WELLHEAD PROTECTION PLAN

MARION TOWNSHIP WELLFIELD
LIVINGSTON COUNTY, MICHIGAN

Prepared for:

Marion, Howell, Oceola, Genoa Sewer and Water Authority (MHOG)
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1.0 INTRODUCTION

The Marion, Howell, Oceola, Genoa Sewer and Water Authority (MHOG) relies on groundwater sources to supply drinking water to residents and businesses through a municipal water system. One of the primary goals of the Wellhead Protection Plan (WHPP) is to protect MHOG's groundwater supply from contamination by formulating and implementing a set of actions and management practices to protect the water supply from potential sources of contamination. WSP USA Environment & Infrastructure, Inc. (WSP), formerly Wood Environment & Infrastructure Solutions, Inc. (Wood) is part of a team working closely with MHOG with the preparation of this revised and updated WHPP.

This revised WHPP was prepared in accordance with renewal guidance documents available from the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resource Division. Michigan's Wellhead protection program was developed in response to the 1986 amendments to the federal Safe Drinking Water Act (SDWA). Wellhead protection is a voluntary program which is implemented on a local level through the coordination of activities by local, county, regional and state agencies. Funding for the development of this updated WHPP was provided jointly by MHOG and the state of Michigan through the Wellhead Protection Grant Program.

This revised WHPP is intended to be a working document. In order for the WHPP to achieve its goal, this document needs to be used frequently and updated when necessary. One must remember that MHOG intends to use its water supply for an indefinite period of time. As long as groundwater is used by MHOG, this WHPP will have to be maintained to remain useful.

A copy of the WHPP will be available for review at the MHOG water treatment plant in Marion Township. This WHPP will continue to be updated periodically by MHOG.

The WHPP provides background information about the MHOG water supply system, a summary of each of the seven elements of the MHOG WHPP, recommended procedures for maintaining the WHPP, an implementation schedule, and a guide to resources that can be used as the WHPP is implemented. Supporting information is provided in associated figures, tables and appendices.

1.1 Community Location and Population

The areas surrounding the City of Howell and City of Brighton experienced rapid growth and development in the 1990s that continues today. MHOG was created to provide water within select areas of the four Townships (Marion, Howell, Oceola, and Genoa) surrounding the City of Howell to meet the needs of the newly developed areas. MHOG Public Water Supply System (PWSS) currently serves a population of approximately 16,000 and is located in the central portions of Livingston County, Michigan. MHOG's well field is located in Section 5 of Marion Township. The City of Howell operates a well field approximately 6,500 feet to the east in Section 4 of Marion Township, which serves a different population than MHOG's water supply.

The region surrounding MHOG's well field in Marion Township is gently rolling hills to undulating topography, with numerous lakes, ditches, wetlands, creeks, and streams. Ground surface elevations in the area range from about 890 feet above mean sea level (amsl) east of the two well fields to about 1,125 feet amsl approximately one mile east of the MHOG well field and south of the City of Howell well field. The elevation within the well fields ranged from 980 to 1,000 feet amsl for Howell and 930 to 940 feet amsl for MHOG. The MHOG well field is located immediately southwest of the Red Cedar River. The Red Cedar

River, along with the South Branch Shiawassee River located approximately ¾ mile east of the City of Howell well field, are the hydraulic controlling surface water features for the area.

1.2 Present Service Area

The MHOG public water supply system (PWSS) service area generally surrounds the City of Howell and serves select areas of Marion, Howell, Oceola, and Genoa Townships. The PWSS currently has approximately 6,112 service connections, 610 of which are commercial/industrial, 5,227 are residential, and 275 of the connections are for multi-family residential. The MHOG PWSS is owned by MHOG, operated by the Genoa Township Utility Department, and serves a population of approximately 14,000. 2022 production was approximately 678.878 million gallons, with a maximum daily production of 4.02 million gallons per day (MGD) and an average daily production of 1.859 MGD. The current water distribution system consists of six water supply wells, a water treatment plant, four elevated water towers, two ground storage reservoirs, four booster stations, and a water distribution system. MHOG's well field, which includes production wells 1 through 6, is located at the intersection of Norton Road and Cedar Lake Road (WSSN #04098) in Marion Township, Livingston County, Michigan. The locations of the production wells are shown on **Figure 1, Well Locations**. Further, **Figure 2, Geographic Areas of Service,** provides a depiction of the current approximate geographic areas that are served by the PWSS. Additional information regarding the components of the water distribution system is described below.

MHOG Water Treatment Plant: The MHOG Water Treatment Plant, located at 4288 Norton Road, is capable of treating up to 12 million gallons of groundwater daily. After entry into the plant, raw water from the six supply wells enters the head tank aerators. This begins the oxidation of iron for the iron removal process. Also, at this stage, the head tanks provide adequate elevation so that water gravity flows through the rest of the plant processes. From the head tank aerators, raw water enters the base of the claricones. Rapid mix of lime slurry, flocculation and sedimentation of agglomerated particles occurs in this vessel. This is where the softening process and some of the iron removal happens. After the softening process, water enters the recarbonation tanks for pH adjustment using Carbon Dioxide. From the recarbonation tanks, water enters the duel media sand and anthracite filters. Gravity filtration finishes the iron removal process and removes any turbidity left over from softening. From here, potable water flows into the plant's clearwells where sodium hypochlorite (16% Bleach) is added for disinfection purposes. High service pumps pump finished water from the clearwells into the distribution system. Just prior to the distribution system, hydrofluorosilicic acid (fluoride source) is added for dental protection.

MHOG Water Towers and Ground Storage Reservoirs: MHOG's four elevated water towers and two ground storage reservoirs have a combined capacity of 6.8 million gallons.

A summary of the water towers and ground reservoirs is provided on the following table:

Tower I.D.	Capacity (Gal.)
Transwest Tower (WTO 03)	300,000
Marion 1 Ground Storage Tank (WTO 01)	1,000,000
Marion 2 Ground Storage Tank (WTO 02)	4,000,000
Oceola Tower (WTO 04)	500,000
Genoa Tower (WTO 05)	500,000
Hometown Tower (WTO 06)	500,000

MHOG Water Distribution System: Once potable water leaves the plant via the high service pumps, the finished water enters into the distribution system's water mains and is distributed to its residential and commercial/industrial users within the service area. The distribution system contains approximately 870,012 lineal feet (LF) or 164.8 miles of water mains. The current distribution system components are listed in the table below:

Water Main Components	Quantity
Water Treatment Plant	1
Ground Storage Reservoir	2
Elevated Water Towers	4
Well Houses	6
Hydrants	1,694
2-inch water main	1,459 LF
4-inch water main	4,112 LF
6-inch water main	7,476 LF
8-inch water main	486,968 LF
10-inch water main	1,634.5 LF
12-inch water main	241,118 LF
14-inch Water Main	3,621 LF
16-inch Water Main	109,985 LF
20-inch Water Main	12,700 LF
24-inch Water Main	626.5 LF
30-inch Water Main	412 LF

A pressure regulating valve is located at the entrance of the water treatment plant to regulate pressure into the distribution system during the summer months. Another PRV is located on Golf Club Road between Oceola and Genoa Towers. This PRV can be used during emergencies to fill Oceola Tower from Genoa Tower.

The MHOG distribution system can essentially be broken up into 4 pressure districts.

- Western Marion Township and the western portion of Howell Township act as one pressure district

to the west of the system at an elevation of 1050 feet amsl.

- The Sanitorium Booster Station and Hometown Tower comprise another pressure district in eastern Marion Township at an elevation of 1105 feet amsl.
- Oceola Township and the eastern portion of Howell Township is a pressure district in the northeast part of the system at an elevation 1100 feet amsl.
- Genoa Township is a pressure district in the southeast part of the system at an elevation of 1150 feet amsl.

The plant high service pumps directly fill Marion 1 Ground Storage Tank (GST), Marion 2 GST, and Transwest Tower. The Transwest Tower is also filled from the Transwest Pumps in the Sanitorium Booster Station when the water plant is not running. The Hometown Pumps in the Sanitorium Booster Station fill Hometown Tower. Oceola and Genoa Towers are filled via their own dedicated booster pump stations from the bulk of system storage located in Marion and Howell Townships. Industrial Drive Booster Station fills Genoa Tower and the Butler Road Booster Station fills Oceola Tower. Georgetown Pump Station is solely for providing higher pressure to a subdivision of similar elevation to Marion 1 & Marion 2 GSTs.

Sodium Hypochlorite is boosted in the distribution system at two booster stations. It is added at the Industrial Drive Booster Station and the Butler Road Booster Station to boost chlorine residual into their pressure districts.

MHOG's Marion Township Well Field

The MHOG well field currently consists of six Type I municipal drinking water wells (Wells 1 through 6) located in Section 5 of Marion Township approximately 250 to 1,500 feet apart. The MHOG PWSS serves a population of approximately 16,000. The MHOG wells are located in an area near the intersection of Norton Road and Cedar Lake Road. The City of Howell's Marion Township well field is located in the immediate vicinity and south of Norton Road approximately ½ mile west of County Farm Road (WSSN #3250) in Livingston County, Michigan. Due to the close proximity of the well fields to one another, the development of the WHPA delineations were completed simultaneously using the same computer model. The MHOG field locations are presented in **Figure 1, Well Locations**.

In 2013, MHOG and the City of Howell completed a revised WHPA delineation of their two respective well fields located in Sections 4 and 5 of Marion Township. MHOG's well field was initially developed in 1996. The six, 1,400-gpm rated production wells were installed at depths ranging from 391 to 418 feet and are open through and obtain water from both the Michigan Formation and the deeper Marshall Sandstone. Up to 5 wells can be pumping at any one time with at least one of the wells acting as backup capacity. Therefore, the firm capacity of the MHOG system is determined to be 7,000-gpm. The results of the WHPA delineation were presented in WSP's July 12, 2013, "Well Head Protection Area Delineation Report for Howell and MHOG Water Supply Fields, Marion Township, Michigan," which was reviewed and approved by EGLE.

1.3 Number of Wells and Capacity

As discussed above, the present PWSS for MHOG consists of one well site located in Marion Township with a total of six water supply wells as noted in **Figure 1**.

Details for the wells are provided below:

Well I.D.	Year Installed	Well Diameter	Intake Interval	Capacity
Well 1	1995	16-inch casing, open borehole	116 – 391 feet	1,400 gpm
Well 2	1996	16-inch casing, open borehole	121 – 410 feet	1,400 gpm
Well 3	2000	16-inch casing, open borehole	124 - 403 feet	1,400 gpm
Well 4	2003	16-inch casing, open borehole	130 – 408 feet	1,400 gpm
Well 5	2004	16-inch casing, open borehole	144 – 418 feet	1,400 gpm
Well 6	2004	16-inch casing, open borehole	142 – 417 feet	1,400 gpm

Note: gpm: gallons per minute

The production wells are installed in bedrock of the Michigan and Marshall Formations. Copies of the water well and pump records for each of the wells are included in **Appendix A, Water Well and Pump Records**. Additional details regarding geology, drilling, methods, and well construction information are included on the records in **Appendix A**.

WSP's 2013 WHPA delineation report was completed using newly collected data and existing data in the form of a previous October 1996 C.J. Linck & Associates, Inc. (CJL) WHPA delineation report completed for the City of Howell and MHOG Marion Township well fields. The CJL WHPA delineations were completed using pumping capacities that were based on future projections and did not accurately reflect the current pumping configuration of either the City of Howell or MHOG well fields. The current firm capacity for the City of Howell and MHOG well fields are 3,350 gpm and 7,000 gpm, respectively. The updated WHPA delineation was completed in accordance with the State of Michigan's Wellhead Protection Program at each well field's current firm capacity to ensure an accurate WHPA delineation was developed and used in the WHPP.

MHOG monitors the water quality of its water supply in accordance with state and federal regulations. Water quality data indicates the water quality meets all applicable criteria for safe water. MHOG provides its water customers with an annual water report on the water system. Copies of MHOG's Consumer Confidence Reports for 2018 through 2022 are provided in **Appendix B, Water Quality Reports**.

1.4 Mission Statement and Local Goals for Wellhead Program

The WHPP reflects MHOG's commitment to the protection of its community resources, the public health of its citizens, and the natural environment. This commitment is expressed in the following mission statement in Section 1.4.1.

1.4.1 Mission Statement for the MHOG Wellhead Protection Program

The mission statement for the MHOG Wellhead Protection Program is as follows:

> It is the mission of MHOG to continuously protect the local drinking water resource from potential and existing contamination for generations to come.

1.4.2 Goals

MHOG's primary goal for the wellhead protection program is the formulation and implementation of a set of actions and management practices to protect the water supply from potential sources of contamination.

To accomplish the objectives of the wellhead protection program, MHOG identified the following specific goals for the Wellhead Protection Program:

Goal 1: To develop a comprehensive groundwater protection plan that addresses, at a minimum, each of the elements required in a State of Michigan Wellhead Protection Program. The web address for the State of Michigan's Wellhead Protection Program is https://www.michigan.gov/egle/about/organization/drinking-water-and-environmental-health/source-water-protection.

Goal 2: To instill a sense of ownership of the well fields and encourage the local community to recognize that wellhead protection is both worthwhile and necessary.

Goal 3: 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 substances or petroleum substances in MHOG's delineated WHPA.

Goal 4: To protect groundwater resources through the development of administrative options. This includes groundwater protection ordinances and site plan review criteria that are consistent with and utilize all of the authority granted by state zoning enabling legislation for cities and townships.

Goal 5: To promote inter-governmental and intra-governmental cooperation to assure protection of the water resources within the Wellhead Protection Area.

Goal 6: Enhance communication and coordination between local and state agencies on pollution incidents to assure adequate cleanup for natural resource and public health protection.

Goal 7: Work with local, state, and federal agencies to minimize the impacts of listed sites of environmental contamination on MHOG's groundwater resources.

Goal 8: Site new wells properly to maximize yield and minimize potential contamination.

Goal 9: Establish WHPA delineations based on the 10 year capture zone identified in the delineation process based on current well field conditions and when new wells are developed.

Goal 10: To gather public support and participation in the development and on-going implementation of the Wellhead Protection Program.

Goal 11: Monitor existing and future activities within the WHPA that have been identified as potential sources of contamination.

Goal 12: Inform landowners of the potential impacts of abandoned wells on MHOG's water supply; complete an inventory of abandoned private wells within the WHPA; and seek funding to work towards properly abandoning any such wells.

Goal 13: Seek additional funding from local, state and federal sources to implement the WHPP.

2.0 ROLES AND RESPONSIBILITIES

This element of the WHPP is intended to identify individuals responsible for development and implementation of the WHPP and to outline their responsibilities. The process began with the establishment of the Team and establishing the role and responsibilities for each team member.

Continued success and implementation of the WHPP will rely on the efforts of the Team; representatives from MHOG, Marion Township, City of Howell, Livingston County, EGLE, consultants to MHOG, business representatives, residents and representatives of neighboring communities. These groups are aware of their roles and responsibilities, and several are represented on the Team. Contact information for the individuals mentioned is provided in **Table 1, City of Howell & MHOG Wellhead Protection Team Contact List**. Given the dynamic nature of wellhead protection, it is important to acknowledge that the roles and responsibilities will change over time and planning for this change is essential.

2.1 Identification of Significant Responsibilities of Carrying Out WHPP

Establishing roles and responsibilities requires building partnerships with the community at all levels of government and with other supporting organizations. This section of the WHPP focuses on the identification of all people, local, county, or State agencies, or public water supply agencies that have significant responsibilities for carrying out the WHPP.

Team members consist of members representing these various interests to tailor the wellhead protection program to meet the needs of the community. The Team has the responsibility of assisting with the preparation of the WHPP and will have continued responsibility for assuring the WHPP is implemented and updated and, in general, for carrying out the responsibilities of the local team. This is the second update since the WHPP was prepared in September 2013. The last WHPP updated was completed in 2018. Current Team members consist of:

Wellhead Protection Team Members

- Greg Tatara, Utility Director, MHOG
- Alex Chimpouras, Deputy Utility Director, MHOG
- James Webster, Operations Manager, Howell Water Treatment Plant
- Mike Spittler, Howell Department of Public Works Deputy Director (DPW)
- Kristi Troy, Administrator, Howell Planning and Zoning Department
- Brian Anderson, Deputy Chief, Howell Area Fire Authority
- Matthew Cox, Howell Public Schools
- Robin DeWyre, Vice President - Geologist, WSP
- Heather Blair, Environmental Specialist, Livingston County Health Department Representative
- Bob W. Hanvey, Marion Township Supervisor
- Benjamin Gebott, Quality Control Manager/John Hibbard Production Manager Pepsi Beverages Company

It should be noted that James Webster, the City of Howell's Water System Operations Manager, and Ray Kraft, the City of Howell's Department of Public Works Department Deputy Director have agreed to be members of the current Team. The City of Howell operates a well field 6,500 feet east of the MHOG well field. Both MHOG's well field and the City of Howell's main well field are located in Marion Township, and withdraw groundwater from the same aquifer. The approved WHPA delineation for these two well fields was completed by the City of Howell jointly with MHOG in 1996 and again in 2013, and the Team meets jointly.

Throughout the process of program development and implementation, individual roles and responsibilities may change; however, the team will provide consistency of the program to ensure its continuance over time. Team meetings have been held routinely and it is envisioned that Team meetings will continue moving forward.

2.2 Brief Description of the Roles and Responsibilities of Each Person or Agency

Brief descriptions of the roles and responsibilities of each Team member and other people or agencies involved in wellhead protection are presented below.

Utility Director: Current Representative, Greg Tatara (Team Member and MHOG Utility Director)

The Utility Director will be responsible for providing support and guidance as the WHPP is implemented, work with others to ensure there is accountability with the WHPP, and promote the importance of the WHPP to the administrative staff who, in turn, can promote the program to the community at large. The Utility Director, with support from MHOG officials will be responsible for maintaining any budgets associated with wellhead protection activities. The Utility Director will coordinate public participation and education (i.e. Team meetings, brochures); revise the Water Emergency Contingency Plan (once every five years); review the Environmental Permit Checklist; administer and review, in conjunction with Marion Township officials, the Groundwater Protection Ordinance; and maintain a copy of the Wellhead Protection Plan. The Utility Director will also be responsible for communicating with Marion Township officials regarding enforcement of the Groundwater Protection Ordinance.

Deputy Utility Director: Current Representative, Alex Chimpouras (Team Member and Deputy Utility Director), MHOG

The Deputy Utility Director will have the primary responsibility of operation of the MHOG water supply system; will assist with ensuring the WHPP is both implemented and updated; will serve as the liaison with all others having a role and/or responsibility; will assist in the coordination of public participation and education; will assist in revising the Water Emergency Contingency Plan (once every five years); and maintain a copy of the Well Head Protection Plan.

Howell Area Fire Department: Current Representative, Brian Anderson, Deputy Chief (Team Member)

The Howell Area Fire Department representative is responsible for ensuring there is a linkage between wellhead protection and public safety issues such as hazardous waste storage, handling, and chemical spills. The Howell Area Fire Department representative is also in charge of information related to the presence

and proper storage of hazardous substances and petroleum products in the City of Howell as well as in Cohoctah, Howell, Marion and Oceola Townships.

City Planning: Current Representative, Kristi Troy, Interim Community Development Director (Team Member)

City of Howell Planning will be responsible for management of wellhead protection as a community-planning issue for the City of Howell and will assist MHOG with planning strategy. Management strategies that can be used by City Planning and Marion Township are described in detail in Section 5.0.

Hydrogeologist: Current Representative, Robin DeWyre, CPG, WSP (Team Member)

WSP will provide hydrogeological expertise required for the management and, if necessary, expansion of the water supply system. This function includes assisting with additional groundwater exploration, should that eventuality become necessary. The hydrogeologist will also take the lead in updating the WHPP as needed.

Livingston County Health Department: Current Representative, Heather Blair, Environmental Specialist (Team Member)

The Livingston County Health Department will be responsible for management of new water supply wells drilled within the WHPA delineation, the abandonment of unused wells and the assessment of the seriousness of groundwater contamination sources in the wellhead protection area. The Livingston County Health Department representative will also coordinate updates to the contaminant source inventory once every three years.

Howell Public Schools: Current Representative, Matthew Cox (Team Member)

The Howell Public Schools representative will be the liaison between educators, students and the Team. The Howell Public Schools representative will provide the Team with recommendations for effective methods to educate students regarding their water supply system and how to protect it. The Howell Public Schools representative will also assist educators with incorporating wellhead protection concepts into the earth science curricula.

Community Residents: Current Representative, Bob W. Hanvey, Marion Township Supervisor (Team Member)

Marion Township will be responsible for management of wellhead protection as a community-planning issue for MHOG. Management strategies that can be used Marion Township are described in detail in Section 5.0. The Planning representative will co-administer the Environmental Permit Checklist and co-administer and review, as needed, the existing Marion Township Groundwater Protection Ordinance to inform and educate proposed and existing developments of the WHPP.

Local Business Representatives: Current Representatives, Benjamin Gebott, Quality Control Manager/John Hibbard, Production Manager (alternate), Pepsi Beverages Company (Team Member)

The local business representative will be the liaison with local business groups with an interest in the protection of their water source as an important component in the economic vitality of their operations.

Neighboring Community Representative: Current Representatives, James Webster (Team Member and City of Howell's Water System Operations Manager), and Ray Kraft (Team Member and City of Howell's DPW Director)

The neighboring community representatives will serve as the liaisons between the City of Howell and MHOG. These representatives will be responsible for communicating to MHOG the wellhead protection efforts being undertaken by the City. Examples of such activities may include any regulatory, education, and outreach programs and continued intergovernmental WHPP activities between MHOG and the City of Howell.

Michigan Department of Environment, Great Lakes, and Energy (EGLE)

EGLE will act as the supervisory body that assures that spills of hazardous substances or petroleum products are properly cleaned up and that the water source within the MHOG well field has not been contaminated as a result of spills or release(s).

2.3 Intergovernmental Agreements, Memoranda, or Ordinances Which Set Forth Procedures or Responsibilities Related to Wellhead Protection

This WHPP has been prepared in general accordance with the following EGLE guidance documents:

- Checklist for Local Wellhead Protection Program Approval and Renewal - EGLE
- An Overview of Michigan's Wellhead Protection Program - EGLE
- Teaming Up for Quality Drinking Water, The Michigan Wellhead Protection Program Guide, MDEQ, Drinking Water & Environmental Health Section, February 2006
- Safe Drinking Water Act (SDWA), 1976 PA 399, as amended

MHOG understands and acknowledges that the WHPP is an ongoing commitment to protecting their sole source of drinking water. MHOG understands that as part of the process, continued enforcement of the existing Marion Township Wellhead Protection Ordinance will be necessary. Referencing the WHPP in the Marion Township Engineering Design Standards will help to inform and educate proposed developments of the plan. This information will be further discussed in **Section 5.0**.

Marion Township currently has an approved Wellhead Protection and Hazardous Substance Overlay Zone (Ordinance) which covers a majority of MHOG's delineated WHPA. The purpose and intent of this overlay zone is to provide supplemental development regulations in designated areas so as to permanently protect drinking water sources from long-term contamination in order to protect the public health and safety by minimizing contamination of the aquifers. These regulations contain proactive measures, which apply to certain areas of the community as well as those imposed in the underlying district. The goals of this overlay zone ordinance are to: (1) to shape future development and promote best management practices in order to

protect municipal wells; (2) limit chemicals and contaminants near municipal wells; (3) provide for early detection of contaminants in or near the wellhead protection area; and (4) to have the ability to inspect and catalog possible contaminants held by businesses or industry within the wellhead protection area. It is the intent to accomplish this, as much as possible, by public education and securing public cooperation, and also by the enforcement of the Wellhead Protection and Hazardous Substance Overlay Zone. Although there is no formal notification between Marion Township and MHOG, Marion Township is typically in close contact with MHOG in regards to enforcement of this ordinance, site planning or site review of development within the wellhead protection area that is not on the MHOG distribution system. Furthermore, a small portion of MHOG's delineated WHPA is located in Howell Township. MHOG plans to work with Howell Township regarding the development and implementation of a WHP Ordinance. MHOG also plans to work with both Marion and Howell Township to develop a formal notification process and enforcement procedure to strengthen MHOG's commitment to long-term groundwater protection. A copy of Marion Township's ordinance is provided in **Appendix C, Environmental Permit Checklist and Wellhead Protection Ordinance**. Marion Township is in the process of revising the current ordinance, and discussions with Howell Township are underway about implementation of a new Ordinance. The City of Howell is also exploring the development of an Ordinance for the WHPA delineation for Well 7.

Furthermore, the MHOG and the City of Howell water systems have a written emergency protection agreement which is included in **Appendix D, Emergency Water Connection Agreement**. This emergency connection agreement provides each participating community with a ready source of emergency drinking water, if necessary.

There are currently no other intergovernmental agreements that are part of the WHPP, or memoranda to include in the WHPP at this time.

2.4 Agency, Person and/or Team Responsible for the Periodic Update of the Local Wellhead Protection Program

As indicated, the WHPP was last updated in September 2018. This revised WHPP is a working document and MHOG will be responsible for updating of the plan. As such, it needs to be periodically updated. It is recommended the WHPP be reviewed once per year and updated as needed, with updates being completed at a minimum of at least every six years. A checklist, along with the EGLE renewal checklist, is provided as **Appendix E, Checklist for WHPP Updates**. The checklists can be used to guide the user toward portions of the WHPP most likely to require updates and provides a general guideline for the review of portions that need to be updated.

It is recommended that any proposed changes to the WHPP be recorded and kept with the WHPP by MHOG. The WHPP will be revised at least every six years by MHOG officials, with assistance from the Team, and the Hydrogeologist, as needed.

3.0 WELLHEAD PROTECTION AREA DELINEATIONS

The state of Michigan defines a WHPA as "the surface and subsurface areas surrounding a water well or well field, which supplies a public water system, and through which contaminants are reasonably likely to move toward and reach the water well or well field within a 10-year time of travel." The information presented in this section describes the development of WHPA delineations for the MHOG well field located in Marion Township.

3.1 EGLE Approved Wellhead Protection Area Delineations

MHOG's long term commitment to wellhead protection is demonstrated by the completion of wellhead protection area delineations at the well field beginning in 1996 and proceeding through the update completed in 2013. New geological data, well flow rates, well usage, well capacity changes, or other changes such as the installation of new wells that would result in the necessity to update the WHP delineation area have not been encountered since the delineation was last updated in 2013. In addition, significant or known changes to watershed boundaries and surface water runoff patterns have not occurred during the same timeframe. The location of the well field and its current calculated 10-year capture zone is depicted on **Figure 3-Wellhead Delineation Area,** and **Figure 4-Zones of Contribution. Figure 3** and **Figure 4** also depict the adjacent WHP Delineation from the City of Howell well field, ground surface topography and major surface water bodies.

WSP's 2013 WHPA Delineation Report provides a detailed description of the hydrogeology of the area. This report is maintained on file at the MHOG water treatment plant and at EGLE. It is important to note that although the delineation report defines the 10-year groundwater travel time area, the underlying aquifer does not stop at the delineation lines shown on the diagrams. Therefore, it is the intention of MHOG to make this information available to the adjacent municipalities; including Marion Township, Howell Township, and the City of Howell so neighboring groundwater users can become familiar with the results of the delineation study when planning future groundwater use. This attempt to share the information contained in the delineation is done to avoid the likelihood of possible competitive uses of the same groundwater resources causing groundwater interference problems.

The following paragraphs discuss details of the well site and its respective delineation area.

MHOG Well Field

MHOG operates a well field 6,500 feet west of the City of Howell's well field. Both the MHOG and the City of Howell well fields located in Marion Township withdraw groundwater from the same aquifer. In 1996, the City and MHOG completed a joint wellhead protection area delineation of their two respective well fields located in Marion Township. The results of the wellhead protection area delineation were presented in the October 28, 1996, "*Delineation of the Wellhead Protection Area for the Two Municipal Well Fields in Marion Township, Howell, Michigan*," prepared by C.J. Linck & Associates, Inc. (CJL) which was reviewed and approved by EGLE.

In the 1996 CJL WHPA study, the WHPA delineations were completed using pumping capacities that were based on future projections and did not accurately reflect the current pumping configuration of either the City of Howell or MHOG well fields. Subsequent to the wellhead protection area delineation in 1996, the City of Howell has installed a new well, CW-8 in its Marion Township well field. MHOG has also installed four additional production wells in their adjacent Marion Township well field. Three of the four new

MHOG wells were not anticipated in modeling completed in 1996. Although the initial wellhead delineation was completed using future anticipated withdrawals, the current balance of groundwater withdrawals in the two well fields differs from the withdrawals modeled in 1996. The differences in withdrawals impacted the size and magnitude of the currently utilized delineation area for this well field. EGLE agreed that wellhead protection area delineations for the two well fields should be modeled together due to their proximity and withdrawal from the same aquifer(s). During 2013, WSP completed revised wellhead protection area delineations for the City of Howell and MHOG well fields using current firm capacity pumping rates of 3,350 gpm and 7,000 gpm respectively. The 2013 WHPA delineation was completed in accordance with the State of Michigan's Wellhead Protection Program, at each well field's current firm capacity to ensure an accurate WHPA delineation was developed and used in the WHPP. These services were completed by WSP using updated data and existing data in the form of the 1996 CJL WHPA delineation report completed for the City of Howell and MHOG Well Fields.

In summary, the confined bedrock aquifer for MHOG and City of Howell municipal wells consists of approximately 160-165 feet of limestone and sandstone located beneath one or more shale layers. For the purpose of the 2013 WHPA delineation, the assumed maximum pumping rate for both MHOG and City of Howell systems are presented below:

- MHOG – Has six wells (Wells PW-1 through PW-6) which are rated at 1,400-gallons per minute (gpm) each. The firm capacity for the MHOG wells consists of having five of the six wells pumping (7,000 gpm total).
- City of Howell – The City of Howell water system has 5 wells total, not including a sixth emergency back-up well (Well 1). Wells 4, 5, 6, & 8 located at the main well field in Marion Township with capacity ratings of 1,000-gpm each and Well 7 is at a different location and is rated at 350-gpm. Therefore, the firm capacity of the City of Howell system is determined to be 3,350-gpm. The model was completed with four wells (Wells 4, 5, 6 & 8) assumed to be pumping at 837.5 gpm each (3,350-gpm total).

The wells are open through and obtain water from both the Michigan Formation and deeper Marshall Sandstone. The total thickness of permeable material was 165 feet at the MHOG well field and 160 feet at the City of Howell well field. The transmissivity and storage properties of the well fields were calculated to be 12,700 ft^2/day and 1.9 x 10^{-4}, respectively. Using future maximum day demands to set the production rates for the two well fields, the MHOG 10-year zone of contribution is approximately 15,500-feet long by 11,300-feet wide elongated in a northwest-southeast direction, and the City of Howell 10-year zone of contribution is approximately 10,500-feet long by 8,600-feet wide elongated in a north-south direction. The updated and most recent 10-year capture zone delineation areas for MHOG and the City of Howell well fields are depicted on **Figure 3** and **Figure 4**.

The WHPA delineations for MHOG and the City of Howell's Marion Township Well field was submitted to EGLE on July 12, 2013 and approved by EGLE in a letter dated October 4, 2013. A copy of the approval letter, along with the 1996 approval letter, is included in **Appendix F, EGLE Delineation Approval Letters**.

4.0 CONTAMINANT SOURCE INVENTORY (POTENTIAL SOURCES OF CONTAMINATION)

The goal of this updated contaminant source inventory (CSI) is to identify and locate existing and potential sources of environmental contamination, within MHOG's delineated WHPA. The purpose of this assessment is to identify facilities within the WHPA that may represent a "threat" to MHOG's PWSS. A comprehensive knowledge of these "threats" is essential in the development and implementation of effective management and public education strategies for the WHPP. The CSI was initially developed and last updated for the development of the WHPP in 2018, and has been updated as noted below.

4.1 Contaminant Source Inventory Maps

A figure that displays each of the identified potential sources of contamination within the delineated WHPA is included as **Figure 5-Known and Potential Sources of Contamination**. This drawing depicts the wellhead delineation area in relation to the following:

- Properties of known contamination based on regulatory database listings of released hazardous substances or petroleum products,
- Properties that are potential sites of contamination based on regulatory database listings documenting the use, handling, storage and/or disposal of hazardous substances or petroleum products, and
- Properties where zoning allows land uses that could include the use, handling, and/or storage of significant quantities of hazardous substances or petroleum products.

Several additional potential properties of environmental concern were identified within the WHPA based solely on the parcel's zoning classification. Properties identified as commercial were each identified as being a potential threat to the PWSS based on the current or potential future use of the property. There were no industrial-zoned parcels within the MHOG WHPA. Within the MHOG WHPA there are two zoning classifications; 201(commercial-improved) and 202 (commercial-vacant), that allow land uses that could potentially involve the use, handling, and/or storage of hazardous substances, and therefore have the potential to impact the municipality's PWSS.

A figure that displays each of the identified parcels of land within the municipality's delineated WHPA that represent a potential threat to the PWSS is included as **Figure 5-Known and Potential Sources of Contamination**. This drawing depicts parcels that are known to have contamination (based on regulatory database listings of released hazardous substances), parcels that are potential sources of contamination (based on regulatory database listing documenting the use, handling, and/or storage of hazardous materials), and potential sources of contamination (based on the parcel zoning classification). A summary of the parcels identified as known and/or potential sources of contamination within the MHOG WHPA is also presented in **Table 2-Known and Potential Sources of Contamination**.

The properties identified as potential sources of contamination based on their regulatory database listings are discussed in the sections below.

4.2 Identification of Potential Sources of Contamination

In order to identify and locate existing and potential sources of contamination within MHOG's delineated WHPA, WSP obtained and reviewed standard environmental records sources as required by ASTM

Standard E 1527-21 for the WHPA. A regulatory agency database report, provided by Environmental Data Resources, Inc. (EDR) on January 31, 2023, was reviewed for information pertaining to storage and/or reported releases of hazardous substances and petroleum products within the delineated WHPA. The EDR report is included in **Appendix G- EDR Radius Map Report**. The information obtained from EDR was tabulated and then verified with Livingston County Geographical Information System (GIS) records. The County's GIS records provide zoning and land use for the properties located within MHOG's delineated WHPA. GIS data was also used to identify whether additional commercial and/or industrial zoned properties were located within the delineated WHPA that were not identified in the EDR report.

The database search information has been divided into four subcategories: Federal Records, State Records, Tribal Records, and EDR Proprietary Records. As can be seen on **Figure 5** and **Table 2**, the review of the federal, state, tribal, and proprietary records summary provided by EDR identified five sites of potential environmental concern within, or partially within, the MHOG WHPA. One of these properties is listed in environmental databases which indicate that there is likely soil and/or groundwater contamination present on the site. This property represents the greatest current risk to the PWSS and is depicted in red on both **Figure 5** and **Table 2**. Based on their environmental database listings, the remaining four properties represent a moderate risk to the PWSS and are depicted in orange on both **Figure 5** and **Table 2**.

In addition to a review of reasonably ascertainable historical environmental regulatory databases, WSP also completed the following activities to further identify potential sources of contamination within the MHOG WHPA:

- Reviewed available county GIS data to identify properties within the delineated WHPA where potential contaminants may be used and/or handled, or that were zoned commercial or industrial.
- Reviewed the EGLE Environmental Mapper online database.

WSP's review of the Livingston County GIS records identified seven properties of potential environmental concern within the WHPA based solely on the parcel's zoning classification. These properties include all parcels with either a commercial or industrial zoning code/classification. Within the MHOG WHPA there are two zoning classifications that allow land uses that could potentially involve the use, handling, and/or storage of hazardous substances, and therefore have to potential to impact the PWSS. These zoning classifications include:

- 201 – Commercial-Improved
- 202 – Commercial-Vacant

There were no industrial-zoned parcels within the MHOG WHPA. The five properties identified through the environmental database search and the seven through zoning classifications have been assigned a map ID number (on **Table 2**), and their locations are depicted on the map presented on **Figure 5**. Known sites of environmental contamination identified within this WHPA are shaded in red, the remaining four properties identified from the environmental database search are shaded in orange, while those identified based on their zoning classification are shaded in yellow. Additional details are provided below.

4.3 Comprehensive Listing of all Potential Sources of Contamination

Information obtained for known and potential sources of contamination identified in MHOG's delineated WHPA is summarized in the following sections. This information is also presented on **Figure 5** and **Table 2**. Detailed descriptions of the known and potential sources of contamination within the WHPA are

presented in the EDR Report in **Appendix G**. The following sections present a summary of the results of the EDR report. Properties that were identified by EDR and were later identified as not being located within the WHPA are not discussed below.

4.3.1 Known Sources of Contamination

The facilities identified in the following environmental databases are properties with known or suspected soil and/or groundwater contamination present on their property, and are known sources of contamination. These properties represent the greatest potential risk to the municipality's PWSS. A summary of the properties identified in each of these databases is provided below:

Environmental Database	Number of Properties Within the MHOG WHPA
LUST: Leaking Underground Storage Tank Sites	**1***
RGA LUST: Recovered Government Archive Leaking Underground Storage Tank Sites	**1***
INVENTORY: Inventory of Facilities	**1***

*The same property (parcel# 06-32-300-003, 4944 Mason Road) was identified in each of these three databases.

Please note that the single property identified above was listed in three separate databases. This property is discussed below.

Sites of Environmental Contamination (Part 201)
This database includes "facilities" as defined by Part 201 of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451 (Part 201), where there has been a release of a hazardous substance in excess of the Part 201 residential criteria, and/or where corrective actions have not been completed.

- *There were no Part 201 sites identified within the MHOG WHPA.*

Baseline Environmental Site Assessment Sites (BEA)
A BEA is a document that new or prospective property owners/operators disclose to EGLE identifying the property as a facility pursuant to Part 201 or Part 213.

- *There were no BEA sites identified within the MHOG WHPA.*

Leaking Underground Storage Tank Sites (LUST)
This database contains an inventory of reported leaking underground storage tank incidents. The following property was identified as a LUST site within the MHOG WHPA:

- 4944 Mason Road – Parcel ID# 06-32-300-003 (D&J Gravel, Co.)

Recovered Government Archive Leaking Underground Storage Tank Sites (RGA LUST)
The following property was identified as a recovered government archive leaking underground storage tank (RGA LUST) site within the MHOG WHPA:

- 4944 Mason Road – Parcel ID# 06-32-300-003 (D&J Gravel, Co.)

Inventory Sites
The Inventory of facilities has three data sources: facilities under Part 201 of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended, facilities under Part 213, Leaking

Underground Storage Tanks of the NREPA; and facilities identified through submittals of Baseline Environmental Assessments (BEA) submitted pursuant to Part 201 or Part 213 of the NREPA. The following property was identified as an INVENTORY site within the MHOG WHPA:

- 4944 Mason Road – Parcel ID# 06-32-300-003 (D&J Gravel, Co.)

Activity Use Limitation (AUL) Sites
This database contains a listing of facilities with institution and/or engineering controls in place.

- *There were no AUL sites identified within the MHOG WHPA.*

Brownfield Sites
This database contains a listing of properties that have been expanded, redeveloped, or reused of which may have been complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

- *There were no Brownfield sites identified within the MHOG WHPA.*

Oil and Gas Contamination Sites

- *There were no oil and gas contamination sites identified within the MHOG WHPA.*

Federal National Priorities List (NPL)
The National Priorities List (Superfund) is a subset of CERCLIS and identified over 1,200 sites for priority cleanup under the Superfund Program.

- *There were no federal NPL sites identified within the MHOG WHPA.*

Federal Permits for Class V Wells

- *There were no Class V wells identified within the MHOG WHPA.*

Landfill/Solid Waste Disposal Sites

- *No active or inactive historical landfills were identified within the MHOG WHPA.*

Groundwater Discharge Sites

- No permitted groundwater discharge sites were identified within the MHOG WHPA.

4.3.1 Potential Sources of Contamination

Properties identified in the following environmental databases are facilities with the potential to have contamination on the property based on the potential use, handling, or storage of hazardous materials as part of the current and/or historic operations at the facility. These properties represent a moderate risk to MHOG's PWSS. The number of facilities identified within each of the following databases is presented below. A listing of which specific properties were identified in the following databases is provided on **Table 2**. Please note that some of the properties identified on the table below may appear on multiple environmental databases. Detailed information pertaining to each of the listings can be reviewed in the EDR report in **Appendix G**.

Environmental Database	Number of Properties Within the MHOG WHPA*
ASBESTOS: Asbestos Containing Material Sites	**1**
CDL: Clandestine Drug Lab Locations	**1**
ECHO: Enforcement and Compliance History Information	**1**
FINDS: Facility Index System/Facility Registry System	**2**
MINES MRDS: Mines-Mineral Resources Data System	**1**
NPDES: National Pollutant Discharge Elimination System permit facilities	**2**
RCRA-VSQG: Resource Conservation and Recovery Act Very Small Quantity Generator	**1**
SPILLS: Pollution Emergency Alerting System	**1**
US MINES: Mines Master Index File-Dept. of Labor, Mine Safety and Health Administration	**1**
UST: Underground Storage Tank Sites	**1**
WDS: Waste Data System	**2**

5.0 WELLHEAD PROTECTION MANAGEMENT APPROACHES

Management strategies specify how actual and potential sources of contamination in the delineated wellhead protection areas will be managed in order to prevent them from reaching the aquifer in which the public supply wells are constructed. The delineated wellhead protection area will be considered as special management area by many supporting organizations. Management strategies should encourage and facilitate desirable uses of the environment and limit undesirable land uses and development practices.

Management strategies are unique to each community and are specific to:

- The Contaminant Source Inventory
- Hydrogeology
- Land use
- Current and proposed zoning
- Enforcement capability
- Intangibles, such as public interest and support
- Financial resources

After considering the background information and community goals, MHOG has developed a revised wellhead protection management program that is organized in accordance with EGLE guidance documents and which is described in the following sections. The anticipated timetables for implementing the management program are described in each section.

5.1 Abandoned Well Search and/or Closure

Abandoned groundwater wells provide a direct migration conduit for contamination of groundwater resources. The inventory and proper abandonment of private wells located within the wellhead delineation areas that are no longer needed to produce groundwater, will greatly reduce numerous potential sources of contamination.

MHOG conducted a comprehensive search for abandoned wells within the delineated WHPA in 2003. Significant effort was made at that time to identify and locate abandoned wells within the delineated WHPA. Since the WHP delineation area is larger than it was in 2003 and there has been recent development in the area, along with ownership changes of properties, it is expected that there may be abandoned wells within the delineated wellhead protection area that have yet to be identified. As such, identifying any abandoned wells will require ongoing effort. MHOG is planning additional activities to search for abandoned wells in the future. If an additional search is conducted, MHOG intends to request funding first for locating and secondly for abandoning such wells from the EGLE through the Wellhead Protection Grant Program

MHOG cannot plug abandoned wells that are privately owned without the owner's cooperation. MHOG recognizes owners of abandoned wells are often uninformed about their responsibility regarding the wells, or may be unable to pay for proper plugging of their well. As such, MHOG will make educational resources available for well owners to properly plug their wells and if possible, direct owners to available financial resources. MHOG will work with organizations such as EGLE and the Livingston County Health Department, and the by contributing to the following goals:

- Increasing public awareness to the problem of abandoned wells
- Providing educational materials to the public
- Assisting in the enforcement of well plugging regulations
- Following up on well plugging at replacement well sites
- Helping to secure funding, such as grant monies, which can offset the cost of well plugging

The management activities anticipated for this task are as follows:

Activity 1: Implement an outreach program to inform landowners of the potential risks to groundwater contamination associated with abandoned water wells. Information will be distributed through the Consumer Confidence Reports, community newsletters, Marion Township and MHOG websites, and through social media. Implementation of this activity is anticipated for 2024 - 2025 and will be ongoing.

Activity 3: Do a historical review of MHOG records to determine each property that has connected to the MHOG water system since 2003 by reviewing meter installation records. A plan will be developed to then reach out to each property owner that is identified to ensure that the former well servicing each respective property has been properly abandoned. Implementation of this is anticipated for 2024 - 2025.

Activity 4: As unused wells are located, keep an inventory of the location and ownership of abandoned wells in the delineated wellhead protection area. Implementation of this activity is anticipated for 2024 - 2025.

