Chapter One: Getting To Know the Cheboygan River/Lower Black River Watershed

Overview

The Cheboygan River-Lower Black River Watershed located in northeastern Lower Michigan covers 94,130.65 acres, principally in Cheboygan County. Ranging over the northern one-third of Cheboygan County, the watershed includes all or parts of Aloha, Benton, Grant, Inverness, and Monroe townships and touches on Carp Lake, Center, Maple River, and McKinley Townships in Emmet County.

The Cheboygan River-Lower Black River Watershed is a sub-watershed of the larger Cheboygan River Watershed. Due to the difficulties encountered in developing a manageable non-point source pollution plan for a large watershed that would include several sizable inland lakes, the Cheboygan River Watershed was divided into several sub-watersheds, based on drainage patterns of the water bodies. In previous years, nonpoint source pollution management plans were developed for the Black Lake, Burt Lake, Crooked/Pickerel Lakes, and the Mullett Lake sub-watersheds within the Cheboygan River Watershed.

The Cheboygan River-Lower Black River Watershed includes portions of the Lake Sixteen Bog, the Lower Black River, the Cheboygan River, a section of Maple River, Terry Creek, Sipper Creek, Laperell Creek, Van Creek, the 529-acre Munro Lake, 400-acre Long Lake, 3733.5-acre Douglas Lake, the Twin Lakes, and the many tributaries of these water bodies. **Map 1** shows the boundaries of the Cheboygan River/Lower Black River Watershed. Approximately two-thirds of the watershed, including the Cheboygan and Lower Black rivers, lies in Cheboygan County. At the western edge of Cheboygan County and into Emmet County lies Douglas Lake and its tributaries.

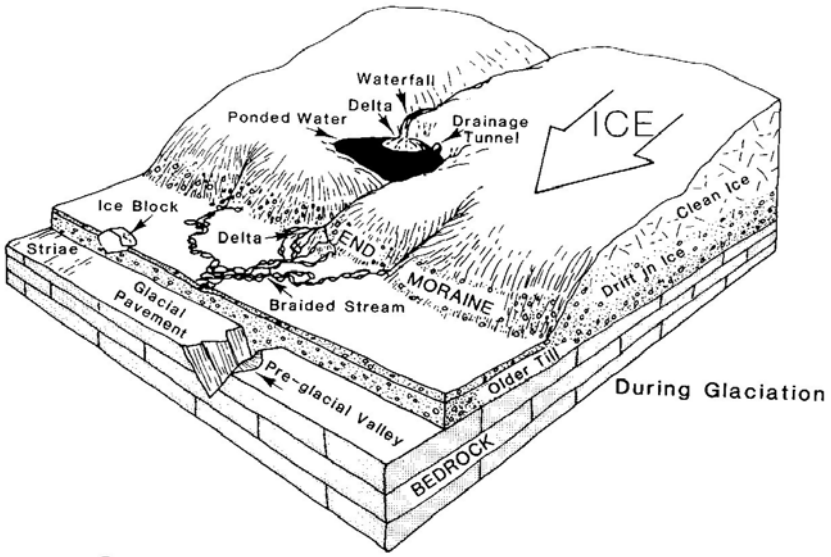
The Cheboygan River and the Lower Black River plus adjacent land are between 577 and 643 feet above sea level. The remaining watershed area is 644 to 709 feet above sea level, with the exception of the Douglas Lake portion, which has an elevation of 710 to 774 feet.

Geology

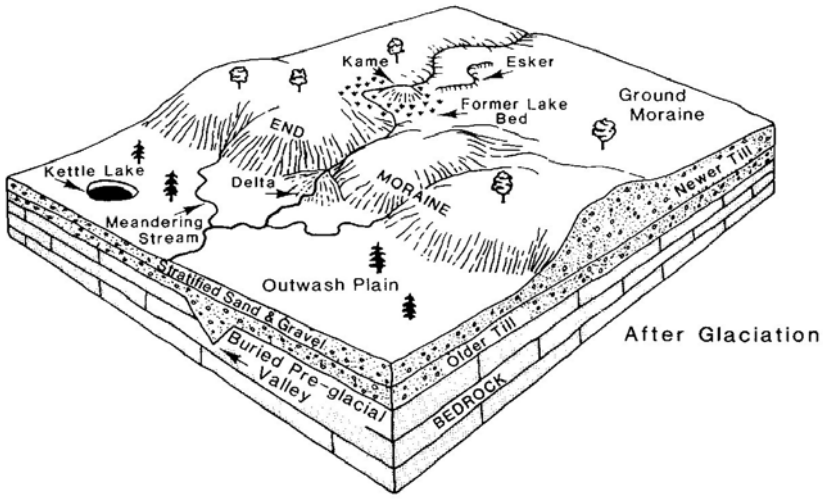
Throughout prehistory of the Great Lakes Region glaciers advanced and retreated repeatedly, creating various surface and subsurface landforms. Occurring nearly 12,000 years ago, the last glacial advance was instrumental in the formation of the existing landscape. Three major surface types dominate the watershed area; *lacustrine sand and gravel, peat and muck, and glacial till.* (See **Figure 1** and **Map 2**)

