

Rogers City Wellhead Protection Plan

Prepared by:

ROGERS CITY WATER DEPARTMENT

ROGERS CITY WELLHEAD PROTECTION COMMITTEE

With the Assistance of:

NORTHEAST MICHIGAN COUNCIL OF GOVERNMENTS

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Completed: September of 2002



ROGERS CITY WELLHEAD PROTECTION PLAN

Rogers City
Presque Isle County
Michigan

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and

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Chapter 1– Introduction

The communities of Rogers City and Rogers Township depend upon groundwater sources to supply drinking water. Rogers City provides water to residents and businesses through a municipal water system. Residents and businesses in Rogers Township rely on individual private wells for drinking water. The underground soil and bedrock aquifers, that supply drinking water, are highly vulnerable to contamination from a number of potential sources of pollution. The protection of this valuable, yet vulnerable resource is both a quality of life and an economic issue for the communities.

By definition, the wellhead is the physical structure at the land surface from which the groundwater is drawn from the subsurface aquifer. A Wellhead Protection Area (WHPA) as defined by Federal law is “the surface and subsurface area surrounding a water well or wellfield, through which contaminants are reasonably likely to move toward and reach such well or well field.” The ten-year capture zone delineation (wellhead protection area) was completed for wells #1,#3 and #4 in 2000.

The purpose of this wellhead protection plan is to establish a process to protect the groundwater resources and resulting public water supply for the City of Rogers City. The process involves formulating and implementing a set of actions and management practices to protect the water supply from potential sources of contamination. The primary focus of these activities will be in the WHPA or delineated ten-year capture zone. This plan was prepared in accordance with the Michigan Wellhead Protection Program.

A proactive approach to WHPA planning will help minimize and potentially prevent contamination of aquifers and community’s drinking water supplies. The benefits of such an approach include the protection of: public health, groundwater and drinking water resources, the community’s investment in its public water supply system, property values, the community image, and the community’s economic base. Wells are expensive to construct and contaminated groundwater is costly to treat. The environmental cleanup of contaminated groundwater is a lengthy and very costly endeavor. Preventing groundwater contamination is far less costly than cleaning up groundwater after it is contaminated.

Michigan’s Wellhead Protection Program

Michigan’s Wellhead Protection (WHP) Program was developed in response to amendments to the Federal Safe Drinking Water Act. The 1986 amendment mandated that each state develop a wellhead protection program. The State of Michigan prepared a program that was approved by the United States Environmental Protection Agency in 1994. Michigan’s WHP Program is voluntary. However, communities choosing to participate must follow criteria established by the State program and local programs must be developed by public agencies that operate the public water supply system. The State of Michigan administers a program that provides grants to local communities to delineate 10-year capture zones, develop wellhead protection plans and implement

management activities identified in the plans. The grants require a 50 percent match by local communities. This plan and related education activities was funded by the Michigan Department of Environmental Quality and the City of Rogers City.

Wellhead Protection Team

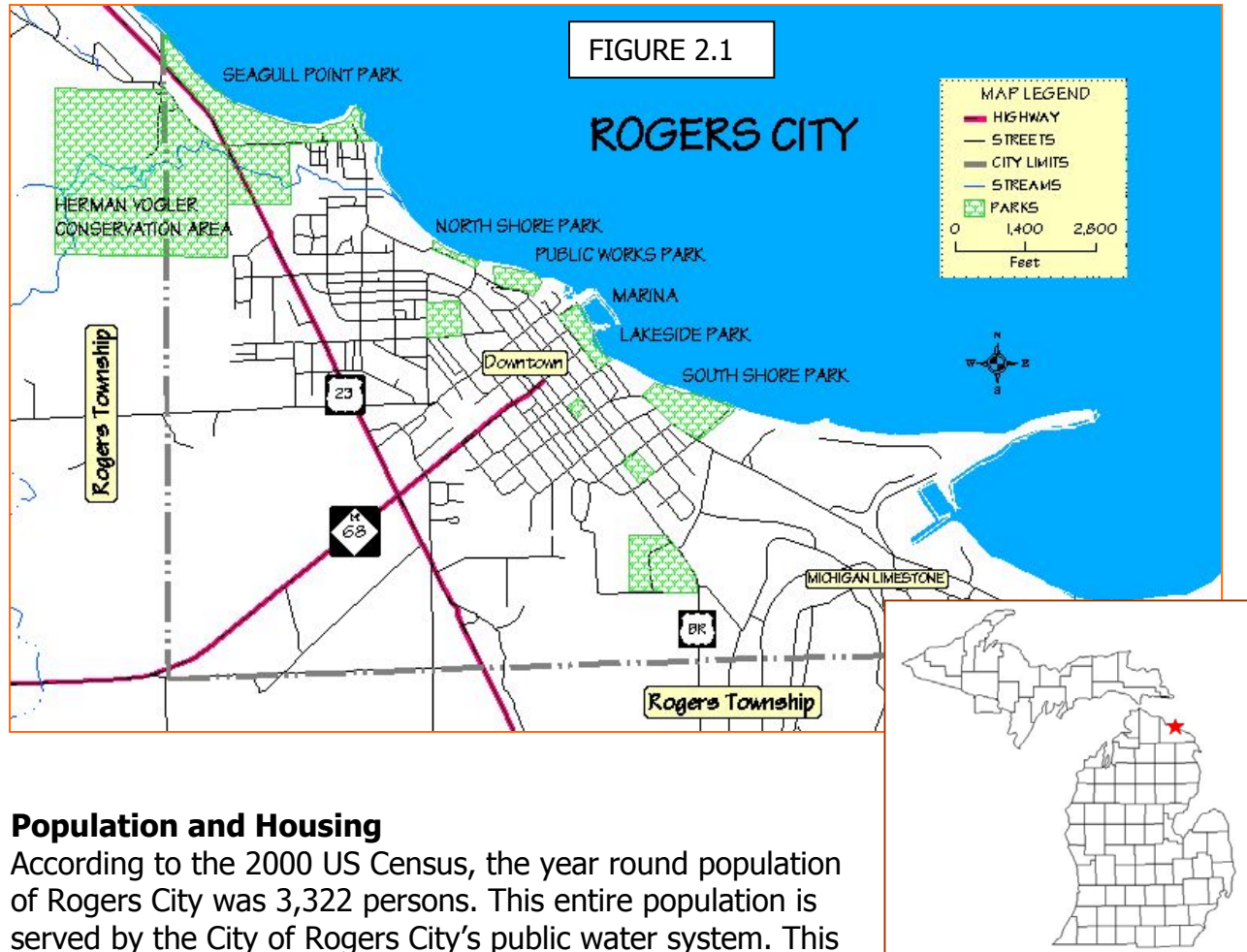
A local committee was formed in accordance with the Michigan WHP Program Guidelines. This committee played an integral in the planning process, providing guidance and input throughout the plan development. In addition, committee members will be involved in the implementation of the plan.

<u>Committee Members</u>	<u>Organization</u>	<u>Representing</u>
Ron Krawczak	City Water Superintendent	PWSS Superintendent
Debra Greene	City Councilman	Municipality
Frank Krist	District Health Dept. #4	Local Health Department
Jean Gross	District Health Dept. #4	Local Health Department
Robert Paschke	County Emerg. Services Coord.	Local Fire Department
Ann Derry	Michigan Limestone	Business and Industry
Patrick Henry	MI Groundwater Stewardship	Agriculture
Lori Leow	St. Ignatius School	Education
John Plath	Plath’s Meat Market	General Public
Richard Deuell	NEMCOG	Planning
Carol Warren	MI Groundwater Stewardship	Environmental Organization
Tom Radka	Rogers Township	Adjacent Community

Chapter 2 – Existing Conditions

Location and Regional Setting

Rogers City is located in the northeastern part of the lower peninsula of Michigan. Rogers City serves as the county seat for Presque Isle County. The City is situated on Lake Huron with its northern border being the shores of the Great Lake. The Township of Rogers borders the other three sides of the City. Figure 2.1 depicts the City of Rogers City.



Population and Housing

According to the 2000 US Census, the year round population of Rogers City was 3,322 persons. This entire population is served by the City of Rogers City's public water system. This is a 8.8 percent decrease from the 1990 population of 3,642. Data from the 2000 Census shows a total of 1,626 housing units in Rogers City. The breakdown of housing showed 1,113 were owner occupied and 367 were renter occupied. Furthermore, of the 1,626 housing units, 1514 were classified as occupied and 146 units were vacant, with 34 of those vacant units being classified as seasonal.