Activity 5: Implement a well closure program whereby it is anticipated that the costs for well closures are shared by landowners, the state and local government. The implementation of this activity is anticipated for 2025-2027.

5.2 Zoning Ordinance Provisions for Wellhead Protection

While there are numerous state and federal laws governing environmental protection, the first line of responsibility falls to the local government. Land use planning and zoning is the most appropriate place for local government to institute regulations that will protect groundwater resources.

The development of additional environmentally-based site plan review standards to augment existing standards is a prudent approach to groundwater protection in the delineated Wellhead Protection Area. Site plan review is a process by which proposed developments are examined to determine if they comply with zoning and other regulations. In this process, the municipal Planner and Engineer review the proposals and provide their recommendations to the Planning Commission which has the authority to approve or deny a site plan.

MHOG plans to continue the ongoing work with Marion Township and Howell Township to use an enhanced site plan review processes to help prevent land-use activities that can cause groundwater contamination. This will be accomplished through continued enforcement of Marion Township's Wellhead Protection Overlay District and through the use of an Environmental Checklist which is discussed in **Section 5.5** below and is included in **Appendix C.** As mentioned in **Section 2.3**, Marion Township currently has an approved Wellhead Protection and Hazardous Substance Overlay Zone (ordinance) which covers a majority of MHOG's delineated WHPA and is exploring the possibility of updating it. Further, MHOG

plans to work in conjunction with Marion and Howell Townships to amend their existing Utility Ordinances to include a Wellhead Protection Ordinance that will be referenced in the Township's Master Plan/Zoning Ordinance and the Township's Engineering Standards. The amendment to the Ordinance will include reference to the entire WHPP, which makes it enforceable under the Township's Utility Ordinance, which includes civil infractions for violations against this ordinance. Referencing the WHPP in the Engineering Design Standards will help to inform and educate proposed developments of the plan.

Recently, Marion Township addressed solar panel "fields" and has prohibited them to be constructed within WHPAs. In addition, Howell and MHOG worked cooperatively with Marion Township to provide opinions related to a proposed gasoline station in the northern portion of MHOG's WHPA. The gas station has not been permitted at this time.

Activity 1: Continue to work with Marion Township with their site plan review process to continue to include groundwater protection standards, environmental permits checklist, and hazardous waste reporting form. The implementation of this activity is ongoing.

Activity 2: Work with both Marion and Howell Townships to promote sustainable development that will meet the needs of residents and visitors while protecting natural resources. The implementation of this activity is anticipated for 2023 - 2024.

Activity 3: Designate compatible land uses and standards within the delineated wellhead protection area. The implementation of this activity is ongoing.

Activity 4: Work with Howell Township to develop a Wellhead Protection Ordinance along with references in the Township's Master Plan/Zoning Ordinance and Township Engineering Standards. The implementation of this activity is anticipated for 2023 - 2024 and will be ongoing.

Activity 5: Work with Marion Township to develop a formal notification process regarding the enforcement of the Township's Wellhead Protection Ordinance. This will, in turn, strengthen MHOG's commitment to long-term groundwater protection. The implementation of this activity is anticipated for 2023 - 2024 and will be ongoing.

5.3 Facility Inspection or Hazardous Material Survey Program

MHOG will work with both Marion and Howell Townships to review their existing inspection program and hazardous material survey program utilizing the existing regulatory structure for small businesses utilizing small quantities of hazardous materials or petroleum products.

The Howell Fire Department is also actively involved with the completion of annual community right-to-know inspections at all local businesses. The Fire Department will work jointly with our WHPP efforts by informing local business owners if they are located in the WHP delineation area and provide educational materials to them. This effort has been implemented in 2018 and will be ongoing.

5.4 Information to Businesses Concerning State and County Requirements

Within the delineated WHPA, businesses that use or generate hazardous waste present the greatest potential threat to contamination of MHOG'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 through completion of the following activities.

Activity 1: As noted above, MHOG has worked with the local fire department to incorporate hazardous materials information from the fire fighters right-to-know inventory program into MHOG's wellhead protection program. The implementation of this activity occurred in 2018 and is ongoing.

Activity 2: Work with both Marion and Howell Townships to develop a voluntary Best Management Practices program and/or informational flyer for businesses that use or generate hazardous substances. The implementation of this activity is anticipated for 2025 - 2026.

5.5 Environmental Permits Checklist for New Businesses

As discussed above, MHOG plans to work with both Marion and Howell Townships with site plan review procedures where applicants will be required to provide their local municipality with an Environmental Permits Checklist (Checklist) that will be shared with MHOG. A copy of the Checklist is provided in **Appendix C.** The Checklist identifies state and county environmental permits and approvals that are potentially involved in common development situations. It is not designed as a comprehensive listing of all necessary permits for every development. The Checklist and other building permit/development materials will be made available. Regulatory concerns that are the focus of the Checklist include:

- Water quality including surface water, groundwater, and wetlands
- Management of hazardous materials, petroleum products, and wastes
- On-site sewage disposal and drinking water wells

It is envisioned that both Marion and Howell Townships will continue to apply the Checklist to all new applicants in MHOG's delineated WHPA. The advantages of such a process include:

- Equal treatment for all landowners
- Protecting groundwater throughout the community as it is the sole drinking water source
- Avoiding preparation of a separate map for the zoning ordinance

It is important to recognize that incorporation of the Checklist into the site plan review process only affects new development. It is not retroactive and it does not remedy existing conditions. Additionally, land use changes can occur without a site plan review. Such changes could include a process change that results in additional chemical storage.

Activity 1: Changes to the format and contents of an Environmental Permits Checklist will continue to be updated as necessary.

5.6 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. Based on the information provided on the Checklist, on a site by site basis, MHOG will develop strategies to identify changes in land use, such as chemical storage, which could negatively impact groundwater quality. Such strategies may include right-to-know inspections, inspections associated with

occupancy permits, or building permit applications. These activities will need to be conducted by the appropriate municipality and the information obtained will need to be shared with MHOG.

In addition, the Howell Fire Department implemented a standard operating procedure when responding to chemical spills located within the WHP delineation area. As the Fire Department is most often first responders to chemical spills, they have agreed to notify MHOG when responding to spills of petroleum products greater than 50 gallons and spills of any quantity of other chemicals. This will ensure that MHOG is aware of when such spills occur in the WHP delineation area and follow up with the appropriate regulatory agencies to ensure proper cleanup is completed. In addition, the Fire Department incorporated an overlay of the WHPAs into their GIS mapping system to allow them to determine if a spill response is located within the WHPAs.

5.7 Interagency Coordination and Communication

A comprehensive wellhead management program will require coordination between both Marion and Howell Townships, and MHOG as well as local agencies such as the Livingston County Department of Public Health and state agencies.

A representative from EGLE was a guest presenter in November 2022 to discuss our local WHPP efforts and provide information on EGLE's Michigan Underground Storage Take Assurance (MUSTA) program. This information was helpful and initiated contact with EGLE about sites of known contamination located within the WHPAs. WSP recently developed a single map that shows both of Howell's and MHOG's WHPAs with the locations of the know sites of contamination located within these areas. It is the intent to meet with EGLE Remediation & Redevelopment (RRD) to discuss the progress for cleaning up these sites of environmental impact to protect our drinking water resource.
Activity 1: Provide information on MHOG's delineated WHPA and wellhead protection program to Marion and Howell Townships and other local agencies, and establish protocols for notifying and responding to potential contamination incidents. The implementation of this activity is ongoing.

Activity 2: MHOG will contact EGLE RRD, the state agency responsible for site clean-up to notify them of the wellhead protection area. The implementation of this activity is planned for 2024 - 2025.

5.8 Other Wellhead Protection Program Elements Developed by the Local Agency

One component of establishing effective management strategies involves the identification of wellhead protection as a community-planning issue. This can be accomplished by incorporating the basic concepts in the municipal master plans of the communities within the delineated wellhead protection area. Master plans are the official statement of goals and policies that express a vision concerning the future of the community. The master plan typically includes maps and illustrations that describe the current characteristics of a community, which should be considered in making land-use decisions. A map of each delineated wellhead protection area, laid over maps of land use and other important community features, becomes a useful tool for those making future land-use decisions. The incorporation of such information was discussed above in **Section 5.2**.

Planning teams for MHOG and neighboring municipalities should consider a joint meeting with the local Team to discuss the issues and develop a process for incorporating wellhead protection concepts into community planning tools. The implementation of this activity is to occur once the MHOG, the City, Marion

Township and Howell Township finalize WHPA Overlay Zones/Ordinances and is anticipated to occur in 2024-2025.

5.9 Identification of Partnerships or Agreements with County or State Agencies Which Will Help Implement the Local Wellhead Protection Program

MHOG continues to coordinate wellhead protection activities with the City of Howell which operates a nearby well field. This cooperative effort was previously implemented in 1996 and has been encouraged by EGLE. Continued coordination of wellhead protection activities between MHOG and the City of Howell will create efficiencies that will result in cost savings for the overall effort. MHOG also plans to coordinate with Marion Township and Howell Township to provide a larger outreach area for each of the communities.

6.0 CONTINGENCY PLANNING

The Contingency Plan for this WHPP has been developed with MHOG's Emergency Response Plan (ERP) in mind and is meant to describe protocols for the immediate and long-term protection of MHOG's water supply. A contingency plan typically describes the protocols for the immediate and long-term protection of MHOG's water supply. Water supply emergencies can occur from a widespread variety of causes including power outages and widespread natural disasters. The most probable threat to the PWSS requiring emergency response is from a spill of hazardous materials or petroleum products in one of the delineated wellhead protection areas.

The existing ERP is updated regularly and outlines the program for the rapid correction or mitigation of water supply emergencies and training of employees for emergency responses. It contains an inventory of necessary stand-by personnel, equipment, chemical, and other materials readily available for the correction of water supply problems, including emergency measures in the event of contamination of the municipal wells from on emergency spill within the wellhead protection areas. The means of notification of customers affected by an emergency is also provided, along with a description of the precautions and measures to be taken to protect the health of the affected water customers. The existing ERP also addresses the procedures for notifying the public and internal corrective actions if MHOG's water supply is disrupted. This includes templates for press releases and provisions of delivery/pick-up of water from the safe supply if necessary and appropriate.

MHOG and the City of Howell water systems have a written emergency water connection agreement which is included in **Appendix D**. This emergency connection agreement provides each participating community with a ready source of emergency drinking water, if necessary.

A copy of the most recent ERP (revised in June 2023) is on file at the water treatment plant. Recent significant updates or changes to the ERP have not been necessary. The ERP is a secure document that is not available to the public and cannot be included herein. The state of Michigan does not maintain a copy of this plan, but according to MHOG, reviews the plan regularly. A summary of the ERP provided by MHOG is included as **Appendix H, Water System ERP Summary**.

There have been no water supply emergencies since the WHPP was last updated. In the event an emergency response call is received by MHOG, the Utility Director of MHOG will be notified immediately.

7.0 PLAN FOR NEW WELL

MHOG has sufficient well capacity to meet current demands and based on the current projected growth rate is not expected to exceed current well capacity in the near future. However, future growth could potentially require additional well capacity. There is also the potential that well capacity could be lost to a catastrophic failure of a well or the detection of contamination in groundwater supplied by a well. As such, a mechanism for incorporating new wells at an existing well site location or well field into local wellhead protection has been developed. The potential to expand capacity by the installation of new wells at the existing well site would be the first option for new wells. EGLE requirements for new wells at an existing well site location would be followed, including required testing necessary to increase well site capacity.

MHOG has purchased a 20-acre parcel of property located on the north side of Mason Road, west of N. Burkhardt Road to serve as a contingent well site location. Should this site be needed, or a new well site location be needed, EGLE requirements for siting new wells will be followed. 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 new wells in accordance with EGLE requirements. The benefits of assessing wellhead protection during new well development is a reduction in development costs, and the prevention of development in known or potential contaminant areas.

7.1 Identification of the Proposed Location, Depth, and Other Descriptive Information for all New Wells

The following methods will be used to select the location and depth of new wells at new well sites:

Environmental Factors

- Conduct an on-site environmental assessment of the property being considered for a well site to assess any adverse environmental conditions at the site.
- Conduct an environmental review of adjacent properties surrounding the proposed well field or well site to evaluate environmental conditions
- 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 well field or production well site should be reviewed for potential environmental impacts.
- Well site dimensions should be large enough to provide absolute control of a minimum 200-foot radius around the well.
- If possible, well fields and supply wells should not be located where known or potential sources of contamination lie within the estimated 10-year time of travel.
- 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 railways and major roadways will be avoided whenever possible.
- An environmental review is required by EGLE, including a site visit by EGLE staff.
- Proposed well depths will be based on the geologic setting and upon known or potential contamination in the area.

Production Capabilities

- Conduct an aquifer performance test as required by EGLE. The test must be conducted by a qualified hydrogeologist and should meet EGLE testing specifications. The test will determine the quantity of water available and the effect of long-term pumping on the aquifer.
- Conduct groundwater testing according to the current EGLE requirements to demonstrate the water quality meets regulatory requirements.

Community Development Factors

- Wellfield and production well sites will have adequate access to allow for operation and maintenance requirements.
- 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 concerns.
- 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.
- The Township zoning ordinances will be reviewed to determine allowable land use in the proposed well field or production site and adjacent properties.
- The Township master plans should be reviewed to assess future land uses in the proposed well field or production site and adjacent properties.

7.2 Proposed Method for Incorporating New Wells into the Wellhead Protection Program

New wells will be incorporated into the wellhead protection program during planned Wellhead Protection Plan updates which occur at a minimum every six years provided funding is available. MHOG will proactively seek state of Michigan Wellhead Grant funding to facilitate plan updates.

7.3 Determination of the Wellhead Protection Area

The delineated wellhead protection area of any new production well or well field will be determined using methods acceptable to EGLE and consistent with the methods used in developing the delineated wellhead protection areas for the two existing well fields. Provided funding is available, any new well site delineations would be completed during the calendar year following well permitting.

8.0 PUBLIC PARTICIPATION AND OUTREACH/EDUCATION

Successful implementation of the MHOG WHPP continues to require active involvement of the people who live and conduct business in the delineated wellhead protection areas. Wellhead protection cannot be completed without establishing strong partnerships and cooperation throughout the community. To improve the quality of the program and improve its chance for success, MHOG works regularly to involve citizens in the development and implementation of each of the WHPP elements.

The local Team which meets regularly includes representation from MHOG, the City of Howell, Marion Township, the health department, the fire department, members of the public, including the City of Howell's planning department, and members representing a local business utilizing MHOG's water supply.

The primary education goal continues to be to inform the community of the source of MHOG's drinking water and the importance of protecting it. MHOG will also continue to develop and implement strategies to educate local businesses owners and residents who own property in the delineated wellhead protection area about wellhead protection.

8.1 Description of the Methods Used to Involve and Educate the Public

The following sections describe methods that will be used to involve the general public, students, and businesses about the wellhead protection plan.

8.1.1 General Public

The methods that MHOG uses for educating the general public about the WHPP and associated community wellhead protection activities include the following:

- Informational Brochure – A tri-fold brochure has been prepared that describes basic information about the WHPP. This brochure has been made available at places such as the Township Halls, the Livingston County Health Department Office, the Drain Commissioner's Office, and other locations, upon request. As needed, the brochure will be updated and at a minimum, the brochure will include information regarding the WHPP, the geographic extent of the delineated wellhead protection areas, and groundwater protection strategies. A mailing to be included with water bills will also be considered.
- Community Presentations – The WHPP is still considering the completion of presentations at Township Board and Planning meetings to educate the general public about the WHPP and promote participation in hazardous waste collection days.
- Informational Postings – MHOG is considering posting information regarding wellhead protection at both Marion and Howell Township Halls, on the Township's websites and at the local library and will promote participation in hazardous waste collection days.
- Groundwater Model – MHOG and the City of Howell continue to use the existing groundwater model which can demonstrate the effect of contamination on an aquifer at local events.
- Local Newspapers, Radio Stations, and Cable Access - As appropriate, the local media will be used to distribute and promote wellhead protection activities and promote participation in hazardous waste collection days. Consideration is being given to the creation of a one-page advertisement

regarding WHPP for local cable access channels. MHOG is developing a couple "Power Point" slides for use at local events, cable access channels, or on the Township and City websites.

- Informational Video – In March 2021 MHOG created an educational YouTube video using the tabletop groundwater model and simulated how contamination migrates. In addition, MHOG is considering development of a short information video, "Power Point" presentation, etc. for use at local events, cable access channels, or on the Township websites.
- Local Events - There are occasional opportunities to promote MHOG's WHPP. As appropriate, information regarding wellhead protection is distributed at these activities. MHOG has participated along with the City of Howell at the local Arbor Day activities in the City, Marion Township Heritage Days, and the Howell Fire Department open houses to highlight water related activities. Participation in local events will continue.
- Local Community Service Groups - As resources allow, several community service organizations (i.e., local environmental organizations, the Boy/Girl Scouts, local gun club, Howell Gardening Club, churches, etc.) and other business and professional organizations (Rotary Club, Chamber of Commerce, etc.) will be informed about MHOG's WHPP and asked to promote the goals of the WHPP in their community efforts.
- Roadside Signage – MHOG purchased seven new and revised roadside signs and had them installed in June 2015. The signs inform the general public that they are in delineated well head protection areas.
- Consumer Confidence Report and Mailings - The Consumer Confidence Report is an annual report provided to water customers that outlines specific information about MHOG's water system and water quality. This report is an excellent tool to highlight the WHPP. All future reports will contain information about the WHPP.
- WHP Delineation Area Map Displays –MHOG created a poster size map of the WHP delineation area for display at Marion Township Hall. Additional maps are anticipated to be provided and displayed on the walls at the Howell Fire Department, Genoa and Howell Township Halls, along with Howell City Hall.
- Distributing Information to Building Permit Applicants and Newcomers to the Area – Community members are often made aware of programs during the building permit process. As such, information regarding the WHPP will be provided to those applying for a building permit from Marion and Howell Townships. The Townships will include information regarding water related issues in materials provided to new residents.
- Information to Business Owners – MHOG plans to develop an informational flyer to distribute to local business owners that are in the WHP delineation areas informing them of the groundwater protection efforts.
- Social Media – MHOG plans to continue using social media platforms such as Facebook® and Twitter® to assist in educating the public and promoting public awareness and participation in wellhead protection activities.

MHOG and the City of Howell have already incorporated several of the aforementioned methods of educating the public and promoting public participation with the WHPP. Copies of press releases, informational brochures, pamphlets, and notices of hazardous waste collection days used in the past are included in **Appendix I**, **Public Outreach Information**. MHOG plans to continue using these methods and to develop new strategies in the future.

8.1.2 Students

MHOG recognizes the need to educate students regarding their water supply system and how to protect it. MHOG is able to provide a limited amount of support to area schools. MHOG considers outreach and education of student age community members extremely important to the long-term success of the WHPP. The plan for student outreach and education will involve attempts to:

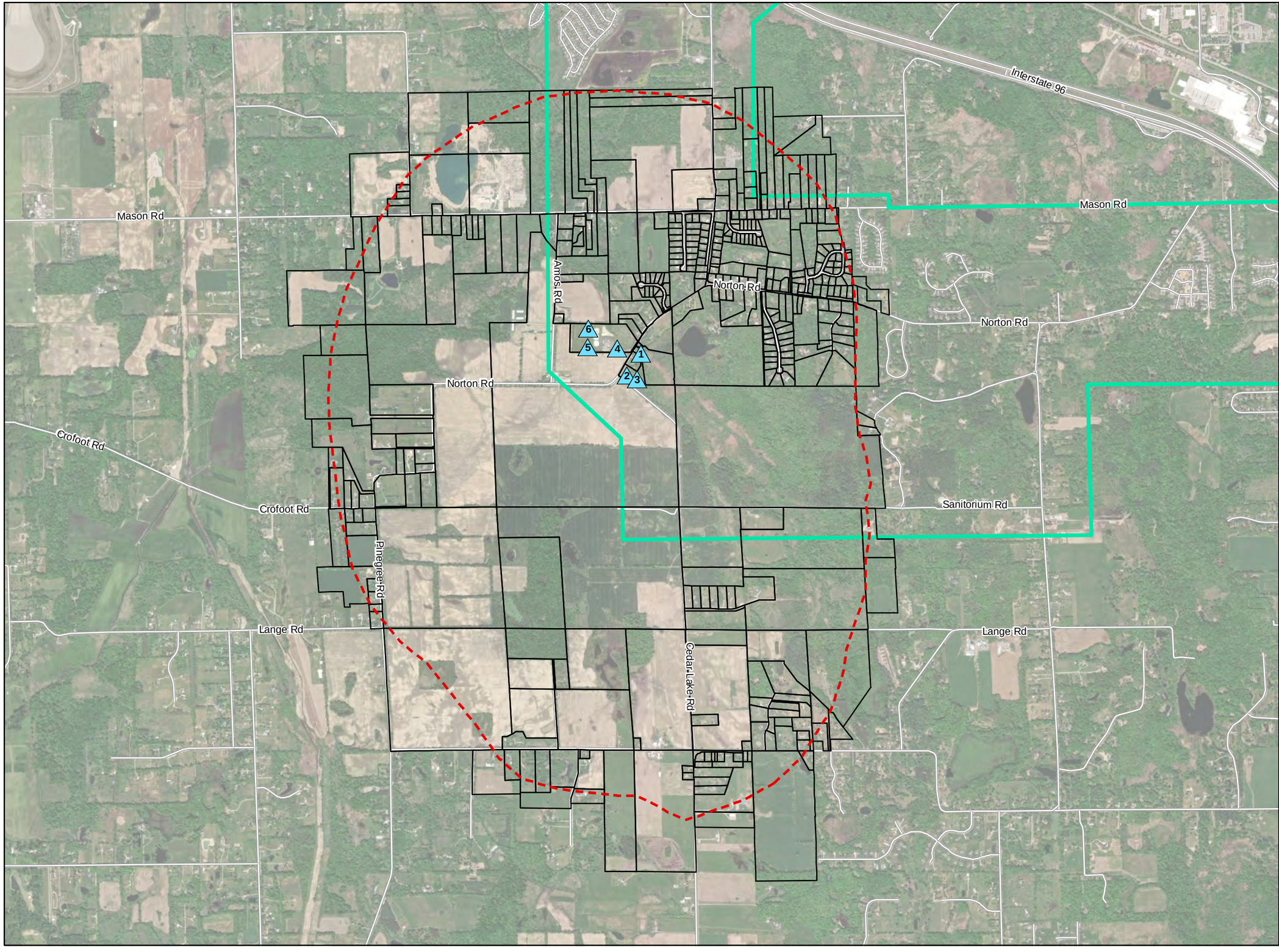
- Complete presentations at schools and teacher organizations to integrate groundwater related issues into curriculum.
- Providing demonstrations and materials to students relative to groundwater and its protection.
- Encouraging students and teachers to embark upon individual or class projects concerning wellhead protection.

MHOG has established a relationship with Hutchings Elementary School where MHOG attends annually to give presentations on WHPP, including using the groundwater model simulator. MHOG also works with Lansing Community College and Schoolcraft College, giving occasional tours of the MHOG Water Plant to groups of students to discuss the water system and WHPP efforts. Additional presentations will be provided upon request. MHOG will attempt to work with the local school system to design an effective education approach that fits the needs of the schools and emphasizes important aspects of the water system and its protection.

8.2 Timetables for Outreach and Education Program Implementation

Public education, outreach and participation will be an ongoing effort as allowed by funding considerations for a minimum of three years.

FIGURES



MHOG Municipal Well Location

MHOG Wellhead Protection Area

Parcel Boundary (Parcels Inside WHPAs

WaterServiceArea

Notes:
1) GIS data provided by MHOG
2) Parcel data provided by Livingston County

N

0 500 1,000 2,000
Feet

Figure 1

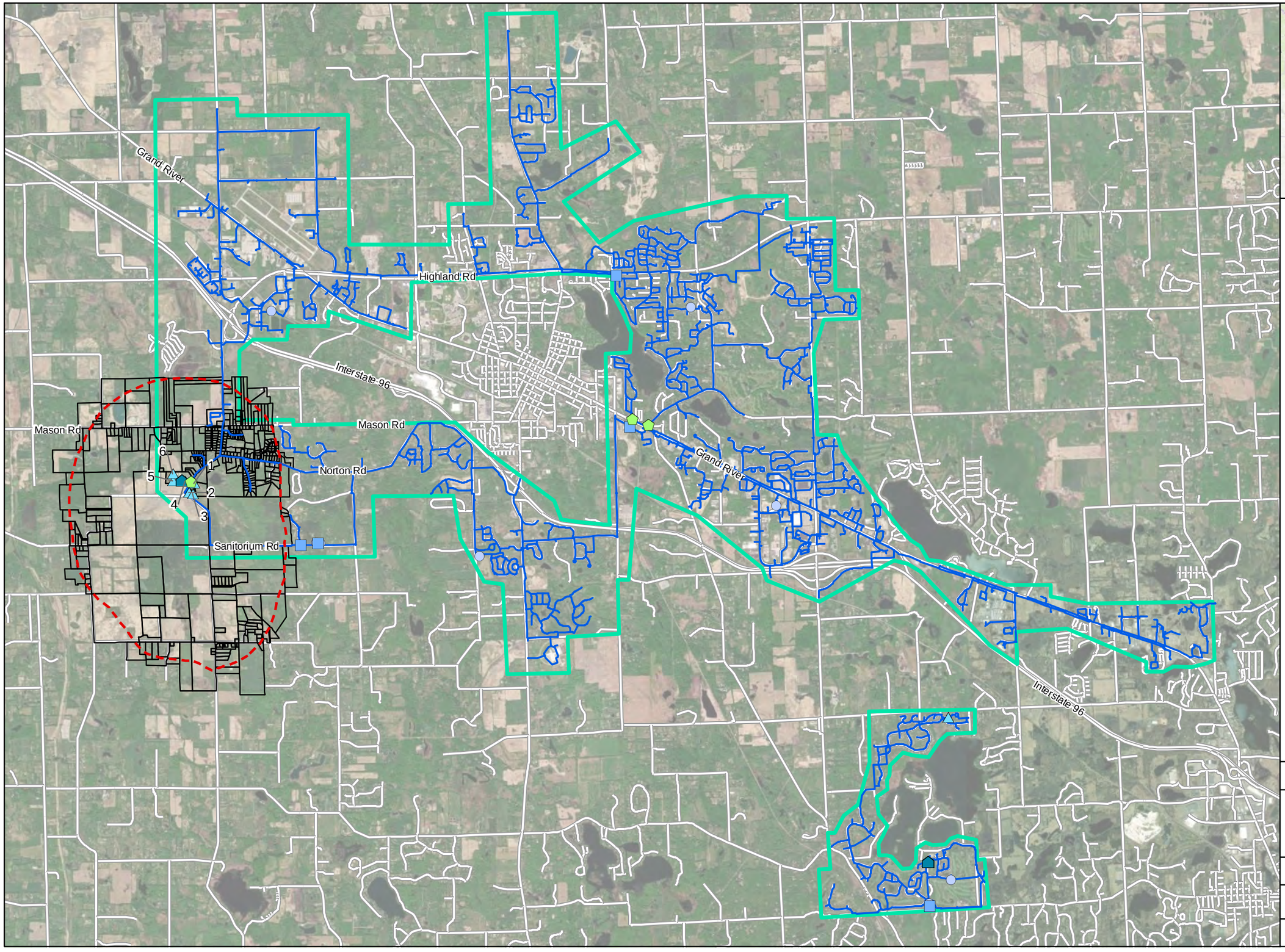
Well Locations

MHOG Wellhead Protection Plan
Howell, Michigan

Prepared By: MSC	Checked By: JA

Environment & Infrastructure
46850 Magellan Dr #190
Novi, MI 48377
248 926 4008

Proj: 500150X3.03	Date: 3/14/2023



- Pressure Reducing Valves
- WaterTreatmentPlant
- MHOG Municipal Well Location
- BoosterStations
- WaterTower
- WaterMain
- MHOG Wellhead Protection Area
- Parcel Boundary (Parcels Inside WHPAs)
- MHOG Geographic Area of Service

Notes:
1) GIS data provided by MHOG
2) Parcel data provided by Livingston County

N

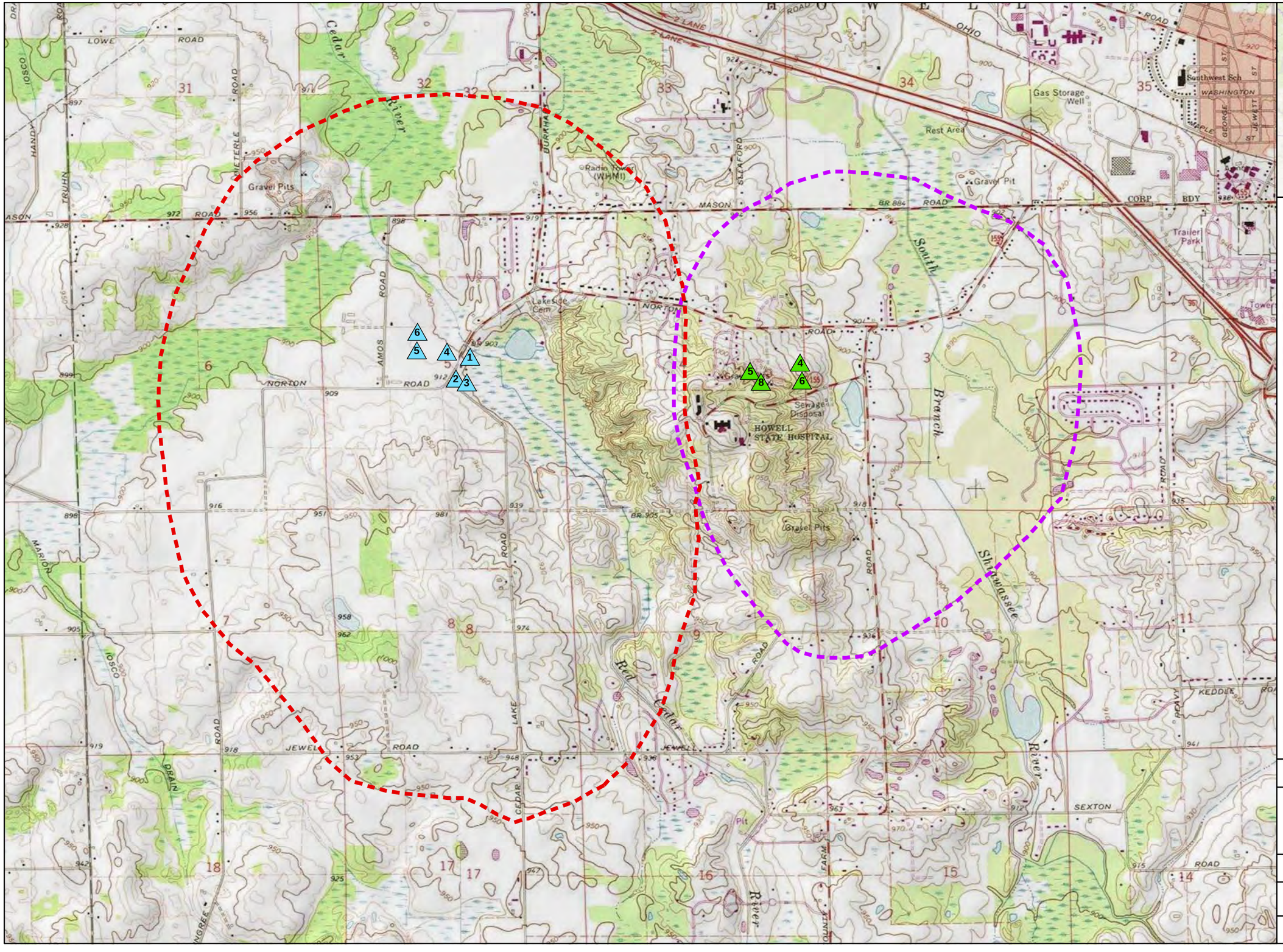
0 1,250 2,500 5,000
Feet

Figure 2

Geographic Areas of Service

MHOG Wellhead Protection Plan
Howell, Michigan

Prepared By: MSC	Checked By: JA
WSP	Environment & Infrastructure 46850 Magellan Dr #190 Novi, MI 48377 248 926 4008
Proj: 500150X3.03	Date: 3/14/2023



- City of Howell Municipal Well Locations
- MHOG Municipal Well Locations
- MHOG WHPA (10-yr Zone of Contribution)
- City of Howell WHPA (10-yr Zone of Contribution)

Notes:
1) GIS data provided by MHOG
2) Parcel data provided by Livingston County

N

0 500 1,000 2,000
Feet

Figure 3

Wellhead Delineation Area

MHOG Wellhead Protection Plan
Howell, Michigan

Prepared By: MSC	Checked By: JA
wsp	Environment & Infrastructure 46850 Magellan Dr #190 Novi, MI 48377 248 926 4008
Proj: 500150X3.03	Date: 3/14/2023

MHOG WHPA

City of Howell WHPA
(Well 7)

City of Howell WHPA
(Wells 4, 5, 6, 8)

- City of Howell Emergency Well
- City of Howell Municipal Well Locations
- MHOG Municipal Well Locations
- 1-Year Travel Time
- 5-Year Travel Time
- 10-yr Travel Time (WHPA)
- Roads

Notes:
1) GIS data provided by MHOG,
2) Parcel data provided by Livingston County

N

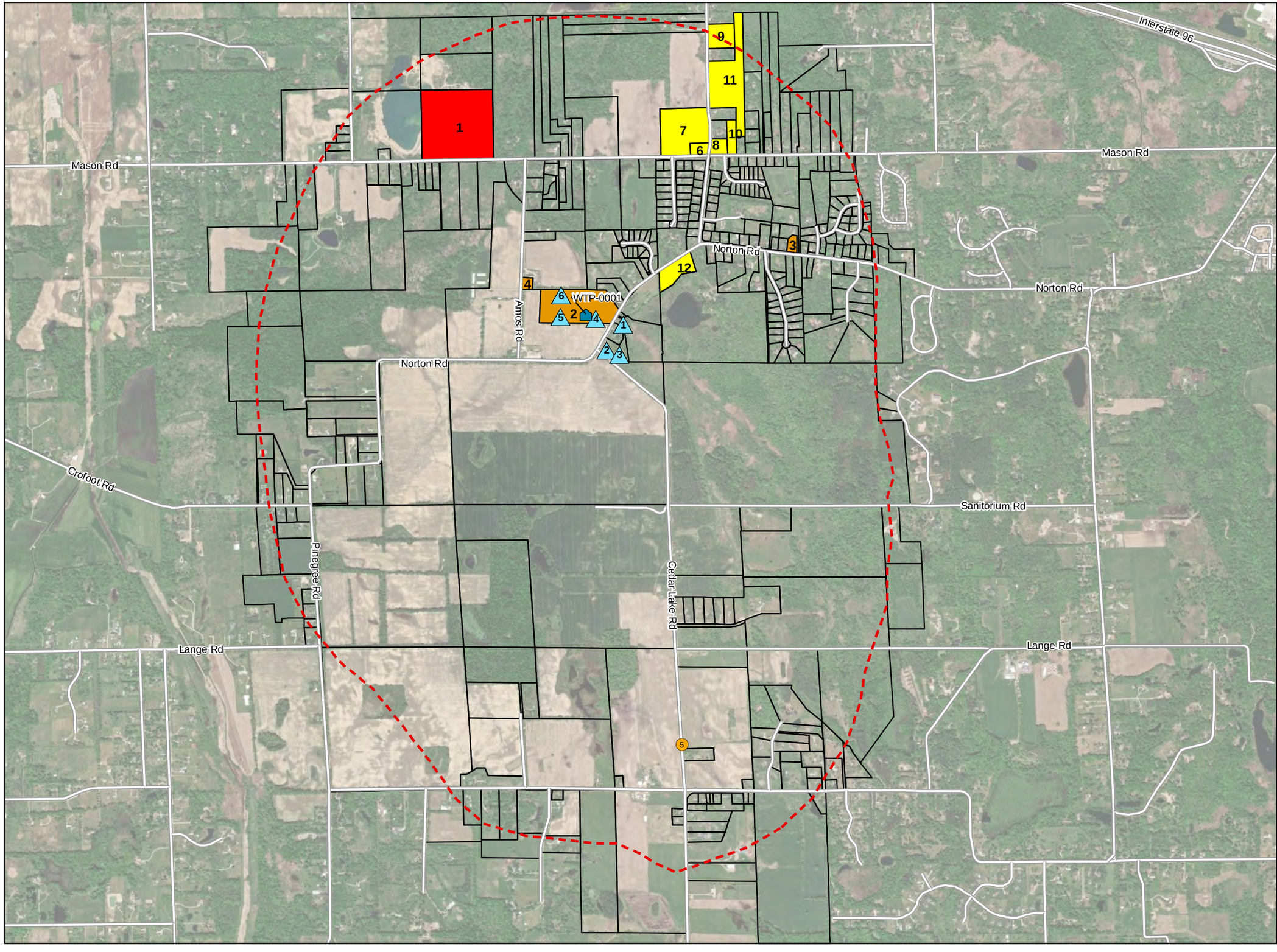
0 500 1,000 2,000
Feet

Figure 4

Zones of Contribution

MHOG Wellhead Protection Plan
Howell, Michigan

Prepared By: MSC	Checked By: JA
wsp	Environment & Infrastructure 46850 Magellan Dr #190 Novi, MI 48377 248 926 4008
Proj: 500150X3.03	Date: 3/14/2023



- Water Treatment Plant
- MHOG Municipal Well Location
- Wellhead Protection Area
- Parcel Boundary (Parcels Inside WHPAs)
- Known Properties of Contamination
- Potential Sources of Contamination (Based on Environmental Database Listings)
- Potential Sources of Contamination (Based on Zoning)
- 5 — Map ID # (Refer to Table 5)

Notes:
1) GIS data provided by MHOG,
2) Parcel data provided by Livingston County
3) Refer to Table 2 for additional information regarding known/potential sources of contamination

N

0 425 850 1,700
Feet

Figure 5

Known and Potential Sources of Contamination

MHOG Wellhead Protection Plan
Howell, Michigan

Prepared By: MSC	Checked By: JA
Environment & Infrastructure 46850 Magellan Dr #190 Novi, MI 48377 248 926 4008	
Proj: 500150X3.03	Date: 3/14/2023

TABLE

City of Howell & MHOG Wellhead Protection Team

2022-23 Grant

Name	Company	Mailing Address	Phone	Cell Phone:	email:	Representing	
Jim Webster	City of Howell Water Plant Operations Manager	150 Marion St., Howell MI 48843	(517) 546-5309	(517) 204-4916	jwebster@cityofhowell.org	Both	Public Water Supply Superintendent / Rep. Adjacent Municipality
Mike Spittler	City of Howell DPS Director	150 Marion St., Howell MI 48843	(517) 546-5309	(517) 285-1485	esuida@cityofhowell.org	Howell	Representative of Municipality
Alex Chimpouras	MHOG Water Plant Deputy Utility Director	4288 Norton Rd., Howell MI 48843	(517) 545-5098	(810) 588-7900	Alex@mhog.org	Both	Public Water Supply Superintendent / Rep. Adjacent Municipality
Greg Tatara	MHOG Utilities Director	2911 Dorr Rd., Brighton MI 48116	(810) 227-5225	(810) 623-4725	Greg@mhog.org	MHOG	Representative of Municipality
Brian Anderson	Howell Area Fire Authority	1211 W. Grand River Ave, Howell MI 48843	(517) 546-0560	(517) 225-7895	banderson@howellfire.net	Both	Local Fire Department
Heather Blair	Livingston County Director of Environmental Health	2300 E. Grand River, Ste. 102 Howell MI 48843	(517) 552-6810		hblair@livgov.com	Both	Local Health Department
John Hibbard	Pepsi Beverages Co. Quality Manager	755 McPherson Park Drive, Howell MI 48843	(517) 545-2629		John.Hibbard@pepsico.com	Both	Business & Industry
Benjamin Gebott					Benjamin.Gebott@pepsico.com		
Kristi Troy	City of Howell Planning & Zoning Administrator	611 E. Grand River Ave., Howell MI 48843	(517) 540-6733		tschmitt@cityofhowell.org	Howell	Planning
Bob Hanvey	Marion Twp. Supervisor	2877 West Coon Lake Rd., Howell MI 48843	(517) 546-1588		supervisor@mariontownship.com	Both	General Public - for Howell Planning - for MHOG
Matthew Cox	Howell Schools	1313 W. Highland Bldg. "O" Howell MI 48843	(517) 548-6249		coxm@howellschools.org	Both	Education
Rob DeWyre	WSP Vice President-Geologist	46850 Magellan Dr., Ste. 190 Novi MI 48377	(248) 313-3687	(517) 404-0586	robin.dewyre@wsp.com	Both	Environmental or Watershed Group

TABLE 2
SUMMARY OF KNOWN & POTENTIAL SOURCES OF CONTAMINATION
MHOG WELLHEAD PROTECTION PLAN (2023)

MAP ID #	PARCEL ID #	SITE NAME and/or OWNER NAME	STREET #	STREET DIR.	STREET	ZONING CODE	ZONING DESCRIPTION	EDR LISTINGS[1]	DATA SOURCE
1	06-32-300-003	BEDROCK VENTURES, LLC, D&J GRAVEL, AMERICAN CONCRETE	4944		MASON RD	201	Commercial-Improved	NPDES, LUST, UST, WDS, SPILLS, US MINES, MINES MRDS, RGA LUST, INVENTORY	EDR/GIS
2	10-05-100-021	MHOG WATER TREATMENT PLANT	4288		NORTON RD	201	Commercial-Improved	NPDES, WDS, FINDS, RCRA-VSQG, ECHO	EDR/GIS
3	10-04-101-039	KRISTEN & CAMERON COUCH	3720		NORTON RD	401	Residential-Improved	ASBESTOS	EDR/GIS
4	10-05-100-009	ESPER'S AUTO REPAIR	305		AMOS RD	401	Residential-Improved	FINDS	EDR/GIS
5	UNKNOWN	N/A	1999		CEDAR LAKE RD	N/A	N/A	CDL	EDR/GIS
7	06-32-400-002	GHELANI PRITI	4040		MASON RD	201	Commercial-Improved		GIS
8	06-32-400-012	CHESTNUT CROSSING LLC	0	N	BURKHART - VARIOUS	201	Commercial-Improved		GIS
8	06-33-300-001	HOWELL MASON LLC	3958		MASON RD	201	Commercial-Improved		GIS
9	06-33-300-016	HASLOCK ENTERPRISES LLC	396	N	BURKHART RD	201	Commercial-Improved		GIS
10	06-33-300-017	LOLLIO MARCO T AND SHARON K	3910		MASON RD	201	Commercial-Improved		GIS
11	06-33-300-042	HEART OF THE SHEPHERD	228	N	BURKHART RD	201	Commercial-Improved		GIS
12	10-05-200-048	MARION TOWNSHIP CEMETERY	4063		NORTON RD	202	Commercial (vacant)		GIS

NOTES:

[1]: Environmental Data Resources (EDR), Inc.- The Radius Map Report, MHOG Wellhead Protection Plan, Marion Township, Howell, MI (January 31, 2023).
Parcel Data provided by Livingston County

EDR ENVIRONMENTAL DATABASES:

ASBESTOS: Asbestos Notification Listing
CDL: Clandestine drug lab locations
DEL PART 201: Delisted State of Michigan Part 201 Sites of Contamination (no longer meets criteria specified in the Part 201 rules)
ECHO: Enforcement & Compliance History Information
FINDS: Facility Index System/Facility Registry System
INVENTORY: Inventory of facilities from three data sources (Facilities under Part 201, 213, and BEAs)
LUST: Leaking Underground Storage Tank site
MINES MRDS: Mines-Mineral Resources Data System
NPDES: National Pollutant Discharge Elimination System and NPDES Storm Water Permits
RCRA-VSQG: Resource Conservation and Recovery Act - Very Small Quantity Generator
RGA LUST: Recovered Government Archive Leaking Underground Storage Tank
SPILLS: Environmental pollution emergencies reported to EGLE (such as tanker accidents, pipeline breaks, an releases of reportable quantities of hazardous substances)
US MINES: Mines Master Indes File-Dept. of Labor, Mine Safety and Health Administration
UST: Registered Underground Storage Tank site
WDS: Waste Data System

APPENDIX A

Water Well and Pump Records

#1

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Well ID: 47000006480

Import ID: 47027405302

Tax No:	Permit No:	County: Livingston	Township: Marion

Well ID: 47000006480

Elevation: 902 ft

Latitude: 42.69139797

Longitude: -83.99869739

Fraction:	Section:	Town/Range:	WSSN:	Source ID/Well No:
NW¼ SW¼ NE¼	5	02N 04E	4098	1

Distance and Direction from Road Intersection: WSSN# 03256;100' SE OF NORTON RD & 100' S F RED CEDAR B

Well Owner: Mhog Water & Sewer Authority

Well Address:	Owner Address:
MHOG SWATH #1 HOWELL MI	3225 BYRON ROAD HOWELL MI 48843

Drilling Method: Rotary

Well Depth: 391.00 ft. | Well Use: Type I public

Well Type: New | Date Completed: 5/5/1995

Casing Type: Other
Casing Joint: Unknown
Diameter: 16.00 in. to 116.00 ft. depth

Bore Diameter 1:
Bore Diameter 2:
Bore Diameter 3:
Height: 2.00 ft. above grade
Casing Fitting: None

Pump Installed: No
Pump Installation date:
Manufacturer:
Model Number:
Length of Drop Pipe:
Diameter of Drop Pipe:
Draw Down Seal Used:

Pump Installation only:
HP:
Pump Type:
Pump Capacity:
Id of Well:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:
Pressure Relief Valve Installed: No

Tank Capacity: Gallons

Static Water Level: 0.55 ft. Above Grade(Flowing)
Yield Test Method: Unknown
Measurement Taken During Pump Test:
16.00 ft. after 24.00 hrs. pumping at 1,429.00 GPM
21.00 ft. after 1.00 hrs. pumping at 1,808.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: No | Well Intake: Unknown
Filter Packed:
Screen Diameter: | Length:
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes | Grouting Method: Unknown
No. of Bags: | Additives: None
Grouting Materials:
Neat cement | From 0.00 ft. to 116.00 ft.