MAP 1 WATERSHED

Figure 1: Glacial Formations



Features originating at a glacier front occur in a definite order.



Landforms of continental glaciation are unmistakable.

Many northern Michigan lakes were formed when the glaciers melted, leaving behind large blocks of ice. The Douglas and Munro lakes of Cheboygan County were created in this way. As the ice receded further north, meltwaters flooded many areas of northern Michigan. The higher elevations, above water, formed islands. During this period the *lacustrine sands*, (sand and gravel deposited as sheet sands and beaches)
covering much of the watershed were deposited on the lakebed of glacial Lake Algonquin.

MAP 2 GEOLOGY

Map 2 shows that *peat and muck* cover much of the watershed's western portion, surrounding Douglas Lake on three sides, and spreading into Emmet County. Peat and muck are both comprised of organic soil material, with muck containing more minerals than peat. In peat, the original plant parts are recognizable, but are unrecognizable in muck. North of Douglas Lake lies a three mile long *esker,* a long, narrow, sinuous, steep-sided ridge composed of irregularly stratified sand and gravel. (See **Figure 1**) This sand and gravel ridge was formed when a stream flowing between ice walls, or in an ice tunnel of a retreating glacier deposited materials

that were left behind when the ice melted. Eskers range in length from less than a mile to nearly 100 miles long.

Glacial till covers most of the eastern portion of the watershed. (See **Map 2**) Glacial till is unsorted material deposited by glacial ice and consists of a mixture of clay, silt, sand, gravel, stones, and boulders. A drumlin field can be found on the till plain in the southeast corner of the watershed, near Black Lake.

.Drumlins are low, smooth, spoon-shaped hills or mounds of compacted till. The tail of a drumlin always runs parallel to the glacier flow, so that all the drumlins in a field are oriented in the same direction.

Subsurface geology ranges from limestone in Benton and eastern Inverness townships to shale in western Inverness, and a combination of limestone and shale in most watershed portions located in Emmet County.

Soils

Soils information is important in the determination of types and intensity of land uses. Water quality of a river system is partially based on the nature of the soils and the slope of the land within the drainage basin. These factors determine potential land use, soil infiltration rates, water-holding capacity and soil erodibility and therefore are directly related to the amount of non-point source pollution in the watershed. The construction of roads, buildings, and septic systems on steeply sloped areas or areas with organic and hydric soils require special design considerations. If developed improperly the impacts to natural resources, particularly water quality, can be far-reaching.

The soils of the Cheboygan River/Lower Black River Watershed cover moraines, drumlins, lake terraces, and till plains. These soils are often found on uplands and post-glacial lake islands. Slope gradients range from 0 to 50 per cent, but are predominantly 2 to 30 per cent. Soils are well drained or moderately well drained with low to high potential surface runoff, depending on slope. Permeability is moderately rapid in the upper sandy material and very slow in the lower loamy horizons. Most of the watershed soil is in woodland. Many of the steeper areas are kept in permanent forest vegetation, but a few areas are used as pasture. Nearly level to moderately sloping sites are frequently used for pasture or growing hay and small grains, especially in the western portion of the watershed.

The Natural Resource Conservation Service completed a detailed soil survey of Cheboygan and Emmet Counties. A digital or computerized version of the soil survey maps was acquired from the Michigan Department of Natural Resources, MIRIS program. Using information contained within the published soil survey books, a series of maps will be presented that depict hydric soils, slopes 12 percent and greater and soils with septic system limitations.

