospheric Administration (NOAA) supports revision, while the Department of Justice is opposed.

December 1990

A lawsuit filed by North Carolina to halt the pipeline. This is the second attempt to stop construction.

April 27, 1991

The Sierra Club as well as the North Carolina Wildlife Federation, join the coalition to stop Virginia Beach from building the Lake Gaston pipeline. Mark Yatrofsky, chairman of the Virginia chapter of the national environmental group The Sierra Club, stated that, "We're concerned that this project is going to fuel growth that will put pressure on resources that are already stressed."

May 1991

The North Carolina Farm Bureau, the town of Weldon, N.C., and a water and sewer agency, the Roanoke Rapids Sanitation District join the coalition against the pipeline project.

June 27, 1991

The North Carolina House of Representatives passed a bill that would prohibit the withdrawal of water if two conditions exist: the withdrawal would cause the natural flow of water to be reversed for one mile, and most of the withdrawn water is not returned to the stream. The bill passed 97-0.

December 1991

Voting at a council meeting in Virginia Beach about soliciting bids from contractors to work on parts of the pipeline was for the first time not unanimous. Councilmen James Brazier and Paul Lanteigne vote against going ahead with soliciting for bids. Michael Barrett, chairman of the committee on legislative affairs for the Hampton Roads Chamber of Commerce said, "this issue is of vital importance to our future." He goes on to state that, "I can't conceive of anyone voting against it."

March 1992

U.S. Circuit Court of Appeals in Richmond said Virginia Beach can build small parts of the pipeline while it waits for federal regulators to grant final approval for the project. The ruling repealed a decision handed down in December.

June 13, 1992

A public meeting is held at the Pavillon in Virginia Beach. “Only” one thousand fill the six thousand seats. Terry Elliot, who grew up in Tidewater, argues that he is “very disappointed the whole place isn’t filled.” Bob Rotov, a lifelong resident of Tidewater comments that, “this is a disgusting turnout.”

May 1993

The U.S. Environmental Protection Agency requested a new environmental study to be done by Federal Energy Regulatory Commission, as well as the National Oceanic and Atmospheric Administration (NOAA). Previous studies done by the Army Corp of Engineers were claimed to not be adequate, because, they dealt with questions that were too broad, rather than focusing directly on the pipeline. The request from the EPA came with support from other federal agencies, including the Fish and Wildlife Service and the National Marine Fisheries Service.

September 3, 1993

North Carolina’s attorney general filed a lawsuit challenging a federal ruling that an environmental law can’t be used to fight the \$174 million pipeline. North Carolina Gov. James Easley argued that the pipeline, “**would be both an economic and environmental disaster**” (emphasis my own). He went on to state that the lawsuit was part of his state’s continuing fight, “to keep North Carolina’s water in North Carolina.”

January 28, 1994

Pipeline project manager, Thomas Leary, in a speech to the Tidewater Association of Realtors' commercial and industrial council, said that the pipeline would be, "clear of its final hurdles by June."

March 13, 1995

The Virginia Pilot reports that "the pipeline's construction is a near certainty, the EPA appeared to conclude in its analysis of the Federal Energy Regulatory Commission's preliminary study." The EPA noted that Virginia Beach must prove beyond a shadow a doubt that without Lake Gaston, it does not have enough water to meet current and future needs.

March 20, 1995

The Department of Interior, which once supported the Lake Gaston project, now believes Virginia's demand for water should be scaled back.

April 4, 1995

The Lake Gaston Gazette reports that the U.S. District Court for the Eastern District of North Carolina said no to Virginia Beach's request to condemn land in Pea Hill Creek to circumvent the FERC procedures and start the construction of the pipeline.

April 4, 1995

R. Clinton Clary Jr., President of the Lake Gaston Chamber of Commerce, in a letter to the editor of the *The Lake Gaston Gazette* argues that, "Virginia Beach has chosen a course of reckless, irresponsible growth, and now seeks to divert the major natural resource of a vastly inferior socio-economic region to quench the water needs of its uncontrollably

escalating population.”

April 7, 1995

The Virginian-Pilot reports of a possible truce to the fifteen year battle between Virginia Beach and Lake Gaston. A federal mediator released a proposed compromise that would provide water to south-eastern Virginia in exchange for environmental protection and improvements to roads in north-eastern North Carolina.

April 28, 1995

Virginia Beach and Lake Gaston sign a settlement that ensures Virginia Beach 60 million gallons and ensures Gaston with needed highway construction help.

April 28, 1995

Robert Ruhl, who pursues businesses for the Beach’s Department of Economic Development, argues that, “the most obvious benefit is that the city (Virginia Beach) can again control its own destiny, development-wise.”

May 1995

Norfolk and Virginia Beach attack each other in the water issue. Norfolk takes out a full page ad in the *Virginian-Pilot* denouncing the efforts of Virginia Beach to get a new water source.

May 21, 1995

Norfolk attacks Virginia Beach, citing Va Beach’s lack of consideration in the negotiations. *The Virginian-Pilot* reports that “everyone in Virginia Beach, regardless of party, supports the pipeline, and everyone in South-side, regardless of party, hates it.”

June 3, 1995

The agreement is off. Legislators rework the agreement because of objections from Norfolk and jurisdictions in the Roanoke River Basin.

June 20, 1995

General Assembly negotiators work out another proposal. The *Virginian-Pilot* reports that “lawmakers might reach a settlement before the original agreement’s deadline of June 27. North Carolina refuses to budge on the deadline.

June 21, 1995

Tentative compromise between N.C. and Va. Beach includes an agreement for Va Beach to pay a surcharge on Gaston water, to use Norfolk’s surplus water before drawing on Lake Gaston, and to promise never to restrict the uses of the Roanoke River upstream of Lake Gaston. North Carolina agrees to drop demand that Norfolk be forbidden to sell its water to the Peninsula or the Eastern Shore and to drop its demand that South Hampton Roads be encouraged to form a regional water authority. Both sides agree to expand a two-state water commission.

November 19, 1995

The Virginian-Pilot reports that North Carolina leaders and leaders in southwestern Virginia, “will keep fighting the proposed pipeline for as long as it takes.” Virginia Beach stands to lose \$200 million if they lose. Construction contracts will be signed by November 30th to build the 76-mile pipeline and complete a water pumping system.

THE NORTH CAROLINA PERSPECTIVE

North Carolina claims there would be extensive negative environmental impact from the construction of the project. They claim that the project could hurt fish populations, like the striped bass, by lowering the level of the lake and surrounding rivers. Other issues include stream flows and the amount of oxygen in the water.

North Carolina also claims that the proposed pipeline may hurt economic development by limiting future industry that might want to withdraw water, and adversely effect the economic growth in towns along the Roanoke River. The pipeline, it is argued will also cripple hydroelectric power production to the surrounding area. The lower water levels would affect industries such as paper mills. Weyerhaeuser, which operates a paper mill, employing 1,600 people has declared that any substantial withdrawals from the Roanoke River could close the mill. .

Area residents say that the pipeline construction would decrease property values. There are 4,000 homes around the lake that would be affected by the construction of the pipeline. Area farmers worry about damage to their farms from lowered water tables. Irrigation and water used by local farmers would be adversely affected.

The construction would also ruin the Gaston creek, turn it muddy and would force the city to limit boating along the lake and rivers. The lower levels would pose hazards to boaters and could keep fishing tournaments away.

As Donald Owen, a Gaston resident, puts it, Virginia Beach is a, “greedy, growing resort trying to steal the Southside’s most valuable asset - bountiful water.”

Some speculate that Virginia Beach and its partners might try to impose standards or limits on how the water is used upstream. That could affect their industries and municipal sewage treatment plants.

Some see this issue as a power play by the urban interests to come to a rural community that have natural resources and take them without just compensation. Ewell Barr, vice-president of the Roanoke River Basin Association argues that, “power and money follow water.” He goes on to state that, “we are talking about the power to control the entire future development of the Roanoke River basin both in Virginia and North Carolina.” Kathleen Walker, mayor of Clarksville, Va., near Lake Gaston comments that the, “question is: Will the largest city in Virginia prosper by trampling over one of its smallest and oldest towns?”

Environmentalists have also argued that Virginia Beach has never justified its presumed need for 48 million gallons a day. From their perspective the “real” issue is too much growth and too little conservation. Some engineers claim that the cities waste millions of gallons of water that could be captured for use. There are also questions raised regarding the natural limits of urban expansion.