Well Head Completion: 12 inches above grade, Other

Nearest source of possible contamination:
Type | Distance | Direction
None

Drilling Machine Operator Name: STANLEY H. BROWN

Employment: Unknown

Formation Description	Thickness	Depth to Bottom
Black Topsoil	3.00	3.00
Gray Clay Sandy	6.00	9.00
Gray Clay Soft	13.00	22.00
Gray Sand Very Fine	5.00	27.00
Gray Sand & Clay	11.00	38.00
Gravel & Sand Coarse	19.00	57.00
Gravel & Stones W/Clay	7.00	64.00
Gravel & Sand Coarse	5.00	69.00
Gray Clay	13.00	82.00
Gray Clay & Stones	9.00	91.00
Limestone & Sandstone W/Gravel	9.00	100.00
Gray Clay	11.00	111.00
Limestone & Sandstone	2.00	113.00
Sandstone & Limestone	5.00	118.00
Gray Limestone & Sandstone	10.00	128.00
White Sandstone	12.00	140.00
Gray Limestone & Sandstone	11.00	151.00
Gray & White Sandstone	14.00	165.00
Brown Limestone Hard	8.00	173.00
White Sandstone	8.00	181.00
Gray Limestone	2.00	183.00
Gray & White Sandstone	9.00	192.00
Limestone & Sandstone W/Shale	14.00	206.00
Black Shale Hard	8.00	214.00
Brown Sandstone & Limestone	4.00	218.00
Black & Gray Shale	10.00	228.00
Gray & White Sandstone	31.00	259.00
Gray Shale	12.00	271.00
Green Sandstone	8.00	279.00
Shale & Sandstone Green	7.00	286.00
Limestone	7.00	293.00
Shale & Limestone W/Sandstone	19.00	312.00

(Continued on Page 2)

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/17/2000 20:34

#1

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Well ID: 47000006480 — Failure to comply is a misdemeanor. — Import ID: 47027405302

Tax No:	Permit No:	County: Livingston	Township: Marion

Well ID: 47000006480

Elevation: 902 ft

Latitude: 42.59139797

Longitude: -83.99889739

Fraction:	Section:	Town/Range:	WSSN:	Source ID/Well No:
NW¼ SW¼ NE¼	5	02N 04E	4098	1

Distance and Direction from Road Intersection: WSSN# 03256;100' SE OF NORTON RD & 100' S F RED CEDAR B

Well Owner: Mhog Water & Sewer Authority

Well Address:	Owner Address:
MHOG SWATH #1 HOWELL MI	3225 BYRON ROAD HOWELL, MI 48843

(Continued from Page 1)

Formation Description	Thickness	Depth to Bottom
Gray Sandstone & Limestone	2.00	314.00
White Sandstone & Limestone	12.00	326.00
Gray Shale & Sandstone	9.00	335.00
White Sandstone	37.00	372.00
Gray Shale Soft	4.00	376.00
White Sandstone	14.00	390.00
Black & Gray Shale	1.00	391.00

Geology Remarks: 1. [BLACK TOP SOIL] [3] [3] 2. [GRAY SANDY CLAY] [9] [6] 3. [GRAY SOFT CLAY] [22] [13] 4. [GRAY VERY FINE SAND] [27] [5] 5. [GRAY SAND CLAY] [38] [11] 6. [COARSE GRAVEL SAND] [57] [19] 7. [STONES GRAVEL CLAY] [64] [7] 8. [VERY COARSE GRAVEL SAND] [69] [5] 9. [GRAY CLAY] [82] [13] 10. [GRAY CLAY STONES] [91] [9] 11. [GRAVEL LIM STONE AND SAND STONE] [100] [9] 12. [GRAY CLAY] [111] [11] 13. [LIME STONE SAND STONE] [113] [2] 14. [SAND STONE LIME STONE] [118] [5] 15. [GRAY LIME STONE AND SAND STONE] [128] [10] 16. [WHITE SAND STONE] [140] [12] 17. [GRAY LIME STONE SAND STONE] [161] [11] 18. [GRAY WHITE SAND STONE] [166] [14] 19. [BROWN HARD LIME STONE] [173] [8] 20. [WHITE SAND STONE] [181] [8] 21. [GRAY LIME STONE] [183] [2] 22. [GRAY WHITE SAND STONE] [192] [9] 23. [LIME STONE SAND STONE SHALE] [206] [14] 24. [BLACK HARD SHALE] [214] [8] 25. [BROWN SAND STONE LIME STONE] [218] [4] 26. [GRAY BLACK SHALE] [228] [10] 27. [GRAY WHITE SAND STONE] [259] [31] 28. [GRAY SHALE] [271] [12] 29. [LITE GREENISH SAND STONE] [279] [8] 30. [SHALE LITE GREEN SAND STONE] [286] [7] 31. [BUFF LIME STONE] [293] [7] 32. [SHALE LIME STONE SANDSTONE] [312] [19] 33. [GRAY SAND STONE LIME STONE] [314] [2] 34. [WHITE SAND STONE LIME STONE] [326] [12] 35. [GRAY SHALE SAND STONE] [335] [9] 36. [WHITE GRAY SAND STONE] [372] [37] 37. [GRAY SOFT SHALE] [376] [4] 38. [WHITE GRAY SAND STONE] [390] [14] 39. [BLACK GRAY SHALE] [391] [1]

Contractor Type: Unknown
Registration Number: 2072
Business Name:
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor — Date

General Remarks: CASING TYPE LISTED AS SCH40 PE; BORE HOLE DIAMETER 19

OTHER REMARKS Casing Type: Casing Type unknown Well Head Completion: 12 Inch Above Grade

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/17/2000 20:34

#1

MICHIGAN WATER WELL RECORD

Location of Well

County	Township Name	Fraction	Section Number	Town Number	Range Number
LIVINGSTON	MARION	NW 1/4 SW 1/4 NE 1/4	5	2N	4E

Distance and Direction From Road Intersection
100 FT SOUTH EAST OF NORTON RD. AND 100 FT SOUTH OF THE RED CEDAR RIVER BRIDGE.
MHO-SWATH WELL #1, 16"
HOWELL

Well #1

Street Address and City of Well Location

City: HOWELL TOWNSHIP

Owner's Name: 3225 BYRON RD
HOWELL MI 48843-

Owner same as well location? No

Sketch Map

1 Well Depth: Completed 391 ft. | Date of Completion: 05/05/9 | New Well

5 Drilling Method: MUD-AIR ROTARY

6 Proposed Use: TYPE 1 PUBLIC

2

FORMATION DESCRIPTION	Thickness of Stratum	Depth to Bottom of Stratum
BLACK TOP SOIL	3	3
GRAY SANDY CLAY	6	9
GRAY SOFT CLAY	13	22
GRAY VERY FINE SAND	5	27
GRAY SAND CLAY	11	38
COARSE GRAVEL SAND	19	57
STONES GRAVEL CLAY	7	64
VERY COARSE GRAVEL SAND	5	69
GRAY CLAY	13	82
GRAY CLAY STONES	9	91
GRAVEL LIME STONE SAND STONE	9	100
GRAY CLAY	11	111
LIME STONE SAND STONE	2	113
SAND STONE LIME STONE	5	118
GRAY LIME STONE SAND STONE	10	128
WHITE SAND STONE	12	140
GRAY LIME STONE SAND STONE	11	151
GRAY WHITE SAND STONE	14	165
BROWN HARD LIME STONE	8	173
WHITE SAND STONE	8	181
GRAY LIME STONE	2	183
GRAY WHITE SAND STONE	9	192
LIME STONE SAND STONE SHALE	14	206

PLEASE SEE ATTACHED SHEET FOR ADDITIONAL FORMATIONS

7 Casing: BLACK SCH40 PE | Height Above Surface 2 ft.
16 in. to 116 ft. depth | Weight SCH40 lbs./ft.
in. to ft. depth
Bore Hole Diameter
19 in. to 116 ft. depth | Drive Shoe No
15 in. to 391 ft. depth | Shale Packer No

8 Screen: Not Installed | Gravel-packed? No

9 Static Water Level +.55 ft. Below Land Surface +.55' Fl

10 Pumping Level Below Land Surface
15.81 ft. after 24 hrs. pumping at 1429 G.P.M.
21.06 ft. after 1 hrs. pumping at 1808 G.P.M.
Using TURBINE TEST

11 Well Head Completion: ABOVE GRADE

12 Well Grouted? Yes From 116 to 0 ft.
NEAT CEMENT
No. of bags of cement 85 Additives 3% CACL2

13 Nearest Source of Possible Contamination
DOES NOT APPLY Distance ft. Direction
DOES NOT APPLY Distance ft. Direction

15 Abandoned well plugged? No
Casing Diameter in. Depth ft.
Casing removed? No

14 Pump: Not Installed

16 Remarks, elevation, source of data, etc.
PLEASE SEE ATTACHED SHEET FOR ADDITIONAL REMARKS

17 Drilling machine operator:
Employee
Name STANLEY H. BROWN

Authority: Act 368 PA 1978
Completion: Required.
Penalty: Conviction of violation of any provision is a misdemeanor.
IMPORTANT: File with deed.

18 Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Registered business name: BROWN DRILLING COMPANY
Registration number: 47-2072
Address: 7215 HIGHLAND ROAD, HOWELL, MI 48843
Signed: _____ Date _____
(Authorized representative)

#1

Location of well

County	Township Name	Section Number	Town No.	Range Number
LIVINGSTON	MARION	NW 1/4 SW 1/4 NE 1/4 5	2N	5E

MHO-SWATH WELL #1, 16"
HOWELL

Well #1

Owner of well: HOWELL TOWNSHIP
Address: 3225 BYRON RD
HOWELL MI 48843-

Well Depth Completed: 391 ft.
Date of Completion: 05/05/95
New Well

FORMATION DESCRIPTION	Thickness of Stratum	Depth to Bottom of Stratum
BLACK HARD SHALE	8	214
BROWN SAND STONE LIME STONE	4	218
GRAY BLACK SHALE	10	228
GRAY WHITE SAND STONE	31	259
GRAY SHALE	12	271
LITE GREENISH SAND STONE	8	279
SHALE LITE GREEN SAND STONE	7	286
BUFF LIME STONE	7	293
SHALE LIME STONE SAND STONE	19	312
GRAY SAND STONE LIME STONE	2	314
WHITE SAND STONE LIME STONE	12	326
GRAY SHALE SAND STONE	9	335
WHITE GRAY SAND STONE	37	372
GRAY SOFT SHALE	4	376
WHITE GRAY SAND STONE	14	390
BLACK GRAY SHALE	1	391

15 Remarks, elevation, source of data, etc.

A 20" SURFACE CASING WAS DRIVEN TO 70 FT ON THIS WELL TO SECURE THE COARSE GRAVELS, SANDS AND BOULDERS. THERE WERE 14 BAGS OF BENSEAL USED AS THE CASING WAS DRIVEN TO SEAL IT IN PLACE.

THE 16" CASING WAS INSTALLED IN A 19" MUD ROTARY DRILLED HOLE. NEAT CEMENT GROUT WAS USED TO SEAL THE CASING INPLACE. THE GROUT WAS PUMPED DOWN THE CASING AND BACK UP THE ANNULAR SPACE TO THE SURFACE. HALLIBURTON SERVICES PLACED THE CEMENT GROUT.

CONSTRUCTION TIME FOR THE WELL WAS 19 WORK DAYS WHICH INCLUDED ALL THE TIME ON THE JOB FROM SETUP TO THE PULLING OF THE TEST PUMP AND WELDING ON THE STEEL PLATE CAP.

THERE WERE 2 FISHING JOB IN THIS TIME WHICH AMOUNTED TO A TOTAL OF 3 DAYS. 1) WAS CAUSED WHEN THE PIN ON THE DRILL COLLAR WHICH WAS SCREWED INTO THE BIT SUB BROKE OFF FROM FATIGUE. THE BIT SUB WAS TAKEN TO OIL PATCH MACHINE TOOL COMPANY IN MT PLEASANT AND THE DUTCHMAN TAKEN OUT AND THE BOX REPAIRED. 2) WAS CAUSED WHEN THE BIT SUB BOX WHICH HAD JUST UNDERGONE REPAIR AND HAD DRILLED ONLY 15 FT SPLIT.

#2

DEQ

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Well ID: 47000006481

Import ID: 47027405303

Tax No:	Permit No:	County: Livingston	Township: Marion

Well ID: 47000006481

Elevation: 908 ft

Latitude: 42.59006988

Longitude: -84.00011221

Fraction:	Section:	Town/Range:	WSSN:	Source ID/Well No:
SW¼ SW¼ SW¼	5	02N 04E	4098	2

Distance and Direction from Road Intersection: WSSN# 03255; 133'N C/L CEDAR LK RD &133' E NORTON RD

Well Owner: Mhog Water & Sewer Authority

Well Address:	Owner Address:
MHOG SWATH #2 HOWELL MI	3225 BYRON ROAD HOWELL MI 48843

Drilling Method: Rotary
Well Depth: 410.00 ft. | Well Use: Type I public
Well Type: New | Date Completed: 2/27/1996
Casing Type: Steel - black
Casing Joint: Unknown
Diameter: 16.00 in. to 121.00 ft. depth

Bore Diameter 1: 3.00 in. to 121.00 ft. depth
Bore Diameter 2:
Bore Diameter 3:
Height: 5.00 ft. above grade
Casing Fitting: None

Static Water Level: 6.80 ft. Below Grade(Not Flowing)
Yield Test Method: Unknown
Measurement Taken During Pump Test:
27.00 ft. after 26.00 hrs. pumping at 8.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:
Abandoned well ID:

Screen Installed: No | Well Intake: Unknown
Filter Packed:
Screen Diameter: | Length:
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes | Grouting Method: Unknown
No. of Bags: | Additives: None
Grouting Materials:
Neat cement | From 0.00 ft. to 121.00 ft.

Well Head Completion: Unknown

Nearest source of possible contamination:

Type	Distance	Direction
Unknown	0.00 ft.	
Unknown		

Drilling Machine Operator Name: HUGHES
Employment: Unknown

Pump Installed: No | Pump Installation only:
Pump Installation date: | HP:
Manufacturer: | Pump Type:
Model Number: | Pump Capacity:
Length of Drop Pipe: | Id of Well:
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number: | Tank Capacity : Gallons
Pressure Relief Valve Installed : No

Formation Description	Thickness	Depth to Bottom
Clay	7.00	7.00
Sand & Gravel	11.00	18.00
Grey Clay W/Gravel	41.00	59.00
Gravel & Cobbles	5.00	64.00
Clay W/Gravel	26.00	90.00
Sandstone Broken W/Shale	25.00	115.00
Green Sandstone	20.00	135.00
Shale Hard W/Limestone	5.00	140.00
Green Sandstone W/Shale	22.00	162.00
Limestone Hard	13.00	175.00
Sandstone	7.00	182.00
Shale W/Sandstone W/Limestone	21.00	203.00
Sandstone W/Shale	79.00	282.00
Sandstone W/Shale Hard	58.00	340.00
White Sandstone	46.00	386.00
Shale W/Sandstone	4.00	390.00
Sandstone W/Silt	8.00	398.00
Shale	12.00	410.00

(Continued on Page 2)

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/17/2000 20:34

#2

DEQ

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Well ID: 47000006481 Failure to comply is a misdemeanor. Import ID: 47027405303

Tax No:	Permit No:	County: Livingston	Township: Marion

Well ID: 47000006481

Elevation: 906 ft

Latitude: 42.69006968

Longitude: -84.00011221

Fraction:	Section:	Town/Range:	WSSN:	Source ID/Well No:
SW¼ SW¼ SW¼	5	02N 04E	4098	2

Distance and Direction from Road Intersection: WSSN# 03255; 133'N C/L CEDAR LK RD &133' E NORTON RD

Well Owner: Mhog Water & Sewer Authority

Well Address:	Owner Address:
MHOG SWATH #2 HOWELL MI	3225 BYRON ROAD HOWELL MI 48843

(Continued from Page 1)

Formation Description	Thickness	Depth to Bottom

Geology Remarks: 1. [CLAY] [7] [7] 2. [SAND & GRAVEL, SMALL] [18] [11] 3. [CLAY, GREY-LITTLE GRAVEL] [59] [41] 4. [GRAVEL & ROCKS] [64] [5] 5. [CLAY W/SOME GRAVEL] [90] [26] 6. [SANDSTONE, BROKEN AT TOP & SHALE] [116] [26] 7. [SANDSTONE, GREEN] [136] [20] 8. [SHALE, HARD W/LIMESTONE] [140] [6] 9. [SANDSTONE, GREEN W/SOME SHALE] [162] [22] 10. [LIMESTONE, HARD] [176] [13] 11. [SANDSTONE] [182] [7] 12. [SHALE W/SOME SANDSTONE & LIMESTONE] [203] [21] 13. [SANDSTONE W/SHALE] [282] [79] 14. [SANDSTONE, HARD W/SHALE] [340] [58] 15. [SANDSTONE, WHITE] [386] [46] 16. [SHALE W/SANDSTONE] [390] [4] 17. [SANDSTONE, DIRTY] [398] [8] 18. [SHALE] [410] [12]

Contractor Type: Unknown
Registration Number: 2072
Business Name:
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor Date

General Remarks: 3

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/17/2000 20:34

Well #2

Layne NORTHERN COMPANY INCORPORATED
INDIANAPOLIS • MISHAWAKA • LANSING

☐ TEST
☒ PERMANENT

Job No. 54-5216

WELL LOG No. 2 CITY Howell County Livingston

Owner Marion-Howell Genoa-Oceola-Sewer & Water Authority Township Marion

SW, SW, SW Section 5, T2N, R4E

Location State Michigan

From Land Description 133' N. c/l Cedar Lake Rd & 133' E. c/l Norton Road

From Street or Road

FORMATION FOUND -- DESCRIBE FULLY	FROM NATURAL GROUND LEVEL			
	Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Static Water Level
Clay	0	7'	7'	
Sand & gravel, small	7'	18'	11'	
Clay, grey - little gravel	18'	59'	41'	
Gravel & rocks	59'	64'	5'	
Clay w/some gravel	64'	90'	26'	
Sandstone, broken at top & shale	90	115'	25'	
Sandstone, green	115'	135	20'	
Shale, hard w/limestone	135'	140'	5'	
Sandstone, green w/some shale	140'	162'	22'	
Limestone, hard	162'	175	13'	
Sandstone	175'	182'	7'	
Shale w/some sandstone & limestone	182'	203'	21'	
Sandstone w/shale	203'	282	79'	
Sandstone, hard w/shale	282'	340	58'	
Sandstone, white	340'	386'	46'	6.8'
Shale w/sandstone	386'	390'	4'	
Sandstone, dirty	390'	398'	8'	
Shale	398'	410'	12'	

22" to 121'

Hole 15" - 410" Dia Drilled by: { Cable Tool ____ Rotary ____ Jetting ____ / Reverse Circ. X Bucket ____ Auger ____

Rotary Hole Grouted: Neat Cement X Drilling Mud ____ Other ____

Casing 16 "OD From 60 "above ground to 121 feet below ground. Weight 62.6 Pounds per foot

Screen N/A " Set from ____ to ____ feet Make N/A Type ____ Slot ____

Pumping test 1413 GPM drawdown to 26.07 feet after 8 hours pumping

Date Completed 2/27/96 Driller G. Huahes

COLLI-GRAPHIC CORP. 63188 1784 TM 1-64

Well #2

Job No. 54-5216

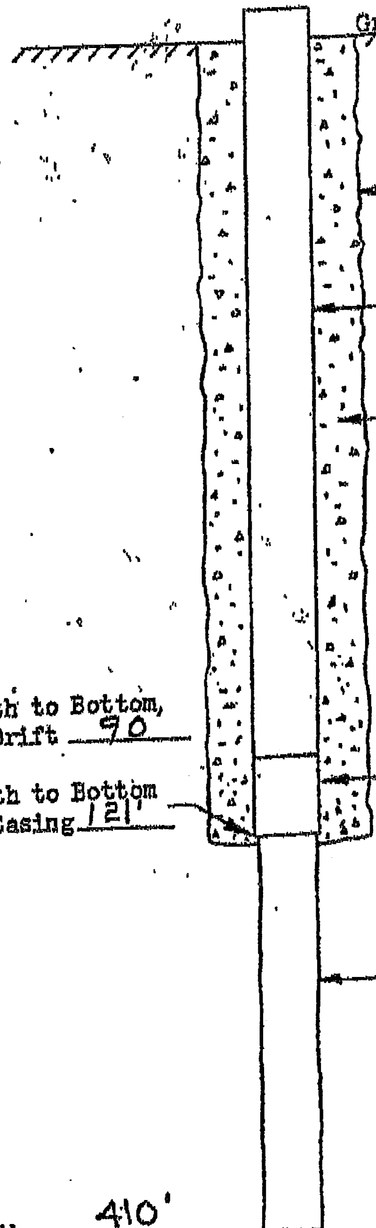
Location: 125' N. c/L Cedar Lake Rd
133' E. c/L Norton Rd.

County Livingston

Township Marion

Section 5 T 2N R 4E

Pipe extends 5 feet above ground level.



Ground Level

22" Dia. Hole Drilled

16" Black Steel Pipe
Weight 62.6 lbs. per ft.

3" Wall of Grout
15 lbs. per gal.
Neat Cement

Depth to Bottom, of Drift 90

Depth to Bottom of Casing 121'

15" Rock Hole

Depth 410'

Pipe Tally — Welded ~~Threaded~~

	feet	inches
Bottom		
		21'
		21'-4"
		22'
		21'-8"
		21'
		19'
Top		
Total		126'

Static Level 6.8' Pumping Level after 8 Hours Driller Hughes
Pumped 1413 GPM at 26.07' Date Finished 2/27/96
Type of Rig RC Date Started 1/10/96

NOTE: All Depths Measured from Ground Level

CASED AND CEMENTED ROCK WELL NO. 2 FOR
Marion Howell Genoa Oceola Sewer & Water Authority

SCALE: Not to Scale
DATE: 3/12/96
DRWN: G.H APPD:
DRAWING NUMBER
A-6948A

LAYNE-NORTHERN CO., INC.
INDIANAPOLIS • MISHAWAKA, IND. • LANSING

#3

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Well ID: 47000018854

Tax No:	Permit No:	County: Livingston	Township: Marion

Well ID: 47000018854

Elevation: 906 ft

Latitude: 42.56983688

Longitude: -83.99923714

Fraction:	Section:	Town/Range:	WSSN:	Source ID/Well No:
SW¼ NE¼ SE¼	5	02N 04E	4098	3

Distance and Direction from Road Intersection: 100' N. OF CEDAR LAKE RD --400' E. OF NORTON

Well Owner: Mhog Water & Sewer Authority

Well Address:	Owner Address:
MHOG SWATH #3	1577 N. LATSON RD HOWELL MI 48844

Drilling Method: Rotary
Well Depth: 403.00 ft. | Well Use: Type I public
Well Type: New | Date Completed: 9/15/2000
Casing Type: Steel - galvanized
Casing Joint: Welded
Diameter: 16.00 in. to 124.00 ft. depth

Bore Diameter 1: 20.00 in. to 124.00 ft. depth
Bore Diameter 2: 15.00 in. to 403.00 ft. depth
Bore Diameter 3:
Height: 2.00 ft. above grade
Casing Fitting: None

Static Water Level: 13.00 ft. Below Grade(Not Flowing)
Yield Test Method: Test pump
Measurement Taken During Pump Test:
28.00 ft. after 6.00 hrs. pumping at 1,500.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: No | Well Intake: Bedrock Well
Filter Packed:
Screen Diameter: | Length:
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes | Grouting Method: Unknown
No. of Bags: 84 | Additives: None
Grouting Materials:
Neat cement | From 0.00 ft. to 124.00 ft.

Well Head Completion: Well house

Nearest source of possible contamination:
Type | Distance | Direction
None

Drilling Machine Operator Name: JOE KNAUF

Employment: Employee

Pump Installed: No | Pump Installation only:
Pump Installation date: | HP:
Manufacturer: | Pump Type:
Model Number: | Pump Capacity:
Length of Drop Pipe: | Id of Well:
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number: | Tank Capacity : Gallons
Pressure Relief Valve Installed : No

Formation Description	Thickness	Depth to Bottom
Brown Clay	16.00	16.00
Brown Clay & Gravel	2.00	18.00
Gray Clay	3.00	21.00
Sand & Gravel	14.00	35.00
Gray Clay	20.00	55.00
Sand & Gravel	7.00	62.00
Gray Clay & Gravel	2.00	64.00
Gravel	1.00	65.00
Gray Clay	8.00	73.00
Gray Clay & Gravel	8.00	81.00
Boulders	1.00	82.00
Sandstone W/Limestone Broken	12.00	94.00
Sandstone Hard	3.00	97.00
Sandstone	5.00	102.00
Sandstone W/Limestone	13.00	115.00
Sandstone	30.00	145.00
Sandstone W/Limestone	30.00	175.00
Sandstone	10.00	185.00
Red Shale	3.00	188.00
Sandstone	4.00	192.00
Sandstone W/Limestone	2.00	194.00
Gray Shale	2.00	196.00
Shale W/Sandstone	1.00	197.00
Limestone	2.00	199.00
Shale W/Limestone	2.00	201.00
Limestone	1.00	202.00
Black Shale	3.00	205.00
Limestone	5.00	210.00
Gray Shale	2.00	212.00
Sandstone	3.00	215.00
Black Shale	3.00	218.00
Limestone	6.00	224.00

(Continued on Page 2)

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

3/6/2002 16:59

#3

DEQ

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 47000018854

Tax No:	Permit No:	County: Livingston	Township: Marion

Well ID: 47000018854

Elevation: 906 ft

Latitude: 42.56863686

Longitude: -83.99923714

Fraction:	Section:	Town/Range:	WSSN:	Source ID/Well No:
SW¼ NE¼ SE¼	6	02N 04E	4098	3

Distance and Direction from Road Intersection: 100' N. OF CEDAR LAKE RD --400' E. OF NORTON

Well Owner: Mhog Water & Sewer Authority

Well Address:	Owner Address:
MHOG SWATH #3	1577 N. LATSON RD HOWELL MI 48844

(Continued from Page 1)

Formation Description	Thickness	Depth to Bottom
Sandstone	31.00	255.00
Black Shale	4.00	259.00
Limestone	1.00	260.00
Sandstone W/Shale	10.00	270.00
Sandstone	5.00	275.00
Black Shale	3.00	278.00
Sandstone	1.00	279.00
Sandstone W/Limestone	2.00	281.00
Sandstone	2.00	283.00
Limestone W/Shale	3.00	286.00
Sandstone W/Shale	1.00	287.00
Sandstone	116.00	403.00

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 2055
Business Name: RAYMER COMPANY INC
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor Date

General Remarks:
OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

3/6/2002 16:59

#3

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
DRINKING WATER & RADIOLOGICAL PROTECTION DIVISION

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978
Failure to comply is a misdemeanor

TAX NO:

PERMIT NO:

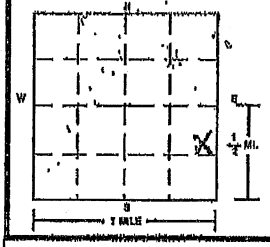
1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
LIVINGSTON	MARION	SW 1/4 NE 1/4 SE 1/4	06	2N	4E

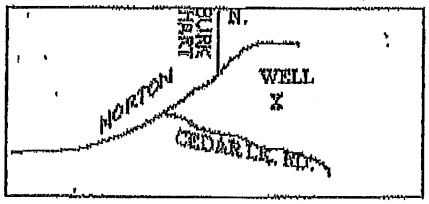
Distance and Direction from Road Intersection
100' N. OF CEDAR LAKE RD. - 400' E. OF NORTON.

Street Address & City of Well Location: CEDAR LAKE HOWELL

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: M.H.O.G.-- S & W. AUTH.
1577 N. LATSON RD.
HOWELL MI 48844-
Address Same as Well Location ☐ Yes ☒ No

4. WELL DEPTH: 403 ft. | Date Completed 9 // 15 // 00 | ☒ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☒ AIR

6. USE: ☐ Household ☒ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☒ Welded ☐ Other
Diameter: 16 in. to 124 ft. depth; ___ in. to ___ ft. depth
BORE HOLE: Diameter: 20 in. to 124 ft. depth; 15 in. to 403 ft. depth
Height: Above/Below Surface: 2 ft
Weight: 62.58 lbs./ft.
☐ Drive Shoe ☐ Shale Packer

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
BROWN CLAY	16	16
BROWN CLAY & GRAVEL	2	18
GRAY CLAY	3	21
SAND & GRAVEL	14	35
GRAY CLAY	20	55
SAND & GRAVEL	7	62
GRAY CLAY & GRAVEL	2	64
GRAVEL	1	65
GRAY CLAY	8	73
GRAY CLAY & GRAVEL	8	81
BOULDERS	1	82
BROKEN SANDSTONE/ LIMESTONE	12	94
SANDSTONE, HARD	3	97
SANDSTONE	5	102
SANDSTONE W/LIMESTONE	13	115
USE A 2ND SHEET IF NEEDED		

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type ___ Diameter ___
Slot/Gauze ___ Length: ___
Set Between ___ ft. and ___ ft.
FITTINGS: ☐ K-Packer ☐ Bramer Check ☐ Blank Above Screen ___ ft. ☐ Other ___

9. STATIC WATER LEVEL: 13 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
28 ft. After 8 hrs. Pumping at 1500 G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☒ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade ☐ Basement Offset ☒ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 0 to 124 ft.
☒ Neat Cement ☐ Bentonite ☐ Other ___
No. of Bags 84 Additives NONE

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type ___ Distance ___ ft. Direction ___
Type ___ Distance ___ ft. Direction ___

14. PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of Drop Pipe ___ ft. Capacity ___ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other ___
PRESSURE TANK:
Manufacturer's Name ___
Model Number ___ Capacity ___ Gallons ___

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter ___ in. Depth ___ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags ___ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
PAGE 1- DRLD. REVERSE AIR 145'-403' USING WELL WATER FOR DRILLING.

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name JOE KNAUF

18. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Raymer Company, Inc. (REGISTERED BUSINESS NAME) 2066 (REGISTRATION NO.)
Address 1367 Comstock, Marne MI 49435
Signed ___ (AUTHORIZED REPRESENTATIVE) Date 9/20/00

IMPORTANT: File with deed.

EQP 2017 (12/96)

WELL OWNER COPY

#3

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
DRINKING WATER & RADIOLOGICAL PROTECTION DIVISION

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978
Failure to comply is a misdemeanor

TAX NO:

PERMIT NO:

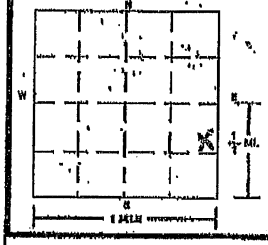
1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
LIVINGSTON	MARION	SW 1/4 NE 1/4 SE 1/4	05	2N	4E

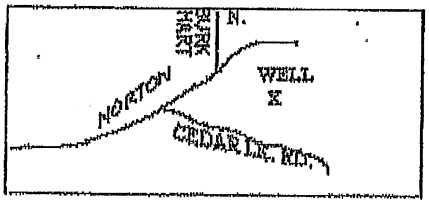
Direction and Distance from Road Intersection
100' N. OF CEDAR LAKE RD. - 400' E. OF NORTON.

Street Address & City of Well Location: CEDAR LAKE HOWELL

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: M.H.O.G.-- S & W. AUTH.
1577 N. LATSON RD.
HOWELL. MI 48844-
Address Same as Well Location ☐ Yes ☒ No

4. WELL DEPTH: ft. Date Completed / / ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐

7. CASING: ☐ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other
Diameter: ____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface: 2 ft
Weight: 62.58 lbs./ft.
BORE HOLE:
Diameter: ____ in. to ____ ft. depth
____ in. to ____ ft. depth
☐ Drive Shoe ☐ Shale Packer

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
SANDSTONE	30	145
SANDSTONE W/LIMESTONE	30	175
SANDSTONE	10	185
RED SHALE	3	188
SANDSTONE	4	192
SANDSTONE W/ LIMESTONE	2	194
GRAY SHALE	2	196
SHALE W/SANDSTONE	1	197
LIMESTONE	2	199
SHALE W/ LIMESTONE	2	201
LIMESTONE	1	202
BLACK SHALE	3	205
LIMESTONE	5	210
GRAY SHALE	2	212
SANDSTONE	3	215
USE A 2ND SHEET IF NEEDED		

8. SCREEN: ☐ Not Installed. ☐ Gravel-Packed
Type ____ Diameter ____
Slot/Gauze ____ Length: ____
Set Between ____ ft. and ____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen ____ ft. Other ____

9. STATIC WATER LEVEL:
____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
____ ft. After ____ hrs. Pumping at ____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☒ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From ____ to ____ ft.
☐ Neat Cement ☐ Bentonite ☐ Other ____
No. of Bags ____ Additives ____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type ____ Distance ____ ft. Direction ____
Type ____ Distance ____ ft. Direction ____

14. PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's Name ____
Model Number ____ HP ____ Volts ____
Length of Drop Pipe ____ ft. Capacity ____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other ____
PRESSURE TANK:
Manufacturer's Name ____
Model Number ____ Capacity ____ Gallons ____

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter ____ in. Depth ____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags ____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
PAGE 2

DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name JOE KNAUF

18. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Raymer Company, Inc. (REGISTERED BUSINESS NAME) 2055 (REGISTRATION NO.)
Address 1357 Comstock, Marne, MI 49436
Signed ____ (AUTHORIZED REPRESENTATIVE) Date 9/20/00

IMPORTANT: File with deed.

WELL OWNER COPY

EQP 2017 (12/96)

#3

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

DRINKING WATER & RADIOLOGICAL PROTECTION DIVISION

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978
Failure to comply is a misdemeanor

TAX NO:

PERMIT NO:

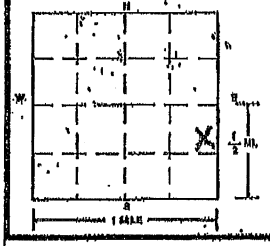
1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
LIVINGSTON	MARION	SW 1/4 NE 1/4 SE 1/4	05	2N	4E

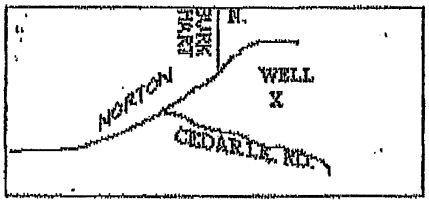
Distance and Direction from Road Intersection
100' N. OF CEDAR LAKE RD. - 400' E. OF NORTON.

Street Address & City of Well Location: CEDAR LAKE HOWELL

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: M.H.O.G.-- S & W. AUTH.
1577 N. LATSON RD.
HOWELL MI 48844-
Address Same as Well Location ☐ Yes ☒ No

4. WELL DEPTH: ft. | Date Completed: / / | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☐ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: _____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface: 2 ft
Weight: 62.56 lbs./ft.
BORE HOLE:
Diameter: _____ in. to _____ ft. depth
_____ in. to _____ ft. depth
☐ Drive Shoe ☐ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter: _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. ☐ Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Baller ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From _____ to _____ ft.
☐ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
BLACK SHALE	3	218
LIMESTONE	6	224
SANDSTONE	31	255
BLACK SHALE	4	259
LIMESTONE	1	260
SANDSTONE W/SHALE	10	270
SANDSTONE	5	275
BLACK SHALE	3	278
SANDSTONE	1	279
SANDSTONE W/LIMESTONE	2	281
SANDSTONE	2	283
LIMESTONE W/ SHALE	3	286
SANDSTONE W/SHALE	1	287
SANDSTONE	116	403
USE A 2ND SHEET IF NEEDED		

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry
☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
PAGE 3

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name JOE KNAUF

18. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Raymer Company, Inc. (REGISTERED BUSINESS NAME) 2056 (REGISTRATION NO.)
Address 1357 Comstock, Manor MI 48436
Signed _____ (AUTHORIZED REPRESENTATIVE) Date 9/20/00

IMPORTANT: File with deed.

EQP 2017 (12/96)

WELL OWNER COPY

#4

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Well ID: 47000023216

Tax No:	Permit No:	County: Livingston	Township: Marion

Well ID: 47000023216

Elevation: 905 ft

Latitude: 42.59167464

Longitude: -84.00060838

Fraction:	Section:	Town/Range:	WSSN:	Source ID/Well No:
SW¼ NE¼ SE¼	5	02N 04E	4098	4

Distance and Direction from Road Intersection: .25 mi W of Burkhart Rd & 600 ft N of Norton Rd.

Well Owner: Mhog Water & Sewer Authority

Well Address:	Owner Address:
MHOG SWATH #4	1577 N Latson Rd. Howell MI 48843

Drilling Method: Rotary
Well Depth: 408.00 ft. | Well Use: Type I public
Well Type: New | Date Completed: 1/28/2003

Casing Type: Steel - black
Casing Joint: Welded
Diameter: 16.00 in. to 130.00 ft. depth

Bore Diameter 1: 22.00 in. to 130.00 ft. depth
Bore Diameter 2: 15.00 in. to 408.00 ft. depth
Bore Diameter 3:
Height: 3.00 ft. above grade
Casing Fitting: Centralizer

Static Water Level: 13.00 ft. Below Grade(Not Flowing)
Yield Test Method: Test pump
Measurement Taken During Pump Test:
30.00 ft. after 4.00 hrs. pumping at 1,800.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: No | Well Intake: Bedrock Well
Filter Packed:
Screen Diameter: | Length:
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes | Grouting Method: Grout pipe outside casing
No. of Bags: 101 | Additives: None
Grouting Materials:
Neat cement | From 0.00 ft. to 130.00 ft.

Well Head Completion: 12 inches above grade

Nearest source of possible contamination:

Type	Distance	Direction
None	200.00 ft.	

Drilling Machine Operator Name: Mike Smith

Employment: Employee

Pump Installed: No | Pump Installation only:
Pump Installation date: | HP:
Manufacturer: | Pump Type:
Model Number: | Pump Capacity:
Length of Drop Pipe: | Id of Well:
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number : | Tank Capacity : Gallons
Pressure Relief Valve Installed : No

Formation Description	Thickness	Depth to Bottom
Sand & Silt Fine	55.00	55.00
Gravel Stoney	5.00	60.00
Clay W/Gravel	20.00	80.00
Gray Clay Hard	15.00	95.00
Sand & Gravel W/Boulders	8.00	103.00
Limestone & Sandstone Fractured	11.00	114.00
Green Sandstone W/Shale Stringers	6.00	120.00
Sandstone	20.00	140.00
Sandstone W/Shale Stringers	27.00	167.00
Limestone Sandy Hard	13.00	180.00
Sandstone & Shale W/Limestone Stringers	85.00	265.00
Shale & Sandstone W/Limestone Stringers	43.00	308.00
Shale & Sandstone Soft	40.00	348.00
White Sandstone Hard	60.00	408.00

(Continued on Page 2)

ATTENTION WELL OWNER: FILE WITH DEED

#4

DEQ

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Well ID: 47000023216

Failure to comply is a misdemeanor.

Tax No:	Permit No:	County: Livingston			Township: Marion
	Fraction: SW¼ NE¼ SE¼	Section: 5	Town/Range: 02N 04E	WSSN: 4098	Source ID/Well No: 4

Well ID: 47000023216

Elevation: 905 ft

Latitude: 42.59167464

Longitude: -84.00080838

Distance and Direction from Road Intersection: .25 mi W of Burkhart Rd & 600 ft N of Norton Rd.

Well Owner: Mhog Water & Sewer Authority

Well Address:	Owner Address:
MHOG SWATH #4	1577 N Latson Rd. Howell MI 48843

(Continued from Page 1)

Formation Description	Thickness	Depth to Bottom

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 1913
Business Name: Kelley Dewatering & Const. Co.
Business Address: Wyoming MI

WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor Date

General Remarks:

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/6/2004 07:24

#5

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Well ID: 47000024196

Tax No:	Permit No:	County: Livingston	Township: Marion

Well ID: 47000024196

Elevation: 914 ft

Latitude: 42.59170768

Longitude: -84.00322144

Fraction:	Section:	Town/Range:	WSSN:	Source ID/Well No:
SW¼ NE¼ SE¼	5	02N 04E	4098	5

Distance and Direction from Road Intersection: 600 n of well #4

Well Owner: Mhog Sewer & Water Authority

Well Address:	Owner Address:
MHOG SWATH #5	4288 Norton Rd. Howell MI 48843

Drilling Method: Rotary
Well Depth: 418.00 ft. | Well Use: Type I public
Well Type: New | Date Completed: 8/7/2004

Casing Type: Steel - black
Casing Joint: Welded
Diameter: 16.00 in. to 144.00 ft. depth

Bore Diameter 1: 20.00 in. to 144.00 ft. depth
Bore Diameter 2: 16.00 in. to 418.00 ft. depth
Bore Diameter 3:
Height: 3.00 ft. above grade
Casing Fitting: Drive shoe

Pump Installed: No
Pump Installation date:
Manufacturer:
Model Number:
Length of Drop Pipe:
Diameter of Drop Pipe:
Draw Down Seal Used:

Pump Installation only:
HP:
Pump Type:
Pump Capacity:
Id of Well:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:
Tank Capacity: Gallons
Pressure Relief Valve Installed: No

Static Water Level: 30.00 ft. Below Grade(Not Flowing)
Yield Test Method: Test pump
Measurement Taken During Pump Test:
42.00 ft. after 6.00 hrs. pumping at 1,400.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Formation Description	Thickness	Depth to Bottom
Clay	7.00	7.00
Sand & Gravel	111.00	118.00
Limestone Soft Fractured	12.00	130.00
Sandstone W/Shale	14.00	144.00
Sandstone	74.00	218.00
Sandstone & Shale	37.00	255.00
Sandstone	25.00	280.00
Shale Sandy	20.00	300.00
Sandstone & Shale	30.00	330.00
White Sandstone	88.00	418.00
Dark Gray Shale Sticky	2.00	420.00

Screen Installed: No
Filter Packed:
Screen Diameter:
Screen Material Type:
Slot:
Blank:
Fittings:

Well Intake: Bedrock Well
Length:

Geology Remarks:

Well Grouted: Yes
Grouting Method: Grout pipe outside casing
No. of Bags: 110
Additives: None
Grouting Materials:
Neat cement From 0.00 ft. to 144.00 ft.