Hydric Soils and Steeply Sloped Areas

Map 3 is a color thematic map that classifies hydric soils and shows soils on steep slopes. Lower density and less intensive development should be directed to these areas with severe building constraints. Hydric soils are saturated, flooded or ponded during part of the growing season and are classified as poorly drained and very poorly drained. Hydric soils have poor potential for building site development and sanitary facilities. Wetness and frequent ponding are severe problems that are difficult and costly to overcome. Sites with high water tables may be classified as wetlands and a wetlands permit would be required to develop these areas.

According to information presented in the Cheboygan County and Emmet County Soil Surveys, areas with hydric soils make up roughly 13 percent of land in the watershed. Most of these wet areas are found in the western half of the watershed, from Douglas Lake in Munro Township, Cheboygan County, through McKinley and Carp Lake Townships, Emmet County. Much of the hydric soils in these townships are found on state land and on land owned by the University of Michigan Biological Station. While the threat of over-development is low on U. of M. and State lands, the threat remains high for hydric soils owned by the private sector, as large parcels are increasingly fragmented to accommodate the population's ever growing desire for rural and riparian housing.

While less prominent than in the western portion, hydric soils still have an influence on land use in the eastern half of the watershed. As can be seen in **Map 3** there are several pockets of hydric soils in Inverness Township, in the northwestern section of the eastern portion of the watershed. Several larger concentrations can be found in Benton, Grant and Aloha Townships on the watershed's east side.

Hills and steeply rolling terrain may provide opportunities for spectacular views of the landscape. However, steeply sloped sites have severe building constraints, are more difficult and costly to develop. Maintenance costs tend to be higher on steeply sloped terrain. Special design standards such as erosion control measures, limiting size of disturbed areas, retaining natural vegetation, revegetation, slope stabilization and on-site retention of water run-off from impervious surfaces would all serve to minimize resource impacts.

Information derived from the Cheboygan County and Emmet County Soil Surveys indicates that areas with slopes 12 percent and greater are minimal in the eastern portion of the watershed, with most steeply sloped areas found adjacent to the Cheboygan River. The western portion of the watershed is considerably more hilly, with several steeply sloped areas found in the vicinity of Douglas Lake and the Maple River. Steep slopes are also found scattered throughout Center, McKinley and Carp Lake Townships in the westernmost section of the watershed, as shown in **Map 3.**

MAP 3 SOILS

MAP 4 Septic Constraints

Septic System Limitations

Using a computer mapping system, soils maps have been color coded to show areas with severe septic system limitations as defined by the USDA Natural Resource Conservation Service. Criteria include depth to water table, wetness, filtering capacity and ability to percolate water. Severe septic system limitations due to hydric soils and wet soils affect much of the watershed. Hydric soils are those that are saturated with water long enough during the plant growing season to become anaerobic. These soils will usually be characterized by anaerobic soil zones and wetland vegetation. Hydric soils cover a large area in the western half of the watershed. (See **Map 4)** The entire eastern half of the watershed also has severe septic system limitations. Much of this is caused by widespread hydric and wet soils. In addition, this portion of the Watershed contains sandy soils with severe limitations due to poor filtration of septic effluents. This is a critical issue when the water table is close to the surface or when high density development occurs. Limiting types and density of development or making public water and sewer available for high density development are likely the best options for protecting the groundwater resources in these areas. Other severe limiting factors affecting the watershed include steep slopes, soils that percolate slowly and areas of cemented pan.

Hydrology

The Cheboygan and Black Rivers are a part of the Inland Water Route, a series of connecting waters that extend from the Village of Conway, located at the western end of Crooked Lake, 3 miles east of Lake Michigan, to Cheboygan, located on the Lake Huron end of the Straits of Mackinac. Cheboygan River (the fifteenth largest river in the state) flows roughly seven miles from its source on Mullett Lake through the city of Cheboygan to discharge into Lake Huron. The upper part of the river is separated from the lower by the Cheboygan Dam. Above the dam the Cheboygan River is wide and deep for 2 1/2 miles to its junction with Black River. The remaining 2 1/2 miles to Mullett Lake is littered with stumps and snags.

