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Section 1

Introduction

The City of Newaygo has several municipal water wells that supply the City with drinking water. The City has chosen to develop a wellhead protection plan and has developed wellhead protection areas (WHPA) for these production wells. The plan requires a 10-year delineation area for each well and a management plan to protect the water supply, particularly within the wellhead delineation area. This document contains the elements required by Michigan Department of Environmental Quality (MDEQ) for a complete Wellhead Protection Program.

Community Location and Population

The City of Newaygo is located in Newaygo County in Michigan. The Muskegon River runs through the north side of town. The following demographics are according to the 2010 census:

Population: 1,976

Number of Households: 786

Population density: 528.3/sq.mi.

Area: 3.90 square miles total (3.74 square miles lined and 0.16 square miles water)

Elevation: 705 ft

Present Service Area (geographic area and population served)

The present service area of the water system includes the population and area described above.

Number of Wells and Capacity

There are two municipal wells located on the east side of town and north of the Muskegon River. These wells have been in use for a number of years and were included in an earlier Wellhead Protection Plan. The two existing wells are located in Section 21 of Brooks Township, near the address of 2020 E 72nd Street. These existing wells are identified as Production Well #5 (PW-5) and Production Well #6 (PW-6). One pump serves both wells with a capacity of 450 gallons per minute. There is a third municipal well at this location that is unused. It is included on the contamination source inventory list in this document.

Two additional wells have been drilled and are located on the west side of town, east of the Muskegon River. One of the new wells is to be added to the municipal service now in order to provide additional capacity and also provide a back-up system in case of a problem or emergency involving the existing wells. The new well is Production Well #7 (PW-7) is in Section 25 and is within the city limits of Newaygo. A second new well, Production Well #8 (PW-8), was drilled in the same location. This well

has been capped and is reserved for future use if needed. In the drilling logs, these are identified as TW-12C (PW-7) and TW-12B (PW-8). A third well was drilled, identified as TW-12A, but this well did not produce water and it is to be plugged. It is included on the contamination source inventory.

The four municipal wells are further identified and located in Table 1. Copies of the Production Well Logs are located in Appendix A.

Table 1						
City of Newaygo: Production Wells Information						
Production Well	Capacity (GPM)	Depth (feet)	Township or City	Section	Location	
PW-5	450	317	Brooks	21	T. 12 N, R 12 W	NW 1/4, NE 1/4
PW-6	450	348	Brooks	21	T. 12 N, R 12 W	NE 1/4, NW 1/4, NE 1/4
PW-7	300	153	Newaygo	25	T. 12 N, R 13 W	NE 1/4, NW 1/4
PW-8 (future)	195	153	Newaygo	25	T. 12 N, R 13 W	NE 1/4, NW 1/4

Local Program Goals for Wellhead Program

The City of Newaygo strives to protect the public drinking water supply by preventing the pollution of surface and groundwater within the Well Protection Areas. The City has been actively pursuing wellhead protection activities since 2000.

The City works with local business, industry and private property owners and schools to educate area residents about well head protection and activities that might cause risk to the water supply. Public awareness is key to the wellhead protection program.

Cooperative management by local government agencies is also a goal of the Wellhead Program, to promote the speedy and thorough cleanup of any existing contamination and to implement appropriate permits and permit reviews for new land use.

Section 2

Roles and Responsibilities

There are certain individuals and agencies that have significant responsibilities in carrying out a successful wellhead protection program. These include the following current members:

The Wellhead Protection Team (2014)

The Wellhead protection team currently consists of the following:

- ✓ Brooks Township Representative – Kurt Giberson-Kurt will be a liaison to the City and will assist in Township ordinances to protect the wellhead areas.
- ✓ District Health Dept. #10 Representative – John Andersen-John is the district overseer for all residential Type II and Type III wells in Newaygo County. John will review permits to make sure unneeded wells are not drilled and abandoned wells plugged.
- ✓ City of Newaygo Water Supervisor – Ron Wight-Ron will maintain the City's water system and ensure a safe water supply is provided to the community.
- ✓ City of Newaygo Manager – Jon Schneider-Jon will manage the wellhead protection program, oversee the budgets and ensure the plan's goals are carried out. With the assistance of the team Jon will update the wellhead protection plan as required.
- ✓ Newaygo Conservation District Representative – Luke Cotton-Luke will provide input regarding the agriculture contamination risk to the wellhead protection area.
- ✓ Consultant, Sidock Group, Inc. – Bill Frazier- Bill will provide technical assistance to the committee.

