A Social Profile of the
Lower Grand River Watershed

Lower Grand River Organization of Watersheds
Initiatives Implementation Project

Tracking Code: #2007-0137

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Acknowledgements – Project Partners

Michigan Department of Natural Resources and Environment

Michigan's Nonpoint Source (**NPS**) Program assists local units of government, non-profit entities, and other partners in reducing nonpoint source pollution. Watershed management is the basis of the program with most projects funded for developing watershed management plans or implementing the NPS activities from these plans. The NPS Program consists of:

- Technical assistance in developing and implementing watershed management plans.
- Information and education.
- Grants, including federal Clean Water Act funds and the Clean Michigan Initiative.
- Compliance and enforcement.
- Monitoring and field investigations to determine effectiveness of the NPS Program

Grand Valley Metropolitan Council - Lower Grand River Organization of Watersheds

The Lower Grand River drainage basin that encompasses more than 3,000 square miles starting at the confluence of the Grand and Looking Glass Rivers in downtown Portland in Ionia County through Grand Rapids to Lake Michigan at Grand Haven. The Lower Grand River Organization of Watersheds (**LGROW**) serves as an umbrella watershed organization for the ten-county watershed. Through its various partnerships, LGROW undertakes multidisciplinary projects and coordinates activities designed to protect, restore and improve water quality in the Lower Grand River and its tributaries, such as the Rogue, Thornapple, Flat, and Coldwater Rivers in addition to the Sand, Plaster, and Buck Creeks.

The Grand Valley Metropolitan Council (**GVMC**) is a regional alliance dedicated to promoting cooperation and coordination among local governments in the metropolitan Grand Rapids area. Created in 1990, its membership includes 35 local governments, representing more than 700,000 people. Its mission is to advance the current and future well-being of the metropolitan area by bringing together public and private sectors to cooperatively advocate, plan for, and coordinate the provision of services and investments which have environmental, economic and social impact.

Annis Water Resources Institute - Grand Valley State University

The Robert B. Annis Water Resources Institute (**AWRI**) at Grand Valley State University is a multidisciplinary research organization committed to the study of freshwater resources. The mission of AWRI is to *integrate research, education, and outreach to enhance and preserve freshwater resources*. AWRI seeks to accomplish this mission through:

- Research into major questions about our water resources, including: ecosystem structure and function; contaminants and toxicology; hydrology; land use; watershed, stream, and wetland ecology; water quality; and basic and applied limnology.
- Public education for a variety of groups, including K-12, university students, and the community.
- Outreach to ensure that decision makers are equipped with the best available knowledge on environmental and water resource-related issues, to reduce the uncertainty associated with their resource management decisions.

West Michigan Environmental Action Council

The West Michigan Environmental Action Council (**WMEAC**) is a non-profit organization working to protect and enhance West Michigan's natural and human environments by translating the concerns of people into positive action. WMEAC has been delivering environmental education and advocacy to the West Michigan for over forty years. WMEAC has served as West Michigan's leading voice for environmental protection and has remained committed to empowering its citizens, businesses, institutions and organizations with the tools they need to become better stewards of our environment. Its mission is to lead environmental protection in West Michigan by inspiring action toward a healthy and thriving community where environmental, social, and economic systems are balanced and sustainable.

Fishbeck, Thompson, Carr & Huber

Fishbeck, Thompson, Carr & Huber, Inc. (**FTC&H**) is a professional civil engineering, environmental consulting, architectural/engineering, and construction management firm. FTC&H has over 20 years of experience in watershed management and is known throughout the state for their innovative and state-of-the-art approaches to storm water management. Many of the staff are LEED@ certified and have extensive experience in providing engineering and technical services on LID practices, storm water issues, and grant administration.

Carl Frost Center for Social Science Research – Hope College

The mission of the Carl Frost Center for Social Science Research is to provide its clients with diverse research and analysis capabilities that are accurate, accessible and practical for the shaping of informed decisions. As a part of Hope College's academic environment, they are also committed to supporting the research of Hope's distinguished faculty as well as its student body. The Center is committed to increasing community partnerships and meeting the needs of the communities they serve.

Center for Environmental Study

The Center for Environmental Study (**CES**), a non-profit organization founded in 1969, serves its community as an independent, science-based environmental education and research authority. Its mission is to *promote environmental practices which contribute to a sustainable community*.

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1.0 Introduction

Considerable physical data has been compiled in updating the Lower Grand River Watershed (LGRW) Management Plan. This data describes the watershed's hydrological, biological, and geophysical characteristics and establishes indicators to represent the condition of the watershed. Data collection was rigorous in order to use it to identify management practices for protecting the Grand River and its watershed.

Protecting the LGRW, which supports a population approaching one million, cannot be based just on such geophysical and hydrological data. Such data alone rarely yields the best course of action for the particular communities in the watershed. Instead, this range of options must also reflect an understanding of the human factors in the watershed.

Many of today's most pressing water quality problems, such as nonpoint source pollution, are rooted in the social and economic fabric of a community. Understanding the human dimension is built on learning what is happening in the watershed and how those living in the watershed view the issues affecting water quality. Resolving water quality problems from the perspective of watershed residents has led to the development of a Social Profile for the Lower Grand River Watershed.

1.1 Purpose of Social Profile

The goal of the **LGRW Initiatives Project** is to reduce the negative impacts that nonpoint source pollutants are having on the watershed through the development and implementation of a stakeholder-driven Watershed Management Plan. The purpose of the Social Profile is to contribute to this effort by:

- Outlining the socioeconomic characteristics of the Lower Grand River Watershed in order to recognize the historic, cultural, and political dynamics that shape watershed communities
- Highlighting the issues and concerns of residents' for the Grand River and its watershed in West Michigan that will need to be addressed in watershed planning and plan implementation
- Introducing a "big picture" by providing a "snapshot" of what is currently known – and not known – about the socioeconomic aspects of the watershed
- Providing information, identifying barriers, and suggesting trends that supports the development of an **Information & Education Strategy**

The Social Profile is organized around five basic questions, suggested by the work of researchers at the University of Illinois, as follows:

1. Who lives in the watershed?
2. How do they make a living?
3. How do they use and impact natural resources in the watershed?
4. What are the issues?
5. How can they be reached?

By understanding who lives in the LGRW, they can be more easily informed about the issues facing their watershed. Additionally, by knowing both who might be *most interested* in these issues or *not interested* at all, information can be more effectively tailored. This profile provides a general perspective on who

might be “out there” in the watershed. Like all generalizations using the “average” characteristics, it does not accurately represent the actual range and diversity of watershed stakeholders.

1.2 Information Sources

Preparing the LGRW Social Profile involved collecting data from a variety of sources. This data was drawn from a suite of demographic information and will be used to provide a general impression of population characteristics within the Lower Grand River Watershed. To help provide a frame of reference for defining the scope of the LGRW Social Profile, data will be benchmarked against other available databases at the state and county levels as well as compared to other communities, whenever applicable. The LGRW Social Profile will reflect the availability of socioeconomic data at the county level but will include other levels where such information contributes to characterizing the watershed.

1.2.1 United States Census: Year 2000 versus 2010

This Social Profile is based predominantly on the selection of information from 2000 Census of Population. Since most Census data is collected every ten years, the major disadvantage in using the 2000 Census data will be its current inaccuracy. As this profile is being compiled, the 2010 Census is being conducted with its results not to be fully available until 2012. Consequently, the data does not reflect changes in the demographic makeup of the watershed in the ten years since the 2000 Census. Intervening Census estimates are incomplete and do not cover all of the watershed communities. Due to the age of the data, certain results may be unrepresentative and skewed in some cases.

In addition, the nation and most particularly the state of Michigan have been experiencing a significant recession in the past couple of years and it is likely that the 2010 Census will reveal substantial changes in the state since the year 2000, unlike anything that has been enumerated by the Census in the past forty years. Although the data might not be current or accurate for describing the socioeconomic conditions of the watershed, it is expected that the 2000 data still contributes to a reasonable and suitable profile of the Lower Grand River Watershed.

1.2.2 ZIP Codes

Although socioeconomic data is available at different geographic scales, such as by state, county, township or city and census tracts and blocks, the U. S. Census data rarely conforms to watershed boundaries. Another option is to organize and present Census data by ZIP code. For several decades, U.S. Census data has been compiled by ZIP codes (mail volume is among the factors used by the Census Bureau to estimate changes between decennial census). ZIP codes are used not only for delivering and tracking mail but they are also frequently used in organizing socioeconomic data for a variety of purposes, such as marketing and location hunts. Additionally, most people are more familiar with their ZIP code than other geographic entities. Consequently, a variety of environmental data has been increasingly available on a ZIP code basis, including the USEPA’s “Surf Your Watershed”.

ZIP codes do not represent geographic regions; they generally correspond to U.S. Postal Service delivery routes which are subject to changing boundaries. For the 2000 Census, the Census Bureau developed a geographic alternative to ZIP codes for publishing data based on corresponding ZIP codes. ZIP Code Tabulation Areas (ZCTA) are aggregations of census blocks that approximate areas corresponding to ZIP Codes. Although nearly identical to the 5-digit ZIP code, there are important distinctions. Unlike the ZIP codes used for tabulating earlier censuses, ZCTA areas are spatially complete and can be mapped.

There are limitations to ZIP code data. ZIP codes may change over time and may not be useful for doing time-series or trend analysis. ZIP codes are not uniform demographic units. They were invented for mail delivery, not demographic comparisons. ZIP codes are loosely tied to their place names. The Postal Service designates a "default" place name for each ZIP code which may be an actual incorporated city, a sub-entity of a town or city or an unincorporated place. The name associated with a ZIP code does not mean that the area is actually located within that named place. ZIP codes can and do cross various jurisdictional lines (for example, about ten percent of ZIP codes are in more than one county).

1.2.3 Surveys

In addition to Census data, this Social Profile of the Lower Grand River Watershed will also utilize the results of two surveys conducted of watershed residents in Kent County to guide and inform this effort. Other relevant surveys are also used to supplement the LGRW survey and add to the socioeconomic information in the LGRW Social Profile**.** These surveys provide insights into the knowledge and perceptions regarding the river, its watershed, water quality and other issues in addition to:

- Providing valuable feedback
- Identifying behaviors that negatively impact or positively safeguard
- Indicating where to focus outreach efforts
- Suggesting how best to frame issues for audiences
- Measuring the effectiveness of future campaigns

1.3 The Lower Grand River Watershed

The Lower Grand River Watershed (LGRW) starts at the confluence of the Grand River and Looking Glass River, near Portland, to the Grand River's mouth in Grand Haven, where it enters Lake Michigan. The LGRW drains approximately 2,909 square miles of West Michigan in large portions of seven counties and in much smaller portions of three other counties (see table below). This Social Profile will focus on the socioeconomic characteristics of these seven counties containing a higher proportion of the watershed, specifically Kent, Ionia, Barry, Ottawa, Montcalm, Eaton, and Muskegon Counties.

County	County Acres	LGRW Acres	% of County Land in LGRW	% of LGRW Area in County
Kent	557,741	550,164	98.6	29.6
Ionia	370,915	301,581	81.3	16.2
Barry	370,555	253,239	68.3	13.6
Ottawa	367,756	230,451	62.7	12.4
Montcalm	460,068	230,378	50.1	12.3
Eaton	369,097	158,999	43.1	8.5
Muskegon	330,242	74,907	22.7	4.0
Newaygo	550,325	43,828	8.0	2.4
Mecosta	365,564	14,188	3.9	0.8
Allegan	539,539	3,210	0.6	0.2
Clinton	367,878	554	0.2	0.03
Totals	4,649,680	1,861,499	---	100

Source: Annis Water Resources Institute

Land use in the watershed is reported as 49 percent agriculture, 23 percent forest, 12 percent range, 10 percent urban, 4 percent wetlands, and 2 percent open water. The LGRW connects rural, upstream communities, most of which are agriculturally focused, with sprawling suburbs and diversifying,

industrialized urban areas. Agriculture is a major industry in the watershed. The eastern and western reaches of the watershed are heavily farmed due to the temperate climate and good soils. Nearly one million people live in the watershed, home to about 10 percent of the state's population. The watershed also contains the whole Grand Rapids metropolitan area, the second largest in Michigan, and a portion of the Muskegon metropolitan area.

County	2000 County Population	2000 LGRW Population	% County Population in LGRW	% LGRW Population in County	2000 County Households	2000 LGRW Households	% County Households in LGRW	% LGRW Households in County
Kent	581,548	574,335	98.8	63.3	215,617	212,890	98.7	64.5
Ottawa	238,314	136,397	57.2	15.2	81,662	47,178	57.8	14.3
Ionia	61,518	54,988	89.4	6.2	20,606	18,198	88.3	5.5
Barry	56,755	43,595	76.8	4.8	21,035	16,014	76.1	4.9
Montcalm	61,266	36,303	59.3	4.1	22,079	13,496	61.1	4.1
Eaton	103,655	27,158	26.2	3.0	40,167	9,739	24.3	3.0
Muskegon	170,200	17,369	10.2	1.9	63,330	6,049	9.6	1.8
Newaygo	47,874	8,712	18.2	1.0	17,599	2,921	16.6	0.9
Mecosta	40,553	1,068	2.6	0.2	14,915	419	2.8	0.1
Allegan	105,665	879	0.8	0.1	38,165	315	.08	0.1
Clinton	64,753	233	0.4	>0.1	23,653	67	0.3	>0.1
Totals	1,355,058	**908,550**	---	100	556,101	**330,013**	---	100

Source: Annis Water Resources Institute

The LGRW's diverse economic base, expanding academic institutions, and wealth of outdoor resources have made the watershed a special place to live and work. The Grand River, farmlands, forests, and Lake Michigan wrap the region in scenery and recreational opportunities. Watershed residents can choose to live in downtowns, small towns, suburban neighborhoods, quiet villages, historic areas, and rural homesteads. The communities along the Grand River are the most populated, with large cities that include Grand Rapids, Wyoming and Grandville. Most Grand River communities were founded due to the waterways which powered mills and other manufacturing industries. Although employment prospects exist throughout the watershed, many residents work in Grand Rapids metropolitan area, the region's cultural and economic center, where they can find manufacturing centers, educational institutions, and health services, among other employment sectors.

According to the LGRW Management Plan (WMP), sediment, nutrients, and bacterial pathogens characterize the major impairments to the watershed. In addition, a number of water bodies in the LGRW do not meet water quality standards established by the Michigan Department of Natural Resources and Environment (MDNRE).

1.4 Watershed History

The history of the watershed is not solely an accounting of past events. It represents an ongoing process of change that defines how the Lower Grand River Watershed has been transformed over time and how it continues to change. The watershed's history also contains the roots of its economy, defines the character of its communities and contributes to shaping the beliefs and values of watershed residents. By recognizing the significant choices that were made in the past, today's watershed residents might be encouraged to assess the importance of the decisions that they make - or fail to make - today. The watershed's past continues to influence its future.

- Following the retreat of continental glaciers, the watershed was first occupied by Paleo-Indian hunters about 8,000 years ago. These **earliest human occupants** were succeeded by several phases of woodland cultures,

such as the Hopewell Indians, perhaps 2,000 years ago, followed by Ottawa and Pottawatomi tribes. The banks of the Grand River have contained remnants of these cultures, such as ancient tools and burial sites.

- One Indian name of the Grand River was reported as Ouashtenong (or Washtonnong) Sebee - far away or long-flowing water. French voyageurs called the river *La Grande Riviere*. Around the late **1600's**, French traders were the first Europeans in the watershed. It is reported that Lake Michigan was "discovered" in **1634** and its shoreline explored in **1675**. With its habitat for beavers and other small mammals, the Grand River offered a route into Michigan's interior. The first French explorers followed the rivers inland. Robert de la Salle was the first white to record a journey on the Grand River in **1680**, but white trappers had been on the river many times before that.

- The profit to be made from the European demand for fur beckoned traders to Michigan. Furs could be harvested by one or two individuals, an advantage for the frontier. The watershed served as an important center for the fur trade in the early **1800s**. An American Fur Company trading post was established a few miles up the Grand River from Lake Michigan in the early **1820's**. In the **1830**'s, the fur trade began dwindling due to a shortage of fur-bearing animals, fashion changes, and the expansion of the western fur industry.

- Michigan became a territory in **1805**. At the time, travel was simplest and most efficient by water, with waterways the only method of moving goods. The Erie Canal, built across New York in the **1820s**, opened the Northwest Territory, including Michigan, to development. Many homesteaders, often from the New England states, arrived by way of the canal and the Great Lakes. In **1821**, a family by the name of Robinson set out from Detroit, sailed on a small vessel and, via Mackinaw, reached the mouth of Grand River. From there, they put household goods on rafts, poled their way up the river and settled in Ottawa and Kent counties. Rix Robinson, who had been trading at Ada for several years previously, named "Grand Haven" to reflect its position as a large safe port at the confluence of three significant bodies of water. Another brother came with his family and settled on the west bank of Flat River, in what is now Lowell.

- In **1831** the federal survey of the Northwest Territory reached the Grand River and set the boundaries for Kent County. Louis Campau, in **1831,** bought 72 acres of what is now the downtown of Grand Rapids from the federal government. He built a trading post on the east bank of the Grand River near the rapids, naming his tract Grand Rapids. Rival Lucius Lyon, who purchased adjacent land, called his the Village of Kent. By **1838** the settlement was incorporated as a village. With a population of 2,686, the city of Grand Rapids was officially created in **1850**. In the 1830's more people continued to arrive, creating permanent paths through the watershed's forests. For example, Samuel Dexter and his colony of 63 people arrived from New York to settle Ionia along the Grand River in **1833**.

- In **1837**, Michigan became the 26th State of the Union. Most townships in the watershed were incorporating in the **mid to late 1800's**. At the time, the Grand River was the only thoroughfare and means of communication with the outside world. Steamboats ferried finished products between Grand Haven and other watershed communities. In addition, gypsum, limestone, sand, and gravel were mined from the banks of the river, and clams were harvested for commercial button production. Lake schooners were making regular trips from Grand Haven and Chicago, bringing increasing numbers of immigrants to the watershed and its growing communities. Many steamboat landings and shipyards could be found along the Grand River. With the construction of railroad lines after 1858 river navigation quickly dropped away, except for moving logs.

- The watershed was heavily forested with close proximity to the Grand River. In the **mid-to-late 19th century**, a timber boom exploded and timber from the watershed was transported to major shipping ports on the Great Lakes. Saw mills developed along the Grand River and its tributaries, often becoming the nucleus of emerging communities. The Grand River supported the development of the watershed by providing a means of conveying logs to sawmills powered by the river's flow. For example, Montcalm County was on the southern end of the large white pine forest. Mature trees, 125 feet tall, two feet in diameter with no limbs for 100 feet up the tree, meant no knots in the finished lumber. The first log run on the Flat River was in **1866**. Rafts of logs found their way to the Greenville sawmills and on down the Flat River to the village of Lowell,

where the Flat River flows into the Grand River. From the Grand River the logs continued down river to markets in Grand Rapids, Muskegon, Spring Lake, Grand Haven and on across Lake Michigan to Chicago.

- In **1890,** the dense pine forests of the watershed were depleted, the last log was run on the Flat River, and the lumber era ended. It has been estimated that more than 3.5 billion feet was the total yield of logs from the forests in the Grand River watershed. After large-scale logging ceased, the economy was hit hard and new sources of business and industry were needed to sustain watershed communities. Many towns founded on logging disappeared. After the lumber boom, the watershed developed into a region for agriculture and early manufacturing industries. Industry began to congregate in the communities of =. By the end of the century, stimulated by the =, the watershed became a significant center for agriculture, and manufacturing.

- In the more fertile areas of the watershed, more **farmland** was carved out of logged-out areas. The rich soils and favorable micro-climates found in some parts of the watershed were appropriate for a variety of crops. Early settlers devoted much of the farmland to raising wheat and corn. In time, more attention turned to fruits and vegetables for supplying rapidly growing cities. Earlier, game of many kinds were abundant; but nearby supplies were eventually exhausted, except fish. Fish were taken from the river and adjacent waters in considerable quantities. Fruit orchards, vegetables, grains, potatoes, beans, and livestock were grown, processed, and shipped from the watershed to developing cities, taking advantage of the rail lines used to support logging.

- After money from logging became available for investment, several watershed communities became substantial manufacturing centers. At the time, the Grand River powered flour mills saw mills and the machinery of early factories. In **1880**, Grand Rapids became the first city in the country to use water power to generate electricity for lighting. Both sides of the Grand River in Grand Rapids were lined with industries, discharging untreated wastes directly into the river in addition to municipal sewers. Residents below the city complained. Wyoming Township brought suit and the state Supreme Court in **1911** ordered the city to cease pollution of the river. In **1922**, the state board of health issued an order that the city install a sewage disposal plant. Environmental legislation in the late **1960s** provided the additional impetus for cleanup of the Grand River and its tributaries. The Grand River Watershed Council was organized **1970's** and monitored stream monitoring and soil erosion and sedimentation control programs, and reported on a survey

- The first "roads" in the watershed were merely foot paths blazed by the Native Americans, especially along the Grand River. In one description of early travel along these paths, the tree canopy was so complete, little sun ever reached the earth. These foot paths were widened to allow wagons to move goods more easily to and from settlements. Stage lines contracted for the building of roads. Around **1909**, when the State Highway Department began designating roads as "state trunk lines", one obvious choice was **the Grand River Road** from Detroit, through Lansing, to Grand Rapids and Lake Michigan. From 1918 until 1926, the Grand River Road bore the route markers for M-16 from Detroit to Grand Haven and then was designated as US-16 in 1926. Following a redirection, US-16 continued to Muskegon and then across Lake Michigan via a railroad car ferry to Milwaukee. In 1957, the route was designated as Interstate-96. With the improvements of the roads, the use of **bridges** became increasingly important. 1914-20's. A ferry transported traffic traveling the Bridge Street Road across the Grand River in Allendale Township until a bridge was opened in **1926**.

- Over centuries, the watershed's character has been **shaped by immigration**. The 19th century settlers were predominantly native-born Americans from New England, New York and Pennsylvania. As logging took off, immigrants from Ireland, Germany, Netherlands, Norway, Sweden and Denmark joined the workforce. The watershed's industrial surge in the 20th century attracted southern Europeans, while World War II witnessed the arrival of Mexican-Americans, Southern blacks, and Appalachian whites.

2.0 Who lives in the LGRW?

As part of the discussion in this and subsequent sections, each topic below contains both the top five and bottom five ZIP codes illustrating the range covered in the watershed. More details for each major ZIP code in the watershed are presented as an individual profile in section 5.0 ZIP Code Profiles.

2.1 Population

The size of the population in the specific ZIP code is among the most important measures for suggesting the possible magnitude of outreach efforts for the LGRW.

As represented in the table below, ten years ago for the 2000 Census the population size ranged from 813 to nearly 60,000 people in a watershed ZIP code. It is anticipated that the results from the 2010 Census will reveal that many areas in the LGRW have experienced much less growth especially in contrast to population growth during the past forty years.

LGRW Top 5 Zip Codes	total	**LGRW Bottom 5 Zip Codes**	total
49509 Wyoming	59,089	48885 Sydney	813
49504 Walker	40,199	49303 Bailey	1,024
49508 Kentwood	40,065	49322 Coral	1,261
49507 Grand Rapids	39,734	49347 Trufant	1,292
49503 Grand Rapids SE	33,909	48897 Woodland	1,442

Source: U.S. Census 2000

2.2 Population Density

Population density, as persons per square mile, reflects the intensity of development and helps in distinguishing rural and urban areas. Changes in population density between the 2000 and 2010 Census will indicate where development is pressuring the land resource, where open space is being converted to developed uses, where the land base continues to fragment, and where congestion is increasing. Studies have found that higher population densities adversely affect the quantity and quality of stormwater runoff, suggesting that these impacts escalate with density measured per area but decline on a per capita basis.

The higher population densities are especially apparent around the Grand Rapids metropolitan area in contrast to the more sparsely populated areas in the northern reaches of the LGRW. Based on these population densities, the ZIP code profiles indicate the percentage of the population that is urban. The average population density in Michigan was 175 persons per square mile.

LGRW Top 5 Zip Codes	persons per square mile	**LGRW Bottom 5 Zip Codes**	persons per square mile
49507 Grand Rapids	6,563	48897 Woodland	45
49503 Grand Rapids SE	5,014	48834 Fenwick	48
49506 East Grand Rapids	4,399	49096 Vermontville	49
49505 Grand Rapids NE	3,600	48829 Edmore	50
49509 Wyoming	3,405	48885 Sydney	55

Source: U.S. Census 2000

2.3 Median Age

The median age simply represents the age distribution of a population when it has been divided into two equal halves, where one-half of the population is older than the median age and one-half is younger. The median age might reflect how a population is aging. For example, in the U. S., the age profile of the population is steadily shifting to the older age groups. The median age is influenced by the number of retirees, empty nesters, families with young children, and college students in the population, among other factors.

The median age of Michigan residents from the 2000 Census was 35.5 years and the median age of the U.S. population was 35.3 years in 2000.

LGRW Top 5 Zip Codes	years	**LGRW Bottom 5 Zip Codes**	years
49050 Dowling	40.4	49401 Allendale	21.1
49456 Spring Lake	38.9	49507 Grand Rapids	27.3
49347 Trufant	38.4	49321 Comstock	29.5
49301 Ada	37.8	49503 Grand Rapids SE	29.7
48837 Grand Ledge	37.8	48846 Ionia	30.1

Source: U.S. Census 2000

2.4 Population Under 5 Years Old

With more detailed research into the age profile of a community, it becomes possible to more efficiently target and reach different age groups for outreach efforts. Different age groups respond to different messages and approaches. For example, a higher percentage of children under 5 years of age suggest more families with young children, families who are quite busy and focused on raising children. Outreach might focus on the family and not the individual.

Ten years ago, the percent of the population under five years of age ranged from a high of 10.3 percent in Grand Rapids, suggesting a larger number of families with young children, to a low of 5.4 percent in Dowling, suggesting an older age profile. In the state, the population under five years of age was 6.8 percent in 2000.

LGRW Top 5 Zip Codes	per cent	**LGRW Bottom 5 Zip Codes**	per cent
49507 Grand Rapids	10.3	49050 Dowling	5.4
49426 Hudsonville	8.8	48846 Ionia	5.6
49341 Rockford	8.3	48884 Sheridan	5.7
49548 Cutlerville	8.3	49415 Fruitport	5.8
49504 Walker	8.1	49347 Trufant	5.9

Source: U.S. Census 2000

2.5 Population Over 65 Years Old

As previously noted, community interests and participation varies across age groups and outreach should reflect these variations. Several studies have shown that younger age groups are more interested in active volunteering, informal socializing, and technology-based activities while their parents are engaged by current events, political activity, and giving while their grandparents are highly engaged in giving, church, and community affairs.

Ten years ago, the percent of the population over 65 years of age ranged from a high of 14.9 percent in Forest Hills, suggesting a larger number of empty nest families or retirees, to a low of 4.3 percent in Allendale, suggesting a younger age profile. In 2000, the state's population over 65 years was 12.3%.

LGRW Top 5 Zip Codes	per cent	LGRW Bottom 5 Zip Codes	per cent
49546 Forest Hill	14.9	49401 Allendale	4.3
49347 Trufant	13.9	49507 Grand Rapids	6.3
49504 Walker	13.5	49301 Ada	6.9
49506 East Grand Rapids	13.3	49302 Alto	6.9
49050 Dowling	10.8	49341 Rockford	7.0

Source: U.S. Census 2000

2.6 Student Population: Kindergarten to Grade 12

The size of the student population in kindergarten to 12th grade provides an indication of the level of effort that may be required in reaching out to school age children. These students may be attending public or private schools or may be home schooled. They may or may not be attending schools located in the ZIP code or in the watershed. More details can be found in the ZIP code profile.

Ten years ago in 2000, the school age segment of Michigan's population was 21.6 percent.

LGRW Top 5 Zip Codes	total	LGRW Bottom 5 Zip Codes	total
49509 Wyoming	12,152	48885 Sydney	184
49507 Grand Rapids	10,187	49347 Trufant	239
49508 Kentwood	8,179	49050 Dowling	252
49504 Walker	7,639	49303 Bailey	274
49506 East Grand Rapids	7,016	49322 Coral	283

Source: U.S. Census 2000

2.7 Education – Bachelor's Degree or Higher

The levels of education attained by watershed residents suggest the quality of human resources available in a community and the degree of workforce preparation. The more education a population possesses the more likely they will participate in community activities, fund charities, and attend meetings. Other characteristics noted of college graduates is that they are more likely to participate in a range of community activities and are more likely to have high levels of confidence in science.

Over the last 30 years, the U.S. population has become more educated as demonstrated by the growth in the number of college graduates. Between 1970 and 2000, the number of people in the U.S. over 25 years of age with a college degree doubled, growing from 10 percent to over 25 percent nationally. Michigan experienced a similar increase in college graduates. In 2000, 21.8 percent of the state's population had a bachelor's degree or higher.

LGRW Top 5 Zip Codes	per cent	LGRW Bottom 5 Zip Codes	per cent
49301 Ada	49.3	48834 Fenwick	6.3
49546 Forest Hill	48.4	48851 Lyons	7.2
49506 East Grand Rapids	48.3	48865 Orleans	7.2
49512 Grand Rapids	37.5	48884 Sheridan	7.2
49456 Spring Lake	36.1	49326 Gowen	8.0

Source: U.S. Census 2000

2.8 Race - Black/African American

The proportional presence of Black/African American residents in the watershed suggests how outreach efforts might need to address the beliefs and values represented by this minority population.

As the 2000 Census data indicates, the racial composition of the watershed is predominantly white (slightly over 14 percent of the state's population was Black/African American in 2000 while nationally it was 12.3 percent). As is expected in the 2010 Census results, the racial and ethnic characteristics of the watershed will continue to change.

LGRW Top 5 Zip Codes	per cent	**LGRW Bottom 5 Zip Codes**	per cent
49507 Grand Rapids	43.0	49403 Conklin	0.0
49503 Grand Rapids SE	22.2	48815 Clarksville	0.1
49506 East Grand Rapids	20.5	48849 Lake Odessa	0.1
48846 Ionia	13.7	48851 Lyons	0.1
49319 Cedar Springs	12.3	48881 Saranac	0.1
		48885 Sydney	0.1
		48897 Woodland	0.1
		49333 Middleville	0.1
		49339 Pierson	0.1

Source: U.S. Census 2000

2.9 Origin - Hispanic/Latino

As a relatively newer cultural presence in the watershed, people of Hispanic or Latin origin understand water pollution issues differently than other population segments. Their natural resource knowledge and land ethics may vary due in part to their unique cultural perspectives. Like other minority populations, success in communicating water resource issues will rely on the ability of outreach to connect with these populations and solicit their interest and participation.

Over the years, the watershed's cultural composition has experienced an increase in people of Hispanic or Latin origin. The importance of agriculture and manufacturing in the watershed's economy resulted in the migration of such workers to the watershed. For comparison, ten years ago, the state's population was 3.3 percent of Latino or Hispanic origin. In the U.S. population, the proportion of people of Hispanic/Latino origin increased from 9 percent in 1990 to 12.5 percent in 2000.

LGRW Top 5 Zip Codes	per cent	**LGRW Bottom 5 Zip Codes**	per cent
49507 Grand Rapids	23.2	49050 Dowling	0.3
49503 Grand Rapids SE	15.3	49347 Trufant	0.5
49509 Wyoming	13.5	49073 Nashville	0.6
49504 Walker	13.1	49339 Pierson	0.9
49319 Cedar Springs	12.5	49096 Vermontville	1.1
		49301 Ada	1.1
		49302 Alto	1.1

Source: U.S. Census 2000

2.10 Language Other than English

Even with the increasing population diversity of many areas within the watershed, English will remain an important language. However, certain segments of the population may feel more comfortable receiving information in a language they are much more conversant in than English. Outreach can be designed to reflect the probability of specific language needs in certain watershed communities.