From Black Lake, located southeast of the watershed in Presque Isle County, the Black River courses approximately 10 miles to its confluence with the Cheboygan River. The water flow is restricted significantly for 4.3 miles between Black Lake and the Alverno Dam due to rapids in the river. Below the dam the shore widens and the river is shallow for about 2 3/4 miles, then becomes wide and deep as it continues its course another 2 1/2 miles to merge with the Cheboygan River.

Not considered part of the Inland Waterway, the east branch of the Maple River discharges from Douglas Lake and flows southwest roughly 5 miles to the 139 acre impoundment, Lake Kathleen. The waters of the east branch are joined by those of the west branch at the impoundment, and the main stem of the Maple River flows in a southeasterly direction from Lake Kathleen to discharge into Burt Lake. The west branch and the main stem of the Maple River lie outside the Cheboygan River/Lower Black River Watershed boundary. All the waters within the watershed eventually drain into Lake Huron. (See **Map 1**)

The amount of flow in rivers of the watershed changes throughout the year. In general, flow is greater in late winter and early spring when snowmelt and rainfall produce more surface runoff. Although summer is a period of high precipitation, much water is lost through evaporation and transpiration, causing river flow to be lowest in late summer.

One factor greatly affecting hydrology of the watershed is the *lake effect snow* produced by Lake Huron and Lake Michigan. Lake effect snow can occur when cold winds blow across a large lake. Evaporation of warm surface water increases the amount of moisture in the colder

drier air above the lakes surface, causing water vapor in the cold air to condense and form ice-crystal clouds. When these clouds reach the lake's edge, they deposit heavy snowfall along the shoreline. Once the snow begins to melt the water may be absorbed by the ground, or may enter the lakes and streams of the watershed, eventually returning to the lake as runoff.

Land Uses

Past

Originally the homeland of the Chippewa Indians, the watershed became popular with French fur traders in the 1600's. In 1844 the first settlers moved into the area. The population grew slowly over the next thirty years, but tripled within ten years following the construction of a sawmill in the 1870's. Lumbering made a tremendous impact on the landscape, and by the early 1900's the vast northern Michigan forests had been logged off.

Commercial fishing began to flourish in both counties around the same time as the lumbering boom, and Connable Fish Market bought up large quantities of fish to pack and ship as far away as Philadelphia. Farming and manufacturing also gained importance at this time.

The Inland Water Route was a major factor in the development of the watershed area. The waterway connects many of the lakes and streams in northern Michigan and was a vital component of the area's transportation system before the days of railroads. From Pickerel Lake in Emmet County, the waterway runs through Pickerel Channel to Crooked Lake and continues via Crooked River to Burt Lake in Cheboygan County. The waterway also connects Douglas Lake to Burt Lake by way of the Maple River. From Burt Lake, the waterway courses through the Indian River to enter Mullett Lake. Leaving Mullet Lake at the north end, the waterway continues down the Cheboygan River and through the city of Cheboygan to eventually discharge into Lake Huron.

Present

Soils, topography and surface water in large part determine the present land uses for the watershed. Only about 4.7 per cent of the watershed is being used for residential, commercial, industrial, or institutional purposes. Over a quarter of all housing in Emmet County is seasonal/recreational, and this faction continues to grow. Agriculture is an important land use in the western portion of the watershed with nearly 17 per cent of Emmet County in farmlands. The eastern portion of the watershed is less heavily farmed, and only 6.3 per cent of land in Cheboygan County is designated agricultural. Surface water covers roughly 6.5 per cent of the watershed area, and another 4.2 per cent is comprised of wetlands. Nearly two-thirds of the watershed area is forested

Future

Suburbanization of rural acreage continues, with renewable resource lands such as farms and forests becoming increasingly fragmented under current land division practices. The number of seasonal and vacation homes will grow dramatically, with especially heavy development along lake and river shorelines. Throughout the watershed, but particularly in Emmet County, many seasonal homes are being converted to year round housing. Both counties represented in the watershed have or are developing plans to assist in the management of future land use within the watershed.

Recreation

The two counties of the Cheboygan River-Lower Black River watershed offer a wide variety of recreational opportunities with over 100 boat-water access sites; 9 campgrounds; many hiking trails; several public parks, picnic areas and playgrounds; over 30 public fishing access sites, marinas and harbors; numerous soccer and softball fields; tennis, volleyball, shuffleboard, racket ball and basketball courts; 2 indoor ice rinks (both in Cheboygan), 2 bowling alleys (one in each county) and 31 golf courses, 15 of which lie in Emmet County. Large portions of the watershed are available for hunting, fishing, snow-shoeing, cross-country skiing, and swimming, and Emmet County is famous for its ski slopes. The Cheboygan County Historical Museum and the Little Traverse Historical Society offer locals and visitors a glimpse into the area's past. Year round indoor entertainment is available at the Cheboygan Opera House, Victories Casino in Petoskey, and local theaters in both counties.

