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Assessing the Acceptance of the New Environmental Paradigm in Kalamazoo County, Michigan

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ASSESSING THE ACCEPTANCE OF THE NEW ENVIRONMENTAL PARADIGM IN KALAMAZOO COUNTY, MICHIGAN

by

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Since the first Earth Day in 1970, there has been an expanding popular movement to protect the environment and a growing consciousness that humans are an integral part of nature. The New Environmental Paradigm (NEP) is a worldview that emphasizes the relationship that exists between humans and the environment. The purpose of this Master's Thesis is to assess Kalamazoo County, Michigan residents' attitudes on the environment based on their acceptance of the NEP. The acceptance of the NEP by Kalamazoo County residents was evaluated by residents' responses on a survey developed to measure their environmental attitudes. Kalamazoo County was found to have an overall pro-environmental attitude. The assessment of the acceptance of an environmental viewpoint in Kalamazoo County will help to provide baseline data on environmental attitudes of the county's residents. The study can help those interested in promoting environmental policies and plans in the county target certain groups of people who may be more supportive of their ideas.

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CHAPTER I

INTRODUCTION

Environmentalism has become a growing outlook among the American public since the first Earth Day in 1970. The New Environmental Paradigm (NEP) is a worldview that emphasizes the relationship that exists between humans and their environment. Dunlap and Van Liere originally developed a scale in 1978, which was revised in 2000 (Dunlap et al.), called the New Environmental Paradigm scale. The NEP scale has been used to measure the acceptance of this environmental worldview among a variety of different groups of individuals (Albrecht et al., 1982; Geller and Lasley, 1985; Arcury, 1990; Noe and Snow, 1990; Shetzer et al., 1991; Furman, 1998). The NEP is used in this study to assess Kalamazoo County residents' attitudes regarding the environment.

A study was conducted on a sample of 400 Kalamazoo County residents. It was conducted at seven Harding's grocery stores across the county (Table 1). The survey contained fifteen statements from the 2000 NEP scale, seven questions about socio-economic variables, and five questions on their environmental actions, as well as a map in which respondents were asked to indicate where they live.

The purpose of this study was to determine if there were differences in the acceptance of the NEP with respect to the different socio-economic variables and geographic location. Any differences between residents' attitudes about the environment and environmental actions they actually engaged in were also assessed. As found in previous studies, it was hypothesized that the young, well-educated, wealthy, and

Table 1

Locations of Harding's Grocery Stores Surveyed

Date Surveyed	Harding's Location	Number of people surveyed
7/30/02	8900 Gull Road, Richland, MI 49083	60
8/1/02	54 West Michigan, Galesburg, MI 49053	37
8/6/02	3750 West Centre, Portage, MI 49024	68
8/8/02	6430 West Michigan, Oshtemo, MI 49009	68
8/15/02	54 West Michigan, Galesburg, MI 49053	31
8/20/02	2626 East Main, Kalamazoo, MI 49048	68
8/23/02	139 Grand, Schoolcraft, MI 49087	68

politically liberal respondents in the Kalamazoo sample would be the most "environmentally friendly" (Caron, 1989; Arcury and Christianson, 1990; Schahn and Holzer, 1990; Scott and Willits, 1994). My research was a significant study involving the discipline of geography, as different areas of the county were analyzed to see if there was a difference in acceptance of the NEP across the county. Results of this study are also compared to the results of previous studies done on the NEP scale at different locations throughout the country and the world.

This assessment of the acceptance of an environmental worldview in Kalamazoo County will help provide baseline data on environmental attitudes, since no other similar study exists for the area. Kalamazoo, like many older cities in the United States, has its share of environmental problems both past and present. This study can help those interested in promoting environmental policies and plans in the county identify certain groups of people who may be more supportive of their ideas. It will also help them target

certain groups that may need more education regarding environmental ideas and issues and help them become more informed.

CHAPTER II

GROWING ENTHUSIASM FOR ENVIRONMENTAL PROTECTION

Increasing Environmental Awareness and Knowledge

As the air, water, and resources of planet Earth become more threatened, the economic and political problems associated with slowing or reversing environmental degradation become ever more prominent in potential solutions (Shultz and Stone, 1994). Over the last twenty years, there has been an expanding movement to protect the environment and a growing consciousness that humans are an integral part of nature (Noe and Snow, 1990; Jones and Dunlap, 1992; Shultz and Stone, 1994; Roberts and Bacon, 1997). Public opinion polls show overwhelming support for protection of the environment (Dunlap and Scarce, 1991; Thompson and Barton, 1994; Zimmerman, 1996; Roberts and Bacon, 1997), yet changes to environmental behaviors and subsequent improvements to our environment have not come at the pace once anticipated.

Promoters of increased environmental awareness assume that increased information leads to increased knowledge about the environment (Arcury, 1990; Zimmerman, 1996). As a result of this view, there has been a large quantity of information delivered to the public regarding the environment. Arcury (1990) suggests that increased knowledge is a precondition for changing attitudes. Environmental educators seek to create knowledgeable individuals who are motivated by this knowledge to work toward a more livable world through the understanding that the human relationship with the environment is reciprocal (Arcury, 1990; Zimmerman, 1996; Ma and Bateson, 1999). Improvement comes when people fully realize they are accountable

for their actions and impacts and stop placing a large share of the blame on large corporations.

While there is often a strong verbal endorsement by the general public of making lifestyle changes to protect the environment, this does not always seem to be effectively translated into actions intended to conserve resources (Thompson and Barton, 1994; Shultz and Oskamp, 1996; Olli et al., 2001). One explanation for this lack of connection between attitudes and actions is the sacrifice and inconvenience involved in reducing consumption and in attending to the consequences of purchases (Thompson and Barton, 1994). Nevertheless, it seems likely that those who hold the most supportive attitudes would be more inclined than those with less supportive attitudes to act in ways that protect the environment (Scott and Willits, 1994).

A Possible Paradigmatic Shift in Worldview

The concept of a paradigm was originally developed by Kuhn (1970), but has been extended by social scientists to define the Dominant Social Paradigm (DSP) as a set of common values, beliefs, and shared wisdom about the physical and social environments (Dunlap and Van Liere, 1984). As envisioned by Dunlap and Van Liere, the DSP constitutes a society's basic environmental "worldview". A major theme in the literature on environmental problems in the United States is that such problems stem, in large part, from our society's traditional values, beliefs, and ideologies (Dunlap and Van Liere, 1984). Many Americans share a strong anthropocentric tradition, common in western cultures, in which humans historically have been seen as being apart from or above nature (Albrecht et al., 1982). Thompson and Barton (1994) argue that based on such a view, Americans often feel that the environment should only be protected because

of its value in maintaining or enhancing the quality of life for humans. The elements of the DSP which seem to contribute to the United States' environmental problems include commitment to limited government, support for free enterprise, devotion to private property rights, emphasis on individualism, support for the status quo, faith in the efficacy of science and technology, support for economic growth and faith in future abundance (Albrecht et al., 1982; Dunlap and Van Liere, 1984; Geller and Lasley, 1985; Roberts and Bacon, 1997; Kilbourne et al., 2001).