THE VIRGINIA BEACH PERSPECTIVE

Pipeline advocates firmly believe that Lake Gaston will end or severely reduce water troubles in Virginia Beach, Chesapeake, Franklin, and Isle of Wight County. The lake is pure and almost untapped body of water fed by the fast-running Roanoke River. Filling their needs would require less than 1 percent of its flow. Virginia officials are

therefore impatient for the pipeline. They say North Carolina is simply using delay tactics to kill a viable and reasonable project.

Real estate developers and brokers say the region (Tidewater) needs a guaranteed water supply to “attract businesses and accommodate new houses.” They argue that the pipeline construction is vital to Virginia Beach’s present and future economy. Virginia Beach supporters argue that the project is vital to national security because the Beach is buying water from Norfolk, which is also supplying many military installations. The commander of the Norfolk Naval Base claims that the armed forces have a “vital interest” in a water system that meets future needs.

III. HYPOTHESES

This research will build on the extensive work of Dunlap and Van Liere, who have shown a negative relationship between commitment to a Dominant Social Paradigm and environmental concern. They have also shown a positive relationship between commitment to the New Environmental Paradigm and environmental concern. The Lake Gaston water pipeline proposal, because of its huge environmental impact has been seen by many, including the Sierra Club, as adversely affecting the environment. So, we can assume that those who consider themselves more “concerned for the environment” will be against the pipeline and those who are less concerned for environmental quality, will be for the pipeline construction. This line of argument can be illustrated as followings:

1) Strong commitment to the NEP (“high” score) — concern about the environment — against the pipeline construction.

2) Rejection of the NEP (“medium” or “low” score) — less concern about the environment — and pro pipeline construction.

Although, the above statements are logical extensions of previous research findings, I suggest that in most instances another factor will be found to be decisive in determining opinions about the pipeline, namely, residency. I submit that where respondents live will be more predictive of their views about the pipeline than their general agreement with a particular paradigm or any sociodemographic variables that might be used to characterize the population. The important factor will be the presumed self interest and advantage of the pipeline to their own region. Those people who live in the Lake Gaston area will generally be against the pipeline regardless of their general attitudes about the environment, how they scored on the NEP Scale, and sociodemographic variables. Most people in Virginia Beach, on the other hand, will be for the pipeline — primarily because they have a vested interest in the project.

The general research has consistently documented the importance of environmental paradigms under ordinary social circumstances. All things being equal, NEP scores will be predictive of respondents’ behavior. But sometimes things are not equal. I submit that when an environmental issue directly affects people, vested self interests and presumed economic advantage will be the most influential factors predicting their stance on that issue.

Because respondents may not accept each of the 12 items on the NEP scale at the same level of agreement, scores will likely vary on a spectrum from “high” to “low.” It is reasonable to assume that opinions of respondents who have moderate scores on the NEP

scale will be more influenced by variables other than ideology. Again, it is most likely that the crucial factor will be residency.

It is likely, however, that one distinct group of respondents will not be persuaded by economic advantage but rather by their commitment to their views regarding the environment. Persons who score high constitute a special category. In order for a person to score “high” they must have “strongly agreed” on each of the twelve items and constitute a score between 56 and 60. This would mean that they fully agree with this new paradigm. I suggest that those who consistently embrace every postulate of the NEP will define themselves as “environmentalists” and such self-designation will operate as a “master status.” They will be more likely to cite environmental reasons for their opinion about the pipeline proposal. For this group of respondents, and only for them, residency and economic considerations will largely be irrelevant. Whether they live near Lake Gaston or in Virginia Beach, their first consideration will be the impact of the pipeline on the environment and they will probably be opposed to its construction.

Here then are my hypotheses. In terms of their scores on the NEP, I expect to find:

1). Resident of Va. Beach:

“High” on NEP — Anti Pipeline — citing environmental reasons

“Medium” NEP — Pro Pipeline — citing economic reasons

“Low” on NEP — Pro Pipeline — citing economic reasons

2). Resident of Lake Gaston:

“High” on NEP — Anti Pipeline — citing environmental reasons

“Medium” NEP — Anti Pipeline — citing enviro/economic reasons

“Low” on NEP — Anti Pipeline — citing economic reasons

For those residents who score “high” on the NEP scale, this will become their “master status.” They will see this issue as more than an economic issue and will cite environmental reasons why they are against the pipeline construction. The residents in Virginia Beach who score “medium” on the NEP, do not fully embrace the entire NEP, thus, their residence will be the dominating factor in being against the pipeline. Their perceived vested interests will shape their responses. They will cite economic reasons for advocating the pipeline. Residents from Virginia Beach who score “low” on the NEP will be concerned only with getting water. They will be for the pipeline and will cite economic reasons for their convictions. Residents from Lake Gaston, on the other hand, will be against the pipeline, regardless of how they scored on the NEP scale. Those who score “high” will cite environmental reasons for opposing the pipeline. “Medium” scores will cite both environmental and economic reasons for opposing pipeline construction. Residents who score “low” will see the construction in purely economic terms.

SPECIFIC HYPOTHESES

1. Residency is the crucial factor in determining attitudes toward the pipeline.

For most people economic issues and presumed regional interests will be more predictive than scores on the NEP Scale or any demographic factors.

- a. Respondents from the Lake Gaston region will reject the pipeline
- b. Respondents from Virginia Beach will be for the pipeline

There will be this one major exception:

- 2. Those who score “high” on the NEP will uniformly oppose the pipeline regardless of their residency.
- 3. Those respondents who score “high” on the NEP will primarily cite

environmental reasons as the basis of their opinions.

4. For all other respondents (i.e. those who do not score “high” on the NEP) the reasons cited for their opinions will primarily be economic ones.

IV. RESEARCH DESIGN

Data were gathered by way of a telephone survey. The subjects were adult residents of both the Lake Gaston area and the city of Virginia Beach. Virginia Beach respondents were selected from telephone listings. The page number of the telephone book was selected by using a table of random numbers between one and seven hundred and two. The row and column were selected using the same technique. If the selected name was not from Virginia Beach or refused to be questioned, the next resident was called. This continued until a respondent agreed. About five hundred phone calls were made to get the sample size of one hundred and two. The phone calls to the Virginia Beach area were made from my residence there; calls to Lake Gaston were made from a pay phone. Due to the large number of respondents from Virginia Beach (roughly 400) who declined an interview, a smaller sample size of fifty-one was chosen for the Gaston area. The respondents from the Lake Gaston area were selected using the same technique as Virginia Beach. Although the sample size is small, it is likely that it reflects the larger population. Due to time constraints as well as financial constraints standardized telephone interviews were conducted, rather than mail surveys such as those used in the original work by Van Liere and Catton. The interview itself took roughly three minutes. The interview schedule was a truncated version of the questions used by Van Liere and Catton and in their research concerning the NEP and environmental concern.

As a prelude to the computer assisted telephone interview itself, potential respondents were telephoned and invited to participate in the research project. Among other things, the initial call told them: (a) that they are a critical part of a random sample; (b) that the research is about regional issues; and (c) why their participation is important. A convenient time for the actual telephone interview was arranged with those willing to participate. In all cases, respondents choose to either participate on the first call or rejected participating at all.

The questionnaire consisted of four sections. The first section included basic sociodemographic questions, such as age, area of residence, length of residence, sex, and level of education. Since respondent cooperation was essential and phone time was limited, questions regarding income, political affiliation and race were not asked. The second part focused on Dunlap and Van Liere's original 12 item NEP scale, with a modification in wording on one item (see Caron 1989). The items were prefaced by the following statement, "Now we would like to get your opinion on a wide range of important social, political, and economic issues facing the United States. Please indicate the extent to which you agree or disagree with each of the following statements." Responses were measured on a five point Likert scale: "strongly agree" = 5; "agree" = 4; "neutral" = 3; "disagree" = 2; and "strongly disagree" = 1. Based on their general scores, respondents were divided into three categories: "high," "medium," and "low." "High" scores ranged from a score of 55 to 60. "Medium" scores ranged from 40 to 54 and a "low" score ranged from 12 to 39.

The third section concentrated on general attitudes about the environment and its quality. Three Likert-type scales were used to measure respondents' degree of concern with the major substantive areas emphasized in the environmental problems literature:

pollution, overpopulation, and resource depletion. These questions followed Dunlap and Van Liere's original schedule and measures.(see Appendix III) Based on these scores, respondents were assigned one of two categories: "High" (scores ranging from 11 to 16) or "Low" (scores ranging from 5 to 10).