For comparison, ten years ago it was indicated that 8.4 percent of the state's population over the age of 5 spoke a language at home other than English. In 2000, it was indicated that 7.9 percent of the same segment in the U.S. population spoke a language other than English at home. More details on the specific languages are spoken in certain areas of the watershed, whether Dutch, Spanish, or Slovakian, are available from Census data.

LGRW Top 5 Zip Codes	per cent	**LGRW Bottom 5 Zip Codes**	per cent
49507 Grand Rapids	23.3	48890 Sunfield	1.0
49401 Allendale	17.9	48815 Clarksville	1.6
49512 Grand Rapids	16.6	49058 Hastings	1.6
49503 Grand Rapids SE	15.3	49073 Nashville	1.8
49509 Wyoming	15.3	48875 Portland	2.1

Source: U.S. Census 2000

2.11 Households

According to the U.S. Census Bureau, a household includes all persons who occupy a housing unit (as defined below). Knowing the quantity of households within certain areas of the watershed or the watershed as a whole may help to define other relevant parameters. For example, the number of dogs can be estimated based on statistics from the U.S. Human Society and other organizations which state that four in ten U.S. households include at least one dog. Estimates of total watershed households can be useful in planning for the distribution of outreach materials.

Ten years ago, these were the number of households within the ZIP codes covering different areas o f the watershed. It is expected that these numbers will be changing, similar to the total population numbers, as the 2010 Census is tabulated.

LGRW Top 5 Zip Codes	total	**LGRW Bottom 5 Zip Codes**	total
49509 Wyoming	58,843	48885 Sydney	301
49504 Walker	39,790	49303 Bailey	344
49507 Grand Rapids	39,369	49322 Coral	452
49508 Kentwood	39,194	48865 Orleans	501
49506 East Grand Rapids	32,005	49318 Casnovia	503

Source: U.S. Census 2000

2.12 Average Household Size

Household size is the average number of persons living in a household within a community as calculated by dividing the household population by the number of households. Decreasing household size has been a national trend; a trend that is also reflected in the watershed. Demographers have suggested several factors, such as marriage at a later age, more single-parent households, postponing children, and rearing

fewer children. As household size decreases and population increases in the watershed, more housing is developed with all of its associated impacts on water quality.

As measured in the different watershed communities, the number of households in the watershed is rising faster than the watershed's population. For comparison with household size in the LGRW, ten years ago in 2000 the average household size in the U.S. population was 2.59 and in the state population it was 2.56.

LGRW Top 5 Zip Codes	persons per household	**LGRW Bottom 5 Zip Codes**	persons per household
49426 Hudsonville	3.09	49512 Grand Rapids	2.05
49507 Grand Rapids	3.09	49503 Grand Rapids SE	2.28
49403 Conklin	3.08	49505 Grand Rapids NE	2.41
49301 Ada	3.06	49456 Spring Lake	2.44
49302 Alto	3.02	49544 Grand Rapids	2.53

Source: U.S. Census 2000

2.13 Total Housing Units

According to the Census Bureau, a housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live and eat separately from any other persons in the building and which have direct access from the outside of the building or through a common hall. Although housing units cover a variety of living situations in the watershed, housing units can be used to estimate, for example, the number tied to septic systems or the amount of lawn that is fertilized and managed. The fertilizer application rate can be affected by social economic factors

The numbers below and in the ZIP code profiles represent results from the 2000 Census and it is expected that these numbers will show an increase following the compilation of the 2010 Census.

LGRW Top 5 Zip Codes	total	**LGRW Bottom 5 Zip Codes**	total
49509 Wyoming	23,410	48885 Sydney	317
49504 Walker	16,394	49303 Bailey	369
49508 Kentwood	15,910	49318 Casnovia	547
49503 Grand Rapids SE	15,169	49325 Freeport	572
49507 Grand Rapids	13,692	49322 Coral	578

Source: U.S. Census 2000

2.14 Vehicles

Vehicles available - the number of cars, vans, and trucks kept at home and available for use by household members (does not include non-running vehicles) – were counted as part of the 2000 Census. Vehicle ownership is associated with various nonpoint sources of pollution, such as spills from fueling, leaks of automotive fluids, and driveway vehicle washing. Some of these sources can be modified with changes in the values and behaviors of watershed residents. For example, many enjoy washing their vehicles in the driveway but are unaware of the impact of this action on the streams and rivers in the watershed. Outreach can utilize estimates that illustrate how much vehicle wash water containing harmful pollutants is discharged through storm sewers to local streams. These types of estimates can be

powerful and effective at highlighting incremental behavioral changes by demonstrating how small changes can translate into larger and more geographically significant water-quality improvements.

The 2000 Census identified the quantity of cars in categories reflecting how many cars from none to three or more. The number of vehicles identified in each ZIP code is a conservative estimate based on Census data, but the numbers suggest the potential impact of vehicle ownership in these areas.

LGRW Top 5 Zip Codes	total	**LGRW Bottom 5 Zip Codes**	total
49509 Wyoming	37,092	48885 Sydney	600
49508 Kentwood	25,284	49303 Bailey	671
49504 Walker	23,490	49322 Coral	847
49546 Forest Hill	20,717	49325 Freeport	937
49506 East Grand Rapids	20,450	49347 Trufant	969

Source: U.S. Census 2000

3.0 How Do They Make a Living?

At one time, the Grand River was the foundation of the watershed's economy, the source of how people made a living in the watershed. A population that makes a living through the efforts of their work, satisfying basic needs in the form of food, shelter, health, and security, can experience economic wellbeing. This wellbeing tends to indicate that the population has the ability to search for more meaning in their lives and feel they can contribute more time, energy, and funds to their community's projects. At the same time, the importance of clean water to the watershed's economy, whether for farming, recreation, tourism, also highlights the connections between economic and environmental wellbeing.

3.1 Median Household Income

The median household income is the point where half of a community's households would have income below that amount and half would have income above that amount. Median household income is the most widely used and accepted measure of income in a community. It accounts for all households and fairly represents a typical income level for the community. The indicator represents the impact of economic activity on personal income. Rising median income indicates economic prosperity. Studies have shown that as income rises, more of the population participates in community projects. Decreasing income may reflect levels of inequality, conditions of deprivation, or disinvestment and capital flight.

Ten years ago in 2000, the range of median household incomes in the watershed were considerable yet were not associated solely with urban or rural communities. The median household income for Michigan was $46,181 compared to the national median household income of $42,148.

LGRW Top 5 Zip Codes	dollars	**LGRW Bottom 5 Zip Codes**	dollars
49301 Ada	$83,902	49503 Grand Rapids SE	$30,176
49506 East Grand Rapids	$65,784	48829 Edmore	$31,950
49341 Rockford	$64,165	48886 Six Lakes	$32,672
49302 Alto	$62,520	49322 Coral	$37,269
49316 Caledonia	$61,810	49303 Bailey	$37,778

Source: U.S. Census 2000

3.2 Families below Poverty Level

The percent of families below the poverty level represent families whose total income is less than the poverty threshold for that family size. Poverty thresholds also take into account the composition of the household, recognizing that the same amount of income can purchase different amounts of economic well being. The percent of families who fall below the threshold is one way to represent the poverty situation for a community. Low poverty rates indicate that there are enough jobs paying wages that are sufficient to keep families above the poverty threshold. However, it is not a good general measure of economic well being because it focuses entirely on the low end of the income scale.

Ten years ago in 2000, the rates of family poverty in the watershed were considerable yet were not associated solely with urban or rural communities. The family poverty rate for Michigan was 9.7 percent compared to the national family poverty rate of 9.2 percent.

LGRW Top 5 Zip Codes	per cent	LGRW Bottom 5 Zip Codes	per cent
49507 Grand Rapids	18.0	49306 Belmont	1.0
49503 Grand Rapids SE	16.7	49315 Byron Center	1.7
48829 Edmore	12.4	49426 Hudsonville	1.8
49504 Walker	11.1	49302 Alto	1.9
48865 Orleans	10.2	49417 Grand Haven	1.9

Source: U.S. Census 2000

3.3 Labor Force

The labor force is an asset to the watershed economy and participation in the labor force is related to economic wellbeing. The labor force participation rate is the proportion of workers over 16 years employed or available for work. The differences in rates between communities reflect different factors, including the number of people enrolled full-time in school, withdrawn from the labor force after seasonal work or unable to find work, and not working for other reasons such as caring for their families.

Ten years ago in 2000, the labor force participation of the population in the watershed ranged widely, with lower participation rates in the rural areas where there are fewer jobs. In Michigan, the labor force participation rate in 2000 was at 64.6 percent and on the national level it was at 63.9 percent.

LGRW Top 5 Zip Codes	per cent	LGRW Bottom 5 Zip Codes	per cent
49315 Byron Center	81.8	48897 Woodland	43.6
49321 Comstock	79.1	48846 Ionia	46.3
49512 Grand Rapids	78.1	48884 Sheridan	53.9
48876 Potterville	75.8	49322 Coral	55.2
49426 Hudsonville	75.1	48886 Six Lakes	58.6

Source: U.S. Census 2000

3.4 Commute Time

Commute time, or mean travel time, is the average amount of time, often measured in minutes, an individual spends travelling to a particular destination, in this case, the workplace. Where people choose to live is often based on where they work and the commute time from home to work. It has been observed that longer commute times reduce social connections, e.g. less attendance at watershed meetings or fewer evenings picking up litter from local streams. Additionally, communities experiencing a growing presence of commuters may view watershed issues differently.

The mean travel time to work in the watershed typically corresponds, in most cases, to locations relative to the Grand Rapids metropolitan area, a major regional center of employment. For comparison, the mean travel time in Michigan was 24.1 minutes in 2000 and the national mean was 25.5 minutes.

LGRW Top 5 Zip Codes	minutes	LGRW Bottom 5 Zip Codes	minutes
48865 Orleans	41.8	49506 East Grand Rapids	17.3
48890 Sunfield	36.3	49546 Forest Hill	17.8
49339 Pierson	35.3	49418 Grandville	19.3
49322 Coral	35.1	49504 Walker	19.3
49343 Sand Lake	34.9	49505 Grand Rapids NE	19.3
		49544 Grand Rapids	19.3

Source: U.S. Census 2000

3.5 Work in County of Residence

When residents live and work in the same community, they have shorter commute times. Outreach can be designed to target individuals at home or at work, whichever becomes a more effective method.

In 2000, 70.9% of Michigan residents worked within their county of residence, while 27.5% traveled to another county for employment.

LGRW Top 5 Zip Codes	per cent	LGRW Bottom 5 Zip Codes	per cent
49546 Forest Hill	94.6	49339 Pierson	18.5
49508 Kentwood	94.0	49050 Dowling	25.6
49512 Grand Rapids	94.0	49435 Marne	26.3
49506 East Grand Rapids	93.8	49318 Casnovia	31.0
49507 Grand Rapids	93.5	49333 Middleville	33.3

Source: U.S. Census 2000

3.6 Business Establishments

The higher concentration of business establishments in certain ZIP codes often represents employment centers in the watershed. The nature of these businesses will vary throughout the watershed, from large industrial complexes to convenience stores. These numbers provide a sense of economic activity within the ZIP Code.

LGRW Top 5 Zip Codes	number	LGRW Bottom 5 Zip Codes	number
49503 Grand Rapids SE	1,604	49322 Coral	7
49546 Forest Hill	1,405	49347 Trufant	12
49512 Grand Rapids	1,209	48885 Sydney	12
49418 Grandville	1,011	48865 Orleans	13
49417 Grand Haven	936	49050 Dowling	14
		49303 Bailey	14

Source: Census 2007 Business Patterns

3.7 Manufacturing Employment

The distribution and type of jobs by industry are key economic community indicators since they shed some light on the income potential and diversification of the watershed economy. Manufacturing has declined in the watershed for several years yet it remains a vital source of employment.

Ten years ago in 2000, 14.1 percent of the U.S. workforce and 22.5 percent of the state workforce was employed in manufacturing.

LGRW Top 5 Zip Codes	per cent	LGRW Bottom 5 Zip Codes	per cent
48885 Sydney	38.5	49319 Cedar Springs	5.0
48865 Orleans	34.9	49401 Allendale	15.2
49451 Ravenna	34.6	48837 Grand Ledge	15.7
48884 Sheridan	33.3	49506 East Grand Rapids	15.7
49073 Nashville	33.3	49546 Forest Hill	17.9

Source: U.S. Census 2000

3.8 Farm Operations

Farmers must take advantage of the unique local features of the watershed, its soils, climate, and water, in order to survive. Manure management practices, chemical use strategies, participation in federal conservation programs, and other actions contribute to the scale of a farm's impact on nonpoint pollution. Balancing the long-term role of agriculture in the watershed and optimizing its environmental and quality-of-life benefits will be essential to both agriculture's viability and the sustainability of watershed communities.

Based on the most recent Agricultural Census data collected and reported by the National Agricultural Statistics Service and the U.S. Department of Agriculture for 2007, the total number of farm operations and farm operations with animals in 2007 are summarized in the table below by the top ZIP codes in the watershed. Eight watershed ZIP codes have no farm operations identified in 2007 Agricultural Census.

LGRW Top 5 Zip Codes	total	**LGRW Top 5 Zip Codes** ***With Animals***	total
48813 Charlotte	404	48813 Charlotte	141
49058 Hastings	284	48846 Ionia	103
49426 Hudsonville	250	49058 Hastings	103
48846 Ionia	220	49404 Coopersville	91
48875 Portland	212	48875 Portland	90
49073 Nashville	212		

Source: Agricultural Census 2007, USDA

3.9 Other Aspects of the Watershed's Economy

- The **Grand Rapids metropolitan area** predominates as the major transportation, commercial, and industrial center of the Lower Grand River Watershed. Other communities distributed throughout the watershed, from Portland to Grand Haven and Greenville to Hastings, also provide more localized centers of employment with significant commercial and industrial activities.

- Tourism remains a major economic driver. Kent County has been ranked third in the state for **tourism** spending as a destination county behind Wayne County and Oakland County.

- **Future "green" industries** have been receiving attention, such as renewable energy. Due to its proximity to the winds off of Lake Michigan, several **wind farms** have been proposed in different parts of the watershed.

- The headquarters of **multi-national companies** and one of the country's largest clusters of biopharmaceutical suppliers can be found in the watershed. In 2008 the World Knowledge Competitive index of 145 metropolitan regions ranked West Michigan:
    - … 13th World Knowledge Competitive Index
    - … 4th in higher education expenditures
    - … 4th in research and development expenditures by business
    - … 13th in primary and secondary education expenditures
    - … 20th in economic activity
    - … 24th in patents registered per capita
    - … 28th in labor productivity

4.0 How Do They Use and Impact Natural Resources?

As the watershed's population expands, more demands stress the resources of the watershed, such as its water supply, waste treatment and disposal capacity, and recreational facilities. As a result, natural habitats can be degraded or destroyed, or ecosystem services compromised. Since most natural resource problems addressed in watershed planning can be traced back to the way residents and visitors use and change the natural environment, finding solutions will depend on everyone's cooperation in how they use these resources.

The natural resources of the watershed refer to the physical layout and natural features in the watershed. Some of these features might include water resources (e.g., rivers, lakes, wetlands, aquifers), geologic resources (e.g., minerals, sand, gravel, soil), and geographical features (e.g., forests, shorelines). These resources also include wildlife, habitat, flyways, and historic and cultural landmarks.

Public infrastructure affects natural resources. Infrastructure and public services describes a community's publicly supported services such as roads, waste disposal, utilities, drinking water, and sewage treatment. It also relates to schools, parks, and libraries that provide a sense of community and place. The extent and quality of infrastructure can reflect a community's values relative to its use of natural resources, e.g., high recycling rates and visible measures to conserve energy.

4.1 Land Area

The ZIP code was designed to accommodate mail delivery and its size along with population and transportation network is a reflection of that purpose. Comparing square miles

LGRW Top 5 Zip Codes	square mile	**LGRW Bottom 5 Zip Codes**	square mile
48813 Charlotte	171.0	49507 Grand Rapids	5.9
49058 Hastings	144.9	49503 Grand Rapids SE	6.6
48846 Ionia	104.8	49506 East Grand Rapids	7.5
48875 Portland	93.8	49505 Grand Rapids NE	8.7
49319 Cedar Springs	91.2	49548 Cutlerville	10.9

Source: U.S. Census 2000

4.2 Average Elevation

The range of average elevations in the watershed identifies the ZIP codes and communities that are upstream from each other and which such places may contain the headwaters of the tributaries to the Grand River. The changing elevations also suggest how the Grand River drops in height as it reaches Lake Michigan. Such information can help to specifically relate the place of a watershed resident to the whole watershed.

LGRW Top 5 Zip Codes	feet above sea level	**LGRW Bottom 5 Zip Codes**	feet above sea level
48888 Stanton	1,006	49417 Grand Haven	600
48829 Edmore	979	49456 Spring Lake	608
49073 Nashville	961	49426 Hudsonville	618
49050 Dowling	952	49418 Grandville	628
48886 Six Lakes	949	49404 Coopersville	631

Source: U.S. Census 2000

4.3 Agriculture in the Watershed

The Land Policy Institute at Michigan State University in partnership with the West Michigan Strategic Alliance completed an analysis of the agricultural economy in eight West Michigan counties, nearly all part of the LGRW. The results, published in 2009, describe the essential role agriculture plays in the West Michigan economy. Below are some highlights from the report:

- Agriculture in West Michigan represents approximately 28 percent of Michigan's agricultural economy. The agricultural sector employs over 26,200 people in these eight counties. The state and local government tax impact is over $103 million. An increase of five percent in agriculture-related sectors could result in an estimated increase of state and local tax revenue of nearly $5.2 million.

- Allegan, Montcalm and Ionia Counties have the greatest share of the region's agricultural acreage, containing 18.6, 16.4, and 16.1 percent, respectively in the region. Allegan County ranks first in total agricultural sales in 2007. Ottawa County, tied for fourth with Kent County in total agricultural land for the region, and has the second greatest value of sales for West Michigan. This is due, primarily, to the large sales in nursery, greenhouses, floriculture and sod. Newaygo County, with over 75% of its land devoted to natural land types, has experienced the greatest increase in the total number of farms from 1997 to 2007, while experienced a decrease in average farm size, with total agricultural acreage only increasing slightly.

- **Barry County** has the most acres devoted to the winter wheat/soybean double crop and the most pasture land in the region. The county ranks 5th in the region for total acres of row crops, grains, hay and seeds, and last for acres of other crops. Contributing factors to the comparatively low acreage in production are the large amount of water and natural land types found in Barry County.

- **Ionia County** ranks first in the region for row crop acreage, due to having the most acres for soybean production and the second most acres for corn production. Ionia also leads the region in acres of grains, hay and seeds, due to alfalfa and winter wheat production. Ionia County also has the fewest acres in natural land types and urban/developed land. The number of farms in the county remained fairly stable over the 10-year period (1997 to 2007), increasing by only two percent. Although average farm size in the county has decreased by six percent over this period, in 2007 it had the largest average farm size in the eight-county region. In 2007, Ionia was the highest earning county in West Michigan in the sale of milk and other bovine dairy products and was the second highest earning in the sale of grains, oilseeds, dry beans and dry peas.

- **Kent County** has the highest proportion of urban/developed land (33%). Despite the amount of developed land, which is concentrated in the county's southwest corner, it ranked fourth in the region in acres for the production of grains, hay and seeds, as well as for other crops. For 1997, 2002 and 2007, Kent was among the top three counties in the region in crop sales. Most of these sales can be credited to fruits, tree nuts and berries, and to nursery, greenhouse, floriculture and sod. From 1997 to 2007, Kent County lost more than eleven percent in the number of farms and lost more than fourteen percent in farmland acreage—the greatest losses in the region over this time period. Kent was Michigan's top apple county, with 9,325 acres devoted to commercial apple orchards.

- **Montcalm County** nearly ties with Ionia County for the most acres of grains, hay and seeds. It alone claims 61 percent of West Michigan acres of agriculture classified as other crops, with the greatest acreage of potatoes and dry beans and the third greatest acreage of miscellaneous vegetables and fruits in the region. Of the eight counties, Montcalm has the fourth greatest proportion of natural land types. In 1997 and 2002, Montcalm had the highest average farm size, but fell to second by 2007. For all three of these years, Montcalm County has had the third largest amount of harvested cropland in the region. The county also had the greatest sales in the region for vegetables, melons, potatoes and sweet potatoes, and for cut Christmas trees and short-rotation woody crops for 2002 and 2007.

- **Muskegon County** ranks at the bottom of the region in row crop acres and acres of grains, hay and seeds and ranks second to last in acres of other crops. It has the highest proportion of water and the second greatest proportion of natural land types. The county's southwest corner is fairly urban and claims about twelve percent of the region's total developed land, ranking it third in the region. The county consistently had the fewest number of farms in the region, and lowest total sales for all years. While the number of farms has been decreasing, Muskegon County has experienced the greatest maintenance of average farm size for the region. Muskegon's largest sales generally come from milk and other dairy products; nursery, greenhouse, floriculture and sod; and fruits, tree nuts and berries. While only a small portion of the county's total sales, it ranks first in the region in the value of certified organically produced commodity sales.

- **Newaygo County** is has the highest proportion of natural land in the region at 76 percent and the second greatest amount of surface water. The county ranks seventh in row crops and grains, hay and seeds, with much of it concentrated in southern portion of the county. Newaygo County experienced the greatest increase (20%) in farm numbers from 1997 to 2007, but greatest decrease in average farm size, indicating more, but smaller, farms. The largest sales in the County were generally from milk and other dairy products. Newaygo County ranks second in the region in the value of certified organically produced commodities.

- **Ottawa County** has the 2nd highest proportion of urban/developed land (28%) in the eight-county region. It also ranks 2nd in the acreage devoted to the agricultural category of other crops, primarily the sub-categories of other crops and miscellaneous vegetables and fruits. Ottawa County had the highest total crop sale values in 1997, 2002 and 2007, due primarily to the large value of sales in the nursery, greenhouse, floriculture and sod category (nearly half of all sales in this category for the West Michigan region). Ottawa County ranks 2nd in livestock, poultry and their products, as well in total agriculture sales for the region, and 1st in the average sales-per-farm.

4.4 Parks, Recreation and Tourism

The connections made with a place during the pursuit of outdoor recreation often encourage environmentally friendly behavior and link personal values with protecting the environment. Researchers have found that people consistently point to the same kinds of life experiences, such as recreation, as profoundly influencing their later environmental interests and activism. Recreational experiences have motivated people to act to protect the environment.

The Lower Grand River Watershed is a mixture of both rural and urban outdoor recreational resources. Its proximity to Lake Michigan and other water resources and numerous other parks and natural areas, outdoor recreation plays a significant role in watershed's culture and economy. This diversity of recreational opportunities is one of the cultural strengths of the watershed. These recreational areas are within commuting distance of major employment centers and attract both watershed residents as well as visitors to the watershed.

*Examples of the **parks and other recreational amenities** present in the watershed:*

- North Country Trail Kent and Barry Counties (Lowell is trail's half-way point and national headquarters of North Country Trail Association)
- Barry State Game Area, Barry County
- Cannonsburg State Game Area, Kent County
- Grand River State Game Area, Ionia County
- Bass River State Recreation Area, Ottawa County
- Ionia State Recreation Area, Ionia County
- Flat River State Game Area, Ionia and Montcalm Counties
- Yankee Springs Recreation Area, Barry County
- White Pine Trail begins in Kent County and runs northeast for nearly 100 miles
- Thornapple Trail when complete will be 42 miles from Grand Rapids to Vermontville
- Kent Trails runs north/south from John Ball Park in Grand Rapids to Byron Township
- Frederik Meijer Trail runs east/west mostly along M-6 and will connect with other trails
- Cannon Township Trail, Kent County
- Musketawa Trail stretches 25 miles through Ottawa and Muskegon Counties
- Frederik Meijer Gardens and Sculpture Park, Grand Rapids Township
- John Ball Zoological Garden, Grand Rapids
- Millennium Park, Kent County
- Rosa Parks Circle, Grand Rapids
- Dolan Natural Area, Kent County, West Michigan Trout Unlimited
- Tyden Park and Fish Hatchery Park, Hastings
- Historic Charlton Park Village and Recreation Area, Barry County
- McKeown Bridge Park, Barry County
- Michigan Audubon Warner Sanctuary, Barry County
- Lake Alliance Park, Potterville, Eaton County
- Woldumar Nature Center, Eaton County
- Bertha Brock Park, Ionia County
- Ionia County Fair, Ionia County
- Grand River Trail, Ionia County
- Flat River Nature Park, Montcalm County
- McCarthy Park, Montcalm County

*Examples of **historic sites** on the National Register of Historic Places present in the watershed:*

- Porter Hollow Embankment and Culvert (trestle bridge over Stegman Creek), Algoma Township
- Ada Covered Bridge (south of where Thornapple River enters the Grand River)
- Berkey and Gay Furniture Company Factory, Grand Rapids
- American Seating Company Factory Complex, Grand Rapids
- Meyer May House, designed by Frank Lloyd Wright, Grand Rapids
- Downtown Lowell Historic District
- Fallasburg Covered Bridge (Flat River), Vergennes Township
- Monroe Avenue Water Filtration Plant
- Sixth Street Bridge, Grand Rapids
- Chief Noonday Group Camp Historic District, Barry County
- Long Lake Group Camp Historic District, Barry County
- First Congregational Church, Vermontville, Eaton County
- Vermontville Opera House, Eaton County
- Hall-Fowler Memorial Library, Ionia
- Ionia Downtown Commercial Historic District, Ionia
- Greenville Downtown Historic District
- Battle Point Site, Ottawa County
- Fruitport Road-Pettys Bayou Bridge, Spring Lake Township

Researchers at GVSU and MSU developed a computerized tool to estimate the dollar values of natural features in Muskegon, Ottawa, Newaygo, Kent, Ionia, Allegan, and Barry counties. The program is called INVEST for Integrated Valuation of Ecosystem Services Tool. The INVEST tool provided a breakdown of the value of natural features in each of these seven counties (portions of these seven counties are present in the LGRW). Researchers calculated the worth of natural features by measuring the value of ecosystem services, defined as the direct and indirect benefits that natural features provide humans, including recreation, improved water quality, fish and wildlife habitat, tourism, soil erosion control, food production, scenic beauty, and improved human health.

According to the study, 996,000 acres of forest land in the seven-county area were the region's most valuable natural asset, worth an estimated $1.1 billion annually. West Michigan's natural resources — forests, sand dunes, wetlands and water — provide many benefits calculated to be worth at least $1.6 billion annually. Lake Michigan beaches and sand dunes, spanning 4,762 acres in Muskegon, Ottawa and Allegan counties, ranked second in value, at $139 million. Those were followed by cropland, at $119 million (including the value of crops); wetlands, $81 million; and inland lakes and streams (excluding Lake Michigan), at $62 million. Newaygo County had the largest portfolio of natural features, worth an estimated $899 million due to the presence of the Manistee National Forest. Muskegon County placed second with natural features valued at $242 million. Ottawa County with natural features valued at $134 million, and Kent County estimated to be worth $111 million. By comparison, the value of all goods and services produced by businesses in the seven county area studied is $45 billion annually, according to the West Michigan Strategic Alliance.

Other notes regarding parks, recreation, and tourism in the Lower Grand River Watershed:

- Parks and recreation are so highly valued in LGRW communities that several have staffed and funded with public moneys local agencies, e.g. park and recreation departments, responsible for protecting natural resources and providing and promoting recreation services. In addition, an entire industry exists in the region to entice visitors to take advantage of the watershed's natural resources for recreation. Studies document that these nature-based tourism activities provide a significantly positive gain for the health of the residents and to the regional economy.

- The West Michigan Tourist Association, a regional tourism organization that represents over forty counties and has 1,064 members. The WMTA is the oldest, continually operating regional tourist organization in the U.S.

- The West Michigan Strategic Alliance and its Green Infrastructure Initiative is another example of the value placed on the natural resources of the watershed.

- Outdoor recreation is an important component of the watershed's economy and quality of life. Diverse tourism and recreational opportunities are available that range from hiking and bird watching in local parks to swimming at beaches. A well-defined four-season climate supports many types of recreation ranging from ice fishing, skiing, and snowmobiling in the winter to golf, biking, and boating in the summer.

- With its agriculture base, the watershed contains a variety of farm-related tourism opportunities. These opportunities include fresh produce from local farm markets, local u-pick farms, hayrides and mazes, cider mills, nature centers, gardens, and more are all located in the watershed, encouraging visitors to explore and enjoy the rural amenities of the watershed.

- Preserved open spaces play a substantial role in supporting the watershed economy. For example, the use of environmentally sensitive areas as open space or for recreational purposes contributes to reducing potential property damage costs by mitigating flood hazards. The combination of habitat protection and recreation is often the highest and best use of lands that are too fragile for development. In the long run, the cost of not protecting such assets as groundwater, steep slopes, woodlots, wetlands, and floodways would be much higher.

4.5 Solid Waste Management and Recycling

The management of solid waste often represents the endpoint in the flow of natural resources. In order to slow this flow and reduce landfill space, many watershed residents have been encouraged to separate and recycle their discarded materials, in spite of the obstacles. Several watershed communities provide easier access to recycling opportunities. Awareness and knowledge of solid waste issues, including recycling, suggests less litter might be found in a watershed and its surface waters.

The West Michigan Strategic alliance collected recycling information for eight counties (Allegan, Barry, Ionia, Kent, Montcalm, Muskegon, Newaygo and Ottawa, all with some or all land area in the LGRW). Each county was evaluated based on selected criteria, such as urban population, availability of curbside recycling, publicly run programs, offer of clean-up days, and drop-off facilities. This information was used to describe what recycling resources were available in each county. Some conclusions from this study included:

- **Availability of Curbside Recycling:** The majority of residents living in urban areas have access to curbside recycling. Several cities offering municipally run programs and others are considering such programs or creating better guidelines and regulations for private waste haulers.
- **Large Manufacturers Recycling:** With a large manufacturing base, some companies are establishing themselves as leaders in sustainable manufacturing, including recycling programs. Others companies are integrating better recycling programs to save money on waste disposal.
- **Strong Municipal Programs:** Most metropolitan areas have taken steps to increase recycling. All have universal curbside collection programs. Grand Rapids uses a pay-as-you-throw trash disposal system to encourage recycling. Grand Rapids is also building a new single-stream recycling facility and burns a large portion of its garbage at their Waste to Energy plant.
- **Access to Chicago's Markets:** Many experts believe West Michigan's proximity to Chicago and the existing rail system might allow manufacturers using recycled materials in their products to access Chicago's markets, eventually plugging into Chicago's Waste to Profit program.
- **Market for LEED Certified Products:** West Michigan's leadership in LEED (Leadership in Energy and Environmental Design) buildings provides an incentive for companies to create and use construction material made with recycled materials.
- **Strong Community Organizations:** West Michigan has an excellent base of community organizations working to promote recycling.

4.6 Drinking Water

Quality drinking water is an invaluable resource, one that should not be taken for granted. With the growing dependence on either municipal or self-supplied drinking water, the protection of water quality in streams, lakes, and wetlands should continue to be a top priority.

- It is estimated that the average Michigan household uses 75 gallons of water per person per day. The **LGRW survey** conducted in 2009 and 2010 asked Kent County participants if they knew where

they or their community get their drinking water. About 74 percent responded "yes". Participants were then asked where their drinking water came from and 37 percent identified a well or groundwater, 34 percent responded Lake Michigan, 20 percent indicated governmental unit, 5 percent said the Grand River, and the remainder selected other.

- Supplying watershed communities with water involves withdrawing, treating, and distributing water for residential, public, commercial, and industrial uses. Residential uses include water for drinking, household activities, and lawn and garden sprinkling. Public uses include fire fighting, street washing, and supplying parks, golf courses, and swimming pools. Commercial and industrial uses include providing water for hotels, restaurants, laundries, office buildings, manufacturers, and industrial complexes. **Public water supply systems** are the sole source of water for many of these facilities, while others use a combination of public and self-supplied water sources.