In the future, the team is considering having additional team members added. These new team members might be selected from the following list of potential team members:

- ✓ Garfield Township Representative
- ✓ Croton Township Representative
- ✓ Fire Department Representative
- ✓ Michigan Ag Counties Representative
- ✓ Newaygo Intermediate School Representative

✓ Local Resident

The lead agency for the Wellhead Protection Program is the City of Newaygo.

The Wellhead Protection Team represents stakeholders of the community and has provided input and guidance on how the area manages its water supply and how best to protect the area groundwater. It is important to include area communities outside the delineation area in order to effectively manage land use development in surrounding areas that could impact groundwater.

The Wellhead Protection Team meets at least annually to review and update the Wellhead Protection Plan, evaluate the effectiveness of public awareness programs and education and update the contaminant source inventory. Other items may be addressed as needed, including other communities Wellhead Protection Programs, review of any changes in MDEQ WHP guidance and abandoned well closures. Updates to the Wellhead Protection Plan are the responsibility of the Team.

The Wellhead Protection Team has been meeting quarterly during the grant process to review and update the WHPP and evaluate and implement public awareness and other activities.

The existing production wells are located in Brooks Township and the new wells are within the city limits. The delineation area of the new well extends into Garfield Township and Brooks Township as well as a portion of the City of Newaygo. Intergovernmental cooperation between these local governments is needed for the implementation and success of the program. The Wellhead Protection team may consider future intergovernmental agreements or ordinances with neighboring townships or with the County.

Section 3

Wellhead Protection Area Delineation

The wellhead protection area (WHPA) is defined as the land surface and subsurface area surrounding a wellfield through which water, or contaminants, can enter the ground and move toward the wellfield within a specific period of time.

The original Wellhead Protection Plan was completed in 2004. At that time the plan covered the two existing wells, PW-5 and PW-6. These wells were tested for tritium levels and the results show that the production wells are completed in an aquifer that has a geologic sensitivity considered to be “very low”. The State of Michigan, Department of Environmental Quality (MDEQ) sent an approval letter, dated January 24, 2002 regarding these wells and establishing the Source Water Protection Area as a one-mile radius of the wells. A copy of this letter and supporting documents are included in Appendix B.

The original Wellhead Protection Plan was approved in a letter to the City from the Michigan Department of Environmental Quality dated February 4, 2004. A copy of this letter is also included in Appendix B.

The new wells, PW-7 and PW-8, are to be added to the Wellhead Protection Program. The WHPA Delineation for the new wells was completed for the City of Newaygo by Peerless-Midwest, Inc. in July 2014 and was submitted to MDEQ for approval. The Wellhead Protection Delineation report is still under review at the time of this submittal. This Wellhead Protection Plan is submitted with the approval pending and when received a copy of the approval letter will be included in Appendix B.

The City installed the two new groundwater production wells (Well 7 and Well 8) in 2012. Both wells are completed within a leaky/semi-confined sand aquifer. This report is the WHPA delineation for the two new production wells using an analytical groundwater flow model, GFLOW. Well logs for the Newaygo production wells are provided in Appendix A. In the well logs, these wells are identified as TW-12C (PW-7) and TW-12B (PW-8).

Static water levels were measured in June 2014 throughout the Newaygo area to provide an understanding of the regional groundwater flow direction. The potentiometric surface map for the sand aquifer indicates that the regional groundwater flow direction is generally from the east-northeast to the west-northwest south of the Muskegon River and north-northwest to south-southwest north of the Muskegon River.

The two-dimensional, analytical element groundwater flow model, GFLOW, was calibrated to the groundwater elevations measured in June 2014. Statistical analysis of the differences between observed and calculated water levels indicates the model accurately reproduces the regional groundwater flow pattern. Visual comparison of the measured water levels to the simulated water levels also indicate the model produces a groundwater flow field representative of the observed

regional flow pattern.