The fourth section focused on specific attitude about the Lake Gaston pipeline proposal. The final section was designed not simply to gather data regarding opinions about the pipeline, but to uncover the grounds for those opinions. It attempted to determine if the *reasons* for the stated opinions stem mainly from general economic or environmental considerations. The question read, "would you say that the primary reason why you are (for, neutral or against) the Lake Gaston pipeline construction project is for economic or for environmental reasons?"

V. FINDINGS

Contingency tables were run on all potentially relevant variables to gauge their correlation with the respondents' stance toward the pipeline construction project. The most salient finding is the statistically significant relationship between area of residence and stated opinions about the pipeline (See Appendix 2 / Table 1). With a Chi Square of 53.2, a probability of less than .0001, and a Cramer's V of .59, area of residence is the single most important factor in determining whether one is for or against the pipeline construction. Of the respondents in the Gaston area, only four of the fifty one are for the pipeline construction. In Virginia Beach, only twenty of the one hundred and two are against it. These results support the first part of my hypothesis that residency is the crucial factor in

determining attitudes toward the pipeline.

The contingency tables concerning the NEP scores and pipeline decisions for both areas show a Chi-square of 6.7, a probability of .15, and a Cramer's V of .148. (See Table 2). The results show a slight (statistically non-significant) relationship between NEP and opinions regarding the pipeline. Furthermore, when split by area, another interesting pattern is revealed. In Virginia Beach, when NEP scores and pipeline decisions are compared, a Chi-square of 20.2 and a probability of .0005 is found (Table 3). However, in the Gaston area, there is a Chi-square of .87 and a probability of .9289 (Table 4). Scores on the NEP scale, are more predictive in Virginia Beach. In North Carolina, however, residents are so overwhelmingly against the pipeline that NEP scores have no relationship to their general stance.

These results challenge the work of Catton and Van Liere, after which the scale is modeled. Catton and Van Liere argue that there is a direct relationship between NEP scores and environmental concern. It would logically follow that the higher the NEP score, the higher the environmental concern and the greater the likelihood that the decision on the pipeline would favor the more "environmental" choice. Although there has been much debate about the environmental implications of the project, groups such as the Sierra Club, publically oppose it. The results from Gaston however, do not support Catton and Van Liere's predictions that higher NEP scores will lead to a higher chance of rejecting the pipeline. These results also support my first hypothesis.

When comparing NEP scores with area of residence, a statistically significant relationship is revealed - a Chi-square of 9.4, a probability of .009, and a Cramer's V of .248 (Table 5). Virginia Beach residents score higher on the NEP scale than residents in

the Lake Gaston area and had eighty-nine percent of the residents who score “high” on the NEP scale. Although residents in Virginia Beach score higher than residents of Lake Gaston, the residents of Lake Gaston are almost uniformly against the pipeline and residents in Virginia Beach are split about the pipeline. From table one, we know that area of residence is the most crucial factor. It is also known from table two and three, that NEP scores are somewhat telling of attitude toward pipeline and that they differ between areas. These results, particularly the patterns shown when NEP and pipeline stance is split by area, indicate that there are differences between the areas other than just NEP scores that could account for the high correlation between area of residence and pipeline stance.

One difference is in the geographical stability of the two populations. Length of residence has a statistically significant relationship with attitudes toward the pipeline, with a Chi-square of 16.6, a probability of .0023, and a Cramer’s V of .233 is found (Table 7). When split by area, there is a slight relationship between length of residency and pipeline stance in Virginia Beach, with a Chi-square of 9.8, a probability of .04, and a Cramer’s V of .22 (Table 8). The residents of Virginia Beach show that those who live there for more than 10 years are much more likely to be for the pipeline. Whereas those who have lived there less than 6 years are more likely to have a neutral stance. In the Gaston area, however, length is not significant at all, with a Chi-square of 2.6, a probability of .626, and a Cramer’s V of .16 (Table 9). This reflects general differences in population stability between the two areas. In Gaston, the average length of residency of the respondents is 26.9 years, while Virginia Beach it is 15 years.

We might assume that the longer persons lives in an area the more concerned about the area they become. It is understandable if residents were to care less about future water supply, if they did not grow up there or if they are planning to move out of the area

soon. This may help explain why almost a third of the residents in Virginia Beach take a neutral stance, while only 6 Gaston residents are neutral. In Gaston, where 42 of the 51 are residents of more than 10 years, concerns are greater about the future of the area and the future of its resources. Lake Gaston residents consider themselves fully informed about the pipeline project and are more adamant in their views about it. In stark contrast, many of residents in Virginia Beach declare that they do not know about the issues and are neutral about the pipeline.

Yet another difference between the areas is shown by comparing level of schooling and area of residence. A Chi-square of 9.9, a probability of .0186, and a Cramer's V of .256 is shown (Table 10). Residents of Virginia Beach have a higher level of education than those in the Gaston area. Level of schooling has a slight relationship to pipeline decision, with a Chi-square of 15.4 and a probability of .017 (Table 11). The higher the level of schooling, the greater the chances of being against the pipeline. This may be directly related to NEP scores, environmental concern, as well as type of occupation. Rhyne and White argue that, "the number of years of education is positively correlated, and often very strongly so, with environmental concern" (11). In the present case, however, it is quite clear that this predicted relationship does not hold. The population with more formal education is the one apparently less concerned with the potential environmental impact of pipeline construction.

Unlike other studies done on environmental issues, the data here indicates that other demographics such as gender and occupation are less related to respondents decisions than where they lived. In terms of gender and pipeline, there is no relationship, with a Chi-square of 1.8 and a probability of .40 (Table 15). Also, men and women score much the same on the NEP scale, as well as on the environmental concern scale. Occupation is

also not significant, with a Chi- square of 5.7 and a probability of .22 (Table 16).

Previous studies lead us to expect that the variation between the views of Lake Gaston and Virginia Beach residents might be explained in terms of different degrees of general environmental concern. The data, however, show little relationship between pipeline decisions and environmental concern in either region — a Chi-square of 2.0, a probability of .36, and a Cramer's V of .115 (Table 12). In Virginia Beach, however, the relationship is somewhat stronger, with a Chi-square of 8.2, a probability of .0165, and a Cramer's V of .284 (Table 13). In Virginia Beach, seventy percent of those who score "low" on the scale are neutral about the issues or favor the pipeline proposal; and sixty percent those who score "high" on the scale are either neutral or oppose the pipeline. On the other hand, in the Gaston area, environmental concern and pipeline decisions show no relationship — a Chi-square of 1.2, a probability of .55, and a Cramer's V of .153 (Table 14). In the Gaston area, where a respondent places on the environmental scale is of little importance in the decision making process. It is also worth noting that Virginia Beach residents generally score higher on the environmental concern scale, with an average of 11.26, while Gaston residents score an average of 10.6 out of a possible 16. In short, the data demonstrate that area of residence is more predictive of positions regarding the pipeline than environmental concern levels.

These results strongly support my first hypothesis that residency is the single most crucial factor in determining attitudes toward the pipeline. For most people, economic issues and presumed regional interests are more predictive than scores on the NEP scale or any demographic variable such as gender, occupation, and education level.

The second hypothesis, at first glance, seems to be less concrete. When pipeline stance and those who score “high” on the NEP are compared, a less than significant correlation is found. A Chi-square of 1.3, a probability of .50 and a Cramer’s V of .095 is revealed; this does not support my second hypothesis (Table 17). However, when pipeline stance and “high” score is split by area a statistically significant pattern is seen, with a Chi-square of 11.5, a probability of .003, and a Cramer’s V of .336 (Table 18). Those who score “high” are much more likely to be against the pipeline than those who do not. This supports my second hypothesis that those who score “high” on the NEP will be more likely to oppose the pipeline. At first glance, it appears that in Lake Gaston, “high” scores and pipeline stance do not have a relationship, with a Chi-square of .77, a probability of .6779, and a Cramer’s V of .123 (Table 19). However, these relationships are made insignificant because of the high number of residents that are against the pipeline regardless of the score on the NEP and the low number of residents that did not score “high” on the NEP. Those respondents that did score “high” on the NEP were all against the pipeline. These results tend to support my second hypothesis.

When comparing those who cite environmental or economic reasoning with pipeline stance a strongly relationship is found — a Chi-square of 35.6, a probability of less than .0001, and a Cramer’s V of .482 (Table 20). Of the 67 who explain the issue in environmental terms, only eight are for the pipeline. On the other hand, of the eight-six who see it as an economic issue thirty are against the pipeline. Overall, those who cite economic reasons for their decisions are more likely to be for the pipeline and those citing environmental reasons are more likely to be against it, particularly in Virginia Beach. In the resort town, those who specify economic reasons, are eighty eight percent likely not to oppose the pipeline. A little over eighty percent of those who cite environmental reasons

are against the pipeline (Table 21). In Gaston, residents are against the pipeline regardless of whether they specify environmental or economic reasons for their view. Interestingly, over fifty percent of the Gaston residents see the pipeline project as primarily an economic concern (Table 22).

