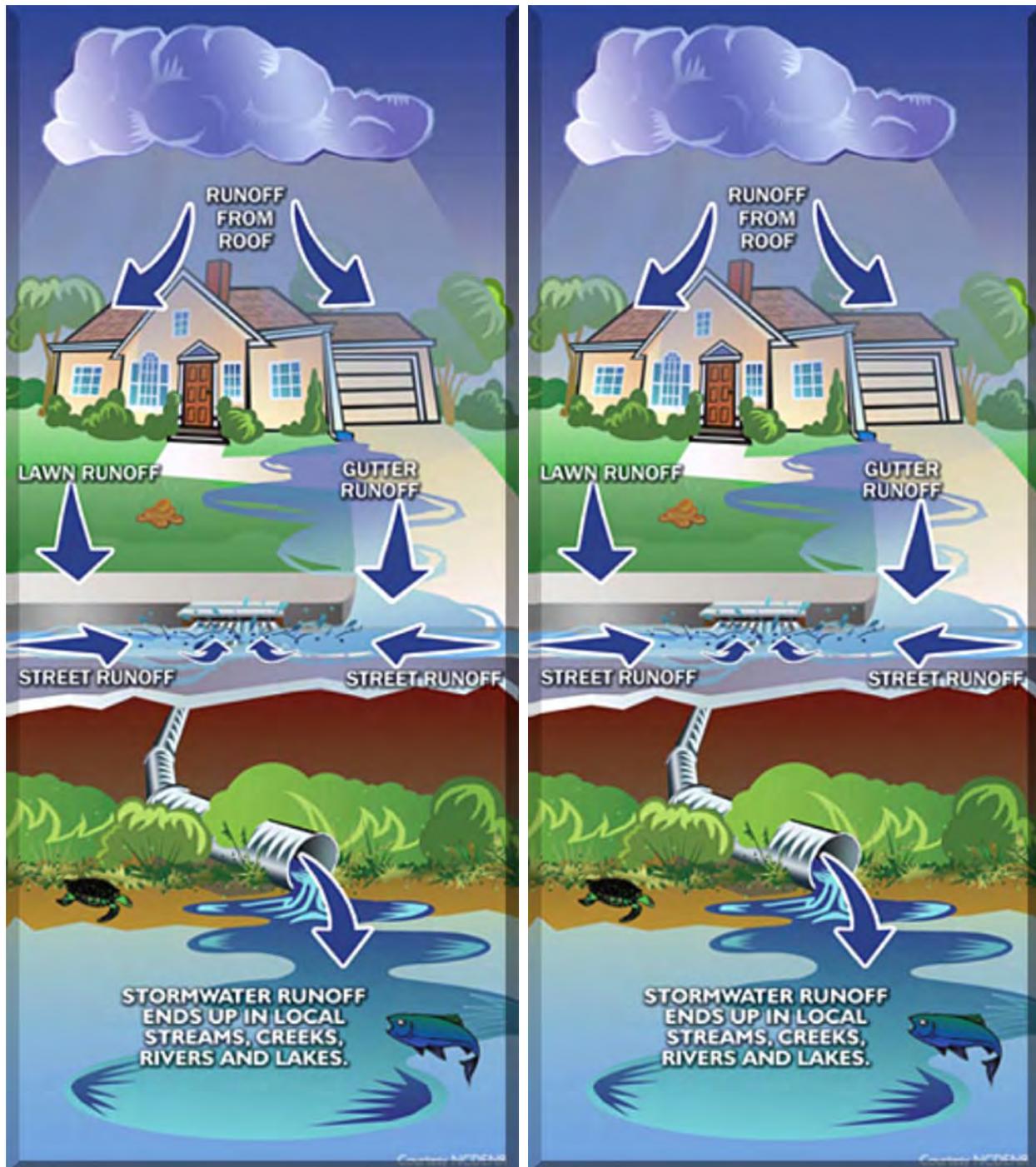


Source Water Protection

POTENTIAL SOURCES OF CONTAMINATION

City of Grand Haven-North Ottawa Water Facilities

Ottawa, County



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-  Underground Storage Tank Sites
-  Leaking Underground Tank Sites
-  Ottawa County Storm Water Plan
-  Lower Grand River Watershed

Disclaimer: The information contained in this “Plan” is limited to that available from public records and the water supplier. Other “potential contamination sites” or threats to the water supply may exist in the Intake Protection Areas that are not identified in this “Plan”. Identification of a site as a “potential contamination site” should not be interpreted that this site has or will cause contamination of the water supply.

SECTION 3.0 Potential Sources of Contamination

3.1 Introduction

The goal of this element is to identify existing and potential sources of contamination within the Grand Haven Source Water Intake Protection Areas. A potential contaminant source is simply a location where there is an activity having the potential to release contaminants into the environment at a level of concern. The activity may be associated with a business, industry, agriculture, waste water discharge or operation involving the use, transport, storage, or manufacture of the potential contaminants. Surface water obtained from is supplied by the Lake Michigan and the Lower Grand River Watershed in Grand Haven this is currently the primary water resource for the community. At this time, Surface water is the only economically feasible source of water for the community. There is an abundance of surface water with the capability to meet the present and future demands.

Identification of a business, industry or operation as a potential contaminant source does not mean that the business, industry or operation is out of compliance with any local, state, or federal regulation, and it does not necessarily mean that the business, industry or operation has or will cause contamination.

What it does mean is that the potential for contamination (or pollution as it is sometimes called) exists due to the nature of the business, industry, or operation. An inventory of potential contaminant sources can:

1. Provide an effective means of educating the public about potential contaminants;
2. Provide information on the locations of potential sources, especially those that present the greatest risks to the water supply; and
3. Provide a reliable basis for developing a local management plan to reduce the risks of contamination to the water supply.

The identification of potential or existing sources of contamination within the Grand Haven Source Water Intake Protection Areas was completed and confirmed. The identification of existing sources of contamination have been compiled using on-site inspections and information from various state agencies and programs which include Sites of Environmental Contamination, The Underground Storage Tank List, Oil and Gas Site, federal database searches and other sites.

The City of Grand Haven obtains their drinking water from Lake Michigan that is influenced by the Lower Grand River Watershed in Ottawa County this is currently the primary water resource for the community. The contaminant source inventory will assist the City of Grand Haven in identifying, planning and management for potential impacts to its water supply. An understanding of what types of contamination issues that may occur will also enable them to plan for necessary improvements in treatment capabilities or allow time to remediate the source of contamination.

3.2 Contaminants of Concern

Contaminants of concern within the Grand Haven SWIPP Areas are nonpoint source pollution from storm water runoff, agriculture activities and other nonpoint source pollutants in the Lower Grand River Watershed can directly affect the quality of the raw water intake. In addition, animal feedlots and bulk storage of fertilizers or herbicides/pesticides also poses potential threat to the source water.

Underground storage tanks, storm water drainage pipes, and bare soils may be conduits by which contaminants can easily reach the drinking water source. Leaking tanks (above ground and below the ground), spills, wash water runoff, and improperly stored hazardous substances also can contaminate the source water. Pathways that are applicable to this program include the following:

- Non-point source pollution
- Storm water runoff from streets and lawns
- Farms that apply pesticides and fertilizers
- Point source pollution
- Municipal, residential or commercial septic systems
- Underground or above-ground fuel storage tanks and gas stations
- Railroad yards and other railroad-related work sites
- Manufacturing plants and machine shops that uses any type of cleaning solvents
- Landfills, sludge disposal sites, chemical waste storage facilities, incinerator
- Forestry activities

Of most concern to the water quality of the Lower Grand Rivers, pollutants that get into water from both rural and urban activities. The main six types of pollutants that affect the source water quality are.

- **Sediment** (Wind and water erosion of soils)
- **Nutrients** (Fertilizer, animal wastes, sewage treatment plants)
- **Animal Wastes** (Fecal coliform from livestock and septic systems)
- **Pesticides** (Herbicides, insecticides, fungicides, etc...)
- **Salt** (Mostly from applied road salt)
- **Toxics** (Manufactured and refined products like oil, paints, anti-freeze)

3.2.1 Critical Assessment Zone (CAZ)

Using the Great Lakes Protocol and the Grand Haven water supply information:

- The CAZ for Grand Haven intake #1 is calculated as:

4,475 (the length of the intake in ft.) x 34 (the depth of the intake in ft.) = 152,150 (unitless)

This results in rating the intake as moderately sensitive, with a CAZ of 1,000 ft (MDEQ, 1999, Appendix L; fig. 3).

- The CAZ does not intersect the shoreline and there is no shoreline susceptible area.

3.2.2 Buffer Zone

The SWPA encompasses a 10,000 foot diameter area centered over the intake as shown in Figure 2-5 and provides a factor of safety of 10 over the CAZ delineated in the Source Water Assessment

3.2.3 Lower Grand River Watershed Drainage Area

While only a portion of the Lower Grand River Watershed is included in the SWAP as previously defined, it is acknowledged that it has a noticeable influence on the water quality and chemistry at the intake. This influence is most pronounced during large storm events or thermal inversions when the water from the Lower Grand River Watershed has increased quantities of sediment and detritus. These materials enter the WTP through the intake and may cause treatment difficulties. Operational staff is trained on steps to be taken for poor intake water quality conditions but this accentuates the potential influence of the Lower Grand River Watershed on the raw water quality.

3.3 Contaminant Pathways

Contaminants can enter a source water through direct, piped and channeled discharges these are called *point sources*, or they can enter lakes, or streams from *nonpoint sources*. These pollutants are categorized in two ways:

- 1) The manner in which pollutants enter the water
- 2) The way pollutants can be treated and removed from water

3.3.1 Point Source Pollution

Pollutants can enter source water through direct, piped and channeled discharges these are called point sources. Anyone discharging, or proposing to discharge, waste or wastewater into the surface waters of the State is required by law to obtain a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES program is intended



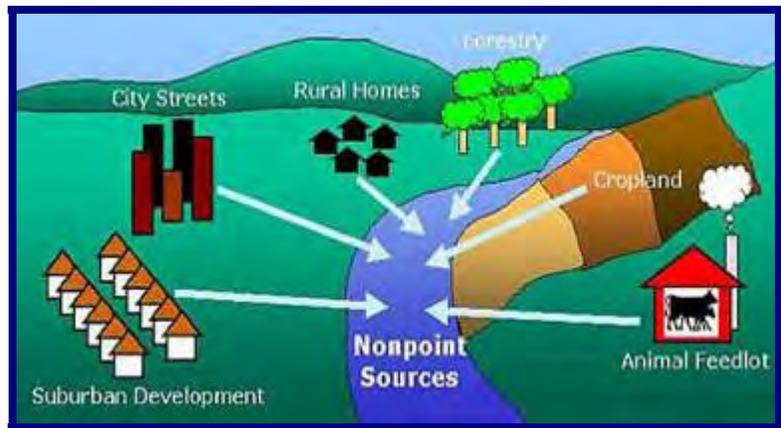
to control direct discharge into the surface waters of the State by imposing effluent limits and other conditions necessary to meet State and federal requirements.

The NPDES program regulates pollutants discharged directly into waterways from wastewater sources. Indirect dischargers (those who discharge to a municipal treatment facility via a sanitary sewer) are not required to have an NPDES permit. Discharge to a storm sewer does not go to a municipal treatment facility, and is considered a direct discharge. Discharge to a municipal treatment facility may require a permit from the municipality under the Industrial Pretreatment Program.

3.3.2 Non-Point Source Pollution

Nonpoint sources are considered to be major contributors to surface water pollution are: runoff from paved streets and parking lots, agricultural lands and construction sites; soil erosion from road cuts, streams and from logging or farm operations, and atmospheric deposition of acidic or toxic air pollutants.

Transported soil can be both a pollutant itself and a vehicle for carrying other pollutants that become attached to soil particles. For example, the soil contains phosphorus, but much of the phosphorus added to soil through the use of fertilizers also is bound to the soil particles. When soil is disturbed (erosion), it may be transported by rivers and streams



to the lake. The soil particles themselves may be considered a pollutant because they cause the lake water to become turbid. The phosphorus in the transported soil may later become available to aquatic plants. Particles may also protect microbes from harm in nature or in disinfection of drinking water.

Non-point sources are described as dispersed contamination from many sources such as soil erosion, on-lot septic systems, storm water discharges, agricultural activities, and pollution associated with resource extraction. The most significant contamination associated with non-point sources is nitrates associated with the use of manure, fertilizer, and pesticides that drain into streams and infiltrate into ground water. Household hazardous and commercial/industrial waste (e.g., ammonia, chlorides, paint, paint thinners, waste oil, antifreeze, solvents, etc.), which are sometimes discharged into on-lot septic systems, are also sources of non-point pollution. The potential risk from non-point sources is medium for the Intake Protection Areas

It has been demonstrated that nonpoint source pollution from storm water runoff, agriculture activities and other nonpoint source pollutants in the Lower Grand River Watershed can directly affect the quality of the raw water intake. Despite cases of total and fecal coliforms, organic and inorganic compounds, and microorganisms found in the raw drinking water, the Grand Haven Water Treatment Plant has effectively treated the source to meet drinking water standards.

The Source Protection Team will be installing Water Supply Area signs, developing community education by purchasing and distributing non-point source pollution prevention materials, working with local school district to design a curriculum including source water protection materials and to publish a series of newspaper articles about SWIPP Area.

The CREP encourages farmers to plant long-term resource-conserving covers to improve soil, water and wildlife resources. Farmers who agree to implement practices on eligible land for fifteen years will be compensated. The CREP will create buffers along streams and drains and take highly erodible land out of production; thereby decreasing the amount of soil that reaches the flowing water.

3.3.3 Potential Future Sources

Undeveloped land areas represent the potential for future contamination sources. There is significant undeveloped land areas within the Intake Protection Areas including areas zoned for residential, industrial, agricultural and commercial development. Therefore, based on the amount of undeveloped land areas within the Intake Protection Areas, the risk associated with future contamination sources is moderately high.

This area will be targeted by:

- Using specific education and outreach materials for planners, developers and sales organizations
- Using environmental information forms to assist planning, zoning and building permits offices with decision making.