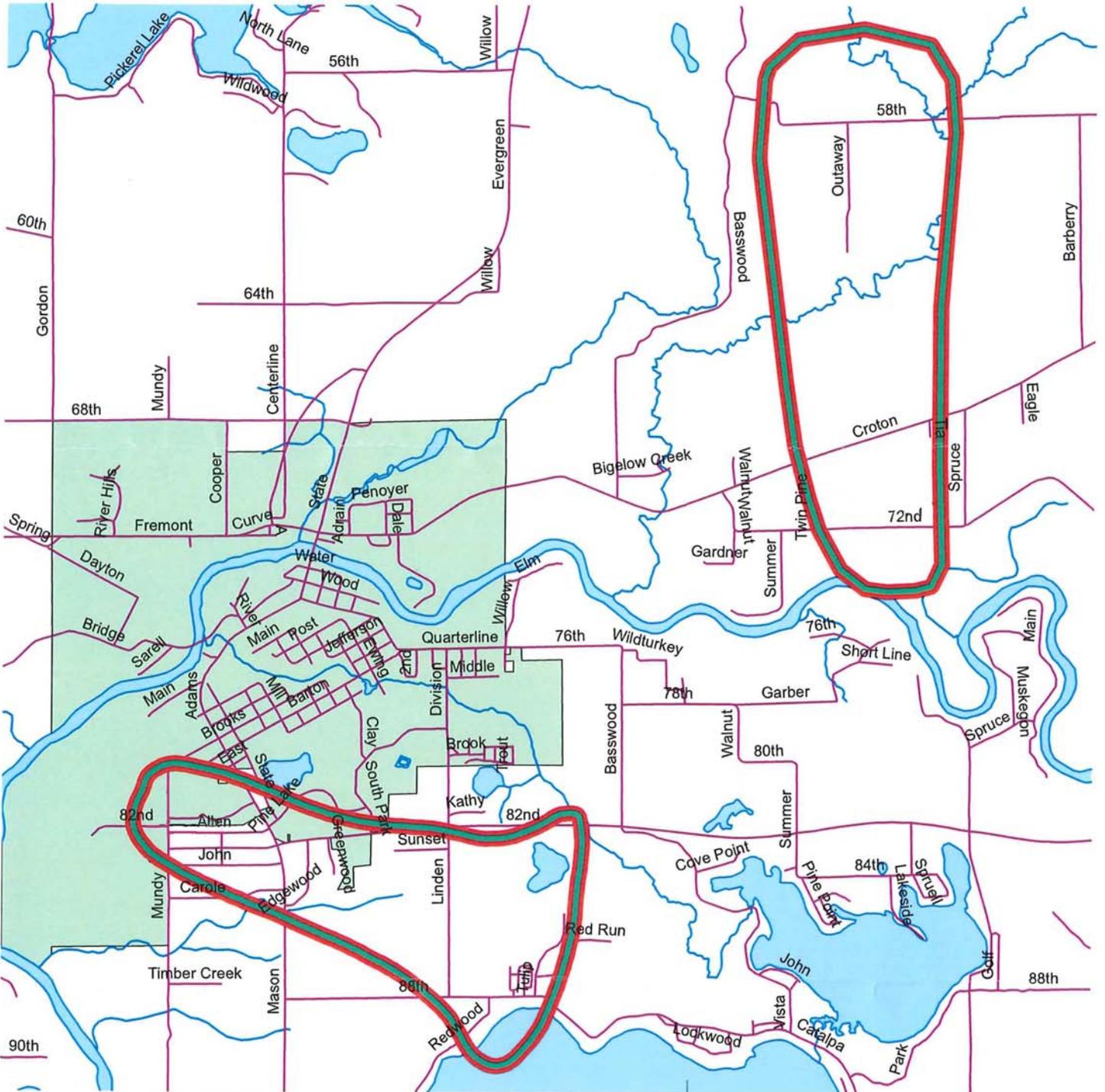
The WHPA delineation for Newaygo's two production wells is a composite of the modeled 1, 5 and 10 year delineations. The modeled delineations are conservative estimates of time of travel (TOT) capture areas for water particles within the aquifer. The 1, 5 and 10 year WHPAs, shown in Map 1 in Appendix C, are composite WHPAs based on the areas determined from the 6 simulated flow system scenarios. The different scenarios cover a range of possible hydraulic conductivity values for Zone 1 and recharge values for the model. By using the various scenarios to develop the 1, 5 and 10 year WHPAs, uncertainty in the calibrated model input parameters has been reduced.

- ✓ The 1 year WHPA trends northwest to southeast and is approximately 2,130 feet at the widest part, 3,180 feet in length, and covers approximately 135 acres (0.21 square miles).
- ✓ The 5 year WHPA trends northwest to southeast and is approximately 3,730 feet at the widest part, 9,950 feet in length, and covers approximately 607 acres (0.95 square miles).
- ✓ The 10 year WHPA trends northwest to southeast and is approximately 6,030 feet at the widest part, 10,500 feet in length, and covers approximately 769 acres (1.20 square miles).

The State of Michigan encourages management of the 10 year TOT capture area to minimize the threat of groundwater contamination to the public water supply wells. A copy of the map from the delineation report is included here for reference. This map shows the delineation area for the new wells only.