Contingency tables were also run on pipeline stance and reasoning behind pipeline stance, by residents who score “high” on the NEP. There is a significant relationship, with a Chi-square of 10.2, a probability of .006, and a Cramer’s V of .595 (Table 23). Almost twice as many people who score “high” on the scale see it terms of the environment. Those who score “high” and cite environmental reasons for their stance are more likely to be against the pipeline, while those who see it in economic terms are more likely to be for the project. Similarly, when pipeline stance and reasoning is split by those who do not score “high” on the NEP, a similar pattern is shown - Chi-square of 20.7, a probability of less than .0001, and a Cramer’s V of .409 (Table 24). Those residents who do not score “high” are more likely to cite economic reasoning behind stance. This lends support to my third and fourth hypothesis that those respondents who score “high” on the NEP will primarily designate environmental reasons as the basis of their opinions.

VI. DISCUSSION

The results confirm my hypothesis that residence is the single most important factor affecting the decisions on the pipeline construction project. They strongly suggest that when an issue is put in its social context, area of residence and vested interests become more predictive than philosophical orientation, gender, or any other demographic variable.

Only seven percent of the residents in the area surrounding Lake Gaston, are for the pipeline regardless of how long they lived in the area, regardless of how they score on the NEP scale, regardless of the socio-demographics and regardless of their stated level of environmental concern. In areas such as Gaston, where valued economic resources are at stake, resident response is based primarily on regional concerns. On the other hand, in Virginia Beach, where the potential costs are lower, residents are more likely to take into consideration philosophical orientation as well as regional advantages.

This research shows the importance of putting environmental issues into their social context. The NEP scale is a much more effective gauge of environmental concern when those being asked are not immediately and directly affected by a practical environmental issue. Consequently, if people are in an area that is not obviously affected by resource depletion or other such environmental issues their NEP scores will more likely be related to higher environmental concern and will be strongly correlated with opinions regarding various issues. However, where regional interests are at stake, other variables — such as vested interest and assumed economic and political advantages — weigh a great deal more in determining opinions. This research provides a clear, substantial and concrete illustration of this. Residents in the Lake Gaston area, for a variety of reasons, ranging from purely economic to environmental worries are almost uniformly against the pipeline regardless of the socio-demographics or their philosophical orientations. Several elements go into the mix when it comes to environmental decision making. Philosophical orientation, which is here measured on the NEP scale is only part of the mix. In Virginia Beach, philosophical considerations are clearly more strongly in the mix than in Gaston.

There are several factors that may help explain why these two areas have distinctly different opinions about the pipeline. One set of factors would be distinct socio-

demographic differences. For instance, the average length of residence in the Gaston area is twenty-five, while in Virginia Beach, the average was fifteen. Virginia Beach is a more transient area, which may explain why some residents are neutral in their decision. It seems reasonable to assume that the longer persons live in an area, the more attached to the area they are and the more likely they will be opposed to “outsiders” coming in and taking valued resources. Furthermore, as we have seen, there is also a difference in the levels of education. Residents in Virginia Beach have completed more years of formal schooling than have respondents from the Gaston area. These higher levels of education may help explain why the average scores on the environmental concern and NEP scale are higher in Virginia Beach. Higher levels of education may affect type of jobs as well as increase the likelihood of being introduced to environmental concepts that part of the NEP scale as well as part of the environmental concern questions. Yet, in terms of regional comparisons, the population with more formal education is the one expressing less concern about potential ecological issues connected with the pipeline.

There are other demographic differences between the two areas that might account for the differences in their attitudes toward the pipeline. Virginia Beach is a large, growing resort area. The Lake Gaston population is small. In Gaston, small size and population stability contribute to a sense of community. This may help explain why Gaston residents are uniformly against the pipeline. While Virginia Beach residents are more transient and spread out, their responses are not so uniform.

Other rural and urban distinctions may also be factors that account for the differences. Kenneth Tremblay and Riley Dunlap argue that, “recent data suggest that there are moderate differences between rural and urban residents” (1978:475). Tremblay and Dunlap note that such studies have, “generally found urban residents to be somewhat more

concerned about environmental problems than are rural residents” (475). The explanation for this phenomena is mixed with the fact that urban residents are more likely to be exposed to more serious environmental hazards. Then too, since so many rural occupations involve the routine exploitation of nature and the direct use of natural resources, what others call “environmental issues” may be viewed merely as “making a living” by rural residents. It is not surprising then that Virginia Beach residents score higher on average on the environmental concern scale than do the Gaston residents. What is surprising in this regard is that most Virginia Beach residents are still for the pipeline. Even though they score higher on environmental concern, the beneficiaries of the pipeline project do not seem to perceive any environmental issues at stake. .

Another possible factor that may have an effect on these two areas is the different roles the citizens of each area take. Rhyne and White remind us that “a person’s general outlook is never the product of just one role even though there are those times when one role and its attendant attitudes may overwhelm most or all others” (3). In this case, those respondents around the Gaston area are responding to the role of citizen of Lake Gaston, North Carolina. Their role as citizens of Lake Gaston overwhelms all other roles. Roles of the respondents in Virginia Beach are likely more variant. They are more likely to respond to many differing and in this case conflicting roles such as citizens of Virginia Beach as well as “environmentalists.” These differing roles that Virginia Beach residents are responding to may help explain what would be considered inconsistencies.

Whatever the reasons, those who profit from the proposed pipeline tend to support it regardless of their general environmental stance. Such inconsistencies have been noted *in passing* by other researchers. Scott and Willits, for example, tell us that it “seems likely that not all persons who espouse support for the new environmental paradigm will

consistently engage in behaviors congruent with these ideas” (1994:240). Previous studies also show that despite the fact that people express a relatively high level of concern about the environment, they engage in few environmentally oriented behaviors (Maloney and Ward, 1973; Ostman and Parker, 1987; Smythe and Brook, 1980; Dunlap, 1989, 1991). This present study suggests that such incongruent behavior is best explained by examining the economic and political context and the practical events that may or may not impact on respondents’ lives. In this instance, the pipeline project portends very different effects for residents of the two regions and attitudes about it are shaped primarily in terms of these presumed effects.

Another distinction between these two areas that may help explain their differing reactions to the pipeline is the distinction between the view of the physical environment as “sustenance” or as “home”. Following the cue of Schnaiberg (1980:10-12), Rhyne and White describe the “home” concern as involving “those times in which concern is first of all with safety, comfort, and the beauty of the surroundings” (4). “Sustenance” concerns are those which focus on the environment as a “source for goods needed for food, clothing, and shelter, or as a place in which to be safe, comfortable and entertained” (4). This distinction seems especially applicable to the Lake Gaston Pipeline issue. The residents of Gaston are more likely to respond to the sustenance orientation, while Virginia Beach residents are more likely to respond to the “home” orientation. These distinctions are bolstered by the types of occupations in the two areas. More farmers and people who work with raw materials were found in the Gaston area, while Virginia Beach residents were more likely to be teachers and military personnel. These differing orientations may lead to differences in the mix of environmental concerns and attitudes about issues.

\ Intertwined throughout this research are the many social and economic differences between the two areas. Perhaps, the most telling distinction is the perceived cost of the project to each area and how these perceived costs add to regionalism. On the one hand, Gaston residents stand to pay the greater price from the construction of the pipeline. They will be the ones who may suffer lower water levels, less boat access, loss of a valuable resource. This has united the citizenry surrounding the area. Gaston residents see Virginia Beach as the “outsiders” coming in to take advantage of the smaller Gaston. Citizens of Gaston are more united because of they are part of a small community, they believe they bear the “cost” of the pipeline construction — the loss of their water, and they face a common enemy — big-city outsiders.

On the other hand, as *The Virginian-Pilot* reports, “the most obvious beneficiary of the pipeline is Virginia Beach, which can continue development and attract major businesses it couldn’t have served before” (4/28/95:B2). Virginia Beach residents are more likely to focus on the costly alternatives to Gaston’s water, such as severe water restrictions or the use of desalinization plants. Virginia Beach residents are less united, not only because of the size of the area and the diversity of its citizens, but by the presumed lack of alternatives to the project. Much debate has gone on about the impact on the environment and the increased cost of water. These factors have left the citizens more confused about their stance on the issue. This is reflected in the large number of neutral positions.