Soils and Geology

Groundwater quality and quantity, as well as the vulnerability of the aquifers, is influenced by the geology and soils. Starting some 2 million years ago, during the Pleistocene era, continental glaciers formed in the Hudson Bay area. Several times,

over this two million year period, the massive sheets of ice built up and inched their way south across what is today Michigan. The massive ice sheets, more than one mile

thick, advanced in a southerly direction, bulldozing their way across the landscape. The glacier pushed material in front of it, incorporated rocks and soil into the debris laden ice; and scraped, ground and broke apart the sedimentary bedrock of the Michigan Basin. The last glacial period, called the Wisconsin era, created the landscape we know today. The glacier left behind boulders, rocks, cobble, sand, gravel, silt, clay and loam. Soils in the Rogers City area primarily consist of a thin mantle of unconsolidated material, deposited by retreating glaciers and pro-glacial Great Lakes. According to the ten-year capture zone delineation reports, prepared by C.J. Linck & Associates, the thickest glacial/post glacial deposits are found near the lakeshore. The upper layer is sand and gravel ranging from 25-40 feet thick. Beneath the sand and gravel is a layer of clayey tills which in turn rests on a sedimentary bedrock foundation. Wells #1 and #3 are drilled in the sand and gravel materials. Though these wells are able to produce high volumes of water, the unprotected shallow aquifers are very vulnerable to contamination.

The presence of limestone bedrock at or near the surface influences the hydrology. Beneath the mantle of glacial deposits is sedimentary bedrock that was created during the upper and lower Devonian ages of the Paleozoic Era. The bedrock was formed in ancient seas, which covered the area some 345 to 405 million years ago. The shallow marine seas deposited layers of silt, clay, sediments, marine animals, plants, coral, and other calcareous materials. These deposits formed shale, limestone, and dolomite bedrock. Michigan Limestone, located in the eastern part of the City, mines and processes these deposits.

Topography of the underlying bedrock essentially reflects the surface topography. Near the lakeshore the bedrock elevation is approximately 500 feet above sea level and rises to nearly 700 feet above sea level in the southeast corner of the city. Depth to bedrock ranges from approximately 80 feet along the Lake Huron shoreline to within 10 feet of the surface near the southern city limits. Most private wells south of the City are in limestone bedrock. Municipal wells between 1920 and the late 1940's were drilled into the limestone bedrock. Current production well #4 was also drilled into the deeper limestone aquifer.

Land Uses

The potential for groundwater contamination is related to types and intensities of land uses. Intensive agricultural operations, commercial and industrial development, and high density residential development with onsite septic have a much greater potential than open space and low density residential development. Commercial development is concentrated in the central business district and west along N. 3rd Street to US-23. Newer commercial development is located around the intersection of M-68 and US-23 and north along US-23. Older industrial development was located along the lakeshore, however, much of this has been abandoned and converted to other uses. One

exception to this trend is the Michigan Limestone operation, located in the northeast portions of the City. A newer industrial park is located north of the Rogers City Airport. With the exception of institutional uses, the balance of the developed portions of Rogers City is residential. Minimal development has occurred in the southwestern portions of the City.

Water Supply Wells

There are currently three producing wells. Wells #1 and #3 are relatively shallow, located in the sand and gravel glacial and post glacial deposits near the lakeshore. Well #1 was drilled in 1948 and rebuilt in 1995. The well is completed in coarse gravel at a depth of 41 feet. Yield is very good at 550 gallons per minute. Well #3 was drilled in 1961 to a depth of 38 feet and is completed in coarse gravel. This well produces 600 gallons per minute. Well #4 is drilled to a depth of 160 feet deep into the Dundee formation of fractured limestone bedrock. There is over 80 feet of gravely clay capping the limestone at this location. Well #4 produces 500 gallons per minute. Rogers City is developing a new production well #5 near the current well #3. The well is at a depth of 140 feet and is drilled into the same bedrock formation as well #4. Figure 2.2 shows the location of public wells in Rogers City.

Michigan Limestone and Chemical Company developed the first central water system in 1920. One 6 inch well was drilled 150 feet deep to extract groundwater from the underlying limestone aquifer. The system was developed to serve a group of company owned houses along Lake Street. This well, though no longer used for production, is free flowing and creates a small creek that flows into Lakeside Park.

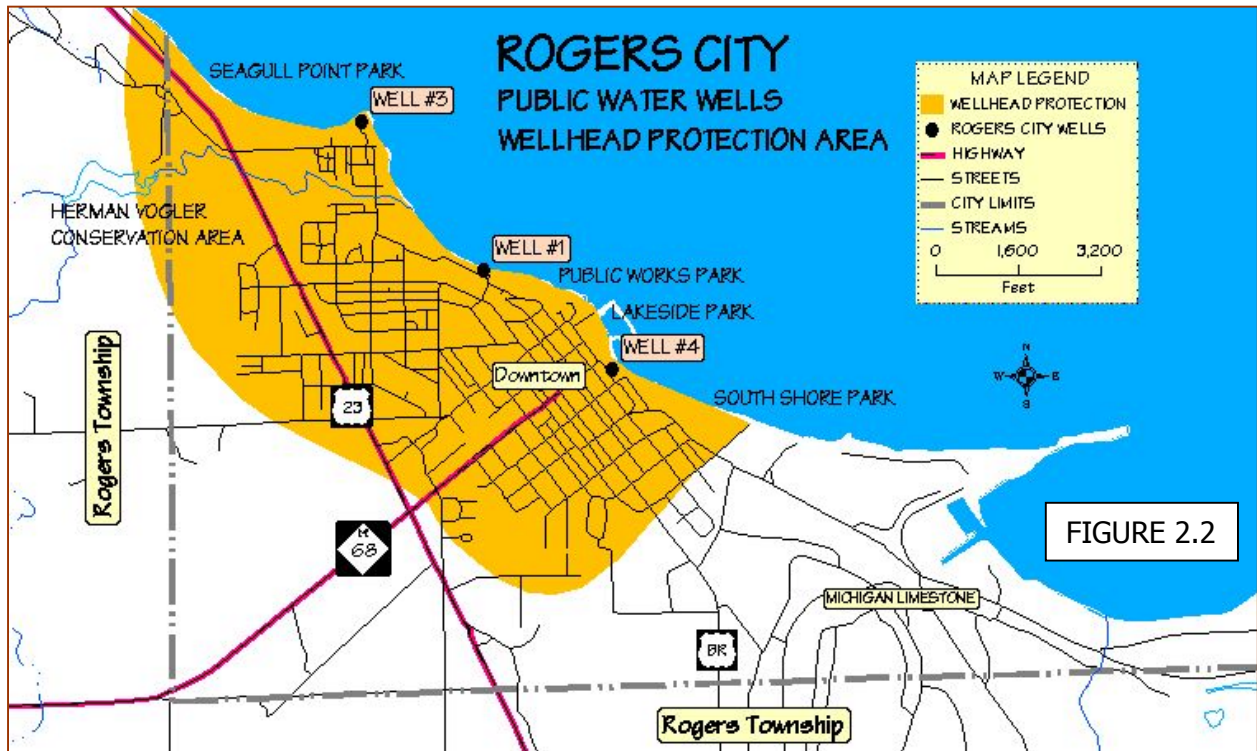


FIGURE 2.2

In 1930, water system ownership was transferred to the Rogers City Light and Power Company. The service area was expanded and improvements were completed including the development of two 8 inch wells. In 1948, the Friedrich Street well was developed in gravel substratum. Contamination from dry cleaning waste was detected in 1957 and one year later, equipment was installed to control odor/taste.

Rogers City took over the water utility in 1959 and has operated the water system since that time. Since that time, additional production wells were developed and the older wells were abandoned and plugged. The utility has encountered its share of problems, however, all have appeared to be satisfactorily resolved over the years.

10 Year Capture Zone Delineation and Map

With a commitment to take a proactive approach to managing the groundwater resources in the community, Rogers City decided to participate in Michigan's Wellhead Protection Program. The City applied to the State's wellhead protection grant program to secure funding to assist with identifying the wellhead protection area. C.J. Linck & Associates was hired to conduct studies with the goal of delineating the 10 year capture zones for wells #1, #3 and #4. The studies were completed in 2000 and subsequently approved by the State of Michigan. Figure 2.2 shows the combined wellhead protection areas for wells #1, #3 and #4. The wellhead protection area is shown as orange on the map.

Chapter 3– Potential Source of Contamination

The next step in developing a Wellhead Protection Plan is to identify potential sources of contamination within the wellhead protection area. Considering that Rogers City draws their drinking water from this wellhead area, it is imperative that management programs be implemented to prevent contamination from occurring.

This section provides information on both *known* and *suspected* sources of groundwater contamination. Several information sources were used to complete this section: Presque Isle County Groundwater Protection Manual, databases posted on MDEQ and EPA web sites, phone calls and a field survey. The information was reviewed by the local wellhead protection team. A map depicting the location of potential sites is included at the end of this chapter.

Leaking Underground Storage Tanks (LUST) *known*

The information in **Table 3.1** is a list of Leaking Underground Storage Tanks located within the groundwater recharge area of Rogers City. This list was provided by the Michigan Department of Environmental Quality (MDEQ).

Explanation of tank status can be found below.