Additional maps of the area are included in Appendix C. USGS maps are used as the base map for the delineation areas and the contaminant source inventory maps. The maps included in Appendix C are:

- ✓ Map 1 – Map of the area showing the municipal wells and the delineation areas for each of the production wells. The 1, 5 and 10 year time of travel capture zones for the new well field are shown. The existing wells use the 1 mile radius as the well head protection area.
- ✓ Map 2 – Locates sites that were identified as being Higher Risk Potential Sources of Contamination in and around the City of Newaygo.
- ✓ Map 3 – Locate sites identified of Lower Risk Potential Sources of Contamination in and around the City of Newaygo.
- ✓ Map 4 – Future Land Use Map from the City of Newaygo Master Plan
- ✓ Map 5 – Local Area Land Use Map in 1998 from City Documents
- ✓ Map 6 – GIS map showing boundaries of the municipal area townships and sections in the area



City of Newaygo Wellhead Protection Areas

Legend

 Wellhead Protection Area

Michigan Department of Environmental Quality
Community Drinking Water Unit
October 2014



Section 4

Contaminant Source Inventory

(Potential Sources of Contamination)

The Contaminant Source Inventory (CSI) was completed for the areas surrounding the well fields and specifically for the delineation areas of the wells.

The maps included in Appendix C show the sites identified as Potential Sources of Contamination in August, 2014, the most recent update to the Plan. The mapped area was selected to include both of the well fields; the existing wells on the east side of town and the new wells on the west side of town.

The Contaminant Source Inventory is included in Table 2 found in Appendix D. The table lists the reason for including the site as a Potential Source of Contamination (PSC) and also the site address, and longitude and latitude location. Most of these sites were identified using MDEQ on-line tools that provide information on environmental impacts for the regulated community.

Table 2 includes a source number that is used to locate the source on the maps found in Appendix C. The first eight sources are identified Higher Risk Potential Sources of Contamination. For this Plan we chose to identify those sites as Higher Risk that either have an operating underground tank (UST) or have had a leaking underground storage tank (LUST) in the past. If the site has had a LUST, the site must with perform corrective actions to meet the appropriate land use criteria. If the MDEQ site status is open, this means that the corrective actions have not been completed. If the site status was closed then the corrective actions have been completed. For the CSI, if the site was still open or was closed with deed restriction, it was considered to be a High Risk Source, along with sources that have active USTs. Some sites of LUST were closed without restrictions, so these were considered to be Lower Risk Potential Sources of Contamination.

In the original well field, east of the city, there are no Higher Risk PSCs and only two Lower Risk PSCs identified within the 1 mile radius delineation area. One is the existing city well, identified on the map as source number 9, located near production wells PW-5 and PW-6. This well is reserved for future use but is not currently a producing well. The second is a plugged oil well, Permit # 12815, identified on the map as source number 10.

The new wells located on the west side of the city and have a different delineation area. There is one Higher Risk PCS located within the well head protection area. This source, identified on the map as source number 1, is the Speedway #3569, 8500 S. Mason Dr. and is inside the 5-year time of travel (TOT) delineation area for the new wells. MDEQ documentation indicates that an underground tank leaked at this site in the past. The status of the site shows it to be a closed issue with the property subject to deed restrictions at this time.

There are also 10 Lower Risk PCSs identified within the delineation area for the new wells. These are identified in Table 2 as sources 11 through 20. During the development of the new well field, a third well was drilled. The well logs identify this well as TW-12-A. This well did not produce a sufficient supply of water and will be plugged. Until the well is plugged, this is also considered to be a potential source of contamination. It is listed and shown on the map as PCS No. 19.

Other listed PCSs, sources 21 – 47, were located in the area. These are outside the delineation area, but nearby, for example many are located within the city limits. Additionally, the inventory shown in Table 2 includes sources numbered 48 - 67 which were located in the region. These are outside of the mapped area, but are included in the inventory to complete the list of sources for the three townships, Brooks, Garfield and Croton.

Table 3 is a list of oil and gas wells that are identified as the Kimball Lake Oil Field. This list is included due to the proximity of the oil field to the wells. However, because the delineation area is to the southeast of the wells, these are not included in the wellhead protection area. It should be noted that most of these wells are plugged, but the current list shows 4 wells that are currently producing. These are not included on the mapped area since the producing wells are outside of the mapped area. More information regarding these wells is available on the MDEQ website.