- Drinking water supplies come from two basic sources in the watershed – groundwater and surface water. The largest public water supplies (Type I Community Water Supplies) in the watershed originate from Lake Michigan and include systems that service the Grand Rapids metropolitan area and northwest Ottawa County. Many other smaller communities in the watershed depend on groundwater for their community systems. In addition there are many Type II public water supplies utilizing groundwater to serve watershed schools, industry, hotels, restaurants, campgrounds, and municipalities.

- Areas not connected to community water systems, whether from groundwater or surface water, are served by **on-site private wells**. It is difficult to determine how many non-community, private wells are being used for drinking water in the watershed.

- Several communities in the watershed utilizing groundwater for community water supply have established **wellhead protection programs** as defined under federal and state regulations.

4.7 Wastewater

One of the threats to drinking water supplies includes the management of wastewater, whether handled properly or inadequately, by multitudes of individual on-site septic systems or by a large municipal system which transports wastewaters great distances within this regional system.

- Those areas not served with sanitary sewers utilize individual on-site septic systems. **Septic system failure** is a significant water quality concern since the effluent, if not properly managed, can contaminate drinking water wells and surface waters as well as pose other public health risks. In 2007, the USEPA estimated that **50 percent** of total housing units with septic systems were in rural areas, **47 percent** were in suburbs, while **3 percent** were found in central cities.

- It is estimated that **250-350 gallons** of wastewater is generated per household per day by Michigan residents. About 28 percent of the state's households are served by septic systems, or a total of over 1.2 million **on-site wastewater systems** generating 264 million gallons of wastewater per day. Included in this estimate are over 30,000 commercial and community subsurface disposal systems with flows up to 10,000 gallons per day. Local health departments estimate that 33,000 individual permits maybe issued annually for new and replacement on-site wastewater systems. Data also suggests that over 50 percent of new single family homes utilize on-site wastewater systems.

- Several communities own and operate their own wastewater collection systems or send their wastewaters to another **public wastewater treatment system**. The following communities are among several that have wastewater treatment systems operating in the watershed:

  Hastings, Barry County
  Grand Rapids, Kent County
  Portland, Ionia County
  Caledonia Township, Kent County
  North Kent Sewer Authority, Kent County
  Cedar Springs, Kent County
  Coopersville, Ottawa County
  Grandville, Kent County
  Kentwood, Kent County
  Wyoming, Kent County
  Spring Lake Township, Ottawa County
  Ionia, Ionia County
  Lowell, Kent County

5.0 ZIP Code Profiles

Since they are so easily remembered, recognized and always a part of any standard address, nearly every adult knows his or her own ZIP code.

Today a lot of information is being squeezed into and out of a ZIP code. ZIP codes are widely used in many applications, including community planning. Data about the residents are being compiled by ZIP code and then mined by others for data by ZIP code. For the LGRW, the ZIP code provides a variety of data at a more intimate scale that is otherwise found at larger scales. Using ZIP codes to define the target audiences and to reach out and involve local stakeholders can result in more locally relevant efforts, taking into account each ZIP codes unique social, economic, and environmental situation.

However, it is important to remember that ZIP codes exist solely to help the U.S. Postal Service deliver mail more efficiently. As such, their main limitations are:

- They can be unreliable for mapping, because they can cross so many political boundaries, and boundaries may change (the U.S. Census Bureau created the ZCTA or ZIP Code Tabulation Areas which can be mapped).
- The number of ZIP codes varies greatly within most geographical boundaries.
- They were not created with any intention of characterizing populations
- New ZIP codes are added periodically, which is evident in the LGRW. Data coded one year cannot always be added to data from future years since changes may occur in ZIP code boundaries from year to year. However, information can be coded without reference to old ZIP codes with ZCTA.

ZIP Code Profiles were created for the codes that overlie the Lower Grand River Watershed (see Attachment 1). These profiles, organized by major watershed ZIP code, contain data categories on population, economy, education, and social indicators. These data were selected to highlight the socioeconomic patterns that are found in the watershed. The ZIP codes in the LGRW can be found below and the compilation of LGRW ZIP codes Profiles can be found on the following pages.

ZIP Codes in LGRW Counties

Kent	Barry	Eaton	Ionia	Montcalm	Ottawa
49301, 49302, 49306, 49315, 49316, 49317, 49319, 49321, 49326, 49330, 49331, 49341, 49343, 49345, 49351, 49355, 49356, 49357, 49418, 49468, 49501, 49502, 49503, 49504, 49505, 49506, 49507, 49508, 49509, 49510, 49512, 49514, 49515, 49516, 49518, 49523, 49525, 49530, 49544, 49546, 49548, 49550, 49555, 49560, 49588, 49599	48897, 49035, 49046, 49050, 49058, 49060, 49073, 49325, 49333	48813, 48821, 48827, 48837, 48861, 48876, 48890, 48907, 48908, 48917, 49021, 49076, 49096	48809, 48815, 48845, 48846, 48849, 48851, 48860, 48865, 48870, 48873, 48875, 48881, 48887	48811, 48812, 48818, 48829, 48834, 48838, 48850, 48852, 48884, 48885, 48886, 48888, 48891, 49322, 49329, 49339, 49347	49401, 49403, 49404, 49409, 49417, 49422, 49423, 49424, 49426, 49427, 49428, 49429, 49430, 49434, 49435, 49448, 49456, 49460, 49464

Part 1 – Summary of ZIP Code Profiles in the Lower Grand River Watershed

	Land area (acres)	Elevation (feet)	population	Median age	% Under 5	% Over 65	%Black	% Hispanic	Household Size	Housing units	% 4+ year degree +	% Language not English	% Workforce	Commute (minutes)
48809 Belding	86.7	798	11,192	33.4	7.8	10.9	0.4	2.7	2.73	4,299	12.2	3.6	68.1	28.4
48813 Charlotte	171.0	929	20,363	36.5	6.5	11.6	0.5	2.8	2.63	7,848	17.1	3.3	69.4	23.8
48815 Clarksville	28.8	818	2,095	34.9	7.4	10.5	0.1	1.3	2.76	870	15.3	1.6	67.1	28.9
48829 Edmore	66.9	979	3,430	36.3	7.1	15.6	0.2	2.6	2.61	1,413	10.7	3.3	61.7	21.2
48834 Fenwick	50.6	817	2,412	36.1	7.0	8.9	0.9	3.5	2.81	998	6.3	3.1	66.6	30.3
48837 Grand Ledge	79.2	848	17,456	37.8	6.1	10.4	0.6	2.2	2.60	6,957	25.0	4.0	70.8	21.5
48838 Greenville	91.0	848	16,540	36.3	6.6	13.7	0.4	2.6	2.55	6,986	14.2	3.3	64.8	24.8
48846 Ionia	104.8	752	19,934	30.1	5.6	9.0	13.7	4.1	2.60	5,992	9.4	6.4	46.3	24.8
48849 Lake Odessa	83.3	688	6,150	34.9	7.0	11.7	0.1	3.9	2.74	2,430	12.0	4.3	66.0	29.1
48851 Lyons	32.5	764	2,256	35.7	6.0	9.8	0.1	2.0	2.69	884	7.2	2.3	69.6	27.9
48865 Orleans	20.1	831	1,852	33.7	7.5	9.0	0.2	1.9	2.76	782	7.2	2.4	64.0	41.8
48875 Portland	93.8	801	9,208	33.8	7.7	9.9	0.3	1.2	2.78	3,429	17.3	2.1	72.8	24.6
48876 Potterville	14.1	896	3,473	32.9	7.8	6.8	0.5	4.6	2.73	1,381	10.9	3.2	75.8	23.0
48881 Saranac	57.6	688	5,319	35.6	6.8	10.9	0.1	1.8	2.67	2,114	10.8	3.3	68.1	29.5
48884 Sheridan	60.3	837	4,770	36.2	5.7	10.0	6.3	2.0	2.68	1,727	7.2	4.5	53.9	28.3
48885 Sydney	14.9	883	813	35.3	6.3	10.3	0.1	1.1	2.70	317	13.1	2.2	66.6	27.3
48886 Six Lakes	29.2	949	2,215	37.3	7.3	14.6	0.4	1.6	2.58	1,169	8.8	5.1	58.6	26.7
48888 Stanton	91.0	1006	6,859	36.1	6.4	12.1	0.2	2.7	2.66	3,019	10.2	2.9	61.6	28.6
48890 Sunfield	30.1	860	2,107	36.2	7.1	11.7	0.3	1.9	2.77	785	10.2	1.0	67.7	36.3
48897 Woodland	31.3	859	1,442	36.9	6.7	12.8	0.1	2.4	2.67	559	13.3	2.6	43.6	29.1
49046 Delton	86.7	798	11,192	33.4	7.8	10.9	0.4	2.7	2.73	4,299	12.2	3.6	68.1	28.4
49050 Dowling	MMM	952	1,562	40.4	5.4	10.8	0.8	0.3	2.58	667	11.4	2.6	67.0	31.7
49058 Hastings	MMM	828	18,071	36.8	7.0	13.8	0.2	1.6	2.62	7,279	17.0	1.6	65.7	24.7
49073 Nashville	74.4	961	5,134	35.5	6.4	11.7	0.2	0.6	2.67	2,061	11.0	1.8	65.8	30.0
49096 Vermontville	66.6	939	3,305	36.2	6.3	9.9	0.4	1.1	2.81	1,257	9.7	4.9	67.1	31.3
49301 Ada	55.7	645	10,439	37.8	7.0	6.9	0.4	1.1	3.06	3,535	49.3	4.8	71.6	23.9
49302 Alto	48.4	841	6,467	35.5	7.1	68.1	0.3	1.1	3.02	2,209	30.0	3.1	73.4	26.4
49303 Bailey	14.1	820	1,024	31.7	6.3	8.3	0.0	6.5	2.97	369	12.4	10.8	66.4	28.5
49306 Belmont	17.7	671	8,008	36.6	7.8	10.2	0.7	1.3	2.84	2,924	29.4	4.1	73.8	23.4
49315 Byron Center	53.4	706	13,721	34.2	7.1	9.8	0.5	1.2	2.87	4,891	23.6	3.5	81.8	20.6
49316 Caledonia	59.0	801	13,968	35.6	7.8	9.4	1.1	1.4	2.88	5,124	29.3	5.0	75.0	21.1
49318 Casnovia	19.2	811	1,460	34.7	6.2	8.6	0.0	5.3	2.84	547	11.6	5.8	72.5	25.9
49319 Cedar Springs	91.2	858	13,692	33.9	7.7	12.4	12.3	12.5	2.84	4,975	11.8	4.7	71.0	29.0
49321 Comstock	24.0	739	15,613	29.5	7.9	7.9	2.7	5.6	2.55	6,375	20.9	7.5	79.1	21.2
49322 Coral	26.4	928	1,261	36.2	6.6	11.7	0.0	1.1	2.78	578	8.6	5.0	55.2	35.1
49325 Freeport	25.9	859	1,642	34.8	7.2	8.7	0.5	1.9	2.96	572	8.3	2.7	68.5	25.2
49326 Gowen	25.3	844	3,445	36.9	6.4	9.6	0.7	1.2	2.66	1,512	8.0	2.9	66.8	30.2
49330 Kent City	42.8	821	4,875	33.0	7.6	9.2	0.5	5.4	3.00	1,645	8.4	7.3	72.7	30.5
49331 Lowell	88.1	675	14,689	35.1	7.1	9.5	0.7	2.0	167	5,260	20.0	3.5	72.8	25.1
49333 Middleville	80.2	739	9,320	34.7	7.6	8.8	0.1	1.3	2.85	3,717	17.2	3.4	72.6	24.4
49339 Pierson	29.2	895	2,155	35.0	35.0	8.6	0.1	0.9	2.83	1,041	13.8	3.3	69.1	35.3
49341 Rockford	83.6	859	29,095	34.5	8.3	7.0	0.4	1.3	2.96	10,344	31.9	2.9	73.1	26.3
49343 Sand Lake	54.6	882	4,991	34.9	7.1	9.6	0.4	2.0	2.81	2,040	9.1	3.2	67.3	34.9
49345 Sparta	54.4	738	12,374	34.4	7.3	10.3	0.4	3.1	2.76	4,671	13.5	2.8	70.6	23.5
49347 Trufant	18.3	875	1,292	38.4	5.9	13.9	0.3	0.5	2.56	662	12.8	2.4	67.1	34.5
49401 Allendale	25.8	660	13,110	21.1	6.0	4.3	2.8	3.0	3.00	3,540	24.4	17.9	71.2	20.2
49403 Conklin	45.2	790	2,495	33.0	6.5	8.9	0.0	6.7	3.08	839	12.1	5.3	71.6	25.7
49404 Coopersville	64.5	631	7,952	34.3	7.0	10.7	0.2	2.4	2.87	2,869	16.1	4.4	72.3	22.5
49415 Fruitport	25.2	641	5,818	36.6	5.8	10.4	0.6	1.6	2.81	2,141	24.4	2.8	68.6	21.1
49417 Grand Haven	49.5	600	27,969	36.8	6.5	12.1	0.3	1.9	2.57	11,691	28.2	3.7	71.0	19.7
49418 Grandville	20.7	628	25,028	33.5	7.2	11.6	1.4	2.9	2.73	9,363	25.1	5.0	74.2	19.3
49426 Hudsonville	62.6	618	27,015	32.4	8.8	9.2	0.2	1.2	3.09	8,948	26.7	3.7	75.1	20.8
49428 Jenison	15.3	657	24,452	35.9	6.5	11.9	0.5	1.8	2.88	8,543	25.6	3.7	71.8	22.5
49435 Marne	24.3	685	3,615	36.4	6.7	12.4	0.3	1.9	3.01	1,175	12.4	6.4	70.9	22.6

49448 Nunica	32.6	634	3,251	36.5	6.3	10.2	0.6	1.7	2.71	1,259	15.3	7.7	73.4	22.3
49451 Ravenna	78.9	698	6,053	33.9	6.9	10.0	0.3	2.5	2.93	2,169	9.1	3.5	65.6	29.5
49456 Spring Lake	23.9	608	17,080	38.9	6.3	14.4	0.4	1.4	2.44	7,648	36.1	3.5	68.9	21.6
49503 GR SE	6.6	744	33,909	29.7	7.7	9.0	22.2	15.3	2.28	15,169	23.2	15.3	65.8	19.5
49504 Walker	12.3	762	40,199	32.7	8.1	13.5	3.0	13.1	2.57	16,394	18.2	14.6	66.9	19.3
49505 GR NE	8.7	673	31,967	33.6	8.0	15.2	9.9	3.9	2.41	13,349	25.1	7.0	68.0	19.3
49506 E. GR	7.5	795	33,864	34.0	7.5	13.3	20.5	3.6	2.63	12,840	48.3	7.7	66.5	17.3
49507 GR	5.9	682	39,734	27.3	10.3	6.3	43.0	23.2	3.09	13,692	18.3	23.3	63.9	20.5
49508 Kentwood	12.2	736	40,065	33.0	7.6	10.8	13.1	4.8	2.58	15,910	30.1	12.6	71.5	19.4
49509 Wyoming	17.0	643	59,089	30.8	8.0	9.8	5.3	13.5	2.60	23,410	17.0	15.3	73.0	19.8
49512 GR	21.8	793	11,195	30.2	7.9	7.4	12.2	4.0	2.05	5,986	37.5	16.6	78.1	20.2
49525 Northview	23.5	791	26,662	35.5	6.2	10.2	2.0	1.8	2.64	10,143	31.4	4.5	72.6	19.9
49544 GR	54.4	715	28,217	32.7	7.1	10.0	1.3	2.6	2.53	11,520	20.9	4.5	74.3	19.3
49546 Forest Hill	22.0	749	33,844	36.5	6.3	14.9	4.7	1.8	2.58	12,426	48.4	11.9	65.2	17.8
49548 Cutlerville	10.9	679	31,475	31.7	8.3	9.8	5.6	6.6	2.54	12,776	10.6	9.5	72.2	20.0

Part 2 – Summary of ZIP Code Profiles in the Lower Grand River Watershed

	Farm operations	Farms with animals	Govt payments	% Urban population	K-12 students	Households	Vehicles	Median income	% Families poverty	% Work in county	Businesses	% Employed manufacturing
48809 Belding	147	61	62	52.8	2,538	4,011	7,438	$40,275	9.2	48.2	194	31.8
48813 Charlotte	404	141	220	46.0	4,230	7,545	14,114	$46,924	4.4	60.5	421	24.4
48815 Clarksville	65	32	35	0.0	436	759	1,487	$43,942	3.8	32.4	30	27.4
48829 Edmore	76	35	33	0.0	856	1,298	2,178	$31,950	12.4	70.9	101	24.6
48834 Fenwick	100	36	60	0.0	524	853	1,636	$40,938	5.3	55.6	19	33.2
48837 Grand Ledge	120	35	54	64.7	3,697	6,699	12,887	$57,271	3.5	39.1	371	15.7
48838 Greenville	133	45	48	47.2	3,329	6,394	11,009	$37,883	6.5	61.5	454	30.4
48846 Ionia	220	103	121	70.3	3,681	5,572	9,742	$41,071	8.8	67.1	329	24.5
48849 Lake Odessa	169	73	107	41.8	1,481	2,244	4,216	$42,228	3.5	39.8	130	26.3
48851 Lyons	58	28	31	0.0	530	839	1,677	$46,399	5.8	58.5	21	27.7
48865 Orleans	32	5	11	0.0	394	501	1,342	$36,813	10.2	45.8	13	34.9
48875 Portland	212	90	123	44.3	2,225	3,307	6,733	$53,464	3.4	42.3	181	19.8
48876 Potterville	32	13	11	62.3	778	1,274	2,358	$48,971	2.8	49.6	46	17.3
48881 Saranac	90	60	42	0.0	1,194	1,990	3,741	$44,544	5.0	34.5	80	27.7
48884 Sheridan	126	52	71	0.0	929	1,550	2,916	$35,806	9.7	69.1	49	33.3
48885 Sydney	29	9	18	0.0	184	301	600	$41,838	4.8	73.6	12	38.5
48886 Six Lakes	41	24	26	0.0	432	859	1,469	$32,672	7.0	66.5	35	30.4
48888 Stanton	167	67	72	0.0	1,483	2,545	4,747	$38,615	8.9	71.0	113	31.3
48890 Sunfield	53	11	32	0.0	430	754	1,502	$46,164	3.2	39.1	30	20.8
48897 Woodland	58	8	40	0.0	297	541	1,095	$43,558	4.4	43.6	20	33.2
49046 Delton	143	58	53	0.0	1,322	7,130	5,060	$40,275	9.2	48.2	194	31.8
49050 Dowling	41	16	21	0.0	252	605	1,207	$51,406	2.6	25.6	14	33.1
49058 Hastings	284	103	127	MM	3,606	6,752	12,738	$44,440	4.5	MM	451	31.4
49073 Nashville	212	76	103	0.0	1,101	1,915	3,631	$39,082	6.9	44.8	62	33.3
49096 Vermontville	177	69	81	0.0	771	1,172	2,487	$47,473	4.0	51.3	33	24.4
49301 Ada	74	25	18	38.7	2,320	3,403	7,327	$83,902	2.1	93.7	392	19.8
49302 Alto	106	46	29	23.7	1,535	2,133	4,534	$62,520	1.9	89.9	126	26.9
49303 Bailey	36	19	16	0.0	274	344	671	$37,778	7.5	29.4	14	29.3
49306 Belmont	25	10	3	62.2	1,653	2,815	5,388	$61,601	1.0	91.6	186	21.9
49315 Byron Center	144	55	35	57.1	3,774	4,755	9,329	$57,603	1.7	81.8	528	23.4
49316 Caledonia	95	49	35	27.9	3,312	4,838	9,564	$61,810	2.8	81.1	495	23.1
49318 Casnovia	42	22	22	0.0	372	503	1,061	$51,985	5.6	31.0	19	30.7
49319 Cedar Springs	156	62	43	21.8	3,276	4,783	9,447	$46,608	5.0	87.5	250	5.0
49321 Comstock	41	12	15	84.9	6,178	6,102	10,684	$46,231	5.5	90.8	436	24.7
49322 Coral	40	16	18	0.0	283	452	847	$37,269	5.2	53.4	7	24.3
49325 Freeport	56	23	37	0.0	346	553	937	$48,517	4.9	51.3	30	31.5

49326 Gowen	46	9	18	0.0	710	1,272	2,565	$48,601	6.5	80.7	75	26.7
49330 Kent City	99	31	28	0.0	1,132	1,582	3,148	$52,654	3.5	86.1	351	27.1
49331 Lowell	134	65	37	41.8	3,520	14,106	10,252	$53,321	2.7	33.3	192	30.5
49333 Middleville	115	65	31	28.8	2,121	3,267	6,638	$48,750	3.2	18.5	192	30.8
49339 Pierson	33	16	14	0.0	515	761	1,536	$45,875	4.9	49.4	35	31.7
49341 Rockford	128	43	43	58.0	7,347	9,839	19,728	$64,165	3.9	91.5	659	21.9
49343 Sand Lake	122	47	31	0.0	1065	1,772	3,367	$46,860	7.6	47.6	61	32.8
49345 Sparta	97	29	26	40.2	2,827	4,459	8,277	$46,309	3.6	91.0	263	29.5
49347 Trufant	42	18	26	0.0	239	504	969	$39,167	4.4	51.2	12	32.6
49401 Allendale	60	25	17	74.3	1,755	3,354	6,934	$43,449	2.6	52.9	186	15.2
49403 Conklin	116	45	38	0.0	614	783	1,745	$51,103	3.8	42.3	46	24.5
49404 Coopersville	183	91	83	45.0	1,949	2,717	5,254	$50,410	4.4	46.8	207	24.5
49415 Fruitport	41	15	2	48.9	1,233	2,060	4,022	$46,818	6.5	59.1	115	32.8
49417 Grand Haven	73	22	7	81.2	5,746	10,727	19,509	$51,142	1.9	75.6	936	28.7
49418 Grandville	35	10	7	93.4	5,545	9,064	16,663	$ 51,433	2.3	74.2	1,011	21.5
49426 Hudsonville	250	86	54	73.3	6,856	8,683	17,787	$60,507	1.8	49.8	638	24.9
49428 Jenison	20	8	13	98.0	5,673	8,382	18,576	$57,008	2.1	36.4	582	22.9
49435 Marne	64	28	17	16.4	850	1,145	2,336	$57,356	5.4	26.3	102	23.5
49448 Nunica	60	19	14	100	846	1,191	1,122	$46,019	3.6	60.7	80	28.3
49451 Ravenna	142	74	50	100	1,370	2,062	1,934	$42,379	5.8	51.4	76	34.6
49456	56	6	2	82.1	3,151	6,889	12,407	$51,359	2.8	62.1	408	25.2
49503 GR SE	0	0	0	100	5,511	31,829	17,948	$30,176	16.7	92.2	1,604	19.2
49504 Walker	0	0	0	100	7,639	39,790	23,490	$38,835	11.1	90.9	904	25.3
49505 GR NE	0	0	0	100	6,060	30,778	20,039	$40,710	6.9	93=	545	19.9
49506 E. GR	0	0	0	100	7,016	32,005	20,450	$65,784	7.6	93.8	589	15.7
49507 GR	0	0	0	100	10,187	39,369	18,801	$ 36,520	18.0	93.5	424	27.0
49508 Kentwood	0	0	0	100	8,179	39,194	25,284	$ 47,495	4.3	94.0	845	25.0
49509 Wyoming	0	0	0	100	12,152	58,843	37,092	$42,138	6.5	90.0	778	28.5
49512 GR	3	0	0	96.1	1,412	11,166	8,173	$42,315	5.0	94.0	1,209	23.2
49525 Northview	28	2	7	92.0	5,953	26,042	14,110	$50,316	4.0	92.1	791	19.4
49544 GR	73	33	22	86.0	5,597	27,948	18,994	$47,615	3.0	77.5	603	25.4
49546 Forest Hill	0	0	0	100	6,744	30,771	20,717	$59,945	4.8	94.6	1,405	17.9
49548 Cutlerville								$44,931	5.6	91.9	912	29.2
	Farm operations	Farms with animals	Govt payments	% Urban population	K-12 students	Households	Vehicles	Median income	% Families poverty	% Work in county	Businesses	% Employed manufacturing

6.0 What Are the Issues?

Census data does not tap into how stakeholders understand and view the various issues affecting the Lower Grand River Watershed, i.e. how understanding their beliefs, values, and attitudes might help to better define approaches to improving the water quality in the watershed. Surveys can supplement other information about what issues are important in the watershed, as suggested by survey respondents. Surveys can be used to assess preferred courses of action and the possible acceptance or rejection of ideas or solutions. Surveys, representing a snapshot of the moment in time, can help gauge the perceptions of issues held by watershed stakeholders, although not necessarily capturing the complete and complex set of issues as viewed by all watershed stakeholders.

6.1 The LGRW Survey

6.1.1 Survey Background

Several information and education (I/E) tasks were implemented as part of the Lower Grand River Watershed Initiatives. One task included the creation of a new logo for the LGRW for the purpose of increasing watershed awareness and enhancing the visibility of the partners working together as the Lower Grand River Organization of Watersheds (LGROW). The logo was used on LGROW communications, including letterhead and website. Several portable displays were purchased to assist LGROW and subwatershed organizations in their I/E efforts, also using the logo when possible. In addition, a series of three inserts were distributed through the regional newspaper, the *Grand Rapids Press*. These inserts were focused on various watershed issues associated with the Lower Grand River Watershed and utilized the LGROW logo as one point of recognition.

A two-stage survey was used to assess whether the I/E efforts, as represented by the new watershed logo and the three inserts distributed through the *GR Press*, would increase awareness of watershed issues. An initial survey, a pre-insert survey, would establish a baseline for assessing watershed awareness before the actual distribution of inserts. Subsequently, this benchmark would be used to compare the influence of *GR Press* inserts on public awareness of watershed issues.

6.1.2 Survey Methodology

Quality Assurance Project Plan

A quality assurance project plan (QAPP) was prepared to provide a blueprint for the collection of survey data. The QAPP was intended to reduce the risk that incorrect conclusions about the watershed and its residents would be reached due to the collection of faulty data. By applying standard methods of quality assurance and quality control, this risk would be minimized, a satisfactory level of confidence would be ensured, and the purpose of the survey would be achieved.

Survey Instrument

A 34-question survey (Attachment 2) was created for this effort and then implemented in partnership with Carl Frost Center for Social Science Research at Hope College. It was designed to measure awareness, perceptions, and behaviors related to water quality in the LGRW. The same survey was also used to collect demographic data on the respondents, such as their ZIP code, age, etc. gender

Survey Population

In defining a population for the survey, it was decided to select a sample from watershed residents living within the boundaries of Kent County for the following reasons:

- Unlike most of the other watershed counties, it is wholly contained within the LGRW.
- Kent County is the most populous LGRW county and the fourth largest county in the state
- The *Grand Rapids Press* is headquartered there with much of its readership in the county.
- The general public more readily identifies with living in a specific county than living in the LGRW.
- Kent County is wholly contained within the 616 area code which simplifies the random selection of households for sampling
- Unlike other LGRW counties, the county contains a much more diverse population with urban, suburban, small town, non-farm rural, and farm residents.
- Kent County, containing a large population core and employment nucleus, has a high degree of economic and social integration with other communities in the watershed.
- The adoption of storm water or non-point source ordinances by 25 communities in Kent County suggests a growing need to assess watershed awareness of county residents.

Survey participants were selected from a random sample of Kent County households.

Procedure

The first wave of telephone interviewing was conducted from December 1 to December 10, 2009, using randomly generated telephone numbers purchased from Survey Sampling Inc. After the three inserts were distributed through the *Grand Rapids Press* in 2010 on March 7, 14, and 21, a second wave of telephone interviewing was conducted from March 22 to April 1, 2010, using a new and different sample of randomly generated phone numbers purchased from Survey Sampling Inc.

A total of 1045 surveys were completed with 517 completed in December 2009 (49% of total sample) and 528 completed in March 2010 (51% of the sample).

6.1.3 Survey Results

Survey results are presented as an average between the two surveys unless there is a significant difference in the responses between the December and March surveys.

The initial series of questions were intended to gauge how much participants valued water resources. In an open-ended question about what **natural resource in Michigan** was personally valued most, water was identified by seven in ten participants (68% first wave and 71% second wave). One in eight respondents (12%) considered multiple resources, other than water, to be valuable. Other unprompted natural resources identified included forests, wildlife, air, and energy resources.

In **rating the importance of water** on a scale from 1 to 10, where 1 means *not important* and 10 means *extremely important*, 72% of participants rated water as *extremely important*. Additionally, 84 percent of those who didn't initially identify water as their most valued natural resource still rated water as *very important*. **Good water quality** was identified as most important for *drinking* (98% very important) and *for home use* (90%). For business or industrial use, good water quality received the least "very important" rating (68%). Most participants consider good water quality very important for *all activities.* Participants believe others in the community hold similar views.

Survey participants were asked to select which listed statements best described how they felt about the **Grand River**. Six in ten (60%) participants indicated that they *strongly support* and *care greatly* about the Grand River. This selection was slightly higher following the distribution of the inserts (63% vs. 57%), although not by a statistically significantly margin. When asked which of the listed Grand River activities was most important to the participant, about one third (34%) of survey participants indicated that they enjoy *looking at* the Grand River, while one-fourth (26%) like *watching wildlife* along the river. *Swimming* was the least selected activity (2%) in the Grand River. When asked which activity is least important to them, *swimming* was selected by nearly half (46%) of survey participants while *fishing* was the second least important activity (19%).

Survey participants were asked to select which listed statements best described how they felt about the **Lake Michigan**. Nearly nine in ten (87%) participants indicated that they *strongly support* and *care greatly* about the Lake Michigan. When asked which of the listed Lake Michigan activities was most important to the participant, about one in three (33%) of survey participants indicated that *drinking water* was most important, while *swimming* was selected second (19%). When asked which activity is least important to them, *boating* was selected by one in four (26%) of survey participants while *fishing* was the second least important activity (18%).

Survey participants were asked to think about the **body of water nearest their home** and to indicate whether this body of water connected to a larger body of water. Two out of three (65%) responded that it did. One in ten (11%) were unsure. Participants were then asked whether this body of water connected eventually to the Grand River (71% said yes, 8% were unsure) and eventually to Lake Michigan (84% said yes, 11% were unsure). Many (17%) indicated that the Grand River was the body of water near their home

When asked if they were familiar with the idea of a **watershed**, half (51%) said "yes", 37 percent said "no", and 12 percent were unsure. Survey participants were then asked if they knew which watershed they live in. Eight out of ten (79%) didn't know or were unsure. Very few could name their watershed, either during the first or second waves of the survey.

Survey participants were asked to **rate the water quality** in the Lower Grand River Watershed and in Lake Michigan as either *excellent, good, fair, or poor*. As the table below summarizes, the water quality of Lake Michigan was clearly rated higher than in the LGRW. More significantly, however, the rating of the LGRW changed dramatically between the first and second survey waves. The mean rating dropped significantly from straddling the "good to fair" water quality to bordering just on "fair". Additionally, the uncertainty regarding water quality in the LGRW also increased and the number of participants responding to this question decreased (especially in contrast to the responses to Lake Michigan).

Water Quality Rating	Grand River Wave 1	Grand River Wave 2	Lake Michigan Wave 1	Lake Michigan Wave 2
Excellent (4)	11%	3%	7%	7%
Good (3)	42%	29%	57%	56%
Fair (2)	31%	41%	33%	33%
Poor (1)	16%	27%	4%	5%
Number responding	*435*	*395*	*469*	*474*
Mean rating	*2.47*	*2.08*	*2.66*	*2.65*
Unsure/Don't know	16%	24%	9%	10%

There is no straightforward evidence whether the series of newspaper inserts influenced these differences. Where the changes in responses to other questions could have been the result of the newspaper inserts, such as the questions on watersheds, it remains difficult to draw a straight line there.