During the last few decades many scholars argue that a paradigmatic shift has occurred in the public's orientation toward the physical environment (Geller and Lasley, 1985; Arcury et al., 1986). The public's outlook towards the environment has slowly moved from the DSP to the New Environmental Paradigm (NEP) (Albrecht et al., 1982; Dunlap and Van Liere, 1984; Geller and Lasley, 1985; Arcury et al., 1986). The NEP consists of a more ecocentric viewpoint in which individuals support environmental issues because they see nature as worth preserving regardless of the economic or lifestyle implications of conservation (Thompson and Barton, 1994). The main focus of the NEP is on the desirability of restricting growth, protecting the integrity of ecosystems, and living in harmony with nature (Albrecht et al., 1982; Geller and Lasley, 1985; Arcury et al., 1986; Roberts and Bacon, 1997).

The New Environmental Paradigm Scale

To document this hypothesized transformation in American thought from preoccupation with the DSP to a growing awareness and acceptance of the NEP, an instrument was developed by Dunlap and Van Liere in 1978, which they called the New Environmental Paradigm scale. The NEP scale has been widely used and tested as a

measure of environmental worldview (Albrecht et al., 1982; Arcury et al., 1986; Edgell and Nowell, 1989; Noe and Snow, 1990; Roberts and Bacon, 1997; Dunlap et al., 2000). The NEP scale primarily measures basic beliefs about the Earth and about human-environment relations (Stern et al., 1995).

The original NEP scale consisted of twelve Likert-type questions aimed at measuring a person's overall environmental attitudes (Dunlap and Van Liere, 1978). A recently revised NEP scale consists of fifteen Likert-type questions, including six from the original NEP scale, four of which were modified slightly (Dunlap et al., 2000). The scale was revised to have a better balance between pro- and anti-NEP statements, to touch on more facets of environmental worldview, as well as to update outdated terminology that was present in some of the original NEP items and include an "unsure" category to the list of responses (Dunlap et al., 2000). A comparison of the two NEP scales is shown in Table 2. Three items in the revised NEP scale were designed to tap each of the five hypothesized facets of an ecological worldview: the reality of limits of growth (1,6,11), anti-anthropocentrism (2,7,12), the fragility of nature's balance (3,8,13), rejection of exemptionalism (4,9,14), and the possibility of an ecocrisis (5,10,15) (Dunlap et al., 2000). A number of studies done over the past twenty years suggest that the NEP scale has been a relatively reliable and valid instrument for measuring environmental concern across a diverse set of populations in many places throughout the world (Albrecht et al., 1982; Geller and Lasely, 1985; Arcury, 1990; Noe and Snow, 1990; Widegren, 1998; Ewert and Baker, 2001). Therefore, my study does not test the validity of the research instrument. Given its very successful application by the many researchers cited above there is every reason to believe the scale is effective.

Table 2

Comparison of 1978 and 2000 New Environmental Paradigm Scales *

The Original NEP Scale (1978)	The Revised NEP Scale (2000)
1. We are approaching the limit of the number of people the earth can support.	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.	2. Humans have the right to modify the natural environment to suit their needs.
3. Humans have the right to modify the natural environment to suit their needs.	3. When humans interfere with nature it often produces disastrous consequences.
4. Mankind was created to rule over the rest of nature.	4. Human ingenuity will insure that we do NOT make the earth unlivable.
5. When humans interfere with nature it often produces disastrous consequences.	5. Humans are severely abusing the environment.
6. Plants and animals exist primarily to be used by humans.	6. The earth has plenty of natural resources if we just learn how to develop them.
7. To maintain a healthy economy we will have to develop a "steady-state" economy where industrial growth is controlled.	7. Plants and animals have as much right as humans to exist.
8. Humans must live in harmony with nature in order to survive.	8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.
9. The earth is like a spaceship with only limited room and resources.	9. Despite our special abilities humans are still subject to the laws of nature.
10. Humans need not to adapt to the natural environment because they can remake it to suit their needs.	10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.
11. There are limits to growth beyond which our industrialized society cannot expand.	11. The earth is like a spaceship with very limited room and resources.
12. Mankind is severely abusing the environment.	12. Humans were meant to rule over the rest of nature.
	13. The balance of nature is very delicate and easily upset.
* Available responses to the questions in both scales included: Strongly Agree, Mildly Agree, Mildly Disagree, Strongly Disagree, and Unsure (included in 2000 scale only).	14. Humans will eventually learn enough about how nature works to be able to control it.
	15. If things continue on their present course, we will soon experience a major ecological catastrophe.

Sources: Dunlap, and Van Liere, 1978; Dunlap, et al., 2000.

There are many social-economic characteristics that are often studied in conjunction with the level of acceptance of the NEP. In general, age, level of education, income and political ideology have been found to be consistently predictive of environmental attitudes, with the young, well-educated, wealthy, and politically liberal being the most "environmentally friendly" (Caron, 1989; Arcury and Christianson, 1990; Schahn and Holzer, 1990; Scott and Willits, 1994). The relationship between gender and the acceptance of the NEP scale has been shown to be inconsistent across the studies, with some studies reporting a weak to no correlation (Arcury et al., 1986; Arcury and Christianson, 1990; Schahn and Holzer, 1990; Scott and Willits, 1994; Gooch, 1995; Tarrant and Cordell, 1997; Furman, 1998; Ewert and Baker, 2001). Of the studies that included race as a social characteristic variable, African Americans were just as likely to have general pro-environmental attitudes as Whites (Caron, 1989; Sheppard, 1995; Arp and Kenny, 1996; Parker and McDonough, 1999). Studies of other ethnic groups with large populations in the United States such as Hispanic-Americans or Asian-Americans have not been as prevalent and represent a potentially important direction for future research.

The studies previously noted focused on the acceptance of the NEP as a new worldview. They also focused on the comparison of different socio-economic variables to acceptance of the NEP. My study focuses on the acceptance of the NEP, how socio-economic variables affects the acceptance of the NEP, and how the acceptance of the NEP is related to participation in environmental actions. However, since the newer NEP scale is used, it will help to build information specific to the 2000 scale. There has been little research to date using the newer scale. My study is used to find out if results

generated from the 2000 NEP scale are comparable to those resulting from the 1978 scale. My study is also unique, as it looks at the acceptance of an environmental worldview in a county that has historically relied on industry as a main source of income for many of its residents. It also provides a basis for further environmental attitude investigations in the county and, more generally, it helps in determining if residents of a typical county of the Great Lakes region have different perspectives compared to those held by the participants from the other studies.