The method for completing the contaminant source inventory included an internet survey to locate any existing or potential sources of contamination in the City of Newaygo, Brooks Township, Garfield Township and Croton Township. In some instances the County of Newaygo was surveyed. Once a comprehensive list was compiled, the sites located within the delineation areas for the wells were identified. In addition, some information was obtained from the City of Newaygo and from Wellhead Protection Team members.

The following list of information sources was used to complete the inventory:

- ✓ Sites of Environmental Contamination (201 sites), Remediation and Redevelopment Division (RDD), MDEQ (Part 201 of Act 451) (<https://secure1.state.mi.us/FacilitiesInventoryQueries/>)
- ✓ Underground Storage Tank List, Remediation and Redevelopment Division (RDD), MDEQ (Part 211 of Act 451) (http://www.deq.state.mi.us/sid-web/UST_Search.aspx)
- ✓ Leaking Underground Storage Tank Sites, Remediation and Redevelopment Division (RRD), MDEQ (Part 213 of Act 451) (http://www.deq.state.mi.us/sid-web/UST_Search.aspx)
- ✓ Oils & Gas Contamination Sites, Office of Oil, Gas, and Minerals (OOGM), MDEQ (Act 61) (<http://ww2.deq.state.mi.us/GeoWebFace/>)
- ✓ Hazardous Waste Generators, Office of Waste Management and Radiological Protection (OWMRP), MDEQ (Part 111 of Act 451) (<http://www.deq.state.mi.us/wdsp/>)
- ✓ Groundwater Discharge Permits, Groundwater Permits Unit, MDEQ (517) 284-5570 (Part 31 of Act 451) (<http://ww2.deq.state.mi.us/GeoWebFace/>)
- ✓ Landfill/Solid Waste Disposal Site List, Office of Waste Management and Radiological Protection (OWMRP), MDEQ (Part 115 of Act 451) (<http://www.deq.state.mi.us/wdsp/>)

- ✓ Federal National Priorities List; EPA, Region 5 (CERCLA & Superfund) (<http://www.epa.gov/superfund/sites/npl/index.htm>)
- ✓ Federal permits for Class V wells (underground Injection Control Program)
- ✓ Locations of Environmental Interest using MDEQ Site Registry and Map Viewer (<http://www.deq.state.mi.us/SiteRegistry/MapView/Default.aspx?>)
- ✓ Existing water wells in Newaygo County using MDEQ Wellogig tools (<https://secure1.state.mi.us/wellogig/Login.aspx?ReturnUrl=%2fwellogig%2fdefault.aspx>)
- ✓ Existing water wells using MDEQ Water Well Viewer (<http://wellviewer.rsgis.msu.edu/viewer.htm>)

In addition to the listed sources of potential contamination, there are certain types of activities and land use that could also be considered to be potential contamination sources (PCSs). These include agricultural operations, commercial facilities, manufacturing and industrial facilities, institutional facilities and utility companies. Abandoned wells left improperly sealed provide a direct route to the groundwater system and should be considered to be PCSs.

Other potential sources could include commercial operations such as auto repair shops, scrap yards, septic systems, dry cleaners, landfill, urban runoff and farming practices. Common operations that may take place within or near the WHPA and the waste generated that may pose a risk to the water supply if not properly managed are listed here.

- ✓ All businesses – Sanitary Sewage
- ✓ Vehicle Service and Body Repair – Oil, antifreeze, solvents, fuels, paints, metal residues
- ✓ Car and Truck Wash – Road salt, gasoline, antifreeze, oil-laden wash and rinse, cleaners
- ✓ Metal Parts Cleaning – Alkaline solutions, solvents, phosphate solutions, metal residues
- ✓ Laundromat – Dirty wash water, detergents, laundry pre-wash solvents
- ✓ Dry Cleaning – Solvents, filters
- ✓ Furniture Repair and Refinishing – Solvents, paints, varnishes, shellac
- ✓ Photo Finishing/Silk Screen Printing – Process chemicals, inks
- ✓ Paint Mixing – Paints, solvents, pigments
- ✓ Food Processors/Restaurants – Food scraps and juices, wash water, salt, grease
- ✓ Gas Station – Gasoline, diesel fuel, oils, kerosene
- ✓ Residential – Septic systems, lawn fertilizers, pesticides, oils and fuel, household hazardous chemicals, paints, furniture strippers, fuel oil, swimming pool chemicals, pharmaceuticals
- ✓ Agricultural – Animal waste, fertilizers, pesticides fuels and oils, manure spreading, animal burial area.