When asked, in two separate questions, if the water quality in the Grand River as well as in Lake Michigan were affected by the things participants did, even if just a little, the responses were very similar for both the Grand River and Lake Michigan. Broadly, three out of four indicated "yes" (range 74-79%)and one out of four said "no" (range 17-23%). Very few expressed uncertainty (range 3- 4%).

When participants were asked what would be the first thing that came to mind regarding ways that **people negatively affected water quality**, the most common response in the first survey was "people adding sewage" (23%) followed by "littering" (21%). In the second wave, the most common responses were "littering" (23%) and "people adding sewage" (dropping to 14%). In addition, the response "dumping chemicals on the ground or in storm sewer " increased from 10 percent before the inserts to 17 percent after the inserts. Again, it may be difficult to directly tie these changes to the discussions of the issue in the insert. For both waves, more participants (26%) provided responses classified as "other", representing "ways" that could not be readily categorized. The "unsure or don't know" response remained statistically the same (5% and 4%).

Responses to the question about where the participant or the community obtains **drinking water** were met with "yes" by three out of four respondents (74%). Those who responded with a "yes" were asked the origin of their drinking water. A well or groundwater were indicated by 37 percent of participants, Lake Michigan identified by one out three respondents (34%), and a municipality by 20 percent.

Participants were asked about their view on whether **rainwater** flowing over roofs, lawns, and pavement could become harmful if it flows untreated into nearby water bodies. More than half of the responses (54%) for both pre- and post-insert surveys agreed with the statement "untreated rainwater can be harmful". The statement "rainwater is not harmful" received 35 and 33 percent in the first and second waves, respectively. Ten percent in the first wave and 12 percent in the second wave indicated that they were unsure or did not know.

The follow-up question asked the participants about their opinions about the **responsibility** for not exposing rainwater to harmful substances. For the first wave survey in December, more than half (56%) believed that individuals should be responsible for the quality of rainwater leaving their property. In March, 64 percent agreed that it was an individual responsibility. The belief that individuals need ***not*** be responsible for the exposure of rainwater to harmful substances was held by 28 percent in December decreasing to 23 percent in March.

As summarized in the table below, when participants were asked what is the **one thing people could do** around their homes to improve water quality, "reducing outdoor chemical use" generated the most responses. This response did not change from the December survey to the March survey which followed the inserts offering a variety of suggestions.

Participants were then asked if they could name **one thing they were doing** to help improve water quality (see table below). Again, "reducing outdoor chemical use" predominated. However, fewer were reducing outdoor chemical use themselves than were offering the suggestion for others to do so. There also was no significant change in the proportion of responses between the December and March surveys for any of the categories. The responses for both questions regarding actions to improve water quality and for both waves suggested that it was easier for participants to recommend actions for other people than to identify what they were doing personally. In addition, more people were unsure about what they were doing to improve water quality compared to offering ideas on what others could do to improve water quality.

Actions to Improve Water Quality	Others Can Do Wave 1	Others Can Do Wave 2	I Am Doing Wave 1	I Am Doing Wave 2
Reduce outdoor chemical use	42%	45%	28%	29%
Pick up pet waste, use plants, repair car leaks, etc.	7%	11%	5%	7%
Other	33%	27%	38%	36%
Total of the preceding two	*(40%)*	*(38%)*	*(43%)*	*(43%)*
Unsure/Don't know	17%	16%	27%	26%

Participants were then asked to rate the ease with which people could **change their ways** in order to improve water quality, indicating whether something listed would be *very easy, somewhat easy,* or *not easily done.* Based on the averaging of all responses, the relative ease of these listed actions would follow the priorities below, suggesting the easiest change people can make to the more difficult action for people to change:

1.20 *Pick-up pet waste*
1.46 *Use plants to absorb and filter runoff (plant more trees)*
1.56 *Repair car leaks*
1.61 *Regularly pump out septic system*
1.63 *Reduce outdoor chemical use (herbicides, pesticides, fertilizers)*
1.69 *Participate in a river clean-up*
1.73 *Keep soil and debris away from surface runoff*
1.74 *Avoid washing car on pavement*
2.00 *Minimize hard or non-porous surfaces in yard*
2.08 *Keep rain where it falls*

The selection of "reduce outdoor chemical use" decreased in its perception of ease from the December survey to the March survey. In the first wave survey it was identified as *very easy* by 55 percent and *not very easy* by 11 percent while in the second wave it decreased to 47 percent for *very easy* and increased to 19 percent for *not very easy*. Possibly a re-evaluation of the ease of reducing chemical use took place between the two waves. As summarized in the table above regarding the previous questions on what other people can do and what I am doing to improve water quality, this re-evaluation might also echo both the wider recognition and perceived difficulty of this particular action.

Of all the actions listed, the smallest number of participants ranked "Regularly pump out septic system" and it had the highest uncertainty expressed (which increased by four points from the first to second survey), perhaps indicating an unfamiliarity with the action or its ease of use. The action "Keep soil and debris away from surface runoff" was perceived as being much easier to accomplish by participants in the second wave than participants in the first wave of surveys.

Survey participants were also asked if they had noticed the **new logo** for the Lower Grand River Organization of Watersheds, which has been displayed on city buses, on lamppost banners, in newspapers, on display boards, in brochures, and other places in the area. The logo had been included on each of the four pages in all three newspaper inserts. Only 7 percent in the December survey and 8 percent in the March survey indicated that they had seen the new logo. These participants were then asked if they could describe it.

6.1.4 Characteristics of Survey Participants

The relationships between responses and demographic characteristics were analyzed through cross-tabulations and statistically compared to determine if different population demographics may have been reflected in different responses by survey participant.

Age of Survey Participants

Various studies have suggested that one particular age group is not necessarily better informed on environmental issues. Often environmental knowledge within age groups will vary by the issue, although older age groups tend to be more concerned about environmental issues. The age groups also seem to rely on different media, for example older age groups rely more on newspapers and younger age groups use the Internet more often. Other differences among age groups that may be relevant include smaller households among older people (less impact on energy and less time needed for family concerns) and a generally high level of civic involvement (e.g., in voting) among older people.

Survey participants were asked to select the age range that contained their age. The table below summarizes their response along with comparisons to Kent County's 2007 age distribution that best fits the survey's distribution. Additionally, the generational type has also been tied to the age distribution to have a better sense of the unique perspectives offered by these generational viewpoints. Descriptions of these generations are condensed in the table below.

Age (years)	Total Survey response	Generation	U.S. Census Age (years)	Kent County Age Distribution
			Over 18	73.0%
30 + under	9%	Generation Y (born 1980-2000+)	20-34	20.9
31-45	23%	Generation X (born 1965-1980)	35-44	14.6
46-60	33%	Baby Boomers (born 1946-1964)	45-59	20.2
Over 60	34%	Boomers + Greatest Gen (before 1945)	Over 60	14.5

The statistically significant distinctions in how different generations responded to certain questions are summarized below:

- While three-fourths of all participants acknowledged that **their actions affect the water quality** in both the Grand River and Lake Michigan, participants over age 60 were less likely to believe this than younger participants.
- Participants older than 46 years were more likely to know where their **drinking water** comes from than younger participants (81% vs. 60%, respectively)
- Participants older than 46 years were more likely to **strongly support and care greatly** about the **Grand River** than younger participants (66% vs. 48%, respectively)
- Older participations (more than 46 years) are also more likely to **strongly support and care greatly** about **Lake Michigan** than younger participants (90% vs. 82%, respectively)
- Younger participants (45 years or less) use the **Internet a**s a source of information far more than participants over 60 years (60% vs. 23%, respectively)
- Younger participants (45 years or less) are less likely to use/read the **newspaper** than older residents (over 60 years)

The Gender of Survey Participants

A few studies have indicated that gender affects environmental attitudes. For example, women may be somewhat more likely than men to engage in pro-environmental behavior although men tend to be better informed about environmental matters. These studies suggest that men appear to see the consequences and risks of environmental problems as less serious than do women and men tend to show less environmental concern in their personal behavior.

As part of the survey, either the gender of the participant was inferred by the surveyor or, if it was not clear, survey participants were asked their gender. As the table below illustrates, more women participated in the survey at a rate higher then represented in the Kent County population. Consequently, survey results in general may be skewed to reflect a possible gender bias in the responses.

	Male	Female
LGRW Survey	37%	63%
Kent County	49%	51%

Survey results were separated by gender to be able to distinguish whether there were any statistically significant differences in the responses. These differences are summarized below:

- Women tended to rate **water** higher and value it as a natural resource more than men, where the mean was calculated as 9.57 out of 10 for women versus 9.17 for men (for comparison, the mean for the December survey was 9.4 and for the March survey 9.5)
- Men (66%) were more familiar with the **watershed concept** than women (42%)
- Men (82%) tended to know the source of their home's **drinking water** more often than women (69%)

Those *less* likely to know the source of their drinking water were women, younger than 45 years, and from an urban ZIP code. Men and rural residents were most familiar with the watershed concept than women and urban residents

Survey Participants from Rural and Urban ZIP Codes

Many rural and urban residents live in subwatersheds that are transitioning from 100 percent rural to a mixture of rural and urban lifestyles. An urban-rural dialogue will be an essential component of any conversations regarding the management of the water resources of these subwatersheds and the LGRW.

The major ZIP codes in the watershed were characterized as either rural or urban based on the density (persons per square mile) in the ZIP code and the total population of the ZIP code as counted in the 2000 Census. The urban or rural status of a resident may play a role in certain types of behaviors. For example, more rural residents are "do-it-yourselfers" and are more likely to change the oil in their car and manage yard waste on-site. More urban residents walk their dogs, wash their cars on hardened surfaces (but with greater access to commercial car washes), and have access to yard waste pick-up. Rural residents might see a lot of open space and not believe there's a need to protect them.

	Survey Wave 1	Survey Wave 2
Urban ZIP Codes	**58%**	**57%**
Rural ZIP Codes	**42%**	**43%**

The ZIP codes of survey respondents were classified as urban or rural based on density and population size. Survey responses from participants in urban and rural ZIP codes were analyzed and the following summarizes the significant differences between urban and rural responses.

- Rural participants (83%) were more likely to know the source of their drinking water than urban participants (69%)
- Participants from rural areas (57%) were more familiar with the watershed concept than those in urban areas (47%)
- Urban participants (58%) were more likely to recognize the harmfulness of rainwater runoff than rural participants (49%)

Passive and Active Recreation of Survey Participants

In the responses to the questions regarding which Grand River and Lake Michigan activities were the *most* and *least important* to the survey participant, it was possible to estimate the importance of passive and active recreation. Passive recreational activities would be characterized as looking at the river or lake and watching wildlife along the river or lake. Active recreational activities would be represented by swimming, boating, and fishing. Sixty percent of the responses were related to selecting passive recreational activities and 23 percent selected active recreational pursuits. The remaining responses, 16 percent, selected "other" or "don't know".

Subwatersheds of Survey Participants

ZIP Code	*Total responses*	Subwatersheds	ZIP Code	*Total responses*	Subwatersheds
49341 Rockford	93	Direct drainage, Rogue River, Bear Creek, Coopers/Clear/Black Creeks, Lower Flat River, Wabasis/Beaver Dam Creeks	**49509** Wyoming	27	Direct drainage, Buck Creek, Plaster Creek
49504 GR Walker	88	Direct drainage, Indian Mill Creek	**49507** Grand Rapids	25	Direct drainage, Plaster Creek
49505 GR NE	70	Direct drainage	**49321** Comstock Pk	24	Direct drainage, Indian Mill Creek, Mill Creek, Lower Rogue River, Sand Creek
49525 GR - Northview	57	Direct drainage, Lower Rogue, Mill Creek, Plaster Creek	**49302** Alto	22	Lower Thornapple River, Coldwater River
49508 GR - Kentwood	53	Buck Creek, Plaster Creek	**49512** Grand Rapids	18	Buck Creek, Plaster Creek, Lower Thornapple River
49546 GR – Forest Hill	50	Direct drainage, Lower Thornapple River, Plaster Creek	**49544** Grand Rapids	14	Direct drainage, Indian Mill Creek, Mill Creek, Lower Rogue River, Sand Creek
49506 E. Grand Rapids	46	Direct drainage, Plaster Creek	**49330** Kent City	9	Rogue River, Crockery Creek
49301 Ada	45	Direct drainage, Bear Creek, Lower Thornapple River, Lower Flat River, Plaster Creek	**49343** Sand Lake	3	Coopers/Clear/Black Creeks, Rogue River, Upper Flat River
49331	43	Direct drainage, Coldwater River, Fall Creek, Lake Creek, Lower Flat	**48809**	2	Direct drainage, Bellemy Creek, Deer Creek, Flat River, Prairie

Lowell		River, Lower Thornapple River	Belding		Creek, Wabasis/Beaver Dam Creeks
49418 Grandville	43	Direct drainage, Buck Creek, Rush Creek	**49326** Gowen	2	Coopers/Clear/Black Creeks, Upper Flat River
49319 Cedar Springs	39	Coopers/Clear/Black Creeks, Rogue River, Wabasis/Beaver Dam Creek	**49318** Casnovia	1	Crockery Creek, Rogue River
49503 GR - Eastown	37	Direct drainage, Plaster Creek	**49333** Middleville	1	Coldwater River, Lower Thornapple River
49519 Wyoming	36		**49346** Stanwood	1	Flat River
49315 Byron Center	33	Buck Creek, Rush Creek, Plaster Creek, Lower Thornapple	**49348** Wayland	1	Buck Creek, Lower Thornapple River
49345 Conklin	33	Direct drainage, Crockery Creek, Rogue River, Mill Creek	**49501** GR downtown	1	Direct drainage
49548 Cutlerville	33	Buck Creek, Plaster Creek	**48815** Clarksville	1	Coldwater River, Lake Creek, Lower Thornapple River
49534 Walker	29	Direct drainage, Sand Creek	**48838** Greenville	1	Coopers/Clear/Black Creeks, Deer Creek, Wabasis/Beaver Dam Creek, Upper Flat
49316 Caledonia	28	Buck Creek, Plaster Creek, Lower Thornapple River	**49325** Freeport	1	Coldwater River
49306 Belmont	27	Direct drainage, Bear Creek, Lower Rogue River			

6.2 Highlights of Other Surveys in the Watershed

Ottawa County 2010 Citizen Survey

Ottawa County has conducted a survey of its residents every two years, starting in 2006, to keep county and other officials apprised of how their residents view different issues in the county and rate their efforts. The report on the most recent survey was conducted in March 2010. Responses to this survey have meaningful insights for the LGRW on several important issues, including methods for informing local residents (see summary in Section 7.0).

In an open-ended question, survey participants were asked **what they liked the most** about living in Ottawa County. As the most frequent response, 16 percent indicated being close to Lake Michigan (19% responded similarly in 2008 and 15% in 2006). "Rural – open space" was identified by 10 percent of participants (10% in 2008 responded similarly and in 2006 it was "green space" by 17%). The similar priority given to these same responses over time suggest how highly the natural features in the county are valued by its residents.

In a new question for the 2010 survey, participants were asked how aware they were about the 2008 ban on the use of **fertilizer containing phosphorous** in Ottawa County. About two-thirds of participants (68%) said they were aware of the action by the Ottawa County Board of Commissioners to ban the use of fertilizer containing phosphorus (43% very aware and 25% somewhat aware) with 31 percent saying they are unaware of the new law (8% somewhat aware and 23% very unaware).

In contrast to previous years, fewer survey respondents in the 2010 survey supported the county efforts to protect farmland and open space (several years ago county voters approved a 10-year millage to protect open space). In another new question, survey participants were asked about the county-adopted "**purchase of development rights**" program. The program was explained to the participant as well as a proposal to stabilize program financing with a county millage, costing the taxpayer about $5

per year. Survey participants were asked if this proposal were placed on a ballot, would they vote in favor or in opposition to the request. Fifty percent responded "no", they would not support the proposal, and 42 percent replied they would support the proposal (8% were uncertain).

2010 Spring Lake Watershed Wetlands

A survey was of local officials in the Spring Lake Watershed (SLW), a sub-watershed of the LGRW, was conducted as a way to benchmark the perceptions regarding wetland value as well as identifying opportunities to broaden awareness of wetlands in the watershed. The SLW was selected due to the adoption by several communities of local wetland ordinances which received considerable attention. Additionally, another recent project (see *Rein in the Runoff* below) also highlighted and promoted the importance of wetlands in improving water quality. Since the population of SLW decision-makers was identified as 130, a complete census was conducted instead of surveying a sample. A summary of responses are presented below.

- Nearly 60 percent of responding local officials indicated that they are *very interested* and less than 40 percent *somewhat interested* in environmental issues. The most important environmental issues facing their communities were identified by nearly half of responding officials as water quality.
- Over half (53%) believe that local officials have a *moderate impact* on improving water quality while a third believe they have a *substantial impact* on water quality.
- Most respondents (39%) felt they are *somewhat knowledgeable* about wetland issues and 35 percent feel they are *sufficiently knowledgeable*. Only 10 percent felt that they were *very knowledgeable* and 16 percent felt *not knowledgeable.*
- When asked what is the most important benefit of wetlands, improving water quality was identified by 45 percent and providing wildlife habitat identified by 35 percent.
- Most respondents (52%) believed local officials should be *somewhat involved* in protecting wetlands and other respondents (45%) believed they should be *very involved*
- Eight out of ten these officials believe that the loss of wetlands has contributed significantly to water quality problems. Nearly nine out of ten consider wetlands to be valuable to their community's welfare. Six out of ten think that their community is only *somewhat concerned* about wetland losses and believe that their community should try to protect *some wetlands.* Four out of ten believe that *all wetlands* should be protected
- Wetland protection has been most commonly addressed in site plan reviews (71%) and master plans (61%). Local ordinances (42%) and local policies (26%) were less commonly identified. These officials believed that decisions made during planning (26%), enacting ordinances (26%) and zoning (19%) most affected wetlands in their communities.
- Over half believed that wetlands are fun places to visit while nearly one out of four do not, and one out of five was not sure. Nearly eight out of ten officials have explored a wetland in their community (and about six out of ten would like to). Nearly 80 percent of responding local officials would expect to find wildlife and habitat in their community's wetlands plus the following: swamp, dense growth, water filtering, recreational opportunities, high amounts of clay and hard pan, mosquitoes, and no fences.

- Over half of survey respondents (53%) would describe the health of wetlands in their community as stable while 17 percent thought wetland health was improving and 20 percent thought it was declining. In contrast, half of responding local officials perceived the water quality in their local streams to be good while the other half believed water quality in local streams to be fair (33%) or poor (17%).
- Examples of the one thing these local officials would recommend to their constituents to protect wetlands included: establishing buffer zones; not using fertilizers or car soaps; no dumping; limiting runoff; monitoring growth in sensitive areas; taking advantage of wetlands; increasing public awareness; establishing regulations; staying out of wetlands; being aware of proposed projects; not filling in wetlands; and following Master Plan guidelines.
- Seventy (70) percent of local officials thought property owners would *likely* or *somewhat likely* take voluntarily actions to protect wetlands on their property.
- Most responding local officials were interested in being either *involved* in an advisory role (47%) or *somewhat involved* by being kept informed (40%) about wetland issues in the watershed.

Survey results may not necessarily characterize perceptions of wetlands held by other LGRW local officials. However, these results might supplement other surveys that suggest a broader pallet of stakeholder insights on wetlands. Nevertheless, the results of this survey offer a glimpse into community perceptions and provide several conclusions regarding these perceptions in the SLW.

2008 Spring Lake "Rein in the Runoff"

As part of the integrated assessment conducted on managing stormwater runoff in the Spring Lake watershed, a survey was variously distributed to residents through meetings, presentations, and community events as well as accessible on the project website. The survey was intended to identify behaviors affecting stormwater runoff, educate watershed residents about these behaviors, and gather information about watershed residents' willingness to pay for improved water quality.

The project team received very few responses. Only 40 surveys were completed and returned by individuals already concerned about water quality in Spring Lake, the Grand River, Lake Michigan, or another water body. Even with this limited response, there were some interesting results

Sixty percent of survey respondents believe that the water quality of Spring Lake is fair or poor with 35 percent believing water quality in the lake as good or excellent. Only 40 percent of these respondents were willing to pay more than$50 per year if phosphorus levels could be reduced. When asked to rate potential sources of water pollution to Spring Lake, the top five ranked sources were: 1) runoff from parking lots, streets, and traffic areas; 2) runoff from farming and agricultural operations; 3) trash from boaters and recreational users of the lake; 4) runoff from commercial or industrial areas; and 5) runoff from residential areas.

Seventeen percent of respondents that change their car's oil throw used oil into the garbage; 23 percent of respondents that walk dogs rarely or never pick up after them; 72 percent of respondents that fertilize their lawns have never had a soil test, and 9 percent continue to use a phosphorus-based fertilizer. These responses suggest that while interested stakeholders understand how their behaviors affect water quality, ongoing education continue to be needed.

2007 Clean Water Legacy Plan Project Public Meetings

A few public meetings were held in 2007 to present information on the Clean Water Legacy Project. As part of this effort, meeting attendees (which totaled 60) were asked a few questions. The first one asked how they would prioritize the water uses (1=highest). The results were: 1) drinking water, 2) swimming, 3) boating, 4) fishing, and 5) viewing water, waterfowl, and/or wildlife. Based on meeting presentations and handouts, meeting attendees were then asked to select which items represented new information: two out three indicated that the amount of research and projects completed in the LGRW and the projects currently underway in their "backyard". One out three identified the number of pollution issues impacting local water bodies and one out of four were already familiar with most topics.

Meeting attendees were asked how willing they would be to get involved in local efforts to restore and protect the areas water resources. The most popular response was yes (77%) with one in four indicating that it would depend on the project. None of the attendees said "no". Meeting attendees were also asked about how likely it would be they would make behavioral changes to improve water quality, such as switching to no phosphate lawn fertilizer. Again, no one responded with a "no" but 93 percent chose "very likely" and 8 percent indicated they didn't know.

7.0 How Can They Be Reached?

Reaching out through communication remains essential in a time that is becoming more complex. Finding solutions to water quality problems in the Lower Grand River Watershed will require even greater efforts to reach stakeholders, those who have an interest in what happens in the watershed. Regardless of what role each stakeholder has in the watershed, a broad understanding of watershed issues will be needed for future discussion about change in how water quality is protected or restored. Communication is the means for reaching stakeholders and enhancing watershed literacy and sustainable watershed practices.

The news media - including newspapers, magazines, television, the Web and radio - is one of the most common pathways to increased public awareness. The size of a community often influences what media outlets are available. Large urban areas will have numerous and diverse outlets while rural areas may have few publications and limited television and radio coverage. Each media outlet operates with a different set of rules and has different goals. Knowing something about each will help determine which type of media outlet best serves objectives. Media outlets in a community may include:

- Television and radio stations
- Cable television programs and cable access channels
- State or city wire news services
- Daily, weekly, and specialized newspapers
- Newsletters (club, corporate, Chambers of Commerce)
- College and university newspapers
- The Internet, including media outlets with home pages on the World Wide Web
- Libraries, etc

7.1 LGRW Survey Results on Information Sources

As part of the LGRW surveys conducted in December 2009 and March 2010, 1,045 participants were asked where they primarily would go to find information about water quality and what people can do to improve water quality. The table below summarizes their responses for each of the survey waves.

Response	% Wave 1	% Wave 2	% Total
Internet	46%	40%	43%
City government	13	15	14
State/County agencies	12	13	13
Unsure/Don't know	9	10	9
Other	8	13	10
Environmental groups	6	3	4
Newspapers	2	2	2
Neighborhood associations	2	<1	1
Universities/colleges	1	1	1
Radio and television	1	1	1
Refuse	<1	3	1
Total	100	100	100

A follow-up question was asked on which, if any, of the following newspapers does the participant read. All 1,045 participants responded, as summarized in the table below:

Response	% Wave 1	% Wave 2	% Total
The Grand Rapids Press	74%	74%	74%
The Advance	42	43	43
USA Today	12	9	11
Unsure/Don't know	10	7	9
The Detroit Free Press	9	5	7
The New York Times	5	5	5
Refuse	2	5	3

Source: Lower Grand River Watershed Survey

7.2 Ottawa County 2010 Citizen Survey – Sharing Information

The biennial Ottawa County Citizen Survey conducted in March 2010 offered several insights into how residents in Ottawa County – *and perhaps other areas of the LGRW* – **receive information** about their communities. The second highest 2010 priority identified by participants in this survey was, "**keep county residents informed**", which was cited by 41 percent indicating more needs to be done by the county. This was unchanged from 2008 or 2006 when 42 percent in each year said more should be done.

Participating registered voters in the county were asked where they got most of their information concerning county government. The responses for both 2010 and in 2008 are summarized in the table below. Note that newspapers account as the top source of information for nearly 50 percent of the responses in 2010 compared to 41 percent in 2008 and 68 percent in 2006.

Response	**2010** (%)	**2008** (%)
Television coverage	15	12
Grand Rapids Press	14	17
Newsletters from the county	12	11
The Holland Sentinel	12	13
Grand Valley Advance	11	3
From friends/word of mouth	10	8
Grand Haven Tribune	9	7
Radio coverage of the county	5	3
County Website	4	3
Muskegon Chronicle	2	1
Commission meetings on cable	1	---
Library	---	1
Other/undecided/refused	5	---

Source: EPIC-MRA Ottawa County 2010 Survey

Survey participants were asked how often they connect to the **Internet**. Three out of four (75%) connect to the Internet daily and 14 percent never do – as summarized in the table below:

Response	**2010** (%)	**2008** (%)
Every day	75	70
A few times a week	5	9
Once or twice a week	2	3
A few times a month	1	1
A few times a year	---	---
Seldom	---	1

Never	14	11
No computer *(volunteered)*	2	2
Other/undecided/refused	1	3

Source: EPIC-MRA Ottawa County 2010 Survey

For 2010, a new question asked survey participants to name two or three methods they **preferred for receiving information** about the county. The table below summarizes their responses. When combined, "newspapers" were mentioned as the top choice by 35 percent, followed by "direct mail" and "Internet" at 14 percent each, with "television news reports" mentioned by 13 percent.

Response	#1 choice percent	#2 choice percent	#3 choice percent
Newspapers	**51**	**21**	15
Radio news and programs	5	18	9
Television news reports	8	15	**25**
Cable TV	4	4	1
Billboards	---	3	5
The Internet	11	17	13
Social network sites, e.g. Facebook	2	1	6
Magazines	14	---	2
Direct mail	4	14	15
Friends, family or relatives ---	---	7	9
Undecided/don't know/refused	1	---	---

Source: EPIC-MRA Ottawa County 2010 Survey

Those survey participants who said they connect to the Internet were asked how often they visit the **Ottawa County website**. Forty-five percent (40% in 2008) said they visit the website with three percent indicating they visit a lot (same as 2008), 14 percent visiting some (18% in 2008) and 28 percent visiting only a little (19% in 2008). Over fifty percent (54% in 2010 and 57% in 2008) indicated that they do not visit the site at all.

In another new question for 2010, survey participants were asked how often they visit **social media websites**, such as Twitter, Facebook or MySpace. Nearly seven out ten (69%) indicated that they *never* or *seldom* use social media sites. Otherwise, of the three in ten that use these sites, 18 percent indicated *every day* use and 13 percent use them less frequently, from most days to several times a month. For those who use social media websites, "Facebook" was identified by 92 percent as the site visited most often.

It was suggested to survey participants that the county is seeking different ways to keep citizens well informed about its activities. One suggestion was conducting a "citizen's academy" where sessions provide information about a specific area of county government. They were asked how interested they would be in attending such sessions. Fifty percent expressed an interest (46% in 2008) with 11 percent saying they would be "very interested" (14% in 2008) and 39 percent somewhat interested (32% in 2008). In contrast, 47 percent would *not* be interested (45% in 2008).

7.3 Michigan Newspaper Survey 2008

A 2008 survey of adults in Michigan found that **newspapers** are the dominant source for most types of news and information in Michigan. In addition, a larger than average percentage of adults read printed newspapers. Weekday and Sunday readership by Michigan residents is significantly higher than national averages. Other findings regarding newspapers in Michigan include:

- Almost six in 10 adults (58%) read a printed daily or Sunday newspaper o an average weekday, higher than the national average of 48 percent
- Eight in 10 read at least once during an average week, Monday through Friday
- 70% of adults read a printed daily or Sunday newspaper on an average Sunday, higher than national average of 55%.
- Almost nine in 10 adults (87%) read at least one Michigan newspaper during an average seven-day period, Sunday through Saturday.

7.4 Schools Serving the Watershed

Local schools can play a leading role in expanding watershed literacy and reaching students as well as their parents and other members of the community. In partnership with watershed organizations, schools can help define and unite their watershed and provide a forum where a community can be engaged and mobilized on common watershed issues. Schools and school districts have been identified in the ZIP Code Profiles in Attachment 1.

7.5 Watershed Libraries

Libraries may emerge as the new community centers and librarians can represent an effective force for watershed literacy. They already provide a resource center for their communities, but many of them are now pushing to turn their libraries into civic centers that foster a sense of community and offer a unique gathering place. In addition to school libraries, local public libraries promote literacy and learning, provide an open social space, and foster opportunities for formal and informal public education. The number of books in circulation at a library reflects a community's access to and use of new, pertinent and available information. Visitation and circulation of library books is an indicator of community interest and communication. Libraries in the Lower Grand River Watershed are identified in the ZIP Code Profiles in Attachment 1.

7.6 Colleges and Universities Serving the Watershed

It has been estimated that there may be more than 65,000 students enrolled in the colleges and universities serving the watershed. These institutions, as listed below, offer various resources for targeted outreach.

Aquinas College http://www.aquinas.edu/
Calvin College http://www.calvin.edu/
Calvin Theological Seminary
http://www.calvinseminary.edu/
Central Michigan University
http://www.cel.cmich.edu/
Cornerstone University
http://www.cornerstone.edu/
Davenport University http://www.davenport.edu/
Ferris State University http://www.ferris.edu/
Grace Bible College http://www.gbcol.edu/
Grand Rapids Baptist Seminary
http://www.gbcol.edu/
Grand Rapids Community College
http://www.grcc.cc.mi.us/
Grand Valley State University http://www.gvsu.edu/
Hope College http://www.hope.edu/
ITT Technical Institute http://www2.itt-tech.edu/
Kellogg Community College
http://www.kellogg.edu/regional/fehsenfeld/
Kendall College of Art and Design
http://www.kcad.edu/
Kuyper College http://www.kuyper.edu/
Michigan State University http://www.msu.edu/
Montcalm Community College
http://www.montcalm.cc.mi.us/
University of Phoenix http://www.phoenix.edu/
Western Michigan University
http://www.wmich.edu/

Watershed Congregations

Churches and their congregations may be another means for reaching watershed residents and addressing watershed issues. Churches represent another forum for discussing important community issues, including concerns about environmental quality. An increasing number of congregations are encouraging environmental awareness and organizing environmental events and volunteer activities, motivated by a commitment to sharing positive environmental values and concerns about the community's environmental future. Congregational "adherents" include all full members, their children, and others who regularly attend services.