CHAPTER III

STUDY DESIGN

Kalamazoo County, Michigan

Kalamazoo County is located in the southwestern part of Michigan's lower peninsula (Figure 1), with a population of about 238,000 (U.S. Census Bureau, 2002). The city of Kalamazoo is the county seat and it is the fifth largest metropolitan area in Michigan. Kalamazoo County is situated as a midway point between Detroit and Chicago. Approximately fifteen percent of the land in the county is considered urban.

Industry has long been a major force in Kalamazoo County's economy. Industrial employment claims almost thirty percent of the area's working residents. The county was one of the largest paper producing areas in the United States during the 1880s (Multimag, 1999). The paper industry continued to be an industrial mainstay in the area until the past few years when many of the major companies shut down, creating large, expensive brownfields. The Kalamazoo River, which runs through the county on its way to Lake Michigan, became very polluted due to industrial discharge by the many paper mills and other companies located along the river. This has become one of the infamous environmental issues in the county. Kalamazoo County is also home to Fortune 500 corporations such as the Pfizer Corporation, which employees a large number of area residents. Kalamazoo County boasts several institutions of higher education including Western Michigan University, Kalamazoo College, and Davenport College of Business, as well as Kalamazoo Valley Community College. These institutions also employ a large number of county citizens.

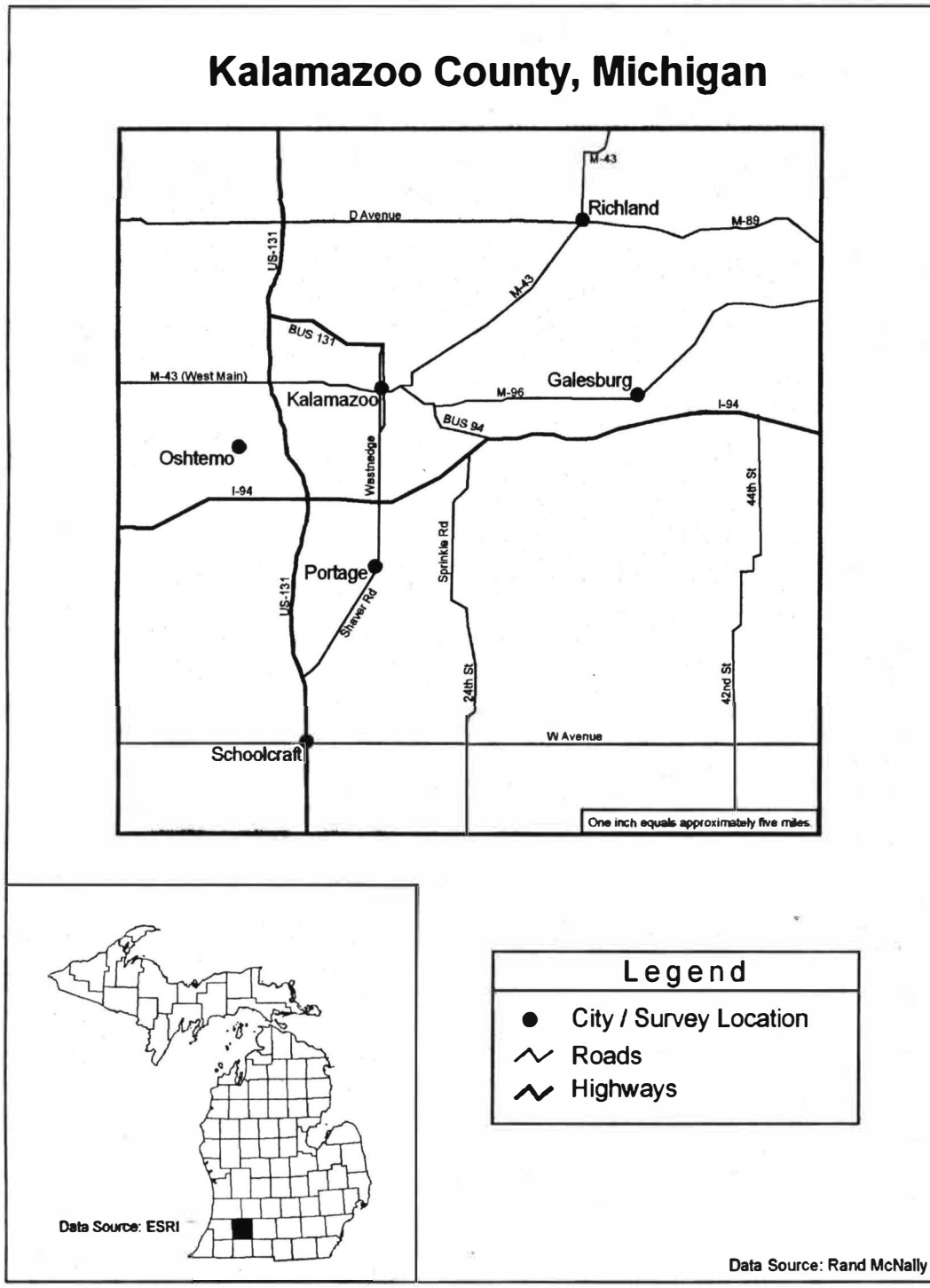

Figure 1: Map of Kalamazoo County, Michigan.

As reported by the 2000 Census (U.S. Census Bureau, 2002) a little over half of Kalamazoo County's residents are female (52 percent). The racial distribution of the county is presented in Table 3, showing Whites as the dominant population. The median age of Kalamazoo County residents is 32.7 years old. Nearly 89 percent of residents who are 25 years old or over have at least a high school diploma, and 31 percent have a Bachelor's degree or a higher degree. The median household income is approximately $42,000, and the per capita income is $21,700.

Table 3

Racial Composition of Kalamazoo County

Race	Percentage
White	84
African American	9.7
Hispanic	2.6
Asian	1.8
Native American	0.4

Source: United States Census Bureau. 2002.

There are many recreational opportunities in Kalamazoo County. The Kalamazoo River is a popular destination for canoeing and fishing. There are also many lakes and parks spread throughout the county. The county also features the Kalamazoo Nature Center, which is recognized as one of the nation's best nature centers (Kalamazoo Nature Center, 2002). There are also many museums in the area including the Gilmore Car Museum, Kalamazoo Air Museum, Kalamazoo Valley Museum, and the Kalamazoo Institute of Arts.