Although this research is the only study to use the NEP scale in a specific social context, the findings do relate indirectly to other environmental research. For example, the work done by William Freudenberg and Susan Pastor (1992) and Marten Wolsink (1994) on the NIMBY (not-in-my-backyard) movement has several parallels to the present

research. In the Lake Gaston area, residents are not concerned for the welfare of the residents of Virginia Beach. They are not interested with the well-being of residents in the surrounding community and their primary concern is not the impact of the environment. Rather, their concern is with how the pipeline will affect them as Lake Gaston citizens. Similarly, those of the NIMBY movement, are focused solely on the impact to their community. Wolsink argues that, “the basic idea behind it is the ‘theory’ of people defending their own backyard without recognizing the needs of society as a whole, it is called the NIMBY instrument” (1994:851). Freudenberg and Pastor go on to argue that residents in such debates, “tend to see only the location, not the technology, as problematic” (1992:40). Similarly, this is where the residents of Lake Gaston focused their attention. One respondent from Gaston declared, “why don’t they build a pipeline and get it (the water) from their own state.”

The present research could not have been more timely. It came at a critical period when the eyes of the media were directly focused on the Lake Gaston controversy. Talk about environmental issue filled the newspapers and the television. Much has been written about the issues and several public hearings have focused the continuous clamorous debate. The issue at stake, therefore, is not abstract or remote for most residents affected by the project. The majority are clearly aware of the project and have decided views about it. The results of my research strongly suggest that for most people it is presumed regional interest which has the greatest impact on their opinion about the practical issues.

VII. FURTHER RESEARCH

This research project represents a significant but limited start in the exploration of some current environmental issues. The instrument used in the interviews was a direct adoption of one developed by Van Liere and Catton for their research concerning the NEP and environmental concern. The reasons for replicating their instrument are compelling but the findings might have been enhanced if the questions had been expanded and modified. The wording of some questions clearly confused most respondents and more questions concerning environmental concern would have been desirable.

A more elaborated questionnaire would likely have required a mail survey rather than the telephone interviews. A mail survey might have gotten more candid responses to some relatively difficult and probing questions. For example, more information might have been gathered regarding income, race, religion and political affiliation. Data regarding such variables could be valuable in better understanding respondents, but it seems likely that none of these would be as salient as area of residence. The present study strongly suggests that area of residence would still be the most important variable in the decision on the pipeline. Furthermore, a mail survey might yield a much smaller return. The telephone interviews at least provided a quick and useful method of eliciting opinions of persons who might very well ignore a mailed questionnaire.

A larger sample size would possibly have been in order. It might be argued that fifty respondents from the Gaston area represents too small a sample. The uniformity of report, however, suggests that these fifty very likely are speaking for the larger community. Finally, a forced-choice format might have made patterns more apparent.

The instrument might have made it harder for the respondents to answer “neutral” on the pipeline. Asking them whether they were more for it or more against it, may have revealed important tendencies obscured by allowing them the neutral alternative.

VIII. IMPORTANCE OF THIS RESEARCH

In spite of its obvious limitations, this research is important for several reasons. In the first place, it deals with a timely and significant social situation. The Lake Gaston issue is particularly interesting because of the publicity it has received, the extent of vested interests involved, the bipolar attitudes, and the amount of time, money and resources invested. All this makes it the very kind of issue that sociology must address. Shirley Bradway Laska, in her article, “Environmental Sociology and the State of the Discipline,” argues that, “seeking a greater role in addressing societal problems is particularly important, enhancing both disciplinary scholarship and its relevancy” (1993:1). She goes on to say that, “the demand for knowledge about the relationship between humans and the environment is placing sociology front and center in society’s desire to find solutions” (3). After all, “environmental problems are causing nonsociologists to consider the social, human organizational aspects of societal problems in ways that no other societal problem has been able to do” (11). The environmental issues dealt with in this project should be important to sociology because they are of concern to the general public and have a significant impact on society.

Secondly, the project provides a concrete study of social reactions of two distinct populations to immediate ecological limitations. The Lake Gaston issue revolves around

Virginia Beach's lack of water resources and Gaston's potential loss of their present resources. It provides an illustration of how the physical environment has a direct effect on human activities, and how in turn human activities effect the environment. This is exactly the sort of study that must be pursued in environmental sociology, viz., a study of ecological limitations and how those limitations affect society. In this instance, residents of the two regions define "the problem" and see "the solution" in totally divergent ways. The study shows the wisdom of Dunlap and Catton when they argue that, "not only must environmental sociologists recognize the complex manner in which environmental conditions influence human behavior and social organization, they must also recognize an even more fundamental source of complexity in societal-environmental relationships: namely, that such relationships are reciprocal, for not only does the environment affect humans, but clearly humans have a significant effect upon their environment" (1983:127). The present study shows (a) how the same ecological conditions can be perceived in totally divergent ways by different populations, and (b) how people tend to evaluate the impact of proposed ecological actions in terms of presumed regional advantages. The findings strongly suggest that economics and regionalism are especially important in understanding the relationships between society and the environment.

Thirdly, much of the literature about current environmental issues focuses on the need for a change in belief systems and values in order to get off the path of further environmental degradation (e.g., Starhawk, Commoner, Ehrlich, etc). This study tests this very assumption, i.e., that the way people see their relationship with the environment is primarily determined by the ideological paradigm they hold. The findings indicate that economic interests can be significantly more salient than belief systems in determining opinions about specific environmental issues. The project demonstrates a need for much

more research regarding the decision making process that goes on when people are affected by an environmental issue. It is one thing for researchers to sample opinions about the environment when there are no immediate practical economic interests at stake, and quite another when there are. More research is needed interlinking questions about general environmental concern, NEP questions as well as very specific questions about particular pressing regional issues and interests. This project represents a step in that direction. It is hoped that it might add to the growing body of knowledge regarding the interplay of paradigms, economic interests and regionalism on defining environmental issues and determining solutions.

APPENDIX I- QUESTIONNAIRE

THE PRIMARY SOURCE OF ENVIRONMENTAL CONCERN: NEW ENVIRONMENTAL PARADIGM OR PRESUMED VESTED INTEREST BASED ON AREA OF RESIDENCE?

First I need some general information

**Area of residence _____ How long have you lived in the area? _____

**Sex _____

What is your occupation? _____

What was your last level of school finished

- _____ Grade School
- _____ High School
- _____ College
- _____ Graduate school
- _____ An advanced degree
- _____ Other

II. NEP Scale:

Now I would like to get your opinion on a wide range of important social, political, and economic issues facing the United States. Please indicate the extent to which you strongly agree, agree, are neutral, disagree or strongly disagree with the following statements.

1. We are approaching the limit of the number of people the earth can support. _____

2. The balance of nature is very delicate and easily upset

_____.

3. Humans have the right to modify the natural environment to suit their needs. _____

4. Mankind was created to rule over the rest of nature.

5. When humans interfere with nature it often produces disastrous consequences. _____

6. Plants and animals exist primarily to be used by humans.

7. In the past 300 years, the U. S. economy and industry have been expanding and growing - building more and more new factories, stores, etc., and using more and more natural resources. In the future we will have to change, and limit or reduce the amount of growth. _____

8. Humans must live in harmony with nature in order to survive. _____

9. The earth is like a spaceship with only limited room and resources. _____

10. Humans need not adapt to the natural environment because they can remake it to suit their needs. _____

11. There are limits to growth beyond which our industrialized society cannot exist. _____

12. Mankind is severely abusing the environment. _____

III. General Concern for Environment:

13. There has been too much emphasis on conserving natural resources, and not enough on utilizing them, in recent years.

14. Anti-pollution laws should be enforced more strongly.

15. Environmental problems are far more serious than most people think _____

IV. The Lake Gaston Issue:

Now I would like to get your opinion on a specific environmental issue, which is of concern to residents of both Virginia and North Carolina, namely the Lake Gaston water pipeline construction. Please indicate the extent to which you strongly agree, agree, are neutral, disagree or strongly disagree with the following statements.

16. The main reasons for being for or against the Lake Gaston pipeline is its economic impact. _____

17. The main reasons for being for or against the Lake Gaston pipeline is its environmental impact. _____

18. Are you for or against the Lake Gaston water pipeline construction? _____

Your contribution to this study is greatly appreciated. Thank you for your time and cooperation.