	Congregations	Total Adherents	% of Population	Top 5 Religions by Adherents
Barry County	46	13,623	24.0%	Catholic Church (3,830) United Methodist Church, The (2,464) General Association of Regular Baptist Churches (945) Reformed Church in America (849) Evangelical Lutheran Church in America (676)
Eaton County	79	35,979	34.7%	Assemblies of God (8,570) Catholic Church (7,947) United Methodist Church, The (3,726) United Church of Christ (1,314) Church of the Nazarene (1,156)
Ionia County	63	25,064	40.7%	Catholic Church (13,868) United Methodist Church, The (1,844) Lutheran Church--Missouri Synod (911) General Association of Regular Baptist Churches (738) Christian Reformed Church in North America (561)
Kent County	442	358,046	62.3%	Catholic Church (114,716) Christian Reformed Church in North America (48,973) Reformed Church in America (17,633) General Association of Regular Baptist Churches (11,562) United Methodist Church, The (10,497)
Montcalm County	84	21,935	35.8%	Catholic Church (5,958) United Methodist Church, The (1,974) Evangelical Lutheran Church in America (1,429) Lutheran Church--Missouri Synod (1,347) Wesleyan Church, The (1,325)
Ottawa County	208	148,218	62.2%	Reformed Church in America (36,461) Christian Reformed Church in North America (30,490) Catholic Church (27,110) Wesleyan Church, The (9,614) Lutheran Church--Missouri Synod (6,560)

Source: Association of Religion Data Archives

8.0 How to Use This Social Profile

The human dimensions of the Lower Grand River Watershed (LGRW) have been addressed by this Social Profile. The techniques for using this information and designing outreach programs, as reflected in the Information and Education (I/E) Strategy is summarized in the following descriptions based on the use of ZIP Code Tabulation Areas (ZCTA). In tailoring outreach for a specific impaired stream segment, a LGRW subwatershed, or community, consider these steps:

- Identify target audiences. Collect information to understand them. Create outreach focused on the characteristics of watershed stakeholders. Cultivate a constituency of stakeholders interested in the LGRW's health. Tailor messages to reflect their interest and motivate change.
- Identify the ZIP codes associated with the subwatershed (see "Crosswalk" table on page 57), the stream segment, or the community. Look up the specific ZIP Code Profile (*Attachment 1-ZIP Code Profiles*, following *References*).
- The data found in the ZIP Code Profiles will change as more up-to-date information becomes available, such as the 2010 Census data. Review the information in the ZIP Code Profile to determine whether more current information will be useful to the effort. Utilize the "American FactFinder", the Census Bureau's online tool for accessing a wide variety of demographic data organized by ZIP codes and by communities, including maps of the ZCTA with water features. http://factfinder.census.gov/home/saff/main.html?_lang=en
- In compiling demographic information, compare it with other watershed ZIP codes, the county, state, or nation. Combine different population characteristics to see if a pattern emerges or to confirm a conclusion about the data.

ZIP Code Profile Information Summary

Land and Water Area	Average Elevation
The focus of the I/E effort may be on a smaller portion of the ZIP code area or on the entire ZIP code .The size of the ZIP code area in square miles for both land and water can be compared with other watershed areas or the watershed as a whole. **Watershed range 5.9 to 171.0 square miles**	The average elevation in feet above sea level of the ZIP code can indicate whether the area contains drainage headwaters and delineates how upstream a community may be relative to other watershed communities. Such information can help connect the watershed residents to the larger watershed. **Watershed range 600 to 1,006 feet above sea level**

Sub-watersheds	Communities	Schools
The LGRW crosses many boundaries, sometimes making it more challenging for outreach efforts. The focus of the I/E effort may be on an impaired stream segment or a subwatershed. It can be directed at the residents, farmers, businesses or officials of a county, township, village, city, or urban neighborhood. Outreach might be aimed at educators, students, and their families found at local schools and libraries. At the same time, the resources of communities, neighborhoods, school districts, and libraries may be tapped as ways to distribute information. In addition its use in mail and other types of I/E campaigns, ZIP codes are a tool for leveraging demographic information so that outreach can be tailored to target audiences in these geographic entities. The "crosswalk" table helps identifies what LGRW subwatersheds are contained within specific ZIP code areas.		

Population	Median Age
The size of the population in the ZIP code indicates the possible magnitude of outreach efforts, such as	Outreach efforts can target audiences based on age. A population's median age, where half the population is

suggesting numbers for the printing of I/E materials or for the distribution of surveys. **Watershed Range 813 -59,089 people**	older and half is younger, is influenced by the age composition of the population, e.g. the number of retirees, empty nesters, expanding families, and college students, among other factors. **Watershed Range 21.1 years to 40.4 years**

Under 5 years old	Over 18 years old	Over 65 years old
Community interests and participation varies across age groups and outreach should reflect these variations. A higher percentage of children under 5 years of age suggest more families with young children. These families are busy and focused on raising children. Outreach might focus on the family rather than the individual. **Watershed Range 5.4% -10.3%**	Those over 18 years of age represent the watershed's adult population, that is, the population that can vote and make other important decisions. Studies have shown that younger adults are more interested in active volunteering, informal socializing, and technology-based activities while their parents are engaged by current events, political activity, and giving while their grandparents are highly engaged in giving, church, and community affairs. **Watershed range 65.2% to 80.7%**	A higher proportion of residents over 65 years old may suggest a larger number of empty nest couples or retirees. Such age groups respond to different messages and approaches. For example, about half of this age group has indicated they could use assistance with yard work. Older adults are entering a time of life when work and family responsibilities decrease. They are looking for connection, growth, and meaning. Many will have the opportunity to keep contributing to the community in a variety of ways. **Watershed range 4.3% to 14.9%**

Race White	Race Black/African American	Origin Hispanic or Latino
The 2000 Census indicates that the racial composition of the watershed is predominantly white. However, the presence of other races or ethnic origins in the LGRW, besides the Black/African American and Hispanic proportion, will need to be assessed. Over the past twenty years, diversity in the watershed has increased. **Watershed range 39.6% to 98.8%**	The proportional presence of Black/African American residents in the watershed suggests how outreach efforts might need to reflect the beliefs and values represented by this population. **Watershed range 0.0% to 43.0%**	Successful I/E will need to connect with all segments of an area's population to solicit their interest and participation, especially where language might need to be an element of effective outreach. **Watershed range 0.3% to 23.2%**

Average Household Size	Total Housing Units
Household size is the average number of persons living in a household. Household size may indicate larger families in a ZCTA. Decreasing household size and increasing population suggests greater development impact in the watershed. I/E efforts can use average household size to estimate impact of outreach efforts to households, such as all members of a household being exposed to a media campaign. **Watershed range 2.05 to 3.09 persons per household**	Water quality is closely related to decisions made at the housing unit level. Based on various studies, housing units can be used to estimate, for example, how many septic systems are used (28% of Michigan housing units in rural/suburban areas - and growing) and the number of users that need to become aware of water quality issues. Lawn sizes and chemical application rates, as another example, can be estimated based on housing unit numbers. **Watershed range 317 to 23,410 housing units**

Education	Language Other than English
The levels of education attained by watershed residents, such as the percentage of the population with a bachelor's degree or above, suggest a higher degree of community engagement and possibly a greater confidence in science, among other attributes. Outreach materials will need to anticipate the information and educational needs of the population based on educational characteristics. **Watershed range 6.3% to 49.3% with a bachelor's degree or higher**	Certain segments of the population may feel more comfortable receiving information about the watershed in a language they are much more conversant in than English. Outreach can be designed to reflect the probability of specific language needs in certain watershed communities.. **Watershed range 1.0% to 23.3% speak a language other than English at home**
Labor Force	**Commute Time**
The labor force participation rate is the proportion of workers over 16 years employed or available for work. The differences in rates between communities might reflect the number of people enrolled full-time in school, withdrawn from the labor force after seasonal work, unable to find work, and not working for other reasons such as caring for their families. **Watershed range 43.6% to 81.8%**	Longer commute times reduce social connections, e.g. less attendance at watershed meetings or fewer evenings picking up litter from local streams. Additionally, communities experiencing a growing presence of commuters, often not committed to the area, may view watershed issues differently. **Watershed range 17.3 to 41.8 minutes**
Median Household Income	**Families Below Poverty Level**
The median household income is the point where half of an area's households would have income below that amount and half would have income above that amount. Median household income fairly represents a typical income level for the community. Studies have shown that as income rises, more of the population participates in community projects. Decreasing income may reflect levels of inequality, conditions of deprivation, or disinvestment and capital flight. **Watershed range $30,176 to $83,902**	The percent of families below the poverty level represent families with income less than the poverty threshold for that family size. The percent of families who fall below the threshold is one way to represent the poverty situation for a community. Higher poverty rates indicate that there are not enough jobs paying wages sufficient to keep families above the poverty threshold. These jobs are less stable, have less predictable hours, often making it difficult for individuals to participate in community activities. **Watershed range 1.0% to 18.0% below poverty level**
Work in County of Residence	**Business Establishments**
When residents live and work in the same community, they have shorter commute times. Outreach can be designed to target individuals at home or at work, whichever becomes a more effective method. Determine whether the outflow of workers to worksites outside of their county of residence is a lifestyle preference or economic necessity. This daily outflow of workers to other areas can have negative impact on social resources and civic engagement. **Watershed range 18.5% to 94.6% work in county of residence**	If I/E efforts will target businesses in a community, the number of business establishments in the ZCTA often represents employment centers in the watershed. The nature of these businesses will vary throughout the watershed, from large industrial complexes to convenience stores. These numbers provide a sense of economic activity and how outreach can target businesses and their employees. **Watershed range 7 to 1,604 business establishments**

Employees	Employed in Manufacturing
With the participation of business establishments in a watershed, it may be possible to target employees. The number of employees in the ZCTA, who may or may not live in the ZCTA, provides an indicator of the magnitude of the outreach activities. **Watershed range 22 to 40,022 employees**	The distribution and type of jobs by industry are indicators of economic diversification in the watershed. The economic recession had a negative effect in the watershed with substantial declines in the goods-producing sector. Higher reliance on manufacturing suggests a vulnerable economy. **Watershed range 5.0% to 38.5% of workforce employed in manufacturing**

Farm Operations	Farm Operations with Animals	Conservation Programs
Based on the 2007 Census data, the number of farm operations was summarized by watershed ZCTA. These farm operations ranged from orchards to row crops to livestock operations. Eight watershed ZCTAs have no farm operations identified in 2007. **Watershed range 3 to 404 farm operations**	During the 2007 Agricultural Census, the total number of farm operations with animals was summarized by ZCTA. This data provides a sense of the number of farm operations that are managing animals in the ZCTA. The management of animals, whether livestock or poultry or another animal, can have an impact on water quality. More details on the types of animals can be found in the Census information. **Watershed range 5 to 141 farm operations with animals**	Farm operations that have participated in the following governmental programs that help farmers conserve natural resources suggest possible interest in other similar programs to improve the watershed: the Conservation Reserve Program, Wetlands Reserve Program, Farmable Wetlands Program, and Conservation Reserve Enhancement Program plus other federal, state, and local programs **Watershed range 2 to 220 participating farm operations**

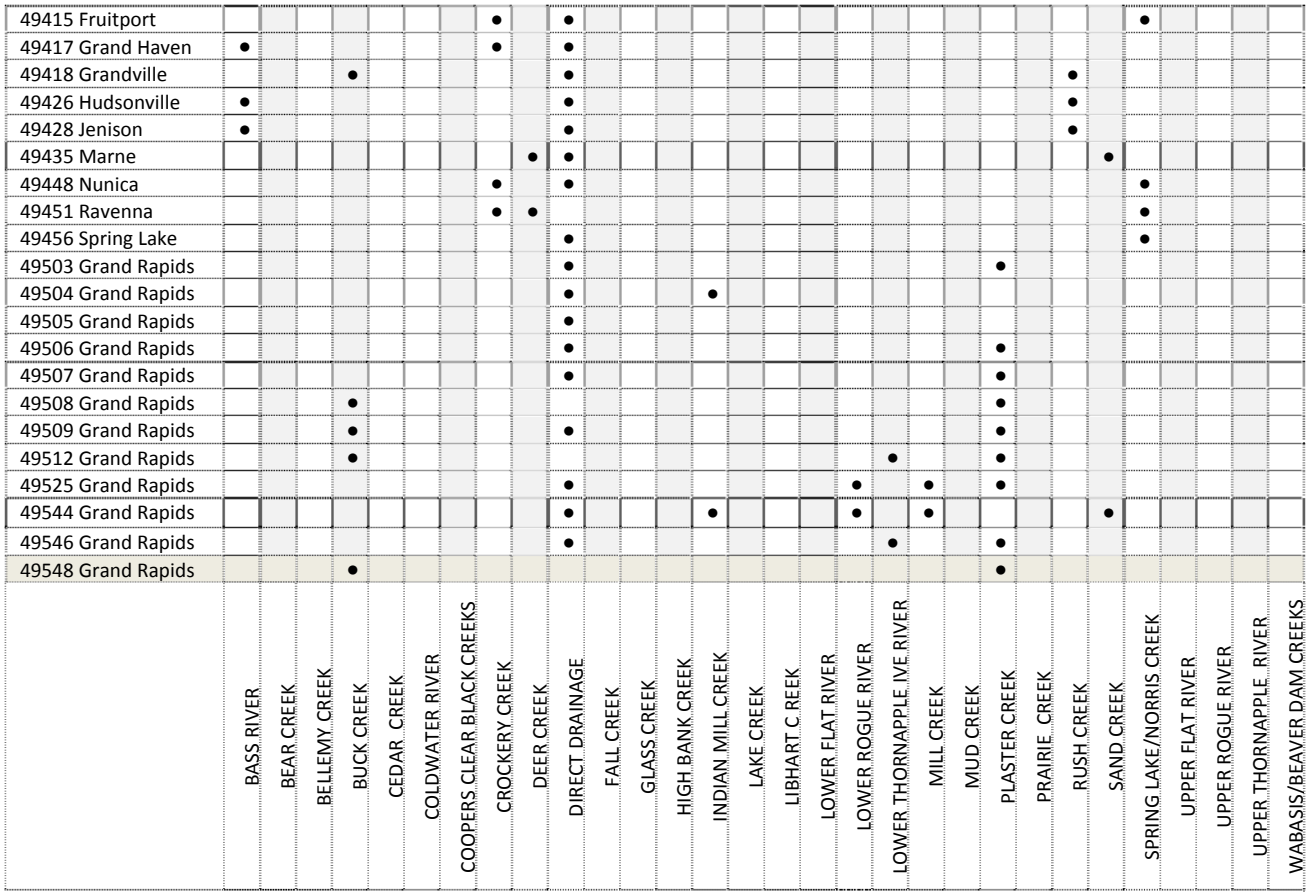
Population Density	Urban Population	K-12 Student Population
The number of persons per square mile often reflects the intensity of development and often distinguishes rural from urban areas. Studies have found that higher population densities adversely affect the quantity and quality of stormwater runoff, suggesting that these impacts escalate with density but decline on a per capita basis. **Watershed range 45 to 6,563 persons per square mile**	The urban nature of an area suggests certain population characteristics important to outreach activities. Based on these population densities, the ZIP code profiles indicate the percentage of the population that is urban. Very highly urban: 75% or more urban Highly urban: 50% to 74.9% urban Moderately urban: 25% to 49.9% urban Moderately rural: 10% to 24.9% urban Highly rural: Less than 10% urban **Watershed range 0% to 100%**	The size of the student population in kindergarten to 12th grade provides an indication of the level of effort that may be required in reaching out to school age children. These students may be attending public or private schools or may be home schooled. They may or may not be attending schools located in the ZIP code or in the watershed. **Watershed range 283 to 12,152 K-12 students**

Households	Vehicles	Dogs
A household includes all persons who occupy a housing unit (as defined above). Knowing the quantity of households within certain areas of the watershed may help to define other relevant parameters (250-350 gallons of	Vehicle ownership is associated with various nonpoint sources of pollution, such as fueling spills, leaks of automotive fluids, and driveway vehicle washing. The number of vehicles - cars, vans, and trucks - kept at home and available for use	Managing pet waste may be a topic for improving water quality in a subwatershed. The number of dogs in a ZCTA can be estimated based on data from the U.S. Human Society and other organizations indicating that four in ten (40%) U.S.

wastewater are generated per household per day by Michigan residents). Estimates of total watershed households can be useful in planning for the distribution of outreach materials. **Watershed range 503 to 58,843 households**	by household members were counted in the 2000 Census. Outreach can utilize these counts to illustrate how much vehicle wash water is discharged. **Watershed range 600 to 37,092 vehicles**	households include at least one dog. **Watershed range 201 to 23,537 dogs**

Crosswalk – ZIP Codes Associated with LGRW Subwatersheds

	BASS RIVER	BEAR CREEK	BELLEMY CREEK	BUCK CREEK	CEDAR CREEK	COLDWATER RIVER	COOPERS CLEAR BLACK CREEKS	CROCKERY CREEK	DEER CREEK	DIRECT DRAINAGE	FALL CREEK	GLASS CREEK	HIGH BANK CREEK	INDIAN MILL CREEK	LAKE CREEK	LIBHART C REEK	LOWER FLAT RIVER	LOWER ROGUE RIVER	LOWER THORNAPPLE IVE RIVER	MILL CREEK	MUD CREEK	PLASTER CREEK	PRAIRIE CREEK	RUSH CREEK	SAND CREEK	SPRING LAKE/NORRIS CREEK	UPPER FLAT RIVER	UPPER ROGUE RIVER	UPPER THORNAPPLE RIVER	WABASIS/BEAVER DAM CREEKS
48809 Belding		•	•							•							•						•				•			•
48813 Charlotte																													•	
48815 Clarksville						•									•		•													
48829 Edmore																											•			
48834 Fenwick																	•						•							
48837 Grand Ledge																													•	
48838 Greenville							•																				•			•
48846 Ionia			•							•					•	•	•						•							
48849 Lake Odessa						•				•					•	•					•									
48851 Lyons										•						•														
48865 Orleans			•							•							•						•							
48875 Portland						•				•						•														
48876 Potterville																													•	
48881 Saranac			•			•				•					•		•													
48884 Sheridan																							•							
48885 Sydney																											•			
48886 Six Lakes																											•			
48888 Stanton																											•			
48890 Sunfield																					•									
48897 Woodland						•													•		•									
49046 Delton					•						•	•	•						•											
49050 Dowling					•								•																	
49058 Hastings					•	•					•	•	•						•											
49073 Nashville													•						•		•								•	
49096 Vermontville																					•								•	
49301 Ada		•								•							•		•			•								
49302 Alto						•													•											
49303 Bailey								•																				•		
49306 Belmont		•								•								•												
49315 Byron Center				•															•			•		•						
49316 Caledonia				•															•			•								
49318 Casnovia								•										•										•		
49319 Cedar Springs							•											•										•		•
49321 Comstock										•				•				•		•					•					
49322 Coral							•																				•			
49325 Freeport						•																								
49326 Gowen							•																				•			
49330 Kent City								•										•										•		
49331 Lowell		•				•				•					•		•		•											
49333 Middleville						•						•							•											
49339 Pierson							•																					•		
49341 Rockford		•					•			•							•	•												•
49343 Sand Lake							•											•									•	•		
49345 Sparta								•		•								•		•								•		
49347 Trufant							•																				•			
49401 Allendale	•									•																				
49403 Conklin								•	•									•		•					•					
49404 Coopersville								•	•	•															•					


49415 Fruitport
49417 Grand Haven
49418 Grandville
49426 Hudsonville
49428 Jenison
49435 Marne
49448 Nunica
49451 Ravenna
49456 Spring Lake
49503 Grand Rapids
49504 Grand Rapids
49505 Grand Rapids
49506 Grand Rapids
49507 Grand Rapids
49508 Grand Rapids
49509 Grand Rapids
49512 Grand Rapids
49525 Grand Rapids
49544 Grand Rapids
49546 Grand Rapids
49548 Grand Rapids
BASS RIVER
BEAR CREEK
BELLEMY CREEK
BUCK CREEK
CEDAR CREEK
COLDWATER RIVER
COOPERS CLEAR BLACK CREEKS
CROCKERY CREEK
DEER CREEK
DIRECT DRAINAGE
FALL CREEK
GLASS CREEK
HIGH BANK CREEK
INDIAN MILL CREEK
LAKE CREEK
LIBHART C REEK
LOWER FLAT RIVER
LOWER ROGUE RIVER
LOWER THORNAPPLE IVE RIVER
MILL CREEK
MUD CREEK
PLASTER CREEK
PRAIRIE CREEK
RUSH CREEK
SAND CREEK
SPRING LAKE/NORRIS CREEK
UPPER FLAT RIVER
UPPER ROGUE RIVER
UPPER THORNAPPLE RIVER
WABASIS/BEAVER DAM CREEKS

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These are examples of the variety of resources available on the Internet that provided information on population, economic trends, and other useful data for this Social Profile:

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Bureau of Economic Analysis http://www.bea.gov
National and regional economic information, GDP, income, trade, investments

Bureau of Labor Statistics http://www.bls.gov/
Inflation, wages, productivity, demographics, employment, occupations, industry

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K.K. McDermaid and D.C. Barnstable. 2001. *Step-by-step guide to conducting a social profile for watershed planning. Urbana:* University of Illinois, Department of Natural Resources and Environmental Sciences.

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Michigan Department of Environmental Quality, Nonpoint Source Program
http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3714---,00.html

Michigan Department of Management & Budget www.state.mi.us/dmb

U.S. Census of Agriculture http://www.nass.usda.gov/census/census02
Data collected and reported by the National Agricultural Statistics Service of the Agricultural Census for 2007 U.S. Department of Agriculture (USDA),

US Census Bureau http://www.census.gov/
People: Population, Age & Sex, Aging, Disability, Education, Employment, Income, Origins and Language, Poverty, Race & Ethnicity, Relationships, Veterans
Housing: Physical Characteristics (Units, Ownership, Vacancy), Financial Characteristics (Mortgage Status, Rental Costs, Median Rent, Values)
Business and Government: Economic Fact Sheet for an Industry, Business and Industry, Foreign Trade, Government, Maps, ZIP Code Business Patterns

Attachment 1 – ZIP Code Profiles

48809 Belding

Land area: **86.7** sq. mi. Water area: **1.7** sq. mi. Average elevation: **798** feet above sea level

Sub-watersheds	Communities	School districts, etc.
Bear Creek Bellemy Creek Deer Creek Direct drainage to Grand River Flat River Prairie Creek Wabasis/Beaver Dam Creeks	Ionia County Belding, City Otisco Township Parts of Orleans, Keene, and Grattan (Kent County) Townships	Belding Area School District (2,371 6 schools) Grattan Academy (200) Faith Community Christian School (42 students) Alvah N. Belding Memorial Library (47,987 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
11,192	**33.4**	**7.8%**	**69.5%**	**10.9%**	**96.7%**	**0.4%**	**2.7%**	**2.73**	**4,299**	**12.2%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.6%	**68.1%**	**28.4**	**$40,275**	**9.2%**	**48.2%**	**194**	**2,074**	**31.8%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
147	**61**	**62**	**125**	**52.8%**	**2,538**	**4,011**	**7,438**	**1,604**

48813 Charlotte

Land area: **171.0** sq. mi. Water area: **0.2** sq. mi. Average elevation: 929 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Upper Thornapple River	Eaton County Charlotte, City Portions of Chester, Eaton, Walton, and Carmel Townships	Charlotte Public Schools (3,343 7 schools) Eaton Intermediate School District (158 4 schools) Maple Country School (14) St. Mary Elementary School (134) Charlotte Community Library (207,159 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
20,363	**36.5**	**6.5%**	**73.4%**	**11.6%**	**96.7%**	**0.5%**	**2.8%**	**2.63**	**7,848**	**17.1%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.3%	**69.4%**	**23.8**	**$46,924**	**4.4%**	**60.5%**	**421**	**5,467**	**24.4%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
404	**141**	**220**	**121**	**46.0%**	**4,230**	**7,545**	**14,114**	**3,018**

48815 Clarksville

Land area: 28.8 sq. mi. Water area: 0.1 sq. mi. Average elevation: 818 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Coldwater River Lake Creek Lower Flat River	Ionia County Clarksville, Village Portions of Boston and Campbell Townships	Lakewood School District Lakewood Clarksville Elementary School (130 students) Clarksville Area Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
2,095	**34.9**	**7.4%**	**70.8%**	**10.5%**	**98.5%**	**0.1%**	**1.3%**	**2.76**	**870**	**15.3%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
1.6%	**67.1%**	**28.9**	**$43,942**	**3.8%**	**32.4%**	**30**	**90**	**27.4%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
65	**32**	**35**	**71**	**0.0%**	**436**	**759**	**1,487**	**304**

48829 Edmore

Land area: 66.9 sq. mi. Water area: 0.3 sq. mi. Average elevation: 979 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Upper Flat River	Montcalm County Edmore, Village Home Township Portions of Day, Ferris, and Belvidere Townships	Montabella Community Schools (9,91 students 4 schools) Home Township Library (34,000 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
3,430	**36.3**	**7.1%**	**72.2%**	**15.6%**	**96.5%**	**0.2%**	**2.6%**	**2.61**	**1,413**	**10.7%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.3%	**61.7%**	**21.2**	**$31,950**	**12.4%**	**70.9%**	**101**	**786**	**24.6%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
76	**35**	**33**	**50**	**0.0%**	**856**	**1,298**	**2,178**	**519**

48834 Fenwick

Land area: 50.6 sq. mi. Water area: 0.3 sq. mi. Average elevation: 817 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Deer Creek Lower Flat River Prairie Creek	Montcalm + Ionia Counties Portions of Fairplain, Bushnell and Ronald Townships	Montcalm Area ISD School District H.O. Steele High School

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
2,412	**36.1**	**7.0%**	**71.8%**	**8.9%**	**97.1%**	**0.9%**	**3.5%**	**2.81**	**998**	**6.3%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.1%	**66.6%**	**30.3**	**$40,938**	**5.3%**	**55.6%**	**19**	**43**	**33.2%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
100	**36**	**60**	**48**	**0.0%**	**524**	**853**	**1,636**	**341**

48837 Grand Ledge

Land area: 79.2 sq. mi. Water area: 0.0 sq. mi. Average elevation: 848 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Upper Thornapple River	Eaton County Grand Ledge, City Oneida Township Portions of Roxand Township	Grand Ledge Public Schools (5,494 students, 10 schools) Oneida Township S/D #3 (20 students, 1 school) St. Michael Parish School Grand Ledge Area District Library (64,897visits) Grand Ledge Area District Library at Wacousta

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
17,456	**37.8**	**6.1%**	**73.2%**	**10.4%**	**96.6%**	**0.6%**	**2.2%**	**2.60**	**6,957**	**25.0%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
4.0%	**70.8%**	**21.5**	**$57,271**	**3.5%**	**39.1%**	**371**	**3,363**	**15.7%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
120	**35**	**54**	**216**	**64.7%**	**3,697**	**6,699**	**12,887**	**2,680**

48838 Greenville

Land area: 91.0 sq. mi. Water area: 3.1 sq. mi. Average elevation: 848 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Coopers/Clear/Black Creeks Deer Creek Upper Flat River Wabasis/Beaver Dam Creeks	Montcalm + Kent Counties Greenville, City Eureka + Montcalm Townships Portions of Oakfield and Fairplains Townships	Greenville Public Schools (3,986 students, 6 schools) Pine Grove Amish Parochial School (23 students) St. Charles Elementary School (143 students) Flat River Community Library (98,149 visits/year) Montcalm Community College

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
16,540	**36.3**	**6.6%**	**73.5%**	**13.7%**	**96.7%**	**0.4%**	**2.6%**	**2.55**	**6,986**	**14.2%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.3%	**64.8%**	**24.8**	**$37,883**	**6.5%**	**61.5%**	**454**	**6,701**	**30.4%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
133	**45**	**48**	**184**	**47.2%**	**3,329**	**6,394**	**11,009**	**2,558**

48846 Ionia

Land area: 104.8 sq. mi. Water area: 0.1 sq. mi. Average elevation: 752 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Bellemy Creek Direct drainage to the Grand River Lake Creek Libhart Creek Lower Flat River Prairie Creek	Ionia County Ionia, City Easton, Ronald, Ionia, Orange, and Berlin Townships	Ionia Public Schools (3,238 students, 8 schools) Ionia ISD (214 students, 3 schools) Berlin Township S/D #3 (32 students) Berlin Township S/D #6 (27 students) Ionia Township S/D #2 (8 students) Easton Township S/D #6 (27 students) Ionia Nazarene Christian School (14 students) Ionia Seventh-Day Adventist Elementary School (14 student) SS Peter & Paul Elementary School (102 students) Ionia Community Library (60,072 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
19,934	**30.1**	**5.6%**	**78.8%**	**9.0%**	**80.9%**	**13.7%**	**4.1%**	**2.60**	**5,992**	**9.4%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
6.4%	**46.3%**	**24.8**	**$41,071**	**8.8%**	**67.1%**	**329**	**4,756**	**24.5%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
220	**103**	**121**	**207**	**70.3%**	**3,681**	**5,572**	**9,742**	**2,229**

48849 Lake Odessa

Land area: 83.3 sq. mi. Water area: 0.8 sq. mi. Average elevation: 688 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Coldwater River Direct drainage to the Grand River Lake Creek Libhart Creek Mud Creek	Ionia County Lake Odessa, city Odessa Township Portions of Sebewa, Woodland, Carleton and Campbell Townships	Lakewood Public Schools (2,366 students, 7 schools) Lakewood Christian School (45 students) Lake Odessa Community Library (15,720 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
6,150	**34.9**	**7.0%**	**70.3%**	**11.7%**	**96.0%**	**0.1%**	**3.9%**	**2.74**	**2,430**	**12.0%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
4.3%	**66.0%**	**29.1**	**$42,228**	**3.5%**	**39.8%**	**130**	**1,035**	**26.3%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
169	**73**	**107**	**72**	**41.8%**	**1,481**	**2,244**	**4,216**	**898**

48851 Lyons

Land area: 32.5 sq. mi. Water area: 0.0 sq. mi. Average elevation: 764 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Direct drainage to the Grand River Libhart Creek	Ionia County Lyons, Village Portions of Ionia, Orange, Lyons, Portland, and Townships	Ionia County Intermediate School District Twin Rivers Elementary School (203 students) Lyons Township District Library (11,200 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
2,256	**35.7**	**6.0%**	**71.5%**	**9.8%**	**97.1%**	**0.1%**	**2.0%**	**2.69**	**884**	**7.2%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.3%	**69.6%**	**27.9**	**$46,399**	**5.8%**	**58.5%**	**21**	**85**	**27.7%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
58	**28**	**31**	**68**	**0.0%**	**530**	**839**	**1,677**	**336**

48865 Orleans

Land area: 20.1 sq. mi. Water area: 0.2 sq. mi. Average elevation: 831 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Bellemy Creek Deer Creek Direct drainage to Grand River Lower Flat River Prairie Creek	Ionia County Orleans Township	Ionia County Intermediate School District Threshold Academy (190)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
1,852	**33.7**	**7.5%**	**72.0%**	**9.0%**	**97.2%**	**0.2%**	**1.9%**	**2.76**	**782**	**7.2%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.4%	**64.0%**	**41.8**	**$36,813**	**10.2%**	**45.8%**	**13**	**94**	**34.9%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
32	**5**	**11**	**93**	**0.0%**	**394**	**501**	**1,342**	**200**

48875 Portland

Land area: 93.8 sq. mi. Water area: 0.1 sq. mi. Average elevation: 801 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Coldwater River Direct drainage to the Grand River Libhart Creek	Ionia County Portland, City Portions of Ionia, Sebewa, Portland, Orange, and Danby Townships	Portland Public School District (2,124 students 4 schools) St. Patrick school (334 students) Portland District Library (30,000 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
9,208	**33.8**	**7.7%**	**70.1%**	**9.9%**	**97.8%**	**0.3%**	**1.2%**	**2.78**	**3,429**	**17.3%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.1%	**72.8%**	**24.6**	**$53,464**	**3.4%**	**42.3%**	**181**	**1,700**	**19.8%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
212	**90**	**123**	**95**	**44.3%**	**2,225**	**3,307**	**6,733**	**1,323**

48876 Potterville

Land area: 14.1 sq. mi. Water area: 0.0 sq. mi. Average elevation: 896 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Upper Thornapple River	Eaton County Potterville, Village Benton and Windsor Townships	Potterville Public Schools (959 students) Potterville Benton Township District Library (10,170 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
3,473	**32.9**	**7.8%**	**69.8%**	**6.8%**	**95.4%**	**0.5%**	**4.6%**	**2.73**	**1,381**	**10.9%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.2%	**75.8%**	**23.0**	**$48,971**	**2.8%**	**49.6%**	**46**	**na**	**17.3%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
32	**13**	**11**	**243**	**62.3%**	**778**	**1,274**	**2,358**	**510**