Open LUST

A location where a release has occurred from an underground storage tank system, and where corrective actions have not been completed to meet the appropriate land use criteria. An *Open LUST* site may have more than one release.

Closed LUST

A location where a release has occurred from an underground storage tank system, and where corrective actions have been completed to meet the appropriate land use criteria.

A site listed as *Closed*, is subject to an audit by the Storage Tank Division, within 6 months of the date of receipt of the closure report. The date of receipt of the closure reports will be included in future list postings. If an audit does not confirm that corrective action has been conducted in compliance with Part 213 or that cleanup criteria have not been met the owner or operator may need to provide additional information or retain a consultant to take additional corrective actions. Until such time as the report indicates that the corrective actions are complete the facility will remain "open."

Open Release

The detection of chemicals from an underground storage tank in the groundwater, surface water, or subsurface soils and reported to the Storage Tank Division. An *Open Release* results in an *Open LUST* site.

Closed Release

Corrective actions have been completed to meet the appropriate land use criteria for the specific release that was reported.

Table 3.1 Rogers City Leaking Underground Storage Tanks (LUST)				
Tank Status	Release Date	Name	Address	City
Open	1/9/95	B & G Standard Service	107 South 3rd	Rogers City
Open	12/27/92	Cash Automotive	1186 West 3rd St.	Rogers City
Open	10/19/98	Cash's Automotive	1186 West 3rd St.	Rogers City
Open	11/27/00	Darga Forest Products	780 Pinewood Ave.	Rogers City
Open	3/5/91	Hawks Service Center	459 S Third St.	Rogers City
Open	6/16/95	Rogers City Gas Station	338 North 3rd St.	Rogers City
Closed	10/8/99	"Basel Oil Co., Inc."	1301 Cedar	Rogers City
Closed	9/11/91	Basel Oil Company - Rogers City	153 S Third	Rogers City
Closed	10/30/90	City Of Rogers City Dpw	400 First St.	Rogers City
Closed	11/11/96	K.J. Shell	303 N Third	Rogers City
Closed	8/17/94	Ken's Oil Co.	1115 Lakeview Ave.	Rogers City
Closed	5/1/91	Mike Lynch Ford	135 N Bradley Hwy	Rogers City
Closed	10/1/87	Perry Oil Co. - Rogers City	380 N Second	Rogers City
Closed	6/8/94	Rogers City High School	1033 W Huron	Rogers City
Closed	5/4/91	Tendercare Health Center (Rogers City Hospital)	555 N Bradley Hwy	Rogers City
Closed	5/1/95	Rogers City Tire Center Inc.	306 S Third St.	Rogers City
Source: Michigan Department of Environmental Quality				

Hazardous Waste Generators *known*

Table 3.2 displays a list of facilities, which generate hazardous waste or industrial waste in Rogers City.

Table 3.2 Rogers City Hazardous Waste Generators		
Name	Address	City
B & G Standard	107 S. Third St.	Rogers City
City Of Rogers City WWTP	400 First Street	Rogers City
Presque Isle County Road Commission*		Rogers City
Rogers City Community Health Center	555 N. Bradley Highway	Rogers City
U.S. Steel Corporation*		Rogers City
Source: Michigan Department of Environmental Quality		

Underground Storage Tanks *known*

Information found in **Table 3.3** was obtained from the MDEQ and include an inventory of the underground storage tanks which are “currently in use” or “closed in the ground” located within the wellhead protection area. Some of the tanks have been listed as “removed from ground” in case there is any residual contaminates they are still apart of this inventory and are included in Appendix A.

Table 3.3 Underground Storage Tanks				
NAME	ADDRESS	TANK STATUS	TANK CAPACITY	TANK PRODUCT
Adrians	335 N Bradley Hwy	Currently In Use	12000	Gasoline
Adrians	335 N Bradley Hwy	Currently In Use	6000	Gasoline
Adrians	335 N Bradley Hwy	Currently In Use	6000	Gasoline
Adrians	335 N Bradley Hwy	Currently In Use	15000	
Adrians	335 N Bradley Hwy	Currently In Use	15000	Diesel
Adrians	335 N Bradley Hwy	Currently In Use	15000	Diesel
Basel Self Serve Citgo	153 S Third	Currently In Use	10000	Gasoline
Basel Self Serve Citgo	153 S Third	Currently In Use	10000	Gasoline
Basel Self Serve Citgo	153 S Third	Currently In Use	2000	Diesel
Bay Port	285 Bradley Hwy	Currently In Use	12000	Gasoline Diesel
Bay Port	285 Bradley Hwy	Currently In Use	12000	Gasoline Diesel
Bay Port	285 Bradley Hwy	Currently In Use	12000	Gasoline Diesel
Cash's Automotive	1186 West 3rd Street	Currently In Use	30000	Gasoline
City Of Rogers City Marina	270 Lake St.	Currently In Use	15000	Gasoline

Table 3.3 Continued Underground Storage Tanks

Name	Address	TANK STATUS	TANK CAPACITY	TANK PRODUCT
City Of Rogers City Marina	270 Lake St.	Currently In Use	15000	Diesel
Ideal Self Serve	1108 West Third St.	Currently In Use	8000	Gasoline
Ideal Self Serve	1108 West Third St.	Currently In Use	8000	Gasoline
Ideal Self Serve	1108 West Third St.	Currently In Use	4000	Diesel Kerosene
Rogers City E-Z Mart	101 S Bradley Hwy	Currently In Use	12000	Gasoline
Rogers City E-Z Mart	101 S Bradley Hwy	Currently In Use	12000	Gasoline
Rogers City E-Z Mart	101 S Bradley Hwy	Currently In Use	12000	Gasoline
Rogers City E-Z Mart	101 S Bradley Hwy	Currently In Use	5000	Gasoline
Rogers City E-Z Mart	101 S Bradley Hwy	Currently In Use	5000	Fuel Oil
Tendercare Health Center	555 N Bradley Hwy	Currently In Use	8000	Heating
Rogers City School Gilpin Field	681 S 3rd St.	Currently In Use	1000	Fuel Oil
Ideal Self Serve	1108 West Third St.	Closed in Ground	6000	Gasoline
Ideal Self Serve	1108 West Third St.	Closed in Ground	6000	Gasoline
Ideal Self Serve	1108 West Third St.	Closed in Ground	6000	Gasoline
Source: Michigan Department of Environmental Quality				

Potential Groundwater Contamination

Potential groundwater contamination sites are those land use activities that could potentially threaten the groundwater resource. These land use activities include commercial, industrial and municipal groundwater discharges; closed dumps and present landfills; oil and gas drilling; production and disposal sites; gasoline bulk fuel storage; septage disposal sites, small business that utilize hazardous materials, agriculture areas, and unsewered densely developed residential areas.

In order to accurately determine the potential threat of contamination to the wellhead study area a field inventory was conducted to identify other areas of concern. **Table 3.4** identifies these areas that could possibly contribute to groundwater pollution.

**Table 3.4
Potential Sites of Groundwater Contamination**

Name	Address	City
Adrian's Marathon Station	335 N. Bradley Hwy.	Rogers City
A-P Super Service-Chrysler	338 N. Third St.	Rogers City
B & J Maxi Muffler	1223 Cedar St.	Rogers City
B&G Standard Service	107 S. Third	Rogers City
Basel Oil Company	153 N. Bradley Hwy.	Rogers City
Beauty Boutique	1076 W. Third St.	Rogers City
Beck Funeral Home	First St. & Michigan Ave.	Rogers City
Bob's Auto Parts	489 N. Third St.	Rogers City
BP Station (Ideal Mini-Mart)	1108 N. Third St.	Rogers City
Brietzke Funeral Home	N. Third St.	Rogers City
Cash Automotive-76 Station	1186 W. Third St.	Rogers City
Citgo	Third St.	Rogers City
City Of Rogers City	400 1 st street	Rogers City
Clipper Beauty Salon	1135 W. Third St.	Rogers City
Culligan Water Conditioning	1130 W. Third St.	Rogers City
Darga Forest Products	780 Pinewood Ave.	Rogers City
Dockside Printing	386 N. Third St.	Rogers City
Don's Body Shop	311 N. Third St.	Rogers City
Doug Potter Gm	420 US 23 North	Rogers City
Gatzke Office Building		Rogers City
GL Lawn & Yard Service	First St.	Rogers City
Glens Plaza/County Post	150 S. Bradley Hwy.	Rogers City
Grulke Hardware	297 N. Third St.	Rogers City
Harbor Light Laundry	234 E. Michigan Ave.	Rogers City
Hawks Service Center	459 S. Third St.	Rogers City
John's Plumbing And Heating	161 W. Freidrich St.	Rogers City
KJ Alignment	303 N. Third St.	Rogers City
Mart's Bear Wheel Alignment	1154 W. Third St.	Rogers City
Mike Lynch Ford	135 N. Bradley Hwy.	Rogers City
Mr. Ed's IGA	194 E. Erie St.	Rogers City
Napa Auto Parts	1095 W. Third St.	Rogers City
Norm's Body Shop & Towing	1393 W. Friedrich St.	Rogers City
*North Star Restaurant	2352 US North	Rogers City
Northern Auto Company-Jeep	1294 W. Third St.	Rogers City
Nowicki's Sausage Shoppe	Third St.	Rogers City
Pennzoil	100 N. Bradley Hwy.	Rogers City
Perry Oil	380 N. Second	Rogers City
Plath's Meat Inc.	116 S. Third St.	Rogers City
Presque Isle County Courthouse	151 E. Huron	Rogers City
RC Repair	193 S. First St.	Rogers City
Rogers City Area Schools	1033 W. Huron St.	Rogers City
Rogers City Car Wash	Third St.	Rogers City
Rogers City Community Health Center	555 N. Bradley Highway	Rogers City
Rogers City Gas Station	338 N. Third St.	Rogers City
Rogers City Marina	270 Lake St.	Rogers City
Rogers City Screen Art	333 N. Third St.	Rogers City
Rogers City Service Station	338 North 3rd St.	Rogers City
Rogers City Waste Disposal	400 First Street	Rogers City
Sunoco Gas Ken's Oil	285 S. Bradley Hwy.	Rogers City
Tendercare Health Center	555 N. Bradley Hwy.	Rogers City
Terry's Marine Bait Shop-Vogelheim Allied Home Ctr.	350 E. Huron	Rogers City
Triple M Tire North	306 S. Third St.	Rogers City
Zgorski-Micketti Plumbing & Heating	209 S. Third St.	Rogers City
NEMCOG Field Survey, March 2002		