Data Collection

In keeping with Western Michigan University requirements, approval to survey residents was obtained prior to surveying from the Human Subjects Institutional Review Board (Appendix A). Two assistants and I distributed the surveys at six different Harding's grocery stores in Kalamazoo County to 400 randomly selected residents (Galesburg, Kalamazoo, Portage, Oshtemo, Richland, and Schoolcraft). Due to extreme weather conditions, the surveys conducted at the Galesburg store were collected on two different days. Every third person to enter the store was asked if they would like to complete a survey. If that person declined to participate, the next customer to enter the store was then asked if they would like to participate. To be included, the resident had to be the age of 18 or older. A separate sheet including contact information and instructions on how to complete the survey was attached to the front of each survey (Appendix B). The resident removed and kept the top information sheet, completed the survey, and returned it immediately after they were finished. Due to the fact that only the residents that frequent the Harding's stores were sampled some bias was entered into the study. The sampling strategy was justified because Harding's is the main grocery chain in this area of southwest Michigan and is often the only grocery store available in certain areas of Kalamazoo County.

The survey consisted of two main segments (Appendix C). The first part of the survey included the 2000 NEP scale developed by Dunlap et al. (2000). The question wording for each of the fifteen Likert-type items on the NEP scale was as follows: "Listed below are statements about the relationship between humans and the environment. For each one, please indicate whether you Strongly Agree, Agree, are

Unsure, Disagree, or Strongly Disagree with it." (Dunlap et al., 2000, 433). There were also five questions about the survey respondents' participation in environmental actions included in the first part. Respondents indicated their percentage of participation in each activity.

The second part of the survey included various socio-economic parameters. The following socio-economic variables were assessed: gender, age, education, race, income, political ideology, and place of residence. Age was an open-ended question that was written in by the resident. Education was divided into six groups by the highest amount of education completed: less than high school, high school, some college, college graduate, post-graduate, and other. Race was also divided into six groups: Caucasian, African American, Hispanic, Native American, Asian, and other. Income was divided into seven groups: less than $10,000 per year, $10,000 to $19,999 per year, $20,000 to $29,999 per year, $30,000 to $39,999 per year, $40,000 to $49,999 per year, $50,000 to $59,999 per year and more than $60,000 per year. Political ideology was divided into three groups: liberal, conservative, and middle-of-the-road. These variables were collected to see if certain characteristics that were predictors of a more pro-environmental attitude. Place of residence was determined by the resident writing in the name of their city or town of residence and also their zipcode. They also were asked to make an "X" on a map of Kalamazoo County near their place of residence to pinpoint where they lived within the county. Due to the fact that many of the respondents were unable to complete the map portion of the survey it was not used in the analysis of the survey data.

Data Analysis

Once the surveys were collected, these data were entered into a spreadsheet. Each of the surveys was coded at the top of the front side with a capital letter to designate the store they were administered and were also given a number for ease of data tracking (Table 4). The responses for each of the survey questions were also dummy-coded with numerical values to facilitate the analysis. The NEP question responses were coded 1 through 5. Each response was coded so that the highest value (5) indicated a pro-NEP response. Therefore, the odd-numbered statement responses were coded from 5 (Strongly Agree) to 1 (Strongly Disagree), and the even-numbered statement responses were coded from 1 (Strongly Agree) to 5 (Strongly Disagree). All of the other survey question responses were numerically coded in a similar fashion. For questions in which the respondent was asked to write in a response, the entire response was entered into the spreadsheet. For questions that were not answered by the respondent the data cell was left blank.

Table 4

Survey Coding Designations

Store	Survey Letter Code
Galesburg (8/1/02)	G
Galesburg (8/15/02)	GG
Kalamazoo	K
Oshtemo	O
Portage	P
Richland	R
Schoolcraft	S

These data were analyzed using the statistical software package SPSS 11.0 (Statistical Package for the Social Sciences, 2001). Basic descriptive statistics were conducted on the data to look at the mean response for each of the NEP statements, and the socio-economic variables. Each of the NEP statements were analyzed individually as well as collectively with the summation of individual items serving as a total NEP score. Independent Student's T-tests were run for the responses on the individual NEP statements, NEP sum and the environmental actions to test for differences across races or by gender. The race variable was regrouped into white and non-white categories, as there were such a relatively low number of non-white individuals who participated in the survey (Table 5). The option to exclude cases analysis by analysis was used to ignore any responses left blank.

Table 5

Racial Category Analysis

Race Category	# Responses
White	314
Non-White	62
No Response	24

One-way Analysis of Variance (ANOVA) was used to determine if there were any differences in responses to the individual NEP statements, NEP sum and the environmental actions for the following variables: educational level, household income, political ideology, and location where the survey was administered. The post hoc test Fisher's LSD (least significant difference) with a significance level of 0.05 was used to identify which means differed, if any, across the sample subsets. The option to exclude cases analysis by analysis was used to ignore any responses left blank. OLS (Ordinary

Least Squares) linear regression was conducted to determine if any of these socio-economic variables could be used to predict NEP scores. In short, are there any variables that might predict a high NEP score which would reflect a more pro-environmental attitude. The regression was run with the NEP total score as the dependent variable and the following independent variables: gender, age, educational level, household income, and political ideology. For this regression, the three political ideology variables were recoded into two dummy variables (n-1) for inclusion in the model. The stepwise method was used to specify how independent variables were entered into the analysis to create the regression models.

CHAPTER IV

RESULTS AND DISCUSSION

Sample Population Composition

A summary of the socio-economic characteristics for the sample surveyed is shown in Table 6. For Kalamazoo County as a whole, there were nearly 20 percent more females surveyed than males. The probable cause of surveying a majority of female respondents is due to the fact that the surveys were administered at grocery stores and traditionally females do more of the grocery shopping. The mean age was 47 years old. The sample surveyed was predominately white. The mean educational level achieved was "some college." The mean annual household income was in the range of $40,000-$49,999. The most common self-identified political view was "middle-of-the-road." These results were consistent with what was reported by the U.S. Census Bureau (2002).

The socio-economic characteristics of the respondents at each location surveyed followed the same general trend as the county as a whole, although there were a few exceptions. The Kalamazoo store had the highest percentage (33 percent) of African American respondents surveyed for any of the six stores. This store also had the highest percentage (41 percent) of respondents who had only a high school education or less. It also had the highest percentage (23 percent) of people in the lowest income bracket of less than $10,000. The Portage and Richland stores both had a mean household income level in the range of $50,000-$59,999, one level higher than the average for the county. The Schoolcraft store was the only location where there were more males surveyed than females (8 percent more).