48881 Saranac

Land area: 57.6 sq. mi. Water area: 0.1 sq. mi. Average elevation: 688 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Bellemy Creek Coldwater River Direct drainage to the Grand River Libhart Creek Lower Flat River Upper Thornapple River	Ionia County Saranac, Village Portions of Berlin, Boston, Easton, and Keene Townships	Saranac Community Schools (1,189 students, 3 schools) Saranac Public Library (33,818 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
5,319	**35.6**	**6.8%**	**71.3%**	**10.9%**	**97.9%**	**0.1%**	**1.8%**	**2.67**	**2,114**	**10.8%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.3%	**68.1%**	**29.5**	**$44,544**	**5.0%**	**34.5%**	**80**	**689**	**27.7%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
90	**60**	**42**	**90**	**0.0%**	**1,194**	**1,990**	**3,741**	**796**

48884 Sheridan

Land area: 60.3 sq. mi. Water area: 0.8 sq. mi. Average elevation: 837 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Deer Creek Prairie Creek	Montcalm County Sheridan, Village Portions of Sydney, Evergreen, Fairplain, and Bushnell Townships	Central Montcalm School District Sheridan Elementary School Beth Haven Baptist Academy (110 students)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
4,770	**36.2**	**5.7%**	**75.6%**	**10.0%**	**91.1%**	**6.3%**	**2.0%**	**2.68**	**1,727**	**7.2%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
4.5%	**53.9%**	**28.3**	**$35,806**	**9.7%**	**69.1%**	**49**	**451**	**33.3%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
126	**52**	**71**	**78**	**0.0%**	**929**	**1,550**	**2,916**	**620**

48885 Sydney

Land area: 14.9 sq. mi. Water area: 0.1 sq. mi. Average elevation: 883 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Deer Creek Upper Flat River	Montcalm County Sydney Township	Montcalm Area Intermediate School District (14,121 students 7 school districts, 11 private/parochial/denominational schools with 879 students)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
813	**35.3**	**6.3%**	**73.4%**	**10.3%**	**98.0%**	**0.1%**	**1.1%**	**2.70**	**317**	**13.1%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.2%	**66.6%**	**27.3**	**$41,838**	**4.8%**	**73.6%**	**12**	**na**	**38.5%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
29	**9**	**18**	**55**	**0.0%**	**184**	**301**	**600**	**120**

48886 Six Lakes

Land area: 29.2 sq. mi. Water area: 0.8 sq. mi. Average elevation: 949 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Upper Flat River	Montcalm County Six Lakes, unincorporated Belvidere Township	Montabella Community School District North Montcalm High School

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
2,215	**37.3**	**7.3%**	**72.8%**	**14.6%**	**95.9%**	**0.4%**	**1.6%**	**2.58**	**1,169**	**8.8%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
5.1%	**58.6%**	**26.7**	**$32,672**	**7.0%**	**66.5%**	**35**	**126**	**30.4%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
41	**24**	**26**	**76**	**0.0%**	**432**	**859**	**1,469**	**344**

48888 Stanton

Land area: 91.0 sq. mi. Water area: 1.6 sq. mi. Average elevation: 1006 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Deer Creek Upper Flat River	Montcalm County Stanton, City Portions of Douglass, Day, Sydney, and Evergreen Townships	Central Montcalm Public Schools (1,960 students, 6 schools) Montcalm Area ISD (352 students, 5 schools) White Pine Library (18,621 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
6,859	**36.1**	**6.4%**	**72.4%**	**12.1%**	**96.9%**	**0.2%**	**2.7%**	**2.66**	**3,019**	**10.2%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.9%	**61.6%**	**28.6**	**$38,615**	**8.9%**	**71.0%**	**113**	**631**	**31.3%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
167	**67**	**72**	**74**	**0.0%**	**1,483**	**2,545**	**4,747**	**1,018**

48890 Sunfield

Land area: 30.1 sq. mi. Water area: 0.2 sq. mi. Average elevation: 860 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Mud Creek	Eaton County Sunfield, Village Portions of Sebewa, Danby, Sunfield, and RoxandTownships	Lakewood School District (765 students, 3 schools) Sunfield Elementary School (174 students) Sunfield District Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
2,107	**36.2**	**7.1%**	**72.0%**	**11.7%**	**97.9%**	**0.3%**	**1.9%**	**2.77**	**785**	**10.2%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
1.0%	**67.7%**	**36.3**	**$46,164**	**3.2%**	**39.1%**	**30**	**316**	**20.8%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
53	**11**	**32**	**69**	**0.0%**	**430**	**754**	**1,502**	**302**

48897 Woodland

Land area: 31.3 sq. mi. Water area: 0.1 sq. mi. Average elevation: 859 feet above sea level

Sub-watersheds	Communities	School districts, etc.
Coldwater River Lower Thornapple River Mud Creek	Barry County Woodland, Village Woodland and Castletown Townships	Lakewood School District (765 students, 3 schools) Woodland Elementary School (193 students) George W. Spindler Memorial Library (3,247 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
1,442	**36.9**	**6.7%**	**72.8%**	**12.8%**	**97.5%**	**0.1%**	**2.4%**	**2.67**	**559**	**13.3%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.6%	**62.1%**	**29.1**	**$43,558**	**4.4%**	**43.6%**	**20**	**81**	**33.2%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
58	**8**	**40**	**45**	**0.0%**	**297**	**541**	**1,095**	**216**

49046 Delton

Land area: **79.6** sq. mi. Water area: **6.3** sq. mi. Average elevation: **929** feet above sea level

Sub-watersheds	Communities	School districts (students)
Cedar Creek Fall Creek Glass Creek High Bank Creek Lower Thornapple River	Barry County Portions of Hope, Barry, Prairieville Johnstown, and Orangeville Townships	Delton-Kellogg Public Schools (1,758 4 schools) Cedar Creek Christian School (65) Delton District Library (66,440 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
7,421	**37.7**	**6.1%**	**73.1%**	**11.2%**	**97.7%**	**0.3%**	**1.4%**	**2.70**	**3,363**	**10.1%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing 2000
2.3%	**66.3%**	**27.9**	**$43,348**	**4.7%**	**41.8%**	**109**	**516**	**26.0%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
143	**58**	**53**	**94**	**0.0%**	**1,322**	**7,130**	**5,060**	**2,852**

49050 Dowling

Land area: 25.9 sq. mi. Water area: 0.8 sq. mi. Average elevation: **952** feet above sea level

Sub-watersheds	Communities	School districts (students)
Cedar Creek High Bank Creek	Barry + Eaton Counties Dowling, unincorporated Portions of Maple Grove, Johnstown, and Barry Townships	Delton-Kellogg School District Dowling Public Library (2,178 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
1,562	**40.4**	**5.4%**	**76.1%**	**10.8%**	**97.6 %**	**0.8%**	**0.3%**	**2.58**	**667**	**11.4%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing 2000
2.6%	**67.0%**	**31.7**	**$51,406**	**2.6%**	**25.6%**	**14**	**59**	**33.1%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
41	**16**	**21**	**60.1**	**0.0%**	**252**	**605**	**1,207**	**242**

49058 Hastings

Land area: 144.9 sq. mi. Water area: 2.7 sq. mi. Average elevation: **828** feet above sea level

Sub-watersheds	Communities	School districts (students)
Cedar Creek Coldwater River Fall Creek Glass Creek High Bank Creek Lower Thornapple River	Barry County Hastings, City Rutland Charter, Hastings Charter, and Baltimore Townships	Hastings Area School District (3,120 students, 7 schools) Barry ISD (68 students 3 schools) Barry County Christian School (96 students) Hastings Adventist Elementary School (8 students) St. Rose of Lima School (107 students) Hastings Public Library (93,270 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
18,071	**36.8**	**7.0%**	**73.2%**	**13.8%**	**97.5%**	**0.2%**	**1.6%**	**2.62**	**7,279**	**17.0%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing 2000
1.6%	**65.7%**	**24.7**	**$44,440**	**4.5%**	61.8%	**451**	**5,842**	**31.4%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
284	**103**	**127**	120	**44.7%**	**3,606**	**6,752**	**12,738**	**2,701**

49073 Nashville

Land area: **74.4** sq. mi. Water area: **0.3** sq. mi. Average elevation: **961** feet above sea level

Sub-watersheds	Communities	School districts (students)
High Bank Creek Mud Creek Thornapple River (upper and lower)	Barry + Eaton Counties Nashville, Village Maple Grove, Castleton, Kalamo (Eaton County), and Assyria Townships	Maple Valley Public Schools Fuller Street Elementary School (392 students) Kellogg Education Center (90 students) Putnum District Library (8,000 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
5,134	**35.5**	**6.4%**	**72.0 %**	**11.7 %**	**97.9 %**	**0.2 %**	**0.6 %**	**2.67**	**2,061**	**11.0%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing 2000
1.8%	**65.8 %**	**30.0**	**$39,082**	**6.9 %**	**44.8%**	**62**	**322**	**33.3 %**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
212	**76**	**103**	**68**	**0.0%**	**1,101**	**1,915**	**3,631**	**766**

49096 Vermontville

Land area: **66.6** sq. mi. Water area**: 0.2** sq. mi. Average elevation: **939** feet above sea level

Sub-watersheds	Communities	School districts (students)	Other
Mud Creek Upper Thornapple River	Eaton County Vermontville, Village Kalamo Township	Maple Valley Schools (1,579 5) Walnut Corner School (15) Vermontville Township Library (12,000 visits/year)	**CSA, CBSA** Chamber of Commerce Newspapers? Agricultural District

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
3,305	**36.2**	**6.3%**	**70.9 %**	**9.9 %**	**97.0%**	**0.4%**	**1.1%**	**2.81**	**1,257**	**9.7%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing 2000
4.9%	**67.1%**	**31.3**	**$47,473**	**4.0%**	**51.3 %**	**33**	**136**	**24.4%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
177	**69**	**81**	**49**	**0.0%**	**771**	**1,172**	**2,487**	**469**

49301 Ada

Land area: 55.7 sq. mi. Water area: 0.3 sq. mi. Average elevation: 645 feet above sea level

Sub-watersheds	Communities	Schools
Bear Creek Direct drainage to the Grand River Lower Flat River Lower Thornapple River Plaster Creek	Kent County Ada, Village Ada Township Portions in Cascade, Grattan, Vergennes, and Lowell Townships	Forest Hills Public School District Goodwillie Environmental School Ada Vista Elementary Central Woodlands School Central Middle School Eastern Middle School Eastern High School Ada Christian School (716 students) St Patrick Elementary School (115)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
10,439	**37.8**	**7.0%**	**67.4%**	**6.9%**	**96.1%**	**0.4%**	**1.1%**	**3.06**	**3,535**	**49.3%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
4.8%	**71.6%**	**23.9**	**$83,902**	**2.1%**	**93.7%**	**392**	**2,628**	**19.8%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
74	**25**	**18**	**189**	**38.7%**	**2,320**	**3,403**	**7,327**	**1,361**

49302 Alto

Land area: 48.4 sq. mi. Water area: 0.4 sq. mi. Average elevation: 841 feet above sea level

Sub-watersheds	Communities	Schools (students)
Coldwater River Lower Thornapple River	Kent County Alto, Village Bowne Township Portions in Caledonia and Lowell Townships + Kentwood	Caledonia Community School District Alto Elementary School Kettle Lake Elementary Alto Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
6,467	**35.5**	**7.1%**	**68.1%**	**68.1%**	**97.4%**	**0.3%**	**1.1%**	**3.02**	**2,209**	**30.0%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.1%	**73.4%**	**26.4**	**$62,520**	**1.9%**	**89.9%**	**126**	**826**	**26.9%**

Farm operations 2007	Farm operations with animals 2007	Government payment programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
106	**46**	**29**	**135**	**23.7%**	**1,535**	**2,133**	**4,534**	**853**

49303 Bailey

Land area: 14.1 sq. mi. Water area: 0.0 sq. mi. Average elevation: 820 feet above sea level

Sub-watersheds	Communities	Schools (students)
Crockery Creek Upper Rogue River	Muskegon County Bailey, unincorporated Casnovia Township Fragments in Ashland Township, Newaygo County	Grant Public School District

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
1,024	**31.7**	**6.3%**	**68.0%**	**8.3%**	**93.8%**	**0.0%**	**6.5%**	**2.97**	**369**	**12.4%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
10.8%	**66.4%**	**28.5**	**$37,778**	**7.5%**	**29.4%**	**14**	**na**	**29.3%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
36	**19**	16	73	**0.0%**	**274**	344	**671**	**138**

49306 Belmont

Land area: 17.7 sq. mi. Water area: 0.2 sq. mi. Average elevation: 671 feet above sea level

Sub-watersheds	Communities	Schools (students)
Bear Creek Direct Drainage to the Grand River Lower Rogue River	Kent County Belmont, unincorporated Plainfield and Cannon Townships Portion in Algoma Township	Rockford Public School District Belmont Elementary Chandler Woods Charter Academy (677) Assumption BVM School (191)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
8,008	**36.6**	**7.8%**	**69.3%**	**10.2%**	**97.0%**	**0.7%**	**1.3%**	**2.84**	**2,924**	**29.4%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
4.1%	**73.8%**	**23.4**	**$61,601**	**1.0%**	**91.6%**	**186**	**2,240**	**21.9%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles 2000 (estimated)	Dogs (estimated)
25	**10**	**3**	**455**	**62.2%**	**1,653**	**2,815**	**5,388**	**1,126**

49315 Byron Center

Land area: 53.4 sq. mi. Water area: 0.0 sq. mi. Average elevation: 706 feet above sea level

Sub-watersheds	Communities	Schools (students)
Buck Creek Lower Thornapple River Plaster Creek Rush Creek	Kent County Byron Center, unincorporated Byron Township Portion in Gaines Township and Jamestown Township (Ottawa County)	Byron Center Public School District (3,251 students 6 schools) Wayland Union School District (3,086 7 schools) Byron Center Charter School (206) Cross Creek Charter Academy (708) Byron Center Christian School (440) St Mary's Visitation School (89) Zion Christian School (209) Byron Township Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
13,721	**34.2**	**7.1%**	**69.7%**	**9.8%**	**97.3%**	**0.5%**	**1.2%**	**2.87**	**4,891**	**23.6%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.5%	**72.9%**	**20.6**	**$57,603**	**1.7%**	**81.8%**	**528**	**8,019**	**23.4%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
144	**55**	**35**	**258**	**57.1%**	**3,774**	**4,755**	**9,329**	**1,902**

49316 Caledonia

Land area: 59.0 sq. mi. Water area: 0.8 sq. mi. Average elevation: 801 feet above sea level

Sub-watersheds	Communities	Schools (students)
Buck Creek Lower Thornapple River Plaster Creek	Kent County Caledonia, Village Gaines and Caledonia Townships Some portions in Allegan County	Caledonia Community Schools (4,010 students 10 schools) Caledonia Elementary School Emmons Lake Elementary School Duncan Lake Middle School Kraft Meadows Middle School Caledonia High School Glenmor High School Dutton Christian School (458) Caledonia Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
13,968	**35.6**	**7.8%**	**69.2%**	**9.4%**	**95.8%**	**1.1%**	**1.4%**	**2.88**	**5,124**	**29.3%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
5.0%	**75.0%**	**21.1**	**$61,810**	**2.8%**	**81.1%**	**495**	**10,117**	**23.1%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
95	**49**	**35**	**290**	**27.9%**	**3,312**	**4,838**	**9,564**	**1,935**

49318 Casnovia

Land area: 19.2 sq. mi. Water area: 0.3 sq. mi. Average elevation: 811 feet above sea level

Sub-watersheds	Communities	Schools (students)
Crockery Creek Rogue River (upper + lower)	Muskegon County Casnovia, Village Casnovia Township Portions in Tyrone Township (Kent County) and Chester Township (Ottawa County)	Kent City Community Schools

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
1,460	**34.7**	**6.2%**	**71.1%**	**8.6%**	**95.2%**	**0.0%**	**5.3%**	**2.84**	**547**	**11.6%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
5.8%	**72.5%**	**25.9**	**$51,985**	**5.6%**	**31.0%**	**19**	**132**	**30.7%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
42	**22**	**22**	**75**	**0.0%**	**372**	**503**	**1,061**	**201**

49319 Cedar Springs

Land area: 91.2 sq. mi. Water area: 0.5 sq. mi. Average elevation: 858 feet above sea level

Sub-watersheds	Communities	Schools (students)
Coopers/Clear/Black Creeks Rogue River (upper + lower) Wabasis/Beaver Dam Creeks	Kent County Cedar Springs, City Solon, Nelson, +Spencer Townships Fragments in Algoma, Courtland, Oakfield, + TyroneTownships	Cedar Springs Public Schools (3,462 students 7 schools) Creative Technologies Academy (264) Pilgrim Bible Academy (22) Cedar Springs Public Library (25,579 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
13,692	**33.9**	**7.7%**	**74.3%**	**12.4%**	**75.1%**	**12.3%**	**12.5%**	**2.84**	**4,975**	**11.8%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
4.7%	**71.0%**	**29.0**	**$46,608**	**5.0%**	**87.5%**	**250**	**2,400**	**5.0%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
156	**62**	**43**	**154**	**21.8%**	**3,276**	**4,783**	**9,447**	**1,913**

49321 Comstock Park

Land area: 24.0 sq. mi. Water area: 0.3 sq. mi. Average elevation: 739 feet above sea level

Sub-watersheds	Communities	Schools (students)
Direct drainage to the Grand River Indian Mill Creek Lower Rogue River Mill Creek Sand Creek	Kent County Comstock Park, unincorporated Alpine Township Fragments in Plainfield and Algoma Townships	Comstock Park Public Schools (2,534 - 6 schools) Holy Trinity Catholic Elementary School (158) Alpine Branch Library Comstock Park Branch Library Kent District Library (2,761,012 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
15,613	**29.5**	**7.9%**	**74.3%**	**7.9%**	**90.6%**	**2.7%**	**5.6%**	**2.55**	**6,375**	**20.9%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
7.5%	**79.1%**	**21.2**	**$46,231**	**5.5%**	**90.8%**	**436**	**6,320**	**24.7%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
41	**12**	**15**	**656**	**84.9%**	**6,178**	**6,102**	**10,684**	**2,441**

49322 Coral

Land area: 26.4 sq. mi. Water area: 0.8 sq. mi. Average elevation: 928 feet above sea level

Sub-watersheds	Communities	Schools (students)
Coopers/Clear/Black Creeks Upper Flat River	Montcalm County Maple Valley + Pine Townships	Cowden Lake Bible Academy (27)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
1,261	**36.2**	**6.6%**	**70.9%**	**11.7%**	**97.5%**	**0.0%**	**1.1%**	**2.78**	**578**	**8.6%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
5.0%	**55.2%**	**35.1**	**$37,269**	**5.2%**	**53.4%**	**7**	**22**	**24.3%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
40	**16**	**18**	**48**	**0.0%**	**283**	**452**	**847**	**181**

49325 Freeport

Land area: 25.9 sq. mi. Water area: 0.1 sq. mi. Average elevation: 859 feet above sea level

Sub-watersheds	Communities	Schools (students)
Coldwater River	Barry + Ionia Counties Freeport, Village Irving, Carlton, + Clarksville Townships Fragments in Bowne Township (Kent County)	Caledonia Community Schools Thornapple-Kellogg Public Schools Lakewood Public Schools Freeport District Library (11,024 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
1,642	**34.8**	**7.2%**	**69.9 %**	**8.7 %**	**97.1%**	**0.5 %**	**1.9 %**	**2.96**	**572**	**8.3%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.7%	**68.5%**	**25.2**	**$ 45,875**	**4.9%**	**49.4%**	**35**	**235**	**31.7 %**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
56	**23**	**37**	**62**	**0.0%**	**346**	**553**	**937**	**221**

49326 Gowen

Land area: 25.3 sq. mi. Water area: 1.2 sq. mi. Average elevation: 844 feet above sea level

Sub-watersheds	Communities	Schools (students)
Coopers/Clear/Black Creeks Upper Flat River	Kent + Montcalm Counties Spencer + Montcalm Townships Portions in Oakfield and Pine Townships	Greenville Public Schools Spencer Township Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
3,445	**36.9**	**6.4 %**	**73.2 %**	**9.6 %**	**97.5%**	**0.7%**	**1.2 %**	**2.66**	**1,512**	**8.0 %**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.9%	**66.8 %**	**30.2**	**$ 48,517**	**4.9 %**	**51.3%**	**30**	**na**	**31.5 %**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
46	**9**	**18**	**137**	**0.0%**	**710**	**1,272**	**2,565**	**509**

49330 Kent City

Land area: 42.8 sq. mi. Water area: 0.1 sq. mi. Average elevation: 821 feet above sea level

Sub-watersheds	Communities	Schools (students)
Crockery Creek Rogue River (upper + lower)	Kent County Kent City, Village Tyrone Township Portions in Ottawa, Muskegon, + Newaygo Counties	Kent City Community Schools (1,432 4 schools) Algoma Christian School (247) Tyrone Township/Kent City Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
4,875	**33.0**	**7.6%**	**68.2%**	**9.2%**	**96.3%**	**0.5%**	**5.4%**	**3.00**	**1,645**	**8.4%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
7.3%	**72.7%**	**30.5**	**$48,601**	**6.5%**	**80.7%**	**75**	**566**	**26.7%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
99	**31**	**28**	**116**	**0.0%**	**1,132**	**1,582**	**3,148**	**633**

49331 Lowell

Land area: 88.1 sq. mi. Water area: 1.3 sq. mi. **Elevation:** 675 feet above sea level

Sub-watersheds	Communities	Schools (students)
Bear Creek Coldwater River Direct drainage to the Grand River Lake Creek Lower Flat Lower Thornapple River	Kent + Ionia County Lowell, City Lowell Charter, Vergennes, and Keene Townships Ionia County	Lowell Area Public Schools (3,946 students 8 schools) Englehardt Library (branch Kent District Library)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
14,689	**35.1**	**7.1%**	**69.7%**	**9.5%**	**96.8%**	**0.7%**	**2.0%**	**2.85**	**5,260**	**20.0%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.5%	**72.8%**	**25.1**	**$52,654**	**3.5%**	**86.1%**	**351**	**4,034**	**27.1%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
134	**65**	**37**	**167**	**41.8%**	**3,520**	**14,106**	**10,252**	**5,642**

49333 Middleville

Land area: 80.2 sq. mi. Water area: 1.3 sq. mi. Average elevation: 739 feet above sea level

Sub-watersheds	Communities	Schools (students)
Coldwater River Glass Creek Lower Thornapple River	Barry County Middleville, Village Thornapple, Yankee Springs, + Irving Townships Portions in Rutland Township + Kent County	Thornapple Kellogg Public Schools (3,051 students 6 schools) Thornapple Kellogg School and Community Library (34,610 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
9,320	**34.7**	**7.6%**	**69.7%**	**8.8 %**	**97.3%**	**0.1 %**	**1.3%**	**2.85**	**3,717**	**17.2 %**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.4%	**72.6 %**	**24.4**	**$ 53,321**	**2.7 %**	**33.3%**	**192**	**2,592**	**30.5 %**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
115	**65**	**31**	**115**	**28.8%**	**2,121**	**3,267**	**6,638**	**1,307**

49339 Pierson

Land area: 29.2 sq. mi. Water area: 0.6 sq. mi. Average elevation: 895 feet above sea level

Sub-watersheds	Communities	Schools (students)
Coopers/Clear/Black Creeks Upper Rogue River	Montcalm County Pierson, Village Pierson Township Portions in Maple Valley Township	Tri County Area Schools

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
2,155	**35.0**	**6.6 %**	**70.5 %**	**8.6 %**	**96.7%**	**0.1 %**	**0.9%**	**2.83**	**1,041**	**13.8%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.3 %	**69.1%**	**35.3**	**$ 48,750**	**3.2 %**	**18.5%**	**192**	**2,592**	**30.8 %**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
33	**16**	**14**	**74**	**0.0%**	**515**	**761**	**1,536**	**304**

49341 Rockford

Land area: 83.6 sq. mi. Water area: 2.4 sq. mi. Average elevation: 859 feet above sea level

Sub-watersheds	Communities	Schools (students)
Bear Creek Coopers/Clear/Black Creeks Direct drainage to the Grand River Lower Flat River Lower Rogue River Wabasis/Beaver Dam Creeks	Kent County Rockford, City Courtland, Algoma, Canton, + Plainfield Townships Portions in Oakfield + Grattan Townships	Rockford Public School District (8,030 students, 16 schools) Rockford Christian School (246) White Pine Montessori (38) Krause Memorial Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
29,095	**34.5**	**8.3%**	**66.9%**	**7.0%**	**97.4%**	**0.4%**	**1.3%**	**2.96**	**10,344**	**31.9%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.9%	**73.1%**	**26.3**	**$64,165**	**3.9%**	**91.5%**	**659**	**5,583**	**21.9%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
128	**43**	**43**	**405**	**58.0%**	**7,347**	**9,839**	**19,728**	**3,936**

49343 Sand Lake

Land area: 54.6 sq. mi. Water area: 1.0 sq. mi. Average elevation: 882 feet above sea level

Sub-watersheds	Communities	Schools (students)
Coopers/Clear/Black Creeks Rogue River (upper + lower) Upper Flat River	Kent + Newaygo Counties Sand Lake, Village Ensley, Nelson, Spencer, + Solon Townships	Tri County Area Schools (2,499 students, 6 schools) Sand Lake Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
4,991	**34.9**	**7.1%**	**69.4%**	**9.6%**	**96.4%**	**0.4%**	**2.0%**	**2.81**	**2,040**	**9.1%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.2%	**67.3%**	**34.9**	**$46,860**	**7.6%**	**47.6%**	**61**	**225**	**32.8%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
122	**47**	**31**	**95**	**0.0%**	**1065**	**1,772**	**3,367**	**709**

49345 Sparta

Land area: 54.4 sq. mi. Water area: 0.6 sq. mi. Average elevation: 738 feet above sea level

Sub-watersheds	Communities	Schools (students)
Crockery Creek Direct drainage to the Grand River Rogue River (upper + lower) Mill	Kent County Sparta, Village Sparta, Algoma, Alpine, + Solon Townships	Sparta Area Schools (2,964 students, 7 schools) Sparta Carnegie Township Library (38,870 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
12,374	**34.4**	**7.3%**	**70.4%**	**10.3%**	**96.6%**	**0.4%**	**3.1%**	**2.76**	**4,671**	**13.5%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.8%	**70.6%**	**23.5**	**$46,309**	**3.6%**	**91.0%**	**263**	**3,843**	**29.5%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
97	**29**	**26**	**221**	**40.2%**	**2,827**	**4,459**	**8,277**	**1,784**

49347 Trufant

Land area: 18.3 sq. mi. Water area: 0.5 sq. mi. Average elevation: 875 feet above sea level

Sub-watersheds	Communities	Schools (students)
Coopers/Clear/Black Creeks Upper Flat	Montcalm County Maple Valley + Pine Townships Fragments in Kent County	Lakeview Community Schools Trufant Elementary School (108 students)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
1,292	**38.4**	**5.9%**	**75.1%**	**13.9%**	**98.8%**	**0.3%**	**0.5%**	**2.56**	**662**	**12.8%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.4%	**67.1%**	**34.5**	**$39,167**	**4.4%**	**51.2%**	**12**	**na**	**32.6%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
42	**18**	**26**	**71**	**0.0%**	**239**	**504**	**969**	**202**

49401 Allendale

Land area: 25.8 sq. mi. Water area: 0.1 sq. mi. Average elevation: 660 feet above sea level

Sub-watersheds	Communities	Schools (students)
Bass River Direct drainage to the Grand River	Ottawa County Allendale Township Georgetown Township	Allendale Public School District (2,166 5 schools) Allendale Christian School (202) Grand Valley State University Allendale Township Library (63,119 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
13,110	**21.1**	**6.0%**	**80.7%**	**4.3%**	**93.5%**	**2.8%**	**3.0%**	**3.00**	**3,540**	**24.4%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
17.9%	**71.2%**	**20.2**	**$43,449**	**2.6%**	**52.9%**	**186**	**2,670**	**15.2%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
60	**25**	**17**	**511**	**74.3%**	**1,755**	**3,354**	**6,934**	**1,342**

49403 Conklin

Land area: 45.2 sq. mi. Water area: 0.2 sq. mi. Average elevation: 790 feet above sea level

Sub-watersheds	Communities	Schools (students)
Crockery Creek Deer Creek Lower Rogue River Mill Creek Sand Creek	Ottawa County Chester Township Wright Township Crockery Lake	Coopersville, Ravenna, Sparta, and Kent City School Districts St. Joseph Elementary School (72) Trinity Lutheran School (54)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
2,495	**33.0**	**6.5%**	**67.9%**	**8.9%**	**94.9%**	**0.0%**	**6.7%**	**3.08**	**839**	**12.1%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
5.3%	**71.6%**	**25.7**	**$51,103**	**3.8%**	**42.3%**	**46**	**179**	**24.5%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
116	**45**	**38**	**56**	**0.0%**	**614**	**783**	**1,745**	**313**

49404 Coopersville

Land area: 64.5 sq. mi. Water area: 0.1 sq. mi. Average elevation: 631 feet above sea level

Sub-watersheds	Communities	Schools (students)
Crockery Creek Deer Creek Direct drainage to the Grand River Sand Creek	Ottawa County Coopersville, City Polkton Township	Coopersville Public School District (2,546students 6 schools) Lamont Christian School (97) St. Michael Elementary School (52) Northeast Ottawa District Library (57,140 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
7,952	**34.3**	**7.0%**	**70.2%**	**10.7%**	**97.3%**	**0.2%**	**2.4%**	**2.87**	**2,869**	**16.1%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
4.4%	**72.3%**	**22.5**	**$50,410**	**4.4%**	**46.8%**	**207**	**2,401**	**24.5%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
183	**91**	**83**	**130**	**45.0%**	**1,949**	**2,717**	**5,254**	**1,087**

49415 Fruitport

Land area: 25.2 sq. mi. Water area: 0.1 sq. mi. Average elevation: 641 feet above sea level

Sub-watersheds	Communities	Schools (students)
Crockery Creek Direct drainage to the Grand River Spring Lake / Norris Creek	Muskegon County Fruitport, City Sullivan, Fruitport, and Crockery (Ottawa County) Townships	Fruitport Community Schools (3,336 students, 8 schools) Calvary Christian Schools (246) Fruitport Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
5,818	**36.6**	**5.8%**	**72.6%**	**10.4%**	**97.1%**	**0.6%**	**1.6%**	**2.81**	**2,141**	**24.4%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
2.8%	**68.6%**	**21.1**	**$46,818**	**6.5%**	**59.1%**	**115**	**718**	**32.8%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
41	**15**	**2**	**223**	**48.9%**	**1,233**	**2,060**	**4,022**	**824**

49417 Grand Haven

Land area: 49.5 sq. mi. Water area: 0.4 sq. mi. Average elevation: 600 feet above sea level

Sub-watersheds	Communities	Schools (students)
Bass River Crockery Creek Direct drainage to the Grand River	Ottawa County Grand Haven, City Grand Haven Charter Township Robinson Township	Grand Haven Area Public Schools (6,018 students 11 schools) Grand Haven Christian School (329) Lakeshore Baptist Academy (78) St. Johns Lutheran School (146) Loutit District Library (174,999 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
27,969	**36.8**	**6.5%**	**73.5%**	**12.1%**	**96.6%**	**0.3%**	**1.9%**	**2.57**	**11,691**	**28.2%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.7%	**71.0%**	**19.7**	**$51,142**	**1.9%**	**75.6%**	**936**	**13,844**	**28.7%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
73	**22**	**7**	**537**	**81.2%**	**5,746**	**10,727**	**19,509**	**4,291**

49418 Grandville

Land area: 20.7 sq. mi. Water area: 0.2 sq. mi. Average elevation: 628 feet above sea level