APPENDIX II. CONTINGENCY TABLES

**TABLE 1. PIPELINE STANCE AND
AREA OF RESIDENCE**

Observed Frequencies for PIPE, AREA

	VB	NC	Totals
AG	20	41	61
N	31	6	37
FOR	51	4	55
Totals	102	51	153

Percents of Row Totals for PIPE, AREA

	VB	NC	Totals
AG	32.787	67.213	100.000
N	83.784	16.216	100.000
FOR	92.727	7.273	100.000
Totals	66.667	33.333	100.000

Summary Table for PIPE, AREA

Num. Missing	0
DF	2
Chi Square	53.196
Chi Square P-Value	<.0001
G-Squared	56.119
G-Squared P-Value	<.0001
Contingency Coef.	.508
Cramer's V	.590

AG= AGAINST PIPELINE
N= NEUTRAL STANCE
FOR= FOR PIPELINE

VB= VIRGINIA BEACH
NC= LAKE GASTON AREA

**TABLE 2. PIPELINE STANCE AND
NEP SCORES**

Observed Frequencies for PIPE, NEP2

	HI	MID	LO	Totals
AG	14	34	13	61
N	5	28	4	37
FOR	10	29	16	55
Totals	29	91	33	153

Percents of Row Totals for PIPE, NEP2

	HI	MID	LO	Totals
AG	22.951	55.738	21.311	100.000
N	13.514	75.676	10.811	100.000
FOR	18.182	52.727	29.091	100.000
Totals	18.954	59.477	21.569	100.000

Summary Table for PIPE, NEP2

Num. Missing	0
DF	4
Chi Square	6.736
Chi Square P-Value	.1505
G-Squared	6.964
G-Squared P-Value	.1378
Contingency Coef.	.205
Cramer's V	.148

HI= NEP SCORE BETWEEN 51-60

MID= NEP BETWEEN 41-55

LO= NEP SCORE BELOW 41

AG=AGAINST PIPELINE

N= NEUTRAL STANCE

FOR=FOR PIPELINE

**TABLE 3. PIPELINE AND NEP SCORE
SPLIT BY VIRGINIA BEACH**

Observed Frequencies for PIPE, NEP2
Split By: AREA
Cell: VB

	HI	MID	LO	Totals
AG	11	8	1	20
N	5	24	2	31
FOR	10	26	15	51
Totals	26	58	18	102

Percents of Row Totals for PIPE, NEP2
Split By: AREA
Cell: VB

	HI	MID	LO	Totals
AG	55.000	40.000	5.000	100.000
N	16.129	77.419	6.452	100.000
FOR	19.608	50.980	29.412	100.000
Totals	25.490	56.863	17.647	100.000

Summary Table for PIPE, NEP2
Split By: AREA
Cell: VB

Num. Missing	0
DF	4
Chi Square	20.219
Chi Square P-Value	.0005
G-Squared	19.378
G-Squared P-Value	.0007
Contingency Coef.	.407
Cramer's V	.315

HI= NEP SCORE BETWEEN 51-60
MID= NEP BETWEEN 41-55
LO= NEP SCORE BELOW 41

AG=AGAINST PIPELINE
N= NEUTRAL STANCE
FOR=FOR PIPELINE

**TABLE 4. PIPELINE STANCE AND
NEP SCORE BY LAKE GASTON AREA**

Observed Frequencies for PIPE, NEP2
Split By: AREA
Cell: NC

	HI	MID	LO	Totals
AG	3	26	12	41
N	0	4	2	6
FOR	0	3	1	4
Totals	3	33	15	51

Percents of Row Totals for PIPE, NEP2
Split By: AREA
Cell: NC

	HI	MID	LO	Totals
AG	7.317	63.415	29.268	100.000
N	0.000	66.667	33.333	100.000
FOR	0.000	75.000	25.000	100.000
Totals	5.882	64.706	29.412	100.000

Summary Table for PIPE, NEP2
Split By: AREA
Cell: NC

Num. Missing	0
DF	4
Chi Square	.869
Chi Square P-Value	.9289
G-Squared	•
G-Squared P-Value	•
Contingency Coef.	.129
Cramer's V	.092

HI= NEP SCORE BETWEEN 51-60
MID= NEP BETWEEN 41-55
LO= NEP SCORE BELOW 41

AG=AGAINST PIPELINE
N= NEUTRAL STANCE
FOR=FOR PIPELINE

**TABLE 5. NEP SCORES AND
AREA OF RESIDENCE**

Observed Frequencies for NEP2, AREA

	VB	NC	Totals
HI	26	3	29
MID	58	33	91
LO	18	15	33
Totals	102	51	153

Percents of Row Totals for NEP2, AREA

	VB	NC	Totals
HI	89.655	10.345	100.000
MID	63.736	36.264	100.000
LO	54.545	45.455	100.000
Totals	66.667	33.333	100.000

Summary Table for NEP2, AREA

Num. Missing	0
DF	2
Chi Square	9.430
Chi Square P-Value	.0090
G-Squared	10.813
G-Squared P-Value	.0045
Contingency Coef.	.241
Cramer's V	.248

HI= NEP SCORE BETWEEN 51-60

MID= NEP BETWEEN 41-55

LO= NEP SCORE BELOW 41

VB= VIRGINIA BEACH

NC= LAKE GASTON AREA

**TABLE 6. LENGTH OF RESIDENCY
AND AREA**

Observed Frequencies for LGTH3, AREA

	VB	NC	Tot...
HI	49	42	91
MID	22	3	25
LO	31	6	37
Tot...	102	51	153

Percents of Row Totals for LGTH3, AREA

	VB	NC	Totals
HI	53.846	46.154	100.000
MID	88.000	12.000	100.000
LO	83.784	16.216	100.000
Totals	66.667	33.333	100.000

Summary Table for LGTH3, AREA

Num. Missing	0
DF	2
Chi Square	16.729
Chi Square P-Value	.0002
G-Squared	18.014
G-Squared P-Value	.0001
Contingency Coef.	.314
Cramer's V	.331

HI= RESIDENCE OF MORE THAN 10YRS
MID=RESIDENCE BETWEEN 6-10 YRS
LO=RESIDENCE LESS THAN 6 YEARS

**TABLE 7. PIPELINE STANCE AND
LENGTH OF RESIDENCY**

Observed Frequencies for PIPE, LGTH3

	HI	MID	LO	Totals
AG	45	7	9	61
N	12	10	15	37
FOR	34	8	13	55
Totals	91	25	37	153

Percents of Row Totals for PIPE, LGTH3

	HI	MID	LO	Totals
AG	73.770	11.475	14.754	100.000
N	32.432	27.027	40.541	100.000
FOR	61.818	14.545	23.636	100.000
Totals	59.477	16.340	24.183	100.000

Summary Table for PIPE, LGTH3

Num. Missing	0
DF	4
Chi Square	16.617
Chi Square P-Value	.0023
G-Squared	16.720
G-Squared P-Value	.0022
Contingency Coef.	.313
Cramer's V	.233

AG=AGAINST THE PIPELINE

N= NEUTRAL STANCE

FOR= FOR PIPELINE

HI= RESIDENCE OF MORE THAN 10YRS

MID=RESIDENCE OF BETWEEN 6AND10YRS

LO= RESIDENCE OF LESS THAN 6 YEARS

**TABLE 8. PIPELINE STANCE AND
LENGTH OF RESIDENCY BY
VIRGINIA BEACH**

Observed Frequencies for PIPE, LGTH3
Split By: AREA
Cell: VB

	HI	MID	LO	Totals
AG	10	5	5	20
N	8	9	14	31
FOR	31	8	12	51
Totals	49	22	31	102

Percents of Row Totals for PIPE, LGTH3
Split By: AREA
Cell: VB

	HI	MID	LO	Totals
AG	50.000	25.000	25.000	100.000
N	25.806	29.032	45.161	100.000
FOR	60.784	15.686	23.529	100.000
Totals	48.039	21.569	30.392	100.000

Summary Table for PIPE, LGTH3
Split By: AREA
Cell: VB

Num. Missing	0
DF	4
Chi Square	9.865
Chi Square P-Value	.0428
G-Squared	10.171
G-Squared P-Value	.0376
Contingency Coef.	.297
Cramer's V	.220