Land use in the wellhead protection area includes some industrial and commercial sites. These are located within the City of Newaygo and also along Highway M-37 that runs north-south through the city. The delineation area for the new wells includes sections along M-37 on the south side of town. The City of Newaygo developed a Newaygo Community Recreation Plan in 2010. In that plan, the City identified a regional area shown on the land use map in Appendix C. In this area, the land use is over 60% forest.

There are also 9.6% non-forested fields, 18.7% agricultural which is primarily Christmas tree farms. Water and wetlands take up 7.2% of the area. The Urban area, including residential and commercial areas comprises 4.0% and industrial, utility and transportation only 0.4% of the land use. This data was provided by a Newaygo County 1998 Source map. There are no Confined Animal Feeding Operations in the area.

There are other area businesses that have been identified that could be potential sources of contamination based on the above list but that have not had any environmental impacts or reason to be included as a verified source of environmental impact. These include gas stations, auto repair shops, Laundromats, and restaurants in the area. There are no dry cleaning establishments, or metal parts cleaning, furniture repair or paint stores in Newaygo.

Much of the wellhead protection areas are in locations where residences would have private well and septic systems. Property owners are encouraged to use best management practices (BMPs) to prevent contamination to groundwater. These practices include maintaining adequate sanitary setback for the private wells and maintaining the private septic field in good condition. All property owners are asked to properly dispose of household hazardous waste. Newaygo County provides an annual hazardous waste collection day for county residents. The MDEQ Wellogic system was used to produce lists of water wells in each of the township sections included in the delineation areas. These lists are included in Appendix E. Additional sources of educational material and information are listed in the next section.

The City publishes a Water Quality report annually. The city routinely samples the drinking water to ensure the water supply is safe and of good quality. The latest report, for 2013 is available on-line at the city website at: <http://www.newaygocity.org/index.php/en/stay-connected>

Section 5

Management Approaches for Local Wellhead Protection

The Wellhead Protection Team reviewed options for Management Strategies and the following options were selected for further development.

1. Public Education and Awareness and Wellhead Protection Plan Maintenance including the following selected strategies:
 - ✓ “Wellhead Protection Community” road signs will be installed at City entrances and be completed by the May 2015.
 - ✓ A copy of the City Wellhead Protection Plan will be made available for the public at the Newaygo Public Library by December 2014.
 - ✓ Printed materials will be available that provide public awareness of how they can work with the city to protect the wells by implementing proper hazardous waste disposal, water conservation and proper closing of abandoned wells . These materials will be available to the public by May 2015.
 - ✓ Annual and quarterly meetings of the Wellhead Protection Team will be held to review the plan’s effectiveness. The annual meeting will be held in October. Other quarterly meetings will be held in January, April and July of each year.
 - ✓ An annual residential hazardous waste collection day has been implemented. The collection day is held in June by the County each year It will also be included in the public awareness literature.
 - ✓ Used oil recycling centers will be identified in the area. These oil recycling centers will be identified in the public awareness literature.
 - ✓ A location has been established for disposal of unwanted medications. The disposal drop box is located inside City Hall adjacent to the Police Department. This drop box location will be included in the public awareness literature.
 - ✓ The City publishes a quarterly newsletter that will be used to distribute news and information regarding the Wellhead Protection Plan and educational information for residents on how they can help protect the water supply.
 - ✓ Post information on the City website by May 2015.

2. Abandoned Well Program –

The City of Newaygo is developing an abandoned well program to identify and plug unknown abandoned wells located within the Wellhead Protection Areas.

The following items will be reviewed and worked on throughout 2015.

- ✓ The City would solicit information from property owners to identify abandoned wells. If reported the city will record the well location and owner. The City will annually attempt to identify funding sources to have the wells properly plugged.
- ✓ The City will also confirm that on-site wells are addressed when demolition permits are issued. The intent is to ensure abandoned wells are properly plugged prior to demolition activities occurring, since after demolition it may be impossible to locate old wells.
- ✓ Zoning ordinances may be modified to include these requirements. The city Planning and Zoning information is available on line at the City of Newaygo website: <http://www.newaygocity.org/index.php/en/government/city-departments/planning-zoning>
- ✓ Permits for new construction and also demolition should include a review of wellhead protection plans. Permit application forms are available on the City of Newaygo website: <http://www.newaygocity.org/index.php/en/forms-documents/category/1-applications-permits>

In Appendix E are copies of lists of existing water wells located in township sections within the delineation areas. This information is published by the Michigan Department of Environmental Quality, on the Wellogic mapping system. The State of Michigan is capturing all the water well data available in the state for purposes of protecting the groundwater of the state. This information should be available to local agencies for evaluating permits to assure the proper closure and plugging of abandoned wells. The website can be accessed to obtain complete information on each well at: <https://secure1.state.mi.us/wellogic/>