Table 6

Summary of Socio-Economic Variables

	Kalamazoo County	Galesburg	Kalamazoo	Oshtemo	Portage	Richland	Schoolcraft
				% Response			
Gender							
Male	*41*	35	37	41	50	26	54
Female	*59*	65	63	59	50	74	46
Mean Age	*47 years*	48 years	46 years	46 years	49 years	50 years	46 years
Race							
White	*84*	92	59	82	89	88	92
African American	*13*	5	33	18	9	12	3
Hispanic	*2*	1.5	8	0	2	0	2
Asian	*1*	1.5	0	0	0	0	3
Educational Level							
< High School	*2*	1.5	3	2	1.5	0	3
High School	*21*	25	38	16	18	1	13
Some College	*35*	32	39	38	15	36	49
College Graduate	*24*	24	9	16	35	33	25
Post-Graduate	*16*	16	11	24	29	12	8
Other	*2*	1.5	0	4	1.5	2	2
Annual Income							
< $10,000	*10*	7	23	10	1.5	8	8
$10,000-$19,999	*10*	15	13	8	1.5	10	12
$20,000-$29,999	*10*	10	10	10	5	12	16
$30,000-$39,999	*12*	12	21	10	15	4	11
$40,000-$49,999	*9*	7	15	13	7	8	5
$50,000-$59,999	*12*	10	10	13	14	8	14
$60,000-$69,999	*13*	17	8	15	14	13	11
> $70,000	*24*	22	0	21	42	37	23
Political Ideology							
Conservative	*27*	28	22	23	26	37	29
Middle-of-the-Road	*51*	54	54	47	49	41	58
Liberal	*22*	18	24	30	25	22	13

Environmental Attitudes

There was an overall acceptance of the worldview represented by the New Environmental Paradigm in Kalamazoo, County. The mean scores for all but one of the NEP statements (NEP 6) were above the mean of 3.00 (Table 7). Agreement with the eight odd-numbered items and disagreement with the seven even-numbered items indicate pro-NEP responses. The respondents seem to support the idea that the balance of nature is being threatened by human activities, but there seems to be a disagreement for the idea that there are limits to growth.

For each of the six individual sampling locations there was an overall acceptance of the New Environmental Paradigm worldview. Specifically, for each of the locations the mean scores for all but one or two of the NEP statements were above the mean of 3.00 (Table 7). One statement that was new in the recently revised NEP scale, NEP statement 6 ("The earth has plenty of natural resources if we just learn how to develop them.") consistently stood out as the one statement that respondents did not accept. A pro-environmental attitude would have the respondents disagreeing with the statement. There were 67 percent of Kalamazoo County residents agreeing with the statement. This statement was an anomaly in Dunlap et al. (2000) also, as they had 59 percent of their respondents agreeing with that statement. Perhaps this mindset of being able to utilize resources endlessly is a result of the American culture. Another explanation for this mindset is that perhaps Michigan appears to "have it all," both industry and the beautiful outdoors. NEP statement 4 ("Human ingenuity will insure that we do NOT make the earth unlivable.") also stood out at three locations (mean scores below 3.00). Again this statement taps into the idea that humans will be able to

Table 7

Mean NEP Scores *

	Kalamazoo County	Galesburg	Kalamazoo	Oshtemo	Portage	Richland	Schoolcraft
NEP 1	*3.51*	3.56	3.31	3.64	3.51	3.50	3.50
NEP 2	***3.41***	3.40	3.00	3.48	3.35	3.54	3.68
NEP 3	*4.05*	4.18	3.93	4.16	3.94	4.20	3.90
NEP 4	*3.01*	2.99	2.84	3.07	3.01	2.97	3.18
NEP 5	***3.96***	3.99	4.28	4.15	3.72	3.90	3.72
NEP 6	***2.34***	2.21	1.91	2.43	2.37	2.49	2.65
NEP 7	*4.19*	4.41	4.43	4.19	3.97	4.05	4.05
NEP 8	*3.67*	3.66	3.45	3.75	3.68	3.66	3.79
NEP 9	***4.26***	4.38	4.40	4.39	4.16	4.25	3.99
NEP 10	*3.49*	3.50	3.27	3.54	3.58	3.52	3.53
NEP 11	*3.56*	3.39	3.50	3.83	3.67	3.39	3.57
NEP 12	*3.51*	3.57	3.51	3.58	3.28	3.35	3.73
NEP 13	*3.85*	3.96	3.95	3.93	3.69	3.83	3.72
NEP 14	*3.28*	3.24	3.09	3.36	3.21	3.29	3.51
NEP 15	***3.67***	3.75	3.95	3.75	3.39	3.59	3.60

* Scores range from 1 to 5 with higher scores indicating a more pro-environmental attitude.
Bold values indicate significance at ≤ 0.05 level.

manipulate the earth and its resources to last incessantly.

For six of the fifteen NEP statements there was a significant difference in the means between the six locations (Table 8). These were NEP statements 2, 5, 6, 7, 9, and 15. For each of the six noted NEP statements the Kalamazoo location emerged as significantly different from at least one and sometimes more than one of the other locations, with the exception of Galesburg. Galesburg and Kalamazoo residents recorded similar scores on all of the scale items. The respondents from Kalamazoo scored significantly higher than any of the locations on NEP 5, 7, 9, and 15 and lower than any of the locations on NEP 2 and 6.

Table 8

ANOVA Results for NEP Statements Compared Across All Survey Locations

	F value	Significance
NEP 1	0.538	0.747
NEP 2	2.401	0.037*
NEP 3	1.428	0.213
NEP 4	0.664	0.651
NEP 5	3.214	0.007*
NEP 6	3.383	0.005*
NEP 7	2.658	0.022*
NEP 8	0.757	0.058
NEP 9	4.195	0.001*
NEP 10	0.621	0.684
NEP 11	1.564	0.169
NEP 12	1.251	0.285
NEP 13	0.913	0.472
NEP 14	1.245	0.287
NEP 15	2.243	0.049*

* denotes significance at ≤ 0.05 level.

Again the Kalamazoo location had the highest percentage of African American respondents, highest percentage of respondents with only a high school education or less, and also highest percentage of people in the lowest income bracket. This is very interesting and runs counter to previously published findings. Some of the literature has presented that the higher educated and those with more income are more pro-environmental (Caron, 1989; Arcury and Christianson, 1990; Scott and Willits, 1994). In this study though, these differences in characteristics could be some possible factors that contributed to the difference between the Kalamazoo location and the other locations with respect to the six NEP statements. Perhaps some the more concerning realities of the environment were more apparent to the residents from the Kalamazoo location because they lived in the most urban area of the county where environmental degradation can be more apparent and more severe. Perhaps the residents living in the more rural areas of the county, where there is seemingly less environmental degradation, have a hard time believing that the environment is in any danger.

There were some differences in environmental attitudes between males and females in Kalamazoo County. Males and females showed a significant difference in responses to NEP statements 2, 5, 7, 9, 13, and 15 (Table 9). For each of these statements females had a higher mean score indicating a more pro-environmental attitude. This supports previous research that females tend to have a more pro-environmental attitude than males (Schahn and Holzer, 1990; Jones and Dunlap, 1992; Tarrant and Cordell, 1997; Furman, 1998; Ewert and Baker, 2001). There were nearly 20 percent more females surveyed than males, which possibly could have biased the results.