3.3.4 Underground Storage Tanks

Although modern USTs meet federal and state regulatory requirements, they still represent a potential source of groundwater contamination. Small leaks, sometimes too small to detect, can develop and allow gasoline, oil or chemicals to reach the source water. (UST Section)

3.3.5 List of Potential Sources of Contamination and the Contaminants Associated with each Activity.

CONTAMINANT	ACTIVITY
Biological Contaminants	Manure spread/pits
	Wells
	Landfills
	Wastewater treatment plants
	Septic Systems
	Storm water
	Grazing/feeds lots/livestock enterprises
	Cemeteries/funeral homes
	Reuse irrigation
	Sewer system overflows/bypasses/pumping
	Transfer stations
	RCRA sites
	Volatile Organic Chemicals (VOCs)
Gas stations	
Petroleum products production, storage and distribution centers	
Dry cleaners	
Landfills	
UST facilities	
Superfund sites	
Septic systems	
Liquid petroleum gas storage, production and distribution	
Junkyards/salvage yards	
Recycling centers	
RCRA sites	
Synthetic Organic Chemicals (SOCs)	
	Agriculture
	Crop dusting/cropland
	Manufacture and storage of pesticides and herbicides
	Superfund sites
	RCRA sites
Inorganic Chemicals (IOCs)	Metal electroplating
	Landfills
	Foundries
	Superfund sites
	Pharmaceuticals
	Junkyards/salvage yards
	Transfer stations
	RCRA sites
Radiochemicals	Radioactive wastes
	Natural occurring geological deposits
	RCRA sites

3.4 Types of Potential Contaminants Listed by Land Use

Land use activities can pose a wide range of pollution threats to the water supply of City of Grand Haven. A computerized database search and a field study were completed in February 2010. Potential contamination sources in the Source Water Protection area were identified and the locations of the sites were field verified from the database search. The following sections discuss those sources.

3.4.1 Residential

Every day over 5,200 homes and businesses and over 11,000 residents rely upon surface water for vital domestic necessities. Because we use groundwater every day, protection of this resource is vital. Most citizens are unaware of the effects of numerous potential contaminants stored, used, and disposed of from residential homes.

The potential contaminants include:

- * household chemicals
- * on-site septic/sand mound systems
- * automotive products
- * lawn/garden chemicals
- * paints/solvents
- * abandoned wells
- * fuel storage systems

3.4.1a Grand Haven Household Hazardous Waste Collection Program

The City of Grand Haven, Grand Haven Charter Township, Ottawa and Allegan Counties, will sponsor a household hazardous waste collection and recycling program. Area residents are urged to go through their homes, basements and garages to get rid of: aerosol cans; drain cleaners; mercury thermometers; rodent poisons; oil and lead base paints; antifreeze; used motor oil; weed killers and herbicides; unknown chemicals; gun solvent; glue; chemical solvents; dry cell batteries; insecticides; detergents; bleach; varnish; stains and fertilizer.

These Items will be accepted from <enter time> until <enter time> at the building located at <Location and Address>.

Latex paint can be disposed of by taking off the lid and letting it dry. Kitty litter can be added to the paint to accelerate the drying process. Dried latex paint cans are then put in the regular garbage.

Used motor oil, oil filters and antifreeze are continually accepted at the <Location and Address>. Hours are Monday through Friday, <enter time> until <enter time>, and Saturdays and Sundays from <enter time> until <enter time>

Dry cell batteries can also be dropped off at the <Location and Address> for recycling, along with depositing at collection containers located at the <Location and Address>.

These services are provided to prevent chemicals from entering the source water supply or wastewater system. In addition, removing flammable materials from home will reduce the possibility of fires and the removing of poisons will help prevent accidental poisoning of children.

Ammunition, explosives, tires and car batteries cannot be accepted.

3.4.1b Residential Development Best Management Practices

The Grand Haven Surface Water Intake Protection Plan Area (Intake Protection Area) is located within a residential area with many potential sources of contamination. There is a high potential for more development in the Intake Protection Area. This area is primarily served by Municipal and on-lot septic systems. The City of Grand Haven will distribute materials (by mail) to all residences in the Intake Protection Area for the household hazardous waste collection program. The City of Grand Haven will distribute educational materials by mail as appropriate to all residences identified in the SWIPP Areas.

Improperly applied chemicals such as pesticides, fungicides and fertilizers can leach through the soil or runoff into the water supply and can present a contamination threat to drinking water supply. When stored in containers, there is the potential of leaks from the storage area onto the ground. There are sizeable agricultural areas within the Lower Grand River Watershed Areas. As a whole, the threat to this supply from agricultural sources is considered to be a moderate risk.

3.4.2 Agriculture and Water Quality

Eliminating impacts of agriculture on water quality is as critical to the future viability of agriculture as ensuring adequate water supplies. Potential water quality impacts include point-source pollution (such as discharge of waste water from confined animal feeding operations and dairies) and non point-source pollution (such as nutrient loading of drainage water and sediment and pesticide loading of winter runoff).

Agricultural practices may also have negative impacts on water quality. Agricultural methods may elevate concentrations of nutrients, fecal coliforms, and sediment loads. Increased nutrient loading from animal waste can lead to eutrophication of water bodies which may eventually damage aquatic ecosystems. Animal waste may also introduce toxic fecal coliforms which threaten public health. Lastly, grazing and other agriculture practices may intensify erosion processes raising sediment input to nearby water sources. Increased sediment loads make drinking water treatment more difficult while also affecting fish and macroinvertebrates.

Agriculture and Animal Waste Statistics

City of Grand Haven-North Ottawa Water Facilities
Ottawa, County



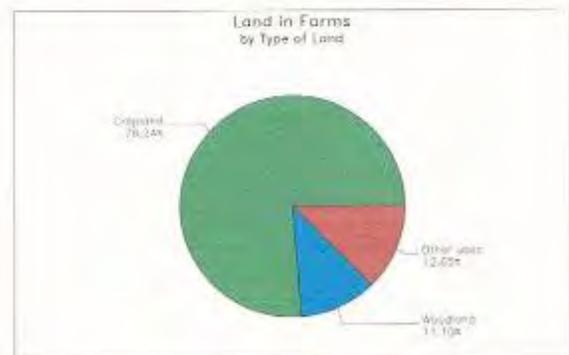
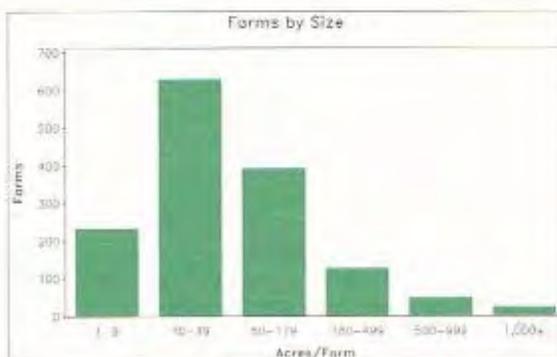
2007 CENSUS OF AGRICULTURE

County Profile



Ottawa County Michigan

	2007	2002	% change
Number of Farms	1,451	1,291	+ 12
Land in Farms	170,539 acres	165,484 acres	+ 3
Average Size of Farm	118 acres	128 acres	- 8
Market Value of Products Sold	\$391,093,000	\$277,503,000	+ 41
Crop Sales \$231,749,000 (59 percent)			
Livestock Sales \$159,344,000 (41 percent)			
Average Per Farm	\$269,533	\$214,952	+ 25
Government Payments	\$1,463,000	\$3,435,000	- 57
Average Per Farm Receiving Payments	\$4,053	\$11,412	- 64



United States Department of Agriculture
National Agricultural Statistics Service

www.agcensus.usda.gov

2007 CENSUS OF AGRICULTURE

County Profile

Ottawa County – Michigan

Ranked items among the 83 state counties and 3,079 U.S. counties, 2007

Item	Quantity	State Rank	Universe ¹	U.S. Rank	Universe ¹
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD (\$1,000)					
Total value of agricultural products sold	391,093	2	83	98	3,076
Value of crops including nursery and greenhouse	231,749	1	83	65	3,072
Value of livestock, poultry, and their products	159,344	3	83	184	3,069
VALUE OF SALES BY COMMODITY GROUP (\$1,000)					
Grains, oilseeds, dry beans, and dry peas	17,431	32	82	1,035	2,933
Tobacco	-	-	-	-	437
Cotton and cottonseed	-	-	-	-	826
Vegetables, melons, potatoes, and sweet potatoes	13,452	9	81	147	2,796
Fruits, tree nuts, and berries	69,381	2	81	48	2,559
Nursery, greenhouse, floriculture, and sod	129,035	1	80	20	2,703
Cut Christmas trees and short rotation woody crops	300	17	81	166	1,710
Other crops and hay	2,151	21	83	614	3,054
Poultry and eggs	79,899	1	82	132	3,020
Cattle and calves	19,306	4	83	709	3,054
Milk and other dairy products from cows	48,424	9	77	153	2,493
Hogs and pigs	10,456	11	82	355	2,922
Sheep, goats, and their products	(D)	8	79	552	2,998
Horses, ponies, mules, burros, and donkeys	465	20	82	519	3,024
Aquaculture	(D)	26	41	(D)	1,498
Other animals and other animal products	557	14	82	350	2,875
TOP CROP ITEMS (acres)					
Corn for grain	35,666	29	78	714	2,634
Forage - land used for all hay and haylage, grass silage, and greenchop	25,757	12	83	824	3,060
Soybeans for beans	17,564	33	85	872	2,039
Corn for silage	13,356	5	79	85	2,263
Land in berries	6,837	2	78	9	2,237
TOP LIVESTOCK INVENTORY ITEMS (number)					
Layers	1,731,008	3	82	51	3,024
Turkeys	868,566	1	77	35	2,371
Pullets for laying flock replacement	466,830	3	81	65	2,627
Broilers and other meat-type chickens	(D)	2	81	(D)	2,476
Hogs and pigs	50,912	5	81	298	2,958

Other County Highlights

Economic Characteristics	Quantity	Operator Characteristics	Quantity
Farms by value of sales:		Principal operators by primary occupation:	
Less than \$1,000	329	Farming	627
\$1,000 to \$2,499	115	Other	824
\$2,500 to \$4,999	112	Principal operators by sex:	
\$5,000 to \$9,999	144	Male	1,276
\$10,000 to \$19,999	121	Female	175
\$20,000 to \$24,999	55	Average age of principal operator (years)	54.1
\$25,000 to \$39,999	66	All operators by race ² :	
\$40,000 to \$49,999	50	American Indian or Alaska Native	20
\$50,000 to \$99,999	81	Asian	3
\$100,000 to \$249,999	126	Black or African American	-
\$250,000 to \$499,999	90	Native Hawaiian or Other Pacific Islander	-
\$500,000 or more	142	White	2,176
Total farm production expenses (\$1,000)	295,168	More than one race	14
Average per farm (\$)	203,424	All operators of Spanish, Hispanic, or Latino Origin ²	48
Net cash farm income of operation (\$1,000)	102,191		
Average per farm (\$)	70,428		

See "Census of Agriculture, Volume 1, Geographic Area Series" for complete footnotes, explanations, definitions, and methodology.

(D) Cannot be disclosed. (Z) Less than half of the unit shown.

¹ Universe is number of counties in state or U.S. with item. ² Data were collected for a maximum of three operators per farm.

MICHIGAN: OTTAWA COUNTY

STATISTICS FROM THE CENSUS OF AGRICULTURE (5-YEAR CYCLE)

FARMS	2002	1997	1992	1987
NUMBER	1,446	1,516	1,259	1,387
ACREAGE	353,083	357,040	336,273	344,801
AVERAGE SIZE (ACRES)	244	236	267	249
MEDIAN SIZE (ACRES)	85	100	N	N
AVERAGE ESTIMATED MARKET VALUE PER FARM (\$)				
LAND & BUILDINGS	585,178	444,451	325,229	297,357
MACHINERY & EQUIPMENT	73,823	71,551	61,937	55,156
CROPLAND (ACRES)				
TOTAL	314,198	302,470	305,242	310,342
HARVESTED	279,999	275,112	276,557	254,847
IRRIGATED	3,807	2,667	1,944	3,131
MARKET VALUE AGRICULTURAL PRODUCTS SOLD				
COUNTY TOTAL VALUE (\$1,000)	103,357	106,470	88,993	78,772
AVERAGE PER FARM (\$)	71,478	70,231	70,685	56,793
NET CASH SALES RETURN PER FARM				
AVERAGE (\$)	9,493	16,821	8,836	5,387
LIVESTOCK (INVENTORY)				
CATTLE & CALVES	23,230	20,026	22,783	29,033
BEEF COWS	1,499	1,116	1,054	1,657
MILK COWS	10,141	5,441	5,778	7,695
HOGS & PIGS	12,789	13,273	31,135	37,611
SHEEP & LAMBS	1,249	1,725	4,314	5,271
LAYERS (20 WEEKS OR OLDER)	10,659	D	D	D
BROILER & CHICKEN (SOLD)	560	870	1,684	1,075
COMMODITY HARVESTED (ACRES)				
CORN, GRAIN OR SEED	92,204	92,720	106,695	92,890
CORN, SILAGE OR GREENCHOP	10,391	N	N	N
SORGHUM, GRAIN OR SEED	N	N	N	N
WHEAT	28,167	35,396	32,062	19,552
BARLEY	11	N	N	N
OATS	594	N	N	N
RICE	N	N	N	N
SUNFLOWER SEED	N	N	N	N
COTTON	N	N	N	N
TOBACCO	N	N	N	N
SOYBEANS	128,951	124,489	111,836	106,999
DRY EDIBLE BEANS, EXCL. LIMAS	D	217	222	692
POTATOES EXCL. SWEET POTATOES	5	N	N	N
SUGARBEETS FOR SUGAR	786	N	N	N
SUGARCANE FOR SUGAR	N	N	N	N
FORAGE LAND (ALFALFA, HAY,) 1/	15,956	13,047	15,591	20,294

MICHIGAN: OTTAWA COUNTY

STATISTICS FROM THE CENSUS OF AGRICULTURE (5-YEAR CYCLE)

Farms	2002	1997	1992	1987
VEGETABLES FOR SALE				
NUMBER OF FARMS	40	42	74	78
ACREAGE	3,097	4,135	4,261	3,421
ORCHARDS				
NUMBER OF FARMS	N/A	42	50	43
ACREAGE	714	836	611	696
PRIMARY OPERATOR'S OCCUPATION (NUMBER)				
FARMING	768	N/A	N/A	N/A
NON-FARMING	678	N/A	N/A	N/A
GOVERNMENT PAYMENT PROGRAM PARTICIPATION				
NUMBER OF FARMS	855	N/A	N/A	N/A
PERCENT OF TOTAL	59.13%	N/A	N/A	N/A
TOTAL PAYMENTS RECEIVED (\$1,000)	7,897	5,825	N/A	N/A
AVERAGE PAYMENT RECEIVED PER FARM (\$)	9,237	6,935	N/A	N/A

1/ AREA COUNTED ONLY ONCE (ALL HAY, ALFALFA, SMALL GRAIN, GRASS SILAGE, GREENCHOP).

N - REPRESENTS ZERO.

0 - REPRESENTS AN INSIGNIFICANT AMOUNT.

D - WITHHELD TO AVOID DISCLOSING DATA FOR INDIVIDUAL FARMS.

Z - LESS THAN HALF OF THE UNIT SHOWN

SOURCE: USDA, NASS, 2002 CENSUS OF AGRICULTURE.