3. Linking the WHPP to Other City Plans or Ordinances

The City recognizes that the success of the Wellhead Protection Program will be improved if a large number of individuals and agencies understand and recognize the value of the program. Linking the WHPP to other city plans would provide a broad base of support for the program. The targeted plans include the City Master Plan, Policy Plans, Strategic Plans and Single-Issue Plans. This will be implemented by the end of 2018. The City Master Plan is available on the city website: <http://www.newaygocity.org/index.php/en/forms-documents/category/17-plans>

4. County Partnerships

The City has worked with the Newaygo county Health Department to partner of certain aspects of the plan. The County is responsible for issuing on-site septic and water well permits. The City has requested that the County consider the Wellhead Protection Areas in future permitting

decisions. This item has been implemented and the representatives from these departments are members of the wellhead protection committee.

5. City/Township Coordination of Leaking Underground Storage Tank Cleanup

Cleanups of leaking underground storage tanks and other contaminated properties in Michigan are regulated at the state level. The MDEQ sometimes allow certain levels of contamination to remain in the soil and groundwater and restrict future land use at the contaminated site. When a cleanup is completed the MDEQ informs the municipality where there are land use restrictions imposed.

The Wellhead Protection Areas include not only the City of Newaygo, but also Brooks Township and Garfield Township. The Wellhead Protection Team finds value in a team approach to the wellhead protection and will work toward implementing agreements between the townships and the city to notify the City if land use restrictions are being proposed for properties within the within the Wellhead Protection Area.

If received, the City will contact MDEQ Grand Rapids District office to inform them that the property is within the delineated area and request that the MDEQ consider this in their review of proposed corrective action activities at the site.

6. Environmental Permit Checklist

The City will be using an Environmental Permit Checklist to help monitor land development in and around the Wellhead Protection Area. MDEQ has developed a checklist that is available for business and industry to use to assist in complying with various state and county environmental permit requirements. The City would propose to work with developers to review and complete the checklist. This list will be phased in over the next two years and will be fully implemented by the end of 2016. The MDEQ checklist is available at the following web address:

http://www.michigan.gov/documents/deq/deq-oea-cau-permits-egp3580_415019_7.pdf

7. Contaminated Property Cleanup monitoring

Cleanup activities at contaminated property that has been reported to MDEQ will be monitored by the City. This monitoring includes reviewing MDEQ files, discussing the cleanup activities with MDEQ and providing status reports to City Council.

8. Site Review Criteria

Land use zoning to protect the quality of life has been adopted in the City. The intent of the zoning is to protect resources through the use of standards. The Wellhead Protection Team will also encourage local townships in the coming year (2015) to consider the WHPP during their zoning review and continue to do so in the future.

9. Demolition Permits

Permits are required to demolish certain structures. Revisions to the City's permit process will include abandonment of unneeded wells and removal of heating oil tanks prior to demolition. The permits will include these items by the end of 2014.

10. Educating local residents and businesses of the ways they can participate and keep potential pollutants out of the environment. These include things like proper disposal of hazardous materials, including batteries, used oil, unwanted medications, and used electronics among other things. The city uses the quarterly newsletter to inform local residents of locations and special collection activities. Information will be posted on the website by May 2015. Resources for educational materials include the MDEQ and EPA. Some of the following information is available at these websites:

- ✓ Wellhead Protection
http://www.michigan.gov/deq/0,1607,7-135-3313_3675_3695---,00.html
- ✓ Examples of Local Outreach and Educational tools including information for children
http://www.michigan.gov/deq/0,4561,7-135-3313_3675_3695-285331--,00.html
- ✓ Proper use, storage and disposal of pesticides and fertilizers at
http://www.michigan.gov/documents/deq/ess-nps-savvy-fertilizer_209418_7.pdf
- ✓ Proper disposal of household hazardous waste, including medical waste.
http://www.michigan.gov/deq/0,4561,7-135-3312_4118-70304--,00.html
- ✓ County Recycling Program Contact Information at
http://wwwmdeqw.michigan.gov/documents/deq/deq-ess-recycle-contact-newaygo_215488_7.pdf
- ✓ Newaygo County recycling program information at
<http://recyclingfornewaygocounty.org/>
- ✓ Proper operation and management of septic systems at
<http://www.miwaterstewardship.org/Portals/0/docs/MSUE%20Bulletins/HAS-Managing.Household.Wastewater-Septic,etc.pdf>
- ✓ Information on plugging abandoned wells at
http://www.michigan.gov/documents/deq/deq-wb-dwehs-wcu-plugabdwells_209016_7.pdf?20140803150114

Section 6

Contingency Planning

The City of Newaygo maintains a Water Supply Emergency Contingency Plan. The plan includes elements to provide for both short-term and long term protection of the City's water supply.