Sites of Environmental Contamination

Information regarding sites of environmental contamination was obtained from the DEQ website (www.michigan.gov/deq). There were no listed sites of environmental contamination for the Rogers City Wellhead Protection area.

Oil and Gas Contamination Sites

Information regarding oil and gas contamination sites was obtained from the Geological Survey Division, DEQ Gaylord Field Office. There are no contaminated oil and gas sites within the Rogers City Wellhead Protection area.

Groundwater Discharge Permits

Information regarding groundwater discharge permits was obtained from the Waste Management Division, DEQ Gaylord Field Office. There were no groundwater discharge permits issued for the Rogers City Wellhead Protection area.

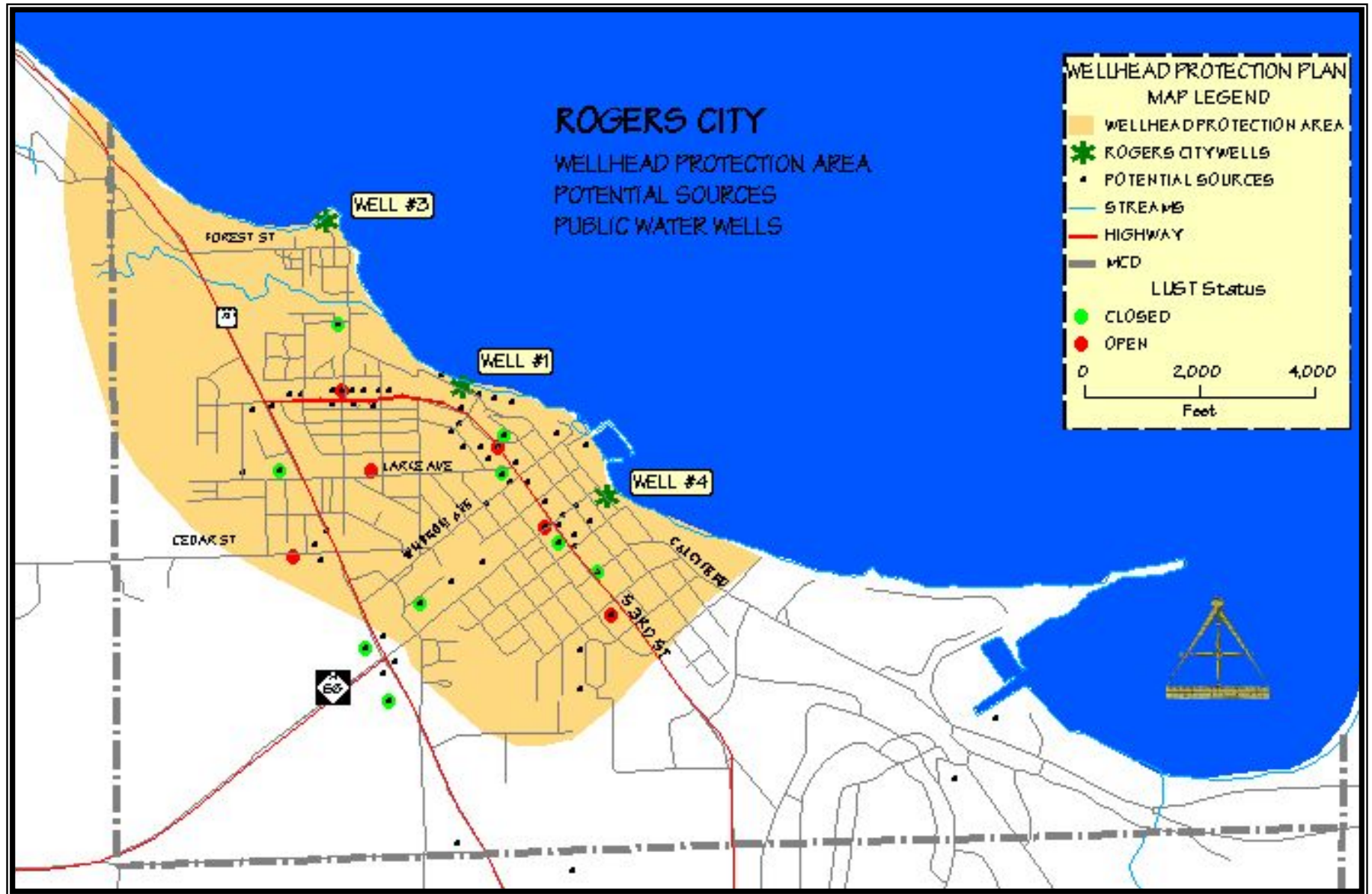
Landfill List

Information regarding landfill sites was obtained from the DEQ website. There are no landfills within the Rogers City Wellhead Protection area.

Federal National Priority List (Superfund)

Information regarding superfund sites was obtained from the US Environmental Protection Agency website (www.epa.gov/R5super). There are no superfund sites located within the Rogers City Wellhead Protection area.

Figure 3.1



Chapter 4 – Wellhead Protection Goals

After completing an analysis of the current conditions, the community developed the following goals. These goals will guide the implementation of Rogers City's Wellhead Protection Program.

Mission Statement:

The mission of Rogers City's Wellhead Protection Program is to institute a program that will provide for the protection of the municipal water supply system by preventing new risks and reducing existing threats to the wellfield. Furthermore, the Wellhead Protection Program should promote the public health, safety, and general welfare, and minimize public and private losses due to contamination of the public water supply, maximize groundwater protection/pollution abatement control procedures and minimize land use restrictions.

Goals:

Goal 1: Provide the local governmental framework, such as regulations and policies, to prevent groundwater contamination from occurring at businesses and industries which store, use or generate quantities of hazardous wastes in Rogers City's WHPA.

Goal 2: Provide for the protection of Rogers City's drinking water supply through comprehensive planning and zoning provisions at the City and County level.

Goal 3: Enhance communication and coordination between local and state agencies on pollution incidents to assure adequate cleanup for natural resource and public health protection.

Goal 4: Implement a public education program to inform residents and businesses on the importance of clean groundwater and what they can do to protect their drinking water.

Goal 5: Work with local, state and federal agencies to minimize the impacts of UST's, LUST's and other identified contamination sites on Rogers City's groundwater resources.

Goal 6: Establish a Wellhead Protection Area (WHPA) based on the 10 year capture zone identified in the delineation process when new wells are developed.

Goal 7: Update the inventory and mapping of all potential sources of contamination within the WHPA every five years.

Goal 8: Monitor existing and future activities within the WHPA that have been identified as potential sources of contamination.

Goal 9: Maintain an up-to-date contingency plan for alternative drinking water supplies to help mitigate contamination of the current water supply.

Goal 10: Site new wells properly to maximize yield and minimize potential contamination.

Goal 11: Inform landowners of the potential impacts of abandoned wells on the City's water supply; complete an inventory of abandoned private wells within the WHPA; and seek grant funding to work towards properly abandoning the wells.

Goal 12: Seek additional funding from local, state and federal sources to implement the Wellhead Protection Program.

Chapter 5 – Management Program

After considering the background information and community goals, the City has developed a wellhead protection management program. The program first defines roles and responsibilities of City staff, along with cooperating local and state agencies. Next, the program identifies activities and estimates a timeline for completing the activities.