Sub-watersheds	Communities	Schools (students)
Buck Creek Plaster Creek Direct drainage to the Grand River	Kent + Ottawa Counties Grandville, City Byron, Georgetown, and Jamestown Townships	Grandville Public Schools (6,040 students, 11 schools) Calvin Christian School Association (831) Calvin Christian Middle School (152) Grandville Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
25,028	**33.5**	**7.2%**	**71.2%**	**11.6%**	**95.0%**	**1.4%**	**2.9%**	**2.73**	**9,363**	**25.1%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
5.0%	**74.2%**	**19.3**	**$ 51,433**	**2.3%**	**74.2%**	**1,011**	**17,077**	**21.5%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
35	**10**	**7**	**1,240**	**93.4%**	**5,545**	**9,064**	**16,663**	**3,626**

49426 Hudsonville

Land area: 62.6 sq. mi. Water area: 0.0 sq. mi. Average elevation: 618 feet above sea level

Sub-watersheds	Communities	Schools (students)
Bass River Direct drainage to the Grand River Rush Creek	Ottawa County Hudsonville, City Jamestown, Georgetown, and Blendon Townships	Hudsonville Public School District (5,479 students, 11 schools) Beaverdam Christian School (105) Freedom Baptist Schools (371) Heritage Christian School (457) Hudsonville Christian School (763) Unity Christian High School (762) Gary Byker Memorial Library of Hudsonville (67,379 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
27,015	**32.4**	**8.8%**	**66.7%**	**9.2%**	**97.8%**	**0.2%**	**1.2%**	**3.09**	**8,948**	**26.7%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.7%	**75.1%**	**20.8**	**$ 60,507**	**1.8%**	**49.8%**	**638**	**7,077**	**24.9%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
250	**86**	**54**	**421**	**73.3%**	**6,856**	**8,683**	**17,787**	**3,473**

49428 Jenison

Land area: 15.3 sq. mi. Water area: 0.3 sq. mi. Average elevation: 657 feet above sea level

Sub-watersheds	Communities	Schools (students)
Bass Creek Direct drainage to the Grand River Rush Creek	Ottawa County Jenison, unincorporated Georgetown Township Jamestown Township	Jenison Public Schools (4,703 students, 8 schools) Jenison Christian School (476) Georgetown Township Public Library (142,833 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
24,452	**35.9**	**6.5%**	**70.9%**	**11.9%**	**96.9%**	**0.5%**	**1.8%**	**2.88**	**8,543**	**25.6%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.7%	**71.8%**	**22.5**	**$ 57,008**	**2.1%**	**36.4%**	**582**	**6,504**	**22.9%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
20	**8**	**13**	**1,604**	**98.0%**	**5,673**	**8,382**	**18,576**	**3,353**

49435 Marne

Land area: 24.3 sq. mi. Water area: 0.0 sq. mi. Average elevation: 685 feet above sea level

Sub-watersheds	Communities	Schools (students)
Deer Creek Direct drainage to the Grand River Sand Creek	Ottawa County Marne, unincorporated Tallmadge and Wright Townships	Coopersville Public Schools Grandville School District Kenowa Hills School District (3,563) Marne Elementary School

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
3,615	**36.4**	**6.7%**	**70.8%**	**12.4%**	**96.9%**	**0.3%**	**1.9%**	**3.01**	**1,175**	**12.4%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
6.4%	**70.9%**	**22.6**	**$57,356**	**5.4%**	**26.3%**	**102**	**819**	**23.5%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
64	**28**	**17**	**149**	**16.4%**	**850**	**1,145**	**2,336**	**458**

49448 Nunica

Land area: 32.6 sq. mi. Water area: 0.1 sq. mi. Average elevation: 634 feet above sea level

Sub-watersheds	Communities	Schools (students)
Deer Creek Direct drainage to the Grand River Spring Lake / Norris Creek	Ottawa + Muskegon Counties Nunica, unincorporated Crockery and Sullivan Townships	Fruitport School District Spring Lake School District Crockery Township Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
3,251	**36.5**	**6.3%**	**72.3%**	**10.2%**	**96.9%**	**0.6%**	**1.7%**	**2.71**	**1,259**	**15.3%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
7.7%	**73.4%**	**22.3**	**$46,019**	**3.6%**	**60.7%**	**80**	**510**	**28.3%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
60	**19**	**14**	**100**	**0.0%**	**846**	**1,191**	**1,122**	**4,76**

49451 Ravenna

Land area: 78.9 sq. mi. Water area: 0.0 sq. mi. Average elevation: 698 feet above sea level

Sub-watersheds	Communities	Schools (students)
Crockery Creek Deer Creek Spring Lake / Norris Creek	Muskegon County Ravenna, Village Ravenna and Moorland Townships Portions of Sullivan and Casnovia Townships	Ravenna Public Schools (1,099 students, 4 schools) St. Catherine School (56) Ravenna Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
6,053	**33.9**	**6.9%**	**69.7%**	**10.0%**	**96.7%**	**0.3%**	**2.5%**	**2.93**	**2,169**	**9.1%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.5%	**65.6%**	**29.5**	**$42,379**	**5.8%**	**51.4%**	**76**	**666**	**34.6%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
142	**74**	**50**	**77**	**0.0%**	**1,370**	**2,062**	**1,934**	**825**

49456 Spring Lake

Land area: 23.9 sq. mi. Water area: 0.2 sq. mi. Average elevation: 608 feet above sea level

Sub-watersheds	Communities	Schools (students)
Direct drainage to the Grand River Spring Lake / Norris Creek	Ottawa + Muskegon Counties Spring Lake, Village Ferrysburg, Village Spring Lake and Fruitport Townships	Spring Lake Public Schools (2,394 students, 6 schools) Walden Green Montessori (193) West Michigan Academy of Arts and Academics (387) St. Mary's School (181) Spring Lake District Library (215,876 visits)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
17,080	**38.9**	**6.3%**	**75.3%**	**14.4%**	**97.2%**	**0.4%**	**1.4%**	**2.44**	**7,648**	**36.1%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
3.5%	**68.9%**	**21.6**	**$51,359**	**2.8%**	**62.1%**	**408**	**6,470**	**25.2%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
56	**6**	**2**	**688**	**82.1%**	**3,151**	**6,889**	**12,407**	**2,756**

49503 Grand Rapids

Land area: **6.6** sq. mi. Water area: **0.0** sq. mi. Average elevation: **744** feet above sea level

Sub-watersheds	Communities	Schools (students)
Direct drainage to the Grand River Plaster Creek	Kent County, Grand Rapids, City Neighborhoods East Hills, Fulton Heights, Belknap Lookout, Black Hills, Center City, Cherry (Diamond), Division South, East Hills, Franklin Eastern, Heartside, Heritage Hill, Highland Park, Michigan Oaks, Michigan Street, Midtown, Monroe North, Northeast, Southeast, South Hill, Wealthy	Grand Rapids Public Schools William C. Abney Academy Catholic Central High School (814) Pyramid Montessori (29) St. Andrew Elementary School (147) St. Isidore Catholic Elementary School (99) Stepping Stones Montessori (149) Grand Rapids Public Library (910,286 visits/year)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
33,909	**29.7**	**7.7%**	**76.5%**	**9.0%**	**63.2%**	**22.2%**	**15.3%**	**2.28**	**15,169**	**23.2%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
15.3%	**65.8%**	**19.5**	**$30,176**	**16.7%**	**92.2%**	**1,604**	**40,022**	**19.2%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
0	**0**	**0**	**5,014**	**100%**	**5,511**	**31,829**	**17,948**	**12,732**

49504 Grand Rapids

Land area: **12.3** sq. mi. Water area: **0.0** sq. mi. Average elevation: **762** feet above sea level

Sub-watersheds	Communities	Schools (students)
Direct drainage to Grand River Indian Mill Creek	Kent County Grand Rapids, City Walker, City Neighborhoods Belknap Lookout, John Ball Park, Stockbridge, SWAN, West Fulton, West Grand, West Leonard	Grand Rapids Public School District Grand Rapids Child Discovery Center Grand Rapids Seventh-Day Adventist Academy (169) Holy Spirit School (389) Sacred Heart of Jesus School (146) SS Peter & Paul School (81) St. Anthony of Padua Elementary School (425) West Catholic High School (638) West Side Christian School (429) West Leonard Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
40,199	**32.7**	**8.1%**	**73.1%**	**13.5%**	**84.7%**	**3.0%**	**13.1%**	**2.57**	**16,394**	**18.2%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
14.6%	**66.9%**	**19.3**	**$38,835**	**11.1%**	**90.9%**	**904**	**17,396**	**25.3%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
0	**0**	**0**	**3,186**	**100%**	**7,639**	**39,790**	**23,490**	**15,916**

49505 Grand Rapids

Land area: **8.7** sq. mi. Water area: **0.0** sq. mi. Average elevation: **673** feet above sea level

Sub-watersheds	Communities	Schools (students)
Direct drainage to Grand River	Kent County Grand Rapids, City Neighborhoods Northeast, Cheshire, Auburn Hills, Michigan Oaks, North End	Grand Rapids Public Schools Blessed Sacrament School (204) Creston Christian School (157) Evergreen Christian School (114) Immanuel-St. James Lutheran School (151) Plymouth Christian Elementary (206) Plymouth Christian High School (182) St. Alphonsus Elementary (147) Van Belkum Branch Library at Creston Yankee Clipper Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
31,967	**33.6**	**8.0%**	**74.2%**	**15.2%**	**83.7%**	**9.9%**	**3.9%**	**2.41**	**13,349**	**25.1%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of residence	Businesses 2007	Employees 2007	Employed in manufacturing
7.0%	**68.0%**	**19.3**	**$40,710**	**6.9%**	**93%**	**545**	**10,544**	**19.9%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
0	**0**	**0**	**3,600**	**100%**	**6,060**	**30,778**	**20,039**	**12,311**

49506 Grand Rapids

Land area: **7.5** sq. mi. Water area: **0.5** sq. mi. Average elevation: **795** feet above sea level

Sub-watersheds	Communities	Schools (students)
Direct drainage to Grand River Plaster Creek	Kent County East Grand Rapids, City Grand Rapids Township Neighborhoods Eastown, Baxter, Cherry (Diamond), East Hills, Eastgate, Franklin Eastern, Michigan Oaks, Oakdale, Ottawa Hills, Wealthy,	East Grand Rapids Public Schools (3,012 students 5 schools) Eastside Christian School (45) Grand Rapids Christian High School (1007) Grand Rapids Christian Middle School (426) Grand Rapids Hebrew Academy (5) Immaculate Heart of Mary School (396) Our Savior Lutheran School (149) St. Stephen School (252) St. Thomas the Apostle School (334) East Grand Rapids Branch Library Ottawa Hills Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
33,864	**34.0**	**7.5%**	**72.4%**	**13.3%**	**74.6%**	**20.5%**	**3.6%**	**2.63**	**12,840**	**48.3%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of Residence	Businesses 2007	Employees 2007	Employed in manufacturing
7.7%	**66.5%**	**17.3**	**$65,784**	**7.6%**	**93.8%**	**589**	**8,094**	**15.7%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
0	**0**	**0**	**4,399**	**100%**	**7,016**	**32,005**	**20,450**	**12,802**

49507 Grand Rapids

Land area: **5.9** sq. mi. Water area: **0.0** sq. mi. Average elevation: **682** feet above sea level

Sub-watersheds	Communities	Schools (students)
Direct drainage to Grand River Coldwater River Fall Creek Lake Creek Lower Flat River Lower Thornapple River	Kent County Grand Rapids, City Neighborhoods Garfield Park, Alger Heights, Boston Square, Burton Heights, Franklin Eastern, Madison Square, Oakdale, Roosevelt Park Seymour Square, Southeast, South Hill,	Grand Rapids Public Schools New Branches School (184) Oakdale Christian School (316) Madison Square Branch Library Seymour Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
39,734	**27.3**	**10.3%**	**65.2 %**	**6.3 %**	**39.6 %**	**43.0%**	**23.2%**	**3.09**	**13,692**	**18.3 %**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of Residence	Businesses 2007	Employees 2007	Employed in manufacturing
23.3%	**63.9%**	**20.5**	**$ 36,520**	**18.0%**	**93.5%**	**424**	**7,655**	**27.0%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
0	**0**	**0**	**6,563**	**100%**	**10,187**	**39,369**	**18,801**	**15,748**

49508 Grand Rapids (Kentwood)

Land area: **12.2** sq. mi. Water area: **0.0** sq. mi. Average elevation: **736** feet above sea level

Sub-watersheds	Communities	Schools (students)
Buck Creek Plaster Creek	Kent County Kentwood, City Cutlerville, City Neighborhoods Millbrook	Kentwood Public Schools (9,182 students, 18 schools) Millbrook Christian School (329) West Michigan Lutheran High School (46) Kentwood Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
40,065	**33.0**	**7.6 %**	**72.2%**	**10.8%**	**76.6%**	**13.1%**	**4.8%**	**2.58**	**15,910**	**30.1%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of Residence	Businesses 2007	Employees 2007	Employed in manufacturing
12.6 %	**71.5%**	**19.4**	**$ 47,495**	**4.3 %**	**94.0%**	**845**	**18,426**	**25.0%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
0	**0**	**0**	**3,207**	**100%**	**8,179**	**39,194**	**25,284**	**15,678**

49509 Grand Rapids (Wyoming)

Land area: **17.0** sq. mi. Water area: **0.0** sq. mi. Average elevation: **643** feet above sea level

Sub-watersheds	Communities	Schools (students)
Direct drainage to Grand River Buck Creek Plaster Creek	Kent County Wyoming, City Neighborhood Roosevelt Park	Godfrey-Lee Public Schools (1,749 students 6 schools) Horizons Community High School (215) Holy Name of Jesus School (113) Holy Trinity Evan. Lutheran School (67) St. John Vianney Elementary (332) Potter's House Elementary & Middle School (492) Wyoming Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
59,089	**30.8**	**8.0%**	**72.5%**	**9.8%**	**82.2%**	**5.3%**	**13.5%**	**2.60**	**23,410**	**17.0%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of Residence	Businesses 2007	Employees 2007	Employed in manufacturing
15.3%	**73.0%**	**19.8**	**$42,138**	**6.5%**	**90.0%**	**778**	**16,372**	**28.5%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
0	**0**	**0**	**3,405**	**100%**	**12,152**	**58,843**	**37,092**	**23,537**

49512 Grand Rapids (Kentwood)

Land area: **21.8** sq. mi. Water area: **0.0** sq. mi. Average elevation: **793** feet above sea level

Sub-watersheds	Communities	Schools (students)
Buck Creek Plaster Creek Lower Thornapple River	Kent County Kentwood, City Cascade Township	Kentwood Public Schools Excel Charter Academy (708)

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
11,195	**30.2**	**7.9%**	**80.1%**	**7.4%**	**75.6%**	**12.2%**	**4.0%**	**2.05**	**5,986**	**37.5%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of Residence	Businesses 2007	Employees 2007	Employed in manufacturing
16.6%	**78.1%**	**20.2**	**$42,315**	**5.0%**	**94%**	**1,209**	**36,865**	**23.2 %**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
3	**0**	**0**	**502**	**96.1%**	**1,412**	**11,166**	**8,173**	**4,466**

49525 Grand Rapids (Northview)

Land area: **23.5** sq. mi. Water area: **0.3** sq. mi. Average elevation: **791** feet above sea level

Sub-watersheds	Communities	Schools (students)
Direct drainage to Grand River Lower Rogue River Mill Creek Plaster Creek	Kent County Grand Rapids, City Plainfield Township Neighborhood Northeast	Northview Public School District (3,496 students, 7 schools) Kent Intermediate School District Knapp Charter Academy (700) North Hills Classical Academy (68) Northpointe School (665) St. Jude Elementary (145) Plainfield Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
26,662	**35.5**	**6.2 %**	**72.2%**	**10.2 %**	**94.3%**	**2.0 %**	**1.8%**	**2.64**	**10,143**	**31.4%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of Residence	Businesses 2007	Employees 2007	Employed in manufacturing
4.5%	**72.6%**	**19.9**	**$ 50,316**	**4.0%**	**92.1%**	**791**	**12,254**	**19.4%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
28	**2**	**7**	**1,141**	**92.0%**	**5,953**	**26,042**	**14,110**	**10,417**

49544 Grand Rapids

Land area: **54.4** sq. mi. Water area: **0.2** sq. mi. Average elevation: **715** feet above sea level

Sub-watersheds	Communities	Schools (students)
Direct drainage to Grand River Lower Thornapple River Plaster Creek	Kent + Ottawa Counties Grand Rapids, City Walker, City Alpine Township Tallmadge Township	Kenowa Hills Public Schools (3,593 students, 9 schools) Walker Charter Academy (683) Walker Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
28,217	**32.7**	**7.1%**	**73.4%**	**10.0%**	**94.9%**	**1.3%**	**2.6%**	**2.53**	**11,520**	**20.9%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of Residence	Businesses 2007	Employees 2007	Employed in manufacturing
4.5%	**74.3%**	**19.3**	**$47,615**	**3.0%**	**77.5%**	**603**	**14,806**	**25.4%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
73	**33**	**22**	**507**	**86.0%**	**5,597**	**27,948**	**18,994**	**11,179**

49546 Grand Rapids (Forest Hills)

Land area: **22.0** sq. mi. Water area: **0.1** sq. mi. Average elevation: **749** feet above sea level

Sub-watersheds	Communities	Schools (students)
Direct drainage to Grand River Indian Mill Creek Mill Creek Lower Rogue River Sand Creek	Kent County Kentwood, City Grand Rapids, Cascade and Ada Townships Neighborhood Ridgmoor	Forest Hills Public Schools (10,022 students, 18 schools) Ridge Park Charter Academy (644) Lake Michigan Academy (30) St. Paul the Apostle School (242) Cascade Branch Library

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
33,844	**36.5**	**6.3%**	**74.5%**	**14.9%**	**89.1%**	**4.7%**	**1.8%**	**2.58**	**12,426**	**48.4%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of Residence	Businesses 2007	Employees 2007	Employed in manufacturing
11.9%	**65.2%**	**17.8**	**$59,945**	**4.8%**	**94.6%**	**1,405**	**29,546**	**17.9%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
0	**0**	**0**	**1,552**	**100%**	**6,744**	**30,771**	**20,717**	**12,309**

49548 Grand Rapids (Cutlerville)

Land area: **10.9** sq. mi. Water area: **0.0** sq. mi. Average elevation: **679** feet above sea level

Sub-watersheds	Communities	Schools (students)
Buck Creek Plaster Creek	Kent County Wyoming, City Kentwood, City Cutlerville? Township	Godwin Heights Public Schools (2,728 students, 6 schools) Kellogsville Public Schools (2,317 students, 7 schools) Vista Charter Academy (691) Kelloggsville Christian School (500) Legacy Christian School (502) South Christian High School (716) Gaines Township Library / Cutlerville

2000 population	Median age	Under 5 yrs old	Over 18 yrs old	Over 65 yrs old	Race White	Race Black/African American	Origin Hispanic or Latino	Average household size	Total housing units	Education 4yr+ deg
31,475	**31.7**	**8.3%**	**71.5%**	**9.8%**	**85.2%**	**5.6%**	**6.6%**	**2.54**	**12,776**	**10.6%**

Language other than English	In labor force 16+ yrs old	Commute time (minutes)	Median household Income	Families below poverty level	Work in county of Residence	Businesses 2007	Employees	Employed in manufacturing
9.5%	**72.2%**	**20.0**	**$44,931**	**5.6%**	**91.9%**	**912**	**21,583**	**29.2%**

Farm operations 2007	Farm operations with animals 2007	Conservation, wetland programs	Density persons per mi2	Urban population	K-12 Students 2000	Households 2000	Vehicles (estimated)	Dogs (estimated)
0	**0**	**0**	**2,831**	**100%**	**6,423**	**31,249**	**19,770**	**12,500**

Attachment 2 – LGRW Survey with Results

Wave 1 – December 2009; Wave 2 – March 2010

1. What is your zip code?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
48809	2	<1	1	<1	1	<1
48815	1	<1	1	<1	0	0
48838	1	<1	1	<1	0	0
49216	1	<1	0	0	1	<1
49301	45	4	23	5	22	4
49302	22	2	10	2	12	2
49306	27	3	12	2	15	3
49315	33	3	13	3	20	4
49316	28	3	14	3	14	3
49318	1	<1	0	0	1	<1
49319	39	4	23	5	16	3
49321	24	2	9	2	15	3
49325	1	<1	1	<1	0	0
49326	2	<1	1	<1	1	<1
49330	9	1	5	1	4	1
49331	43	4	17	3	26	5
49333	1	<1	0	0	1	<1
49341	93	9	48	9	45	9
49343	3	<1	2	<1	1	<1
49345	33	3	17	3	16	3
49346	1	<1	1	<1	0	0
49348	1	<1	0	0	1	<1
49418	43	4	19	4	24	5
49501	1	<1	1	<1	0	0
49503	37	4	19	4	18	3
49504	88	9	44	9	44	8
49505	70	7	35	7	35	7
49506	46	4	19	4	27	5
49507	25	2	14	3	11	2
49508	53	5	28	5	25	5
49509	27	3	14	3	13	3
49512	18	2	11	2	7	1
49518	1	<1	1	<1	0	0
49519	36	3	21	4	15	3
49525	57	5	36	7	21	4
49534	29	3	10	2	19	4
49544	14	1	4	1	10	2
49546	50	5	20	4	30	6
49548	33	3	18	3	15	3
Total	**1039**	**100**	**513**	**100**	**526**	**100**

2. What natural resource in Michigan do you personally *value most*?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Water	725	69	351	68	374	71
Forest/trees	78	8	44	9	34	6
Animal life	18	2	11	2	7	1
Air	28	3	16	3	12	2
Oil	15	1	6	1	9	2
Coal	3	<1	2	<1	1	<1
People	5	1	4	1	1	<1
Other	100	10	42	8	58	11
Unsure/Don't know	71	7	40	8	31	6
Refused	2	<1	1	<1	1	<1
Total	**1045**	**100**	**517**	**100**	**528**	**100**

3. How important to you is water as a natural resource, using a scale from 1 to 10, where 1 means it is not important at all, and 10 means it is extremely important.

(Asked of respondents who did not name water as most important natural resource)

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Not at all – 1	1	<1	0	0	1	1
2	2	1	2	1	0	0
3	1	<1	1	1	0	0
4	0	0	0	0	0	0
5	4	1	0	0	4	3
6	2	1	1	1	1	1
7	7	2	6	4	1	1
8	32	10	19	12	13	9
9	37	12	17	10	20	13
Extremely important – 10	227	72	118	72	109	73
Total	313	100	164	100	149	100
Mean	*313*	*9.42*	*164*	*9.39*	*149*	*9.45*
Unsure/Don't know*	0	0	0	0	0	0
Refused*	1	<1	0	0	1	1

*Unsure/Don't Know/Refused not included in Mean calculation.

4. Using a scale of very important, somewhat important, a little important or not at all important, how important do you think good water quality is for these activities?

Activity	Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
For drinking	Very important (4)	1023	**98%**	506	98%	517	98%
	Somewhat important (3)	18	2	10	2	8	1
	A little important (2)	2	<1	1	<1	1	<1
	Not at all important (1)	1	<1	0	0	1	<1
	Total	1044	100	517	100	527	100
	Mean		*3.98*	*517*	*3.98*	*527*	*3.98*
	Unsure/Don't know/Refused *	1	<1	0	0	1	<1
For recreation/ activities	Very important (4)	700	68%	339	67%	361	69%
	Somewhat important (3)	302	29	149	29	153	29
	A little important (2)	24	2	16	3	8	1
	Not at all important (1)	10	1	6	1	4	1
	Total	1036	100	510	100	526	100
	Mean		*3.63*	*510*	*3.61*	*526*	*3.66*
	Unsure/Don't know/Refused *	9	1	7	1	2	<1
For farming/ gardening	Very important (4)	727	70%	354	69%	373	71%
	Somewhat important (3)	268	26	137	27	131	25
	A little important (2)	30	3	16	3	14	3
	Not at all important (1)	11	1	7	1	4	1
	Total	1036	100	514	100	522	100
	Mean		*3.65*	*514*	*3.63*	*522*	*3.67*
	Unsure/Don't know/Refused *	8	1	3	1	5	1
For supporting wildlife	Very important (4)	799	77%	393	76%	406	77%
	Somewhat important (3)	214	21	106	21	108	21
	A little important (2)	22	2	14	3	8	1
	Not at all important (1)	6	1	3	1	3	1
	Total	1041	100	516	100	525	100
	Mean		*3.73*	*516*	*3.72*	*525*	*3.75*
	Unsure/Don't know/Refused *	4	<1	1	<1	3	1
For home use	Very important (4)	936	90%	462	89%	474	90%
	Somewhat important (3)	98	9	49	9	49	9
	A little important (2)	7	1	4	1	3	1
	Not at all important (1)	3	<1	2	<1	1	<1
	Total	1044	100	517	100	527	100

	Mean		*3.88*	*517*	*3.88*	*527*	*3.89*
	Unsure/Don't know/Refused *	1	<1	0	0	1	<1
For business/ industry use	Very important (4)	632	62%	304	60%	328	64%
	Somewhat important (3)	328	32	174	35	154	30
	A little important (2)	47	5	20	4	27	5
	Not at all important (1)	13	1	6	1	7	1
	Total	1020	100	504	100	516	100
	Mean		*3.55*	*504*	*3.54*	*516*	*3.56*
	Unsure/Don't know/Refused *	19	2	9	2	10	2
Any other use of water that comes to mind?	Very important (4)	30	70%	13	81%	17	63%
	Somewhat important (3)	7	16	2	13	5	19
	A little important (2)	0	0	0	0	0	0
	Not at all important (1)	6	14	1	6	5	19
	Total	43	100	16	100	27	100
	Mean		*3.42*	*16*	*3.69*	*27*	*3.26*
Any other use of water that comes to mind? (Second Other)	Very important (4)	1	33%	1	50%	0	0%
	Somewhat important (3)	1	33	1	50	0	0
	A little important (2)	0	0	0	0	0	0
	Not at all important (1)	1	33	0	0	1	100
	Total	3	100	2	100	1	100
	Mean		*2.67*	*2*	*3.50*	*1*	*1.00*

*Unsure/Don't Know/Refused is percent of total sample, and is not included in Mean calculation.

5. Using the same scale from very important to not at all important, in your opinion, how important to *others* in your community is good water quality for ...?

Activity	Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
For drinking	Very important (4)	920	91%	464	92%	456	91%
	Somewhat important (3)	75	7	34	7	41	8
	A little important (2)	6	1	4	1	2	<1
	Not at all important (1)	4	<1	2	<1	2	<1
	Total	1005	100	504	100	501	100
	Mean	*1005*	*3.90*	*504*	*3.90*	*501*	*3.90*
	Unsure/Don't know/Refused *	40	4	13	3	27	5
For recreation/ activities	Very important (4)	636	63%	326	65%	310	62%
	Somewhat important (3)	318	32	153	30	165	33
	A little important (2)	36	4	16	3	20	4
	Not at all important (1)	14	1	9	2	5	1
	Total	1004	100	504	100	500	100
	Mean	*1004*	*3.57*	*504*	*3.58*	*500*	*3.56*
	Unsure/Don't know/Refused *	40	4	13	3	27	5
For farming/ gardening	Very important (4)	655	65%	323	64%	332	67%
	Somewhat important (3)	292	29	146	29	146	29
	A little important (2)	35	3	21	4	14	3
	Not at all important (1)	19	2	13	3	6	1
	Total	1001	100	503	100	498	100
	Mean	*1001*	*3.58*	*503*	*3.55*	*498*	*3.61*
	Unsure/Don't know/Refused *	44	4	14	3	30	6
For supporting wildlife	Very important (4)	647	65%	326	65%	321	65%
	Somewhat important (3)	284	28	136	27	148	30
	A little important (2)	46	5	27	5	19	4
	Not at all important (1)	22	2	12	2	10	2
	Total	999	100	501	100	498	100
	Mean	*999*	*3.56*	*501*	*3.55*	*498*	*3.57*
	Unsure/Don't know/Refused *	46	4	16	3	30	6
For home use	Very important (4)	861	86%	434	86%	427	86%
	Somewhat important (3)	128	13	63	13	65	13
	A little important (2)	13	1	6	1	7	1
	Not at all important (1)	3	<1	3	1	0	0
	Total	1005	100	506	100	499	100
	Mean	*1005*	*3.84*	*506*	*3.83*	*499*	*3.84*

	Unsure/Don't know/Refused *	38	4	11	2	27	5
For business/ industry use	Very important (4)	585	59%	293	60%	292	59%
	Somewhat important (3)	335	34	169	34	166	34
	A little important (2)	49	5	23	5	26	5
	Not at all important (1)	16	2	7	1	9	2
	Total	985	100	492	100	493	100
	Mean	*985*	*3.51*	*492*	*3.52*	*493*	*3.50*
	Unsure/Don't know/Refused *	57	5	23	5	34	7
Any other use of water that comes to mind?	Very important (4)	30	64%	12	60%	18	67%
	Somewhat important (3)	7	15	2	10	5	19
	A little important (2)	3	6	2	10	1	4
	Not at all important (1)	7	15	4	20	3	11
	Total	47	100	20	100	27	100
	Mean	*47*	*3.28*	*20*	*3.10*	*27*	*3.41*
Any other use of water that comes to mind? (Second Other)	Very important (4)	0	0%	0	0%	0	0%
	Somewhat important (3)	2	67	2	100	0	0
	A little important (2)	0	0	0	0	0	0
	Not at all important (1)	1	33	0	0	1	100
	Total	3	100	2	100	1	100
	Mean	*3*	*2.33*	*2*	*3.00*	*1*	*1.00*

*Unsure/Don't Know/Refused is percent of total sample, and is not included in Mean calculation.

6. Which one of the following statements best describes *how you feel* about the Grand River?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
I strongly support and care greatly about the Grand River and its future (1)	617	60	291	57	326	63
I am somewhat supportive of and care some-what about the Grand River and its future (2)	337	33	176	35	161	31
The Grand River and its future are of little concern to me (3)	55	5	32	6	23	4
The Grand River and its future are of no concern to me (4)	19	2	9	2	10	2
Total	1028	100	508	100	520	100
Mean		*1.49*		*1.53*		*1.46*
I am unsure how I feel about the Grand River and its future *	15	1	8	1	7	1
Refused *	2	<1	1	<1	1	<1

*Unsure/Don't Know/Refused is percent of total sample, and is not included in Mean calculation.

7. Which of these Grand River activities is the *most important* to you?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Looking at the river	343	34	171	34	172	34
Watching wildlife along the river	266	26	127	25	139	27
Swimming in the river	17	2	12	2	5	1
Fishing in the river	150	15	73	15	77	15
Boating on the river	63	6	30	6	33	7
Anything else I haven't mentioned	95	9	43	9	52	10
Unsure/Don't know	67	7	38	8	29	6
Refused	8	1	5	1	3	1
Total	1009	100	499	100	510	100

8. Which of these Grand River activities is the *least important* to you?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Looking at the river	77	8	47	9	30	6
Watching wildlife along the river	34	3	17	3	17	3
Swimming in the river	462	46	214	43	248	49
Fishing in the river	134	13	66	13	68	13
Boating on the river	193	19	96	19	97	19
Anything else I haven't mentioned	32	3	16	3	16	3

Unsure/Don't know	64	6	38	8	26	5
Refused	11	1	4	1	7	1
Total	1007	100	498	100	509	100

9. Which one of the following statements best describes *how you feel* about Lake Michigan?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
I strongly support and care greatly about Lake Michigan and its future (1)	906	87	445	86	461	88
I am somewhat supportive of and care some-what about Lake Michigan and its future (2)	117	11	62	12	55	11
Lake Michigan and its future are of little concern to me (3)	10	1	7	1	3	1
Lake Michigan and its future are of no concern to me (4)	6	1	1	<1	5	1
Total	1039	100	515	100	524	100
Mean	*1039*	*1.15*	*515*	*1.15*	*524*	*1.15*
I am unsure how I feel about the Grand River and its future *	3	<1	0	0	3	1
Refused *	2	0	1	<1	1	<1

*Unsure/Don't Know/Refused is percent of total sample, and is not included in Mean calculation.