Well Head Completion: 12 inches above grade

Nearest source of possible contamination:

Type	Distance	Direction
None	200.00 ft.	

Contractor Type: Water well drilling contractor
Registration Number: 1913
Business Name: Kelley Dewatering
Business Address: Wyoming MI

Drilling Machine Operator Name: Mike Smith

Employment: Employee

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor Date

General Remarks:
OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

9/14/2004 11:46

DEQ

WATER WELL AND PUMP RECORD

#6

Completion is required under authority of Part 127 Act 368 PA 1978.

Well ID: 47000024197

Failure to comply is a misdemeanor.

Tax No:	Permit No:	County: Livingston	Township: Marion

Well ID: 47000024197

Elevation: 913 ft

Latitude: 42.59280018

Longitude: -84.0031946

Fraction:	Section:	Town/Range:	WSSN:	Source ID/Well No:
SW¼ NE¼ SE¼	5	02N 04E	4098	6

Distance and Direction from Road Intersection: 600 FT North of Well 5

Well Owner: Mhog Water & Sewer Authority

Well Address: MHOG SWATH #6

Owner Address: 4266 Norton Rd Howell MI 48843

Drilling Method: Rotary

Well Depth: 417.00 ft. | Well Use: Type I public

Well Type: New | Date Completed: 8/1/2004

Casing Type: Steel - black
Casing Joint: Welded
Diameter: 16.00 In. to 142.00 ft. depth

Bore Diameter 1: 20.00 In. to 142.00 ft. depth
Bore Diameter 2: 15.00 In. to 417.00 ft. depth
Bore Diameter 3:
Height: 3.00 ft. above grade
Casing Fitting: Drive shoe

Static Water Level: 30.00 ft. Below Grade(Not Flowing)
Yield Test Method: Test pump
Measurement Taken During Pump Test:
40.00 ft. after 6.00 hrs. pumping at 1,400.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:
Abandoned well ID:

Screen Installed: No | Well Intake: Bedrock Well
Filter Packed:
Screen Diameter: | Length:
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes | Grouting Method: Grout pipe outside casing
No. of Bags: 105 | Additives: None
Grouting Materials:
Neat cement | From 0.00 ft. to 142.00 ft.

Well Head Completion: 12 inches above grade

Nearest source of possible contamination:

Type	Distance	Direction
None	200.00 ft.	

Drilling Machine Operator Name: Mike Smith

Employment: Employee

Pump Installed: No | Pump Installation only:
Pump Installation date: | HP:
Manufacturer: | Pump Type:
Model Number: | Pump Capacity:
Length of Drop Pipe: | Id of Well:
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number: | Tank Capacity : Gallons
Pressure Relief Valve Installed : No

Formation Description	Thickness	Depth to Bottom
Clay	8.00	8.00
Sand & Gravel	66.00	74.00
Gravel & Clay	6.00	80.00
Gravel W/Stones W/Boulders	38.00	118.00
Limestone Soft Fractured	5.00	123.00
Limestone & Sandstone W/Shale	17.00	140.00
Sandstone	60.00	200.00
Sandstone W/Shale	40.00	240.00
Sandstone	35.00	275.00
Shale	25.00	300.00
Sandstone	20.00	320.00
Shale Sandy	10.00	330.00
White Sandstone	87.00	417.00
Dark Gray Shale Soft	3.00	420.00

(Continued on Page 2)

ATTENTION WELL OWNER: FILE WITH DEED

#6

DEQ

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 47000024197

Tax No:	Permit No:	County: Livingston	Township: Marion

Well ID: 47000024197

Elevation: 913 ft

Latitude: 42.59280018

Longitude: -84.0031946

Fraction:	Section:	Town/Range:	WSSN:	Source ID/Well No:
SW¼ NE¼ SE¼	5	02N 04E	4098	6

Distance and Direction from Road Intersection: 500 FT North of Well 5

Well Owner: Mhog Water & Sewer Authority

Well Address: MHOG SWATH #6

Owner Address: 4288 Norton Rd Howell MI 48843

(Continued from Page 1)

Formation Description	Thickness	Depth to Bottom

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 1913
Business Name: Kelley Dewatering
Business Address: Wyoming MI

WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor Date

General Remarks:

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

9/14/2004 12:13

APPENDIX B

Water Quality Report

Ground water (also called well water) is protected from many of the sources of contamination described later, such as microbes like cryptosporidium. In general, the sources of drinking water (both tap and bottled water) may include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material.

Source water can also be contaminated by substances resulting from animal or human activity. Contaminants include anything found in water. They are generally not harmful at low levels. Removing all contaminants would be extremely expensive and in nearly all cases would not provide greater protection of health. Examples of contaminants that may be present in source water in general include: 1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife. 2) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming. 3) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses. 4) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production which can also come from runoff and septic systems. 5) Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production or the mining process. In order to ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The MHOG Sewer & Water Authority is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When you have not used your water for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at *http://www.epa.gov/safewater/lead.*

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PAID
BRIGHTON, MI
Permit No. 298

MHOG Water Authority
4288 Norton Road
Howell, MI 48843

Important Information Enclosed
2012 Water Quality Report

MHOG Sewer & Water Authority

2012 Drinking Water Quality Report

DEAR CUSTOMER:

This report has been prepared to inform the customers of the Marion, Howell, Oceola, Genoa (MHOG) Sewer & Water Authority of the quality of their drinking water.

Your drinking water complied with all Environmental Protection Agency (EPA) and Michigan drinking water health standards for the latest sampling period. Infants, some elderly or immune-compromised persons such as those undergoing chemotherapy; those who have undergone organ transplants; those who are undergoing treatment with steroids; and people with HIV/AIDS or other immune system disorders can be particularly at risk from infections. If you are in one of the categories listed above you may be more vulnerable than the general population to certain contaminants in drinking water. You should seek advice about drinking water from your physician or health care provider.

A geologic sensitivity analysis of the MHOG Water Treatment Plant (WTP) production wells determined that the wells have "low" susceptibility to contamination. Copies of the susceptibility study may be obtained by contacting Alex Chimpouras at the phone number listed at the end of this page.

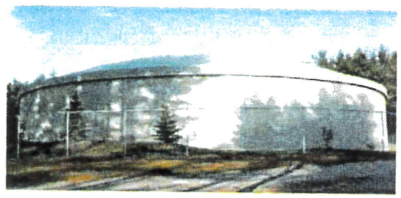
MHOG operators monitor your drinking water daily according to federal and state laws. The table on the next page shows the results of monitoring for the period from January 1 to December 31, 2012, unless otherwise noted. The test results show that your water meets or surpasses all federal and state requirements. For more information about your water call Alex Chimpouras at the MHOG WTP at 517.545.5098.

Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health. Drinking water (bottled or tap) may reasonably be expected to contain at least small amounts of some contaminants. The contaminants in our drinking water are primarily geological materials that dissolved while still in the aquifer. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking water hotline (800.426.4791).

Contaminants may be found in drinking water that cause taste, color, or odor problems. These types of problems do not necessarily cause health concerns. For more information on taste, color, or odor of drinking water, please contact the MHOG WTP at 517.545.5098.

Este reporte incluye informacion importante sobre el agua para tomar. Si tiene preguntas o'discusiones sobre este reporte en espanol, favor del llamar al tel. 281.579.4507 par hablar con una persona biligue en espanol.

Public input concerning the MHOG Water System may be made at regularly scheduled Board Meetings, held the third Wednesday of each month at the Oceola Township Hall, located at 1577 N. Latson Rd. Please call the Oceola Township Hall at 517.546.3259 for more information.



2012 Drinking Water Quality Report

The latest available information for the contaminants detected in our water during the sampling cycle ending in 2012 is given in the following table. The Environmental Protection Agency (EPA) does not require some contaminants to be monitored annually because their concentrations are not expected to vary. The Michigan Department of Environmental Quality (MDEQ) obtains and analyzes the samples in accordance with sampling cycles which vary according to EPA schedules. The definitions and abbreviations used in the table are listed below the results.

Substance (units)	Sample Date	MCL	Level Detected	Range Detected	MCLG	In Compliance	Typical Sources
Inorganic Contaminants							
Chlorine Residual RAA (ppm)	2012	4 MRDL	0.68	0.23-1.17	4 MRDLG	Yes	Water chlorination
Chloride (ppm)	2012	N/A	34	34	N/A	Yes	Natural deposits
Hardness (ppm)	2012	N/A	103	81-132	N/A	Yes	Natural deposits
Sodium (ppm)	2012	N/A	39	39	N/A	Yes	Natural Erosion
Turbidity (NTU)	2012	N/A	0.14	0.01-0.79	N/A	Yes	Soil runoff
Iron (ppm)	2012	N/A	0.01	ND-0.09	N/A	Yes	Natural Deposits
Fluoride (ppm)	2012	4	0.93	0.40-1.33	4	Yes	Natural deposits: additive to prevent tooth decay
Barium (ppm)	2004	2	0.01	0.01	2	Yes	Discharge of drilling wastes & metal refineries; natural erosion
Radioactive Contaminants							
Ra-226 (pCi/l)	2003	5	1.58	1.58	0	Yes	Decay of natural and manmade deposits
Ra-228 (pCi/l)	2003	5	1.29	1.29	0	Yes	Decay of natural and manmade deposits
Disinfectant By-Products							
Bromochloroacetic Acid (ppb)	2012	N/A	2	2	0	Yes	By-product of drinking water chlorination
Dibromoacetic Acid (ppb)	2012	N/A	2	2	0	Yes	By-product of drinking water chlorination
Dichloroacetic Acid (ppb)	2012	N/A	6	6	0	Yes	By-product of drinking water chlorination
Total Haloacetic Acids(five)(ppb)	2012	60	8	8	0	Yes	By-product of drinking water chlorination
Bromodichloromethane (ppb)	2012	80	9.5	9.5	0	Yes	By-product of drinking water chlorination
Bromoform (ppb)	2012	80	5.4	5.4	0	Yes	By-product of drinking water chlorination
Chlorodibromomethane (ppb)	2012	80	12	12	0	Yes	By-product of drinking water chlorination
Chloroform (ppb)	2012	80	5.4	5.4	0	Yes	By-product of drinking water chlorination
Total Trihalomethanes (ppb)	2012	80	32.3	32.3	0	Yes	By-product of drinking water chlorination

Substance (units)	Sample Date	90th Percentile Value	EPA Action Level	Above Action Level	MCLG	In Compliance	Typical Source
Lead and Copper							
Lead (ppb)	2012	1	15	0	0	Yes	Corrosion of customer plumbing
Copper (ppm)	2012	0.15	1.3	0	0	Yes	Corrosion of customer plumbing

No MCLs were exceeded. Levels detected were below MCLs.

Definitions & Abbreviations:

Maximum Contaminant Level Goal (MCLG): The level of contaminants in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology.

Maximum residual disinfectant level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum residual disinfectant level goal (MRDLG): Level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants

Action Level (AL): The concentration of a contaminant, which, if exceeded, triggers treatment, or other requirements, which a water system must follow.

Parts per million (ppm): The equivalent of milligrams per liter (mg/L) is analogous to 1 minute in 2 years.

Parts per billion (ppb): The equivalent of micrograms per liter (ug/L) is analogous to 1 second in 32 years.

Picocuries per liter (pCi/L): A measure of radioactivity. **RAA:** Running Annual Average. **N/A:** Not Applicable. **ND:** Not Detected

Ground water (also called well water) is protected from many of the sources of contamination described later, such as microbes like cryptosporidium. In general, the sources of drinking water (both tap and bottled water) may include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material.

Source water can also be contaminated by substances resulting from animal or human activity. Contaminants include anything found in water. They are generally not harmful at low levels. Removing all contaminants would be extremely expensive and in nearly all cases would not provide greater protection of health. Examples of contaminants that may be present in source water in general include: 1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife. 2) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming. 3) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses. 4) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production which can also come from runoff and septic systems. 5) Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production or the mining process. In order to ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The MHOG Sewer & Water Authority is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When you have not used your water for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at *http://www.epa.gov/safewater/lead.*

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MHOG Water Authority
4288 Norton Road
Howell, MI 48843

Important Information Enclosed
2013 Water Quality Report

MARION
HOWELL
OCEOLA
GENOA
M.H.O.G.
Sewer & Water Utilities

2013 WATER QUALITY REPORT

DEAR CUSTOMER:

This report has been prepared to inform the customers of the Marion, Howell, Oceola, Genoa (MHOG) Sewer & Water Authority of the quality of their drinking water.

Your drinking water complied with all Environmental Protection Agency (EPA) and Michigan drinking water health standards for the latest sampling period. Infants, some elderly or immune-compromised persons such as those undergoing chemotherapy; those who have undergone organ transplants; those who are undergoing treatment with steroids; and people with HIV/AIDS or other immune system disorders can be particularly at risk from infections. If you are in one of the categories listed above you may be more vulnerable than the general population to certain contaminants in drinking water. You should seek advice about drinking water from your physician or health care provider.

A geologic sensitivity analysis of the MHOG Water Treatment Plant (WTP) production wells determined that the wells have "moderately low" to "moderate" susceptibility to contamination. Copies of the susceptibility study may be obtained by contacting Alex Chimpouras at the phone number listed at the end of this page.

MHOG operators monitor your drinking water daily according to federal and state laws. The table on the next page shows the results of monitoring for the period from January 1 to December 31, 2013, unless otherwise noted. The test results show that your water meets or surpasses all federal and state requirements. For more information about your water call Alex Chimpouras at the MHOG WTP at 517-545-5098.

Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health. Drinking water (bottled or tap) may reasonably be expected to contain at least small amounts of some contaminants. The contaminants in our drinking water are primarily geological materials that dissolved while still in the aquifer. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking water hotline (800.426.4791).

Contaminants may be found in drinking water that cause taste, color, or odor problems. These types of problems do not necessarily cause health concerns. For more information on taste, color, or odor of drinking water, please contact the MHOG WTP at 517-545-5098.

Este reporte incluye informacion importante sobre el agua para tomar. Si tiene preguntas o'discusiones sobre este reporte en espanol, favor del llamar al tel. 281-579-4507 par hablar con una persona biligue en espanol.

Public input concerning the MHOG Water System may be made at regularly scheduled Board Meetings, held the third Wednesday of each month at the Oceola Township Hall, located at 1577 N. Latson Rd. Please call the Oceola Township Hall at 517-546-3259 for more information.

2013 Drinking Water Quality Report

The latest available information for the contaminants detected in our water during the sampling cycle ending in 2013 is given in the following table. The Environmental Protection Agency (EPA) does not require some contaminants to be monitored annually because their concentrations are not expected to vary. The Michigan Department of Environmental Quality (MDEQ) obtains and analyzes the samples in accordance with sampling cycles which vary according to EPA schedules. The definitions and abbreviations used in the table are listed below the results.

Substance (units)	Sample Date	MCL	Level Detected	Range Detected	MCLG	In Compliance	Typical Sources
Inorganic Contaminants							
Chlorine Residual RAA (ppm)	2013	4 MRDL	0.73	0.23-2.06	4 MRDLG	Yes	Water chlorination
Chloride (ppm)	2013	N/A	39	39	N/A	Yes	Natural deposits
Hardness (ppm)	2013	N/A	107	84-194	N/A	Yes	Natural deposits
Sodium (ppm)	2013	N/A	39	39	N/A	Yes	Natural Erosion
Turbidity (NTU)	2013	N/A	0.05	ND-0.66	N/A	Yes	Soil runoff
Iron (ppm)	2013	N/A	0.01	ND-0.08	N/A	Yes	Natural Deposits
Fluoride (ppm)	2013	4	0.88	0.34-1.27	4	Yes	Natural deposits: additive to prevent tooth decay
Barium (ppm)	2013	2	0.02	0.02	2	Yes	Discharge of drilling wastes & metal refineries; natural erosion
Radioactive Contaminants							
Ra-226 (pCi/l)	2003	5	1.58	1.58	0	Yes	Decay of natural and manmade deposits
Ra-228 (pCi/l)	2003	5	1.29	1.29	0	Yes	Decay of natural and manmade deposits
Disinfectant By-Products							
Bromochloroacetic Acid (ppb)	2013	N/A	2	2	0	Yes	By-product of drinking water chlorination
Dibromoacetic Acid (ppb)	2013	N/A	2	2	0	Yes	By-product of drinking water chlorination
Dichloroacetic Acid (ppb)	2013	N/A	4	4	0	Yes	By-product of drinking water chlorination
Total Haloacetic Acids(five)(ppb)	2013	60	6	6	0	Yes	By-product of drinking water chlorination
Bromodichloromethane (ppb)	2013	80	13	13	0	Yes	By-product of drinking water chlorination
Bromoform (ppb)	2013	80	4.2	4.2	0	Yes	By-product of drinking water chlorination
Chlorodibromomethane (ppb)	2013	80	13	13	0	Yes	By-product of drinking water chlorination
Chloroform (ppb)	2013	80	8.4	8.4	0	Yes	By-product of drinking water chlorination
Total Trihalomethanes (ppb)	2013	80	38.6	38.6	0	Yes	By-product of drinking water chlorination

Substance (units)	Sample Date	90th Percentile Value	EPA Action Level	Above Action Level	MCLG	In Compliance	Typical Source
Lead and Copper							
Lead (ppb)	2012	1	15	0	0	Yes	Corrosion of customer plumbing
Copper (ppm)	2012	0.15	1.3	0	0	Yes	Corrosion of customer plumbing

No MCLs were exceeded. Levels detected were below MCLs.

Definitions & Abbreviations:

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2014 WATER QUALITY REPORT

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MHOG Sewer & Water Authority
4288 Norton Road
Howell, MI 48843

Important Information Enclosed
2014 Water Quality Report

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A geologic sensitivity analysis of the MHOG Water Treatment Plant (WTP) production wells determined that the wells have "moderately low" to "moderate" susceptibility to contamination. Copies of the susceptibility study may be obtained by contacting Alex Chimpouras at the number listed below.

MHOG operators monitor your drinking water daily according to federal and state laws. The table on the next page shows the results of monitoring for the period from January 1 to December 31, 2014, unless otherwise noted. The test results show that your water meets or surpasses all federal and state requirements. For more information about your water call Alex Chimpouras at the MHOG WTP at 517.545.5098.

Ground water (also called well water) is protected from many of the sources of contamination described later, such as microbes like cryptosporidium. In general, the sources of drinking water (both tap and bottled water) may include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material. Source water can also be contaminated by substances resulting from animal or human activity. Contaminants include anything found in water. They are generally not harmful at low levels. Removing all contaminants would be extremely expensive and in nearly all cases would not provide greater protection of health. Examples of contaminants that may be present in source water in general include: 1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife. 2) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

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MHOG, in partnership with the City of Howell, has recently updated its wellhead protection area. Residents will now see new signs as they enter the 10 year time-of-travel perimeter to the area. A drop of water on the surface of the ground at this distance will take less than 10 years to travel down through the aquifer to the production wells at the drinking water plant. These signs are a reminder to residents that their drinking water could be adversely affected by the improper disposal of solid and liquid materials (e.g. trash, used motor oil).

Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health. Drinking water (bottled or tap) may reasonably be expected to contain at least small amounts of some contaminants. The contaminants in our drinking water are primarily geological materials that dissolved while still in the aquifer. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800.426.4791).

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2014 Drinking Water Quality Report

The latest available information for the contaminants detected in our water during the sampling cycle ending in **2014** is given in the following table. The Environmental Protection Agency (EPA) does not require some contaminants to be monitored annually because their concentrations are not expected to vary. The Michigan Department of Environmental Quality (MDEQ) obtains and analyzes the samples in accordance with sampling cycles which vary according to EPA schedules. The definitions and abbreviations used in the table are listed below the results.

Substance (units)	Sample Date	MCL	Level Detected	Range	MCLG	In Compliance	Typical Sources
Inorganic Contaminants							
Chlorine Residual RAA (ppm)	2014	4 MRDL	0.73	0.23-2.06	4 MRDLG	Yes	Water chlorination
Chloride (ppm)	2014	N/A	29	29	N/A	Yes	Natural deposits
Hardness (ppm)	2014	N/A	107	64-214	N/A	Yes	Natural deposits
Sodium (ppm)	2014	N/A	36	36	N/A	Yes	Natural Erosion
Turbidity (NTU)	2014	N/A	0.08	0.01-0.72	N/A	Yes	Soil runoff
Iron (ppm)	2014	N/A	0.01	ND-0.08	N/A	Yes	Natural Deposits
Fluoride (ppm)	2014	4	0.93	0.34-1.48	4	Yes	Natural deposits: additive to prevent tooth decay
Barium (ppm)	2013	2	0.02	0.02	2	Yes	Discharge of drilling wastes & metal refineries; natural erosion
Radioactive Contaminants							
Ra-226 (pCi/l)	2003	5	1.58	1.58	0	Yes	Decay of natural and manmade deposits
Ra-228 (pCi/l)	2003	5	1.29	1.29	0	Yes	Decay of natural and manmade deposits
Disinfectant By-Products							
Bromochloroacetic Acid (ppb)	2014	N/A	1	ND-2	0	Yes	By-product of drinking water chlorination
Dibromoacetic Acid (ppb)	2014	N/A	3	1-4	0	Yes	By-product of drinking water chlorination
Dichloroacetic Acid (ppb)	2014	N/A	3	2-3	0	Yes	By-product of drinking water chlorination
Total Haloacetic Acids(five)(ppb)	2014	60	5	3-7	0	Yes	By-product of drinking water chlorination
Bromodichloromethane (ppb)	2014	N/A	11	11	0	Yes	By-product of drinking water chlorination
Bromoform (ppb)	2014	N/A	11	10-11	0	Yes	By-product of drinking water chlorination
Chlorodibromomethane (ppb)	2014	N/A	15	14-16	0	Yes	By-product of drinking water chlorination
Chloroform (ppb)	2014	N/A	7.1	6.8-7.3	0	Yes	By-product of drinking water chlorination
Total Trihalomethanes (ppb)	2014	80	43.6	42.3-44.8	0	Yes	By-product of drinking water chlorination

Substance (units)	Sample Date	90th Percentile Value	EPA Action Level	Above Action Level	MCLG	In Compliance	Typical Source
Lead & Copper							
Lead (ppb)	2012	1	15	0	0	Yes	Corrosion of customer plumbing
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No MCLs were exceeded.

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MHOG Sewer & Water Authority
4288 Norton Road
Howell, MI 48843

Important Information Enclosed
2015 Water Quality Report

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2015 Drinking Water Quality Report

The latest available information for the contaminants detected in our water during the sampling cycle ending in **2015** is given in the following table. The Environmental Protection Agency (EPA) does not require some contaminants to be monitored annually because their concentrations are not expected to vary. The Michigan Department of Environmental Quality (MDEQ) obtains and analyzes the samples in accordance with sampling cycles which vary according to EPA schedules. The definitions and abbreviations used in the table are listed below the results.

Substance (units)	Sample Date	MCL	Level Detected	Range	MCLG	In Compliance	Typical Sources
Inorganic Contaminants							
Chlorine Residual RAA (ppm)	2015	4 MRDL	0.66	0.28-1.35	4 MRDLG	Yes	Water chlorination
Chloride (ppm)	2015	N/A	36	36	N/A	Yes	Natural deposits
Hardness (ppm)	2015	N/A	104	76-188	N/A	Yes	Natural deposits
Sodium (ppm)	2015	N/A	41	41	N/A	Yes	Natural Erosion
Turbidity (NTU)	2015	N/A	0.11	0.01-0.49	N/A	Yes	Soil runoff
Iron (ppm)	2015	N/A	0.01	ND-0.11	N/A	Yes	Natural Deposits
Fluoride (ppm)	2015	4	0.79	0.37-1.11	4	Yes	Natural deposits: additive to prevent tooth decay
Barium (ppm)	2013	2	0.02	0.02	2	Yes	Discharge of drilling wastes & metal refineries; natural erosion
Radioactive Contaminants							
Ra-226 (pCi/l)	2003	5	1.58	1.58	0	Yes	Decay of natural and manmade deposits
Ra-228 (pCi/l)	2003	5	1.29	1.29	0	Yes	Decay of natural and manmade deposits
Disinfectant By-Products							
Total Trihalomethanes (ppb)	2015	80	46	25-46	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).
Total Haloacetic Acids (five) (ppb)	2015	60	3	0-3	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).

Substance (units)	Sample Date	90th Percentile Value	EPA Action Level	Above Action Level	MCLG	In Compliance	Typical Source
Lead & Copper							
Lead (ppb)	2015	0	15	0	0	Yes	Corrosion of customer plumbing
Copper (ppb)	2015	60	1300	0	0	Yes	Corrosion of customer plumbing

No MCLs or ALs were exceeded.

For more information please visit our website.

www.mhog.org

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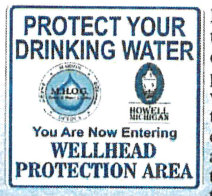
Contaminants include anything found in water. They are generally not harmful at low levels. Removing all contaminants would be extremely expensive and in nearly all cases would not provide greater protection of health. Examples of contaminants that may be present in source water in general include: 1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife. 2) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

3) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses. 4) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production which can also come from runoff and septic systems. 5) Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production or the mining process. In order to ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The MHOG Sewer & Water Authority is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When you have not used your water for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline, which is listed on the next page or at *www.epa.gov/safewater/lead.*



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Substance (units)	Sample Date	MCL	Level Detected	Range	MCLG	In Compliance	Typical Sources
Inorganic Contaminants							
Chlorine Residual RAA (ppm)	2016	4 MRDL	0.69	0.29-1.44	4 MRDLG	Yes	Water chlorination
Chloride (ppm)	2016	N/A	31	31	N/A	Yes	Natural deposits
Hardness (ppm)	2016	N/A	107	80-148	N/A	Yes	Natural deposits
Sodium (ppm)	2016	N/A	32	32	N/A	Yes	Natural Erosion
Turbidity (NTU)	2016	N/A	0.16	0.05-20.4	N/A	Yes	Soil runoff
Iron (ppm)	2016	N/A	0.01	ND-0.08	N/A	Yes	Natural Deposits
Fluoride (ppm) (Fluoride monitoring occurs daily)	2016	4	0.73	0.73	4	Yes	Natural deposits: additive to prevent tooth decay
Barium (ppm)	2013	2	0.02	0.02	2	Yes	Discharge of drilling wastes & metal refineries; natural erosion
Disinfectant By-Products							
Total Trihalomethanes (ppb)	2016	80	55	50-55	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).
Total Haloacetic Acids (five) (ppb)	2016	60	6	2-6	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).

2016 Drinking Water Quality Report

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Substance (units)	Sample Date	90th Percentile Value	EPA Action Level	Above Action Level	MCLG	In Compliance	Typical Source
Lead & Copper							
Lead (ppb)	2015	0	15	0	0	Yes	Corrosion of customer plumbing
Copper (ppb)	2015	60	1300	0	0	Yes	Corrosion of customer plumbing

No MCLs or ALs were exceeded.

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Substance (units)	*Sample Date*	*MCL*	*Level Detected*	*Range*	*MCLG*	*In Compliance*	*Typical Sources*
Inorganic Contaminants							
Chlorine Residual RAA (ppm)	2017	4 MRDL	0.71	0.15-1.33	4 MRDLG	Yes	Water chlorination
Chloride (ppm)	2017	N/A	32	32	N/A	Yes	Natural deposits
Hardness (ppm)	2017	N/A	101	80-122	N/A	Yes	Natural deposits
Sodium (ppm)	2017	N/A	31	31	N/A	Yes	Natural Erosion
Turbidity (NTU)	2017	N/A	0.11	0.06-0.23	N/A	Yes	Soil runoff
Iron (ppm)	2017	N/A	0.01	ND-0.08	N/A	Yes	Natural Deposits
Fluoride (ppm) (Fluoride Monitoring occurs daily)	2017	4	0.80	0.80	4	Yes	Natural deposits: additive to prevent tooth decay
Barium (ppm)	2013	2	0.02	0.02	2	Yes	Discharge of drilling wastes & metal refineries; natural erosion
Disinfectant By-Products							
Total Trihalomethanes (pph)	2017	80	54	45-54	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).
Total Haloacetic Acids (five) (pph)	2017	60	5	1-5	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).

Substance (units)	*Sample Date*	*90th Percentile Value*	*EPA Action Level*	*Above Action Level*	*MCLG*	*In Compliance*	*Typical Source*
Lead & Copper							
Lead (ppb)	2015	0	15	0	0	Yes	Corrosion of customer plumbing
Copper (ppm)	2015	0.060	1.3	0	0	Yes	Corrosion of customer plumbing

No MCLs or ALs were exceeded.

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For information on our Wellhead Protection Program and delineated Wellhead Protection Area please visit our website at *www.mhog.org*, click on the Customer Information link and scroll to the bottom.

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Chloride (ppm)	2018	N/A	30	30	N/A	Yes	Natural deposits
Hardness (ppm)	2018	N/A	100	82-137	N/A	Yes	Natural deposits
Sodium (ppm)	2018	N/A	35	35	N/A	Yes	Natural Erosion
Turbidity (NTU)	2018	N/A	0.07	0.05-0.56	N/A	Yes	Soil runoff
Iron (ppm)	2018	N/A	0.01	ND-0.08	N/A	Yes	Natural Deposits
Fluoride (ppm) (Fluoride monitoring occurs daily)	2018	4	0.81	0.81	4	Yes	Natural deposits: additive to prevent tooth decay
Barium (ppm)	2013	2	0.02	0.02	2	Yes	Discharge of drilling wastes & metal refineries; natural erosion
Disinfectant By-Products							
Total Trihalomethanes (ppb)	2018	80	54	43-54	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).
Total Haloacetic Acids (five) (ppb)	2018	60	4	1-4	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).

Substance (units)	Sample Date	90th Percentile Value	EPA Action Level	Above Action Level	MCLG	In Compliance	Typical Source
Lead & Copper							
Lead (ppb)	2018	1	15	1	0	Yes	Corrosion of customer plumbing ***
Copper (ppm)	2018	0.200	1.3	0	1.3	Yes	Corrosion of customer plumbing

No MCLs were exceeded.

****** The single lead sample above the action level was due to a customer sampling from an unapproved sampling location and reporting it to the utility as an approved location. The home was resampled from the approved location and was below the action level.***

In 2018, the State of Michigan conducted Polyfluoalkyl Substance (PFAS), Perfluorooctanesulfonic Acid (PFOS), and Perfluorooctanoic Acid (PFOA) sampling at the MHOG WTP and total PFAS, PFOS, and PFOA were <u>not</u> detected in our water.

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PRESORTED 1ST CLASS
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BRIGHTON, MI
Permit No. 298

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3) pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses; 4) organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production which can also come from runoff and septic systems; 5) radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production or the mining process. In order to ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The MHOG Sewer & Water Authority is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at 800.426.4791 or at *http://water.epa.gov/drink/info/lead*. Infants and children who drink water containing lead could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

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Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health. Drinking water (bottled or tap) may reasonably be expected to contain at least small amounts of some contaminants. The contaminants in our drinking water are primarily geological materials that dissolved while still in the aquifer. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800.426.4791).

Contaminants may be found in drinking water that cause taste, color, or odor problems. These types of problems do not necessarily cause health concerns. For more information on taste, color, or odor of drinking water, please contact the MHOG WTP at 517.545.5098.

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2019 Drinking Water Quality Report

The latest available information for the contaminants detected in our water during the sampling cycle ending in **2019** is given in the following table. The Environmental Protection Agency (EPA) does not require some contaminants to be monitored annually because their concentrations are not expected to vary. The Michigan Department of Environment, Great Lakes and Energy (MDEGLE) obtains and analyzes the samples in accordance with sampling cycles which vary according to EPA schedules. The definitions and abbreviations used in the table are listed below the results.

Substance (units)	*Sample Date*	*MCL*	*Level Detected*	*Range*	*MCLG*	*In Compliance*	*Typical Sources*
Inorganic Contaminants							
Chlorine Residual RAA (ppm)	2019	4 MRDL	0.70	0.20-1.07	4 MRDLG	Yes	Water chlorination
Chloride (ppm)	2019	N/A	42	42	N/A	Yes	Natural deposits
Hardness (ppm)	2019	N/A	100	82-124	N/A	Yes	Natural deposits
Sodium (ppm)	2019	N/A	37	37	N/A	Yes	Natural Erosion
Turbidity (NTU)	2019	N/A	0.12	0.09-0.24	N/A	Yes	Soil runoff
Iron (ppm)	2019	N/A	0.01	ND-0.09	N/A	Yes	Natural Deposits
Fluoride (ppm) (Fluoride monitoring occurs daily)	2019	4	0.59	0.59	4	Yes	Natural deposits: additive to prevent tooth decay
Barium (ppm)	2013	2	0.02	0.02	2	Yes	Discharge of drilling wastes & metal refineries; natural erosion
Disinfectant By-Products							
Total Trihalomethanes (ppb)	2019	80	51	43-51	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).
Total Haloacetic Acids (five) (ppb)	2019	60	6	ND-6	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).

Substance (units)	*Sample Date*	*90th Percentile Value*	*EPA Action Level*	*Above Action Level*	*MCLG*	*Range*	*In Compliance*	*Typical Source*
Lead & Copper								
Lead (ppb)	2018	1	15	1	0	ND-26	Yes	Lead service lines, corrosion of household plumbing including fittings and fixtures; Erosion of natural deposits. ***
Copper (ppm)	2018	0.200	1.3	0	1.3	ND-0.450	Yes	Corrosion of household plumbing systems; Erosion of natural deposits.

Substance (units)	*Sample Date*	*MCL*	*Average Detected*	*Range*	*MCLG*	*Typical Sources*
Unregulated Contaminants—Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. Before EPA regulates a contaminant, it considers adverse health, the occurrence of the contaminant in drinking water, and whether the regulation would reduce health risk.						
Haloacetic Acids 5 (ppb)	2019	N/A	4	3-7	N/A	By-product of drinking water chlorination.
Haloacetic Acids 6Br (ppb)	2019	N/A	8	5-11	N/A	By-product of drinking water chlorination.
Haloacetic Acids 9 (ppb)	2019	N/A	9	6-13	N/A	By-product of drinking water chlorination.

No MCLs were exceeded.

*** ***The single lead sample above the action level was due to a customer sampling from an unapproved sampling location and reporting it to the utility as an approved location. The home was resampled from the approved location and was below the action level.***

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Maximum residual disinfectant level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum residual disinfectant level goal (MRDLG): Level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Action Level (AL): The concentration of a contaminant, which, if exceeded, triggers treatment, or other requirements, which a water system must follow.

90th Percentile: 9 out of 10 homes tested must show a concentration equal to or lower than the action level.

Parts per million (ppm): The equivalent of milligrams per liter (mg/L) is analogous to 1 minute in 2 years.

Parts per billion (ppb): The equivalent of micrograms per liter (µg/L) is analogous to 1 second in 32 years.

Picocuries per liter (pCi/L): A measure of radioactivity. **RAA:** Running Annual Average **N/A:** Not Applicable **ND:** Not Detected

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2020 WATER QUALITY REPORT

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Your drinking water complied with all Environmental Protection Agency (EPA) and Michigan drinking water health standards for the latest sampling period. Infants, some elderly or immune-compromised persons such as those undergoing chemotherapy; those who have undergone organ transplants; those who are undergoing treatment with steroids; and people with HIV/AIDS or other immune system disorders can be particularly at risk from infections. If you are in one of the categories listed above you may be more vulnerable than the general population to certain contaminants in drinking water. You should seek advice about drinking water from your physician or health care provider.

MHOG Sewer & Water Authority
4288 Norton Road
Howell, MI 48843

Important Information Enclosed
2020 Water Quality Report

PRESORTED 1ST CLASS
U.S. POSTAGE PAID
BRIGHTON, MI
Permit No. 298

A geologic sensitivity analysis of the (6) MHOG Water Treatment Plant (WTP) production wells (400' deep, 16" diameter sandstone wells) determined that the wells have "moderately low" to "moderate" susceptibility to contamination. Copies of the susceptibility study may be obtained by contacting Alex Chimpouras at the number listed below.

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Substance (units)	*Sample Date*	*MCL*	*Level Detected*	*Range*	*MCLG*	*In Compliance*	*Typical Sources*
Inorganic Contaminants							
Chlorine Residual RAA (ppm)	2020	4 MRDL	0.67	0.30-1.35	4 MRDLG	Yes	Water chlorination
Chloride (ppm)	2020	N/A	32	32	N/A	Yes	Natural deposits
Hardness (ppm)	2020	N/A	99	82-116	N/A	Yes	Natural deposits
Sodium (ppm)	2020	N/A	40	40	N/A	Yes	Natural Erosion
Turbidity (NTU)	2020	N/A	0.11	0.06-0.23	N/A	Yes	Soil runoff
Iron (ppm)	2020	N/A	0.01	ND-0.12	N/A	Yes	Natural Deposits
Fluoride (ppm) (Fluoride monitoring occurs daily)	2020	4	0.64	0.64	4	Yes	Natural deposits: additive to prevent tooth decay
Barium (ppm)	2013	2	0.02	0.02	2	Yes	Discharge of drilling wastes & metal refineries; natural erosion
Disinfectant By-Products							
Total Trihalomethanes (ppb)	2020	80	50	42-50	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).
Total Haloacetic Acids (five) (ppb)	2020	60	5	1-5	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).

Substance (units)	*Sample Date*	*90th Percentile Value*	*EPA Action Level*	*Above Action Level*	*MCLG*	*Range*	*In Compliance*	*Typical Source*
Lead & Copper								
Lead (ppb)	2018	1	15	1	0	ND-26	Yes	Lead service lines, corrosion of household plumbing including fittings and fixtures; Erosion of natural deposits. ***
Copper (ppm)	2018	0.200	1.3	0	1.3	ND-0.450	Yes	Corrosion of household plumbing systems; Erosion of natural deposits.

Services	*Total*	*Known Lead Service Lines*	*Unknown Material (Requires Field Verification on Building Owner's Side)*	*Known Material*
	5,804	**0**	**5,308**	**496**

The earliest portions of the MHOG water system were constructed in 1994, almost a decade after lead services were outlawed. The vast majority of homes and businesses connected to the MHOG system were constructed after lead services were prohibited. Therefore, the potential for a home or business having a lead service in the MHOG system is very low. MHOG's construction standards have always required the use of copper services from the water main to the curb stop. Years later the option of plastic services was added under certain circumstances with prior approval from the Water Authority. As ongoing field verification continues MHOG will collect more information confirming the plumbing materials on the building owner's side of the service.

No MCLs were exceeded.

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MHOG Sewer & Water Authority
4288 Norton Road
Howell, MI 48843

Important Information Enclosed
2021 Water Quality Report

PRESORTED
FIRST CLASS MAIL
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BRIGHTON, MI 48116
PERMIT NO. 298

ADDRESS SERVICE REQUESTED

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2021 Drinking Water Quality Report

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Chlorine Residual RAA (ppm)	2021	4 MRDL	0.71	0.24-1.40	4 MRDLG	Yes	Water chlorination
Chloride (ppm)	2021	N/A	30	N/A	N/A	Yes	Natural deposits
Hardness (ppm)	2021	N/A	99	80-124	N/A	Yes	Natural deposits
Sodium (ppm)	2021	N/A	38	N/A	N/A	Yes	Natural Erosion
Turbidity (NTU)	2021	N/A	0.10	0.03-0.36	N/A	Yes	Soil runoff
Iron (ppm)	2021	N/A	0.01	ND-0.06	N/A	Yes	Natural Deposits
Fluoride (ppm) (Fluoride monitoring occurs daily)	2021	4	0.61	N/A	4	Yes	Natural deposits: additive to prevent tooth decay
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Disinfectant By-Products							
Total Trihalomethanes (ppb)	2021	80	48	37-48	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).
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Substance (units)	*Sample Date*	*90th Percentile Value*	*EPA Action Level*	*Above Action Level*	*MCLG*	*Range*	*In Compliance*	*Typical Source*
Lead & Copper								
Lead (ppb)	2021	1	15	0	0	ND-11	Yes	Lead service lines, corrosion of household plumbing including fittings and fixtures; Erosion of natural deposits. ***
Copper (ppm)	2021	0.200	1.3	0	1.3	ND-0.490	Yes	Corrosion of household plumbing systems; Erosion of natural deposits.

Services	*Total*	*Known Lead Service Lines*	*Unknown Material (Requires Field Verification on Building Owner's Side)*	*Known Material*
	5,905	**0**	**5,308**	**597**

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2022 Water Quality Report

A geologic sensitivity analysis of the (6) MHOG Water Treatment Plant (WTP) production wells (400' deep, 16" diameter sandstone wells) determined that the wells have "moderately low" to "moderate" susceptibility to contamination. Copies of the susceptibility study may be obtained by contacting Alex Chimpouras at the number listed below.

MHOG operators monitor your drinking water daily according to federal and state laws. The tables on the next page show the results of monitoring for the period from January 1 to December 31, 2022, unless otherwise noted. The test results show that your water meets or surpasses all federal and state requirements. For more information about your water call Alex Chimpouras at the MHOG WTP at 517.545.5098.

Ground water (also called well water) is protected from many of the sources of contamination described later, such as microbes like cryptosporidium. In general, the sources of drinking water (both tap and bottled water) may include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material. Source water can also be contaminated by substances resulting from animal or human activity. Contaminants include anything found in water. They are generally not harmful at low levels. Removing all contaminants would be extremely expensive and in nearly all cases would not provide greater protection of health. Examples of contaminants that may be present in source water in general include: 1) microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife; 2) inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming;

3) pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses; 4) organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production which can also come from runoff and septic systems; 5) radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production or the mining process. In order to ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The MHOG Sewer & Water Authority is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at 800.426.4791 or at *http://water.epa.gov/drink/info/lead*. Infants and children who drink water containing lead could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

For information on our Wellhead Protection Program and delineated Wellhead Protection Area please visit our website at *www.mhog.org*, click on the Customer Information link and scroll to the bottom.

Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health. Drinking water (bottled or tap) may reasonably be expected to contain at least small amounts of some contaminants. The contaminants in our drinking water are primarily geological materials that dissolved while still in the aquifer. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800.426.4791).

Contaminants may be found in drinking water that cause taste, color, or odor problems. These types of problems do not necessarily cause health concerns. For more information on taste, color, or odor of drinking water, please contact the MHOG WTP at 517.545.5098.

Este reporte incluye informacion importante sobre el agua para tomar. Si tiene preguntas o'discusiones sobre este reporte en espanol, favor del llamar al tel. 281.579.4507 par hablar con una persona biligue en espanol.

Public input concerning the MHOG Water System may be made at regularly scheduled Board Meetings, held the third Wednesday of each month at the Oceola Township Hall, located at 1577 N. Latson Rd. Please call the Oceola Township Hall at 517.546.3259 for more information.

2022 Drinking Water Quality Report

The latest available information for the contaminants detected in our water during the sampling cycle ending in **2022** is given in the following table. The Environmental Protection Agency (EPA) does not require some contaminants to be monitored annually because their concentrations are not expected to vary. The Michigan Department of Environment, Great Lakes and Energy (MDEGLE) obtains and analyzes the samples in accordance with sampling cycles which vary according to EPA schedules. The definitions and abbreviations used in the table are listed below the results.

Substance (units)	*Sample Date*	*MCL*	*Level Detected*	*Range*	*MCLG*	*In Compliance*	*Typical Sources*
Inorganic Contaminants							
Chlorine Residual RAA (ppm)	2022	4 MRDL	0.78	0.31-1.42	4 MRDLG	Yes	Water chlorination
Chloride (ppm)	2022	N/A	30	N/A	N/A	Yes	Natural deposits
Hardness (ppm)	2022	N/A	96	82-110	N/A	Yes	Natural deposits
Sodium (ppm)	2022	N/A	37	N/A	N/A	Yes	Natural Erosion
Turbidity (NTU)	2022	N/A	0.10	0.07-0.13	N/A	Yes	Soil runoff
Iron (ppm)	2022	N/A	0.01	ND-0.06	N/A	Yes	Natural Deposits
Fluoride (ppm) Fluoride monitoring occurs daily)	2022	4	0.50	N/A	4	Yes	Natural deposits: additive to prevent tooth decay
Barium (ppm)	2022	2	0.01	N/A	2	Yes	Discharge of drilling wastes & metal refineries; natural erosion
Disinfectant By-Products							
Total Trihalomethanes (ppb)	2022	80	44	37-44	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).
Total Haloacetic Acids (five) (ppb)	2022	60	4	3-4	0	Yes	By-product of drinking water chlorination. Compliance is based on a locational running annual average (LRAA).