Roles and Responsibilities

Local Government and Agencies

City Water Department is the local agency with primary responsibility for overseeing the development and implementation of the Rogers City Wellhead Protection Program. The City Water Department will be the local agency responsible for updating the Wellhead Protection Management Plan. The supervisor will work with staff, consultants and agencies to institute required management activities.

City Planning and Zoning Department is responsible for administering the zoning within the Wellhead Protection Area (WHPA). When updating the City's master plan and zoning ordinance, the department will incorporate appropriate wellhead protection language. The Department will work towards implementing the wellhead program through enforcement of groundwater protection provisions in the zoning ordinance.

City Manager/Assistant Manager will provide guidance and oversight throughout the program development and implementation.

City Council will be responsible for allocating local financial resources to implement the program and to provide needed match for state grants. The city council is also responsible for adopting proposed amendments to the zoning ordinance.

City Streets Department and County Road Commission will notify the Rogers City Water Department of any highway related hazardous waste spills within the WHPA. Both agencies will work towards minimizing road salt applications within the WHPA.

District Health Department #4 will administer sewage permits, administer drinking water well permits and well abandonment.

County Emergency Services Coordinator is responsible for administering emergency responses. The Coordinator will notify the City Water Department of fires and potential spills that may result in groundwater contamination. The City will be provided with an up-to-date list of hazardous chemicals identified during site inspections.

Presque Isle Conservation District and MI Groundwater Stewardship will continue to work with Rogers City to educate landowners, businesses and students on groundwater protection.

Northeast Michigan Council of Governments will continue to assist the City of Rogers City with developing and implementing the Wellhead Protection Area Program.

State Team Members

Michigan Department of Transportation will notify the Rogers City Water Department of any highway related hazardous waste spills and will work towards minimizing road salt applications within the WHPA.

MDEQ Drinking Water & Radiological Protection Division will provide guidance , review, approval and assistance with siting, permitting, monitoring and regulating public water supply systems. The agency will provide guidance, review, approval, and assistance in preparation and implementation of groundwater protection programs.

MDEQ Storage Tank Division will regulate underground and above ground storage tank systems.

MDEQ Environmental Response Division will report spills within the WHPA to the City Water Department.

Michigan Department of Agriculture will regulate pesticide and fertilizer storage and use practices.

Michigan Department of Management and Budget and Michigan Department of Treasury will provide financial assistance to the owners of underground storage tanks for remedial investigations and clean-ups.

Management Activities

Interagency coordination and communication

A comprehensive wellhead management program will require coordination between city departments as well as adjacent jurisdictions, local agencies and state agencies.

Activity 1: Provide information on the City's Wellhead Protection Area and Wellhead Protection Program, and establish protocol for notifying and responding to potential contamination incidents.

Implementation Timeline: 2002

Activity 2: Develop partnership agreements with local and state agencies to help implement the wellhead protection program.

Implementation Timeline: 2004

Activity 3: Contact state agencies responsible for site clean-up to notify them of the wellhead protection area.

Implementation Timeline: 2002

Education and Outreach

The education and outreach program is a critical component to providing long term protection of groundwater resources and drinking water supply. The program's target audience will be homeowners, businesses, and area schools.

Activity 1: Develop and distribute a Wellhead Protection Program information brochure.

Implementation Timeline: 2002, ongoing

Activity 2: Design and erect Wellhead Protection Area signs.

Implementation Timeline: 2002-2003

Activity 3: Make presentations to local government and civic organizations on City's Wellhead Protection Program.

Implementation Timeline: 2003, ongoing

Activity 4: Submit press releases to local and regional newspapers on the City's Wellhead Protection Program activities.

Implementation Timeline: 2002, ongoing

Activity 5: Work cooperatively with the USDA Groundwater Stewardship Program.

Implementation Timeline: 2002, ongoing

Activity 6: Work with teachers to educate students on groundwater protection.

Implementation Timeline: 2003, ongoing

Activity 7: Develop and distribute educational materials to homeowners in the City and surrounding Township.

Implementation Timeline: 2002, ongoing

Commercial Business Program

Within the wellhead protection area, businesses that use or generate hazardous waste present the greatest potential threat to contamination of the City's water supply. It is the intention of this program to minimize potential negative impacts while encouraging a healthy business environment. To this extent, the program will focus on providing protection without greatly increasing the regulations and operation costs.

Activity 1: Incorporate hazardous materials information from the firefighters right to know inventory program into the City's wellhead protection program and maintain and update list.

Implementation Timeline: Initiate in 2002, ongoing

Activity 2: Develop a voluntary Best Management Practices program for businesses that use or generate hazardous substances.

Implementation Timeline: 2005,

Activity 3: Encourage business to network for the collection and exchange of information regarding small quantities of hazardous waste.

Implementation Timeline: 2005, ongoing

Activity 4: Develop an inspection program utilizing the existing regulatory structure for small businesses utilizing small quantities of hazardous materials.

Implementation Timeline: 2004, ongoing

Activity 5: Use an environmental checklist for new businesses locating in the City and surrounding Township.

Implementation Timeline: 2004, ongoing

Strategic Monitoring within the Wellhead Protection Area

Monitoring of activities within the WHPA will enable the community to respond to groundwater issues in a timely fashion.

Activity 1: Apply to the Michigan Department of Environmental Quality Wellhead Protection Program to secure funding to identify the 10 year zone for new wells.

Implementation Timeline: 2003, ongoing

Activity 2: Provide local financial support to assist in the delineation of the 10 year capture zone.

Implementation Timeline: 2003, ongoing

Activity 3: Work with local and state agencies to maintain a current contaminant source inventory.

Implementation Timeline: 2002, ongoing

Activity 4: Develop and adopt a groundwater protection check list to be used when conducting onsite inspections of water and sewer connections.

Implementation Timeline: 2003, ongoing

Zoning and Land Use

While there are numerous state and federal laws governing environmental protection, the first line of responsibility falls to local government. Without a doubt, land use planning and zoning is the most appropriate place for local government institute regulations that will protect groundwater resources.

Activity 1: Amend the sit plan review process to include groundwater protection standards, environmental permits checklist, and hazardous waste reporting form.

Implementation Timeline: 2004

Activity 2: Promote "Quality of Life Development" in the City that will meet the needs of residents and visitors while protecting natural resources.

Implementation Timeline: 2002, ongoing

Activity 3: Designate compatible land uses and standards within the 10 year capture zone of the wellhead protection area.

Implementation Timeline: when the master plan and zoning ordinance is updated

Abandoned Wells

Abandoned wells provide a direct conduit for contamination of groundwater resources. The inventory and proper abandonment of private wells, no longer needed to produce drinking water, will greatly reduce numerous potential sources of contamination.

Activity 1: Apply to the Michigan Department of Environmental Quality Wellhead Protection Program to secure funding to implement the abandoned well program.

Implementation Timeline: 2005

Activity 2: Allocate local financial resources to assist in developing and implementing the program.

Implementation Timeline: 2005

Activity 3: Develop an outreach program to inform landowners of the potential risks to groundwater contamination associated with abandoned water wells.

Implementation Timeline: 2002, ongoing

Activity 4: Inventory the location and ownership of abandoned wells in the wellhead protection area.

Implementation Timeline: 2005

Activity 5: Implement a well closure program whereby the costs for well closures are shared by landowners, and state and local government.

Implementation Timeline: 2006

Other Management Activities

Activity 1: Develop a procedure to siting new wells and incorporate this procedure into the City's Wellhead Protection Program.

Implementation Timeline: 2002

Activity 2: Develop policies and administrative procedures for responding to hazardous substance spills and water supply replacement.

Implementation Timeline: 2002

Chapter 6 – Contingency Plan

Accidents and spills can occur at businesses, residences or even along roadways. The purpose of the contingency plan is to develop emergency response procedures and water replacement options. In order to protect the community's water supply and the health of water consumers, it is important to have protocol in place. Contingency planning for Wellhead Protection should be coordinated with the water supply contingency plan currently required by Michigan DEQ, as mandated by the Michigan Safe Drinking Water Act.

Short Term Emergency Response

The City of Rogers City contingency plan relies on communication with first responders and a plan of action in the event of a water system emergency. The first responders include the Rogers City EMS, Rogers City Fire Department, Rogers City Police Department, Presque Isle County Sheriff Department, Michigan State Police and Presque Isle County Emergency Management. The first responders have been provided information on Rogers City's Wellhead Protection Area. Rogers City will send a letter to the above organizations in January of each year, requesting the agencies continued cooperation in wellhead protect.

If an incident occurs such as an accident or fire that involves chemicals spills, the first responders have been requested to report the incident to the Supervisor of City of Rogers City Water Department. The Water Department will conduct an investigation and submit a report to the City Manager within 24 hours of the incident. Depending upon the nature and amount of chemical, the City will report the incident to the Michigan DEQ Pollution Emergency Alerting System (PEAS) Line and the Presque Isle Emergency Management.