1997 ANIMAL WASTE SUMMARY

<u>Animal Type</u>	<u>Number of Head</u>	<u>Amount of Waste (tons/yr)</u>	<u>Volume of Waste (gallons/yr)</u>	<u>Amount of Nitrogen in Waste(pounds/yr)</u>	<u>Nitrogen Lost to Atmosphere (pounds/yr)</u>	<u>Amount of Phosphorous in Waste (pounds/yr)</u>
Hogs	13,273	25,000	6,100,000	310,000	220,000	100,000
Cattle	20,026	180,000	43,000,000	1,900,000	830,000	430,000
Poultry	582	30	7,000	790	380	280
Sheep	1,725	690	170,000	15,000	11,000	3,000
Total Animals	35,606	200,000	49,000,000	2,200,000	1,100,000	530,000

***Note:** County totals are compiled using 1997 Census of Agriculture data.

3.4.2a Agriculture Waste Management

Pesticides and fertilizers can contaminate waterbodies by several routes, including spillage, improper storage, application too near or into ditches and streams, leaching from soils, or washed away in runoff. Agricultural operations, if not properly managed, can discharge a wide range of contaminants, including those from manure, fertilizers, pesticides, and eroded soil particles. The most worrisome contaminants are ammonia, nutrients, pathogens, and sediments. Ammonia is toxic to fish, while nutrients can impair water quality. Manure is a significant source of nitrogen, phosphorus, biochemical oxygen demand, and waterborne diseases. Proper management is required to avoid adverse effects to water supplies and human health. Environmentally sound use of manure from farms is a constant challenge in the agricultural industry

Producers are finding new ways to capture nutrients while reducing manure rates and the potential for manure to contaminate surface waters. Land application of manure is the oldest and most sustainable method of livestock and crop farming. But land application comes with positive and negative consequences, sometimes within the same practice (Rector and Harrigan, MSU Extension).

The main goals are to keep the manure nutrients in the root zone which, reduces odors, retains nitrogen, saves money and decreases the risks of manure reaching surface waters. Actions to reduce the risk of manure reaching surface waters by Grand Haven the *Generally Accepted Agricultural and Management Practices for Manure Management and Utilization* practices will form the foundation of a site-specific manure land application plan.

1997 ANIMAL WASTE SUMMARY – OTTAWA COUNTY						
<u>ANIMAL TYPE</u>	<u>NUMBER OF HEAD</u>	<u>AMOUNT OF WASTE (TONS/YR)</u>	<u>VOLUME OF WASTE (GALLONS/YR)</u>	<u>AMOUNT OF NITROGEN IN WASTE(LBS/YR)</u>	<u>NITROGEN LOST TO ATMOSPHERE (POUNDS/YR)</u>	<u>AMOUNT OF PHOSPHOROUS IN WASTE (POUNDS/YR)</u>
Hogs	36,181	69,000	17,000,000	850,000	600,000	280,000
Cattle	21,633	210,000	52,000,000	2,300,000	900,000	510,000
Poultry	835	33	7,800	870	390	280
Sheep	1,503	600	140,000	13,000	9,200	2,600
Total Animal	60,152	280,000	68,000,000	3,100,000	1,500,000	800,000

*NOTE: COUNTY TOTALS ARE COMPILED USING 1997 CENSUS OF AGRICULTURE DATA.

3.4.2b Concentrated Animal Feed Operations

In agriculture, a **Concentrated Animal Feeding Operation (CAFO)** is a farm that raises livestock and seeks to maximize production by making highly efficient use of space and other resources. Operating a CAFO is sometimes referred to as factory farming, though the term is now officially used to recognize most commercial animal growing operations, even those that are quite small.

CAFOs can hold large numbers (some up to hundreds of thousands) of animals, often indoors. These animals are typically cows, hogs (figure 16), turkeys, or chickens. The distinctive characteristics of a CAFO are the concentration of livestock in a given space. Food is supplied in place, and artificial methods are often employed to maintain animal health and improve production, such as therapeutic use of antimicrobial agents, vitamin supplements and growth hormones.

The designation CAFO, used in the US, resulted from the 1972 Federal Clean Water Act, which was enacted to protect and restore surface water—lakes and rivers—to a "fishable, swimmable" quality. The United States Environmental Protection Agency (EPA) identified certain animal feeding operations (AFOs), along with many other types of industry, as point source polluters. These operations were designated as CAFOs and subject to special anti-pollution regulation. So far, 139 large concentrated animal feeding Operations (CAFOs) have been verified under the voluntary Michigan Agriculture Environmental Assurance Program (MAEAP) with approximately 12 facilities in the Lower Grand River Watershed. If you have an questions or concerns relating to the Michigan Confined Animal Feeding Operation program, please contact: Mike Bitondo 517-335-3303 - bitondom@michigan.gov. Comprehensive Nutrient Management Plans (CNMPs) for permitted CAFOs on the list are available upon request. CNMPs will be supplied on CD as digital PDF files. Request may be submitted to: Ms. Nichole Churches 517-241-1313 - churchesn@michigan.gov.



INTERIOR OF A HOG CONFINEMENT BARN

3.4.2c CAFO Waste Management

The U.S. Department of Agriculture and the Environmental Protection Agency recently released a proposal that they hope will lessen the effects livestock and poultry farms could have on water quality and public health. "The basic proposal is that all farmers that have animals will be required to have what they call Comprehensive Nutrient Management Plans. Producers are finding new ways to capture nutrients while reducing manure rates and the potential for manure to contaminate surface waters. Land application of manure is the oldest and most sustainable method of livestock and crop farming. But land application comes with positive and negative consequences, sometimes within the same practice (Rector and Harrigan, MSU Extension).

The main goals are to keep the manure nutrients in the root zone which, reduces odors, retains nitrogen, saves money and decreases the risks of manure reaching surface waters. Actions to reduce the risk of manure reaching surface waters by reading the *Generally Accepted Agricultural and Management Practices for Manure Management and Utilization* practices will form the foundation of a site-specific manure land application plan.

Concentrated Animal Feeding Operation (CAFO)

Primary Species	Permit No.	Issue Date	District	County	Facility Location 1	Location Address 1	City	Zip Code	Total Animal Units
DAIRY	MI0058138	10/23/2006	Grand Rapids	Ottawa	Beaver Creek Dairy	18080 80th Avenue	Coopersville	49404	2286
SWINE	MIG010067	12/28/2007	Grand Rapids	Ottawa	Boersen Farms	6241 Ransom Street, Zeeland 49464		49464	2098
DAIRY	MIG010120	10/11/2007	Grand Rapids	Kent	Bradford Dairy Farms	11435 Sparta Avenue	Sparta	49345	2368
TURKEY	MI0058696	7/14/2009	Grand Rapids	Ottawa	New Holland	11754 New Holland, Holland 49423		49423	1097
DAIRY	MIG010125	8/18/2008	Grand Rapids	Kent	Indian Trail Farm	4780 Lowe Road, Byron Center 49315		49315	1080
SWINE	MIG010008	2/1/2007	Grand Rapids	Ottawa	KH Farms	9997 Leonard Street	Coopersville	49404	not given
SWINE	MIG010055	8/27/2007	Grand Rapids	Kent	Kober Farms, Inc.	2975 9 Mile Road, Sparta 49345		49345	1479
TURKEY	MI0058448	2/10/2009	Grand Rapids	Ottawa	112th Street	7865 112th, Allendale 49401		49401	1259
SWINE	MIG010086	10/29/2007	Grand Rapids	Ottawa	Precision Pork Farm	5014 Perry Street, Zeeland 49464		49464	2491
BEEF	MI0058688	Pending	Grand Rapids	Ottawa	R. J. Kamp Farm	7865 112th	Holland	49424	1533
BEEF & HEIFERS	MIG010127	10/17/2007	Grand Rapids	Ottawa	River Ridge Farms, Incorporated	15585 68th Avenue	Coopersville	49404	3352
DAIRY	MIG010106	12/7/2007	Grand Rapids	Kent	Scenic View Freeport Dairy	10560 Freeport Avenue	Freeport	49325	6610
POULTRY-EGGS	MI0058419	3/4/2008	Grand Rapids	Ottawa	Sunrise Acres Egg Farm	1180 32nd Avenue, Grand Havenville 49426		49426	16317
DAIRY	MIG010052	12/6/2007	Grand Rapids	Kent	Swisslane Farms, Incorporated	12877 - 84th Street	Alto	49302	2737
TURKEY	MIG010147	12/12/2007	Grand Rapids	Ottawa	White Acres, LLC	15730 76th Avenue	Coopersville	49404	1491

3.4.2d Field Crops in 2001, Ottawa County Michigan

Crop	Planted (1,000 acres)	Harvested (1,000 acres)	Yield per harvested acre (bushels)	Production (1,000 bushels)
Barley	0.8	0.8	44.0	33.0
Corn	5.7	4.4	48.0	210.0
Oats	5.7	4.4	48.0	210.0
Soybeans	0.9	0.8	16.0	13.0
Wheat, All	3.4	3.3	70.0	230.0
Wheat, Winter	3.4	3.3	70.0	230.0

Source: National Agricultural Statistics Service

One of the objectives of the project is to reduce agricultural chemical levels in the watershed. Allowing cover to remain on the land will have an immediate effect upon water quality related to sediment loading into the waterways. It follows that if runoff events can be slowed down, reduced, or eliminated, amounts of nutrients and chemicals entering the water system will be reduced.

The Source Protection Team is developing Water Supply area signs and distributing educational materials that relate to agricultural Best Management Practices for wetlands and floodplains.

3.4.3e Targeting Agriculture Water Quality

The City of Grand Haven is planning to work with the Ottawa County Conservation District (member of the steering committee) to achieve maximum agricultural pollution prevention. The targeted programs will have research, education, and cost share components as part of pollution prevention programs, and will not be construed as part of a punitive enforcement effort.

Although assistance will be available to everyone, given limited resources, certain areas such as within the Intake Protection Area will be targeted for specific incentives and other benefits that will make major impacts in pollution prevention and control. One risk in not prioritizing is that resources will be spread so thinly there will be no observable effect. Without targeting programs on an as-needed basis (as opposed to simply when they are requested), funds will not be used to the best potential.

While all farmers have incentives and opportunities to voluntarily participate in these environmental programs, technical and financial assistance should be targeted toward priority concerns, priority areas, and priority farms. Such targeting will require a process that:

- within priority areas articulates the goals for water quality as a priority concern
- within priority areas, identifies those farming practices that are the probable major contributors to sourcewater concerns

- provides a concerted, coordinated effort tailored to the individual farm situation to overcome any barriers so that these farms can change their farming systems and reduce or prevent sourcewater pollution
- within priority areas provide education and technical assistance tailored to meet farm-specific situations

3.4.3f Manure Storage Facilities

Farmers store animal manure so they can spread manure when crops need the nutrients. They save money because they do not need to purchase as much fertilizer. Accumulating manure in a concentrated area, however, can be risky to the environment and to human and animal health. Poorly designed or mismanaged manure storage systems can allow contamination of drinking water sources by the nutrients and disease-causing organisms contained in animal wastes.

Facilities, which store manure in liquid form on the homestead, may leak or burst, releasing large volumes of pollutants. Manure in earthen pits usually forms a semi-impervious seal of organic matter that does limit leaching potential, but seasonal filling and emptying can cause the seal to break down. Short-term solid manure storage and abandoned storage areas can also be sources of nitrate contamination.

If nitrate concentrations in drinking water are greater than federal and state drinking water standards of 10 mg/L,* nitrate-nitrogen can pose health problems for infants younger than 6 months of age, including the condition known as methemoglobinemia (blue baby syndrome). water supply may prove harmful, especially in combination with high concentrations (1,000 ppm) of nitrate-nitrogen from feed sources.

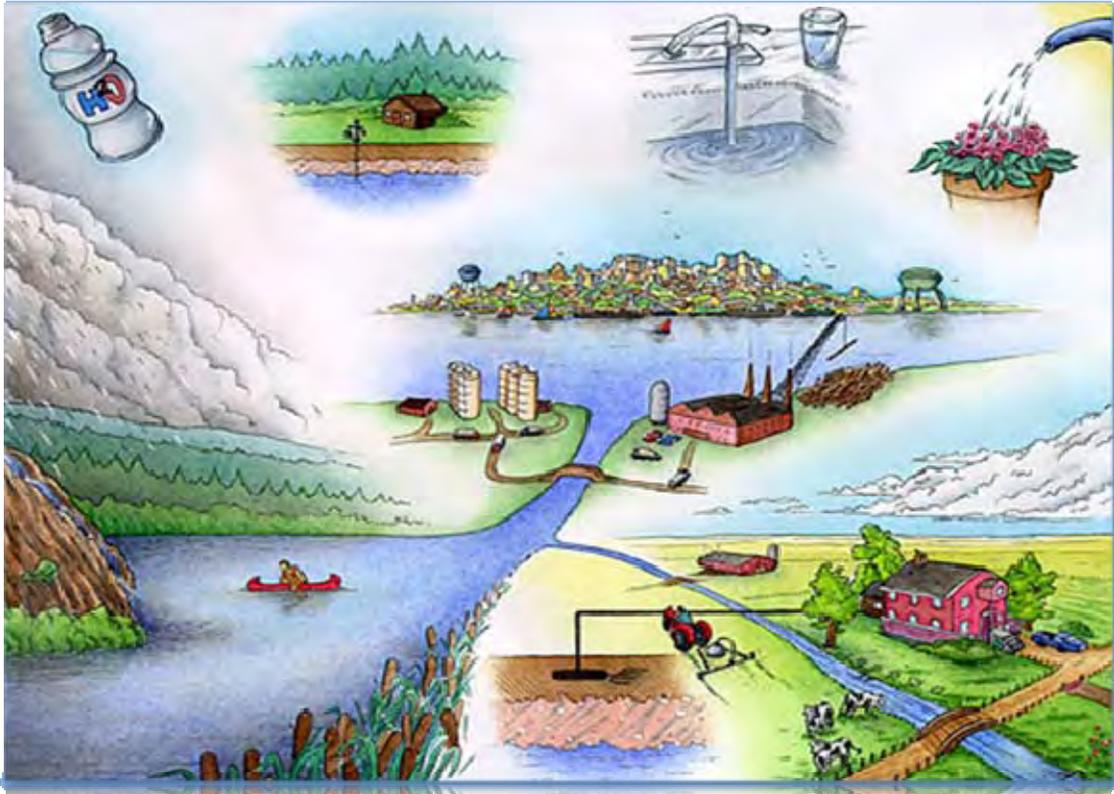
Microorganisms in animal manure can contaminate sourcewater, causing such infectious diseases as dysentery, typhoid, and hepatitis. Organic materials that lend an undesirable taste and odor to drinking water are not known to be dangerous to health, but their presence suggests that other contaminants can be flowing into the drinking water source.

The SWIPP Committee will investigate working with the Ottawa and Allegan County Conservation Districts utilizing the Farm-A-Syst program to achieve agricultural pollution prevention. The targeted programs will promote sourcewater education and site-specific inventorying of potential source contaminants as the main pollution prevention program.

SWIPP Community

Residential, Commercial & Industrial

City of Grand Haven-North Ottawa Water Facilities



3.4.3 Industrial

Industrial operations commonly use toxic substances as part of manufacturing, warehousing, and/or distribution. Materials such as chemicals, petroleum, cleaning supplies, machinery, metals, electronic products, asphalt, and others pose a potential threat to Grand Haven's water supply and must be managed.