Substance (units)	*Sample Date*	*90th Percentile Value*	*EPA Action Level*	*Above Action Level*	*MCLG*	*Range*	*In Compliance*	*Typical Source*
Lead & Copper								
Lead (ppb)	2021	1	15	0	0	ND-11	Yes	Lead service lines, corrosion of household plumbing including fittings and fixtures; Erosion of natural deposits. ***
Copper (ppm)	2021	0.200	1.3	0	1.3	ND-0.490	Yes	Corrosion of household plumbing systems; Erosion of natural deposits.

Services	*Total*	*Known Lead Service Lines*	*Unknown Material (Requires Field Verification on Building Owner's Side)*	*Known Material (Verified)*
	6,088	**0**	**5,491**	**597**

The earliest portions of the MHOG water system were constructed in 1994, almost a decade after lead services were outlawed. The vast majority of homes and businesses connected to the MHOG system were constructed after lead services were prohibited. Therefore, the potential for a home or business having a lead service in the MHOG system is very low. MHOG's construction standards have always required the use of copper services from the water main to the curb stop. Years later the option of plastic services was added under certain circumstances with prior approval from the Water Authority. As ongoing field verification continues MHOG will collect more information confirming the plumbing materials on the building owner's side of the service.

No MCLs were exceeded.

For more information please visit our website. www.mhog.org

Definitions & Abbreviations:

Maximum Contaminant Level Goal (MCLG): The level of contaminants in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology.

Maximum residual disinfectant level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum residual disinfectant level goal (MRDLG): Level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Action Level (AL): The concentration of a contaminant, which, if exceeded, triggers treatment, or other requirements, which a water system must follow.

90th Percentile: 9 out of 10 homes tested must show a concentration equal to or lower than the action level.

Parts per million (ppm): The equivalent of milligrams per liter (mg/L) is analogous to 1 minute in 2 years.

Parts per billion (ppb): The equivalent of micrograms per liter (µg/L) is analogous to 1 second in 32 years.

Picocuries per liter (pCi/L): A measure of radioactivity. **RAA:** Running Annual Average **N/A:** Not Applicable **ND:** Not Detected

TT: Treatment Technique

APPENDIX C

Environmental Permit Checklist and Wellhead Protection Ordinance

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

PERMIT INFORMATION

Michigan.gov/EGLEPermits

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) has prepared a list of key questions to help identify what EGLE permits, licenses, or approvals of a permit-like nature may be needed. By contacting the appropriate offices indicated, you will help reduce the possibility that your project or activity will be delayed due to the untimely discovery of additional permitting requirements later in the construction process. While this list covers the existence of permits and approvals required from EGLE, it is not a comprehensive list of all legal responsibilities. A useful way to learn whether other requirements will apply is to go through the Self-Environmental Assessment in the Michigan Guide to Environmental, Health, and Safety Regulations, online at: Michigan.gov/EHSguide. Please call the Environmental Assistance Center at 800-662-9278 to talk with any of the EGLE programs noted below.

How Do I Know that I Need a Construction Permit?

1) Will your business involve the installation or construction of any process equipment that has the potential to emit air contaminants (e.g. dry sand blasting, boilers, standby generators)? Air Quality Permit to Install, Air Quality Division (AQD), Permit Section

☐ Yes ☐ No

2) Does the project involve renovating or demolishing all or portions of a building? Notification is required for asbestos removal and required for all demolitions even if the structure never contained asbestos. Asbestos Notification, AQD, Asbestos Program, 517-284-6777

☐ Yes ☐ No

3) Please consult the Permitting at the Land and Water Interface Decision Tree document to evaluate whether your project needs a land and water management permit (i.e., Does the project involve filling, dredging, placement of structures, draining, or use of a wetland?). Land and Water Featured Programs (Water Resources Division - WRD) - Joint Permit Application, 517-284-5567:

   a. Does the project involve construction of a building or septic system in a designated Great Lakes high risk erosion area?

   ☐ Yes ☐ No

   b. Does the project involve dredging, filling, grading, or other alteration of the soil, vegetation, or natural drainage, or placement of permanent structures in a designated environmental area?

   ☐ Yes ☐ No

c. Does the project propose any development, construction, silvicultural activities or contour alterations within a designated critical dune area?

☐ Yes ☐ No

d. Does the project involve construction of a dam, weir or other structure to impound flow?

☐ Yes ☐ No

4) Does the project involve an earth change activity (including land balancing, demolition involving soil movement, and construction) or does the project involve construction which will disturb one or more acres that come into contact with storm water that enters a storm sewer, drain, lake, stream, or other surface water? Soil Erosion and Construction Storm Water, 269-567-3515, or Local Agency

☐ Yes ☐ No

5) Does the project involve the construction or alteration of a water supply system or sewage disposal system for a manufactured housing project? Drinking Water & Environmental Health Division (DWEHD), 517-284-6524

☐ Yes ☐ No

6) Does the project involve construction or alteration of any sewage collection or treatment facility? WRD, Part 41 Construction Permit Program (staff), 906-228-4527, or EGLE District Office

☐ Yes ☐ No

7) Public Swimming Pool Construction (Spas/Hot Tubs) Permits: Will your business involve the construction or modification of a public swimming pool, spa or hot tub? Public Swimming Pool Program, 517-284-6541, or EGLE District Office

☐ Yes ☐ No

8) Does the project involve the construction or modification of a campground? DWEHD, Campgrounds program, 517-284-6529

☐ Yes ☐ No

9) Does the project involve construction of a facility that landfills, transfers, or processes of any type of solid non-hazardous waste on-site, or places industrial residuals/sludge into or onto the ground? Materials Management Division (MMD), Solid Waste, 517-284-6588, or EGLE District Office

☐ Yes ☐ No

10) Does the project involve the construction of an on-site treatment, storage, or disposal facility for hazardous waste? MMD, Hazardous Waste Section, Treatment, Storage and Disposal, 517-284-6562

☐ Yes ☐ No

Who Regulates My Drinking (Potable) Water Supply?

11) I am buying water from my community water supply (i.e. city of Detroit or Grand Rapids), Contact Local Water Utility, 517-284-6512

☐ Yes ☐ No

12) I have a Non-Community Water Supply (Type II) Guide, Contact (District or County) Local Health Department, 517-485-0660

☐ Yes ☐ No

13) I am a community water supply (Type I) Community Water Supply, DWEHD District Office, Community Water Supply Program, 517-284-6512

☐ Yes ☐ No

14) Do you desire to develop a withdrawal of over 2,000,000 gallons of water per day from any source including groundwater, inland surface water, or the Great Lakes and their connecting waterways? WRD, Great Lakes Shorelands Unit, Water Use Program, 517-284-5563

☐ Yes ☐ No

Who Regulates My Drinking (Potable) Water Supply?

15) NPDES: Does the project involve the discharge of any type of wastewater to a storm sewer, drain, lake, stream, or other surface water? WRD, EGLE District Office, or National Pollutant Discharge Elimination (NPDES) Permit Program, 517-284-5568

☐ Yes ☐ No

16) Does the facility have industrial activity that comes into contact with storm water that enters a storm sewer, drain, lake, stream, or other surface water? WRD, Permits Section, or EGLE District Office, 517-284-5588

☐ Yes ☐ No

17) Does the project involve the discharge of wastewaters into or onto the ground (e.g. subsurface disposal or irrigation)? WRD, Groundwater Permits Program, 517-290-2570

☐ Yes ☐ No

18) Does the project involve the drilling or deepening of wells for waste disposal? Oil, Gas and Minerals Division (OGMD), 517-284-6841

☐ Yes ☐ No

What Operational Permits are Relevant to My Operation and Air Emissions?

19) Renewable Operating Permit: Does your facility have the potential to emit any of the following: 100 tons per year or more of any criteria pollutant; 10 tons per year or more of any hazardous air pollutant; or 25 tons per year or more of any combination of hazardous air pollutants? AQD, Permit Section, 517-284-6634

☐ Yes ☐ No

20) Does your facility have an electric generating unit that sells electricity to the grid and burns a fossil fuel? AQD, Acid Rain Permit Program, 517-780-7843

☐ Yes ☐ No

What Operational Permits are Relevant to My Waste Management?

21) Does the project involve landfilling, transferring, or processing of any type of solid non-hazardous waste on-site, or placing industrial residuals/sludge into or onto the ground? MMD, 517-284-6588 or EGLE District Office

☐ Yes ☐ No

22) Does the project involve the on-site treatment, storage, or disposal of hazardous waste? MMD, Hazardous and Liquid Waste, 517-284-6562

☐ Yes ☐ No

23) Does the project require a site identification number (EPA number) for regulated waste activities (used oil, liquid waste, hazardous waste, universal waste, PCBs)? (Hazardous Waste Program Forms & License Applications) MMD, EGLE District Office, 517-284-6562

☐ Yes ☐ No

24) Does the project involve the receipt, possession, manufacture, use, storage, transport, transfer, release, or disposal of radioactive material in any form? MMD, Radioactive Material and Standards Unit, 517-284-6581

☐ Yes ☐ No

25) Does the project involve decommissioning or decontamination of tanks, piping, and/or appurtenances that may have radioactive levels above background? MMD Radioactive Material and Standards Unit, 517-284-6581

☐ Yes ☐ No

26) Does the project involve the generation of medical waste or a facility that treats medical waste prior to its disposal? MMD, Medical Waste Regulatory Program, 517-284-6594

☐ Yes ☐ No

What Sector-Specific Permits May be Relevant to My Business?

Transporters

27) Does the project involve the transport of some other facility's non-hazardous liquid waste? MMD, Transporter Program, 517-284-6562

☐ Yes ☐ No

28) Does the project involve the transport of hazardous waste? MMD, Transporter Program, 517-284-6562

☐ Yes ☐ No

29) Do you engage in the business of transporting bulk water for drinking or household purposes (except for your own household use)? DWEHD, Water Hauler Information, 517-284-6527

☐ Yes ☐ No

30) Does the project involve transport of septic tank, cesspool, or dry well contents or the discharge of septage or sewage sludge into or onto the ground? DWEHD, Septage Program, 517-284-6535

☐ Yes ☐ No

31) Do you store, haul, shred or process scrap tires? MMD, Scrap Tire Program, 517-284-6586

☐ Yes ☐ No

Sectors

32) Is the project a dry-cleaning establishment utilizing perchloroethylene or a flammable solvent in the cleaning process? AQD, Dry Cleaning Program, 517-284-6780

☐ Yes ☐ No

33) Does your laboratory test potable water as required for compliance and monitoring purposes of the Safe Drinking Water Act? Laboratory Services Certifications, 517-284-5424

☐ Yes ☐ No

34) Does the project involve the operation of a public swimming pool? DWEHD, Public Swimming Pool Program, 517-284-6529

☐ Yes ☐ No

35) Does the project involve the operation of a campground? DWEHD, Campgrounds program, 517-284-6529

☐ Yes ☐ No

What Permits Do I Need to Add Chemicals to Lakes and Streams?

36) Are you applying a chemical treatment for the purpose of aquatic nuisance control (pesticide/herbicide etc.) in a water body (i.e. lake, pond or river)? WRD, Aquatic Nuisance Control, 517-284-5593

☐ Yes ☐ No

37) Are you applying materials to a water body for a water resource management project (i.e. mosquito control treatments, dye testing, or fish reclamation projects)? WRD, Surface Water Assessment Section, 517-331-5228

☐ Yes ☐ No

Why would I be subject to Oil, Gas and Mineral Permitting?

38) Do you want to operate a central production facility (applies to oil and gas production facilities where products of diverse ownership are commingled)? OGMD, Petroleum Geology and Production Unit, 517-284-6826

☐ Yes ☐ No

39) Does the project involve the removal of sand from a sand dune area within two (2) miles of a Great Lakes shoreline? OGMD, Minerals and Mapping Unit, Sand Dune Mining Program, 517-284-6826

☐ Yes ☐ No

40) Does the project involve decommissioning or decontamination of tanks, piping, and/or appurtenances that may have radioactive levels above background? MMD, Radioactive Protection Programs, 517-284-6581

☐ Yes ☐ No

Petroleum and Mining, OGMD, 517-284-6826

41) Does the project involve the diversion and control of water for the mining and processing of low-grade iron ore?

☐ Yes ☐ No

42) Does the project involve the surface or open-pit mining of metallic mineral deposits?

☐ Yes ☐ No

43) Does the project involve the mining of nonferrous mineral deposits at the surface or in underground mines?

☐ Yes ☐ No

44) Does the project involve mining coal?

☐ Yes ☐ No

45) Does the project involve changing the status or plugging of a mineral well?

☐ Yes ☐ No

46) Does the project involve the drilling or deepening of wells for brine production, solution mining, storage, or as test wells?

☐ Yes ☐ No

Permits and Bonding, OGMD, 517-284-6841

47) Do you want to change the status of an oil or gas well (i.e. plug the well)?

☐ Yes ☐ No

48) Does the project involve drilling of oil, gas, brine disposal, secondary recovery, or hydrocarbon storage wells?

☐ Yes ☐ No

If you need further assistance, please fill out the information below and email the form to EGLE-assist@Michigan.gov.

Requestor Information

First and Last Name: _____

Requestor Phone Number: _____

Requestor E-Mail: _____

If you need this information in an alternate format, contact EGLE-Accessibility@Michigan.gov or call 800-662-9278.

EGLE does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetic information, or sexual orientation in the administration of any of its programs or activities, and prohibits intimidation and retaliation, as required by applicable laws and regulations. Questions or concerns should be directed to the Nondiscrimination Compliance Coordinator at EGLE-NondiscriminationCC@Michigan.gov or 517-249-0906.

This form and its contents are subject to the Freedom of Information Act and may be released to the public.

LIVINGSTON COUNTY HEALTH DEPARTMENT

Environmental Health Division
2300 East Grand River Ave., Suite 102, Howell, MI 48843-7578
(517) 546-9858 * Fax (517) 546-9853 www.lchd.org

COMMERCIAL/INDUSTRIAL FACILITY CHECKLIST

Prior to the issuance of a water well or sewage disposal permit for new construction or an addition at a commercial or industrial building site, the following checklist must be completed and submitted to the Livingston County Health Department.

Facility Name _____ Tax ID # _____

Facility Location _____ Section _____

Facility City, Zip _____ Township _____

Contact Person _____ Phone No: _____

E-Mail Address: _____

Yes	No	(Check One)
☐	☐	Facility will serve drinking water to 25 or more individuals at least 60 days of the year.
☐	☐	Facility will serve drinking water to 25 or more **of the same** individuals for at least 6 months of the year.
☐	☐	Facility will provide a drinking fountain for the public.
☐	☐	Soil borings (perc tests) have been conducted in the area of the proposed drainage beds.
☐	☐	Soil borings (perc tests) were conducted prior to 1986.
☐	☐	Facility will generate over 6,000 gal. of sewage/day.
☐	☐	Facility will generate over 1,000 gal. of sewage/day. *If facility generates over 1,000 gal. of sewage/day, then the sewage disposal system must be designed by an engineer.
☐	☐	Engineer has designed sewage disposal system and/or water supply system.
☐	☐	Floor drains will be located in production areas, chemical use areas or chemical storage areas.
☐	☐	Facility will use underground storage tanks (UST's) for fuel or chemical storage purposes.
☐	☐	Facility will use or store one or more materials listed on the Michigan Critical Materials Register (CMR) (see attached).
☐	☐	Facility will use or store chemicals not on the CMR (if yes, list).
☐	☐	Chemical storage area consists of a curbed concrete containment area.
☐	☐	Facility will generate a hazardous waste (if yes, list).
☐	☐	Facility will generate between 1/2 and 5 - 55 gal. barrels (100 - 1,000 Kilograms) of hazardous waste per month.
☐	☐	Storm drains located less than 50 feet from proposed onsite water and/or sewage disposal system.

The above checklist has been filled out completely and to the best of my knowledge is accurate.

Signed _____ _____
(Name) (Date)

WATER FIXTURE VALUE WORKSHEET

If the first two items on the previous sheet are marked YES, the facility is considered a Type II public water supply, as defined by Act 399, P.A. 1976. A properly designed water supply system should deliver water at the desired quantity, quality and pressure to any outlet on the system during the periods of heaviest use.

In order to calculate peak water demand, please list below the type of and total number of water fixtures located in the facility. Example: hose bib connections, hand sinks, urinals, toilets (sloan valve or tank type).

Water Fixture Type	**Total Number**
1)	
2)	
3	
4)	
5)	
6)	
7)	
8)	
9)	
10)	

DETERMINING PEAK DEMANDS

FIXTURE METHOD

FACILITY NAME_____ WSSN_____ DATE_____

1)Determine Total Fixture Value

FIXTURE TYPE	FIXTURE VALUE (GPM FLOW)		NUMBER OF FIXTURES		TOTAL
Water closet, with tank	5	X	____	=	____
Water closet, with flush valve	27	X	____	=	____
Urinal, with tank,	4	X	____	=	____
Urinal, with flush valve	15	X	____	=	____
Lavatory	3	X	____	=	____
Bathtub, or tub/shower combination	10	X	____	=	____
Shower	6	X	____	=	____
Drinking fountain	2	X	____	=	____
Hose bibb or yard hydrant,					
1/2" connection	3	X	____	=	____
5/8" connection	5	X	____	=	____
3/4" connection	10	X	____	=	____
Washing machine,					
1/2" connection	3	X	____	=	____
5/8" connection	5	X	____	=	____
3/4" connection	10	X	____	=	____
Laundry tray	8	X	____	=	____
Lawn sprinkler, per sprinkler head	5	X	____	=	____
Auto washing, hand spray type	5	X	____	=	____
Tractor and equipment washing	5	X	____	=	____
Water Softener regeneration	7	X	____	=	____
Dental unit	1	X	____	=	____
Dental lavatory	2	X	____	=	____
Garbage disposal, domestic	3	X	____	=	____
commercial	5	X	____	=	____
Kitchen sink, small	6	X	____	=	____
large	8	X	____	=	____
Spray rinse, hand operated	4	X	____	=	____
Ice machine	2	X	____	=	____
Ice cream machine	2	X	____	=	____
Ice cream dipperwell	2	X	____	=	____
Glass filling unit	2	X	____	=	____
Hot chocolate unit	0.5	X	____	=	____
Coffee urn	0.5	X	____	=	____
Other_____	____	X	____	=	____
_____	____	X	____	=	____
_____	____	X	____	=	____

Total Fixture Value = _____

2) Determine GPM from graph on reverse side of sheet using Total Fixture Value above.
GPM from graph = _____

3) Irrigation, process water, and automatic dishwasher needs must be added to the GPM listed in item #2.
Irrigation - Number of sprinkler heads ___ X GPM/sprinkler head ___ = ___GPM
Process Water - Cooling, wash down, rinse, tank filling, etc. = ___GPM
Automatic dishwasher - Use gpm flow as indicated in NSF Food Service Equipment listing. ___GPM
TOTAL ___GPM

4) GPM from #2 ___ + GPM from #3 ___ = Total Demand ___GPM

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION

DETERMINING PEAK DEMANDS
FIXTURE COUNT METHOD

FACILITY NAME_____ WSSN_____ DATE_____

1) Total Fixtures - Toilets

Urinals	_____
Lavatories	_____
Kit Sinks	_____
Service sinks	_____
Garbage Disposal	_____
Hose Bibs	_____
Drinking Fountains	_____
Food Equipment	_____
Bathtub/Showers	_____
Other	_____
TOTAL	_____

2) GPM per fixture (see table below) _____

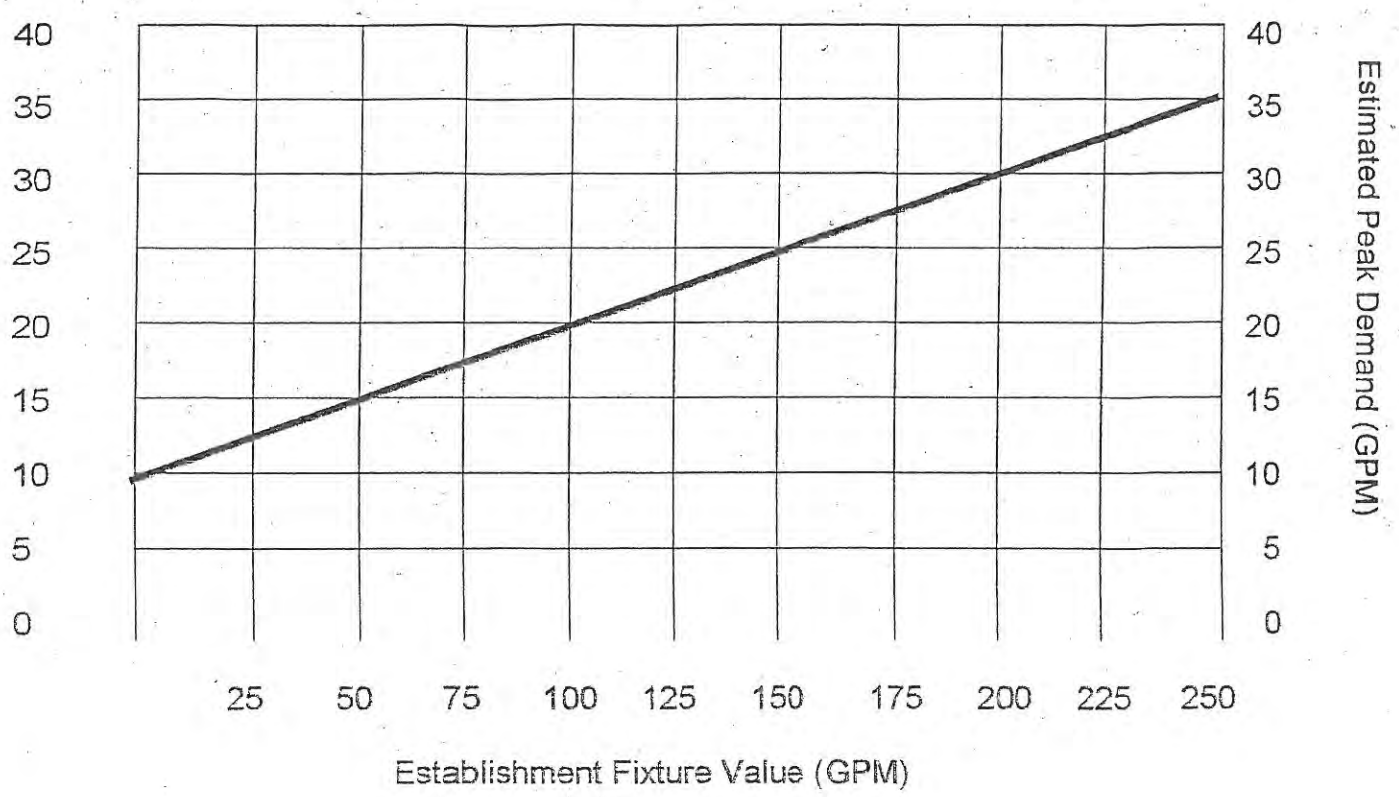
PEAK DEMAND IN GALLONS PER MINUTE (GPM) PER FIXTURE

Type of Building	25 or less	26-50	51-75	76-100	101-200	201-400
Hospitals	1.00	1.00	.80	.70	.60	.50
Churches, Halls, Theaters	1.50	1.25	1.00	.80	.75	.70
Mercantile Buildings	1.30	1.00	.80	.75	.70	.60
Office Buildings	1.20	.90	.75	.70	.65	.50
Factories, Warehouses	1.25	1.00	.80	.75	.70	.60
Schools	1.20	.85	.70	.65	.60	.55
Motels, Hotels	.80	.65	.55	.50	.45	.40
Apartment Buildings	.60	.55	.50	.40	.35	.30

3) Total fixtures (#1 above)____ X GPM per fixture (#2 above)____ = Peak rate_____GPM

D-236 11/02
Authority: 1976 PA 399

GRAPH


40
35
30
25
20
15
10
5
0
25
50
75
100
125
150
175
200
225
250
Establishment Fixture Value (GPM)
Estimated Peak Demand (GPM)

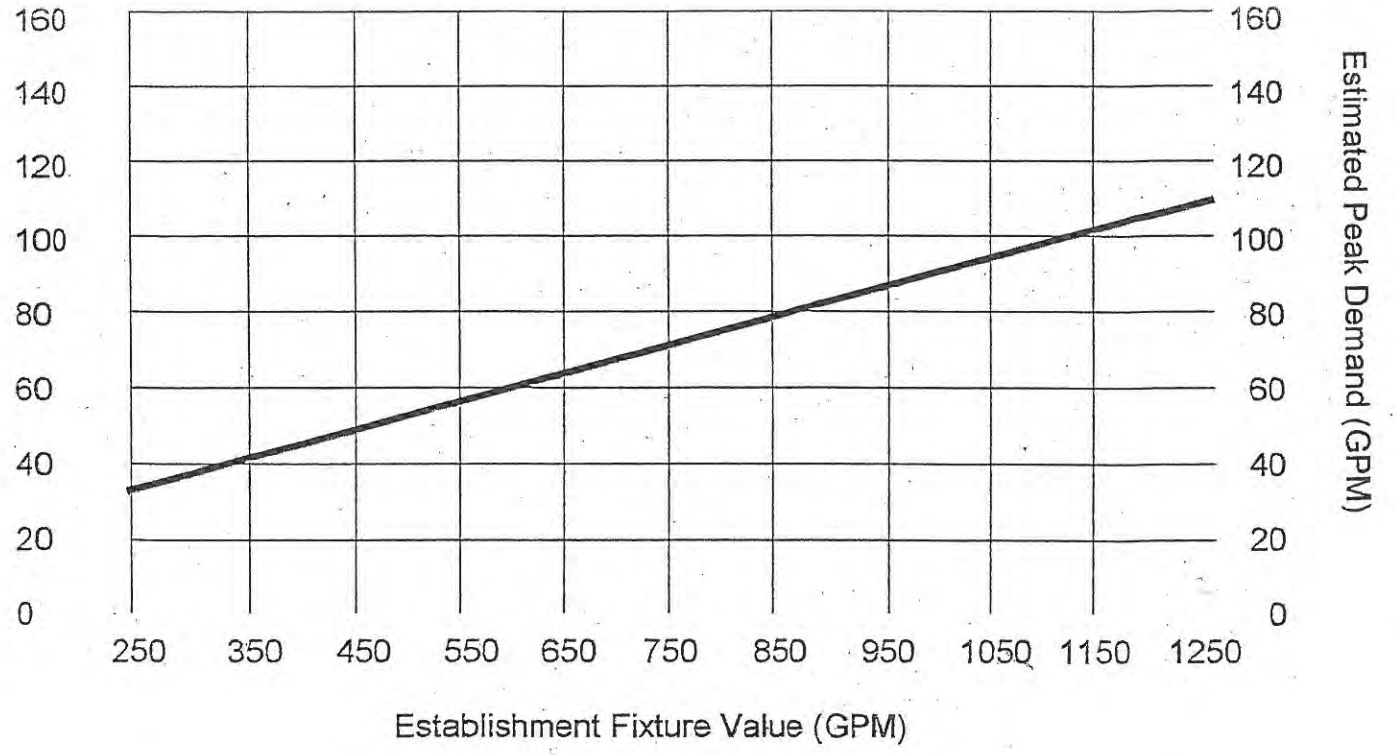

160
140
120
100
80
60
40
20
0
250
350
450
550
650
750
850
950
1050
1150
1250
Establishment Fixture Value (GPM)
Estimated Peak Demand (GPM)

TABLE 1. REGISTER OF CRITICAL MATERIALS.

CHEMICAL NAME	NOTE	PARAMETER NUMBER	ANNUAL USAGE THRESHOLD (IN POUNDS)	CMR #
TRIBUTYLTIN (AND SALTS AND ESTERS)	3	CLASS 06-3	10	1
POLYCHLORINATED NAPHTHALENES		CLASS 06-6	10	2
DDT (P,P', O,P' AND TECHNICAL GRADE)	2,3	00050-29-3	10	3
BENZO(A)PYRENE	2	00050-32-8	10	4
DIBENZ(A,H)ANTHRACENE	2	00053-70-3	10	5
BENZ(A)ANTHRACENE	2	00056-55-3	10	6
CHLORDANE	2,3	00057-74-9	10	7
DIELDRIN	2,3	00060-57-1	10	8
CHLOROFORM	2	00067-66-3	100	9
HEXACHLOROETHANE	2	00067-72-1	10	10
BENZENE	2	00071-43-2	100	11
ENDRIN	3	00072-20-8	10	12
METHOXYCHLOR	3	00072-43-5	10	13
P,P'-TDE (P,P'-DDD)	2,3	00072-54-8	10	14
P,P'-DDE	2,3	00072-55-9	10	15
VINYL CHLORIDE	2	00075-01-4	100	16
METHYLENE CHLORIDE	2	00075-09-2	10	17
1,1-DICHLOROETHYLENE		00075-35-4	100	18
HEPTACHLOR	2,3	00076-44-8	10	19
TRICHLOROETHYLENE	2	00079-01-6	100	20
1,2,3-TRICHLOROBENZENE		00087-61-6	10	21
HEXACHLOROBUTADIENE	2	00087-68-3	10	22
PENTACHLOROPHENOL (AND SALTS)	2	00087-86-5	10	23
3,3'-DICHLOROBENZIDINE	2	00091-94-1	10	24
1,2,4,5-TETRACHLOROBENZENE		00095-94-3	10	25
2,4,5-TRICHLOROPHENOL		00095-95-4	10	26
STYRENE (MONOMER)	2	00100-42-5	100	27
4,4'-METHYLENEBIS (2-CHLOROANILINE)	2	00101-14-4	10	28
4-BROMOPHENYL PHENYL ETHER		00101-55-3	10	29
1,4-DICHLOROBENZENE	2	00106-46-7	100	30
1,2-DICHLOROETHANE	2	00107-06-2	100	31
TOLUENE		00108-88-3	100	32
CHLOROBENZENE		00108-90-7	100	33
DI-N-OCTYL PHTHALATE		00117-84-0	10	34
HEXACHLOROBENZENE	2	00118-74-1	10	35
1,2,4-TRICHLOROBENZENE		00120-82-1	10	36
TETRACHLOROETHYLENE	2	00127-18-4	100	37
ALDRIN	2,3	00309-00-2	10	38
1,3-DICHLOROBENZENE		00541-73-1	10	39
HEXACHLOROCYCLOHEXANE (ALL ISOMERS)	2,3	00608-73-1	10	40
1,2,3,4-TETRACHLOROBENZENE		00634-66-2	10	41
1,2,3,5-TETRACHLOROBENZENE		00634-90-2	10	42

CHEMICAL NAME	NOTE	PARAMETER NUMBER	ANNUAL USAGE THRESHOLD (IN POUNDS)	CMR #
HEPTACHLOR EPOXIDE	2,3	01024-57-3	10	43
XYLENE (ALL ISOMERS)		01330-20-7	100	44
POLYCHLORINATED BIPHENYLS (PCB)	2	01336-36-3	10	45
TRIFLURALIN	2,3	01582-09-8	10	46
2,3,7,8-TCDD (AND CONGENERS)	2	01746-01-6	10	47
MIREX	2,3	02385-85-5	10	48
2,4,5-TRICHLOROTOLUENE		06639-30-1	10	49
LEAD	1	07439-92-1	100	50
MERCURY	1	07439-97-6	10	51
NICKEL	1	07440-02-0	100	52
SILVER	1	07440-22-4	100	53
ARSENIC	1,2	07440-38-2	100	54
BERYLLIUM	1	07440-41-7	100	55
CADMIUM	1	07440-43-9	100	56
CHROMIUM	1	07440-47-3	100	57
COPPER	1	07440-50-8	100	58
ZINC	1	07440-66-6	100	59
SELENIUM	1	07782-49-2	100	60
TOXAPHENE	2,3	08001-35-2	10	61
OCTACHLOROSTYRENE		29082-74-4	10	62
2,3,7,8-TCDF (AND CONGENERS)	2	51207-31-9	10	63
POLYBROMINATED BIPHENYLS (PBB)	2	67774-32-7	10	64

* EPA TOXIC RELEASE INVENTORY (TRI) PROGRAM CHEMICAL
1. ALL COMPOUNDS CONTAINING THE LISTED ELEMENTS MUST ALSO BE REPORTED.
2. CARCINOGENS.
3. PESTICIDES.

Noted Differences Between AWR Critical Materials and TRI
a. Only zinc fume or dust is reportable under TRI
b. Hexachlorocyclohexane has a different CASS No. under TRI
c. Only some forms of tributlyltin appear reportable under TRI
d. Polybrominated biphenyls do not appear to be reportable under TRI

PERMIT INFORMATION

The Department of Environmental Quality (DEQ) has prepared a list of key questions to help identify what departmental permits, licenses, or approvals of a permit-like nature may be need for a project. By contacting the appropriate offices listed below, you will help reduce the possibility that your project or activity will be delayed due to the untimely discovery of additional permitting requirements later in the process. While this list covers the existence of permits and approvals required from the DEQ, it is not a comprehensive list of all legal responsibilities (i.e. planning requirements and chemical storage regulations may apply).

KEY QUESTIONS: (DEQ Permit and Licensing Guidebook Chapter)	Yes/No	If "Yes," for further information contact:
1. Does the project involve the discharge of any type of wastewater to a storm sewer, drain, lake, stream, or other surface water? (5.2.1)	Y N	Appropriate DEQ District Office, Water Bureau (WB), National Pollutant Discharge Elimination (NPDES) Permit Program
2. Does the project involve the discharge of septage or sewage sludge into or onto the ground? (4.2.1)	Y N	DEQ, WB, Septage Program, Drinking Water and Environmental Health Section (DWEHS), 517-241-1313
3. Does the project involve transport of septic tank, cesspool, or dry well contents? (4.2.1)	Y N	DEQ, WB, DWEHS, Septage Program 517-241-1313
4. Does the project involve construction or alteration of any sewage collection or treatment facility? (5.3.1)	Y N	Appropriate DEQ District Office, WB, Part 41 Construction Permit Program
5. Does the project involve either construction which will disturb one or more acre, or does the facility have industrial activity that comes into contact with storm water that enters a storm sewer, drain, lake, stream, or other surface water? (5.2.1)	Y N	DEQ, WB, Permits Section, 517-241-8993 or appropriate DEQ District Office
6. Does the project involve the discharge of wastewaters into or onto the ground? (5.2.2)	Y N	DEQ, WB, Groundwater Permits Program, 517-373-8148
7. Does your facility have an electric generating unit that sells electricity to the grid and burns a fossil fuel? (5.1.1)	Y N	DEQ, AQD, Acid Rain Permit Program, 517-373-7023
8. Does the project involve the on-site treatment, storage, or disposal of hazardous waste? (4.4.3, 4.4.4 or 5.4.2)	Y N	DEQ, Waste and Hazardous Materials Division (WHMD), Hazardous Waste Section, 517-373-9875
9. Does the project involve the transport of hazardous waste or non-hazardous liquid industrial waste? (4.2.3 or 4.2.4)	Y N	DEQ, WHMD, Transporter Program, 734-432-1256
10. Does the project involve burning, landfilling, transferring, or processing of any type of solid non-hazardous waste on-site, or placing industrial residuals/sludges into or onto the ground? (4.4.2 or 5.4.1)	Y N	Appropriate DEQ District Office, WHMD
11. Does the project involve installation, construction, reconstruction, relocation, or alteration of any process equipment (including air pollution control equipment) which has the potential to emit air contaminants? (5.1.3)	Y N	DEQ, Air Quality Division (AQD), Permit Section, 517-373-7023
12. Does your facility have the potential to emit any of the following: 100 tons per year or more of any criteria pollutant; 10 tons per year or more of any hazardous air pollutant; or 25 tons per year or more of any combination of hazardous air pollutants? (5.1.2)	Y N	DEQ, AQD, Permit Section, 517-373-7023
13. Does the project involve any work (dredging, filling, draining, construction) proposed in, across, or under (a) rivers, streams, creeks, ditches, drains, lakes, ponds, or swamps; (ii) wetlands; or (iii) floodplain (area that may have or ever had standing or flowing water)? (5.5)	Y N	DEQ, Land & Water Management Division (LWMD), Permit Consolidation Unit 517-373-9244
14. Does the project involve any dredging proposed within 500 feet of a lake, river, stream, creek, or ditch? (5.5)	Y N	DEQ, LWMD, Permit Consolidation Unit 517-373-9244
15. Does the project involve filling or placement of structures in water, wetlands, floodplains, or any work at the land/water interface? (5.5)	Y N	DEQ, LWMD, Permit Consolidation Unit 517-373-9244
16. Does the project involve an earth change activity within 500 feet of a lake or stream, or will the project disturb an area greater than one acre in size? (5.3.5)	Y N	DEQ, WB, Soil Erosion and Sedimentation Program, 517-335-3178
17. Does the project involve construction of a building or septic system in a designated Great Lakes high risk erosion area? (5.5)	Y N	DEQ, LWMD, Permit Consolidation Unit 517-373-9244

18. Does the project involve dredging, filling, grading, or other alteration of the soil, vegetation, or natural drainage, or placement of permanent structures in a designated environmental area? (5.5)	Y	N	DEQ, LWMD, Permit Consolidation Unit 517-373-9244
19. Does the project propose any development or silvicultural activities or contour alterations within a designated critical dune area? (5.5)	Y	N	DEQ, LWMD, Permit Consolidation Unit 517-373-9244
20. Does the project involve the drilling or reworking of an oil, gas, brine disposal, hydrocarbon storage, or secondary recovery well? (5.7)	Y	N	DEQ, Office of Geological Survey (OGS) Permits and Bonding Unit, 517-241-1528
21. Does the project involve drilling a mineral test well deeper than 50 feet, brine production, waste disposal, or processed brine disposal well? (5.7)	Y	N	DEQ, OGS, Permits and Bonding Unit, 517-241-1528
22. Does the project involve the removal of sand from a sand dune area within two (2) miles of a Great Lakes shoreline? (5.6.1)	Y	N	DEQ, OGS, Mineral and Groundwater Unit, 517-241-1542
23. Does the project involve metallic or non-metallic mining or quarry mining? (5.6.3)	Y	N	DEQ, OGS, Mineral and Groundwater Unit, 517-241-1542
24. Does the project involve the receipt, possession, manufacture, use, storage, transport, transfer, release, or disposal of radioactive material in any form? (www.michigan.gov/deq , Waste, Radiological Protection)	Y	N	DEQ, WHMD, Radioactive Material and Standards Unit, 517-241-1274
25. Does the project involve construction of a community water supply well or the extension of a water supply from an existing water system? (5.3.2)	Y	N	Appropriate DEQ District Office, WB, Community Water Supply Program
26. Does the project involve the construction or alteration of a water supply system or sewage disposal system for a manufactured housing project? (4.1.7 and 5.3.7)	Y	N	DEQ, WB, DWEHS, 517-241-1313
27. Does the project involve a subdivision or site condominium project utilizing individual on-site subsurface disposal systems or individual wells? (5.3.4)	Y	N	DEQ, WB, DWEHS, 517-241-1313
28. Does the project involve the generation of medical waste or a facility that treats medical waste prior to its disposal? (4.1.5)	Y	N	DEQ, WB, DWEHS, 517-241-1313
29. Is the project a dry cleaning establishment utilizing perchloroethylene or a flammable solvent in the cleaning process? (4.1.2)	Y	N	DEQ, AQD, 517-241-1313
30. Does the project involve the construction, modification or operation of a campground? (4.1.6 and 5.3.6)	Y	N	DEQ, WB, DWEHS, 517-241-1313
31. Does the project involve the construction, modification or operation of a public swimming pool? (4.1.3 and 5.3.3)	Y	N	DEQ, WB, DWEHS, 517-241-1313
32. Does the project involve the installation, removal, or upgrade of an underground storage tank containing a petroleum product or a hazardous substance? (4.3.4)	Y	N	DEQ, WHMD, Storage Tank and Solid Waste Section, 517-335-2690
33. Does the project involve the installation of an aboveground storage tank for a flammable or combustible liquid (under 200 degrees Fahrenheit)? (4.3.1)	Y	N	DEQ, WHMD, Storage Tank and Solid Waste Section, 517-335-2690
34. Does the project involve the installation of a liquefied petroleum gas container filling location or storage location that has a tank with a capacity of more than 2,000 gallons or has two (2) or more tanks with an aggregate capacity of more than 4,000 gallons? (4.3.3)	Y	N	DEQ, WHMD, Storage Tank and Solid Waste Section, 517-335-2690
35. Does the project involve the installation of a compressed natural gas dispensing station with storage? (4.3.2)	Y	N	DEQ, WHMD, Storage Tank and Solid Waste Section, 517-335-2690
36. Do you store, haul or process scrap tires? (4.2.2 or 4.4.1)	Y	N	DEQ, WHMD, Scrap Tire Program, 517-335-4035
37. Does the project cross state owned property within the boundaries of a state park, state forest, or state game area?	Y	N	Department of Natural Resources (DNR), Office of Land and Facilities, Real Estate Services, 517-373-1240
38. Is any portion of the project's property enrolled in the Farmland and Open Space Preservation Act, 1974 PA 116 program?	Y	N	Department of Agriculture, Farmland Preservation Program, 517-373-3328
39. Does the project involve any construction or land alteration within 400 feet of a designated natural river or tributary?	Y	N	Department of Natural Resources, Fisheries Division, Natural Rivers Program, 517-373-1280

ENVIRONMENTAL ASSISTANCE CENTER: 1-800-662-9278

Department of Environmental Quality
Office of Drinking Water and Municipal Assistance

Application and Permit to Install Water Supply System

Completion is required under the authority of Part 13, 1976 PA 399

Shaded areas for Local Health Department or DEQ use only.

Permit to: ☐ Construct a Public Well Under 1976 PA 399 ☐ Alter a Public Well Under 1976 PA 399

Well Permit Number WSSN Source ID

Establishment Name _____ Address _____

City _____ State MICHIGAN Zip _____

County _____ Township _____ Section _____

Owner/Manager Name _____

Address _____ Contact Phone _____

Average No. of Persons Served Per Day _____ No. of Service Connections _____

Premise Type _____ (Restaurant, Campground, School, etc.) License Type _____ Food, Campground, DHS, etc.)

Seasonal Operation No ☐ Yes ☐ From _____ To _____

Applicant Name _____ Address _____

City _____ State _____ Zip _____

I hereby apply for this permit and have authorization to do so. I understand this is a construction permit only and that the well is not to be put into service until approval has been granted. I further state the information given is accurate and complete.

Applicant's Signature Date Phone ( ) -

Provide scale drawing where indicated.

DO NOT PROCEED WITH CONSTRUCTION WITHOUT PERMIT APPROVAL FROM THE LOCAL HEALTH DEPARTMENT

PERMIT IS VALID FOR 2 YEARS FROM THE DATE OF ISSUANCE

Well Site Evaluation By _____ Date _____

Classification Type IIA ☐ Type IIB ☐ Required Minimum Pump Capacity _____ GPM

Standard Isolation Area _____ Ft. Major Isolation Area _____ Ft.

Permit Conditions/Deviations _____

Permit Approval/Denial By _____ **Date** _____

Not valid unless signed by local health department

Final Inspection By _____ Date _____

Casing Termination Approved	Yes ☐	No ☐	Storage Tank Approved	Yes ☐	No ☐
Well Location Approved	Yes ☐	No ☐	Sample Tap Approved	Yes ☐	No ☐
Well Construction Approved	Yes ☐	No ☐	Pressure Relief Valve	Yes ☐	No ☐
Well Record Approved	Yes ☐	No ☐	Pump Capacity Adequate	Yes ☐	No ☐

1ST Coliform Bacteria Test Result _____ Date _____ Nitrate Test Result _____ Date _____

2ND Coliform Bacteria Test Result _____ Date _____ Other _____ Result _____ Date _____

Water Supply Approved By _____ **Date** _____

Comments _____

WSSN:_____ Facility Name:_____

SCALE DRAWING:
Make a SCALE DRAWING indicating north, including dimensions, in the space provided below or attach separate sheet.
Show well location in respect to all possible sources of contamination, including adjacent properties, sewer lines, septic system(s), and major sources of contamination. This drawing must be approved by the local health department before installation of the well.