If conditions at the spill site require it, the City of Rogers City will inform the Michigan DEQ Environmental Response Division about the existing or potential hazards. The City will maintain communication with the Michigan DEQ about the status of existing or potential contamination sources in the Wellhead Protection Area, investigations regarding the nature and extent of contamination and the status of clean-up activities. This "open line" of communication will allow the City to monitor potential threats to the water supply and to ensure that threats are being addressed.

There are currently three producing wells and another one being developed into production. Two of the wells are relatively shallow, located in the sand and gravel glacial and post glacial deposits near the lakeshore. The other well and the new well are developed in deeper Dundee formation of fractured limestone bedrock deeper. There is over 80 feet of gravelly clay capping the limestone at this location. The vertical separation and the spacing between wells, it is unlikely that more than one well or well field would be impacted at one time. If one of the wells becomes contaminated and deemed non-useable, the well will be isolated from the water distribution system. By

locking out the well and closing the valves, the city will ensure that no water is pumped from the impacted well. Production of the remaining three wells will be increased to offset the loss of production from the closed well. If sections of the distribution system require isolation, bottled water will be provided to affected households.

The State will provide bottled water to residents if their water source becomes contaminated. However, the contamination levels must exceed those identified as Maximum Contaminant Levels (MCL) by Federal and State Drinking Water Acts and Natural Resources and Environmental Protection Code, Part 201.

In the event of the loss of power, the City of Rogers City has emergency power supplies at well #1 and #4. The maximum pumping capacity under the emergency power supply is 1,224,000 gallons per day. Given the City's average day use of 450,000 gallons per day and the elevated storage tank capacity of 150,000 gallons, the water supply can be maintained during short term emergencies. The auxiliary system includes chemical feed pumps to assure that drinking water is properly treated. Another factor to consider would be, if there is a power outage within the City, the overall water consumption would likely be lower.

Table 6.1 Contingency Plan Contacts for Environmental Emergencies		
City Water Department	Ron Krawwczak, Supt.	989-734-3545 Pager: 253-5464
City Police Department	Matthew Quaine, Chief	989-734-2330
City Fire Department	Keith Froelich, Fire Chief	989-734-2330
City Manager	Robert Fairbanks	989-734-2191
Assistant City Manager	John Bruning	989-734-2191
City Dept. of Public Works	Bill Robin, Supt.	989-734-3494
County Emergency Services	Robert Paschke, Coord.	989-734-2156
County Sheriff	Terry Flewelling	989-734-2156
County Road Commission	Eric Rose, Supt.	989-734-2216
Michigan State Police		989-734-2204
MI Dept. of Transportation	Scott Thayer	989-356-2231
MI Dept. of Environ. Quality	Sue Renken, Area Engineer	231-775-3960 (6391)
District Health Department #4	Presque Isle Office	989-734-4723
MI Dept. of Agriculture	Food Service Section	231-922-5210
PI County Advance Newspaper		989-734-2105
Alpena News		989-354-5426
WMLQ Radio Station		989-734-4797
Source: NEMCOG		

Chapter 7 – Siting New Wells

At the present time the City of Rogers City is developing a new production well, referred to as Well #5 in earlier chapters of this plan. After the well is brought into production, the City will have excess production capacity. Even with this positive scenario, it is advisable for the City to establish criteria for siting new wells. With the high costs associated with well development and issues related to public health, the siting of new wells should follow State standards.

The Michigan DEQ requirements for siting new wells are based on the Michigan Safe Drinking Water Act. The rules address isolation distances, water quality and standards for well construction. The intention is to ensure public water wells produce continuous, adequate supplies of water that meet State drinking water standards. The following sections establish criteria for siting wells, in accordance with the Michigan Drinking Water Act.

Environmental Factors

1. Conduct an on-site environmental assessment of the property being considered for a well site to assess any adverse environmental conditions at the site.
2. Conduct an environmental review of adjacent properties surrounding the proposed wellfield or well site to evaluate environmental conditions.
3. Review data collected in conjunction with 40 CFR Subpart J (Right-to-Know) program regarding adjacent developed properties. Developments next to the property under consideration for a wellfield or production well site should be reviewed for potential environmental impacts.
4. Well site dimensions should be large enough to provide absolute control of a minimum 200-foot radius around the well. (MDEQ requirement)
5. Wellfields and supply well should not be located where known or potential sources of contamination lie within the estimated 10-year time of travel.
6. Major roadways increase the potential of contamination from hazardous materials spills related to vehicle crashes. Contamination from road salt application may also occur in the vicinity of roads. Locating wells adjacent to major roadways should be avoided, whenever possible.
7. An environmental review is required by the Michigan DEQ, including a site visit by MDEQ staff.

Production Capabilities

1. Conduct an aquifer performance test as required by the Michigan DEQ. The test must be conducted by a qualified hydrogeologist, and should meet MDEQ testing specifications. The test will determine the quantity of water available and the effect of long-term pumping on the aquifer.
2. Conduct groundwater sampling for inorganic compounds, metals, and volatile organic compounds to determine if the water quality meets the State requirements.

Community Development Factors

1. Wellfield and production well sites will be with adequate access to ensure that maintenance and operational needs can be met.
2. Titles, tax records, and other available documentation will be reviewed for proposed well site properties to protect against acquisition of properties that may have environmental concern.
3. The location of conservation and other environmentally sensitive properties will be considered during the well siting. Impacts to these areas will be minimized to the extent possible.
4. The City of Rogers City zoning ordinance should be reviewed to determine allowable land use in the proposed wellfield or production site and adjacent properties.
5. The City of Rogers City master plan should be reviewed to assess future land uses in the proposed wellfield or production site and adjacent properties.

**Table A1
Underground Storage Tanks-Removed**

Name	Address	Status	Capacity	Product
ADRIANS	335 N BRADLEY HWY	Removed from Ground	1000	Gasoline
ADRIANS	335 N BRADLEY HWY	Removed from Ground	500	Gasoline
ADRIANS	335 N BRADLEY HWY	Removed from Ground	500	Gasoline
AUSTIN POWDER CO	2596 HWY 451	Removed From Ground	1200	Diesel
B & G STANDARD SERVICE	107 SOUTH 3RD	Removed From Ground	8000	Gasoline
B & G STANDARD SERVICE	107 SOUTH 3RD	Removed From Ground	6000	Gasoline
B & G STANDARD SERVICE	107 SOUTH 3RD	Removed From Ground	4000	Gasoline
B & G STANDARD SERVICE	107 SOUTH 3RD	Removed From Ground	500	Used Oil
B & G STANDARD SERVICE	107 SOUTH 3RD	Removed From Ground	500	Heating Oil
B & G STANDARD SERVICE	107 SOUTH 3RD	Removed From Ground	50	Kerosene
B & G STANDARD SERVICE	107 SOUTH 3RD	Removed From Ground	50	Kerosene
B & G STANDARD SERVICE	107 SOUTH 3RD	Removed From Ground	50	Kerosene
BASEL OIL CO	1301 CEDAR	Removed From Ground	5000	Gasoline
BASEL OIL CO	1301 CEDAR	Removed From Ground	10000	Gasoline
BASEL OIL CO	1301 CEDAR	Removed From Ground	10000	Diesel
BASEL OIL CO	1301 CEDAR	Removed From Ground	10000	Diesel
BASEL OIL CO	1301 CEDAR	Removed From Ground	4000	Diesel
BASEL SELF SERVE CITGO	153 S THIRD	Removed from Ground	10000	Gasoline
BASEL SELF SERVE CITGO	153 S THIRD	Removed from Ground	5000	Gasoline
BASEL SELF SERVE CITGO	153 S THIRD	Removed from Ground	5000	Gasoline
BASEL SELF SERVE CITGO	153 S THIRD	Removed from Ground	2000	Diesel
CASH'S AUTOMOTIVE	1186 WEST 3RD STREET	Removed from Ground	1000	Gasoline
CASH'S AUTOMOTIVE	1186 WEST 3RD STREET	Removed from Ground	1000	Gasoline
CASH'S AUTOMOTIVE	1186 WEST 3RD STREET	Removed from Ground	5000	Gasoline
CASH'S AUTOMOTIVE	1186 WEST 3RD STREET	Removed from Ground	500	Fuel Oil