Table 9

Independent T-Test Results for NEP Statements by Gender

	T-Value	Significance
NEP 1	-1.662	0.097
NEP 2	-3.168	0.002*
NEP 3	-1.600	0.110
NEP 4	-0.044	0.965
NEP 5	-2.246	0.025*
NEP 6	-0.025	0.980
NEP 7	-2.653	0.008*
NEP 8	-0.823	0.411
NEP 9	-1.902	0.058*
NEP 10	-1.560	0.120
NEP 11	1.394	0.164
NEP 12	-1.752	0.081
NEP 13	-1.774	0.077†
NEP 14	0.273	0.785
NEP 15	-2.445	0.015*

* denotes significance at ≤ 0.05 level.

† denotes significance at ≤ 0.07 level.

There were no significant differences observed in environmental attitudes between respondents of different races in Kalamazoo County. Part of the reason for this is that the county is predominately white and there was not a large enough sample of any of the other races to see if there was a difference in attitude. It is encouraging that there were no significant differences found because this leads one to believe that in Kalamazoo County, at least, all races were concerned about the environment equally.

There were significant differences observed with respect to NEP responses between respondents of different income levels. There were differences observed with NEP statements 1, 4, 5, 6, 7, 12, and 15 (Table 10). Interestingly, respondents in the highest income bracket responded significantly different than others for five of the seven

previously noted NEP statements (1, 5, 7, 12, and 15). For each of these items, respondents in the highest income bracket had a lower mean score than the scores of people in the lower income brackets. The scores for all groups were higher than the average of 3.00. This does not support previous studies that concluded that wealthier people tend to have a more pro-environmental attitude (Arcury and Christianson, 1990; Scott and Willits, 1994). Perhaps those in the highest income bracket that were surveyed in Kalamazoo County did not perceive environmental problems to be that severe based on their experiences. Perhaps those in the highest income bracket live in the more picturesque, rural areas of the county where the environment appears to be clean and healthy. Since their surrounding environment is perceivably cleaner than that of the more urban areas of the county and conceivably they may just take for granted that their environment will always be that way and they are not highly concerned with environmental protection.

Table 10

ANOVA Results Comparing NEP Scores Across All Income Levels

	F value	Significance
NEP 1	2.695	0.010*
NEP 2	0.806	0.093
NEP 3	1.766	0.093
NEP 4	2.088	0.044*
NEP 5	2.615	0.012*
NEP 6	2.095	0.043*
NEP 7	2.413	0.020*
NEP 8	1.369	0.217
NEP 9	1.004	0.428
NEP 10	1.014	0.421
NEP 11	0.630	0.731
NEP 12	2.109	0.042*
NEP 13	1.045	0.399
NEP 14	0.705	0.668
NEP 15	2.529	0.015*

* denotes significance at ≤ 0.05 level.

There were significant differences in responses to the NEP statements between the different political ideologies (conservative, middle-of-the-road, and liberal) (Table 11). For every one of the NEP statements there was a difference between at least two of the three ideologies. The most distinctive differences in NEP scores were between the conservative respondents and the liberal respondents. For all of the statements, except NEP statement 2, the liberal group had a higher mean score indicating they were the most pro-environmental. This finding supports previous studies that concluded that those with a liberal political orientation tend to be more pro-environmental (Schahn and Holzer, 1990; Scott and Willits, 1994).

Table 11

ANOVA Results Comparing NEP Scores Across All Political Ideologies

	F value	Significance
NEP 1	15.406	0.000*
NEP 2	3.714	0.025*
NEP 3	5.012	0.007*
NEP 4	4.848	0.008*
NEP 5	9.856	0.000*
NEP 6	4.473	0.012*
NEP 7	9.762	0.000*
NEP 8	4.026	0.019*
NEP 9	4.916	0.008*
NEP 10	21.355	0.000*
NEP 11	18.045	0.000*
NEP 12	15.308	0.000*
NEP 13	4.611	0.011*
NEP 14	2.912	0.056*
NEP 15	7.421	0.001*

* denotes significance at ≤ 0.05 level.

Environmental Actions

The mean scores of the participation rates for a selected set of environmentally sound activities for Kalamazoo County and each individual location are found in Table 12. For Kalamazoo County as a whole most people recycle on average 50 percent of the time. All of the Harding's grocery stores had a place for them to recycle their refundable beverage bottles and cans so they were the common types of materials that respondents recycled. The most common reasons respondents gave for not recycling other items, besides the refundable items, was that they did not know where to recycle the items, they did not have the space to keep the recyclables, or they did not want to take the time to do so. The respondents also intentionally purchase products made from recycled materials 50 percent of the time. They use public transportation, ride a bike, or walk 25 percent of the time. Part of the reason for such a low response to this question is that public transportation is not available to the communities outside the Kalamazoo and Portage city limits. Many of the respondents may live in rural areas of the county where it would be quite a distance to walk or ride a bike to town. The respondents use canvas grocery bags less than 25 percent of the time. There was some confusion with this question because some respondents thought that canvas grocery bags were the same as paper grocery bags. This may have led to a higher than expected rate of usage. Due to this misunderstanding and also low usage response rate, this question was dropped from the analysis. Only 11 percent of the respondents said that they belonged to an environmental organization. Due to this low response rate this question was also dropped from the analysis.

Table 12

Mean Environmental Action Scores*

	Recycle	Purchase Recycled	Public Transportation	Canvas Grocery Bags
Kalamazoo County	***3.49***	*3.09*	***1.95***	*1.52*
Galesburg	3.83	3.30	1.94	1.45
Kalamazoo	3.30	3.26	1.94	1.45
Oshtemo	3.51	3.09	1.90	1.22
Portage	3.75	2.87	1.68	1.50
Richland	3.28	3.00	1.92	1.38
Schoolcraft	3.25	3.02	1.94	1.59

* Scores ranged from 5 (100% of the time) to 1 (0% of the time).
Bold values indicate significance at ≤ 0.05 level.

The responses from the individual locations followed the same general trends as the county as a whole, although there were a few exceptions. There were some significant differences between the locations with respect to recycling and public transportation use (Table 13). With respect to recycling, respondents at both the Galesburg and Portage locations recycle significantly more often than respondents at the Kalamazoo, Richland, and Schoolcraft locations. With respect to public transportation, riding a bike, or walking Kalamazoo respondents indicated a greater amount of participation than all of the other locations, which was statistically significant. This could be because this location is in an urban area where public transportation, and walking or riding a bicycle is more feasible.

Table 13

ANOVA Results Comparing Environmental Action Participation Across All Survey Locations

	F Value	Significance
Recycling	2.689	0.021*
Purchase recycled	1.287	0.269
Public transportation	2.697	0.021*

* denotes significance at ≤ 0.05 level.