After well construction is completed, a water well and pump record must be submitted and approved, the local health department is to be notified for final inspection, and applicable sampling of the well and water supply system is to be completed. Approval from the local health department is required prior to placing water supply well into service.

Department of Environmental Quality
Office of Drinking Water and Municipal Assistance

EXISTING AND PROPOSED FIXTURE COUNT

For Calculating Peak Demand

Facility Name _____ Date _____

Well Permit # _____ WSSN _____

Contact Name _____ Phone _____

Please fill in the quantity for each of the following fixtures.

1. Water closet, with tank _____
2. Water closet, with flush valve _____
3. Urinal, with tank _____
4. Urinal, with flush valve _____
5. Lavatory _____
6. Bathtub, or tub/shower Combination _____
7. Shower _____
8. Drinking fountain _____
9. Laundry tray _____
10. Service/Mop sink _____
11. Lawn sprinkler, per sprinkler head ** _____
12. Auto washing, hand spray type _____
13. Tractor and equipment washing _____
14. Water softener _____
15. Dental unit _____
16. Dental lavatory _____
17. Garbage disposal – domestic/household _____
18. Garbage disposal – Commercial _____
19. Kitchen sink – small _____
20. Kitchen sink – large/double _____
21. Automatic dishwasher ** _____
22. Spray rinse, hand operated _____
23. Ice machine _____
24. Ice cream machine _____
25. Ice cream dipper well _____
26. Glass filling unit _____
27. Hot chocolate unit _____
28. Coffee unit/urn _____
29. Groundwater heat pump ** _____
30. Air conditioner (water cooled) ** _____
31. Evaporative cooler ** _____
32. Bulk chemical dispensing unit ** _____
33. Boiler unit/steam heating unit ** _____
34. Washing machine
    A. ½" connection _____
    B. 5/8" connection _____
    C. ¾" connection _____
35. Hose bibb or Yard hydrant
    A. ½" connection _____
    B. 5/8" connection _____
    C. ¾" connection _____
36. Other
    A. _____ _____
    B. _____ _____
    C. _____ _____

**Please include manufacturer specifications for water demand (gpm) required per fixture.
Fixture count sheet to be completed and submitted with the permit application.

TEMPLATE FOR LHD LETTERHEAD

Instructions for Completing a Noncommunity Water Supply Permit Application

1. Completely fill out the top section and the scale drawing areas (non-shaded) of the Michigan Department of Environmental Quality's "Application and Permit to Install Water Supply Facilities". A scaled drawing is to be completed on the back of the application in the provided space. A separate sheet of paper may be used for the scale drawing. The scale drawing should include the following:

- The distance from the proposed well site to any potential sources of contamination such as buried storm drains, sanitary and storm sewer lines, septic tanks, drainfields, drywells, grease traps, abandoned wells, surface water, livestock holding areas, etc.
- The distance to all major sources of contamination on the property or on adjacent properties such as: landfills, large scale chemical storage, waste lagoons, known groundwater contamination sites, buried fuel tanks, above ground fuel tanks, etc.
- The location of well and distribution system in relationship to property lines and all structures on the property. Please indicate any buildings on the property or on adjacent properties that will be served by the well.

2. Fill out the "Existing and Proposed Fixture Count" as completely as possible. If the manufacturer's information is not available, an estimate will be used.

3. Contact the Type II Noncommunity Water Supply Coordinator, <Name>, at <phone> to make an appointment for a site evaluation and information on well construction requirements prior to drilling the water well.

4. Submit the application, fixture count and $< amount> permit fee to:

<LHD Name>
<LHD Mailing Address>

Payment can be made with cash, check (payable to <Name>), or credit card.

The Environmental Health Staff will conduct a site inspection to review the proposed well location prior to drilling. Water sampling requirements will be determined during the site inspection and application review.

Please call for a final inspection and collection of water samples when the well is completed. **Final approval of the well may be granted when the local health department has: 1. Approved the well construction and pump installation, 2. Received satisfactory water sample results, and 3. Received a satisfactory Water Well and Pump Record from the well contractor(s).**

A permit issued under the Safe Drinking Water Act will expire within 2 years of issuance unless construction or alteration commences. An extension can be applied for through your LHD.

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION

APPLICATION TO INSTALL OR ALTER A PUBLIC WATER SUPPLY SYSTEM

Completion is required under the authority of Part 13, 1976 PA 399.

Type of Permit Request

- ☐ New well and water supply
- ☐ Replacement well only
- ☐ Alteration of an existing public water supply (distribution system)
- ☐ Conversion from existing operation to new use

FOR DEPARTMENT USE

Fee _____
Application # _____
Miss Dig Ticket # _____
Comp. Date _____

Establishment Details

Name:
Address:
County:
Township: Section:
WSSN: Tax ID:

Dates of Operation of the Water System: Year-round ☐ Yes ☐ No, from _____ to _____
Drain all or a portion of the system: ☐ Yes ☐ No

Number of Service Connections (Buildings): _____

Proposed or existing use (Restaurant, Campground, School, Church, etc.):
License(s) if applicable (Food, Campground, Childcare, etc.):

Wastewater System: ☐ Onsite Disposal (private) ☐ Sanitary Sewer (community)

Owner Details

Owner Name:
Mailing Address:
Email Address:
Phone Number:

Operator Details

Nontransient systems and systems with regulated treatment

Certified Operator Name:
Operator Number:
Email Address:
Phone Number:

Population

Number of Full Time Employees: Number of Part Time Employees:
Number of Students (Schools): Number of Children (Licensed Daycare):
Average Number of Non-Employees (Guests) Served Per Day:

If the facility is not open every day, use the total of 30 busiest days and divide by 30.

Water Treatment

(e.g., Softener, In-line Filter, Contaminant Removal)
An additional treatment permit may be necessary once the treatment scope is reviewed.
Is there proposed or existing water treatment? ☐ Yes ☐ No
Describe all treatment devices and their purpose(s) :

Well Installations (if applicable)

Registered Well Contractor Company Name: _____
Phone Number: _____

After well construction is completed, a water well and pump record must be submitted and approved, the local health department is to be notified for final inspection, and applicable sampling of the well and water supply system is to be completed. Approval from the local health department is required prior to placing water supply well into service.

Project Description

Provide a detailed description of the project. Provide product information if you are installing any fixtures, treatment devices, filters, etc. All products must meet NSF/ANSI 60 and 61 to be approved for use in a public water supply system. Use additional sheets as necessary.

(Examples: Remodel project will include replacing all current plumbing fixtures. Replacing pressure tanks. Replacing water softener.)

☐ Complete the Fixture Count Worksheet

Method(s) used to calculate peak demand: _____
Estimated peak demand (gallons per minute): _____

The applicant may have like-sized facilities where water usage is known, e.g., chain of fast-food restaurants. In those cases, the system sizing could be based upon the known water usage and pumping capacity. If used to estimate peak demand, submit documentation of water usage at the like-sized facility with this application.

☐ If the manufacturer's rated pump capacity is or will be greater than 70 gallons per minute, completion of the Michigan's Water Withdrawal Assessment Tool (WWAT) is required. The WWAT is available at the following link Water Withdrawal Assessment Tool (http://www.EGLE.State.MI.US/WWAT).

Drawing

Describe the type of drawing submitted (engineered plans, scale drawings, etc.). If engineered plans are available, submit a full set of project plans with this application.

Type of Drawing: (hand, scaled, engineered) _____

If Applicable:
Professional Engineer or Consultant Name: _____
Email Address: _____
Phone Number: _____

If engineered plans are not available, submit a scale drawing on an 8.5" x 11" paper or larger. The drawing must minimally include:

1. North arrow
2. Property lines and dimensions
3. Streets or roads and driveways
4. Existing and proposed buildings – include distance to roads and landmarks
    a. Indicate proposed additions or changes to existing buildings for remodeling.
    b. Attach existing and proposed floor plan for remodeling.
5. Well locations – (proposed and/or existing) with distance to wastewater discharge system shown
6. Wastewater discharge system components – proposed and/or existing
7. Neighboring wastewater discharge systems (within 300 feet)
8. Sanitary and storm sewers
9. Surface water, e.g., lakes, streams, ponds
10. Underground and above ground fuel storage tanks
11. Utilities, e.g., electric (above and below ground), natural gas, propane, phone

Certification

I hereby apply for this permit and have authorization to do so. I understand this is a construction permit only and that the well and/or water system is not to be put into service until approval has been granted by the local health department. I further state the information given is accurate and complete.

Applicant Name: _____
Mailing Address: _____
Email Address: _____
Phone Number: _____

Date: _____

Applicant's Signature: _____

Applicant's Title/Position: _____

Fixture Count Worksheet

Please fill in the quantity for each of the following fixtures:

_____ Toilet with tank	_____ Ice machine
_____ Toilet with flush valve	_____ Ice cream machine
_____ Urinal with tank	_____ Ice cream dipper well
_____ Urinal with flush valve	_____ Glass filling unit
_____ Bathroom sink	_____ Hot chocolate unit
_____ Bathtub or tub/shower combination	_____ Coffee unit/urn
_____ Shower	_____ Groundwater heat pump[1]
_____ Drinking fountain	_____ Air conditioner (water cooled)[1]
_____ Laundry tub	_____ Evaporative cooler[1]
_____ Service or Mop sink	_____ Bulk chemical dispensing unit[1]
_____ Lawn sprinkler per sprinkler head[1]	_____ Boiler unit/steam heating unit[1]
_____ Auto washing, hand spray type	_____ Washing machine
_____ Tractor and equipment washing	_____ 1/2” connection
_____ Water softener	_____ 5/8” connection
_____ Dental unit	_____ 3/4” connection
_____ Dental lavatory	_____ Hose bibb or Yard hydrant[2]
_____ Garbage disposal – domestic/household	_____ 1/2” connection
_____ Garbage disposal – commercial	_____ 5/8” connection
_____ Kitchen sink – small	_____ 3/4” connection
_____ Kitchen sink – large/double/triple	_____ Other (describe)
_____ Automatic dishwasher[1]	_____
_____ Spray rinse, hand operated	_____

[1]***Please include manufacturer specifications for water demand (gpm) required per fixture, if available.***
[2]***Yard hydrants must be on the EGLE approved list (no open weep hole into the ground).***

If you need this information in an alternate format, contact EGLE-Accessibility@Michigan.gov or call 800-662-9278.

EGLE does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetic information, or sexual orientation in the administration of any of its programs or activities, and prohibits intimidation and retaliation, as required by applicable laws and regulations. Questions or concerns should be directed to the Nondiscrimination Compliance Coordinator at EGLE-NondiscriminationCC@Michigan.gov or 517-249-0906.

This form and its contents are subject to the Freedom of Information Act and may be released to the public.

It shall be unlawful to have, possess, or maintain junk, inoperable or abandoned motor vehicles outside of a building on any property. Violations of this Section will be processed according to the procedures of Section 4.04.

Section 6.24 Landscape Buffer

The Planning Commission may require a landscaped, greenbelt buffer that shall consist of, but not be limited to, trees, shrubs, grasses and herbaceous vegetation, exclusive of noxious weeds, where the impact of a proposed development will have a negative impact on an existing abutting parcel or parcels. If such a greenbelt is required, it shall be a twenty-five (25) foot wide landscaped greenbelt buffer established alongside and between the boundaries of the proposed development and any existing abutting parcels the Planning Commission determines could be negatively affected by the proposed development. A fifty (50) foot wide greenbelt shall be established adjacent to any public road right-of-way, which is not located within the project.

The area of the required greenbelt, which lies within the boundaries of a lot or unit, applies to the area calculation for that lot or unit. The required greenbelt areas shall be maintained perpetually in natural vegetation or landscaping, as provided above, to provide a visual buffer. The Planning Commission may modify this requirement at the end of stub streets and along phasing boundaries, provided that the intent of this Section is maintained.

Section 6.25 Sidewalks in Residential/Commercial Developments

The Planning Commission may require the development of sidewalks in any residential (single-family or multiple-family) or commercial development subject to the following conditions:

A. Sidewalks shall be constructed of concrete with a minimum width of five (5) feet and a minimum depth of four (4) inches and six (6) inches of reinforced concrete at driveway crossing points.

B. Sidewalks are to be constructed within the road right-of-way or easement one (1) foot from the right-of-way or easement line.

Section 6.26 Street Lighting in Residential, Commercial and Industrial Developments

The Planning Commission may require the placement of streetlights in any residential, commercial or industrial development. Streetlights, for the purpose of this Section, may consist of poles or standards from which a light fixture is attached for the purpose of lighting a public right-of-way and/or private road easement.

Section 6.27 Wellhead Protection and Hazardous Substance Overlay Zone

Purpose and Intent

The purpose and intent of the Wellhead Protection and Hazardous Substance Overlay Zone is to provide supplemental development regulations in designated areas so as to permanently protect the Marion Township's drinking water source from long-term contamination originating from the improper use, storage or generation of hazardous substances or polluting materials. Such an ordinance is intended to minimize economic impacts and legal liability while controlling the use of hazardous substances in a wellhead protection area. Further, it is recognized that residents and businesses rely exclusively on ground water for a safe drinking water supply and that certain land uses in the Marion Township can contaminate ground water sources.

The purpose of the Wellhead Protection and Hazardous Substance Overlay Zone is to protect the public health and safety of the Township by minimizing contamination of the aquifers serving said Township, including the significant public investment in the municipal water supply system(s) serving the Township. These regulations contain proactive measures, which apply to certain areas of the community as well as

those imposed in the underlying zoning district. The goals of this overlay zone ordinance are to: 1) to shape future development and promote best management practices in order to protect municipal well; 2) limit chemicals and contaminates near municipal wells; 3) provide for early detection of contaminates in or near the wellhead protection area; and 4) to have the ability to inspect and catalog possible contaminates held by business or industry within the wellhead protection area. It is the intent to accomplish this, as much as possible, by public education and securing public cooperation, and also by the enforcement of the Wellhead Protection and Hazardous Substance Overlay Zone as herein provided:

Scope

The provisions of this Wellhead Protection and Hazardous Substance Overlay Zone shall apply to all uses and facilities, including private and public facilities, which use, store or generate hazardous substances in a quantity greater than 100 kilograms per month (25 gallons or 220 pounds) in a wellhead delineation area (TOT) as shown in the Wellhead Protection Area Maps for Howell MHOG/SWATH found at the State of Michigan, Department of Environmental Quality website, currently http://www.michigan.gov/images/deq-wd-gws-wpu-howellswath_59124_7.jpg These maps are periodically updated to include new listings as information or notice is received by the Livingston County Health Department or the State of Michigan Department of Environmental Quality. In addition, these regulations shall apply to all nonresidential uses and facilities, including private and public facilities outside of the wellhead delineation area(s) (Zone B) which use, store, or generate hazardous substances, which may pose an environmental risk, in a quantity greater than 100 kilograms per month. All uses and facilities as described above shall be subject to site plan review under the provisions of this Zoning Ordinance. The 100 kilograms (25 gallons or 220 pounds) is a threshold level for ground water contamination sources and materials (hazardous substances) established by the Part Rule 5 Implementation Committee of the Michigan Department of Natural Resources (1998) for county health departments participating in the Michigan Water Resources Commission Act (Act 245, P.A. 1929, as amended) Advisory Committee.

Definitions

1. **Aquifer:** A geological formation, group of formations or part of a formation capable of storing and yielding a significant amount of groundwater to wells or springs.

2. **Best Management Practices:** Measures, either managerial or structural, that is determined to be the most effective, practical means of preventing or reducing pollution inputs to soils, surface water and ground water.

3. **Contamination:** The process of making impure, unclean, inferior, or unfit for use by the introduction of undesirable elements through the release of a hazardous substance, or the potential release of a discarded hazardous substance, in a quantity which is or may become injurious to the environment, or to the public health, safety, or welfare.

4. **Contingency Plans:** Detailed plans for control, containment, recovery, and clean up of hazardous materials released during fires, equipment failures, leaks and spills.

5. **Development:** The carrying out of any construction, reconstruction, alteration of the ground surface or structure or change of land use or intensity of use.

6. **Facility:** Any building, structure, or installation from which there may be a discharge of hazardous substances.

7. **Feedlot:** A parcel of land whereon there is contained an operation of feeding or raising animals in excess of one hundred (100) animal units per acre or in excess of five hundred (500) animal units per parcel of land. One (1) animal unit is equivalent to one beef cow, steer, feeder or fat beef animals; one horse; 0.7 dairy cow; 1.7 swine; 6.7 sheep; 33 hens, cockerels, capons, boiler or ducks; and 10 geese or turkeys.

8. **Hazardous Substance:** A chemical or other material, which is or may become injurious to the public health, safety, or welfare, or the environment. The term "Hazardous Substance" includes, but is not limited to, hazardous substances as defined in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Public Law 96-510, 94 Stat. 2767; and "hazardous waste" as defined in Part III (Section 324.11103) of the Natural Resources and Environmental Protection Act, 1994 P.A. 451, as amended; and "petroleum" as defined in Part 213 (Section 324.21303) of the Natural Resources and Environmental Protection Act, 1994 P.A.451, as amended.

9. **Hazardous Materials:** A material which is defined in one or more of the following categories:

   a. **Ignitable:** A gas, liquid or solid which may cause fires through friction, absorption of moisture, or which has low flash points. Examples: white phosphorous and gasoline.

   b. **Carcinogenic:** A gas, liquid or solid, which is normally considered to be cancer causing. Examples: PCBs in some waste oils.

   c. **Explosive:** A reactive gas, liquid or solid which will vigorously and energetically react uncontrollably if exposed to heat, shock, pressure or combinations thereof. Examples: dynamite, organic peroxides and ammonium nitrate.

   d. **Highly Toxic:** A gas, liquid or solid so dangerous to humans as to afford an unusual hazard to life. Examples: parathion and chlorine gas.

   e. **Moderately Toxic:** A gas, liquid or solid, which through repeated exposure or in a single large dose can be hazardous to humans. Example: atrazine.

   f. **Corrosive:** Any material, whether acid or alkaline, which will cause severe damage to human tissue, or in case of leakage might damage or destroy other containers of hazardous materials and cause the release of their contents. Examples: battery acid and phosphoric acid.

10. **Overlay Zone:** A special zoning classification that regulates specific areas of a municipality in addition to the existing "under lying" zoning districts.

11. **Pasture:** (Townships) A field that provides continuous forage to animals.

12. **Polluting Material(s):** Any hazardous substance as defined that can cause pollution to groundwater sources and/or become injurious to the public health, safety, or welfare of the general public or to the environment.

13. **Primary Containment Facility:** A tank, pit, container, pipe, or vessel of first containment of a hazardous substance or material.

14. **Secondary Containment Facility:** A second tank, catchment, pit, pipe, or vessel that limits and contains liquid or chemical leaking or leaching from a primary containment area.

15. **Ten (10) Year Time of Travel Distance (TOT):** The distance that ground water will travel in ten (10) years sometimes referred to as the "Ten Year Capture Zone". The distance is a function of the permeability and slope of the aquifer.

16. **Zone of Contribution:** The entire area around a well or well field that is recharging or contributing water to the well or well field.

17. **Zone "A":** The wellhead delineation (TOT) areas as depicted on the Wellhead Protection Area Maps for Howell MHOG/SWATH found at the State of Michigan, Department of Environmental Quality website. These maps are periodically updated to include new listings as information or notice is

received by the Livingston County Health Department or the State of Michigan Department of Environmental Quality.

18. **Zone "B"**: All areas outside of the wellhead delineation areas (Zone "A"/TOT Areas) as depicted on the Wellhead Protection Area Maps for Howell MHOG/SWATH found at the State of Michigan, Department of Environmental Quality website. These maps are periodically updated to include new listings as information or notice is received by the Livingston County Health Department or the State of Michigan Department of Environmental Quality.

Establishment and Delineation of Wellhead Protection Overlay Zones

Boundaries for the wellhead (aquifer) delineation areas (Zone "A") for the Wellhead Protection and Hazardous Substance Overlay Zone Ordinance are shown on the Wellhead Protection Area Maps for Howell MHOG/SWATH found at the State of Michigan, Department of Environmental Quality website, currently http://www.michigan.gov/images/deq-wd-gws-wpu-howellswath_59124_7.jpg These maps are periodically updated to include new listings as information or notice is received by the Livingston County Health Department or the State of Michigan Department of Environmental Quality. Said maps are hereby adopted by reference as part of this Ordinance as if the maps were fully described herein.

Zone "A" - Wellhead Delineation (TOT) Protection Area

Zone "A", the wellhead delineation (TOT) area, is the zone of contribution mapped around all public water supply wells or well fields. This zone includes land up gradient to the ten (10) year time of travel (TOT) boundary plus contributing drainage areas on adjacent lands (outside of Zone "A") from which water can flow directly onto Zone "A".

Zone "A" Permitted Uses

Permitted uses in Zone "A" provided they meet appropriate performance standards outlined for wellhead protection overlay zones.

1. Agriculture.
2. Horticulture.
3. Parks or publicly owned recreational areas.
4. Necessary public utilities / facilities designed so as to prevent contamination of ground water.
5. Single-family detached dwellings, including accessory buildings incidental to a single-family use.

Zone "A" Permitted Uses Subject to Special Use Approval

All uses, other than permitted uses in Zone "A", found in the underlying zoning district(s) may be permitted subject to special use approval conditions. Said conditions shall be imposed in accordance with Act, 1 of as amended

1. Golf courses, providing they meet the standards of the Michigan Turfgrass Environmental Stewardship Program developed by Michigan State University and subject to the following:
    a. Golf course developments shall comply with the requirements of this Ordinance and with all other county, state and federal environmental laws and regulations concerning the handling and storage of hazardous substances including, but not necessarily limited to pesticides, fertilizers and fuels.

b. Golf course designs shall promote and communicate the best management practices to control potential sources of pollution and to minimize any input of hazardous substances (pesticides, fertilizers, etc.) into the environment.

c. Golf course designs and management practices shall protect the natural features of the property including adjacent properties.

d. Golf course design and management practices shall protect water quality, fish and wildlife habitat and native vegetation as well as promoting the "green space" values of golf course properties.

Zone "A" Prohibited Uses

The following hazardous substance, high risk uses, such as but not necessarily limited to, are expressly prohibited in Zone "A".

1. Animal feed lots.
2. Disposal of solid waste, including the land application or otherwise recycling of municipal or industrial sludge's, human body waste, or forms of biosolid products. Outside unenclosed storage of road salt.
3. Disposal of snow containing de-icing chemicals, including road salt.
4. Processing and storage of oils containing PCBs.
5. Vehicle (car, truck or other motorized equipment or vehicle) washes.
6. Auto service (gasoline service), repair or painting facilities.
7. Junk or salvage yards.
8. Disposal of radioactive waste.
9. Open burning of building materials or any man made material and detonation sites.
10. All facilities involving the collection, handling, manufacturing, use, storage, transfer or disposal of any solid or liquid material or waste having a potentially harmful impact on ground water quality.
11. Contractor storage yards and facilities.
12. Pesticide application services.
13. Landfill/dump sites, including Michigan Act 451 disposal areas.
14. Mining or extraction uses.
15. Lagoon systems for sewage and/or waste disposal.
16. Sewage/Waste Water Treatment Facilities
17. Chemical, paint, and plastic manufacturing.
18. Furniture manufacturing and refinishing.
19. Commercial printing and photography uses.
20. Medical and scientific laboratories.
21. Laundries and dry cleaners.
22. Metal manufacturing businesses.
23. Metal plating and finishing businesses.
24. Transportation terminals.
25. Similar and like uses to those listed above.
26. Underground storage tanks.

Zone "B" Secondary Impact Areas

Zone "B" Secondary Impact Areas include all of the areas located outside of Zone "A". This area is being protected for the following reasons:

1. The area is a valuable natural resource for future development.
2. The area may provide drinking water supply for individual households and businesses (primarily in township areas).
3. Contamination of ground or surface waters can not be justified under any circumstance.
4. Contaminates could eventually reach Zone "A".

Zone "B" Permitted Uses

All uses permitted in the underlying zoning districts provided that they meet the Performance Standards of this Ordinance.

Zone "B" Permitted Uses Subject to Special Use Approval

All permitted uses subject to special use approvals provided they can meet the Performance Standards of this Ordinance.

Performance Standards

The following standards shall apply to all nonresidential land uses, including agricultural uses, in Zones "A" and "B" of the Wellhead Protection and Hazardous Substance Overlay Zone Ordinance.

1. **SEPTIC TANKS AND ASSOCIATED DRAINFIELDS**

   New or replacement septic tanks and associated drain fields for the containment of human or animal wastes shall conform to regulations and standards of the Livingston County Health Department.

2. **HAZARDOUS SUBSTANCE PROTECTION STANDARDS**

   a. A use, project or related improvements to an existing use or a new use shall be designed to protect the natural environment, including lakes, ponds, streams, wetlands, floodplains, and street slopes.

   b. Storm water management and drainage facilities shall be designed to retain the natural retention and storage capacity of any wetland, water body, or water course, and shall not significantly increase flooding or the potential for environmental contamination of surface or groundwater, on-site or off-site.

   c. General purpose floor drains shall be connected to a public sewer system or an on-site holding tank in accordance with state, county, and local requirements, unless a groundwater discharge permit or permit exclusion has been obtained from the Michigan Department of Environmental Quality.

   d. Sites at which hazardous substance and polluting materials are stored, used, or generated shall be designed to prevent spills and discharges of hazardous substances to the air, surface of the ground, groundwater, lakes, streams, rivers, or wetlands.

   e. State and federal agency requirements for storage, spill prevention, record keeping, emergency response, transport and disposal of hazardous substances and polluting materials shall be met. No releases to groundwater, including direct or indirect releases shall be shall be allowed without applicable groundwater discharge permit or permit exclusion from the Michigan Department of Environmental Quality.

   f. In determining conformance with the standards in this zoning ordinance, the Township shall take into consideration the publication titled *Waste Management Guidance, Secondary Containment*, Michigan Department of Environmental Quality, Waste Manage Division, September 1997, and other applicable references.

3. **ABOVEGROUND STORAGE AND USE AREAS FOR HAZARDOUS SUBSTANCES AND POLLUTING MATERIALS**

   a. Primary containment of hazardous substances shall be product-tight.

   b. Secondary containment of hazardous substances shall be provided for all facilities.

Secondary containment shall be sufficient to store one hundred fifty (150) percent of the substance for the maximum anticipated period of time necessary for the recovery of any released substance. Products held in containers of five (5) gallons or less packaged for retail use shall be exempt from this requirement. Containment systems shall be constructed of materials of sufficient thickness, density and composition to prevent the discharge to land, groundwater, or surface waters, of any pollutant which may emanate from said storage container or containers.

c. Outdoor storage of hazardous substances shall be prohibited except in product-tight containers, which are protected from weather, leakage, accidental damage and vandalism. Secondary containment shall be sufficient to store one hundred fifty (150) percent of the substance for the maximum anticipated period of time necessary for the recovery of any released substance, including an allowance for the expected accumulation of precipitation.

d. Out buildings, storage rooms, sheds and pole barns which have secondary containment facilities shall not have floor drains which outlet to the soil, public sewer systems, groundwater, or nearby county drains or natural water bodies unless a surface or groundwater discharge permit has been obtained in accordance with the applicable requirements of Part 31 of Act 451, the Michigan Natural Resources and Environmental Act, 1994 P.A. 451, as amended.

e. Areas and facilities for loading and unloading of hazardous substances as well as areas where such materials are handled, used and stored, shall be designed and constructed to prevent unpermitted discharge or runoff to floor drains, rivers, lakes, wetlands, soils, or groundwater.

4. **UNDERGROUND STORAGE TANKS FOR HAZARDOUS SUBSTANCES AND POLLUTING MATERIALS**

a. Existing and new underground storage tank systems as defined under part 211 of Act 451, the Michigan Natural Resources and Environmental Act, 1994 P.A. 451,as amended shall be registered with the authorized State agency in accordance with applicable requirements of the U.S. Environmental Protection Agency (EPA) and the Michigan Department of Environmental Quality or any other state or federal agency having jurisdiction thereof.

b. Installation, operation, maintenance, closure and removal of underground storage tanks shall be in accordance with applicable requirements of the Michigan Department of Environmental Quality. Applicable leak detection, corrosion protection, spill prevention and overfill protection requirements shall be met. Records of monthly monitoring or inventory control shall be required to be retained and available for review by the state or local officials for tank tightness tests for retention and all other monitoring or test results.

c. Out-of-service and/or abandoned underground storage tanks shall be emptied and permanently closed in accordance with the requirements of the Michigan Department of Environmental Quality Environmental Response Division and applicable Township regulations.

5. **WELL ABANDONMENT**

All public and private wells, excluding wells used for licensed agricultural practices or fire suppression purposes, must be properly abandoned at the time of replacement or hook-up to a municipal water supply system except as may be modified providing that the well will be used only for irrigation purposes. The proper abandonment of wells is to be in accordance with the Livingston County Health Department's Sanitary Code and the Michigan Department of Environmental Quality Well Construction Unit.

a. Out of service water wells shall be sealed and abandoned in accordance with applicable requirements of the Michigan Department of Environmental Quality Well Construction Unit and the Livingston County Health Department.

b. Existing and abandoned wells shall be so noted on any applicable site plan for new construction, reconstruction or expansion of any use or structure to insure compliance with the requirement of this section 5.

6. SITE(S) WITH CONTAMINATED SOILS AND/OR GROUNDWATER

a. Site plans shall address, with a proposed action, the location and extent of any contaminated soils and/or groundwater on the site, and the need to protect public health and the environment.

b. Development shall be prohibited on a site of environmental contamination unless information is available indicating that the development will not exacerbate the contamination or impede its mediation.

7. CONSTRUCTION STANDARDS

a. The general contractor, or if none, the property owner, shall be responsible for assuring that each contractor or subcontractor evaluates each site before construction is initiated to determine if any site conditions may pose particular problems for handing any hazardous substances. For instance, hauling hazardous substances in proximity to water bodies, wetlands, or wellhead delineation zones (Zone "A") may be improper.

b. Hazardous substances and polluting materials stored on the construction site during the construction process shall be stored in a location and manner designed to prevent spills and non-permitted discharges to air, surface of the ground, groundwater, lakes, streams, rivers, or wetlands. Any storage of hazardous substance or polluting materials of quantities greater than 100 kilograms (25 gallons or 220 pounds) shall have secondary containment.

c. If the contractor will be storing or handling hazardous substances or polluting materials that require a manufacture's material data sheet, the contractor shall familiarize him/herself with the sheet, and shall be familiar with procedures required to contain and clean up any releases of the hazardous substance.

d. Upon completion of construction, all hazardous substances and polluting materials, including containment systems no longer used or not needed in the operation of the facility, shall be removed from the construction site by the responsible contractor and shall be disposed of, recycled, or re-used in a proper manner as prescribed by applicable state and federal regulations.

8. MAINTENANCE

In areas where hazardous substances or polluting materials are handled, structural integrity of the building and/or structure shall be maintained to avoid inadvertent discharge of hazardous substances to the soils and groundwater. Cracks and holes in floors, foundations, and walls that could cause hazardous substances to be released shall be repaired in areas where hazardous substances are handled or stored.

9. SITE PLAN REVIEW AND DEVELOPMENT STANDARDS FOR GROUNDWATER PROTECTION

The following site plan and development review requirements are in addition to the development requirements found under Article XVIII, Site Plan Review; for facilities and uses located either in Zone "A" or Zone "B". These provisions shall apply to all agricultural uses and nonresidential uses/facilities, including public and private facilities, which use, store or generate hazardous substances and polluting materials in quantities greater than 100 kilograms per month (25 gallons or 220 pounds):

Site Plan Information Requirements

a. Listing of types and quantities of hazardous substances and polluting materials that will be used or stored on-site at the facility in quantities greater than 25 gallons or 220 pounds per month.

b. Completion of the "Hazardous Substances Reporting Form for Site Plan Review. Submit a list of the types and quantities of hazardous substances and polluting materials which will be used, stored, or generated on-site including chemicals, hazardous substances/materials, petroleum products, hazardous wastes and other polluting materials. The list shall include common name (trade name) of materials, chemical name (components), form (liquid, pressurized liquid, solid, gas, pressurized gas, etc.), maximum quantity on hand at any one time, and type of storage containers (aboveground tank, underground tank, drums, cylinders, metal container, wooded or composition container, portable tank, etc.). Material Safety Data supplied to the Fire Department and to employees by an employer shall also be submitted for site plan review purposes.

c. The location of existing and proposed service facilities and structures, above and below ground, including:

(1) Public and private groundwater supply wells on-site, including abandoned wells.

(2) Septic systems and other wastewater treatment facilities (the location of the drain field and septic tank shall be clearly distinguished).

(3) Areas to be used for the storage, use, loading/unloading, recycling, or disposal of hazardous substances and polluting materials, including interior and exterior areas.

(4) Underground and aboveground storage tank locations.

(5) Location of exterior and interior drains, dry wells, catch basins, retention/detention areas, sumps and other facilities designed to collect store, or transport storm water or wastewater. The point of discharge for all drains and pipes shall be specified on the site plan.

d. Location of existing wetlands and watercourses, such as lakes, ponds, rivers, streams, including public and private drains.

e. Soil characteristics of the parcel, at least to the detail provided by the U.S. Soil Conservation Service.

f. Existing topography, with a maximum contour interval of two (2) feet, shall be indicated.

g. Delineation of areas on the site which are known or suspected to be contaminated, together with a report on the status of site clean-up.

Site Plan Review Standards (Groundwater Protection Standards)

a. The project and related improvements shall be designed to protect the natural environment, including lakes, ponds, streams, wetlands, floodplains, groundwater, and steep slopes.

b. Storm water management and drainage facilities shall be designed to retain the natural retention and storage capacity of any wetland, water body, or watercourse, and shall not increase flooding or the potential for pollution of surface or groundwater, on-site or off-site.

c. General-purpose floor drains shall be connected to a public sewer system, an on-site holding tank, or a system authorized through a state groundwater discharge permit.

d. Sites at which hazardous substances and polluting materials are stored, used, or generated shall be designed to prevent spills and discharges to the air, surface of the ground,

groundwater, lakes, rivers, streams, surface water, or wetlands.

e. State and federal agency requirements for storage, spill prevention, record keeping, emergency response, transport and disposal of hazardous substances and polluting materials shall be met. No discharges to groundwater, including direct or indirect discharges, shall be allowed without required permits and approvals.

f. In determining conformance with the standards in this Zoning Ordinance, the Township shall take into consideration the publication titled *"Small Business Guide to Secondary Containment"* published by the Clinton River Watershed Council, May 1990 and other references.

10. EXEMPTIONS AND WAIVERS

The transportation of any hazardous substance or polluting material shall be exempt form the provisions of this Ordinance provided the transporting motor vehicle or rail car is in continuous transit, or that it is transporting substances to or from properly licensed solid or hazardous waste treatment, storage, or disposal facility.

Section 6.28 Amateur Radio Towers and Antennas, Private Receiving Television and Radio Towers

The general purpose and intent of these regulations is to reasonably accommodate and regulate the establishment of amateur radio towers and antennas, private receiving television and radio towers and satellite antenna with a diameter not exceeding one (1) meter or 39 inches in recognition of the public need and demand for such uses and technologies. These regulations are intended only for free standing facilities that are not attached to existing buildings or residences and are subject to the following regulations:

1. Applicants for antenna installations under this Section shall conform to the application procedures used for Accessory Uses and Structures.

2. Towers and satellite antennas shall be permitted in rear and side yards only.

3. Towers shall be setback from any property line a distance equal to the towers height measured from the base of the tower to the nearest property line. In no case shall such a tower exceed one hundred (100) feet in height. The Planning Commission may waive this required setback requirement providing the applicant can demonstrate with supporting engineering documentation that the fall zone for said tower is less than its height. However, a tower shall be setback from the applicable property line no less than the required minimum setback for either a side or rear yard in the zoning district in which it is located.

Section 6.29 Open Space Preservation

1. The intent of this Section is to allow developers, at their choice, to cluster new homes on smaller lots and to provide the home sites with permanently preserved open space consistent with the open space may be, but does not necessarily need to be, left in a natural state.

2. Density for residential developments shall be the same as the number of units allowed by the underlying residential zoning district on a parcel of land, excluding unbuildable areas such as, but not necessarily limited to, wetlands, major pipeline easements and/or power line easements, etc., as specified in the Zoning Ordinance, but not on more than fifty (50) percent of the land that could be otherwise developed under existing ordinances, laws or rules on the entire land area, providing all of the following apply:

APPENDIX D

Emergency Water Connection Agreement

Contingency plan info

CITY OF HOWELL - MHOG EMERGENCY WATER CONNECTION AGREEMENT

WHEREAS, the Marion, Howell, Oceola and Genoa Sewer and Water Authority (hereinafter referred to as "MHOG") owns and maintains a water treatment plant and a public water distribution system within the Townships of Marion, Howell, Oceola and Genoa; and

WHEREAS, the City of Howell, a Michigan Municipal Corporation, with its offices at 611 E. Grand River Avenue, Howell, Michigan 48843 (hereinafter referred to as the "City") owns and maintains a water treatment plant and a water distribution system within the City of Howell; and

WHEREAS, the public water distribution system of both MHOG and the City run at or near various areas and vicinities to each other; and

WHEREAS, the City is authorized by Article 7, Section 24 of the Michigan Constitution of 1963 and by Public Act 279 of 1909, as amended, to provide water service outside its corporate limits; and

WHEREAS, MHOG is authorized by Public Act 35 of 1951, as amended, and other Public Acts, to enter into agreements to provide and receive water services outside of its authority; and

WHEREAS, it is in the best interest of both parties, to ensure the public health, safety and welfare of those residents and customers served by both parties, to establish continued and uninterrupted water service during times in which either water distribution system is impaired due to emergency;

NOW THEREFORE, in consideration of the mutual covenants between them, the parties hereby agree as follows:

1. Connection and Emergencies.

   MHOG and the City hereby agree to connect their public water distribution system to each other's system for purposes of emergencies, only. An emergency is hereby defined as a major break or loss of water either due to a water transmission line, water plant malfunction, loss of well production, or any other type of emergency wherein the public health, safety and welfare is imminently threatened.

2. Location of Connections.

   The emergency connections will be placed at the following locations:

   a. Lucy Road and Industrial Drive;

   b. Byron Road and M-59, located in Howell Township.

The emergency connections will be a valve mechanism which will be manually turned on as specified in Section 5 below, and water released into the public water distribution system of the party in need of water based upon an emergency as set forth above.

3. Cost of Installation.

The cost of the installation of the emergency valves/switches at the location set forth, above, shall be divided equally between the City and MHOG, 50% to each. The cost of the work shall include, but not be limited to any and all actual costs expended for excavation, materials, labor, design costs and specifications, engineering costs, and any other cost which is directly associated with the installation of the emergency connections.

4. Agreement to Employ Engineer.

An engineering firm shall be employed by both parties, said firm to be agreed to by consent of the parties in writing, who will perform any and all design work necessary for the connections as set forth above.

5. Activation of Emergency Connection.

The emergency connection will be activated by the Superintendent of the Water Treatment Plant for each party or his/her designee. The activation of the connection, once necessary for an emergency, will be such that the burden on both public water distribution systems will be minimized.

6. Determination of Water Usage; Costs and Billing Method.

The parties agree that, after the emergency has ceased, and the emergency connections are closed, the payment of water services will be necessary to pay from one party to the other. To determine the amount of water used during the emergency, engineers for both parties will review what the usage for the particular water plant in question would have been, but for the emergency. The party using the water will pay at a rate of the providing party's normal rate per 1,000 gallons. The amount, when finally determined, will be payable within sixty (60) days to the providing party. If there is non-payment within the sixty (60) day period, interest will accrue on the unpaid balance at the rate of seven percent (7%) per annum.

7. Future Maintenance Expenses.

Any and all future maintenance will be performed jointly by the parties. Future maintenance costs will include

but not be limited to the performance of routine annual checks by both parties to ensure that the emergency valves/switches are in good working order. Any replacement of any emergency connection or part of an emergency connection and any and all other costs associated with future maintenance will be paid for equally between the parties, 50% to MHOG and 50% to the City.

8. Indemnification - MHOG to City.

MHOG agrees to save harmless the City against and from any and all claims, costs, charges and expenses (including without limitation, fees and expenses of attorneys, expert witnesses and other consultants) which may be imposed against the City by reason of any of the following occurring during the term of this Agreement:

a. Any negligent or tortious acts, errors or omissions of MHOG or any of its personnel, employees, subcontractors, or consultants in the construction, operation or maintenance of the MHOG public water distribution system and associated facilities;

b. Any failure by MHOG or any of its personnel, employees, consultants or subcontractors to perform its obligations, either expressed or implied, under this Agreement or any negligent or tortious acts, errors or omissions of MHOG, its personnel, employees, consultants or subcontractors.

9. Indemnification - City to MHOG.

The City agrees to save harmless MHOG against and from any and all claims, costs, charges and expenses (including without limitation, fees and expenses of attorneys, expert witnesses and other consultants) which may be imposed against MHOG by reason of any of the following occurring during the term of this Agreement:

a. Any negligent or tortious acts, errors or omissions of the City or any of its personnel, employees, subcontractors, or consultants in the construction, operation or maintenance of the City public water distribution system and associated facilities;

b. Any failure by the City or any of its personnel, employees, consultants or subcontractors to perform its obligations, either expressed or implied, under this Agreement or any negligent or tortious acts,

errors or omissions of the City, its personnel, employees, consultants or subcontractors.

10. Commencement and Term.

This Agreement shall commence on the date herein and shall only be terminated or modified by mutual agreement of the City and MHOG.

11. Assignability.

This Agreement is not assignable by either party without the written consent of the other.

12. Parties Bound by Agreement.

The parties hereby agree that this Agreement shall be binding upon all successor governmental units, including each individual Township making up the Authority, and which may assume jurisdiction over all or part of the areas now governed by the parties herein.

13. Severability.

Should any provision of this Agreement be found by a Court of competent jurisdiction to be unconstitutional, it shall be severed from this Agreement and the remaining provisions shall remain in full force and effect.

IN WITNESS WHEREOF, the parties have set their hands and seals on the 4th day of March, 1998.