Table 1 continued Underground Storage Tank-Removed

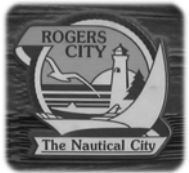
CASH'S AUTOMOTIVE	1186 WEST 3RD STREET	Removed from Ground	1000	Fuel Oil
CASH'S AUTOMOTIVE	1186 WEST 3RD STREET	Removed from Ground	10000	Gasoline
CITY OF ROGERS CITY GARAGE	1221 RIVERVIEW	Removed From Ground	2000	Diesel
CITY OF ROGERS CITY GARAGE	1221 RIVERVIEW	Removed From Ground	2000	Gasoline
CITY OF ROGERS CITY GARAGE	1221 RIVERVIEW	Removed From Ground	4000	Gasoline
CITY OF ROGERS CITY MARINA	270 LAKE ST	Removed from Ground	4000	Diesel
CITY OF ROGERS CITY MARINA	270 LAKE ST	Removed from Ground	4000	Gasoline
DARGA FOREST PRODUCTS	780 PINWOOD AVE	Removed From Ground	10000	Gasoline
DARGA FOREST PRODUCTS	780 PINWOOD AVE	Removed From Ground	5000	Diesel
DONS BODY SHOP	311 N THIRD ST	Removed From Ground	1000	Gasoline
DONS BODY SHOP	311 N THIRD ST	Removed From Ground	2000	Gasoline
EDWARD SORGET	459 S THIRD ST	Removed From Ground	550	Gasoline
EDWARD SORGET	459 S THIRD ST	Removed From Ground	1050	Gasoline
EDWARD SORGET	459 S THIRD ST	Removed From Ground	550	Gasoline
FORMER ROGERS CITY GAS STATION 2	116 SOUTH 3RD ST	Removed From Ground	1000	UNK
HOEFTS MOTOR SERVICE	US-23 SOUTH	Removed From Ground	500	Gasoline
HOEFTS MOTOR SERVICE	US-23 SOUTH	Removed From Ground	1000	Gasoline
HOWARD BREGE	3301 GROVE RD	Removed From Ground	2000	Gasoline
IDEAL SELF SERVE	1108 WEST THIRD ST	Removed from Ground	4000	Diesel
IDEAL SELF SERVE	1108 WEST THIRD ST	Removed from Ground	4000	Diesel
IDEAL SELF SERVE	1108 WEST THIRD ST	Removed from Ground	4000	Diesel
IDEAL SELF SERVE	1108 WEST THIRD ST	Removed from Ground	4000	Diesel
IDEAL SELF SERVE	1108 WEST THIRD ST	Removed from Ground	1000	Kerosene
K J SHELL	303 N THIRD	Removed From Ground	8000	Gasoline
K J SHELL	303 N THIRD	Removed From Ground	6000	Gasoline
K J SHELL	303 N THIRD	Removed From Ground	550	Used Oil

Table 1 continued Underground Storage Tank-Removed

KENS OIL CO	1115 LAKEVIEW AVE	Removed From Ground	20000	Gasoline
KENS OIL CO	1115 LAKEVIEW AVE	Removed From Ground	20000	Gasoline
KENS OIL CO	1115 LAKEVIEW AVE	Removed From Ground	20000	Diesel
KENS OIL CO	1115 LAKEVIEW AVE	Removed From Ground	12000	Diesel
KENS OIL CO	1115 LAKEVIEW AVE	Removed From Ground	10000	Diesel
KENS OIL CO	1115 LAKEVIEW AVE	Removed From Ground	1000	Diesel
KENS OIL CO	1115 LAKEVIEW AVE	Removed From Ground	1000	Gasoline
M/M RALPH A. WENZEL	6188 N US 23	Removed From Ground	1000	Gasoline
M/M RALPH A. WENZEL	6188 N US 23	Removed From Ground	500	Gasoline
MIKE LYNCH INC	135 N BRADLEY HWY	Removed From Ground	1000	Gasoline
MIKE LYNCH INC	135 N BRADLEY HWY	Removed From Ground	500	Gasoline
OLD CITY GARAGE	400 FIRST ST	Removed From Ground	1000	Gasoline
OLD NORTH STAR RESTAURANT	2352 US 23 NORTH	Removed From Ground	2000	Gasoline
OLD NORTH STAR RESTAURANT	2352 US 23 NORTH	Removed From Ground	1000	Gasoline
OLD NORTH STAR RESTAURANT	2352 US 23 NORTH	Removed From Ground	1000	UNK
PARKSIDE CORP	4019 US 23 NORTH	Removed From Ground	2000	Diesel
PARKSIDE CORP	4019 US 23 NORTH	Removed From Ground	1000	Diesel
PARKSIDE CORP	4019 US 23 NORTH	Removed From Ground	500	Diesel
PARKSIDE CORP	4019 US 23 NORTH	Removed From Ground	500	Diesel
PRESQUE ISLE COUNTY COURTHOUSE	151 EAST HURON	Removed From Ground	1000	Gasoline
PRESQUE ISLE COUNTY ROAD COMM	657 S BRADLEY HWY	Removed From Ground	12000	Diesel
PRESQUE ISLE COUNTY ROAD COMM	657 S BRADLEY HWY	Removed From Ground	6000	Gasoline
PRESQUE ISLE COUNTY ROAD COMM	657 S BRADLEY HWY	Removed From Ground	1000	Gasoline
PRESQUE ISLE COUNTY SHERIFF DEPT	267 NORTH 2ND ST	Removed From Ground	1000	Gasoline
ROGERS CITY ELEMENTARY SCHOOL	532 W ERIE	Removed From Ground	1000	Gasoline

Table 1 continued Underground Storage Tank-Removed

ROGERS CITY ELEMENTARY SCHOOL	532 W ERIE	Removed From Ground	10000	Fuel Oil
ROGERS CITY GAS STATION	338 NORTH 3RD ST	Removed From Ground	500	UNK
ROGERS CITY GAS STATION	338 NORTH 3RD ST	Removed From Ground	1000	UNK
ROGERS CITY HIGH SCHOOL	1033 W HURON	Removed From Ground	12000	Gasoline
ROGERS CITY HIGH SCHOOL	1033 W HURON	Removed From Ground	10000	Diesel
ROGERS CITY HIGH SCHOOL	1033 W HURON	Removed From Ground	10000	Fuel Oil
ROGERS CITY TIRE CENTER	306 S THIRD ST	Removed From Ground	2000	Gasoline
ROGERS CITY TIRE CENTER	306 S THIRD ST	Removed From Ground	1000	Gasoline
ROGERS CITY TIRE CENTER	306 S THIRD ST	Removed From Ground	2000	Gasoline
ROGERS CITY TIRE CENTER	306 S THIRD ST	Removed From Ground	2000	Gasoline
THE COVE	450 N BRADELY HWY	Removed From Ground	500	Used Oil
THE COVE	450 N BRADELY HWY	Removed From Ground	1000	Gasoline
WILLIAM CLAUS	N FIRST ST	Removed From Ground	4000	UNK
WILLIAM CLAUS	N FIRST ST	Removed From Ground	3900	UNK



WELLHEAD PROTECTION PLAN (WHPP)

A successful Wellhead Protection Plan includes assistance from all the members of a community to help keep the drinking water safe. By properly managing, storing and disposing of hazardous substances, a community can save on the high costs associated with groundwater cleanup or replacement of contaminated public wells.

Rogers City, with the assistance of a wellhead protection team, has initiated a preventive program to safeguard the city's public water supply. The goal of the Wellhead Protection Program (WHPP) is to ensure an adequate and safe supply of drinking water for residents today and future generations.

BENEFITS OF WHPP INCLUDE:

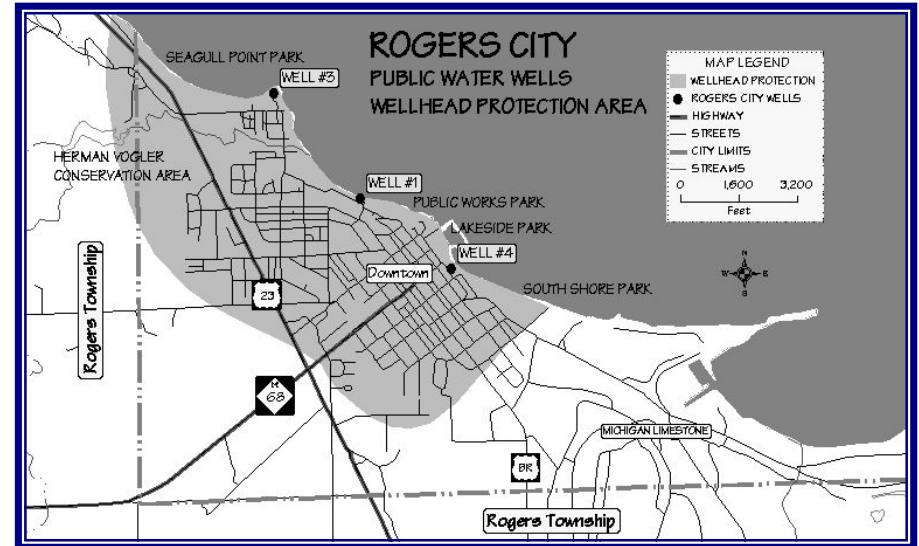
- ◆ Groundwater is the only source of drinking water for the city. The WHPP provides a means to help guard our drinking water.
- ◆ Protection of the community's health through prevention of drinking water contamination.
- ◆ Promotion of the city's image as being proactive in protecting public health and, in the process, promoting economic development.
- ◆ Protection of the community investment in water supply systems. Prevention of groundwater contamination is far less expensive than groundwater cleanup

HOW DOES THE WHPP PROTECT YOUR DRINKING WATER?