There were significant differences across the different socio-economic groups in how often the respondents participated in various environmental actions. There was a significant difference between males and females with respect to recycling, purchasing products made from recycled materials, and using public transportation (Table 14). For each of these environmental actions females participated more often than did males. This could be expected since previously reported results indicated that females had a more pro-environmental attitude.

Table 14

Independent T-Test Results for Environmental Actions by Gender

	T-Value	Significance
Recycling	-3.769	0.000*
Purchase recycled	-4.019	0.000*
Public transportation	-1.785	0.075†

* denotes significance at ≤ 0.05 level.

† denotes significance at ≤ 0.07 level.

There was also a significant difference ($p = 0.001$) in how often respondents recycled with respect to educational level. These data showed that as educational level increased the frequency that the respondent recycled also increased. Perhaps those with higher educational levels knew more about how and where to recycle and also the benefits of recycling. More education also generally leads to higher income levels. People with a higher income are more likely to live in a house where there would be more room to store recyclables compared to a person who lives in an apartment. Sometimes recycling is not even available in apartment complexes, which makes it more inconvenient for the residents to recycle.

There was also a significant difference ($p = 0.001$) of how often respondents used public transportation, rode a bike, or walked with respect to household income level. The respondents in the lowest income bracket were significantly different from the rest of the respondents. Those in the lowest income bracket used public transportation, biked, or walked most frequently. This could be because they are unable to own their own vehicle. This could also be because those in the lowest income bracket more often live in the urban areas where these types of transportation are more available.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Summary

In recent years, Kalamazoo County has had to face the realities of the environmental degradation of the Kalamazoo River and surrounding areas as a result of the long-standing prevalence of industry in the county. Although Kalamazoo County has been heavily reliant on industry over the past 100 years, my study has shown that there was an overall acceptance of the NEP by the residents of Kalamazoo County. My results, in general, reflected similar patterns to other studies done using the NEP scale (Albrecht et al., 1982; Dunlap and Van Liere, 1984; Geller and Lasley, 1985; Arcury et al., 1986). Perhaps due to this history and the spread of environmentalism through the media, Kalamazoo County residents have developed a positive attitude about the health of the environment.

Interestingly, the relationships between socio-economic parameters and the NEP scale did not fully support the hypothesis found in the literature that the young, well-educated, wealthy, and politically liberal respondents would be the most "environmentally friendly" (Caron, 1989; Arcury and Christianson, 1990; Schahn and Holzer, 1990; Scott and Willits, 1994). Indeed, my results did not show age, education or income being related to a more pro-environmental attitude. My findings did suggest, however, that politically liberal respondents reported more pro-environmental attitudes. Perhaps liberals, in general, are just more open to ideas about environmental protection and other environmental practices compared to those who are more conservatively

oriented. Overall my findings did not support a model that would predict what "types" of respondents would have a more pro-environmental attitude.

The results of this research also support the idea that positive attitudes about the environment do not always translate into positive actions (Thompson and Barton, 1994; Shultz and Oskamp, 1996; Olli et al., 2001). The respondents had an overall positive attitude towards the environment but not a very high frequency of participation for any of the environmental actions examined. Residents may simply be unaware of how their personal behavior contributes to environmental degradation and thus may believe it is a problem for "someone else" (Scott and Willits, 1994). Residents may have a positive attitude about environmental protection and be concerned about it, but they just do not purposefully become environmentally conscious citizens who actually participate in activities to protect the environment. Residents' positive attitudes about environmental protection may have come from years of conditioning by the media, but there is not a strong connection between what the residents think they should feel about the environment and what they actually do to be a responsible steward of the environment.

Future Research

There are several suggestions for future research, which include improvements to the current survey method and the importance of future studies. Some improvements can be made to questionnaire and survey method for future studies. Since there was not a very high response for any of the environmental action questions, perhaps different questions could be created that would tap into some of the different things people might do to help the environment. These actions may include visiting nature centers, attending meetings about environmental issues, buying organic produce from local farmers, or

participating in local environmental clean-up projects. In addition, perhaps the question about using canvas grocery bags could be reworded to ask if the respondents brought their own bags with them when they went grocery shopping rather than using the bags from the store. The mapping portion that was included in the survey was not a very effective way of estimating the geographic distribution of respondents since many of the respondents were unable to read the map. Perhaps the map could have been created with more detail by including the location of the cities and towns of Kalamazoo County. Possibly, looking at the distribution in terms of zip codes would be a sufficient way to analyze the geographic distribution of the sample. This would be particularly useful if one intended to do a study for a larger region of the state instead of just a county.

An alternate sampling strategy, such as a mail survey or surveying at different types of locations other than grocery stores, might be used next time in order to obtain more varied distribution of respondents from the non-white racial groups and a more equal distribution of men and women. It might also be beneficial to include some questions that will tap into the respondents' actual knowledge about environmental issues. This would help to distinguish between what people think and what they actually know about the environment.

This study also provides a baseline database for the future assessments of environmental attitudes of Kalamazoo County residents. This study also offers baseline data for future studies to assess if the residents' viewpoints towards the environment have changed or stayed the same over time. It is important to understand the residents' attitudes about the environment if the county wants to be successful in the protection of its natural environment. This study can also help public policy makers understand how

Kalamazoo County residents' feel about the environment. By knowing how the residents feel about the environment local government officials would be able to effectively formulate policy about environmental issues and whether or not more information should be given to the public to perhaps change their attitudes on a certain issue. Perhaps future studies could encompass the entire southwest portion of Michigan, or even several cities across the state to see if Kalamazoo County residents' attitudes about the environment are similar to these other populations. Since Michigan has so many natural resources to protect it would be advantageous to understand how the state's residents feel about the environment to identify how supportive they might be about environmental protection issues.

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Appendix A

Human Subjects Institutional Review Board Approval Letter

WESTERN MICHIGAN UNIVERSITY

Centennial 1903•2003 Celebration

Human Subjects Institutional Review Board

Date: July 23, 2002

To: Lisa DeChano, Principal Investigator
Jaclyn Burke, Student Investigator for thesis

From: Mary Lagerwey, Chair *Mary Lagerwey*

Re: HSIRB Project Number 02-07-08

This letter will serve as confirmation that your research project entitled "Assessing the Acceptance of The New Environmental Paradigm in Kalamazoo County, Michigan" has been **approved** under the **exempt** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: July 23, 2003

Walwood Hall, Kalamazoo MI 49008-5456
PHONE: (616) 387-8293 FAX: (616) 387-8276

Appendix B

Consent Letter and Instructions for Survey Participant

WESTERN MICHIGAN UNIVERSITY
H. S. I. R. B.
Approved for use for one year from this date:

JUL 23 2002

x Mary Lagerwey
HSIRB Chair

You are invited to participate in a research project entitled "Assessing the Acceptance of the New Environmental Paradigm in Kalamazoo County, Michigan" designed to analyze the environmental attitudes of Kalamazoo County residents. This research project is being conducted by Dr. Lisa DeChano and Jaclyn Burke from Western Michigan University, Department of Geography. This research is being conducted as part of the thesis requirements for Jaclyn Burke. This research will be a valuable source of information for public policy makers to understand how residents of Kalamazoo County feel about the environment. It will also offers baseline data for future studies to assess if the residents viewpoints towards the environment have changed or stayed the same over time.