WITNESS

CITY OF HOWELL

BY: PAUL F. ROGERS, Mayor

BY: REBECCA J. RUTTAN, Clerk

WITNESS

Nancy Salmon

Irene Sharpe

MARION, HOWELL, OCEOLA & GENOA
SEWER & WATER AUTHORITY

BY: JOSEPH L. RICHARDS, Chairman

BY: EVELYN CORNELL, Secretary

APPENDIX E

Checklist for WHPP Updates

CHECKLIST FOR WELLHEAD PROTECTION PROGRAM RENEWAL

Local wellhead protection plans submitted to the Michigan Department of Environment, Great Lakes, and Energy for renewal should include the sections listed below. ***Example*** *items for each section are listed below.*

INTRODUCTION

□ Update basic information about the Public Water Supply System (PWSS) and community, such as:

___ Community location and population
___ Present service area (geographic area and population served by the PWSS
___ Number of wells and capacity
___ Local program goals for wellhead protection

ROLES AND RESPONSIBILITIES

□ Update information about the local wellhead protection team including:

___ Roles and responsibilities of each new team member
___ New organizations or agencies involved
___ Intergovernmental agreements or memoranda have been updated or initiated
___ Person or agency responsible for the periodic update of the local plan
___ Date the plan was last updated

WELLHEAD PROTECTION AREA DELINEATION

□ Update information about the Wellhead Protection Area (WHPA) including:

___ New geological data that should be incorporated into the current WHPA
___ Other updates made to the current WHPA
___ Updated map of the current WHPA that includes the wellfield location, municipal boundaries, and topographic contours
___ Changes in well usage or flow rates in the current WHPA (i.e., well abandonment, new wells, etc.)
___ Installation of new well/s that have been delineated (include new WHPA and map)
___ Installation of new well/s that have not been delineated (include timetable for delineating the new well/s)
___ Changes and/or updates to watershed boundaries and/or surface water runoff patterns (optional)
___ Changes and/or updates to storm water drainage system and facilities, including storm water basins (optional)

CONTAMINANT SOURCE INVENTORY

□ Update information about the Contaminant Source Inventory, including:
- ___ Date that the Contaminant Source Inventory was last updated
- ___ Updated map which displays all potential and existing sources of contamination within the WHPA

□ Review the following lists to determine if changes have been made within the WHPA.
- ___ Sites of Environmental Contamination, Remediation and Redevelopment Division, EGLE, (201 sites of Act 451), EGLE.State.MI.US/RIDE/Inventory-of-Facilities/Facilities
- ___ Underground Storage Tank List, Remediation and Redevelopment Division, EGLE, (Part 211 of Act 451), EGLE.State.MI.US/RIDE/Inventory-of-Facilities/Facilities
- ___ Leaking Underground Storage Tank Sites, Remediation and Redevelopment Division, EGLE, (Part 213 of Act 451), EGLE.State.MI.US/RIDE/Inventory-of-Facilities/Facilities
- ___ Oil and Gas Contamination Sites, Oil, Gas, and Minerals Division, EGLE, (Act 61), EGLE.State.MI.US/GeoWebFace
- ___ Hazardous Waste Generators, Materials Management Division, EGLE, (Part 111 of Act 451), EGLE.State.MI.US/WDSPI
- ___ Groundwater Discharge Permits, Water Resources Division, EGLE, (Part 31 of Act 451), Michigan.gov/EGLE/About/Organization/Water-Resources/MiEnviro-Portal-WRD
- ___ Landfill/Solid Waste Disposal Site List, Materials Management Division, EGLE, (Part 115 of Act 451), EGLE.State.MI.US/WDSPI
- ___ Federal National Priorities List, United States Environmental Protection Agency, Region 5, (CERCLA and Superfund), EPA.gov/Superfund/National-Priorities-List-NPL-Sites-State#MI
- ___ Federal permits for Class V wells (Underground Injection Control Program) [Optional]
- ___ Other sites of concern _____
- ___ Environmental Mapper MCGI.State.MI.US/EnvironmentalMapper

MANAGEMENT APPROACHES FOR LOCAL WELLHEAD PROTECTION

□ List the management activities identified in your Wellhead Protection Program Plan:
- ___ Abandoned well search and closure program
- ___ Zoning ordinance provisions for wellhead protection
- ___ Facility inspections or a hazardous material survey
- ___ Disseminated information to businesses
- ___ Environmental Permit Checklist for new business
- ___ Strategic monitoring within the WHPA
- ___ Inter-agency coordination and communication
- ___ Partnerships or agreements with county or state agencies helping to develop program
- ___ Timetable for management program implementation
- ___ Other management approaches

□ Explain the current implementation status of the management activities listed above.
□ Describe updates and changes that have been made to the management activities listed above.
□ Explain other management activities that your community has decided to implement.

CONTINGENCY PLAN

□ Update information about the policies and administrative procedures for water supply emergency response, including:

___ Changes and/or updates to contacts in the Contingency Plan
___ Changes and/or updates to the response protocol in the event of a hazardous substance spill or other emergency
___ Changes in emergency water suppliers (bottled, bulk, etc.)
___ Changes and/or updates to the policies and procedures related to water supply replacement
___ New employee training on the response protocol
___ Water supply emergencies that have occurred since the plan was last updated
___ Other items to incorporate that have been learned since the plan was last updated

PLAN FOR NEW WELLS

□ If expansion of the public water supply system (PWSS) is anticipated, include:

___ Identification of the proposed location, depth, and other descriptive information about the new wells
___ Proposed method for incorporating new wells into the wellhead protection program plan
___ Determination of the WHPA or the timetable for the WHPA delineation

□ If expansion of the PWSS was previously anticipated and discussed in the plan, update the plan to include:

___ Expansion activities that occurred since the plan was last updated
___ Timetable that the expansion activities will or have occurred

PUBLIC PARTICIPATION AND OUTREACH/EDUCATION

□ List the public education and outreach activities identified in your WHPP Plan:

___ Local meetings
___ Newsletters
___ Newspaper articles
___ Other media outlets _____
___ School presentations
___ Brochures
___ Website
___ Wellhead protection signage
___ Hazardous waste collection activities
___ Other _____

□ Explain the current implementation status of the public education and outreach activities listed above.
□ Describe updates and changes that have been made to the public education and outreach activities listed above.
□ Explain other public education and outreach activities that your community has decided to implement.

If you need this information in an alternate format, contact EGLE-Accessibility@Michigan.gov or call 800-662-9278.

EGLE does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetic information, or sexual orientation in the administration of any of its programs or activities, and prohibits intimidation and retaliation, as required by applicable laws and regulations. Questions or concerns should be directed to the Nondiscrimination Compliance Coordinator at EGLE-NondiscriminationCC@Michigan.gov or 517-249-0906.

This form and its contents are subject to the Freedom of Information Act and may be released to the public.

APPENDIX F

EGLE Delineation Approval Letters

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

RUSSELL J. HARDING, Director

REPLY TO:

DRINKING WATER & RADIOLOGICAL PROTECTION DIVISION
3423 N MARTIN L KING JR BLVD
PO BOX 30630
LANSING, MI 48909-8130

December 11, 1996

Mr. Michael Herman
City of Howell
611 East Grand River Avenue
Howell, Michigan 48843

Dear Mr. Herman:

This letter is in regard to the report entitled "Delineation of the Wellhead Protection Area for the Two Municipal Well Fields in Marion Township, Howell, Michigan" dated October 28, 1996, which was submitted on your behalf by C.J. Linck and Associates, Inc. This report identifies wellhead protection areas (WHPAs) for the city of Howell and Marion-Howell-Oceola-Genoa Sewer and Water Authority (MHOG-SWATH) well fields. We have included a map which identifies the WHPAs and other notable locations.

The city of Howell and MHOG-SWATH have taken a proactive approach to wellhead protection and WHPAs of both well fields account for future expansion. Modeled pumpage from the city of Howell well field exceeds current maximum production levels by 1,400 gallons per minute (gpm) and modeled pumpage from the MHOG-SWATH well field is the maximum design capacity (4,200 gpm). As resources, and additional information pertinent to the WHPAs become available, we encourage you to use the information to refine the WHPAs.

We believe that a Wellhead Protection Program (WHPP) should be a dynamic process. We are pleased that the city of Howell and MHOG-SWATH are progressing in the development and implementation of a local wellhead protection program. Now that the WHPAs have been delineated, the city of Howell and MHOG-SWATH can address the remaining elements of the state WHPP. This will require cooperation between the city of Howell and MHOG-SWATH because the model has indicated that the zones of contribution for both well fields will converge over time.

In closing, we commend you and the other members of the city of Howell for the progress you are making in development and implementation of a local WHPP. If you have any comments or questions with regard to this matter, please contact Mr. Brant Fisher at 517-335-9187 or Ms. Debbie Spakoff at 517-373-8800.

Sincerely,

Flint C. Watt, P. E., Chief
Drinking Water & Radiological
Protection Division
517-335-9218

R. Thomas Segall, Director
Office of Groundwater Planning &
Special Services
517-373-0014

cc: Mr. C.J. Linck, C.J. Linck and Associates, Inc.
Mr. Elgar Brown, DEQ
Mr. Dave Timm, DEQ
Mr. Brant Fisher, DEQ
Ms. Debbie Spakoff, DEQ

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

RICK SNYDER
GOVERNOR

DAN WYANT
DIRECTOR

October 4, 2013

Mr. Alex Chimpouras, Deputy Director
Water Treatment and Distribution
MHOG (Marion-Howell-Oceola-Genoa) Water Authority
2911 Dorr Road
Brighton, MI 48116-9436

Dear Mr. Chimpouras: **WSSN: 4098**

This letter is in regard to the report "Well Head Protection Delineation Report, Howell and MHOG Water Supply Fields, Marion Township, Michigan," submitted on your behalf by AMEC Environment & Infrastructure Inc. (AMEC). The report identifies a revised wellhead protection area (WHPA) for the Marion, Howell, Oceola, and Genoa Townships (MHOG) Sewer & Water Authority production wells #1, #2, #3, #4, #5, and #6. The Department of Environmental Quality (DEQ) criteria for WHPA delineation have been met, and the updated WHPA is approved as presented in Figure 2; *Proposed Well Head Protection Area - Zones of Contribution* in the AMEC report. For your reference, the revised and approved WHPA is identified on the enclosed map.

As we currently understand, MHOG owns and operates six production wells in a well field located at the intersection of Norton Road and Cedar Lake Road. Wells #1, #2, #3, #4, #5, and #6 had previously received WHPA approval via a letter dated December 11, 1996. The revision for the MHOG well field was prompted by changes in groundwater withdrawals at the site.

MHOG's production wells #1 through #6 are completed in a confined bedrock aquifer, composed primarily of sandstone and limestone, with an excellent ability to yield groundwater to wells. Hydrogeologic information from the delineation report has been reviewed to establish a geologic sensitivity for the MHOG wells. Geologic sensitivity may be considered a "qualitative" characterization of the protection provided to the aquifer by the overlying lithology. The three categories of geologic sensitivity most often identified are low, moderate, and high, with the order reflecting a decreasing level of protection. As mentioned, these MHOG municipal wells are apparently completed in an aquifer described as "confined," with protection provided to the aquifer by the overlying shale layers and depth of the wells (391 to 418 feet). Confined aquifers can be geologically characterized as having "low" geologic sensitivity.

We are pleased that MHOG is continuing to keep their Wellhead Protection Program (WHPP) viable by updating it as changes occur to the WHPA. Management of the WHPA will continue to be a particularly important task. As the entire protection area apparently lies within Howell and Marion Townships, cooperation with these municipalities may be necessary in management of the WHPA.

In closing, we commend you and MHOG Sewer & Water Authority for your continued evolution and implementation of a local WHPP.

If you have any comments or questions with regard to wellhead protection, please contact Wayne Kukuk, Geologist, at 517-284-6517, kukukw@michigan.gov; Mr. Jason Berndt, Environmental Quality Analyst, at 517-284-6513, berndtj1@michigan.gov; or by mail at DEQ, Community Drinking Water Unit, Office of Drinking Water and Municipal Assistance, P.O. Box 30241, Lansing, Michigan 48909-7741.

Sincerely,

Richard Benzie

Richard Benzie, P.E., Acting Chief
Field Operations Section
Office of Drinking Water and Municipal Assistance
517-284-6512

WWK:RB:DLR
Enclosure
cc: Mr. Rob DeWyre, AMEC
Mr. Jason Berndt, DEQ
cc/enc: Mr. Mark Joseph, DEQ
Mr. Wayne Kukuk, DEQ

APPENDIX G

EDR Radius Map Report

MHOG Wellhead Protection Plan
Marion Township, Howell, MI
Howell, MI 48843

Inquiry Number: 7239409.2s
January 31, 2023

The EDR Radius Map™ Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527-21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

MARION TOWNSHIP, HOWELL, MI
HOWELL, MI 48843

COORDINATES

Latitude (North):	42.5825830 - 42ˆ 34' 57.29''
Longitude (West):	84.0028280 - 84ˆ 0' 10.18''
Universal Tranverse Mercator:	Zone 16
UTM X (Meters):	745958.2
UTM Y (Meters):	4718603.5
Elevation:	962 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	14450264 PARKERS CORNERS, MI
Version Date:	2019
Southeast Map:	14468151 HOWELL, MI
Version Date:	2019

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140804, 20140704
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
MARION TOWNSHIP, HOWELL, MI
HOWELL, MI 48843

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	MARION HOWELL OCEOLA	4288 NORTON RD	RCRA-VSQG	Lower	3469, 0.657, NNE
A2	MHOG WTP	4288 NORTON ROAD	NPDES, WDS	Lower	3469, 0.657, NNE
A3	MARION HOWELL OCEOLA	4288 NORTON RD	FINDS, ECHO	Lower	3469, 0.657, NNE
A4	MHOG WTP	4288 NORTON RD	FINDS, ECHO	Lower	3469, 0.657, NNE
5	ESPER'S AUTO REPAIR	305 AMOS RD.	FINDS	Lower	4055, 0.768, NNW
6		1999 CEDAR LAKE RD	CDL	Lower	4743, 0.898, SSE
7		5448 LANGE RD	SPILLS	Lower	5387, 1.020, WSW
8	RESIDENCE	3720 NORTON ROAD	ASBESTOS	Higher	6143, 1.163, NE
B9	FREEDOM AGGREGATES,		US MINES	Lower	6468, 1.225, NNW
B10		4950 MASON	SPILLS	Lower	6627, 1.255, NNW
B11	D & J GRAVEL CO	4950 MASON RD	RGA LUST	Lower	6627, 1.255, NNW
B12	D & J GRAVEL CO	4950 MASON RD	LUST, UST, INVENTORY, WDS	Lower	6627, 1.255, NNW
B13	D & J GRAVEL CO., IN	4950 MASON RD.	RGA LUST	Lower	6627, 1.255, NNW
B14	AMERICAN CONCRETE PR	4944 MASON ROAD	US MINES	Lower	6643, 1.258, NNW
B15	AMERICAN CONCRETE PR	4944 MASON ROAD	NPDES	Lower	6643, 1.258, NNW
16	MERIT ENERGY CO	SEC 28 PINGREE & JEW	FINDS, ECHO	Lower	6972, 1.320, SW
17	D AND J SAND AND GRA		MINES MRDS	Lower	7103, 1.345, NNW
18	MARION TOWNSHIP/FORM	3012 SANITORIUM RD	DEL PART 201	Higher	8149, 1.543, East

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---------- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---------- Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROLS ---------- Institutional Controls Sites List

EXECUTIVE SUMMARY

Federal ERNS list

ERNS ---------- Emergency Response Notification System

Lists of state- and tribal hazardous waste facilities

SHWS ---------- This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF ---------- Solid Waste Facilities Database

Lists of state and tribal leaking storage tanks

INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

Lists of state and tribal registered storage tanks

FEMA UST ---------- Underground Storage Tank Listing
AST ---------- Aboveground Tanks
INDIAN UST ---------- Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

AUL ---------- Engineering and Institutional Controls

Lists of state and tribal voluntary cleanup sites

INDIAN VCP ---------- Voluntary Cleanup Priority Listing

Lists of state and tribal brownfield sites

BROWNFIELDS ---------- Brownfields and UST Site Database

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY ---------- Recycling Facilities
HIST LF ---------- Inactive Solid Waste Facilities
INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands
ODI ---------- Open Dump Inventory
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ---------- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---------- Delisted National Clandestine Laboratory Register

EXECUTIVE SUMMARY

PART 201 ..... Part 201 Site List
US CDL ..... National Clandestine Laboratory Register

Local Land Records

LIENS ..... Lien List
LIENS 2 ..... CERCLA Lien Information

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System

Other Ascertainable Records

RCRA NonGen / NLR ..... RCRA - Non Generators / No Longer Regulated
FUDS ..... Formerly Used Defense Sites
DOD ..... Department of Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
ROD ..... Records Of Decision
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System
PRP ..... Potentially Responsible Parties
PADS ..... PCB Activity Database System
ICIS ..... Integrated Compliance Information System
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ..... Material Licensing Tracking System
COAL ASH DOE ..... Steam-Electric Plant Operation Data
COAL ASH EPA ..... Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ..... PCB Transformer Registration Database
RADINFO ..... Radiation Information Database
HIST FTTS ..... FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ..... Incident and Accident Data
CONSENT ..... Superfund (CERCLA) Consent Decrees
INDIAN RESERV ..... Indian Reservations
FUSRAP ..... Formerly Utilized Sites Remedial Action Program
UMTRA ..... Uranium Mill Tailings Sites
LEAD SMELTERS ..... Lead Smelter Sites
US AIRS ..... Aerometric Information Retrieval System Facility Subsystem
ABANDONED MINES ..... Abandoned Mines
DOCKET HWC ..... Hazardous Waste Compliance Docket Listing
UXO ..... Unexploded Ordnance Sites
FUELS PROGRAM ..... EPA Fuels Program Registered Listing
PFAS NPL ..... Superfund Sites with PFAS Detections Information
PFAS FEDERAL SITES ..... Federal Sites PFAS Information
PFAS TSCA ..... PFAS Manufacture and Imports Information
PFAS RCRA MANIFEST ..... PFAS Transfers Identified In the RCRA Database Listing
PFAS ATSDR ..... PFAS Contamination Site Location Listing
PFAS WQP ..... Ambient Environmental Sampling for PFAS

PFAS NPDES ---- Clean Water Act Discharge Monitoring Information
PFAS ECHO ---- Facilities in Industries that May Be Handling PFAS Listing
PFAS ECHO FIRE TRAINING ---- Facilities in Industries that May Be Handling PFAS Listing
PFAS PART 139 AIRPORT ---- All Certified Part 139 Airports PFAS Information Listing
AQUEOUS FOAM NRC ---- Aqueous Foam Related Incidents Listing
PFAS ---- PFAS Contaminated Sites Listing
AIRS ---- Permit and Emissions Inventory Data
BEA ---- Baseline Environmental Assessment Database
COAL ASH ---- Coal Ash Disposal Sites
DRYCLEANERS ---- Drycleaning Establishments
Financial Assurance ---- Financial Assurance Information Listing
LEAD ---- Lead Safe Housing Registry
UIC ---- Underground Injection Wells Database

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---- EDR Proprietary Manufactured Gas Plants
EDR Hist Auto ---- EDR Exclusive Historical Auto Stations
EDR Hist Cleaner ---- EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA PART 201 ---- Recovered Government Archive State Hazardous Waste Facilities List
RGA LF ---- Recovered Government Archive Solid Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal RCRA generators

RCRA-VSQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small

quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-VSQG list, as provided by EDR, and dated 11/21/2022 has revealed that there is 1 RCRA-VSQG site within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MARION HOWELL OCEOLA EPA ID:: MIK313734188	4288 NORTON RD	NNE 1/2 - 1 (0.657 mi.)	A1	8

Lists of state and tribal leaking storage tanks

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Environmental Quality's Leaking Underground Storage Tank (LUST) Database.

A review of the LUST list, as provided by EDR, and dated 11/09/2022 has revealed that there is 1 LUST site within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
D & J GRAVEL CO Facility Id: 21870 Facility Id: 00021870 Substance Release: Gasoline Release Status: Open	***4950 MASON RD***	***NNW 1 - 2 (1.255 mi.)***	***B12***	***17***

Lists of state and tribal registered storage tanks

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Quality's Michigan UST database.

A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
D & J GRAVEL CO Database: UST, Date of Government Version: 09/30/2022 Tank Status: Removed from Ground Facility Type: CLOSED Facility Id: 00021870	***4950 MASON RD***	***NNW 1 - 2 (1.255 mi.)***	***B12***	***17***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

EXECUTIVE SUMMARY

INVENTORY: The Inventory of Facilities has three data sources: Facilities under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) identified through state funded or private party response activities (Projects); Facilities under Part 213, Leaking Underground Storage Tanks of the NREPA; and Facilities identified through submittals of Baseline Environmental Assessments (BEA) submitted pursuant to Part 201 or Part 213 of the NREPA. The Part 201 Projects Inventory does not include all of the facilities that are subject to regulation under Part 201 because owners are not required to inform the Department of Environmental Quality (DEQ) about the facilities and can pursue cleanup independently. Facilities that are not known to DEQ are not on the Inventory, nor are locations with releases that resulted in low environmental impact. Part 213 facilities listed here may have more than one release; a list of releases for which corrective actions have been completed and list of releases for which corrective action has not been completed is located on the Leaking Underground Storage Tanks Site Search webpage. The DEQ may or may not have reviewed and concurred with the conclusion that the corrective actions described in a closure report meets criteria. A BEA is a document that new or prospective property owners/operations disclose to the DEQ identifying the property as a facility pursuant to Part 201 and Part 213. The Inventory of BEA Facilities overlaps in part with the Part 201 Projects facilities and Part 213 facilities. There may be more than one BEA for each facility.

A review of the INVENTORY list, as provided by EDR, and dated 10/17/2022 has revealed that there is 1 INVENTORY site within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
D & J GRAVEL CO Facility ID: 21870	***4950 MASON RD***	***NNW 1 - 2 (1.255 mi.)***	***B12***	***17***

CDL: A listing of clandestine drug lab locations.

A review of the CDL list, as provided by EDR, and dated 10/31/2022 has revealed that there is 1 CDL site within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	1999 CEDAR LAKE RD	SSE 1/2 - 1 (0.898 mi.)	6	13

DEL PART 201: A deleted site has been removed from the Part 201 List because information known to the DEQ at the time of the evaluation does not support inclusion on the Part 201 List. This designation is often applied to sites where changes in cleanup criteria resulted in a determination that the site no longer exceeds any applicable cleanup criterion. A delisted site has been removed from the Part 201 List because response actions have reduced the levels of contaminants to concentrations which meet or are below the criteria for unrestricted residential use.

A review of the DEL PART 201 list, as provided by EDR, and dated 08/01/2013 has revealed that there is 1 DEL PART 201 site within approximately 1.75 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MARION TOWNSHIP/FORM Facility Id: 47000188	3012 SANITORIUM RD	E 1 - 2 (1.543 mi.)	18	31

EXECUTIVE SUMMARY

Records of Emergency Release Reports

SPILLS: Environmental pollution emergencies reported to the Department of Environmental Quality such as tanker accidents, pipeline breaks, and release of reportable quantities of hazardous substances.

A review of the SPILLS list, as provided by EDR, and dated 09/27/2022 has revealed that there are 2 SPILLS sites within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	5448 LANGE RD	WSW 1 - 2 (1.020 mi.)	7	14
Not reported	4950 MASON	NNW 1 - 2 (1.255 mi.)	B10	16

Other Ascertainable Records

US MINES: Mines Master Index File. The source of this database is the Dept. of Labor, Mine Safety and Health Administration.

A review of the US MINES list, as provided by EDR, has revealed that there are 2 US MINES sites within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
FREEDOM AGGREGATES, Database: US MINES, Date of Government Version: 08/03/2022 Mine ID:: 2003165		NNW 1 - 2 (1.225 mi.)	B9	15
AMERICAN CONCRETE PR Database: MINES VIOLATIONS, Date of Government Version: 11/29/2022	4944 MASON ROAD	NNW 1 - 2 (1.258 mi.)	B14	22

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 08/03/2022 has revealed that there are 4 FINDS sites within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MARION HOWELL OCEOLA Registry ID:: 110039566779	***4288 NORTON RD***	***NNE 1/2 - 1 (0.657 mi.)***	***A3***	***12***
MHOG WTP Registry ID:: 110006741990	***4288 NORTON RD***	***NNE 1/2 - 1 (0.657 mi.)***	***A4***	***12***
ESPER'S AUTO REPAIR	305 AMOS RD.	NNW 1/2 - 1 (0.768 mi.)	5	13
MERIT ENERGY CO Registry ID:: 110020486687	***SEC 28 PINGREE & JEW***	***SW 1 - 2 (1.320 mi.)***	***16***	***29***

EXECUTIVE SUMMARY

ECHO: ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

A review of the ECHO list, as provided by EDR, and dated 09/25/2022 has revealed that there are 3 ECHO sites within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MARION HOWELL OCEOLA Registry ID: 110039566779	***4288 NORTON RD***	***NNE 1/2 - 1 (0.657 mi.)***	***A3***	***12***
MHOG WTP Registry ID: 110006741990	***4288 NORTON RD***	***NNE 1/2 - 1 (0.657 mi.)***	***A4***	***12***
MERIT ENERGY CO Registry ID: 110020486687	***SEC 28 PINGREE & JEW***	***SW 1 - 2 (1.320 mi.)***	***16***	***29***

ASBESTOS: Asbestos

A review of the ASBESTOS list, as provided by EDR, and dated 09/30/2022 has revealed that there is 1 ASBESTOS site within approximately 1.75 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RESIDENCE	3720 NORTON ROAD	NE 1 - 2 (1.163 mi.)	8	15

NPDES: General information regarding NPDES (National Pollutant Discharge Elimination System) permits and NPDES Storm Water permits.

A review of the NPDES list, as provided by EDR, and dated 07/05/2022 has revealed that there are 2 NPDES sites within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MHOG WTP Permit Number: MIG640052	***4288 NORTON ROAD***	***NNE 1/2 - 1 (0.657 mi.)***	***A2***	***11***
AMERICAN CONCRETE PR Permit Number: GW1540061 Permit Number: MIS310344	4944 MASON ROAD	NNW 1 - 2 (1.258 mi.)	B15	28

WDS: The Waste Data System (WDS) tracks activities at facilities regulated by the Solid Waste, Scrap Tire, Hazardous Waste, and Liquid Industrial Waste programs.

A review of the WDS list, as provided by EDR, and dated 08/11/2022 has revealed that there are 2 WDS sites within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MHOG WTP Site Id: MIK313734188 WMD Id: 486151	***4288 NORTON ROAD***	***NNE 1/2 - 1 (0.657 mi.)***	***A2***	***11***
D & J GRAVEL CO Site Id: MIG000014080 WMD Id: 455311	***4950 MASON RD***	***NNW 1 - 2 (1.255 mi.)***	***B12***	***17***

MINES MRDS: Mineral Resources Data System

A review of the MINES MRDS list, as provided by EDR, and dated 04/06/2018 has revealed that there is 1 MINES MRDS site within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
D AND J SAND AND GRA		NNW 1 - 2 (1.345 mi.)	17	30

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LUST: The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Michigan.

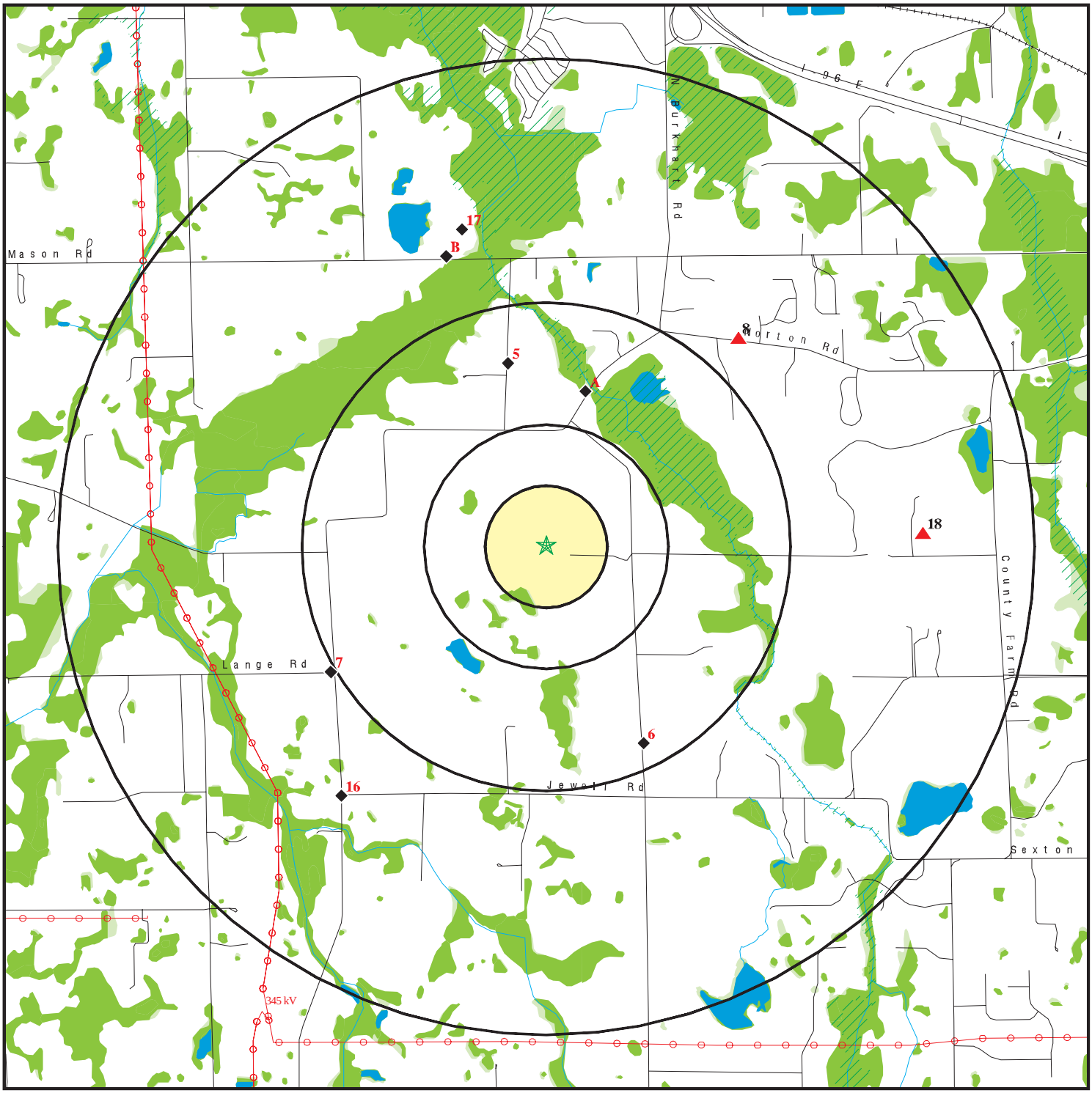
A review of the RGA LUST list, as provided by EDR, has revealed that there are 2 RGA LUST sites within approximately 1.75 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
D & J GRAVEL CO Facility ID: 00021870 Facility ID: 0-021870 Facility ID: 21870	4950 MASON RD	NNW 1 - 2 (1.255 mi.)	B11	16
D & J GRAVEL CO., IN Facility ID: 0-021870	4950 MASON RD.	NNW 1 - 2 (1.255 mi.)	B13	22

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 7239409.2S



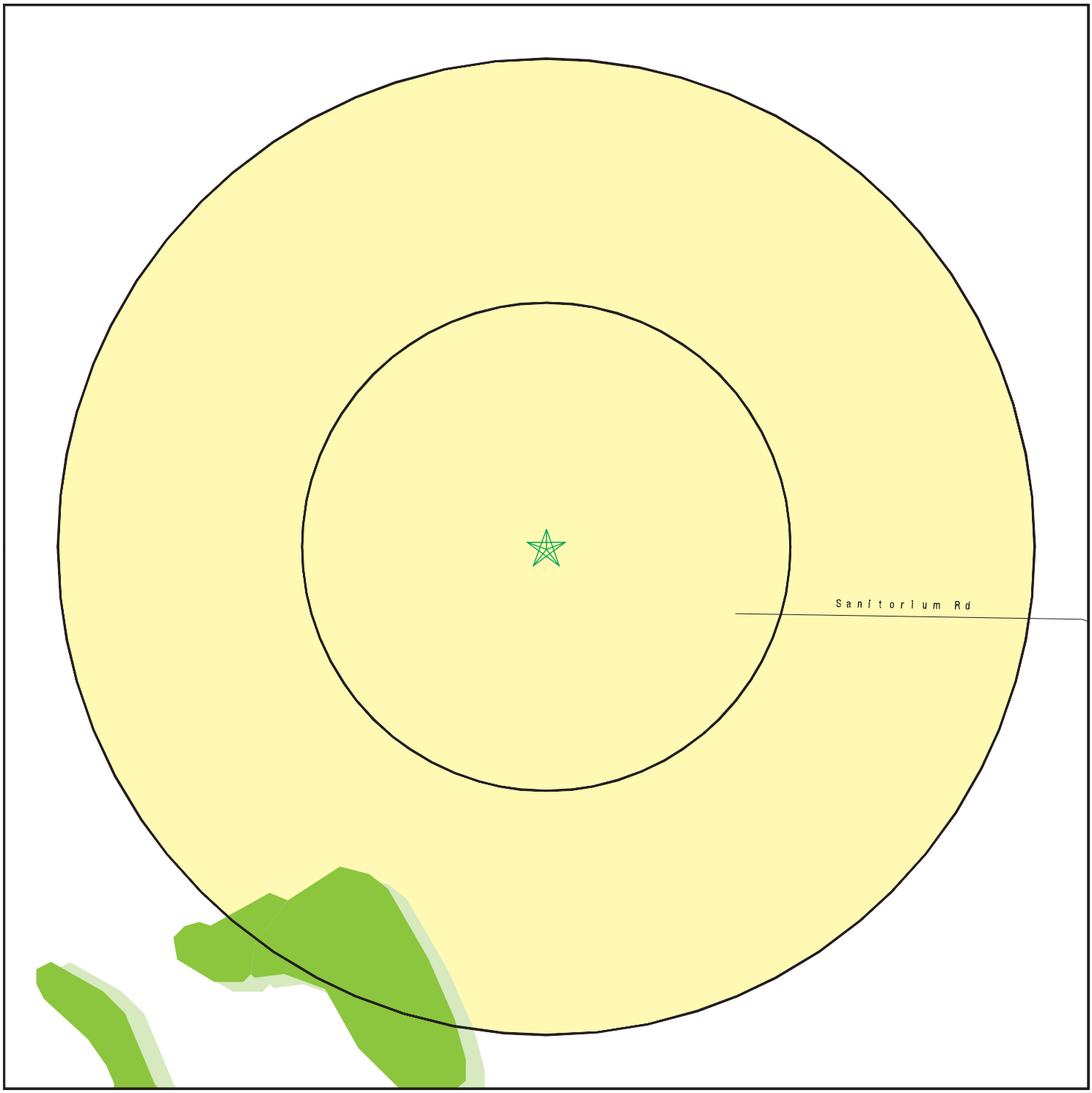
0 1/2 1 2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	MHOG Wellhead Protection Plan	CLIENT:	WSP USA Environment & Infrastructure Inc.
ADDRESS:	Marion Township, Howell, MI Howell MI 48843	CONTACT:	Jason Armstrong
		INQUIRY #:	7239409.2s
LAT/LONG:	42.582583 / 84.002828	DATE:	January 31, 2023 10:47 am

DETAIL MAP - 7239409.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	MHOG Wellhead Protection Plan	CLIENT:	WSP USA Environment & Infrastructure Inc.
ADDRESS:	Marion Township, Howell, MI Howell MI 48843	CONTACT:	Jason Armstrong
LAT/LONG:	42.582583 / 84.002828	INQUIRY #:	7239409.2s
		DATE:	January 31, 2023 10:48 am

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.750		0	0	0	0	0	0
Proposed NPL	1.750		0	0	0	0	0	0
NPL LIENS	1.750		0	0	0	0	0	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.750		0	0	0	0	0	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	1.750		0	0	0	0	0	0
SEMS	1.750		0	0	0	0	0	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	1.750		0	0	0	0	0	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.750		0	0	0	0	0	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	1.750		0	0	0	0	0	0
Lists of Federal RCRA generators								
RCRA-LQG	1.750		0	0	0	0	0	0
RCRA-SQG	1.750		0	0	0	0	0	0
RCRA-VSQG	1.750		0	0	0	1	0	1
Federal institutional controls / engineering controls registries								
LUCIS	1.750		0	0	0	0	0	0
US ENG CONTROLS	1.750		0	0	0	0	0	0
US INST CONTROLS	1.750		0	0	0	0	0	0
Federal ERNS list								
ERNS	1.750		0	0	0	0	0	0
Lists of state- and tribal hazardous waste facilities								
SHWS	1.750		0	0	0	0	0	0
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	1.750		0	0	0	0	0	0
Lists of state and tribal leaking storage tanks								
LUST	1.750		0	0	0	0	1	1

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	1.750		0	0	0	0	0	0
Lists of state and tribal registered storage tanks								
FEMA UST	1.750		0	0	0	0	0	0
UST	1.750		0	0	0	0	1	1
AST	1.750		0	0	0	0	0	0
INDIAN UST	1.750		0	0	0	0	0	0
State and tribal institutional control / engineering control registries								
AUL	1.750		0	0	0	0	0	0
Lists of state and tribal voluntary cleanup sites								
INDIAN VCP	1.750		0	0	0	0	0	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	1.750		0	0	0	0	0	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	1.750		0	0	0	0	0	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	1.750		0	0	0	0	0	0
HIST LF	1.750		0	0	0	0	0	0
INDIAN ODI	1.750		0	0	0	0	0	0
ODI	1.750		0	0	0	0	0	0
DEBRIS REGION 9	1.750		0	0	0	0	0	0
IHS OPEN DUMPS	1.750		0	0	0	0	0	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	1.750		0	0	0	0	0	0
INVENTORY	1.750		0	0	0	0	1	1
PART 201	1.750		0	0	0	0	0	0
CDL	1.750		0	0	0	1	0	1
DEL PART 201	1.750		0	0	0	0	1	1
US CDL	1.750		0	0	0	0	0	0
Local Land Records								
LIENS	1.750		0	0	0	0	0	0
LIENS 2	1.750		0	0	0	0	0	0
Records of Emergency Release Reports								
HMIRS	1.750		0	0	0	0	0	0
SPILLS	1.750		0	0	0	0	2	2
Other Ascertainable Records								
RCRA NonGen / NLR	1.750		0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FUDS	1.750		0	0	0	0	0	0
DOD	1.750		0	0	0	0	0	0
SCRD DRYCLEANERS	1.750		0	0	0	0	0	0
US FIN ASSUR	1.750		0	0	0	0	0	0
EPA WATCH LIST	1.750		0	0	0	0	0	0
2020 COR ACTION	1.750		0	0	0	0	0	0
TSCA	1.750		0	0	0	0	0	0
TRIS	1.750		0	0	0	0	0	0
SSTS	1.750		0	0	0	0	0	0
ROD	1.750		0	0	0	0	0	0
RMP	1.750		0	0	0	0	0	0
RAATS	1.750		0	0	0	0	0	0
PRP	1.750		0	0	0	0	0	0
PADS	1.750		0	0	0	0	0	0
ICIS	1.750		0	0	0	0	0	0
FTTS	1.750		0	0	0	0	0	0
MLTS	1.750		0	0	0	0	0	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	1.750		0	0	0	0	0	0
PCB TRANSFORMER	1.750		0	0	0	0	0	0
RADINFO	1.750		0	0	0	0	0	0
HIST FTTS	1.750		0	0	0	0	0	0
DOT OPS	1.750		0	0	0	0	0	0
CONSENT	1.750		0	0	0	0	0	0
INDIAN RESERV	1.750		0	0	0	0	0	0
FUSRAP	1.750		0	0	0	0	0	0
UMTRA	1.750		0	0	0	0	0	0
LEAD SMELTERS	1.750		0	0	0	0	0	0
US AIRS	1.750		0	0	0	0	0	0
US MINES	1.750		0	0	0	0	2	2
ABANDONED MINES	1.750		0	0	0	0	0	0
FINDS	1.750		0	0	0	3	1	4
DOCKET HWC	1.750		0	0	0	0	0	0
ECHO	1.750		0	0	0	2	1	3
UXO	1.750		0	0	0	0	0	0
FUELS PROGRAM	1.750		0	0	0	0	0	0
PFAS NPL	1.750		0	0	0	0	0	0
PFAS FEDERAL SITES	1.750		0	0	0	0	0	0
PFAS TSCA	1.750		0	0	0	0	0	0
PFAS RCRA MANIFEST	1.750		0	0	0	0	0	0
PFAS ATSDR	1.750		0	0	0	0	0	0
PFAS WQP	1.750		0	0	0	0	0	0
PFAS NPDES	1.750		0	0	0	0	0	0
PFAS ECHO	1.750		0	0	0	0	0	0
PFAS ECHO FIRE TRAINING	1.750		0	0	0	0	0	0
PFAS PART 139 AIRPORT	1.750		0	0	0	0	0	0
AQUEOUS FOAM NRC	1.750		0	0	0	0	0	0
PFAS	1.750		0	0	0	0	0	0
AIRS	1.750		0	0	0	0	0	0
ASBESTOS	1.750		0	0	0	0	1	1
BEA	1.750		0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
COAL ASH	1.750		0	0	0	0	0	0
DRYCLEANERS	1.750		0	0	0	0	0	0
Financial Assurance	1.750		0	0	0	0	0	0
LEAD	1.750		0	0	0	0	0	0
NPDES	1.750		0	0	0	1	1	2
UIC	1.750		0	0	0	0	0	0
WDS	1.750		0	0	0	1	1	2
MINES MRDS	1.750		0	0	0	0	1	1
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.750		0	0	0	0	0	0
EDR Hist Auto	1.750		0	0	0	0	0	0
EDR Hist Cleaner	1.750		0	0	0	0	0	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA PART 201	1.750		0	0	0	0	0	0
RGA LF	1.750		0	0	0	0	0	0
RGA LUST	1.750		0	0	0	0	2	2
- Totals --		0	0	0	0	9	16	25

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1
NNE
1/2-1
0.657 mi.
3469 ft.

MARION HOWELL OCEOLA & GENOA SEWER & WATER AUTHORI
4288 NORTON RD
HOWELL, MI 48843

Site 1 of 4 in cluster A

RCRA-VSQG | **1012180276** / **MIK313734188**

Relative:
Lower

Actual:
899 ft.

RCRA Listings:

Date Form Received by Agency:	20090701
Handler Name:	MARION HOWELL OCEOLA & GENOA SEWER & WATER AUTHORITY
Handler Address:	4288 NORTON RD
Handler City,State,Zip:	HOWELL, MI 48843
EPA ID:	MIK313734188
Contact Name:	ALEX CHIMPOURAS
Contact Address:	4288 NORTON RD
Contact City,State,Zip:	HOWELL, MI 48843
Contact Telephone:	517-545-5098
Contact Fax:	Not reported
Contact Email:	Not reported
Contact Title:	Not reported
EPA Region:	05
Land Type:	Municipal
Federal Waste Generator Description:	Conditionally Exempt Small Quantity Generator
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	4288 NORTON RD
Mailing City,State,Zip:	HOWELL, MI 48843
Owner Name:	MHOG WATER AUTHORITY
Owner Type:	Municipal
Operator Name:	MHOG WATER AUTHORITY
Operator Type:	Municipal
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	NN
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported

MARION HOWELL OCEOLA & GENOA SEWER & WATER AUTHORITY (Continued) **1012180276**

Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required: Not reported	
Handler Date of Last Change:	20110303
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	Not reported
Manifest Broker:	Not reported
Sub-Part P Indicator:	No

Hazardous Waste Summary:

Waste Code:	D001
Waste Description:	IGNITABLE WASTE

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name: MHOG WATER AUTHORITY	
Legal Status:	Municipal
Date Became Current:	19980108
Date Ended Current:	Not reported
Owner/Operator Address:	Not reported
Owner/Operator City,State,Zip:	Not reported
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name: MHOG WATER AUTHORITY	
Legal Status:	Municipal
Date Became Current:	19980108
Date Ended Current:	Not reported
Owner/Operator Address:	Not reported
Owner/Operator City,State,Zip:	Not reported

MARION HOWELL OCEOLA & GENOA SEWER & WATER AUTHORITY (Continued) **1012180276**

Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Owner
Owner/Operator Name: MHOG WATER AUTHORITY
Legal Status: Municipal
Date Became Current: 19980108
Date Ended Current: Not reported
Owner/Operator Address: Not reported
Owner/Operator City,State,Zip: Not reported
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Owner
Owner/Operator Name: MHOG WATER AUTHORITY
Legal Status: Municipal
Date Became Current: 19980108
Date Ended Current: Not reported
Owner/Operator Address: Not reported
Owner/Operator City,State,Zip: Not reported
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Historic Generators:
Receive Date: 20090511
Handler Name: MARION HOWELL OCEOLA & GENOA SEWER & WATER AUTHORITY
Federal Waste Generator Description: Small Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20090701
Handler Name: MARION HOWELL OCEOLA & GENOA SEWER & WATER AUTHORITY
Federal Waste Generator Description: Conditionally Exempt Small Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

MARION HOWELL OCEOLA & GENOA SEWER & WATER AUTHORITY (Continued) **1012180276**

List of NAICS Codes and Descriptions:
NAICS Code: 22131
NAICS Description: WATER SUPPLY AND IRRIGATION SYSTEMS

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

A2 **MHOG WTP** **NPDES** **S107793257**
NNE **4288 NORTON ROAD** **WDS** **N/A**
1/2-1 **HOWELL, MI 48843**
0.657 mi.
3469 ft. **Site 2 of 4 in cluster A**

Relative:
Lower

Actual:
899 ft.