Recreational properties owned by Cheboygan County are barrier-free, with the exception of the Boy Scout Camp. The camp is presently used only as a picnic area. If plans for re-development of the site are implemented, handicap accessibility will be an integral part of the project. Any future recreational projects will include compliance with handicap accessibility standards.

According to the Emmet County Comprehensive Recreation Plan, there are buildings included in the county's park system that are not now barrier free. However, these structures came with the larger resource environmental properties, and were not constructed by Emmet County. As improvements are made, barrier free design features will be incorporated, as some already have.
The recreation plan also further states that it is Emmet County's intent to assess physical barriers to handicapped persons who may wish to enjoy county park properties, and to take measures to mitigate existing barriers. New construction will incorporate barrier free design and meet applicable code standards.

Governmental Units

The Cheboygan River-Lower Black River Watershed covers portions of two northern Michigan counties; Cheboygan and Emmet. A nine-member Board of Commissioners oversees Cheboygan County, with support from various departments, including the County Administrator and County Clerk/Register. The county also has a Planning Commission, a Zoning Commission and a Road Commission. The population center of the watershed is the city of Cheboygan, which is governed by a Mayor, a Mayor Pro Tem, a City Manager, various departments and a seven-member City Council. Cheboygan has its own Planning Commission.

Emmet County is managed by a seven-member Board of Commissioners and several departments, including County Clerk, Road Commission, Drain Commission, and Planning and Zoning Administration. The population center for Emmet County, the city of Petoskey, lies outside the watershed boundary. Petoskey is governed by a Mayor, a City Manager and four Council Members. Each council member oversees one of the city's four wards. The city government includes a Department of Finance, Administration Department, a Department of Public Works, and a Department of Public safety.

The watershed area ranges over five townships in Cheboygan County and over another five in Emmet County. Each township in both counties has a governing body, which includes a township supervisor, a clerk, a treasurer, and an assessor, with the exceptions of Grant and Munro Townships in Cheboygan County, which do not have an assessor position. None of the townships in the watershed have their own zoning laws, but are zoned through their respective counties.

Agencies and Organizations

The following agencies and local organizations are involved with environmental programs and concerns within the watershed:

Michigan Department of Environmental Quality
Mission Statement: The mission of the Michigan Department of Environmental Quality (DEQ) is to drive improvements in environmental quality for the protection of public health and natural resources to benefit current and future generations. This will be accomplished through effective administration of agency programs, providing for the use of innovative strategies, while helping to foster a strong and sustainable economy.

Huron Pines Resource Conservation & Development Area Council
Huron Pines RC&D Council is a non-profit, non-governmental organization serving the eleven county region of Northeast Michigan. It's goals are:

1.) Sponsor collaboration in the sustainability of renewable natural resources through orderly development and accepted conservation practices.
2.) Foster citizen appreciation through education of the need for healthy ecosystems as critical to the area's long-term social and economic stability.
3.) Improve the quality of life and economic conditions in our service area by helping to nurture land, water, mineral, and living resources as the enduring basis for desirable communities, first-rate tourism, and thriving industry.

Tip of the Mitt Watershed Council
The Tip of the Mitt Watershed Council, founded in 1979, is celebrating its 20th year as the lead organization for water resources protection in Antrim, Charlevoix, Cheboygan, and Emmet Counties. A coalition of citizens, lake associations, businesses, and resorters, the Watershed Council works to maintain the environmental integrity and economic and aesthetic values of lakes, streams, wetlands, and ground water.

US Department of Agriculture
Mission: Enhance the quality of life for the American people by supporting production of agriculture:

- Ensuring a safe, affordable, nutritious, and accessible food supply
- caring for agricultural, forest, and range lands
- supporting sound development of rural communities
- providing economic opportunities for farm and rural residents

- expanding global markets for agricultural and forest products and services
- working to reduce hunger in America and throughout the world.