The survey is comprised of 28 questions and will take approximately 5 minutes to complete. Your replies will be completely anonymous; so do not put your name anywhere on the form. You may choose to not answer any question and simply leave it blank. If you choose to not participate in this survey, you may either return the blank survey or you may discard it. Returning the survey indicates your consent for use of the answers you supply. If you have any questions, you may contact Dr. Lisa DeChano at 616-387-3536, Jaclyn Burke at 616-387-3410, the Human Subjects Institutional Review Board at 616-387-8293, or the Vice President for Research at 616-387-8298.

We have provided chairs and a shaded area to sit under while completing the survey in order to minimize any discomforts from standing and being in the sun.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the board chair in the upper right corner. You should not participate in this project if the corner does not have a stamped date and signature.

Appendix C

Survey

Survey of Kalamazoo County Residents

Section I

Listed below are statements about the relationship between humans and the environment. For each one please indicate whether you Strongly Agree (SA), Agree (A), are Unsure (U), Disagree (D) or Strongly Disagree (SD) with it.

1. We are approaching the limit of the number of people the earth can support.	SA	A	U	D	SD
2. Humans have the right to modify the natural environment to suit their needs.	SA	A	U	D	SD
3. When humans interfere with nature it often produces disastrous consequences.	SA	A	U	D	SD
4. Human ingenuity will insure that we do NOT make the earth unlivable.	SA	A	U	D	SD
5. Humans are severely abusing the environment.	SA	A	U	D	SD
6. The earth has plenty of natural resources if we just learn how to develop them.	SA	A	U	D	SD
7. Plants and animals have as much right as humans to exist.	SA	A	U	D	SD
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	SA	A	U	D	SD
9. Despite our special abilities humans are still subject to the laws of nature.	SA	A	U	D	SD
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.	SA	A	U	D	SD
11. The earth is like a spaceship with very limited room and resources.	SA	A	U	D	SD
12. Humans were meant to rule over the rest of nature.	SA	A	U	D	SD
13. The balance of nature is very delicate and easily upset.	SA	A	U	D	SD
14. Humans will eventually learn enough about how nature works to be able to control it.	SA	A	U	D	SD
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	SA	A	U	D	SD

Section II ***Please circle your responses below.***

16. How often do you recycle? 100% 75% 50% 25% 0%

17. How often do you intentionally purchase products made from recycled material? 100% 75% 50% 25% 0%

18. How often do you use public transportation, walk, or ride a bike rather than drive your own vehicle?

100% 75% 50% 25% 0%

19. How often do you use canvas grocery bags? 100% 75% 50% 25% 0%

20. Do you belong to any environmental groups? Yes No

If yes, which one(s)?_____

_____

**Participation in this survey is completely voluntary and anonymous. By agreeing to complete this survey you are giving your permission for your responses to be used for analysis in this Western Michigan University study.*

Section III ***Please put a check mark by your response.***

21. Gender: __ Male __ Female

22. Age: _____ (Please Specify)

23. Race: __ White __ African American __Hispanic __ Asian __ Native American Other _____

24. Educational Level:

__ Less than High School __ High School Graduate __ Some College __ College Graduate

__ Post-Graduate __Other (Please Specify) _____

25. Annual Household Income:

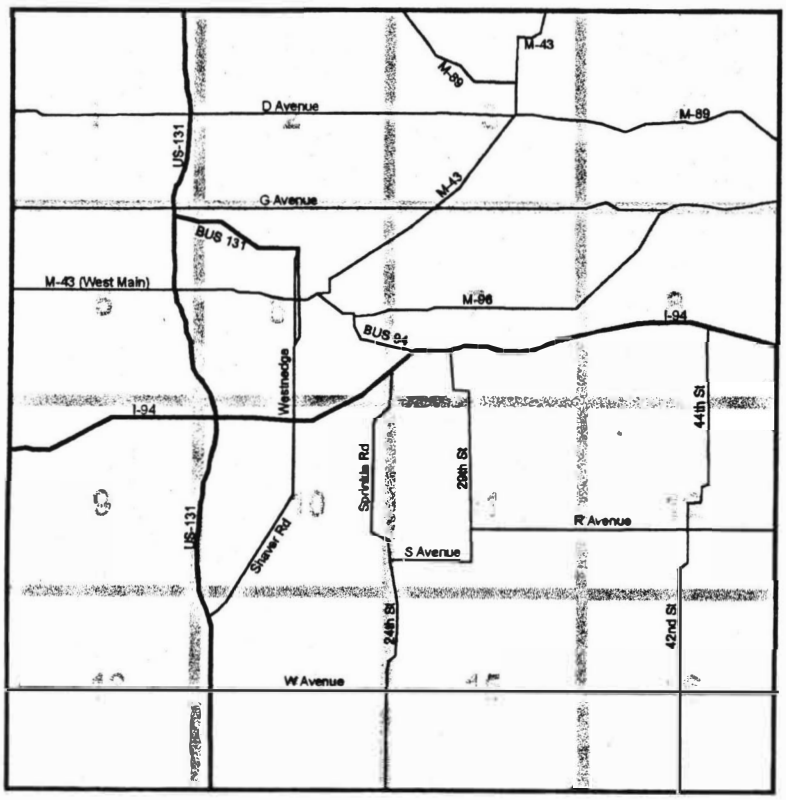
__ Less than $10,000 __ $10,000-$19,999 __ $20,000-$29,999 __ $30,000-$39,999

__ $40,000-$49,999 __ $50,000-$59,999 __ $60,000-$69,999 __More than $70,000

26. Which of these describes your usual stand on political issues: __ Conservative __Middle-of-the-Road __ Liberal

27. Name of City, Town or Township of Residence:_____ 28. Zipcode: _____

Kalamazoo County
Please put an "X" near your home.



Township Key

1 - Alamo
2 - Cooper
3 - Richland
4 - Ross
5 - Oshtemo
6 - Kalamazoo
7 - Comstock
8 - Charleston
9 - Texas
10 - Portage
11 - Pavilion
12 - Climax
13 - Prairie Ronde
14 - Schoolcraft
15 - Brady
16 - Wakeshma

**Participation in this survey is completely voluntary and anonymous. By agreeing to complete this survey you are giving your permission for your responses to be used for analysis in this Western Michigan University study.*