The Grand Haven contaminant source inventory shows several known and potential sources of contamination within the delineated Intake Protection Areas. Potential Environmental contamination within the SWIPP includes disposal areas, utility stations, agricultural and residential areas, and transportation routes. There are also some known sources of contamination that lie near but outside the Intake Protection Area.

3.4.4 Commercial

Many commercial operations use toxic and hazardous materials in their processes. The storage, use, and disposal of chemicals required by these operations can pose a potential threat to water since even small amounts of the hazardous materials can contaminate large amounts of surface or ground water. Storing quantities of the materials can also create a serious problem if they are not contained and stored properly. Leaks and spills from storage tanks and pipes can contaminate water, rendering the water unfit for consumption.

The inventory has identified commercial establishments in and around the SWIPP areas. It is anticipated that the Intake Protection Area has a high potential for commercial growth. Primarily, the handling of engine fluids (oil, antifreeze, etc.), restaurant waste (oil), and the private wells and on-lot septic systems at these facilities are the highest concern. Examples include:

- auto, farm and recreational vehicle repair shops, car washes and gas stations
- road maintenance, de-icing operations and municipal operation
- warehouses, shipping and receiving
- sand and gravel quarry, construction and excavation operations
- medical institutions, research laboratories, photography establishments, printers
- auto salvage yards, railroad tracks and yards,

The Source Water Protection Team would like to install Water Supply Area signs, develop community education packets, and provide speakers and demonstrations at schools, civic and business meetings, and fairs to raise awareness about source water protection.

Michigan Hazardous Waste Treatment, Storage, and Disposal Facilities Directory (TSD)

The following report contains facilities that have required an operating license under Part 111 (Hazardous Waste Management) of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, for hazardous waste treatment, storage, or disposal (TSD) activity. This list includes information regarding the facility location, type, and status (licensed, closed, etc.). A key to the fields and codes is contained at the end of the report.

Current Name	EPA ID Number	Facility Address	Facility City	Facility County	Facility Type	Commercial	Administrative Track	RCRA	Part 111	Clean Closed	Closed
AMERICAN ELECTRIC	MID080356876	203 CUTLER AVE	SPRING LAKE	OTTAWA	S	0	CC	NI	NI	YES	YES
AMERICHEM CORP	MID065840514	1111 WALLEN AVE	GRAND RAPIDS	KENT	S	0	CC	NI	NI	YES	YES
CASCADE RESOURCE RECOVERY	MID000718700	6200 52ND ST SE	GRAND RAPIDS	KENT	T/S/D	0	CC	NI	PD	YES	YES
DETREX CORP	MID020906764	312 ELLSWORTH	GRAND RAPIDS	KENT	S	0	VOL	NI	NI	NO	No
GM COMPONENTS HOLDINGS LLC	MID017079625	2100 BURLINGAME	WYOMING	KENT	S/D	0	PCP	NI	NI	PAR	YES
KNAPE AND VOGT MFG CO	MID006024699	2700 OAK INDUST.	GRAND RAPIDS	KENT	S	0	CC	NI	NI	YES	YES
LACKS INDUSTRIES INC	MID006014666	1601 GALBRAITH	GRAND RAPIDS	KENT	S/D	0	CAO	NI	NI	NO	YES
MICHIGAN ENVIRONMENTAL RECOVERY INC	MID980995534	1923 STERLING AVE	GRAND RAPIDS	KENT	S	0	PFC	NI	NI	NO	NO
REMEDICATION & REDEVELOPMENT DIV/SPARTAN CHEMICAL	MID079300125	2539 28TH ST SW	WYOMING	KENT	S	0	CC	NI	NI	YES	YES
ROZEMA INDUSTRIAL WASTE INC	MID000266957	2650 THORNWOOD	WYOMING	KENT	T/S	0	CC	NI	NI	YES	YES

Facility Type: S=Storage; T=Treatment; D=Land Disposal; I=Incinerator
 Commercial: "-1" Indicates facilities that accept waste on a commercial basis from off-site
 Administrative Track: C=Closure; CAO=Corrective Action Order; OL=Operating License; P=Permit; PC=Post-Closure
 RCRA (Federal) and Part 111 (State) Permit Status: AUR=Application Under Review; CI=Application Called-In; NCI=Application Not Called-In; NI=Permit Not Issued; PD=Permit Denied; PI=Permit Issued; PR=Permit Revoked; RUR=Renewal Application Under Review
 Clean Closed: YES=All units requiring a permit have been certified clean; PAR=Some units are clean closed
 Closed: YES=Units are closed, but contamination or waste remains in place with long-term monitoring and maintenance required; PAR=Some units are closed, but not clean

For issues related to database content contact: DEQ-WHMD-ReceptionDesk@michigan.gov
 For technical issues contact: [DEQ-Webmaster](#)

3.5 Pollutants

Pollutants can be classified by treatment technology as conventional, non-conventional or toxic.

3.5.1 Conventional pollutants

Bacteria associated with the intestinal tract of humans (fecal bacteria, as indicated by the coliform group) are conventional pollutants and can easily be destroyed by disinfection with chlorine, ozone or ultraviolet light.

3.5.2 Non-Conventional pollutants

Non-conventional pollutants include excessive levels of nutrients, such as nitrogen and phosphorus, which require more advanced treatment to be removed for drinking water. These substances may come from many sources, including fertilizers, atmospheric deposition, and sewage.

3.5.3 Toxic pollutants

Toxic pollutants such as heavy metals (chromium, lead), inorganic chemicals (salts, acids), and organic chemicals (pesticides, solvents) can damage human health, aquatic organisms, and the overall health of the ecosystem. Toxic effects can be acute, causing immediate death or impairment, or chronic, causing subtle damage that may not emerge until years after exposure. Toxics often persist in the environment, collecting either in water or in lake bottom sediments. Toxics can bioaccumulate in the tissues of organisms after repeated intake or exposure.

3.5.4 Superfund Projects

Years ago, people were less aware of how dumping chemical wastes might affect public health and the environment. On thousands of properties where such practices were intensive or continuous, the result was uncontrolled or abandoned hazardous waste sites, such as abandoned warehouses and landfills. Citizen concern over the extent of this problem led Congress to establish the Superfund Program in 1980 to locate, investigate, and clean up the worst sites nationwide. The EPA administers the Superfund program in cooperation with individual states and tribal governments. The office that oversees management of the program is the Office of Superfund Remediation Technology Innovation (OSRTI).

The Grand Haven Intake Protection Areas have no sites at which site assessment; removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted under the Superfund program.

3.5.5 Industrial

- Waste Management Data System (*Waste Management Section*)
- Environmental Contamination 201- Sites (*201 Section*)

3.5.6 Commercial

- Underground Storage Tank Facilities List (*UST Section*)
- Leaking Underground Storage Tank Sites List (*Lust Section*)

3.6 Municipal Storm Water Management

Surface water flows within the watershed occur as overland runoff and as stream flow. Overland flow, or storm water as it is commonly called, is generated when the capacity of the soils and vegetation to absorb water from precipitation is exceeded and water runs across the surface of the land. In clay-rich soils, the water-retention capacity is low and runoff from these soils is generated quickly. In sandy soils, a larger portion of the precipitation infiltrates the land surface and recharges the underlying groundwater system, resulting in less runoff.

Since precipitation-generated runoff is the major transport mechanism for non-point source pollution, a direct relationship exists between the timing and magnitude of precipitation events and the resulting level of non-point source pollution. Factors that affect the rate at which precipitation becomes runoff include the soil moisture conditions at the time of the precipitation event, vegetation type and density, and urbanization with its associated impervious surfaces. Clearly, larger and more intense rain events carry more pollutants from the watershed into down gradient waters.

3.6.1 Urban Developments

Urbanized land contributes large amounts of contamination to water bodies via storm water runoff. Urban areas are characterized by a higher percentage of impervious surface coverage; thus, the ability of storm water runoff to transport more pollutants is magnified.

Urban developments tend to encroach on natural resources as well, allowing more and more people the opportunity to use lakes, rivers, beaches, and wetlands. Each natural habitat use has a one-time impact and a cumulative effect – many small impacts add up over time. Water-quality degradation caused by development also fragments existing habitats, restricting the territory available to plant and animal species and eliminating buffers between them and human use areas. Precipitation can carry increasing amounts of inorganic contaminants and sediments to surface waters, particularly from heavily developed areas.

3.6.2 Storm Water System

All storm water from the City of Grand Haven eventually enters the Lower Grand, Lake Michigan. Along the west edges of the city, runoff water first flows into Lower Grand River and from there into Lake Michigan. Throughout the rest of the City, storm water flows directly into Lower Grand, Lake Michigan. There are 26 industrial storm water NPDES (Point Source Section) discharge permits in the Lower Grand River Watershed and these storm water permits require the facility to submit a storm water pollution

prevention plan and focus more on site management than point source treatment ([NMS Web Inquiry System](#))

3.6.3 Storm Water Systems Maintenance and Repairs

The Department of Public Works maintains and repairs the storm system within the City rights-of-way. This will include cleaning the tops of the catch basins to allow for maximum intake of the catch basin structures, repairing failing manhole and basin structures, installing new systems, as they are deemed necessary.



As steward for the Clean Water Act, City Employees monitor all storm sewers for illegal deposits of environmentally harmful materials; such as any automotive fluids, waste from RV's, etc. Illegal discharges items into a catch basin should be reported to the 24 hour Pollution Emergency Alert System (PEAS) at 1-800-292-4706.

The office of the Drain Commissioner exercises authority over the design and construction of structural facilities that convey and treat storm water runoff that will be generated from a site as a result of its design. The Drain Commissioner's Rules will govern the design of such management facilities with the following objectives:

- Incorporate design standards that control both water quantity and quality
- Encourage innovative storm water management practices that meet the criteria contained within these rules
- Place greater emphasis on the maintenance of facilities
- Make the safety of facilities a priority
- Strengthen the protection of natural features
- Encourage more effective soil erosion and sedimentation control measures

Storm water management technologies are rapidly developing and improving and storm water rules provide minimum standards to be complied with by proprietors.

3.6.4 Stormwater Management (City of Grand Haven)

Most storm water drainage within the source water protection area is controlled by the County storm water system. The Ottawa County Drain Commission and Ottawa County Road Commission are to be invited to participate on the Source Water Protection Committee to work on together to complete a storm water management plan for the Intake Protection Area. Site-specific systems, however, can potentially receive contaminated wash water or spills of hazardous substances. Any storm drain that potentially receives wash water requires a discharge permit from the Michigan Department of Natural Resources & Environment. In addition, the Drain Commission will have a certain degree of responsibility with storm water discharge issues.

Non-point source pollution also originates from urban sources. Flow characteristics of urban streams are generally flashy due to large amounts of impermeable surfaces such as roads and highways, parking lots, and roofs. Construction projects often lead to increased runoff and erosion. Runoff via storm drains ends up in stream courses. Another problem in urban areas is the unwise and excessive use of fertilizers, pesticides and herbicides on yards and gardens. Household hazardous and commercial/industrial waste (e.g., ammonia, chlorides, paint, paint thinners, waste oil, antifreeze, solvents, etc.), which are sometimes discharged into on-lot septic systems, are also sources of non-point pollution. Pollutants from urban sources include metals, toxic substances, road salt, oils and fuels, and nutrients. Metals, pesticides, and toxic materials can be incorporated into food chains, and eventually lead to harmful effects in fish and other aquatic organisms and consumption advisories for people.

The need to manage storm water is created by increased land development - residential, commercial, and industrial - since impervious surfaces prevent rain from soaking into the soil and allow pollutants to accumulate. Storm water management, which has only been a subject of concern for many years, focuses on controlling the volume and peak discharge rate that increase dramatically when impervious surfaces cover an area. Concern also needs to be given to potential impacts on surface and ground water

3.6.5 Phase II NPDES Requirements

In response to the growing need for storm water quality protection, the Environmental Protection Agency (EPA) developed a phased storm water control program; Phase I targeting large Municipal Separate Storm Sewer Systems (MS4) operators, and Phase II targeting approximately 5,000 small to medium-sized MS4 operators and as many as 200,000 construction sites (1 to 5 acres). Several communities within the Lower Grand River Watershed are designated as a small to medium-sized MS4 and have the new Storm Water Phase II NPDES requirements to comply with [Stormwater Phase II EPA Final](#) Rule These size designations were based on the [2000 Census Urbanized Area Map](#)

The EPA controls storm water and sewer overflow discharges through its National Pollutant Discharge Elimination System (NPDES). NPDES provides guidance to municipalities and state and federal permitting authorities on how to meet storm water pollution control goals as flexibly and cost-effectively as possible. In Michigan, the state permitting authority is the Michigan Department of Environmental Quality:

<http://www.michigan.gov/deq>

IDEP – Illicit Discharge Elimination Plan

- PEP – Public Education Plan
- WMP – Watershed Management Plan
- SWPPI – Storm water Pollution Prevention Initiative

- PPP – Public Participation Process

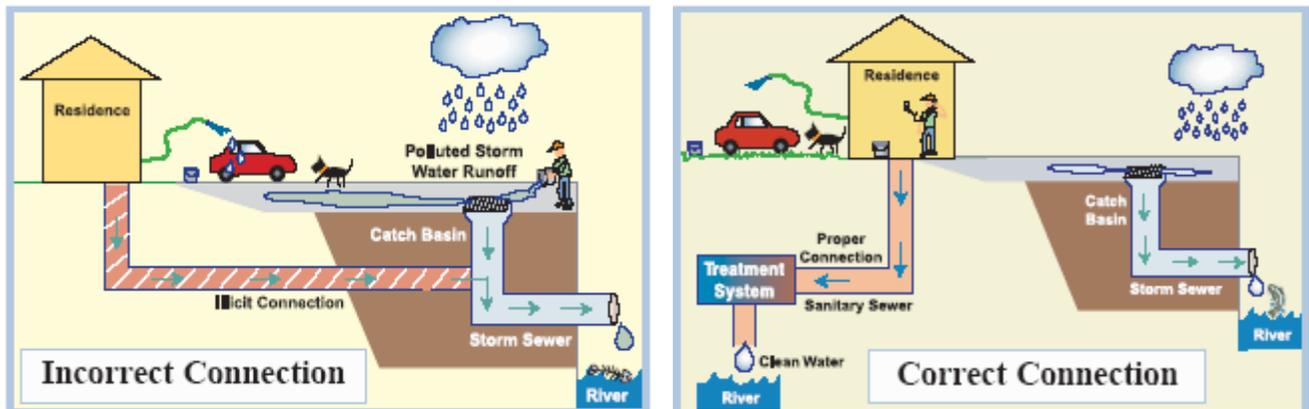
For more detailed information about municipal storm water permitting go to the MDEQ, Storm water Website (DEQ > Water)

3.7 National Pollutant Discharge Elimination System (NPDES)

The Clean Water Act of 1972 set up the NPDES. The NPDES program required communities around the country with urbanized areas to begin tackling the issue of storm water pollution. In recent years, several communities in Local Counties were required to develop an illicit discharge elimination program (IDEP). The IDEP was required to include an investigation of the waters of the state to identify, and eventually eliminate, illicit discharges and connections to the storm sewer.