Natural Resource Conservation Service
Mission Statement: The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

Conservation Districts
Michigan's Conservation Districts are "unique" local units of State Government, that utilize state, federal and private sector resources to solve today's conservation problems. The guiding philosophy of all Conservation Districts is that decisions on conservation issues should be made at the *local level*, by *local people*, with technical assistance provided by government.

Northeast Michigan Council of Government
Mission Statement: NEMCOG is committed to facilitating the development of intergovernmental cooperation and coordination within the eight-county region of Northeast Michigan. The agency is also committed to providing for a controlled growth policy; to preserve and improve the environment, to pursue greater efficiency and responsiveness of local units of government, and to improve the ecological, social, and economic well being of citizens within the region.

District Health Department #4
Mission Statement:
"It shall be the responsibility of this board to continually and diligently endeavor to prevent disease, prolong life, and promote the public health through organized programs including prevention and control of environmental health hazards; prevention and control of disease; prevention and control of health problems of particularly vulnerable population groups; development of health care facilities and health service delivery systems; and regulations of health care facilities and health service delivery systems to the extent provided by law"

Michigan State University Extension
Mission
"Michigan State University Extension (MSUE) helps people improve their lives through an educational process that applies knowledge to critical issues, needs and opportunities."

Since its beginning, Michigan Extension has focused on bringing knowledge-based educational programs to the people of the state to improve their lives and communities. Today, county-based staff members, in concert with on-campus faculty members, serve every county with programming focused on agriculture and natural resources; children, youth and families; and community and economic development.

US Fish and Wildlife Service
"The U.S. Fish and Wildlife Service's mission is, working with others, to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

Little Traverse Conservancy
The Conservancy is a broad coalition of individuals, families, and businesses who agree that the acquisition and protection of natural land is important if we are to retain the quality of life which makes northern Michigan so attractive. The Little Traverse Conservancy is supported entirely by people who willingly donate their time, talent, and financial support to protect irreplaceable natural land.

Petoskey Regional Audubon Society
Mission Statement:
Michigan Audubon Society is a nonprofit organization that promotes the awareness, understanding, enjoyment, and stewardship of the environment and natural resources of the upper Great Lakes region by educating the public, supporting ecological research, maintaining sanctuaries, and by taking part in appropriate advocacy to protect the environment, with emphasis on birds and their habitats.

Science and Environmental Education-North
Mission Statement:
SEE-North's mission is to foster people's connections with the plants, animals, and habitats of northern Michigan; to deepen their knowledge of the natural world; and to inspire in people of all ages a sense of responsibility for their place in nature.

Douglas Lake Stewards
The Douglas Lake Stewards are a group of volunteers that meet for about a half a day every two weeks from May-October . Environmental efforts are concentrated on or near Douglas Lake and the University of Michigan Biological Station lands. The stewards work closely with Biological Station staff when involved in projects located on U. of M. property.

Douglas Lake Association
Long Lake Association
Twin Lakes Association

Demographics

The watershed area has a permanent population of approximately 11,832, clustered mainly in Benton and Inverness townships. This figure reflects a 28.9% increase since 1990 (see **Table 1***)*. Nearly all of the townships within the watershed have been growing at a significant rate, particularly Aloha Township in Cheboygan County (47.2% since 1990) and Maple River Township in Emmet County (65.8% since 1990). The only township within the watershed to show a decrease in population during this time period was Center Township in Emmet County (-3.5%). Another population increase of at least 10% is expected for the watershed by the year 2010. According to the U. S. Department of Commerce, 20% of the population in Canada and the U. S. live within 500 miles of Emmet and Cheboygan Counties, making the area an attractive vacation destination for a great number of people. The main population center for the watershed is the city of Cheboygan, but the resort town of Petoskey in Emmet County draws vacationers to the area from a large portion of the Midwest. Although Petoskey lies outside the watershed boundaries, this seasonal influx of roughly 20,000 visitors has a strong impact on the watershed.