AG= AGAINST THE PIPELINE
N= NEUTRAL STANCE
FOR= FOR PIPELINE

HI= RESIDENCE OF MORE THAN 10 YRS
MID= RESIDENCE BETWEEN 6 AND 10 YRS
LO= RESIDENCE OF LESS THAN 6 YRS

**TABLE 9. PIPELINE STANCE AND
LENGTH OF RESIDENCE
BY LAKE GASTON**

Observed Frequencies for PIPE, LGTH3
Split By: AREA
Cell: NC

	HI	MID	LO	Totals
AG	35	2	4	41
N	4	1	1	6
FOR	3	0	1	4
Totals	42	3	6	51

Percents of Row Totals for PIPE, LGTH3
Split By: AREA
Cell: NC

	HI	MID	LO	Totals
AG	8.5E1	4.878	9.756	100.000
N	6.7E1	16.667	16.667	100.000
FOR	75	0.000	25.000	100.000
Totals	8.2E1	5.882	11.765	100.000

Summary Table for PIPE, LGTH3
Split By: AREA
Cell: NC

Num. Missing	0
DF	4
Chi Square	2.601
Chi Square P-Value	.6266
G-Squared	•
G-Squared P-Value	•
Contingency Coef.	.220
Cramer's V	.160

AG= AGAINST THE PIPELINE
N= NEUTRAL STANCE
FOR= FOR PIPELINE

HI= RESIDENCE OF MORE THAN 10 YRS
MID= RESIDENCE BETWEEN 6 AND 10 YRS
LO= RESIDENCE OF LESS THAN 6 YRS

TABLE 10. LEVEL OF SCHOOLING
AND AREA OF RESIDENCE

Observed Frequencies for SCHOOL, AREA

	VB	NC	Totals
0	1	0	1
1	23	24	47
2	52	17	69
3	26	10	36
Totals	102	51	153

Percents of Row Totals for SCHOOL, AREA

	VB	NC	Totals
0	100.000	0.000	100.000
1	48.936	51.064	100.000
2	75.362	24.638	100.000
3	72.222	27.778	100.000
Totals	66.667	33.333	100.000

Summary Table for SCHOOL, AREA

Num. Missing	0
DF	3
Chi Square	9.997
Chi Square P-Value	.0186
G-Squared	•
G-Squared P-Value	•
Contingency Coef.	.248
Cramer's V	.256

0= GRADE SCHOOL
1= HIGH SCHOOL
2= COLLEGE
3= GRAD SCHOOL

TABLE 11. PIPELINE STANCE AND
LEVEL OF SCHOOLING

Observed Frequencies for PIPE, SCHOOL

	0	1	2	3	Totals
AG	0	26	21	14	61
N	0	7	25	5	37
FOR	1	14	23	17	55
Totals	1	47	69	36	153

Percents of Row Totals for PIPE, SCHOOL

	0	1	2	3	Totals
AG	0.000	42.623	34.426	22.951	100.000
N	0.000	18.919	67.568	13.514	100.000
FOR	1.818	25.455	41.818	30.909	100.000
Totals	.654	30.719	45.098	23.529	100.000

Summary Table for PIPE, SCHOOL

Num. Missing	0
DF	6
Chi Square	15.442
Chi Square P-Value	.0171
G-Squared	•
G-Squared P-Value	•
Contingency Coef.	.303
Cramer's V	.225

0= GRADE SCHOOL

1= HIGH SCHOOL

2= COLLEGE

3= GRAD SCHOOL

AG= AGAINST PIPELINE

N= NEUTRAL STANCE

FOR= FOR PIPELINE

TABLE 12. PIPELINE STANCE AND ENVIRONMENTAL CONCERN LEVEL

Observed Frequencies for PIPE, CRNHI/LO

	LO	HI	Totals
AG	25	36	61
N	12	25	37
FOR	26	29	55
Totals	63	90	153

Percents of Row Totals for PIPE, CRNHI/LO

	LO	HI	Totals
AG	40.984	59.016	100.000
N	32.432	67.568	100.000
FOR	47.273	52.727	100.000
Totals	41.176	58.824	100.000

Summary Table for PIPE, CRNHI/LO

Num. Missing	0
DF	2
Chi Square	2.013
Chi Square P-Value	.3655
G-Squared	2.035
G-Squared P-Value	.3615
Contingency Coef.	.114
Cramer's V	.115

AG= AGAINST THE PIPELINE

N= NEUTRAL STANCE

FOR= FOR PIPELINE

HI= CONCERN LEVEL MORE THAN 10

LO= CONCERN LEVEL 10 OR LESS

TABLE 13. PIPELINE STANCE AND ENVIRONMENTAL CONCERN FOR VIRGINIA BEACH

Observed Frequencies for PIPE, CRNHI/LO
Split By: AREA
Cell: VB

	LO	HI	Totals
AG	3	17	20
N	9	22	31
FOR	25	26	51
Totals	37	65	102

Percents of Row Totals for PIPE, CRNHI/LO
Split By: AREA
Cell: VB

	LO	HI	Totals
AG	15.000	85.000	100.000
N	29.032	70.968	100.000
FOR	49.020	50.980	100.000
Totals	36.275	63.725	100.000

Summary Table for PIPE, CRNHI/LO
Split By: AREA
Cell: VB

Num. Missing	0
DF	2
Chi Square	8.203
Chi Square P-Value	.0165
G-Squared	8.675
G-Squared P-Value	.0131
Contingency Coef.	.273
Cramer's V	.284

AG= AGAINST THE PIPELINE
N= NEUTRAL STANCE
FOR= FOR PIPELINE

HI= RESIDENCE OF MORE THAN 10 YRS
MID= RESIDENCE BETWEEN 6 AND 10 YRS
LO= RESIDENCE OF LESS THAN 6 YRS

TABLE 14. PIPELINE STANCE AND ENVIRONMENTAL CONCERN LEVEL FOR LAKE GASTON AREA

Observed Frequencies for PIPE, CRNHI/LO
 Split By: AREA
 Cell: NC

	LO	HI	Totals
AG	22	19	41
N	3	3	6
FOR	1	3	4
Totals	26	25	51

Percents of Row Totals for PIPE, CRNHI/LO
 Split By: AREA
 Cell: NC

	LO	HI	Totals
AG	53.659	46.341	100.000
N	50.000	50.000	100.000
FOR	25.000	75.000	100.000
Totals	50.980	49.020	100.000

Summary Table for PIPE, CRNHI/LO
 Split By: AREA
 Cell: NC

Num. Missing	0
DF	2
Chi Square	1.200
Chi Square P-Value	.5487
G-Squared	1.247
G-Squared P-Value	.5362
Contingency Coef.	.152
Cramer's V	.153

AG= AGAINST THE PIPELINE
 N= NEUTRAL STANCE
 FOR= FOR PIPELINE

HI= RESIDENCE OF MORE THAN 10 YRS
 MID= RESIDENCE BETWEEN 6 AND 10 YRS
 LO= RESIDENCE OF LESS THAN 6 YRS

TABLE 15. PIPELINE STANCE
AND GENDER

Observed Frequencies for PIPE, SEX

	F	M	Totals
AG	33	28	61
N	24	13	37
FOR	28	27	55
Totals	85	68	153

Percents of Row Totals for PIPE, SEX

	F	M	Totals
AG	54.098	45.902	100.000
N	64.865	35.135	100.000
FOR	50.909	49.091	100.000
Totals	55.556	44.444	100.000

Summary Table for PIPE, SEX

Num. Missing	0
DF	2
Chi Square	1.832
Chi Square P-Value	.4001
G-Squared	1.856
G-Squared P-Value	.3954
Contingency Coef.	.109
Cramer's V	.109

AG= AGIANST THE PIPELINE

N= NEUTRAL STANCE

FOR = FOR THE PIPELINE

M= MALE

F= FEMALE

**TABLE 16. PIPELINE STANCE
AND OCCUPATION**

Observed Frequencies for PIPE, JOB

	1	2	3	Totals
AG	21	39	1	61
N	8	28	1	37
FOR	24	31	0	55
Totals	53	98	2	153

Percents of Row Totals for PIPE, JOB

	1	2	3	Totals
AG	34.426	63.934	1.639	100.000
N	21.622	75.676	2.703	100.000
FOR	43.636	56.364	0.000	100.000
Totals	34.641	64.052	1.307	100.000

Summary Table for PIPE, JOB

Num. Missing	0
DF	4
Chi Square	5.706
Chi Square P-Value	.2222
G-Squared	•
G-Squared P-Value	•
Contingency Coef.	.190
Cramer's V	.137

- 1= "THING" JOB
- 2= "PEOPLE" JOB
- 3= NONE

TABLE 17. PIPELINE STANCE AND
THOSE RESIDENTS WHO SCORED
HIGH ON NEP SCALE

Observed Frequencies for PIPE, nepHI

	HI	N..	Totals
AG	14	47	61
N	5	32	37
FOR	10	45	55
Totals	29	##	153

Percents of Row Totals for PIPE, nepHI

	HI	NOT	Totals
AG	22.951	77.049	100.000
N	13.514	86.486	100.000
FOR	18.182	81.818	100.000
Totals	18.954	81.046	100.000