The City updated their water supply Emergency Response Plan in 2006. The plan includes action plans specific to the water and wastewater systems in the event of a power outage, structural Damage or Intrusion and Water Contamination or Environmental Contamination.

The plan includes identification of personnel, testing equipment, procedures and materials which can be used for rapid correction or elimination of the impact from environmental accidents which may constitute a water supply emergency. The plan also addresses response protocols, notification procedures and methods of containment.

The response protocol in the event of a water or wastewater emergency event includes the following general guidelines:

- ✓ Establish incident command system
- ✓ Consider need to contact Newaygo County Emergency services
- ✓ Establish method of communication.
- ✓ Coordinate public information.
- ✓ Inspect and evaluate water and wastewater systems to ensure safety.
- ✓ In conjunction with Newaygo County Emergency Services identify potable and non-potable water resources.
- ✓ Evaluate any impact the incident has had on the water system.
- ✓ Maintain water and wastewater system reliability and lower water usage and losses, valve off sections as needed
- ✓ Maintain service to critical users and pressure for fire protection.
- ✓ Throttle pumps and valves to limit losses.
- ✓ Coordinate alternative water supplies and alternatives.

Public information notices may be made depending on the contaminant. Three notices are available in the Emergency Response Plan. These include a "Boil Water" notice, a "Do Not Drink Water" notice, and a "Do Not Use Water" notice. These Notices contain information on where bottled water can be obtained if required. Alternate water resources are listed in the Emergency Response Plan and include several sources of bottled water and three neighboring communities that have municipal water supplies.

In the event of contamination of the well the response guidelines include:

- ✓ Follow general guidelines as they apply.
- ✓ Examine the water and wastewater flow rates, sample data and information.
- ✓ Isolate affected portion of the system.
- ✓ Contain wastewater spills to minimize environmental impact.
- ✓ Flush affected portion of the system, if appropriate.
- ✓ Shut down the system if warranted by obvious or confirmed contamination of the water system.
- ✓ Continue to sample and monitor water quality.
- ✓ Protect and preserve evidence as appropriate.
- ✓ Identify chemicals or other contaminants before disposal.
- ✓ Dispose of contaminated material in an authorized facility.
- ✓ Assess and coordinate the need for additional protection and security measures.
- ✓ Conduct a damage assessment of all water and wastewater facilities and equipment.

The location of the well #7 was selected in part to reduce the likelihood of contamination of all of the water supply for the city. The new well is designed to be able to fully supply the water required for the City, allowing for capability of shutting down one of the well locations in the event of a contamination emergency.

If all the wells were to become contaminated, the city would initiate activities to provide either a treated water system, or a new water supply. In the unlikely event of contamination, the residents would be informed immediately and would continue to be informed of any activities being taken regarding the water supply.

Section 7

Plan for New Wells

In the event of additional wells being installed the well will be added to the Wellhead Protection Program Plan. Information regarding the new well is to be included in this plan. The tables in Section 1 – Introduction include spaces for adding information regarding new wells.

For each new well, a wellhead area delineation will be determined. Information for each new well and the delineation area for the new well are to be included in Section 3 – Wellhead Protection Area Delineation. Potential sources of contamination should be identified and this information added to Section 4 – Contaminant Source Inventory. In addition, new or updated maps are to be added to the maps shown in Appendix C. Separate tables or updates to Table 2, showing the Potential Sources of Contamination, are to be added to Appendix D for any new wells.

The city will follow MDEQ guidance for location, design and system implementation of any new wells.

Section 8

Public Participation, Outreach and Education

The following is a list of options the Wellhead Protection Team will use to involve and educate the public regarding the Wellhead Protection Program. Some of these activities have already been implemented.

- ✓ Local meetings
- ✓ Newsletters
- ✓ School presentations
- ✓ Brochures
- ✓ Websites
- ✓ Signs
- ✓ Information to property owners and businesses
- ✓ Hazardous Waste Collection activities

The City's Wellhead Protection Team will continue to encourage community involvement and two way communication with the public regarding the Wellhead Protection Program. There are numerous on-line tools available for the Team to use for a number of these activities. Several websites are listed in Section 5. The implementation schedule is covered under Section 5 paragraph one and ten.