Table 1: Watershed Population by Township Cheboygan and Emmet Counties (1990-2000)

Cheboygan County				Emmet County			
Township	**1990 Population**	**2000 Population**	**Percent Change**	**Township**	**1990 Population**	**2000 Population**	**Percent Change**
Aloha	707	1041	47.2%	Carp Lake	597	807	35.2%
Benton	2388	3080	29.0%	Center	517	499	-3.5%
Grant	686	947	38.0%	Maple	743	1232	65.8%

				River			
Inverness	1952	2278	16.7%	McKinley	1080	1269	17.5%
Munro	512	679	32.6%				
TOTAL	6245	8025	28.5%	TOTAL	2937	3807	29.6%

Population Totals For Watershed		
1990	**2000**	**Percent Change**
9182	11,832	28.9%

Source: U.S. Census Bureau

Cheboygan County has experienced a 28.5% population growth over the last ten years, and a 20% increase in all *housing units* (physical residential living structures, both occupied and unoccupied). The number of seasonal homes, however, has dropped by 8.7%, reflecting the fact that fewer vacation homes are presently being built while those already in existence are being converted to year-round residences (**Tables 1** and **2***)*. The number of *households* (occupied housing units) in Cheboygan County that lie within the watershed boundaries has been increasing at an even greater rate than in the county as a whole. Between the years 1990 and 2000 the number of households in the watershed has jumped by 39.1% compared to a 32.1% increase experienced over the entire county.

Table 2: Watershed Housing Units by Township
Cheboygan and Emmet Counties (1990-2000)

Cheboygan County						
Township	**1990** Seasonal/	Total	**2000** Seasonal/	Total	**Percent Change** Seasonal/	Total
Aloha	220	535	206	670	-6.4%	25.2%
Benton	349	1272	312	1627	-10.6%	27.9%
Grant	409	714	347	817	-15.2%	14.4%
Inverness	229	1037	221	1226	-3.5%	18.2%
Munro	363	591	347	650	-4.4%	10.0%
TOTAL	1570	4149	1433	4990	-8.7%	20%
Emmet County						
Carp Lake	377	681	354	728	-6.1%	6.9%
Center	70	223	86	301	22.9%	35.0%
Maple River	72	354	72	533	0.0%	50.6%
McKinley	38	479	63	572	11.0%	19.4%
TOTAL	557	1737	575	2134	3.2%	22.9%

WATERSHED HOUSING TOTALS					
1990		**2000**		**Percent Change**	
Seasonal	Total	Seasonal	Total	Seasonal	Total
2127	5886	2008	7124	5.6%	21.0%

Source: U.S. Census Bureau

Emmet County's population is growing at a slightly faster rate than Cheboygan County--29.6% over the last ten years (**Table 1***)*. Housing in Emmet County has been keeping pace with its population growth, showing a 22.9% increase in housing. This figure includes a 3.2% growth in seasonal homes, reflecting the resort nature of the surrounding area. Emmet County's increase is highlighted by the significant decrease of seasonal homes seen in Cheboygan County (**Table 2**).

While the population, number of housing units and number of households in the watershed have all been on the increase, household size has decreased from 2.58 persons per household in 1990 to 2.43 persons per household in 2000. As shown in **Table 3**, these figures represent a 5.8% drop in household size. This tendency toward smaller household size is seen through out the country and reflects the changing lifestyles in the United States. The watershed area may be even more strongly affected by this trend as its seasonal residents reach retirement age and settle in the area on a permanent basis.

Table 3: Watershed Households 1990-2000

Townships In Watershed	Total Households			Persons per Household		
	1990	2000	Percent Change	1990	2000	Percent Change
Within Cheboygan County						
Aloha	278	423	52.2%	2.54	2.45	-3.7%
Benton	877	1248	42.3%	2.71	2.44	-9.9%
Grant	275	428	55.6%	2.49	2.21	-11.4%
Inverness	738	914	23.8%	2.64	2.49	-5.9%
Munro	193	270	39.9%	2.65	2.47	-6.9%
Total	2361	3283	39.1%	2.60	2.41	-7.3%
Total for County	8201	10835	32.1%	2.58	2.41	-6.6%
Within Emmet County						
Carp Lake	239	339	41.8%	2.50	2.38	-4.7%
Center	127	192	51.2%	2.90	2.55	-12.0%
Maple River	267	434	62.5%	2.78	2.84	2.1%
McKinley	388	459	18.3%	2.76	2.76	0.0%
Total	1021	1424	39.5%	2.74	2.63	4.0%
Total for County	9516	12577	32.2%	2.58	2.44	-5.5%
Watershed Total	17717	23413	32.1%	2.58	2.43	-5.8%

Source: U. S. Census Bureau