3.7.1 How Do I Spot an Illicit Discharge or Connection?

- Look for makeshift pipes or hoses that lead to a storm drain or body of water.
- Watch for stains, unusual odors, structural damage to streets or gutters, and abnormal vegetative growth in nearby lakes and streams.
- If you see illicit discharges or connections, REPORT IT to your community. The Illicit Discharge and Connection Ordinance, adopted by your community, gives them legal authority to inspect and sample discharge, as well as enforce violations.



Source: <http://www.gho.org/>

3.7.2 Transportation Routes

There are many highway spills reported in Michigan each year. Chemicals, from accidental spills, are often diluted with water; potentially washing the chemicals into the soil or nearby surface water and increasing the potential for contamination. Oil spills can

create plumes that travel with runoff water flow for long distances. Additionally, de-icing compounds used on transportation routes can contaminate water.

Highway Accidents Involving Tank Trucks or Spills are outlined in the Ottawa County Emergency Management Disaster Operations Plan. This plan outlines the contacts for any emergencies related to spill or tank truck accidents. Highway spills likely represent one of the greatest threats to any drinking water source in the Intake Protection Areas. US-31 and I-196 which is located within the Grand Haven Source Water Intake Protection Area could present a high risk of potential contamination.

3.7.3 Waste Management (Waste Data System)

Michigan Department of Natural Resources & Environment (DEQ) Waste Management Division (WMD) administers a diverse number of prevention programs to protect the environment and the public's health through proper management of solid, liquid, and hazardous waste. The division is organized into six sections: Hazardous Waste, Sourcewater, Solid Waste, Enforcement, Field Operations, and Administration.

The Waste Data System (WDS) tracks activities at facilities regulated by the Solid Waste, Scrap Tire, Hazardous Waste, and Liquid Industrial Waste programs. WDS provides information on ownership and operation of the facility; the status of any required permits, licenses, registrations, or certifications; compliance status; authorized transporters; shipments of hazardous or liquid industrial waste (manifest); and user fees. The WMD staff in the Hazardous Waste Inspection Program maintained twelve different databases and two Federal for tracking program activity. The objective of this project is to develop an integrated database to house all the information relative to the Waste Inspection program and combining the State and Federal database into one system.

US-31 and I-196 which is located within the Grand Haven Source Water Intake Protection Areas and could present a high risk of potential contamination. Highway Accidents Involving Tank Trucks or Spills are outlined in the Ottawa County Emergency Management Disaster Operations Plan. This plan outlines the contacts for any emergencies related to spill or tank truck accidents. Highway spills likely represent one of the greatest threats to any drinking water source in the Intake Protection Areas.

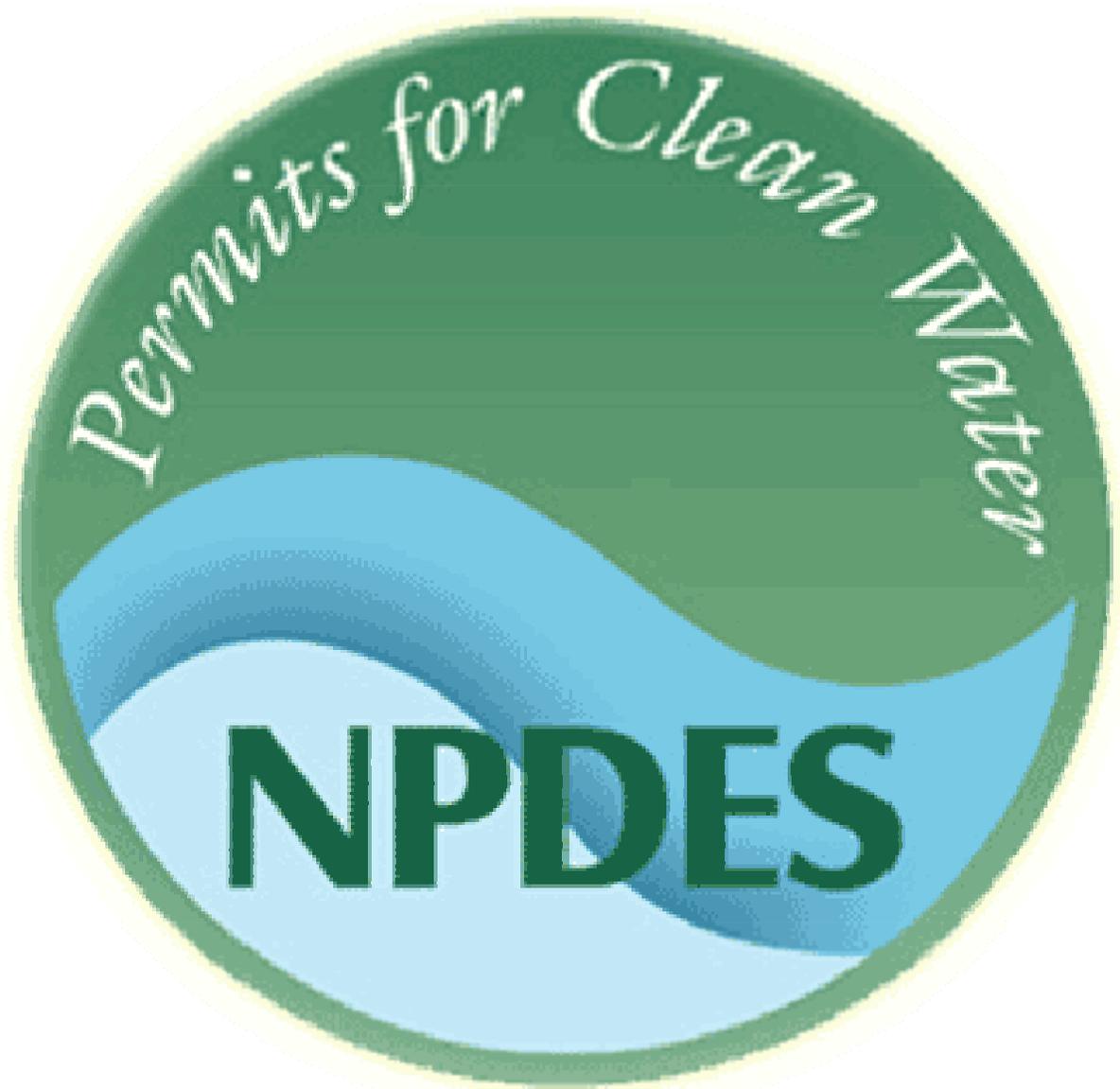
NPDES

National **P**ollutant **D**ischarge **E**limination **S**ystem

Point **S**ource **U**sage

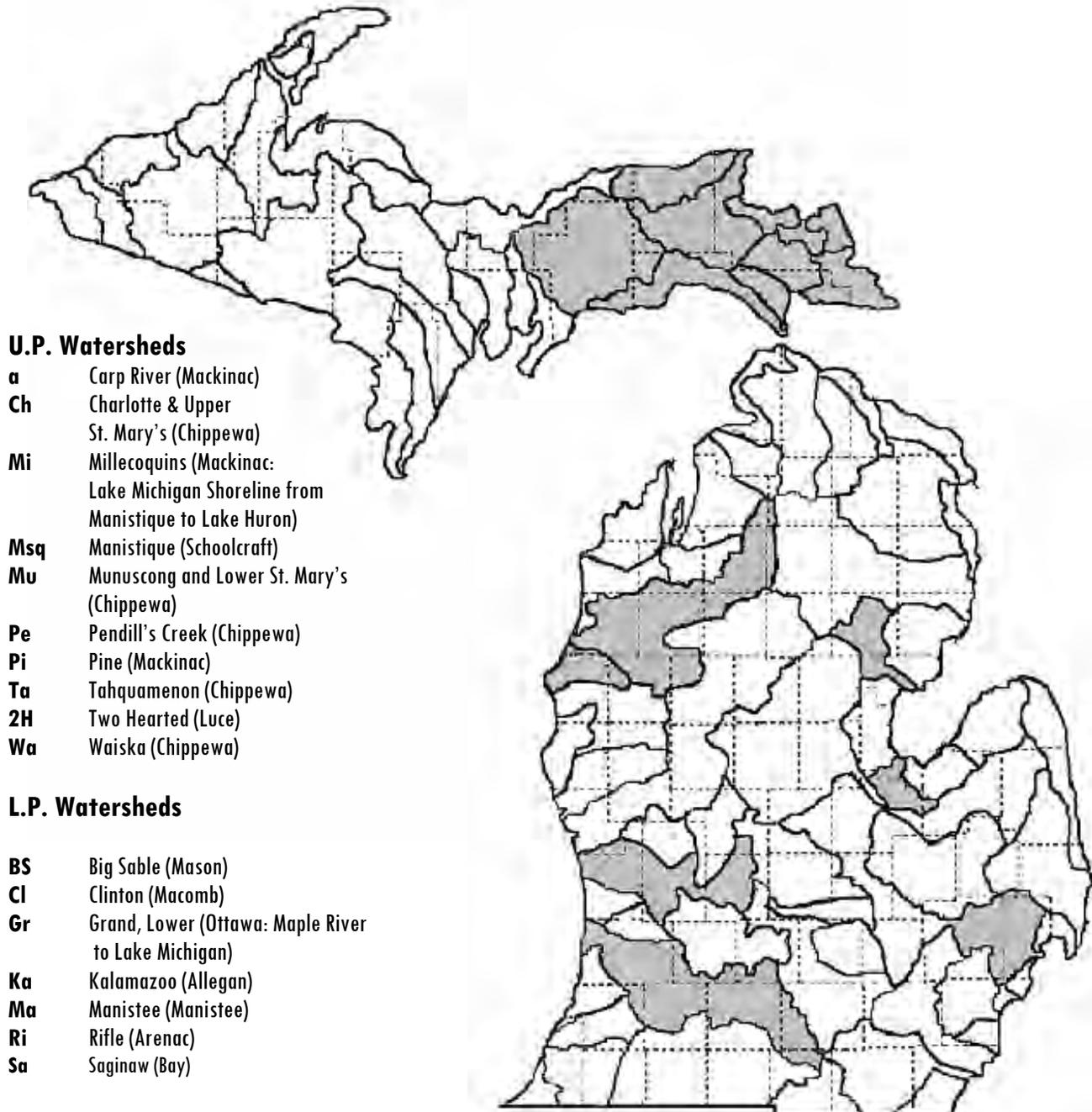
City of Grand Haven – North Ottawa Water Facilities

Ottawa County, Michigan



Cycle Year Watersheds – 2006, 2011, etc.

An NPDES permit is valid for a maximum of five years. This gives the Water Bureau an opportunity to reevaluate operational and monitoring requirements and effluent limits. Michigan has developed a strategy for scheduling permit reissuance known as the "5-Year Basin Plan." This is a timetable for reissuance of permits based on receiving water-bodies. A receiving water is the river, stream or lake that "receives" a particular discharge



- Watersheds are identified by the name of the principal water body. The name in parentheses is the county where the most downstream segment of the principal water body is located.

National Pollutant Discharge Elimination System (NPDES) Permitting Program Water Discharge Permits (PCS)

National Pollutant Discharge Elimination System (NPDES)

The Permit Compliance System (PCS) is a national computerized management information system that automates entry, updating, and retrieval of National Pollutant Discharge Elimination System (NPDES) data and tracks permit issuance, permit limits and monitoring data, and other data pertaining to facilities regulated under NPDES.

Designated Facility Name	Permit Number	Issued Date	Effective Date	Expiration Date
Designated Facility Name	Permit Number	Issued Date	Effective Date	Expiration Date
Accucam	MIS111444	11/21/2006	11/21/2006	04/01/2011
Acrofab Inc	MIS210188	03/28/2007	04/01/2007	04/01/2012
Acrofab Inc	MIG250174	01/03/2008	04/01/2008	04/01/2013
AIM Industries-Grand Haven	MIS111567	04/15/2009	04/15/2009	04/01/2011
Allendale Twp MS4-Ottawa	MIG610120	09/01/2009	09/01/2009	04/01/2013
Allendale Twp WWTP	MI0057679	06/23/2005	10/01/2005	10/01/2010
ALTL Inc-Corporate	MIS110241	08/30/2005	04/01/2006	04/01/2011
Anchorage Boat Yard	MIS210552	04/25/2007	04/25/2007	04/01/2012
Atcoflex	MIS110300	08/16/2006	08/16/2006	04/01/2011
Autumn Hills Recycle-Disposal	MIS210463	04/25/2007	04/25/2007	04/01/2012
Barrett Boat Works	MIS110744	08/16/2006	08/16/2006	04/01/2011
BASF-Holland-GWCU	MI0058303	08/31/2007	08/31/2007	10/01/2011
Beaver Creek Dairy-CAFO	MI0058138	10/23/2006	10/23/2006	10/01/2011
Benteler Aluminium Systems	MIS210720	06/06/2007	06/06/2007	04/01/2012
Big Dutchman-John Donnelly Dr	MIS210894	01/24/2007	04/01/2007	04/01/2012
Black River Pallet	MIS210632	03/28/2007	04/01/2007	04/01/2012
Boars Head Provisions Co	MIS210604	03/28/2007	04/01/2007	04/01/2012
Boersen Farms Inc-CAFO	MIG010067	12/28/2007	01/01/2008	04/01/2010
Brewer Sand & Gravel Inc	MIS210127	06/20/2007	06/20/2007	04/01/2012
Buckeye Terminals-Ferrysburg	MIG670179	11/26/2007	04/01/2008	04/01/2013