10. Which of these Lake Michigan activities is *most important* to you?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Looking at the lake	103	10	51	10	52	10
Watching wildlife along the lake	56	5	38	7	18	3
Walking along the lake	131	13	48	9	83	16
Swimming in the lake	176	17	90	17	86	17
Fishing in the lake	55	5	23	5	32	6
Boating on the lake	49	5	22	4	27	5
Drinking water/Source of water	336	33	171	33	165	32
Anything else I haven't mentioned	98	9	49	9	49	9
Unsure/Don't know	26	3	20	4	6	1
Refused	3	<1	2	<1	1	<1
Total	1033	100	514	100	519	100

11. Which of these Lake Michigan activities is *least important* to you?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Looking at the lake	82	8	38	7	44	9
Watching wildlife along the lake	74	7	38	7	36	7
Walking along the lake	66	6	33	6	33	6
Swimming in the lake	125	12	69	13	56	11
Fishing in the lake	186	18	84	16	102	20
Boating on the lake	264	26	127	25	137	26
Drinking water/Source of water	63	6	30	6	33	6
Anything else I haven't mentioned	56	5	27	5	29	6
Unsure/Don't know	99	10	58	11	41	8
Refused	17	2	10	2	7	1
Total	1032	100	514	100	518	100

12. Please think about the body of water nearest to your home. By this, I mean a lake, river, stream, creek, pond, swampy area, storm drain, or drainage ditch. Does this body of water connect to another larger body of water?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Yes	673	65	341	66	332	63
No	253	24	119	23	134	25
Unsure/Don't know	118	11	57	11	61	12
Refused	0	0	0	0	0	0

Total	1044	100	517	100	527	100

13. If yes, does this body of water eventually connect to the Grand River?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Yes	480	71	238	70	242	73
No	24	4	13	4	11	3
The Grand River is the body of water nearest my home	114	17	60	18	54	16
Unsure/Don't know	56	8	30	9	26	8
Refused	0	0	0	0	0	0
Total	674	100	341	100	333	100

14. Does this body of water eventually connect to Lake Michigan?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Yes	569	84	289	85	280	84
No	29	4	15	4	14	4
Lake Michigan is the body of water nearest my home	2	<1	0	0	2	1
Unsure/Don't know	74	11	37	11	37	11
Refused	0	0	0	0	0	0
Total	674	100	341	100	333	100

15. Are you familiar with the idea of a *watershed*?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Yes	506	51	261	53	245	49
No	366	37	183	37	183	37
Unsure/Don't know	121	12	52	11	69	14
Refused	0	0	0	0	0	0
Total	993	100	496	100	497	100

If no, unsure or refused, read out loud: *A Watershed is an area of land that sends surface water to the same river, stream, lake or other body of water.*

16. Do you know in which watershed you live? If yes, what is it?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Lower Grand River Watershed	32	3	23	5	9	2
Grand River Watershed	74	7	34	7	40	8
Rogue River	20	2	6	1	14	3
Thornapple River	22	2	5	1	17	3
Plaster Creek	15	1	6	1	9	2
Indian Mill Creek	1	<1	0	0	1	<1
Mill Creek	2	<1	0	0	2	<1
Lake Michigan Watershed	1	<1	1	<1	0	0
Great Lakes Watershed	2	<1	1	<1	1	<1
Other	45	4	24	5	21	4
No/Unsure/Don't know	814	79	405	80	409	78
Refused	2	<1	1	<1	1	<1
Total	1030	100	506	100	524	100

17. How would you rate the water quality in the Lower Grand River Watershed? Would you say the water quality is excellent, good, fair or poor?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Excellent (4)	60	7	46	**11**	14	**3**

Good (3)	297	36	184	**42**	113	**29**
Fair (2)	295	35	135	**31**	160	**41**
Poor (1)	178	21	70	**16**	108	**27**
Total	830	100	435	100	395	100
Mean	*830*	*2.29*	*435*	*2.47*	*395*	*2.08*
Unsure/Don't know *	208	**20**	82	**16**	126	**24**
Refused *	6	1	0	0	6	1

*Unsure/Don't Know/Refused is percent of total sample, and is not included in Mean calculation.

18. How would you rate the water quality in Lake Michigan? Would you say the water quality is excellent, good, fair or poor?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Excellent (4)	63	7	31	7	32	7
Good (3)	529	56	265	57	264	56
Fair (2)	310	33	154	33	156	33
Poor (1)	41	4	19	4	22	5
Total	943	100	469	100	474	100
Mean	*943*	*2.65*	*469*	*2.66*	*474*	*2.65*
Unsure/Don't know *	97	**9**	46	**9**	51	**10**
Refused *	3	<1	1	<1	2	<1

*Unsure/Don't Know/Refused is percent of total sample, and is not included in Mean calculation.

19. Is water quality in the Grand River affected by the things you do, even if it's just a little?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Yes	787	75	400	77	387	74
No	214	21	94	18	120	23
Unsure/Don't know	39	4	22	4	17	3
Refused	3	<1	1	<1	2	<1
Total	1043	100	517	100	526	100

20. Is water quality in Lake Michigan affected by the things you do, even if it's just a little?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Yes	805	77	406	79	399	76
No	195	19	87	17	108	21
Unsure/Don't know	42	4	23	4	19	4
Refused	3	<1	1	<1	2	<1
Total	1045	100	517	100	528	100

21. When you think of the ways that people negatively affect water quality, what's the first thing that comes to mind?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
People add sewage	191	18	119	**23**	72	**14**
People add fertilizers	79	8	34	7	45	9
People add pesticides	25	2	13	3	12	2
Washing car on pavement at home	1	<1	0	0	1	<1
Dumping oil	48	5	20	4	28	5
Leaking cars	7	1	6	1	1	<1
Phosphates/Phosphorus	4	<1	2	<1	2	<1
Not properly taking care of pet's waste	3	<1	2	<1	1	<1
Littering	235	23	111	21	124	23
Dumping chemicals on the ground or in storm sewer	144	14	52	10	92	17
Other	261	25	134	26	127	24

Unsure/Don't know	43	4	24	5	19	4
Refused	4	<1	0	0	4	1
Total	1045	100	517	100	528	100

22. Do you know where you or your community gets drinking or tap water?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Yes	774	74	374	73	400	76
No	201	19	107	21	94	18
Unsure/Don't know	62	6	33	6	29	5
Refused	4	<1	0	0	4	1
Total	1041	100	514	100	527	100

23. Where does it (drinking water) come from?

(Asked *of people who said Yes to previous question)*

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Lake Michigan	265	34	134	35	131	33
Grand River	42	5	16	4	26	7
Municipal or City or Government	158	20	79	21	79	20
Well Groundwater	288	37	133	35	155	39
Other	19	2	12	3	7	2
Unsure/Don't know	5	1	3	1	2	1
Refused	0	0	0	0	0	0
Total	777	100	377	100	400	100

24. Some people say that rainwater running off our roofs, lawns and pavement can become harmful if it flows untreated into nearby lakes, rivers and streams. Other people say that rainwater is not at all harmful by flowing over these surfaces. What is closer to your view of the situation?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Untreated rainwater can be harmful	566	54	281	54	285	54
Rainwater is not harmful	358	34	183	35	175	33
Unsure/Don't know	114	11	52	10	62	12
Refused	6	1	1	<1	5	1
Total	1044	100	517	100	527	100

25. Some people say that individuals should be responsible for preventing rainwater falling on their property from being exposed to harmful substances. For example, we should make sure that rain falling on our property is not exposed to pesticides or automotive fluids. Other people say there is no need to take actions to prevent rainwater from being exposed to substances on our property. What is closer to your opinion about responsibility for rainwater?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
I/We should be individually responsible for the quality of rainwater as it leaves our property	625	60	290	56	335	64
The rainwater need not be managed by us individually	270	26	147	28	123	23
I am a renter - the property owner should be responsible	7	1	5	1	2	<1
Some other response (enter below)	53	5	21	4	32	6
Unsure/Don't know	82	8	53	10	29	5
Refused	6	1	1	<1	5	1
Total	1043	100	517	100	526	100

26. What is one thing people could do around their homes that would improve water quality?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Reduce outdoor chemical use (herbicides, pesticides, fertilizers)	453	43	215	42	238	45
Pick up pet waste	9	1	4	1	5	1
Avoid washing car on pavement	5	1	3	1	2	<1
Minimize hard or non-porous surfaces in yard	1	<1	1	<1	0	0
Keep soil and debris away from surface runoff	20	2	8	2	12	2
Use plants to absorb and filter runoff (plant more trees)	17	2	8	2	9	2
Keep rain where it falls	16	1	8	2	8	1
Regularly pump out septic system	7	1	2	<1	5	1
Repair car leaks	20	2	10	2	10	2
Participate in a river clean-up	5	1	1	<1	4	1
Other	311	30	168	33	143	27
Unsure/Don't know	170	16	87	17	83	16
Refuse	8	1	1	<1	7	1
Total	1042	100	516	100	526	100

27. Can you name one thing you are doing to help improve water quality?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Reduce outdoor chemical use (herbicides, pesticides, fertilizers)	301	29	146	28	155	29
Pick up pet waste	3	<1	1	<1	2	<1
Avoid washing car on pavement	3	<1	2	<1	1	<1
Minimize hard or non-porous surfaces in yard	2	<1	1	<1	1	<1
Keep soil and debris away from surface runoff	8	1	2	<1	6	1
Use plants to absorb and filter runoff (plant more trees)	13	1	5	1	8	1
Keep rain where it falls	7	1	3	1	4	1
Regularly pump out septic system	4	<1	0	0	4	1
Repair car leaks	19	2	10	2	9	2
Participate in a river clean-up	4	<1	4	1	0	0
Other	385	37	196	38	189	36
Unsure/Don't know	276	26	137	27	139	26
Refuse	20	2	10	2	10	2
Total	1045	100	517	100	528	100

28. For each of the following, please indicate how easy it would be for people to change their ways of doing things, so that water quality is improved. Please indicate if each could be very easy, somewhat easy, or not easily done.

Activity	Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Reduce outdoor chemical use (herbicides, pesticides, fertilizers)	Very easy (1)	514	51%	279	55%	235	47%
	Somewhat easy (2)	340	34	171	34	169	34
	Not easily done (3)	147	15	55	11	92	19
	Total	1001	100	505	100	496	100
	Mean		*1.63*		*1.56*		*1.71*
	Unsure/Don't know/Refused *	44	4	12	2	32	6
Pick up pet waste	Very easy (1)	852	85%	433	86%	419	84%
	Somewhat easy (2)	114	11	51	10	63	13
	Not easily done (3)	42	4	22	4	20	4
	Total	1008	100	506	100	502	100
	Mean		*1.20*		*1.19*		*1.21*
	Unsure/Don't know/Refused *	36	3	10	2	26	5
Avoid washing car on pavement	Very easy (1)	468	48%	228	47%	240	50%
	Somewhat easy (2)	288	30	150	31	138	29
	Not easily done (3)	212	22	107	22	105	22
	Total	968	100	485	100	483	100
	Mean		*1.74*		*1.75*		*1.72*

	Unsure/Don't know/Refused *	76	7	31	6	45	9
Minimize hard or non-porous surfaces in yard	Very easy (1)	286	31%	150	32%	136	30%
	Somewhat easy (2)	359	39	185	39	174	38
	Not easily done (3)	288	31	137	29	151	33
	Total	933	100	472	100	461	100
	Mean		*2.00*		*1.97*		*2.03*
	Unsure/Don't know/Refused *	109	11	42	8	67	13
Keep soil and debris away from surface runoff	Very easy (1)	446	46%	209	43%	237	48%
	Somewhat easy (2)	339	35	173	36	166	34
	Not easily done (3)	187	19	100	21	87	18
	Total	972	100	482	100	490	100
	Mean		*1.73*		*1.77*		*1.69*
	Unsure/Don't know/Refused *	66	6	30	6	36	7
Use plants to absorb and filter runoff (plant more trees)	Very easy (1)	634	63%	311	61%	323	64%
	Somewhat easy (2)	293	29	148	29	145	29
	Not easily done (3)	85	8	47	9	38	7
	Total	1012	100	506	100	506	100
	Mean		*1.46*		*1.48*		*1.44*
	Unsure/Don't know/Refused *	32	3	10	2	22	4
Keep rain where it falls	Very easy (1)	320	33%	152	31%	168	35%
	Somewhat easy (2)	246	26	131	27	115	24
	Not easily done (3)	396	41	203	42	193	41
	Total	962	100	486	100	476	100
	Mean		*2.08*		*2.10*		*2.05*
	Unsure/Don't know/Refused *	78	7	28	6	50	9
Regularly pump out septic system	Very easy (1)	468	54%	244	55%	224	52%
	Somewhat easy (2)	273	31	127	29	146	34
	Not easily done (3)	131	15	71	16	60	14
	Total	872	100	442	100	430	100
	Mean		*1.61*		*1.61*		*1.62*
	Unsure/Don't know/Refused *	170	16	74	14	96	18
Repair car leaks	Very easy (1)	563	56%	285	56%	278	55%
	Somewhat easy (2)	332	33	164	32	168	33
	Not easily done (3)	114	11	58	11	56	11
	Total	1009	100	507	100	502	100
	Mean		*1.56*		*1.55*		*1.56*
	Unsure/Don't know/Refused *	34	3	9	2	25	5
Participate in a river clean-up	Very easy (1)	474	48%	247	49%	227	47%
	Somewhat easy (2)	351	35	174	35	177	36
	Not easily done (3)	166	17	84	17	82	17
	Total	991	100	505	100	486	100
	Mean		*1.69*		*1.68*		*1.70*
	Unsure/Don't know/Refused *	50	5	11	2	39	7

*Unsure/Don't Know/Refused is percent of total sample, and is not included in Mean calculation.

29. Where would you go primarily to find information about water quality and what people can do to improve water quality?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Newspapers	20	2	9	2	11	2
Radio and television	10	1	6	1	4	1
Internet	447	43	236	46	211	40
Neighborhood associations	10	1	8	2	2	<1
State/County agencies	135	13	64	12	71	13
City government	146	14	69	13	77	15
Environmental groups	46	4	31	6	15	3
Universities/colleges	10	1	5	1	5	1
Other	107	10	39	8	68	13
Unsure/Don't know	98	9	47	9	51	10
Refuse	15	1	2	<1	13	3
Total	1044	100	516	100	528	100

30. The new logo for the Lower Grand River Organization of Watersheds has been displayed on city buses, on lamppost banners, in newspapers, on display boards, in brochures, and other places in the area. Have you noticed it?

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Yes	81	8	39	7	42	8
No	928	89	468	91	460	88
Unsure/Don't know	23	2	10	2	13	3
Refused	10	1	0	0	10	2
Total	1042	100	517	100	525	100

31. *If yes,* if you remember what it looks like, can you describe it? (Enter description)

Wave 1

- A full half of the page, across the middle it said watershed. It had a background to it, it wasn't plain white. There were little words that gave it a different look. All the same words, a pattern. There were words with very small type. The word watershed
- Blue waves
- Can't recall exactly but remembers seeing it
- Can't remember
- Description matches graphic
- Green blue and round shaped
- Heard advertisement on radio
- I cannot remember what it says
- I do know what it is but I can't remember
- I see it but I don't really have time to see it
- I'm not sure what it looked like, but I know I saw it. I just didn't pay much attention.
- It has a circle in it with a little thing running of it
- It has a crane, and says watershed on it
- Library
- No (3)
- Not off the top of my head. I think it's an oval shape but I can't remember.
- Part of the water on it and some sand
- Pictures of people in water, kids playing in a stream
- Positive.
- Remembers seeing it but doesn't recall what it looks like

Wave 2

- A big article on watersheds and if you are taking care of yours. It was a full page ad
- By the court house - on van "Water System"
- Cannot remember... Blue with water, I don't know what else to say
- Can't describe
- Don't remember
- Don't remember the
- Don't remember what it looks like
- Glass of water
- Green sign
- I can't describe it to you, I didn't pay much attention to it
- I don't remember...Is it blue and white? I don't know.
- I remember it being somewhat blue - I saw it on the side of a bus
- I remember it vaguely
- I think it was... a flowing river
- It has a river
- It was insert in the Sunday newspaper.
- Look like a public noticed
- No.
- Preserve our water... It has waves.... I've heard it advertised...
- River or a body of water with maybe a little bit of sand - without seeing what was written I wouldn't know what it meant
- Sometimes they have a little brochure thing that they pass around at the mall, but I can't remember it off the top of my head. We keep it on the backboard at work.
- There's green
- They have a drawing of trees and kids playing on swings and a nice environment

32. Which, if any, of the following newspapers do you read?

Response*	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Total	1045	--	517	--	528	--
The Advance	447	43	218	42	229	43
The Grand Rapids Press	773	74	383	74	390	74
The Detroit Free Press	72	7	45	9	27	5
The New York Times	52	5	25	5	27	5
USA Today	110	11	61	12	49	9
Unsure/Don't know	90	9	51	10	39	7
Refuse	37	3	11	2	26	5
Total	1045	--	517	--	528	--

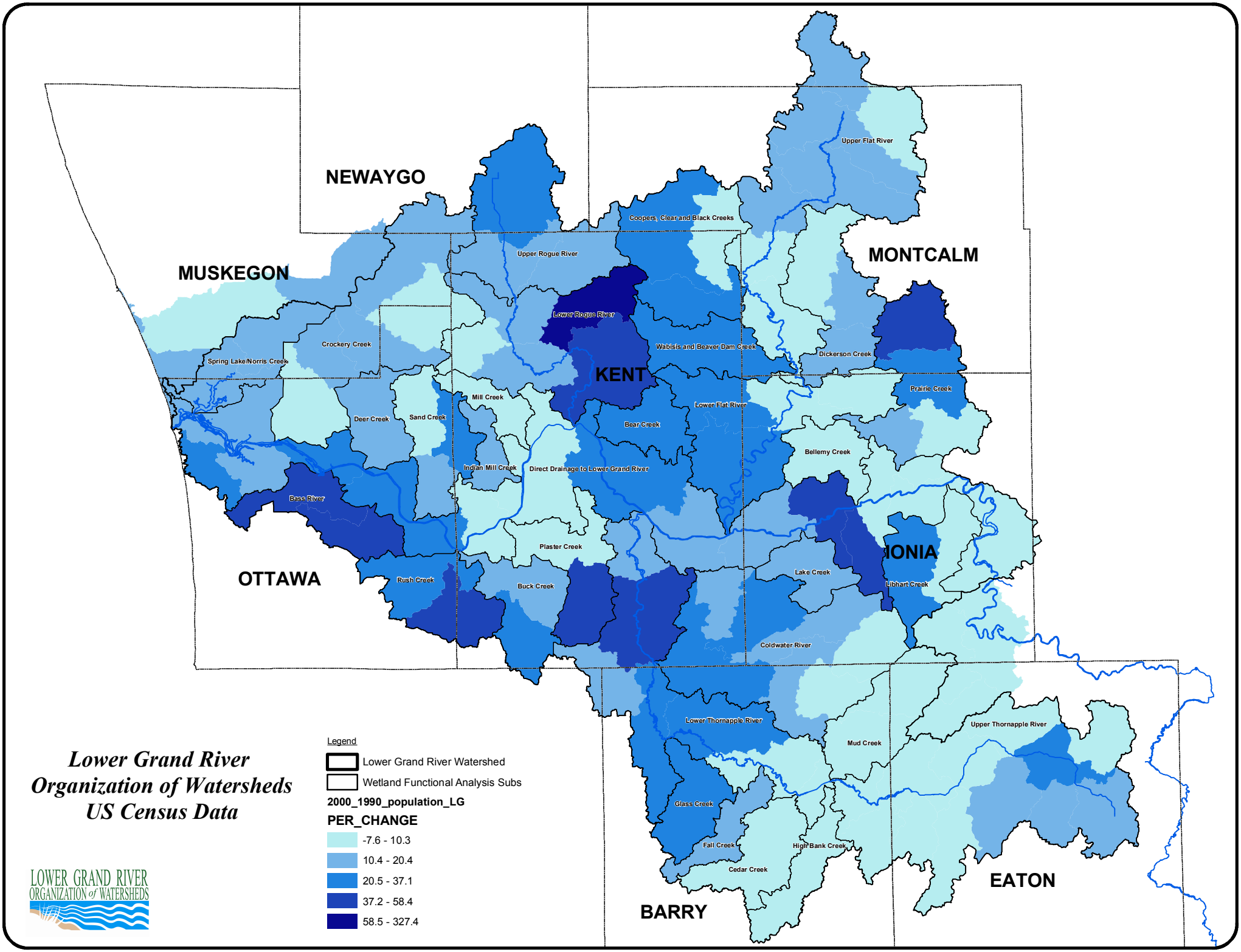
*Percent of total sample

33. What is your age group? Is it...

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
30 or under	95	9	49	10	46	9
31-45	239	23	112	22	127	24
46-60	346	33	175	34	171	32
Over 60	358	34	175	34	183	35
Refused	7	1	6	1	1	<1
Total	1045	100	517	100	528	100

34. Enter gender (only ask if you don't know)

Response	N Total	% Total	N Wave 1	% Wave 1	N Wave 2	% Wave 2
Female	645	63	321	62	324	63
Male	387	37	196	38	191	37
Total	1032	100	517	100	515	100


NEWAYGO
MUSKEGON
MONTCALM
KENT
OTTAWA
IONIA
BARRY
EATON
Upper Flat River
Coopers, Clear and Black Creeks
Upper Rogue River
Lower Rogue River
Crockery Creek
Spring Lake/Norris Creek
Wabasis and Beaver Dam Creek
Dickerson Creek
Prairie Creek
Mill Creek
Deer Creek
Sand Creek
Lower Flat River
Bear Creek
Bellamy Creek
Indian Mill Creek
Direct Drainage to Lower Grand River
Bass River
Plaster Creek
Lake Creek
Libhart Creek
Rush Creek
Buck Creek
Coldwater River
Lower Thornapple River
Upper Thornapple River
Mud Creek
Glass Creek
Fall Creek
High Bank Creek
Cedar Creek
Legend
Lower Grand River Watershed
Wetland Functional Analysis Subs
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10.4 - 20.4
20.5 - 37.1
37.2 - 58.4
58.5 - 327.4
Lower Grand River
Organization of Watersheds
US Census Data
LOWER GRAND RIVER
ORGANIZATION of WATERSHEDS
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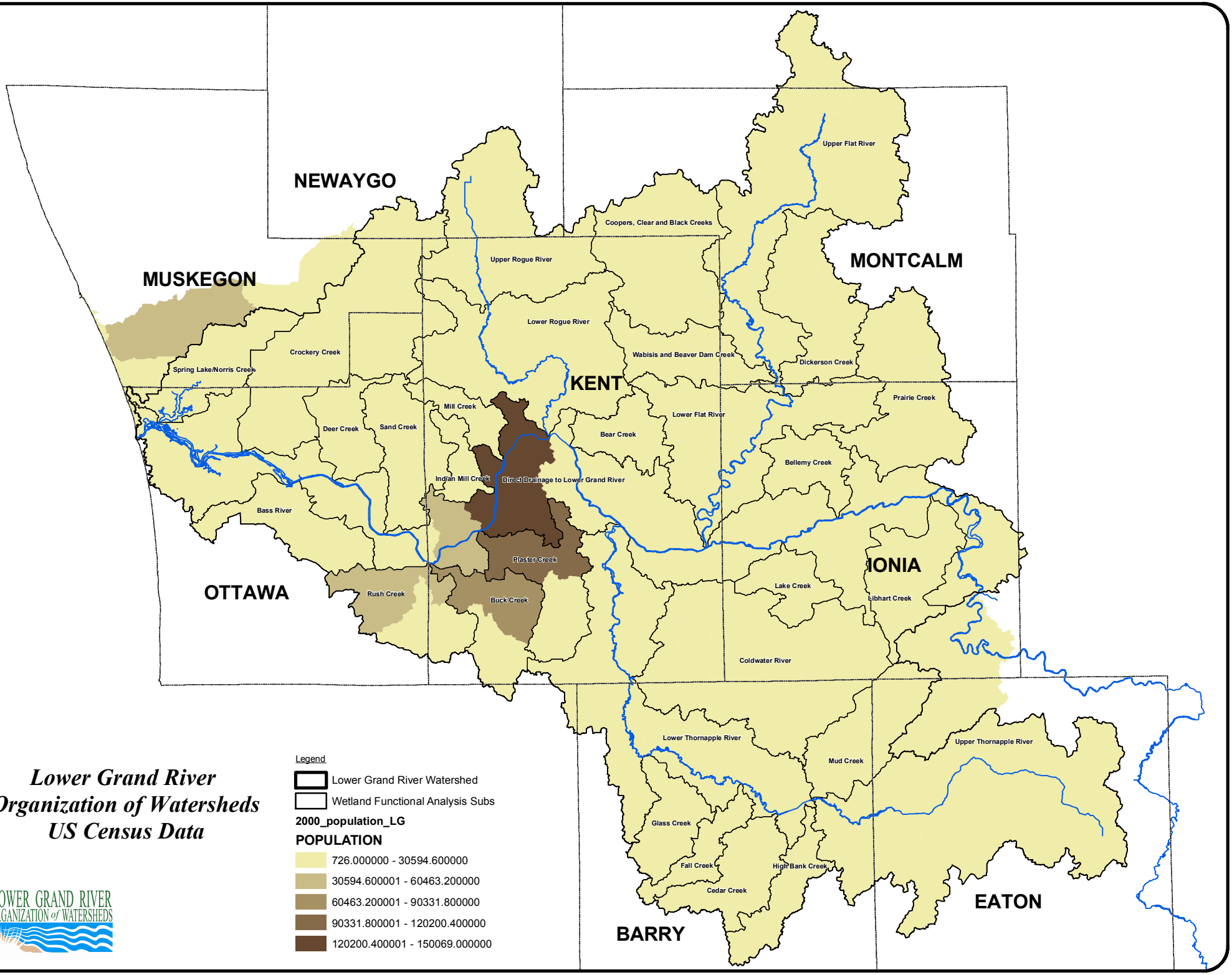
NEWAYGO
MUSKEGON
MONTCALM
KENT
OTTAWA
IONIA
BARRY
EATON
Upper Flat River
Coopers, Clear and Black Creeks
Upper Rogue River
Lower Rogue River
Crockery Creek
Spring Lake/Norris Creek
Wabisis and Beaver Dam Creek
Dickerson Creek
Prairie Creek
Mill Creek
Lower Flat River
Deer Creek
Sand Creek
Bear Creek
Bellamy Creek
Indian Mill Creek
Direct Drainage to Lower Grand River
Bass River
Plaster Creek
Rush Creek
Buck Creek
Lake Creek
Libhart Creek
Coldwater River
Lower Thornapple River
Upper Thornapple River
Mud Creek
Glass Creek
Fall Creek
High Bank Creek
Cedar Creek
Legend
Lower Grand River Watershed
Wetland Functional Analysis Subs
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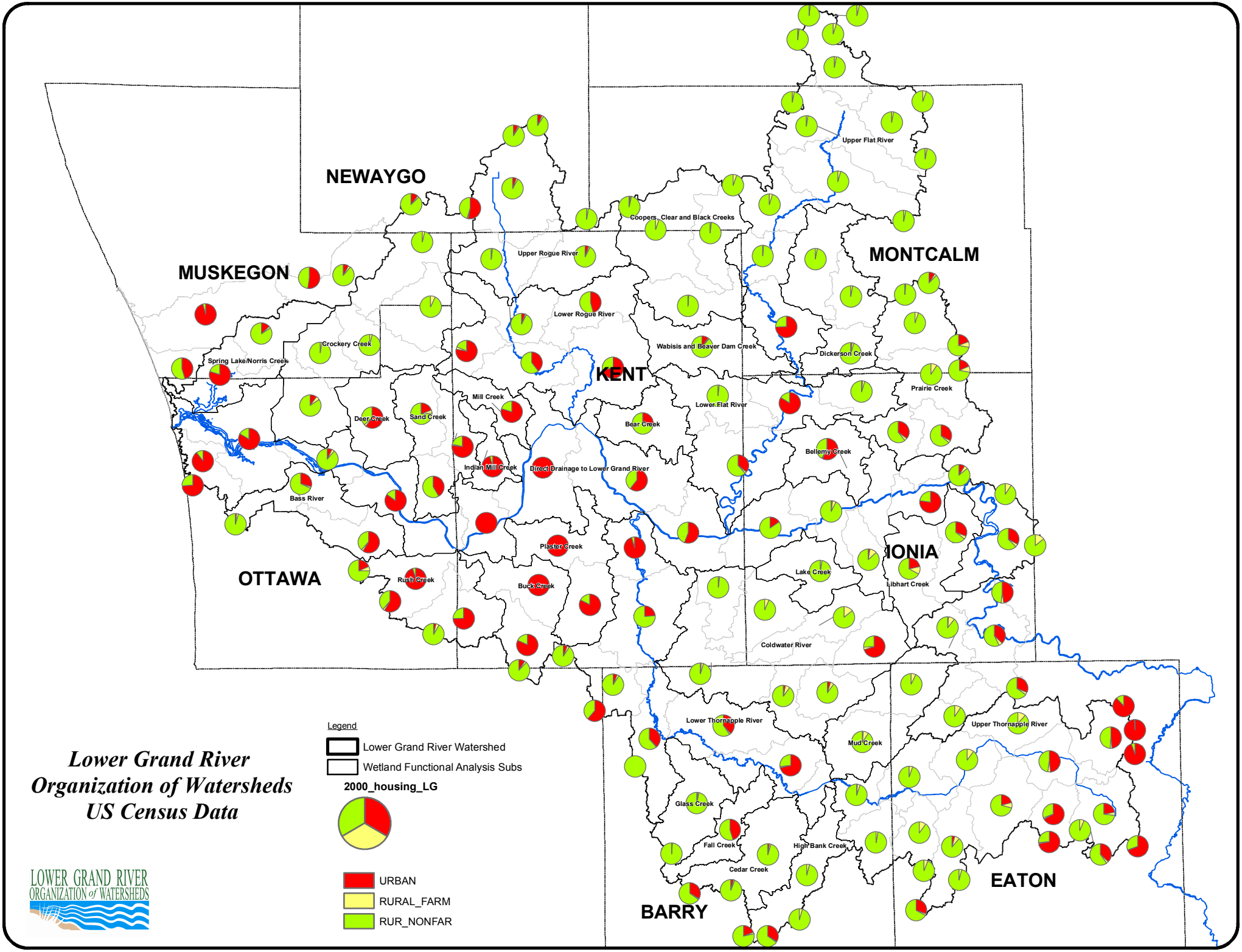
Lower Grand River
Organization of Watersheds
US Census Data
LOWER GRAND RIVER
ORGANIZATION of WATERSHEDS
PLOT INFO: N:\080017\GIS\MAP_DOCUMENT\CENSUS.MXD DATE: 4/2/2009 USER: MCL


NEWAYGO
MUSKEGON
MONTCALM
KENT
OTTAWA
IONIA
BARRY
EATON
Upper Flat River
Coopers, Clear and Black Creeks
Upper Rogue River
Lower Rogue River
Wabisis and Beaver Dam Creek
Dickerson Creek
Crockery Creek
Spring Lake/Norris Creek
Prairie Creek
Lower Flat River
Mill Creek
Deer Creek
Sand Creek
Bear Creek
Bellamy Creek
Indian Mill Creek
Direct Drainage to Lower Grand River
Bass River
Plaster Creek
Rush Creek
Buck Creek
Lake Creek
Libhart Creek
Coldwater River
Lower Thornapple River
Upper Thornapple River
Mud Creek
Glass Creek
Fall Creek
High Bank Creek
Cedar Creek
Legend
Lower Grand River Watershed
Wetland Functional Analysis Subs
2000_housing_LG
URBAN
RURAL_FARM
RUR_NONFAR
Lower Grand River Organization of Watersheds US Census Data
LOWER GRAND RIVER ORGANIZATION of WATERSHEDS
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