Summary Table for PIPE, nepHI

Num. Missing	0
DF	2
Chi Square	1.369
Chi Square P-Value	.5044
G-Squared	1.400
G-Squared P-Value	.4966
Contingency Coef.	.094
Cramer's V	.095

AG= AGAINST PIPELINE
N = NEUTRAL STANCE
FOR =FOR PIPELINE

HI= SCORE OF 55-60 ON NEP
NOT= SCORE LESS THAN 55

**TABLE 18. PIPELINE STANCE AND
HIGH NEP SCORE FOR
VIRGINIA BEACH**

Observed Frequencies for PIPE, nepHI
Split By: AREA
Cell: VB

	HI	NOT	Totals
AG	11	9	20
N	5	26	31
FOR	10	41	51
Totals	26	76	102

Percents of Row Totals for PIPE, nepHI
Split By: AREA
Cell: VB

	HI	NOT	Totals
AG	55.000	45.000	100.000
N	16.129	83.871	100.000
FOR	19.608	80.392	100.000
Totals	25.490	74.510	100.000

Summary Table for PIPE, nepHI
Split By: AREA
Cell: VB

Num. Missing	0
DF	2
Chi Square	11.530
Chi Square P-Val...	.0031
G-Squared	10.403
G-Squared P-Value	.0055
Contingency Coef.	.319
Cramer's V	.336

AG= AGAINST PIPELINE
N = NEUTRAL STANCE
FOR =FOR PIPELINE

HI= SCORE OF 55-60 ON NEP
NOT= SCORE LESS THAN 55

**TABLE 19. PIPELINE STANCE AND
HIGH NEP SCORE FOR
LAKE GASTON**

Observed Frequencies for PIPE, nepHI
Split By: AREA
Cell: NC

	HI	N...	Totals
AG	3	38	41
N	0	6	6
FOR	0	4	4
Totals	3	48	51

Percents of Row Totals for PIPE, nepHI
Split By: AREA
Cell: NC

	HI	NOT	Totals
AG	7.317	92.683	100.000
N	0.000	100.000	100.000
FOR	0.000	100.000	100.000
Totals	5.882	94.118	100.000

Summary Table for PIPE, nepHI
Split By: AREA
Cell: NC

Num. Missing	0
DF	2
Chi Square	.777
Chi Square P-Value	.6779
G-Squared	•
G-Squared P-Value	•
Contingency Coef.	.123
Cramer's V	.123

AG= AGAINST PIPELINE
N = NEUTRAL STANCE
FOR =FOR PIPELINE

HI= SCORE OF 55-60 ON NEP
NOT= SCORE LESS THAN 55

**TABLE 20. PIPELINE STANCE
AND REASONING**

Observed Frequencies for PIPE, ECON

	DISAGREE	AGREE	Totals
AG	31	30	61
N	28	9	37
FOR	8	47	55
Totals	67	86	153

Percents of Row Totals for PIPE, ECON

	DISAGREE	AGREE	Totals
AG	50.820	49.180	100.000
N	75.676	24.324	100.000
FOR	14.545	85.455	100.000
Totals	43.791	56.209	100.000

Summary Table for PIPE, ECON

Num. Missing	0
DF	2
Chi Square	35.617
Chi Square P-Value	<.0001
G-Squared	38.514
G-Squared P-Value	<.0001
Contingency Coef.	.435
Cramer's V	.482

DISAGREE=CITE ENVIRONMENTAL REASONS
AGREE= CITE ECONOMIC REASONS FOR
PIPELINE STANCE

AG=AGAINST PIPELINE
N= NEUTRAL STANCE
FOR= FOR PIPELINE

TABLE 21. PIPELINE STANCE AND REASONING FOR STANCE IN VIRGINIA BEACH

Observed Frequencies for PIPE, ECON
 Split By: AREA
 Cell: VB

	DISAGREE	AGREE	Totals
AG	13	7	20
N	22	9	31
FOR	8	43	51
Totals	43	59	102

Percents of Row Totals for PIPE, ECON
 Split By: AREA
 Cell: VB

	DISAGREE	AGREE	Totals
AG	65.000	35.000	100.000
N	70.968	29.032	100.000
FOR	15.686	84.314	100.000
Totals	42.157	57.843	100.000

Summary Table for PIPE, ECON
 Split By: AREA
 Cell: VB

Num. Missing	0
DF	2
Chi Square	29.487
Chi Square P-Value	<.0001
G-Squared	31.321
G-Squared P-Value	<.0001
Contingency Coef.	.474
Cramer's V	.538

DISAGREE=CITE ENVIRONMENTAL REASONS
 AGREE= CITE ECONOMIC REASONS FOR
 PIPELINE STANCE

AG=AGAINST PIPELINE
 N= NEUTRAL STANCE
 FOR= FOR PIPELINE

TABLE 22. PIPELINE STANCE AND REASONING BEHIND STANCE IN LAKE GASTON

Observed Frequencies for PIPE, ECON
Split By: AREA
Cell: NC

	DISAGREE	AGREE	Totals
AG	18	23	41
N	6	0	6
FOR	0	4	4
Totals	24	27	51

Percents of Row Totals for PIPE, ECON
Split By: AREA
Cell: NC

	DISAGREE	AGREE	Totals
AG	43.902	56.098	100.000
N	100.000	0.000	100.000
FOR	0.000	100.000	100.000
Totals	47.059	52.941	100.000

Summary Table for PIPE, ECON
Split By: AREA
Cell: NC

Num. Missing	0
DF	2
Chi Square	10.470
Chi Square P-Value	.0053
G-Squared	•
G-Squared P-Value	•
Contingency Coef.	.413
Cramer's V	.453

DISAGREE=CITE ENVIRONMENTAL REASONS
AGREE= CITE ECONOMIC REASONS FOR
PIPELINE STANCE

AG=AGAINST PIPELINE
N= NEUTRAL STANCE
FOR= FOR PIPELINE

TABLE 23. PIPELINE STANCE AND REASONING BEHIND STANCE FOR THOSE WHO SCORE HIGH ON NEP

Observed Frequencies for PIPE, ENVIRO
 Split By: nepHI
 Cell: HI

	DIS	AGREE	Totals
AG	1	13	14
N	2	3	5
FOR	7	3	10
Totals	10	19	29

Percents of Row Totals for PIPE, ENVIRO
 Split By: nepHI
 Cell: HI

	DIS	AGREE	Totals
AG	7.143	92.857	100.000
N	40.000	60.000	100.000
FOR	70.000	30.000	100.000
Totals	34.483	65.517	100.000

Summary Table for PIPE, ENVIRO
 Split By: nepHI
 Cell: HI

Num. Missing	0
DF	2
Chi Square	10.283
Chi Square P-Value	.0058
G-Squared	11.210
G-Squared P-Value	.0037
Contingency Coef.	.512
Cramer's V	.595

AG= AGAINST THE PIPELINE
 N= NEUTRAL STANCE
 FOR= FOR PIPELINE

DISAGREE= CITE ECONOMIC REASONS
 AGREE= CITE ENVIRONMENTAL REASON ,

HI= NEP SCORE BETWEEN 55 AND 60

**TABLE 24. PIPELINE STANCE
AND REASONING BEHIND STANCE
FOR THOSE WHO SCORED LOW ON NEP**

Observed Frequencies for PIPE, ENVIRO
Split By: nepHI
Cell: NOT

	DIS	AGREE	Totals
AG	13	34	47
N	20	12	32
FOR	33	12	45
Totals	66	58	124

Percents of Row Totals for PIPE, ENVIRO
Split By: nepHI
Cell: NOT

	DIS	AGREE	Totals
AG	27.660	72.340	100.000
N	62.500	37.500	100.000
FOR	73.333	26.667	100.000
Totals	53.226	46.774	100.000

Summary Table for PIPE, ENVIRO
Split By: nepHI
Cell: NOT

Num. Missing	0
DF	2
Chi Square	20.753
Chi Square P-Value	<.0001
G-Squared	21.419
G-Squared P-Value	<.0001
Contingency Coef.	.379
Cramer's V	.409

AG= AGAINST THE PIPELINE
N= NEUTRAL STANCE
FOR= FOR PIPELINE

DISAGREE= CITE ECONOMIC REASONS
AGREE= CITE ENVIRONMENTAL REASON

NOT= NEP SCORE BELOW 55

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