Buckeye Terminals-Ferrysburg	MIS120597	04/04/2006	04/04/2006	04/01/2011
Casting Technologies Co	MIS210234	05/24/2007	05/24/2007	04/01/2012
CECO-J H Campbell Power Plt	MI0001422	05/29/2007	09/01/2007	10/01/2011
Con-way Freight-XHM	MIS210124	05/10/2007	05/10/2007	04/01/2012
Construction Aggregates Corp	MIG490126	01/13/2005	04/01/2005	04/01/2010
Coopersville WWTP	MI0022730	07/07/2006	10/01/2006	10/01/2010
Crockery MHP	MIG580135	11/14/2008	04/01/2009	04/01/2014
Dr Pepper Snapple Group ProPak	MI0055581	11/22/2006	03/01/2007	10/01/2011
DW Turkey Farm-Fillmore-CAFO	MINPTD008	12/21/2007	12/21/2007	10/01/2012
DW Turkey-Land of Turkey-CAFO	MINPTD007	12/21/2007	12/21/2007	10/01/2012
DW Turkey-New Holland-CAFO	MI0058696	07/14/2009	07/14/2009	07/14/2013
DW Turkey-Port Sheldon-CAFO	MINPTD005	12/21/2007	12/21/2007	10/01/2012
DW Turkey-Turkey Town-CAFO	MINPTD006	12/21/2007	12/21/2007	10/01/2012
Engine Power Components Inc	MIS110783	08/08/2006	08/08/2006	04/01/2011
Ferrysburg MS4-Ottawa	MIG610212	09/08/2009	09/08/2009	04/01/2013
Fleet Refinishing Works Inc	MIS210605	05/24/2007	05/24/2007	04/01/2012
Flint Hills Resources LP-GWCU	MIG081079	07/07/2006	07/07/2006	04/01/2010
Fruitport MS4-Muskegon	MIS040089	09/28/2009	09/28/2009	04/01/2013
Future Industries	MIS111561	04/15/2009	04/15/2009	04/01/2011
Genzink Steel Supply	MIS210745	07/18/2007	07/18/2007	04/01/2012
Georgetown Twp MS4-Ottawa	MIG610209	09/01/2009	09/01/2009	04/01/2013
Gra-Bell Truck-Holland-144 Ave	MIS210557	07/18/2007	07/18/2007	04/01/2012
Grand Haven BL&P	MI0058209	02/27/2007	02/27/2007	10/01/2010
Grand Haven BL&P	MIG250164	01/07/2008	04/01/2008	04/01/2013
Grand Haven BL&P-J B Sims	MI0000728	06/14/2006	09/01/2006	10/01/2010
Grand Haven Memorial Airport	MIS111011	08/16/2006	08/16/2006	04/01/2011
Grand Haven MS4-Ottawa	MIG610208	09/08/2009	09/08/2009	04/01/2013
Grand Haven-Spring Lake WWTP	MI0021245	02/15/2006	08/01/2006	10/01/2010
Grand Isle Marina	MIS110879	08/08/2006	08/08/2006	04/01/2011
Grand Rapids WTP	MIG640126	02/01/2005	04/01/2005	04/01/2010
Harbor Industries	MIS111222	04/04/2006	04/04/2006	04/01/2011
Heath Outdoor Products	MIS110206	08/08/2006	08/08/2006	04/01/2011

Herman Miller Inc-171st Avenue	MIS110712	11/21/2006	11/21/2006	04/01/2011
Herman Miller Inc-E Main	MIS210169	03/28/2007	04/01/2007	04/01/2012
Herman Miller Inc-Van Wagoner	MIS110459	11/21/2006	11/21/2006	04/01/2011
HS Die-Ottawa	MIS110784	08/16/2006	08/16/2006	04/01/2011
Grand Havenville MS4-Ottawa	MIG610211	09/01/2009	09/01/2009	04/01/2013
Indian Trails Childrens Camp	MIG580134	02/26/2009	04/01/2009	04/01/2014
ITW-Drawform	MIS210462	06/06/2007	06/06/2007	04/01/2012
Jerrys Citgo-Grand Haven	MIG080076	12/03/2004	04/01/2005	04/01/2010
Johnson Controls-Interior	MIS210141	07/30/2007	07/30/2007	04/01/2012
Johnston Boiler Co-Ferrysburg	MI0004022	04/12/2006	06/01/2006	10/01/2010
JSJ Corp-GHSP-North	MIS110669	06/28/2006	06/28/2006	04/01/2011
Kenowa Industries	MIS210607	05/24/2007	05/24/2007	04/01/2012
Kerkstra Precast Inc	MIS110207	03/07/2006	04/01/2006	04/01/2011
KH Farms-CAFO	MIG010008	02/01/2007	02/01/2007	04/01/2010
Koks Woodgoods Inc	MIS210541	03/28/2007	04/01/2007	04/01/2012
Kuperus Trucking Inc	MIS111426	07/12/2006	07/12/2006	04/01/2011
Light Corp	MIS111160	08/08/2006	08/08/2006	04/01/2011
Liquid Industrial Waste	MIS210717	05/10/2007	05/10/2007	04/01/2012
LKQ Self Service Auto Parts	MIS210609	03/28/2007	04/01/2007	04/01/2012
Louis Padnos Co-Holland	MIS210945	07/22/2008	07/22/2008	04/01/2012
Mead Johnson & Company	MI0000175	07/20/2007	09/01/2007	10/01/2011
Medallion Instrumentation Sys	MIS110203	12/27/2005	04/01/2006	04/01/2011
Meppelink Woods Inc	MIS210549	06/06/2007	06/06/2007	04/01/2012
Metron of Lamont NH	MIG570127	12/01/2004	04/01/2005	04/01/2010
North Shore Marina	MIS110807	12/13/2005	04/01/2006	04/01/2011
Northwest Ottawa Co-WTP	MIG640188	03/29/2005	04/01/2005	04/01/2010
ODL Incorporated	MIS210551	01/24/2007	04/01/2007	04/01/2012
Ottawa CDC MS4	MIG610203	08/27/2009	08/27/2009	04/01/2013
Ottawa County Farms Landfill	MIS111226	04/27/2006	04/27/2006	04/01/2011
Ottawa CRC	MI0044130	02/21/2007	05/01/2007	10/01/2011
Ottawa CRC MS4	MIG610117	08/27/2009	08/27/2009	04/01/2013
Ottawa CRC-Chester Twp WWSL	MIG580295	01/15/2009	04/01/2009	04/01/2014

Ottawa CRC-Crockery Twp WWTP	MI0056936	01/11/2006	04/01/2006	10/01/2010
Ottawa Turkey Farm-112th-CAFO	MI0058448	02/10/2009	02/10/2009	10/01/2013
Ottawa Turkey-The Hills-CAFO	MINPTD009	12/21/2007	12/21/2007	10/01/2012
Piano Factory-Grand Haven	MI0054399	11/10/2005	01/01/2006	10/01/2010
Plascore Inc	MIS210506	06/27/2007	06/27/2007	04/01/2012
Portercorp	MIS210128	09/19/2007	09/19/2007	04/01/2012
PQ Marine Holding Inc	MIS210939	05/28/2008	05/28/2008	04/01/2012
Precision Pork Farm-CAFO	MIG010086	10/29/2007	01/01/2008	04/01/2010
Prins Trucking Inc-Jenison	MIS110204	12/13/2005	04/01/2006	04/01/2011
Repolite Paints Inc	MIS210516	04/25/2007	04/25/2007	04/01/2012
River Haven MHP WWTP	MIG570128	02/17/2005	04/01/2005	04/01/2010
River Ridge Farms-CAFO	MIG010127	10/17/2007	01/01/2008	04/01/2010

Source: NMS Web Inquiry System: <http://www.deq.state.mi.us/owis/Page/main/Home.aspx>



Lower Grand River Watershed Project



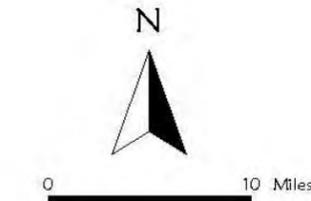
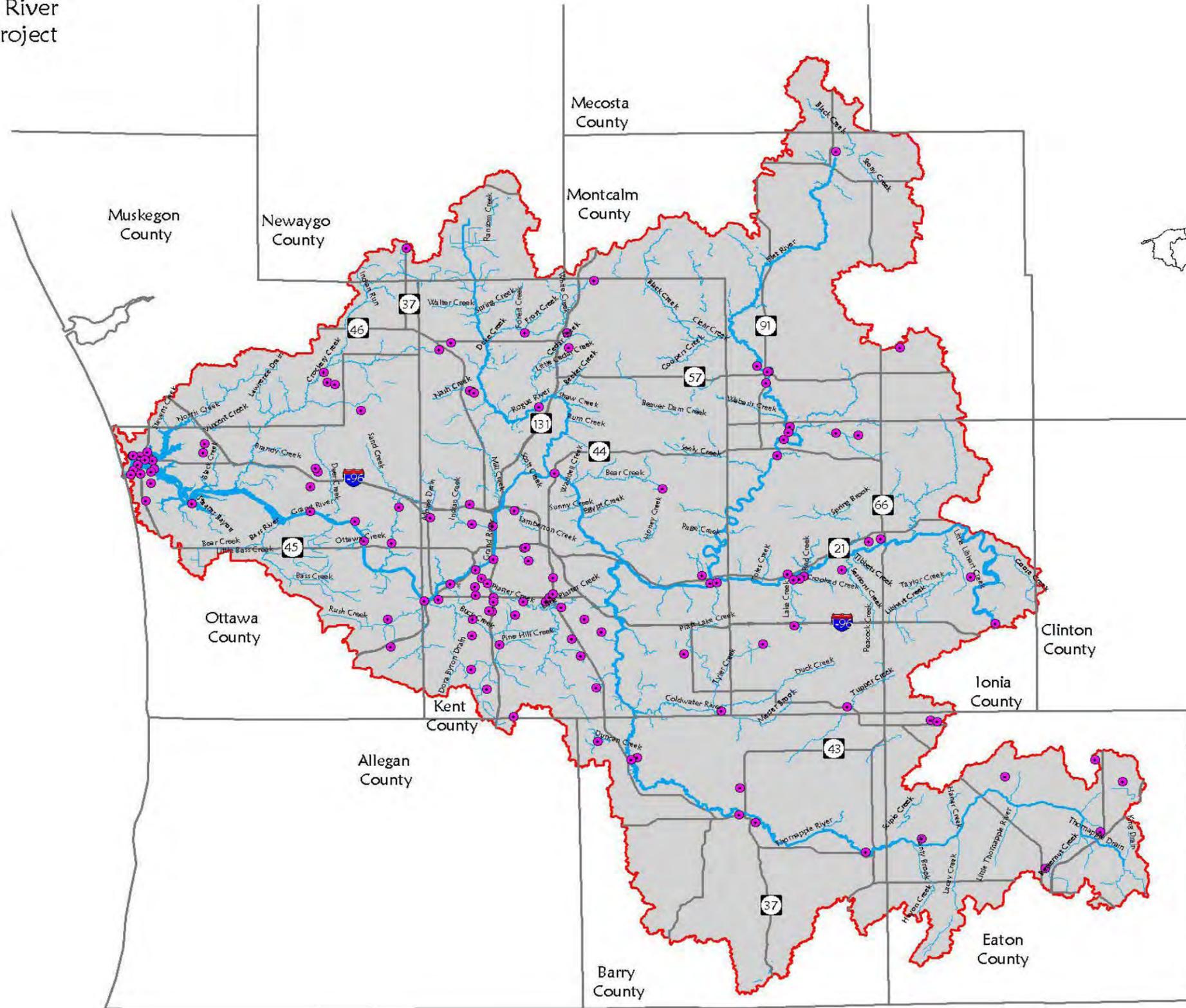
fi&h
fishbeil, douglas, curt & huber
engineers • scientists • architects

Information Services Center
Annis Water Resources Institute
Grand Valley State University

Map Prepared August, 2004

Base Information

- Interstate/Highway
- River/Stream
- County Boundary
- Watershed Boundary
- NPDES Permitted Outfalls



National Pollutant Discharge Elimination System Locations Lower Grand River Watershed

Figure 11

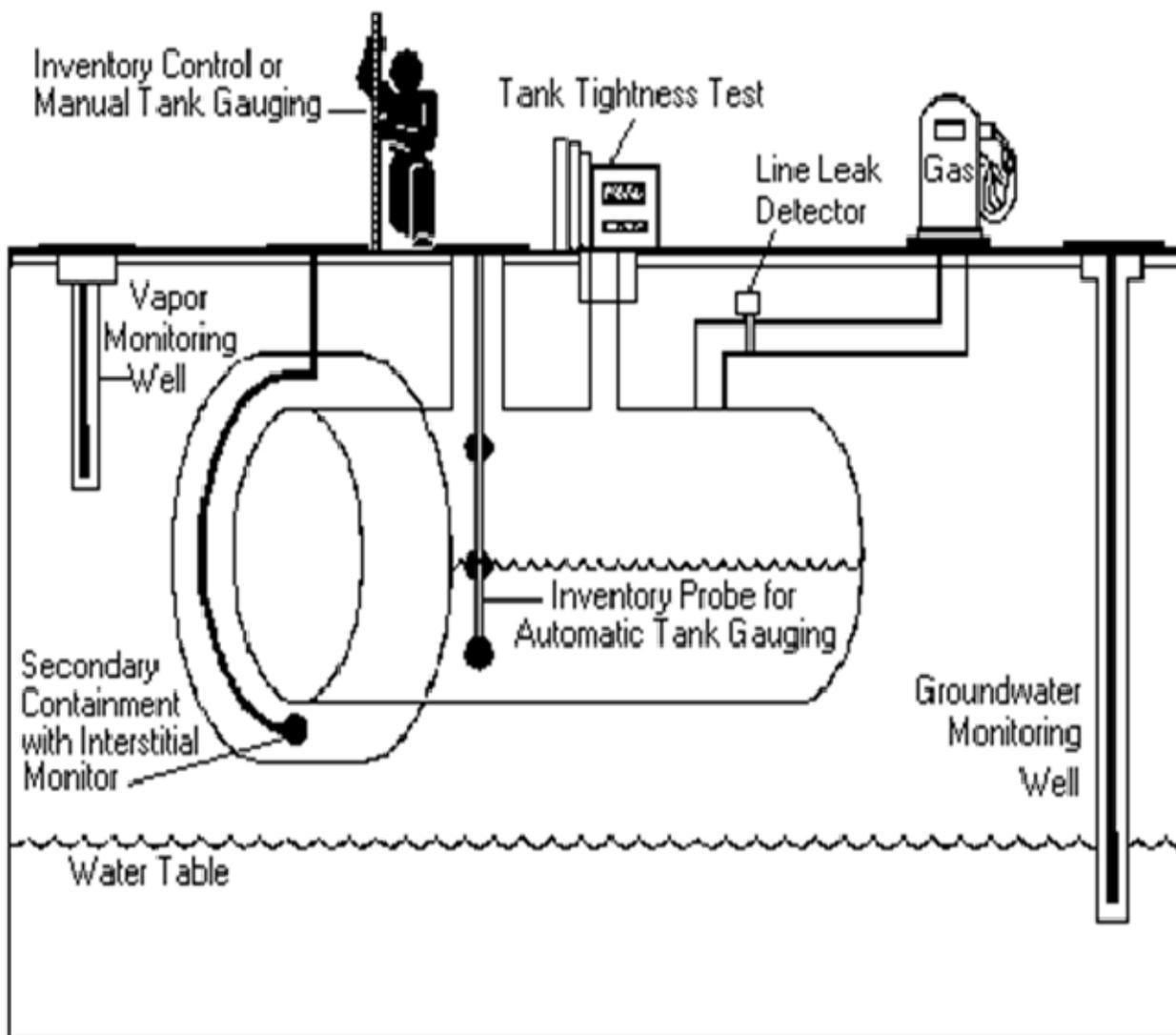
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for Geographic Information, Department
of Information Technology, 2004.
NPDES Locations: U.S. Environmental
Protection Agency, 2004.