The Protection Plan has several key components which together enable the WHPP to successfully protect the city's water supply:

◆ WELLHEAD PROTECTION AREA DELINEATION

The City determined the area which contributes groundwater to its wellfields. This area is called the Wellhead Protection Area and is the region in which potential contaminants are likely to move toward and reach public drinking water supply wells. It is based on a groundwater time-of-travel of 10 years.



◆ SOURCES OF CONTAMINATION

A requirement of the plan was to identify known and potential sources of contamination such as leaking underground storage tanks and spills of hazardous chemicals from industrial sites & transportation accidents.

◆ WELLHEAD PROTECTION AREA MANAGEMENT

Land use issues and zoning ordinances are considered when managing the wellhead protection area.

◆ CONTINGENCY PLANS

Should a contamination incident occur threatening the community's water supply, a contingency plan has been developed for three scenarios:

1. Routine Monitoring Discovery
2. Contaminant release from a site within the protection area.
3. Chemical spill from a transportation accident.

FOR MORE INFORMATION CONTACT:

Rogers City Water Department
989-734-3445

WHERE DOES YOUR DRINKING WATER COME FROM?

Rogers City uses *groundwater* from a subsurface *aquifer* as its sole source of drinking water. *Groundwater* is water beneath the earth's surface which fills openings (*pore spaces*) in sand or gravel, or in fractures of sand, gravel, or rock. It begins as rain or snow and passes through the soil and bedrock. An *Aquifer* is an underground layer of rock, sand, or gravel containing enough groundwater to supply a well.

WHAT YOU CAN DO TO PROTECT YOUR WATER SUPPLY

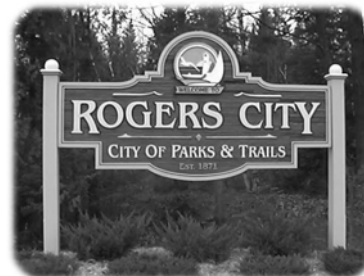
- ◆ Be aware of the household hazardous chemicals (such as paints, solvents, gasoline, *etc.*) you use, and be careful when you use them. If spills occur, clean them up as soon as possible.
- ◆ Never dump used motor oil, gas, household chemicals or pesticides onto the ground. For safe, disposal contact 734-4000
- ◆ Close any abandoned wells on your property. Open holes are easy conduits for chemicals to travel and contaminate groundwater. They are a hazard to groundwater quality and a liability to you. If you are on city water and have an unused water well, inform the Wellhead Protection Team. They are working towards instituting an abandoned well closure program.

WHAT YOU CAN DO

- ◆ Follow instructions for use of fertilizers and pesticides. Over-application of these products can be harmful to the environment.
- ◆ If you have a private well, test your water annually.

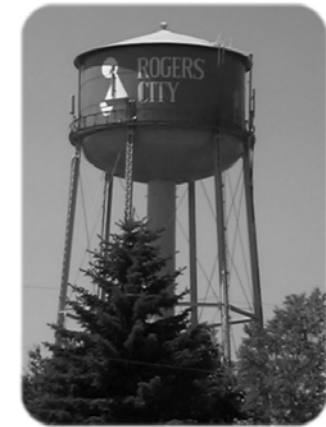
DID YOU KNOW...?

- ◆ About 95% of the total water supply of the United States is groundwater. The other 5% is in lakes, rivers and streams.
- ◆ 43% of Michigan's residents and nearly 100% of the State's rural residents rely on groundwater for their drinking water.
- ◆ One quart of oil can contaminate 250,000 gallons of water.
- ◆ Every year in Michigan, more oil is spilled on the ground than was spilled by the Exxon Valdez into



ROGERS CITY

WELLHEAD PROTECTION PROGRAM



“Working together to protect our precious drinking water”

For more information contact

City of Rogers City
193 East Michigan Avenue
Rogers City, MI 49779
Telephone: 989.734.2191
Fax: 989.734.4833

**Business Hours: Monday through Friday
9 a.m. to 5 p.m.**



A cooperative effort between the City of Rogers City, and Michigan Department of Environmental Quality assisted by the Rogers City Wellhead Protection Committee

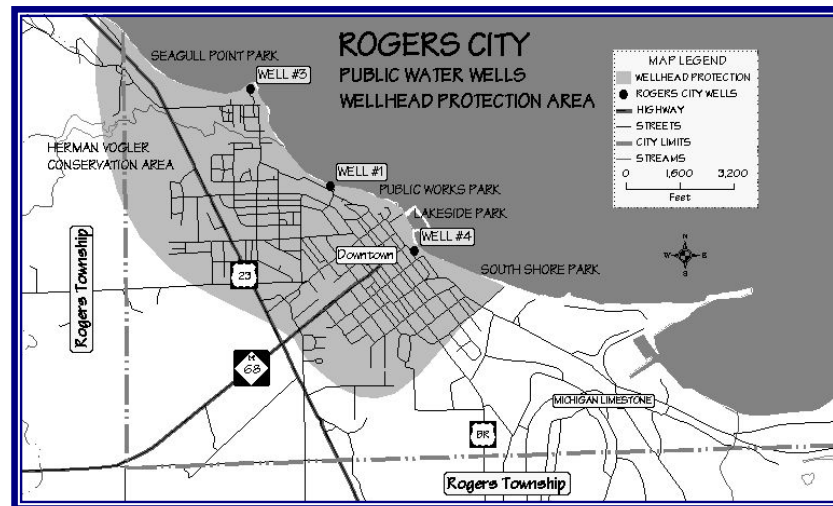
ROGERS CITY

WELLHEAD PROTECTION PROGRAM



Working together to protect our precious drinking water

A cooperative effort between the City of Rogers City, and Michigan Department of Environmental Quality, assisted by the Rogers City Wellhead Protection Committee



DO YOU LIVE IN THE DRINKING WATER PROTECTION ZONE?

The answer is probably YES if you live within the city limits of Rogers City. Look at the above map and find where your home is located. If it is within the light gray area, your home is within the City's Drinking Water Protection Area.

Wellhead Protection Quiz

- Where does Rogers City's drinking water come from?
 - Lake Huron
 - Trout River
 - Groundwater
 - It's the water tower dummy!
- What percentage of the total drinking water supply in the United States comes from groundwater?
 - 25%
 - 50%
 - 75%
 - 95%
 - I don't have a clue
- What percentage of Michigan's residents rely on groundwater for their drinking water?
 - 16%
 - 43%
 - 65%
 - 86%
 - I still don't have a clue. By the way, what exactly is groundwater?
- One quart of oil will contaminate 250,000 gallons of water?
 - True
 - False
- Every year in Michigan, more oil is spilled on the ground than was spilled by the Exxon Valdez into Alaska's Prince William Sound?
 - True
 - False - Come on, this is too unbelievable.
- If the City's groundwater aquifer becomes polluted, it will ...
 - Not be a problem, the City will just drill another well
 - Quickly clean itself, if we just leave it alone
 - Take years to clean up and be very costly
 - I still don't have a clue what wellhead protection is all about
- Individual homeowners can pollute the City's groundwater supply by dumping motor oil, gas, household chemicals and pesticides onto the ground.
 - True
 - False, no way dude, the groundwater aquifer is 100 feet below the surface.
- Since I don't live in Rogers City, there is no need to worry about groundwater pollution.
 - True, so why am I reading this quiz instead of eating my food!
 - False, groundwater is a precious resource that we should protect wherever we live.
- Private water wells should be tested?
 - Once a year
 - Every five years
 - Never, if the water looks clean and tastes okay

WHERE DOES YOUR DRINKING WATER COME FROM?

Rogers City uses *groundwater* from a subsurface *aquifer* as its sole source of drinking water. *Groundwater* is water beneath the earth's surface which fills openings (*pore spaces*) in sand or gravel, or in fractures of sand, gravel, or rock. It begins as rain or snow and passes through the soil and bedrock. An *Aquifer* is an underground layer of rock, sand, or gravel containing enough groundwater to supply a well.

WHAT YOU CAN DO TO PROTECT YOUR WATER SUPPLY

- Be aware of the household hazardous chemicals (such as paints, solvents, gasoline, etc.) you use, and be careful when you use them. If spills occur, clean them up as soon as possible.
- Never dump used motor oil, gas, household chemicals or pesticides onto the ground. For safe, disposal contact 734-4000
- Close any abandoned wells on your property. Open holes are easy conduits for chemicals to travel and contaminate ground water. They are a hazard to groundwater quality and a liability to you. If you are on city water and have an unused water well, inform the Wellhead Protection Team. They are working towards instituting an abandoned well closure program.
- Follow instructions for use of fertilizers and pesticides. Over-application of these products can be harmful to the environment.
- If you have a private well, test your water annually.

Answers:
1. C
2. D
3. B
4. A
5. A
6. C
7. A
8. B
9. A



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