Source Water Protection

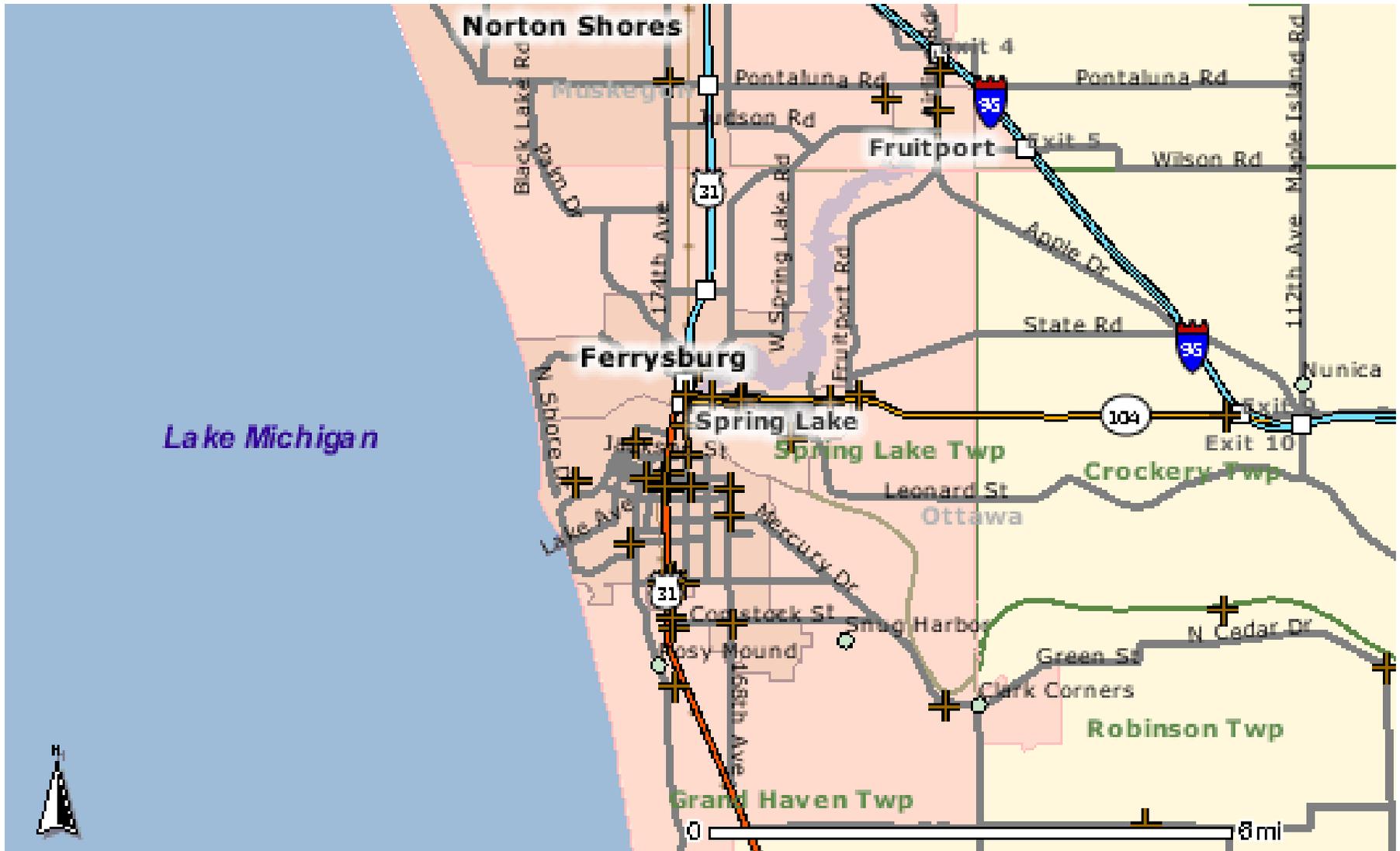
Underground Storage Tanks

(Tank, Facility and Owner Details)

City of Grand Haven - Ottawa County, Michigan

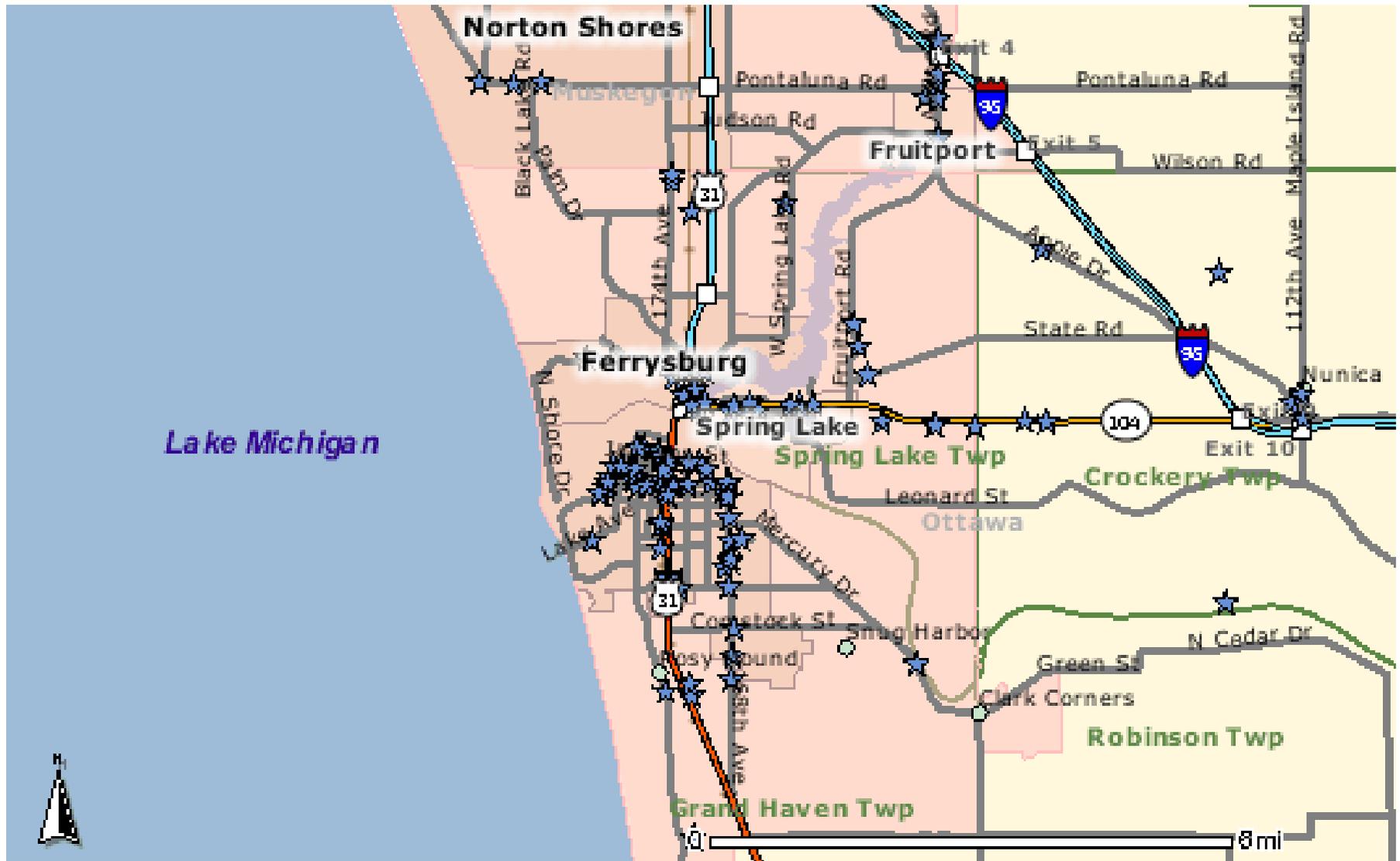


Underground Storage Tank Systems (Part 211)



✚ Active Tanks

Underground Storage Tank Systems (Part 211)



★ Closed Tanks

Underground Storage Tanks (Status: ACTIVE)

ACTIVE FACILITIES are those where there is at least one tank at the facility that is not closed in place or removed and is regulated under Part 211, Underground Storage Tank Regulations, of the Natural Resources and Environment Protection Act, 1994 PA 451, as amended (Act 451). There may be closed tanks and/or active non-regulated tanks (such as heating oil tanks) at the facility.

Facility ID	Facility Name	Facility Address	Owner Name	Owner Address	Active Tanks
<u>00001642</u>	<u>Admiral Petroleum #162</u>	12160 W Olive Rd Grand Haven, MI 49417 (616) 837-6218	Admiral Petroleum Co	13 E Randall St Coopersville, MI 49404 (616) 837-6218	2
<u>00017997</u>	<u>AGC Grand Haven LLC</u>	16750 Comstock St Grand Haven, MI 49417 (616) 842-1820	AGC Grand Haven LLC	16750 Comstock St Grand Haven, MI 49417 (616) 842-1820	2
<u>00012336</u>	<u>Clark</u>	300 N Beacon Blvd Grand Haven, MI 49417 231-864-3111	Blarney Castle Oil Co	PO Box 246 Bear Lake, MI 49614 (231) 864-3111	2
<u>00011722</u>	<u>Grand Haven Co</u>	501 Washington Ave Grand Haven, MI 49417 (866) 492-6836	AT&T Michigan	308 S Akard Ste 1700 Dallas, TX 75202 (887) 648-2073	1
<u>00003370</u>	<u>Grand Haven EZ Mart</u>	1 South Beacon Blvd Grand Haven, MI 49417 (231) 864-3111	Blarney Castle Oil Co	PO Box 246 Bear Lake, MI 49614 (231) 864-3111	4
<u>00013473</u>	<u>Grand Haven Shell Mini-Mart</u>	10 N Beacon Blvd Grand Haven, MI 49417 231-946-2800	Schmuckal Oil Co	1516 Barlow Traverse City, MI 49686 (231) 946-2800	3
<u>00009488</u>	<u>Grand Haven State Police Post</u>	1622 S Beacon Blvd Grand Haven, MI 49417 () -	MDMB - Vehicle & Travel Services	PO Box 30026 Lansing, MI 48909 (517) 322-5000	1
<u>00001731</u>	<u>Grand Haven-spring Lk S.Auth</u>	1525 Washington Ave Grand Haven, MI 49417 (616) 847-3485	Grand Haven Spring Lake Sewer Au	1525 Washington Ave Grand Haven, MI 49417 (616) 847-3485	2
<u>00016232</u>	<u>Grand Isle Marina</u>	1 Grand Isle Dr Grand Haven, MI 49417 (616) 842-9330	Marina Mgt Group Inc	ATTN Carl One Grand Isle Dr Grand Haven, MI 49417 () -	6
<u>00015683</u>	<u>Jerrys Citgo Service</u>	5 N Beacon Blvd Grand Haven, MI 49417 (616) 842-8650	Tri City Oil Copany Inc	PO Box 65 Ferrysburg, MI 49409 (616) 842-8650	4

<u>00003369</u>	<u>Marathon</u>	17200 Robbins Rd Grand Haven, MI 49417 (616) 847-2810	Kens Super Serve Inc	812 W Laketon Ave Muskegon, MI 49441 231- 755-4887	4
<u>00039799</u>	<u>Meijer #180</u>	1500 US-31 South Grand Haven, MI	Meijer Inc	2929 Walker Ave NW Grand Rapids, MI	2
<u>00005110</u>	<u>Msi #627</u>	540 S Beechtree St Grand Haven, MI 49417 (262) 242-4800	Bulk Petroleum Corporation	9653 N Granville Rd Mequon, WI 53097 (262) 242-4800	4
<u>00041979</u>	<u>Murphy USA 7443</u>		Murphy Oil USA Inc	200 Peach St El Dorado, AR 71730	2
<u>00007915</u>	<u>Norcal Foods Inc</u>	12837 Lincoln St Grand Haven, MI 49417 (616) 842-5410	Norcal Foods Inc	12837 Lincoln St Grand Haven, MI 49417 (616) 842-5410	2
<u>00005549</u>	North Ottawa Community Hospti.	1309 Sheldon Rd Grand Haven, MI 49417	North Ottawa Comm Hospital	1309 Sheldon Rd Grand Haven, MI 49417 (616) 842-3600	1
<u>00037981</u>	<u>Oakleas Party Store</u>	10398 N Cedar Dr Grand Haven, MI 49417 (616) 846-6811	North Cedar A & M Inc	10398 North Cedar Grand Haven, MI 49417 (616) 846-6811	2
<u>00032943</u>	<u>Ottawa County Road Commission</u>	Rosy Mound Dr at US-31 Grand Haven, MI 49417 (616) 850-7205	Ottawa Co Road Comm	PO Box 739 Grand Haven, MI 49417 (616) 842-5400	3
<u>00032867</u>	<u>River Haven Marina Inc</u>	15006 120th Ave Grand Haven, MI 49417 (616) 842-2458	River Haven Marina Inc	15006 120th Ave Grand Haven, MI 49417 (616) 842-2458	1
<u>00008545</u>	<u>Rycenga Building Center</u>	1053 Jackson St Grand Haven, MI 49417 (616) 842-5600	Rycenga Bldg Center	PO Box 569 Grand Haven, MI 49417 (616) 842-5600	2
<u>00020688</u>	<u>South Town Auto Wash</u>	832 Robbins Rd Grand Haven, MI 49417 (616) 846-0847	South Town Auto Wash	832 Robbins Rd Grand Haven, MI 49417 (616) 842-5750	3
<u>00012030</u>	<u>Town & Country Cleaners</u>	947 Robbins Rd Grand Haven, MI 49417 (616) 842-1610	Brimarc, Inc	947 Robbins Rd Grand Haven, MI 49417 (616) 842-1610	1
<u>00013748</u>	<u>Wesco #7</u>	14750 Mercury Dr Grand Haven, MI 49417 (231) 719-4300	Wesco Inc	1460 Whitehall Rd Muskegon, MI 49445 (231) 719-4300	4
<u>00003354</u>	<u>West Olive Ez Mart</u>	11240 W Olive Rd Grand Haven, MI 49417 231-864-3111	Blarney Castle Oil Co	PO Box 246 Bear Lake, MI 49614 (231) 864-3111	2
<u>00018531</u>	<u>Wharf Marina</u>	501 North 3rd Street Grand Haven, MI 49417 (616) 842-5370	Parkland Properties, Jonathan Rooks	940 Monroe Ave Ste 155 Grand Rapids, MI 49503 (616) 988-6466	1

Underground Storage Tanks (Status: CLOSED)

CLOSED FACILITIES are those where all tanks at the facility that are regulated under Part 211 of Act 451 are closed. There may be non-regulated active tanks at the facility, such as heating oil tanks or tanks that are smaller than the regulatory cutoff.

Facility ID	Facility Name	Facility Address	Owner Name	Owner Address	Active Tanks
00007031	Amoco Oil Co	20 N THIRD & COLUMBUS GRAND HAVEN, MI 49417 (313) 855-8388	Amoco Petroleum Products	17187 N Laurel Park Ste 365 Livonia, MI 48152 (734) 953-7013	0
00015684	Atcoflex, Inc	14261 172nd Ave Grand Haven, MI 49417 (616) 842-4661	Atcoflex, Inc	14261 172nd Ave Grand Haven, MI 49417 (616) 842-4661	0
00002653	Betten Auto Center Inc	810 Robbins Rd Grand Haven, MI 49417 (616) 842-5750	Betten Auto Ctr Inc	810 Robbins Rd Grand Haven, MI 49417 (616) 842-5750	0
00004436	Boulevard Union 76 Serv.	200 N Beacon Blvd Grand Haven, MI 49417 (616) 842-8910	Gary Thompson	200 N Beacon Blvd Grand Haven, MI 49417 (616) 842-8910	0
00015688	Boulevard Used Cars	421 N 7TH GRAND HAVEN, MI 49417 (000) 000-0000	Tri City Oil Copany Inc	PO Box 65 Ferrysburg, MI 49409 (616) 842-8650	0
50001288	Burger King	1710 S Beacon Blvd Grand Haven, MI 49417 (616) 777-2781	Nrt Owner		0
00019994	Challenge Machinery Co	1433 Fulton St Grand Haven, MI 49417 (616) 842-8300	Challenge Machinery Co	1433 Fulton St Grand Haven, MI 49417 (616) 842-8300	0
00034542	City Of Grand Haven	525 Washington Ave Grand Haven, MI 49417 (616) 842-2550	City Of Grand Haven	519 Washington Ave Grand Haven, MI 49417 (616) 842-4430	0
00020192	County Jail	415 Franklin St Grand Haven, MI 49417 (616) 848-8371	County Of Ottawa	414 WASHINGTON GRAND HAVEN, MI 49417 (616) 846-8371	0
00012637	Dicks Landing	10367 N Cedar Dr Grand Haven, MI 49417 (616) 842-1078	Richard Ten Brink	10367 N Cedar Dr Grand Haven, MI 49417 (616) 842-1078	0

00000426	Diesel Plant	518 HARBOR AVENUE GRAND HAVEN, MI 49417 (616) 842-6355	Grand Haven Board of Light & Power	1700 Eaton Dr Grand Haven, MI 49417 (616) 842-6355	0
00017110	Downtown Sunoco Service	333 Washington Ave Grand Haven, MI 49417 (616) 846-3210	Downtown Sunoco Serv	333 Washington Ave Grand Haven, MI 49417 (616) 846-3210	0
00009156	Eagle Ottawa Leather Co	200 N Beechtree St Grand Haven, MI 49417 (616) 842-4000	Eagle Ottawa Leather Co	200 N Beechtree St Grand Haven, MI 49417 (616) 842-4000	0
00006140	Education Service Center	1415 S Beechtree St Grand Haven, MI 49417 (616) 850-5120	Grand Haven Area Public Schools	1415 S Beechtree St Grand Haven, MI 49417 (616) 850-5150	0
00003839	Engine Power Components, Inc	1333 Fulton St Grand Haven, MI 49417 (616) 846-0110	Engine Power Components, Inc	1333 Fulton St Grand Haven, MI 49417 (616) 846-0110	0
00038002	Fitzpatric Electric	17276 Robbins Rd Grand Haven, MI 49417 (616) 846-6178	Robbins Road Development	15101 152nd Ave Grand Haven, MI 49417 (616) 846-6178	0
00041377	Former Becon Muffler Property	519 N Beacon Blvd Grand Haven, MI 49417 231-744-3358	Jack Cooper	519 N Beacon Blvd Grand Haven, MI 49417 231-774-3358	0
00005109	Former Bulk Petroleum #628	327 Beacon Blvd Grand Haven, MI 49417 (616) 842-7563	Elizabeth/Kenneth/Emily Johnson & Marylyn ColemanTrust	17746 168th Avenue Spring Lake, MI 49456 (616) 842-7563	0
00041868	Former Fulton Service	1106 Fulton St Grand Haven, MI 49417 (616) 846-2701	Love Inc	1106 Fulton St Grand Haven, MI 49417 (616) 846-2701	0
00009357	Former Haven Modern Laundry	1447 Washington Ave Grand Haven, MI 49417 (616) 846-9165	Edwin Oom	Po Box 539 Grand Haven, Mi 49417 (616) 846-9165	0
50002731	Former Russ's Truck Palace	431 N GRIFFIN GRAND HAVEN, MI 49417 () -	Nrt Owner		0
00037051	Freds Super Service	200 N 7th St Grand Haven, MI 49417 (618) 232-2888	Brett Warrington	105 Oak Tree Dr Mount Horeb, WI 53572 (618) 232-2888	0
00005824	Gast Things Ivii	501 N Beacon Blvd Grand Haven, MI 49417 (616) 392-7036	Beacon Boulevard Corp	11372 E Lakewood Blvd Holland, MI 49422 (616) 392-7036	0
00004845	Gils Standard Service	20 N THIRD ST GRAND HAVEN, MI 49417 (616) 846-3540	Gilbert Johnson:Xref On 1-004845	18030 Mohawk Dr Spring Lake, MI 49456 (616) 846-3135	0

00020378	Grabman Associates Inc	740 Taylor Ave Grand Haven, MI 49417 (616) 842-3020	Mr Grabman	PO Box 779 Grand Haven, MI 49417 (616) 842-3020	0
00001137	Grand Haven Airport	16446 Comstock St Grand Haven, MI 49417 (616) 842-4430	City Of Grand Haven	519 Washington Ave Grand Haven, MI 49417 (616) 842-4430	0
50000254	Grand Haven BWL	530 HARBOR AVE GRAND HAVEN, MI 49417 () -	Nrt Owner		0
00035391	Grand Haven Golf Club Inc	17000 Lincoln St Grand Haven, MI 49417 (616) 842-3970	Lakeshore Golf Club Inc	17000 Lincoln St Grand Haven, MI 49417 (616) 842-4040	0
00034453	Grand Haven Municipal Marina	101 N HARBOR DR GRAND HAVEN, MI 49417 (616) 842-3450	City Of Grand Haven	519 Washington Ave Grand Haven, MI 49417 (616) 842-4430	0
00008502	Grand Haven Pacific Pride	815 Verhoeks St Grand Haven, MI 49417 (616) 392-8249	Merle Boes Inc	11372 E Lakewood Blvd Holland, MI 49424 (616) 392-8249	0
00017330	Grand Haven Stamped Products	1250 S Beechtree St Grand Haven, MI 49417 (616) 847-7410	Grand Haven Stamped Products Co	1250 S Beechtree Grand Haven, MI 49417 (616) 842-5500	0
00000473	Grand Haven Twp	1330 168TH AVE GRAND HAVEN, MI 49417 (616) 842-5988	Grand Haven Twp	1330 168TH AVE GRAND HAVEN, MI 49417 (616) 842-5988	0
00015665	Grand Transformers Inc	1500 Marion Ave Grand Haven, MI 49417 (616) 842-5430	Grand Transformers Inc	1500 Marion Ave Grand Haven, MI 49417 (616) 842-5430	0
00001558	Grand Valley Marine Ii	1211 Jackson St Grand Haven, MI 49417 (616) 842-4670	Grand Valley Marine Inc	3125 28TH ST SW GRANDVILLE, MI 49418 (616) 538-2460	0
00005119	Harbor Industries	14130 172nd Ave Grand Haven, MI 49417 (616) 842-5330	Tri City Oil Copany Inc	PO Box 65 Ferrysburg, MI 49409 (616) 842-8650	0
00000389	J.b. Sims Generating Station	1231 N THIRD ST GRAND HAVEN, MI 49417 (616) 842-6355	Grand Haven Board of Light & Power	1700 Eaton Dr Grand Haven, MI 49417 (616) 842-6355	0
00011813	Jerry Timmer Chevrolet	1701 S Beacon Blvd Grand Haven, MI 49417 (616) 842-2250	Jerry Timmer Chev Inc	PO Box 69 Grand Havenville, MI 49426 (616) 842-2250	0
00009978	Jerry Timmer Chevrolet, Inc	1625 S Beacon Blvd Grand Haven, MI 49417 (616) 842-2250	Jerry Timmer Chev Inc	PO Box 69 Grand Havenville, MI 49426 (616) 842-2250	0

00011486	John Zelenka Evergreen Nurs.	16127 Winans St Grand Haven, MI 49417 (616) 773-3225	Superior Oil Co of Michigan	1753 Madison St Muskegon, MI 49442 (616) 777-2781	0
00034498	Lake Forest Cemetery	1304 LAKE AVENUE GRAND HAVEN, MI 49417 (616) 847-3492	City Of Grand Haven	1304 LAKE AVE GRAND HAVEN, MI 49417 (616) 847-3492	0
00035785	Mathews Furniture	803 Verhoeks St Grand Haven, MI 49417 (616) 842-6023	AT&T Michigan	308 S Akard Ste 1700 Dallas, TX 75202 (887) 648-2073	0
00005084	Michigan Gas Utilities Co	310 S Harbor Dr Grand Haven, MI 49417 (616) 692-6351	Michigan Gas Utilities	742 E Allegan St Otsego, MI 49078 (734) 242-5555	0
00041532	NJM LLC	200 S Harbor Dr Grand Haven, MI 49417 (616) 842-5837	NJM LLC	1417 Colfax Grand Haven, MI 49417 (616) 842-5837	0
00035423	Northwest Ottawa Water Plant	30 Sherman St Grand Haven, MI 49417 (616) 847-3487	Northwest Ottawa Water Plant	519 Washington Grand Haven, MI 49417 (616) 847-3488	0
00034259	Nw Ottawa Water Intake Plant	1001 S Harbor Dr Grand Haven, MI 49417 616-847-3488	Northwest Ottawa Water Plant	519 Washington Grand Haven, MI 49417 (616) 847-3488	0
00041739	Old Farmstead	1800 168th Avenue Grand Haven, MI 49417 (231) 777-3447	Alma Louise Munch Trust	15692 Pruin St Spring Lake, MI 49456 (231) 846-2693	0
00017237	Ottawa County Road Commission	616 NORTH SIXTH ST GRAND HAVEN, MI 49417 (616) 842-5400	Ottawa Co Road Comm	PO Box 739 Grand Haven, MI 49417 (616) 842-5400	0
00041399	Presley Auto Body & Glass	482 S Beechtree St Grand Haven, MI 49417 616-842-9361	John Viraldo	482 S Beechtree St Grand Haven, MI 49417 (616) 842-9361	0
00000958	R.a. Miller Ind. Inc	14500 168th Ave Grand Haven, MI 49417 (616) 842-9450	R.A. Miller Ind. Inc	14500 168th Ave Grand Haven, MI 49417 (616) 842-9450	0
00000925	Redeker Ford Inc	1401 S Beacon Blvd Grand Haven, MI 49417 (616) 842-0600	Redeker Ford Inc	1401 S Beacon Blvd Grand Haven, MI 49417 (616) 842-0600	0
00041576	Rendervous Restaurant	401 North 7th Street Grand Haven, MI 49417 (616) 846-6584	Phillip J Glaser	17780 Cove Spring Lake, MI 49409 (616) 846-6584	0
00000242	Robinson Twp Fire Dept	12010 120th Ave Grand Haven, MI 49417 (616) 846-2219	Robinson Twp Fire Dept	12010 120th Ave Grand Haven, MI 49417 (616) 846-2219	0

00006654	Rv Terrill Public Service Bldg	1120 Jackson St Grand Haven, MI 49417 (616) 847-3492	City Of Grand Haven	519 Washington Ave Grand Haven, MI 49417 (616) 842-4430	0
00009938	Ryder Truck Rental	14375 172ND AVE GRAND HAVEN, MI 49417 (616) 538-2804	Ryder Truck Rental	852 47th St SW Wyoming, MI 49509 (616) 538-2804	0
50001211	Schmuckal Oil	Beacon & Washington Grand Haven, MI 49417 () -	Nrt Owner		0
00041678	Shamrock Resturant	121 Beechtree St Grand Haven, MI 49417 (616) 844-5050	Mike Steele	410 Wildwood Dr Holland, MI 49423 (616) 396-5505	0
00017748	Shape Corp	1900 Hayes St Grand Haven, MI 49417 (616) 846-8700	Shape Corp	1900 Hayes St Grand Haven, MI 49417 (616) 846-8700	0
00004316	Shell Oil Co	740 NORTH 3RD ST GRAND HAVEN, MI 49417 (708) 572-5569	Shell Oil Products Co	ATTN:R K WILLIAMS PO BOX 2099 HOUSTON, TX 77252 (713) 241-3567	0
00015685	Shortys Boats	14999 Mercury Dr Grand Haven, MI 49417 (999) 999-9999	Tri City Oil Copany Inc	PO Box 65 Ferrysburg, MI 49409 (616) 842-8650	0
00033723	St Patricks Church	920 Fulton St Grand Haven, MI 49417 (616) 842-0001	St Patricks Church	920 Fulton St Grand Haven, MI 49417 (616) 842-9684	0
50000248	Stan Co Products	104 FULTON ST GRAND HAVEN, MI 49417 () -	Nrt Owner		0
00009204	Standard Sand Corp	14201 LAKESHORE DRIVE GRAND HAVEN, MI 49417 (616) 842-5180	Standard Sand Corp	14201 LAKESHORE DR P O BOX 2 GRAND HAVEN, MI 49417 (616) 842-5180	0
00041075	The Noble Co	614 Monroe St Grand Haven, MI 49417 231-799-8000	The Noble Co	PO Box 350 Grand Haven, MI 49417 231-799-8000	0
00036462	The Wharf Marina, Inc	212 N 3rd St Grand Haven, MI 49417 (616) 842-5370	The Wharf Marina	501 North 3rd Street Grand Haven, MI 49417 (616) 842-5370	0
00017022	United #6279	445 N Beacon Blvd Grand Haven, MI 49417 () -	Speedway SuperAmerica LLC	PO Box 1500 Springfield, OH 45501 (937) 863-6513	0
50000249	Wayne By-products	14865 LAKE MICH DR GRAND HAVEN, MI 49417 () -	Nrt Owner		0

00004834	Weavers Iron & Metals	701 N 6th St Grand Haven, MI 49417 (616) 842-7740	Weavers Iron & Metals	701 N 6th St Grand Haven, MI 49417 (616) 842-7740	0
00001092	Wessels Inc	102 HARBOR GRAND HAVEN, MI 49417 (616) 842-0750	Wessels Inc	102 HARBOR GRAND HAVEN, MI 49417 (616) 842-0750	0
00016226	Windward Products Inc	1605 Marion Ave Grand Haven, MI 49417 (616) 459-6121	Atco Rubber Products Inc	C/O JON P BACHELDER 900 OLD KENT BUILDING GRAND RAPIDS, MI 49503 (616) 459-6121	0
00001444	Z-tire (formerly)	430 N Beacon Blvd Grand Haven, MI 49417 (616) 453-6711	Meijer Inc	2929 Walker Ave NW Grand Rapids, MI 49544 (616) 791-3390	0