MI NPDES:

Name:	MHOG WTP
Address:	4288 NORTON ROAD
City,State,Zip:	HOWELL, MI 48843
Permit Number:	MIG640052
Permitee PO Box:	N
Permitee Email:	Not reported
Issue Date:	04/27/2021
Effective Date:	05/01/2021
Expiration Date:	04/01/2025
Permittee Name:	Marion, Howell, Oceola & Genoa Sewer and Water Authority
Permittee Address:	1577 North Latson Road
Permittee Addr2:	Not reported
Permittee City,St,Zip:	Howell, MI 48843
Permit Type:	NPDES Certificate of Coverage under General Permit (COC)
Facility Name 2:	Not reported
Facility Name 3:	Not reported
Facility Name 4:	Not reported
Designed Name:	MHOG WTP
Latitude:	42.5919
Lat Direction:	N
Lat Type Code:	LAT
Longitude:	-84.0017
Lon Direction:	W
Lon Type Code:	LON
Hydrologic Unit Code:	4050004
Permit Status:	In Effect
COC Permit Category:	Wastewater Discharge from Potable Water Supply
DEQ District Email:	Lansing
DEQ Permit Compliance Manager:	Kevin Bott
DEQ Permit Compliance Manager Email:	BottK@michigan.gov

WDS:

Name:	MARION HOWELL OCEOLA & GENOA SEWER & WATER AUTHORITY
Address:	4288 NORTON RD
City,State,Zip:	HOWELL, MI 48843
Site Id:	MIK313734188
WMD Id:	486151
Site Specific Name:	MARION HOWELL OCEOLA & GENOA SEWER & WATER AUTHORITY

MHOG WTP (Continued) **S107793257**

Mailing Address: 4288 NORTON RD
Mailing City/State/Zip: 48843
Mailing County: LIVINGSTON

A3 **MARION HOWELL OCEOLA & GENOA SEWER & WATER AUTHORI** **FINDS** **1012236032**
NNE **4288 NORTON RD** **ECHO** **N/A**
1/2-1 **HOWELL, MI 48843**
0.657 mi.
3469 ft. **Site 3 of 4 in cluster A**

Relative: **Lower**

Actual: **899 ft.**

FINDS:
Registry ID: 110039566779

Click Here for FRS Facility Detail Report:

Environmental Interest/Information System:
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1012236032
Registry ID: 110039566779
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110039566779
Name: MARION HOWELL OCEOLA & GENOA SEWER & WATER AUTHORITY
Address: 4288 NORTON RD
City,State,Zip: HOWELL, MI 48843

A4 **MHOG WTP** **FINDS** **1005551682**
NNE **4288 NORTON RD** **ECHO** **N/A**
1/2-1 **HOWELL, MI 48843**
0.657 mi.
3469 ft. **Site 4 of 4 in cluster A**

Relative: **Lower**

Actual: **899 ft.**

FINDS:
Registry ID: 110006741990

Click Here for FRS Facility Detail Report:

Environmental Interest/Information System:
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

MHOG WTP (Continued) **1005551682**

ECHO:
Envid: 1005551682
Registry ID: 110006741990
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110006741990
Name: MHOG WTP
Address: 4288 NORTON RD
City,State,Zip: HOWELL, MI 48843

---

5 **ESPER'S AUTO REPAIR** **FINDS** **1027026632**
NNW **305 AMOS RD.** **N/A**
1/2-1 **HOWELL, MI 48843**
0.768 mi.
4055 ft.

Relative:
Lower

Actual:
912 ft.

FINDS:
Registry ID: 110071091686

Click Here for FRS Facility Detail Report:

Environmental Interest/Information System:
ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and it Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

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6 **CDL** **S126312011**
SSE **1999 CEDAR LAKE RD** **N/A**
1/2-1 **HOWELL, MI 48843**
0.898 mi.
4743 ft.

Relative:
Lower

Actual:
959 ft.

CDL:
Name: Not reported
Address: 1999 CEDAR LAKE RD
City: HOWELL

Date: Not reported
Type: Not reported
Cross street: Not reported
Lab type: Not reported
Agency: Livingston County Sheriff's Office
Complaint #: Not reported
Oic: Not reported
Child: Not reported

(Continued) **S126312011**

Fire:	Not reported
Injuries:	Not reported
Who:	Not reported
Lab:	Not reported
Dump:	Not reported
Glass:	Not reported
Unknown:	Not reported
<2:	Not reported
2 - 8oz:	Not reported
9oz - 1lb:	Not reported
2 - 9lb:	Not reported
10 - 19lb:	Not reported
20lb >:	Not reported
Chemical:	Methamphetamines
Quantity Seized:	1000
ORI Number:	15644306
Incident Number:	1905280
Incident Date:	11/24/2019
Entry Date:	02/06/2020
Loss Type:	6
Unit of Measure:	Gram
Latitude:	0
Longitude:	0
ORI Name:	MI4714700
Micr Incidents ID:	Not reported
Drug Desc:	Not reported

---

7 **SPILLS** **S128498872**
WSW **5448 LANGE RD** **N/A**
> 1 **HOWELL, MI**
1.020 mi.
5387 ft.

Relative: PEAS:
Lower

Actual: Name:	Not reported
933 ft. Address:	5448 LANGE RD
City,State,Zip:	HOWELL, MI
Incident Date:	11/28/2017
Office Status:	Not reported
Initials of Incoming Operator:	AP - EAC
Time Received by DNRE Staff:	Not reported
Time Occur:	3:15:00 PM
Date Of PEAS Call:	Not reported
Complainant / Company:	Not reported
Complainant Address:	Not reported
Company Involved:	Not reported
DEQ Division Involved:	WRD-WQ
Incident Description:	Not reported
Incident Description:	Not reported
Incident Description:	Not reported
Incident Description:	Not reported
Description:	Not reported
Date Discovered:	Not reported
Time Discovered:	Not reported
Office/After Hours:	Office Hrs.
Party Involved - Phone 1:	Not reported
Party Involved - Phone 2:	Not reported
Ongoing?:	Not reported
Release Secured:	Not reported

(Continued) **S128498872**

Source:	Not reported
Source decode:	Not reported
Lead Division 2:	Not reported
Party Involved Type:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Release/Incident Ctrl:	Not reported
Release/Incident Ctrl Detail:	Not reported
Special Referral:	Not reported

8
NE
> 1
1.163 mi.
6143 ft.

RESIDENCE **ASBESTOS** **S119791658**
3720 NORTON ROAD **N/A**
HOWELL, MI 48843

Relative:
Higher

Actual:
983 ft.

ASBESTOS:

Notification ID:	122031
Name:	RESIDENCE
Address:	3720 NORTON ROAD
City,State,Zip:	HOWELL, MI 48843
Contractor Name:	Sloan Environmental Services, Inc.
Project Number:	225-16
Notification Type and Date:	Regular 11/17/2016
Start Date:	12/10/2016
End Date:	12/11/2016
Linear Feet:	Not reported
Square Feet:	1200

B9
NNW
> 1
1.225 mi.
6468 ft.

FREEDOM AGGREGATES, LLC **US MINES** **1018136947**
N/A

LIVINGSTON (County), MI

Site 1 of 7 in cluster B

Relative:
Lower

Actual:
900 ft.

US MINES:

Sic Code(s):	144200
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Mine ID:	2003165
Entity Name:	AMERICAN CONCRETE PRODUCTS
Company:	FREEDOM AGGREGATES, LLC
Status:	Intermittent (Included Seasonal
Status Date:	20191015
Operation Class:	2
Number of Shops:	0
Number of Plants:	0
Latitude Degree:	42
Longitude Degree:	084
Latitude Minute:	35
Latitude Seconds:	58
Longitude Minutes:	00
Longitude Seconds:	38

FREEDOM AGGREGATES, LLC (Continued) **1018136947**

Number of Pits: 000

B10 **SPILLS** **S128456463**
NNW **4950 MASON** **N/A**
> 1 **HOWELL, MI**
1.255 mi.
6627 ft. **Site 2 of 7 in cluster B**

Relative: **Lower**
Actual: **907 ft.**

PEAS:

Name:	Not reported
Address:	4950 MASON
City,State,Zip:	HOWELL, MI
Incident Date:	10/07/1996
Office Status:	Not reported
Initials of Incoming Operator:	Not reported
Time Received by DNRE Staff:	Not reported
Time Occur:	2:30:00 PM
Date Of PEAS Call:	Not reported
Complainant / Company:	Not reported
Complainant Address:	Not reported
Company Involved:	Not reported
DEQ Division Involved:	District Office
Incident Description:	Not reported
Incident Description:	Not reported
Incident Description:	Not reported
Incident Description:	Not reported
Description:	Not reported
Date Discovered:	Not reported
Time Discovered:	Not reported
Office/After Hours:	Not reported
Party Involved - Phone 1:	Not reported
Party Involved - Phone 2:	Not reported
Ongoing?:	Not reported
Release Secured:	Not reported
Source:	Not reported
Source decode:	Not reported
Lead Division 2:	Not reported
Party Involved Type:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Release/Incident Ctrl:	Not reported
Release/Incident Ctrl Detail:	Not reported
Special Referral:	Not reported

B11 **D & J GRAVEL CO** **RGA LUST** **S115672027**
NNW **4950 MASON RD** **N/A**
> 1 **HOWELL, MI**
1.255 mi.
6627 ft. **Site 3 of 7 in cluster B**

Relative: **Lower**
Actual: **907 ft.**

RGA LUST:

2012	D & J GRAVEL CO	4950 MASON RD
2011	D & J GRAVEL CO	4950 MASON RD
2010	D & J GRAVEL CO	4950 MASON RD
2009	D & J GRAVEL CO	4950 MASON RD
2008	D & J GRAVEL CO	4950 MASON RD

D & J GRAVEL CO (Continued) **S115672027**

2007	D & J GRAVEL CO	4950 MASON RD
2006	D & J GRAVEL CO	4950 MASON RD
2005	D & J GRAVEL CO	4950 MASON RD
2004	D & J GRAVEL CO	4950 MASON RD
2003	D & J GRAVEL CO	4950 MASON RD
2001	D & J GRAVEL CO	4950 MASON RD
2000	D & J GRAVEL CO	4950 MASON RD
1999	D & J GRAVEL CO	4950 MASON RD

B12 **D & J GRAVEL CO** **LUST** **U000258557**
NNW **4950 MASON RD** **UST** **N/A**
> 1 **HOWELL, MI 48843** **INVENTORY**
1.255 mi. **WDS**
6627 ft. **Site 4 of 7 in cluster B**

Relative: **Lower**
Actual: **907 ft.**

LUST:

Name:	D & J GRAVEL CO
Address:	4950 MASON RD
City,State,Zip:	HOWELL, MI 48843
Facility ID:	21870
Source:	Not reported
Owner Name:	Serafini, Michael
Owner Address:	Not reported
Owner City,St,Zip:	Not reported
Owner Contact:	Not reported
Owner Phone:	(517) 676-6900
Country:	Not reported
District:	Lansing
Site Name:	D & J Gravel Co
Latitude:	42.59971
Longitude:	-84.00651
Date of Collection:	Not reported
Method of Collection:	The geographic coordinate determination method based on address matching-house number.
Accuracy:	100
Accuracy Value Unit:	Not reported
Horizontal Data:	North American Datum of 1983
Point Line Area:	Center of a facility or station
Desc Category:	Not reported
Regulatory Program:	Not reported
Risk Condition:	Not reported
Project Manager:	Not reported
Senate District:	Not reported
House District:	Not reported
US Congressional District:	Not reported
Leak Number:	28923
Release Date:	10/26/1998
Substance Released:	Not reported
Release Status:	Open
Release Closed Date:	Not reported
Leak Number:	C-1055-98
Release Date:	10/26/1998
Substance Released:	Gasoline
Release Status:	Open
Release Closed Date:	Not reported

UST:

D & J GRAVEL CO (Continued) **U000258557**

Name:	D & J GRAVEL CO
Address:	4950 MASON RD
City,State,Zip:	HOWELL 48843-9600
Facility Type:	CLOSED
Facility ID:	00021870
Owner Name:	D & J GRAVEL CO
Owner Address:	4950 MASON RD
Owner City:	HOWELL
Owner State:	MI
Owner Zip:	48843-9697
Owner Contact:	Not reported
Owner Phone:	5175462810
Contact:	SHAWN MORRISON
Contact Phone:	(517) 546-2810
Date of Collection:	01/11/2001
Accuracy:	100
Horizontal Datum:	NAD83
Accuracy Value Unit:	FEET
Source:	STATE OF MICHIGAN
Point Line Area:	POINT
Desc Category:	Plant Entrance (Freight)
Method of Collection:	Address Matching-House Number
District:	Lansing District Office
Tank ID:	5
Capacity:	1000
Tank Status:	Removed from Ground
Substance:	Gasoline
Install Date:	06/01/1988
Remove Date:	10/20/1998
Tank Number:	Not reported
Tank Details Compartments:	Not reported
Tank Release Detection:	Not reported
Pipe Release Detection:	Not reported
Piping Material:	Not reported
Piping Type:	Not reported
Tank Construction:	Not reported
Impressed Device:	Not reported
Latitude:	42.59971
Longitude:	-84.00651

Name:	D & J GRAVEL CO
Address:	4950 MASON RD
City,State,Zip:	HOWELL 48843-9600
Facility Type:	CLOSED
Facility ID:	00021870
Owner Name:	D & J GRAVEL CO
Owner Address:	4950 MASON RD
Owner City:	HOWELL
Owner State:	MI
Owner Zip:	48843-9697
Owner Contact:	Not reported
Owner Phone:	5175462810
Contact:	SHAWN MORRISON
Contact Phone:	(517) 546-2810
Date of Collection:	01/11/2001
Accuracy:	100
Horizontal Datum:	NAD83

D & J GRAVEL CO (Continued) **U000258557**

Accuracy Value Unit:	FEET
Source:	STATE OF MICHIGAN
Point Line Area:	POINT
Desc Category:	Plant Entrance (Freight)
Method of Collection:	Address Matching-House Number
District:	Lansing District Office
Tank ID:	4
Capacity:	10000
Tank Status:	Removed from Ground
Substance:	Diesel
Install Date:	06/01/1988
Remove Date:	01/10/2002
Tank Number:	Not reported
Tank Details Compartments:	Not reported
Tank Release Detection:	Not reported
Pipe Release Detection:	Not reported
Piping Material:	Not reported
Piping Type:	Not reported
Tank Construction:	Not reported
Impressed Device:	Not reported
Latitude:	42.59971
Longitude:	-84.00651

Name:	D & J GRAVEL CO
Address:	4950 MASON RD
City,State,Zip:	HOWELL 48843-9600
Facility Type:	CLOSED
Facility ID:	00021870
Owner Name:	D & J GRAVEL CO
Owner Address:	4950 MASON RD
Owner City:	HOWELL
Owner State:	MI
Owner Zip:	48843-9697
Owner Contact:	Not reported
Owner Phone:	5175462810
Contact:	SHAWN MORRISON
Contact Phone:	(517) 546-2810
Date of Collection:	01/11/2001
Accuracy:	100
Horizontal Datum:	NAD83
Accuracy Value Unit:	FEET
Source:	STATE OF MICHIGAN
Point Line Area:	POINT
Desc Category:	Plant Entrance (Freight)
Method of Collection:	Address Matching-House Number
District:	Lansing District Office
Tank ID:	3
Capacity:	1000
Tank Status:	Removed from Ground
Substance:	Gasoline
Install Date:	06/10/1977
Remove Date:	07/30/1990
Tank Number:	Not reported
Tank Details Compartments:	Not reported
Tank Release Detection:	Not reported
Pipe Release Detection:	Not reported
Piping Material:	Not reported

D & J GRAVEL CO (Continued) **U000258557**

Piping Type:	Not reported
Tank Construction:	Not reported
Impressed Device:	Not reported
Latitude:	42.59971
Longitude:	-84.00651

Name:	D & J GRAVEL CO
Address:	4950 MASON RD
City,State,Zip:	HOWELL 48843-9600
Facility Type:	CLOSED
Facility ID:	00021870
Owner Name:	D & J GRAVEL CO
Owner Address:	4950 MASON RD
Owner City:	HOWELL
Owner State:	MI
Owner Zip:	48843-9697
Owner Contact:	Not reported
Owner Phone:	5175462810
Contact:	SHAWN MORRISON
Contact Phone:	(517) 546-2810
Date of Collection:	01/11/2001
Accuracy:	100
Horizontal Datum:	NAD83
Accuracy Value Unit:	FEET
Source:	STATE OF MICHIGAN
Point Line Area:	POINT
Desc Category:	Plant Entrance (Freight)
Method of Collection:	Address Matching-House Number
District:	Lansing District Office
Tank ID:	2
Capacity:	1000
Tank Status:	Removed from Ground
Substance:	Diesel
Install Date:	06/10/1977
Remove Date:	07/30/1990
Tank Number:	Not reported
Tank Details Compartments:	Not reported
Tank Release Detection:	Not reported
Pipe Release Detection:	Not reported
Piping Material:	Not reported
Piping Type:	Not reported
Tank Construction:	Not reported
Impressed Device:	Not reported
Latitude:	42.59971
Longitude:	-84.00651

Name:	D & J GRAVEL CO
Address:	4950 MASON RD
City,State,Zip:	HOWELL 48843-9600
Facility Type:	CLOSED
Facility ID:	00021870
Owner Name:	D & J GRAVEL CO
Owner Address:	4950 MASON RD
Owner City:	HOWELL
Owner State:	MI
Owner Zip:	48843-9697
Owner Contact:	Not reported

D & J GRAVEL CO (Continued) **U000258557**

Owner Phone:	5175462810
Contact:	SHAWN MORRISON
Contact Phone:	(517) 546-2810
Date of Collection:	01/11/2001
Accuracy:	100
Horizontal Datum:	NAD83
Accuracy Value Unit:	FEET
Source:	STATE OF MICHIGAN
Point Line Area:	POINT
Desc Category:	Plant Entrance (Freight)
Method of Collection:	Address Matching-House Number
District:	Lansing District Office
Tank ID:	1
Capacity:	1000
Tank Status:	Removed from Ground
Substance:	Diesel
Install Date:	06/10/1977
Remove Date:	07/30/1990
Tank Number:	Not reported
Tank Details Compartments:	Not reported
Tank Release Detection:	Not reported
Pipe Release Detection:	Not reported
Piping Material:	Not reported
Piping Type:	Not reported
Tank Construction:	Not reported
Impressed Device:	Not reported
Latitude:	42.59971
Longitude:	-84.00651

INVENTORY:

Name:	D & J GRAVEL CO
Address:	4950 MASON RD
City,State,Zip:	HOWELL, MI 48843
Township:	Howell
District:	Lansing
Data Source:	Risks Present and Require Action in Long-term
Lust Name:	D & J Gravel Co
Regulatory Program:	213
Release Status:	Open
Project Manager:	Eggleston, Michael
Latitude:	42.599714
Longitude:	-84.006519

WDS:

Name:	D & J GRAVEL CO
Address:	4950 MASON RD
City,State,Zip:	HOWELL, MI 48843
Site Id:	MIG000014080
WMD Id:	455311
Site Specific Name:	D & J GRAVEL CO
Mailing Address:	4950 MASON RD
Mailing City/State/Zip:	48843
Mailing County:	LIVINGSTON

B13 **D & J GRAVEL CO., INC.** **RGA LUST** **S115672026**
NNW **4950 MASON RD.** **N/A**
> 1 **HOWELL, MI**
1.255 mi.
6627 ft. **Site 5 of 7 in cluster B**

Relative: RGA LUST:
Lower

1998	D & J GRAVEL CO., INC.	4950 MASON RD.	

Actual:
907 ft.

B14 **AMERICAN CONCRETE PRODUCTS** **US MINES** **1024913661**
NNW **4944 MASON ROAD** **N/A**
> 1 **HOWELL, MI 48843**
1.258 mi.
6643 ft. **Site 6 of 7 in cluster B**

Relative: MINES VIOLATIONS:
Lower

Name:	AMERICAN CONCRETE PRODUCTS
Address:	4944 MASON ROAD
City,State,Zip:	HOWELL, MI 48843
Facility ID:	Not reported

Actual:
908 ft.

MINES VIOLATIONS:

Violation Number:	9622624
Mine ID:	2003165
Contractor ID:	Not reported
Date Issued:	3/14/2022
Action Type:	104(a)
Type of Issue:	Citation
S and S:	Y
Term Date:	3/14/2022
Title 30 Code of Federal Regulations:	56.12013(c)
Proposed Penalty:	321.00
Assessment Amount:	321.00
Paid Penalty Amount:	321.00
Assessment Case Status:	Not reported
Assessment Status:	Proposed
Year:	2022
Address Type:	MineLocation
PO Box:	Not reported
Address:	4944 MASON ROAD
City:	HOWELL
State:	MI
Operator:	Freedom Aggregates, LLC
Zip:	48843
Mine Controller Name:	Brad Jonckheere; Rick Haslock
Name:	AMERICAN CONCRETE PRODUCTS
Ownership Date:	8/1/2015
Mine Status:	Intermittent
Status Date:	10/15/2019
Primary Site Description:	Construction Sand and Gravel
Mine Type:	Surface
State 2:	MI
County:	LIVINGSTON

Violation Number:	9622625
Mine ID:	2003165
Contractor ID:	Not reported
Date Issued:	3/14/2022

AMERICAN CONCRETE PRODUCTS (Continued) **1024913661**

Action Type:	104(a)
Type of Issue:	Citation
S and S:	N
Term Date:	3/14/2022
Title 30 Code of Federal Regulations:	50.30(a)
Proposed Penalty:	133.00
Assessment Amount:	133.00
Paid Penalty Amount:	133.00
Assessment Case Status:	Not reported
Assessment Status:	Proposed
Year:	2022
Address Type:	MineLocation
PO Box:	Not reported
Address:	4944 MASON ROAD
City:	HOWELL
State:	MI
Operator:	Freedom Aggregates, LLC
Zip:	48843
Mine Controller Name:	Brad Jonckheere; Rick Haslock
Name:	AMERICAN CONCRETE PRODUCTS
Ownership Date:	8/1/2015
Mine Status:	Intermittent
Status Date:	10/15/2019
Primary Site Description:	Construction Sand and Gravel
Mine Type:	Surface
State 2:	MI
County:	LIVINGSTON

Violation Number:	6149549
Mine ID:	2003165
Contractor ID:	Not reported
Date Issued:	11/14/2002
Action Type:	104(a)
Type of Issue:	Citation
S and S:	N
Term Date:	11/25/2002
Title 30 Code of Federal Regulations:	56.12008
Proposed Penalty:	55.00
Assessment Amount:	55.00
Paid Penalty Amount:	55.00
Assessment Case Status:	Proposed
Assessment Status:	Closed
Year:	2002
Address Type:	MineLocation
PO Box:	Not reported
Address:	4944 MASON ROAD
City:	HOWELL
State:	MI
Operator:	Freedom Aggregates, LLC
Zip:	48843
Mine Controller Name:	Brad Jonckheere; Rick Haslock
Name:	AMERICAN CONCRETE PRODUCTS
Ownership Date:	08/01/2015
Mine Status:	Intermittent
Status Date:	04/15/2013
Primary Site Description:	Construction Sand and Gravel
Mine Type:	Surface

AMERICAN CONCRETE PRODUCTS (Continued) **1024913661**

State 2:	MI
County:	LIVINGSTON
Violation Number:	8952513
Mine ID:	2003165
Contractor ID:	Not reported
Date Issued:	6/25/2018
Action Type:	104(a)
Type of Issue:	Citation
S and S:	N
Term Date:	6/25/2018
Title 30 Code of Federal Regulations:	56.14112(b)
Proposed Penalty:	118.00
Assessment Amount:	118.00
Paid Penalty Amount:	118.00
Assessment Case Status:	Closed
Assessment Status:	Proposed
Year:	2018
Address Type:	MineLocation
PO Box:	Not reported
Address:	4944 MASON ROAD
City:	HOWELL
State:	MI
Operator:	Freedom Aggregates, LLC
Zip:	48843
Mine Controller Name:	Brad Jonckheere; Rick Haslock
Name:	AMERICAN CONCRETE PRODUCTS
Ownership Date:	8/1/2015
Mine Status:	Intermittent
Status Date:	10/15/2019
Primary Site Description:	Construction Sand and Gravel
Mine Type:	Surface
State 2:	MI
County:	LIVINGSTON
Violation Number:	8952514
Mine ID:	2003165
Contractor ID:	Not reported
Date Issued:	6/25/2018
Action Type:	104(a)
Type of Issue:	Citation
S and S:	Y
Term Date:	6/26/2018
Title 30 Code of Federal Regulations:	56.12028
Proposed Penalty:	118.00
Assessment Amount:	118.00
Paid Penalty Amount:	118.00
Assessment Case Status:	Closed
Assessment Status:	Proposed
Year:	2018
Address Type:	MineLocation
PO Box:	Not reported
Address:	4944 MASON ROAD
City:	HOWELL
State:	MI
Operator:	Freedom Aggregates, LLC
Zip:	48843

AMERICAN CONCRETE PRODUCTS (Continued) **1024913661**

Mine Controller Name:	Brad Jonckheere; Rick Haslock
Name:	AMERICAN CONCRETE PRODUCTS
Ownership Date:	8/1/2015
Mine Status:	Intermittent
Status Date:	10/15/2019
Primary Site Description:	Construction Sand and Gravel
Mine Type:	Surface
State 2:	MI
County:	LIVINGSTON

Violation Number:	8842237
Mine ID:	2003165
Contractor ID:	Not reported
Date Issued:	08/25/2014
Action Type:	104(a)
Type of Issue:	Citation
S and S:	N
Term Date:	09/04/2014
Title 30 Code of Federal Regulations:	56.12008
Proposed Penalty:	100.00
Assessment Amount:	100.00
Paid Penalty Amount:	100.00
Assessment Case Status:	Proposed
Assessment Status:	Closed
Year:	2014
Address Type:	MineLocation
PO Box:	Not reported
Address:	4944 MASON ROAD
City:	HOWELL
State:	MI
Operator:	Freedom Aggregates, LLC
Zip:	48843
Mine Controller Name:	Brad Jonckheere; Rick Haslock
Name:	AMERICAN CONCRETE PRODUCTS
Ownership Date:	08/01/2015
Mine Status:	Intermittent
Status Date:	04/15/2013
Primary Site Description:	Construction Sand and Gravel
Mine Type:	Surface
State 2:	MI
County:	LIVINGSTON

Violation Number:	8842238
Mine ID:	2003165
Contractor ID:	Not reported
Date Issued:	08/25/2014
Action Type:	104(a)
Type of Issue:	Citation
S and S:	N
Term Date:	09/04/2014
Title 30 Code of Federal Regulations:	56.14107(a)
Proposed Penalty:	100.00
Assessment Amount:	100.00
Paid Penalty Amount:	100.00
Assessment Case Status:	Proposed
Assessment Status:	Closed
Year:	2014

AMERICAN CONCRETE PRODUCTS (Continued) **1024913661**

Address Type:	MineLocation
PO Box:	Not reported
Address:	4944 MASON ROAD
City:	HOWELL
State:	MI
Operator:	Freedom Aggregates, LLC
Zip:	48843
Mine Controller Name:	Brad Jonckheere; Rick Haslock
Name:	AMERICAN CONCRETE PRODUCTS
Ownership Date:	08/01/2015
Mine Status:	Intermittent
Status Date:	04/15/2013
Primary Site Description:	Construction Sand and Gravel
Mine Type:	Surface
State 2:	MI
County:	LIVINGSTON

Violation Number:	8842239
Mine ID:	2003165
Contractor ID:	Not reported
Date Issued:	08/25/2014
Action Type:	104(a)
Type of Issue:	Citation
S and S:	Y
Term Date:	09/04/2014
Title 30 Code of Federal Regulations:	56.11001
Proposed Penalty:	100.00
Assessment Amount:	100.00
Paid Penalty Amount:	100.00
Assessment Case Status:	Proposed
Assessment Status:	Closed
Year:	2014
Address Type:	MineLocation
PO Box:	Not reported
Address:	4944 MASON ROAD
City:	HOWELL
State:	MI
Operator:	Freedom Aggregates, LLC
Zip:	48843
Mine Controller Name:	Brad Jonckheere; Rick Haslock
Name:	AMERICAN CONCRETE PRODUCTS
Ownership Date:	08/01/2015
Mine Status:	Intermittent
Status Date:	04/15/2013
Primary Site Description:	Construction Sand and Gravel
Mine Type:	Surface
State 2:	MI
County:	LIVINGSTON

Violation Number:	8842240
Mine ID:	2003165
Contractor ID:	Not reported
Date Issued:	08/25/2014
Action Type:	104(a)
Type of Issue:	Citation
S and S:	N
Term Date:	09/04/2014

AMERICAN CONCRETE PRODUCTS (Continued) **1024913661**

Title 30 Code of Federal Regulations:	56.4201(a)(1)
Proposed Penalty:	100.00
Assessment Amount:	100.00
Paid Penalty Amount:	100.00
Assessment Case Status:	Proposed
Assessment Status:	Closed
Year:	2014
Address Type:	MineLocation
PO Box:	Not reported
Address:	4944 MASON ROAD
City:	HOWELL
State:	MI
Operator:	Freedom Aggregates, LLC
Zip:	48843
Mine Controller Name:	Brad Jonckheere; Rick Haslock
Name:	AMERICAN CONCRETE PRODUCTS
Ownership Date:	08/01/2015
Mine Status:	Intermittent
Status Date:	04/15/2013
Primary Site Description:	Construction Sand and Gravel
Mine Type:	Surface
State 2:	MI
County:	LIVINGSTON

Violation Number:	8885408
Mine ID:	2003165
Contractor ID:	Not reported
Date Issued:	07/06/2016
Action Type:	104(g)(1)
Type of Issue:	Order
S and S:	N
Term Date:	07/11/2016
Title 30 Code of Federal Regulations:	46.8(a)(1)
Proposed Penalty:	127.00
Assessment Amount:	127.00
Paid Penalty Amount:	127.00
Assessment Case Status:	Proposed
Assessment Status:	Closed
Year:	2016
Address Type:	MineLocation
PO Box:	Not reported
Address:	4944 MASON ROAD
City:	HOWELL
State:	MI
Operator:	Freedom Aggregates, LLC
Zip:	48843
Mine Controller Name:	Brad Jonckheere; Rick Haslock
Name:	AMERICAN CONCRETE PRODUCTS
Ownership Date:	08/01/2015
Mine Status:	Active
Status Date:	07/15/2016
Primary Site Description:	Construction Sand and Gravel
Mine Type:	Surface
State 2:	MI
County:	LIVINGSTON

Violation Number:	9622624

AMERICAN CONCRETE PRODUCTS (Continued) **1024913661**

Mine ID:	2003165
Contractor ID:	Not reported
Date Issued:	3/14/2022
Action Type:	104(a)
Type of Issue:	Citation
S and S:	Y
Term Date:	3/14/2022
Title 30 Code of Federal Regulations:	56.12013(c)
Proposed Penalty:	Not reported
Assessment Amount:	Not reported
Paid Penalty Amount:	Not reported
Assessment Case Status:	Not reported
Assessment Status:	Not reported
Year:	2021
Address Type:	MineLocation
PO Box:	Not reported
Address:	4944 MASON ROAD
City:	HOWELL
State:	MI
Operator:	Freedom Aggregates, LLC
Zip:	48843
Mine Controller Name:	Brad Jonckheere; Rick Haslock
Name:	AMERICAN CONCRETE PRODUCTS
Ownership Date:	8/1/2015
Mine Status:	Intermittent
Status Date:	10/15/2019
Primary Site Description:	Construction Sand and Gravel
Mine Type:	Surface
State 2:	MI
County:	LIVINGSTON

Click this hyperlink while viewing on your computer to access
44 additional US_MINES_VIOLATIONS: record(s) in the EDR Site Report.

B15 **AMERICAN CONCRETE PRODUCTS** **NPDES** **S109136954**
NNW **4944 MASON ROAD** **N/A**
> 1 **HOWELL, MI 48843**
1.258 mi.
6643 ft. **Site 7 of 7 in cluster B**

Relative: MI NPDES:
Lower

Name:	AMERICAN CONCRETE PRODUCTS
Address:	4944 MASON ROAD
City,State,Zip:	HOWELL, MI 48843
Permit Number:	GW1540061
Permitee PO Box:	N
Permitee Email:	brad@americanconprod.com
Issue Date:	12/29/2021
Effective Date:	01/01/2022
Expiration Date:	04/01/2025
Permittee Name:	Bedrock Ventures, LLC
Permittee Address:	4944 Mason Road
Permittee Addr2:	Not reported
Permittee City,St,Zip:	Howell, MI 48843
Permit Type:	Rule 2215 Authorization
Facility Name 2:	Not reported
Facility Name 3:	Not reported

Actual:
908 ft.

AMERICAN CONCRETE PRODUCTS (Continued) **S109136954**

Facility Name 4:	Not reported
Designed Name:	American Concrete Products I
Latitude:	42.6051
Lat Direction:	N
Lat Type Code:	LAT
Longitude:	-84.0103
Lon Direction:	W
Lon Type Code:	LON
Hydrologic Unit Code:	Not reported
Permit Status:	In Effect
COC Permit Category:	2215-4 - Gravel, Sand, Limestone, or Dolomite Mining
DEQ District Email:	Lansing
DEQ Permit Compliance Manager:	Kevin Bott
DEQ Permit Compliance Manager Email:	BottK@michigan.gov
Name:	AMERICAN CONCRETE PRODUCTS
Address:	4944 MASON ROAD
City,State,Zip:	HOWELL, MI 48843
Permit Number:	MIS310344
Permitee PO Box:	N
Permitee Email:	brad@americanconprod.com
Issue Date:	06/28/2019
Effective Date:	06/28/2019
Expiration Date:	04/01/2023
Permittee Name:	American Concrete Products Inc.
Permittee Address:	4944 Mason Road
Permittee Addr2:	Not reported
Permittee City,St,Zip:	Howell, MI 48843
Permit Type:	NPDES Certificate of Coverage under General Permit (COC)
Facility Name 2:	Not reported
Facility Name 3:	Not reported
Facility Name 4:	Not reported
Designed Name:	American Concrete Products
Latitude:	42.6051
Lat Direction:	N
Lat Type Code:	LAT
Longitude:	-84.0103
Lon Direction:	W
Lon Type Code:	LON
Hydrologic Unit Code:	4050004
Permit Status:	In Effect
COC Permit Category:	SW-Industrial CY3
DEQ District Email:	Lansing
DEQ Permit Compliance Manager:	Justin Tinker
DEQ Permit Compliance Manager Email:	TinkerJ@michigan.gov

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16 **MERIT ENERGY CO** **FINDS** **1007878738**
SW **SEC 28 PINGREE & JEWELL RD** **ECHO** **N/A**
> 1 **HOWELL, MI 48843**
1.320 mi.
6972 ft.

Relative:
Lower

Actual:
921 ft.

FINDS:
Registry ID: 110020486687

Click Here for FRS Facility Detail Report:

Environmental Interest/Information System:

MERIT ENERGY CO (Continued) **1007878738**

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1007878738
Registry ID:	110020486687
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110020486687
Name:	MERIT ENERGY CO
Address:	SEC 28 PINGREE & JEWELL RD
City,State,Zip:	HOWELL, MI 48843

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17 **D AND J SAND AND GRAVEL** **MINES MRDS** **1025741283**
NNW **N/A**
> 1 **FOWLERVILLE, MI 48836**
1.345 mi.
7103 ft.

Relative:
Lower

Actual:
904 ft.

MINES MRDS:

Name:	D AND J SAND AND GRAVEL
Address:	Not reported
Deposit identification Number:	10267766
City,State,Zip:	FOWLERVILLE, MICHIGAN 48836
URL:	https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10267766
MRDS Identification Number:	Not reported
MAS/MILS Identification Number:	0260930006
Region:	NA
Country:	United States
Primary Commodities:	Sand and Gravel, Construction
Secondary Commodities:	Not reported
Tertiary Commodities:	Not reported
Operation Type:	Surface
Deposit Type:	Not reported
Production Size:	Not reported
Development Status:	Producer
Ore Minerals or Materials:	Not reported
Gangue Minerals or Materials:	Not reported
Other Minerals or Materials:	Not reported
Ore Body Form:	Not reported
Workings Type:	Not reported
Mineral Deposit Model:	Not reported
Alteration Processes:	Not reported
Concentration Processes:	Not reported
Previous Names:	Not reported
Ore Controls:	Not reported
Reporter:	Eastern Field Operations Center (EFOC)
Host Rock Unit Name:	Not reported
Host Rock Type:	Not reported
Associated Rock Unit Name:	Not reported
Associated Rock Type Code:	Not reported
Structural Characteristics:	Not reported
Tectonic Setting:	Not reported

D AND J SAND AND GRAVEL (Continued) **1025741283**

References:	Not reported
First Production Year:	Not reported
Began Before/After FPY:	Not reported
Last Production Year:	Not reported
Ended Before/After LPY:	Not reported
Year Discovered:	Not reported
Found Before/After YD:	Not reported
Production History:	Not reported
Discovery Information:	Not reported
Latitude:	42.60141
Longitude:	-84.00959

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18 **MARION TOWNSHIP/FORMER SANITORIUM** **DEL PART 201** **S108488279**
East **3012 SANITORIUM RD** **N/A**
> 1 **HOWELL, MI**
1.543 mi.
8149 ft.

Relative:
Higher

Actual:
993 ft.

DEL_PART201:

Facility ID:	47000188
Status:	Delisted - no longer meets criteria specified in rules

Count: 0 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Lists of Federal Delisted NPL sites

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 08/25/2022
Date Data Arrived at EDR: 09/06/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 312-886-6186
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 312-886-6186
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 312-886-6186
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 312-886-6186
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 11/02/2022
Date Data Arrived at EDR: 11/08/2022
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 63

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/15/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/16/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 08/15/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/16/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/12/2022
Date Data Arrived at EDR: 12/14/2022
Date Made Active in Reports: 12/19/2022
Number of Days to Update: 5

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

SHWS: This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

Date of Government Version: N/A
Date Data Arrived at EDR: 10/31/2013
Date Made Active in Reports: 11/20/2013
Number of Days to Update: 20

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-284-5103
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: No Update Planned

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF: Solid Waste Facilities Database

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/19/2022
Date Data Arrived at EDR: 09/20/2022
Date Made Active in Reports: 12/06/2022
Number of Days to Update: 77

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-335-4035
Last EDR Contact: 12/15/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Semi-Annually

Lists of state and tribal leaking storage tanks

LUST: Leaking Underground Storage Tank Sites

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 11/09/2022
Date Data Arrived at EDR: 11/09/2022
Date Made Active in Reports: 01/17/2023
Number of Days to Update: 69

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-373-9837
Last EDR Contact: 10/31/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

Lists of state and tribal registered storage tanks

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 10/14/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 02/01/2022
Number of Days to Update: 88
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

UST 2: Underground Storage Tank Listing
A listing of underground storage tank site locations that have unknown owner information.

Date of Government Version: 01/28/2022
Date Data Arrived at EDR: 02/01/2022
Date Made Active in Reports: 04/25/2022
Number of Days to Update: 83
Source: Department of Licensing & Regulatory Affairs
Telephone: 517-373-1820
Last EDR Contact: 01/04/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Varies

UST: Underground Storage Tank Facility List
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 09/30/2022
Date Data Arrived at EDR: 11/03/2022
Date Made Active in Reports: 01/24/2023
Number of Days to Update: 82
Source: Department of Licensing & Regulatory Affairs
Telephone: 517-373-1820
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Annually

AST: Aboveground Tanks
Registered Aboveground Storage Tanks.

Date of Government Version: 07/05/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 10/31/2022
Number of Days to Update: 81
Source: Department of Licensing & Regulatory Affairs
Telephone: 517-373-1820
Last EDR Contact: 11/02/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: No Update Planned

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64
Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/07/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

AUL: Engineering and Institutional Controls
A listing of sites with institutional and/or engineering controls in place.

Date of Government Version: 08/19/2022
Date Data Arrived at EDR: 08/23/2022
Date Made Active in Reports: 11/14/2022
Number of Days to Update: 83

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-373-4828
Last EDR Contact: 11/15/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Quarterly

Lists of state and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/13/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

Lists of state and tribal brownfield sites

BROWNFIELDS: Brownfields and USTfield Site Database
All state funded Part 201 and 213 sites, as well as LUST sites that have been redeveloped by private entities using the BEA process. Be aware that this is not a list of all of the potential brownfield sites in Michigan.

Date of Government Version: 08/25/2022
Date Data Arrived at EDR: 10/18/2022
Date Made Active in Reports: 01/04/2023
Number of Days to Update: 78

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-373-4805
Last EDR Contact: 01/20/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

BROWNFIELDS 2: Brownfields Building and Land Site Locations
A listing of brownfield building and land site locations. The listing is a collaborative effort of Michigan Economic Development Corporation, Michigan Economic Developers Association, Detrot Edison, Detroit Area Commercial Board of Realtors

Date of Government Version: 10/17/2022
Date Data Arrived at EDR: 10/20/2022
Date Made Active in Reports: 01/04/2023
Number of Days to Update: 76

Source: Economic Development Corporation
Telephone: 888-522-0103
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/10/2022
Date Made Active in Reports: 03/10/2022
Number of Days to Update: 0

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/07/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

HIST LF: Inactive Solid Waste Facilities
The database contains historical information and is no longer updated.

Date of Government Version: 03/01/1997
Date Data Arrived at EDR: 02/28/2003
Date Made Active in Reports: 03/06/2003
Number of Days to Update: 6

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-335-4034
Last EDR Contact: 02/28/2003
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWRCY: Recycling Facilities
A listing of recycling center locations.

Date of Government Version: 03/18/2022
Date Data Arrived at EDR: 03/21/2022
Date Made Active in Reports: 06/16/2022
Number of Days to Update: 87

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-241-5719
Last EDR Contact: 12/15/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/20/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 01/13/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 01/27/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 07/29/2022
Date Data Arrived at EDR: 08/18/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 67

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: No Update Planned

INVENTORY: Inventory of Facilities

The Inventory of Facilities has three data sources: Facilities under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) identified through state funded or private party response activities (Projects); Facilities under Part 213, Leaking Underground Storage Tanks of the NREPA; and Facilities identified through submittals of Baseline Environmental Assessments (BEA) submitted pursuant to Part 201 or Part 213 of the NREPA. The Part 201 Projects Inventory does not include all of the facilities that are subject to regulation under Part 201 because owners are not required to inform the Department of Environmental Quality (DEQ) about the facilities and can pursue cleanup independently. Facilities that are not known to DEQ are not on the Inventory, nor are locations with releases that resulted in low environmental impact. Part 213 facilities listed here may have more than one release; a list of releases for which corrective actions have been completed and list of releases for which corrective action has not been completed is located on the Leaking Underground Storage Tanks Site Search webpage. The DEQ may or may not have reviewed and concurred with the conclusion that the corrective actions described in a closure report meets criteria. A BEA is a document that new or prospective property owners/operations disclose to the DEQ identifying the property as a facility pursuant to Part 201 and Part 213. The Inventory of BEA Facilities overlaps in part with the Part 201 Projects facilities and Part 213 facilities. There may be more than one BEA for each facility.

Date of Government Version: 10/17/2022
Date Data Arrived at EDR: 10/18/2022
Date Made Active in Reports: 01/04/2023
Number of Days to Update: 78

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-284-5136
Last EDR Contact: 01/18/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Quarterly

PART 201: Part 201 Site List

A Part 201 Listed site is a location that has been evaluated and scored by the DEQ using the Part 201 scoring model. The location is or includes a "facility" as defined by Part 201, where there has been a release of a hazardous substance(s) in excess of the Part 201 residential criteria, and/or where corrective actions have not been completed under Part 201 to meet the applicable cleanup criteria for unrestricted residential use. The Part 201 List does not include all of the sites of contamination that are subject to regulation under Part 201 because owners are not required to inform the DEQ about the sites and can pursue cleanup independently. Sites of environmental contamination that are not known to DEQ are not on the list, nor are sites with releases that resulted in low environmental impact.

Date of Government Version: 10/01/2013
Date Data Arrived at EDR: 10/03/2014
Date Made Active in Reports: 10/03/2014
Number of Days to Update: 0

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-284-5103
Last EDR Contact: 07/22/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Lab Listing

A listing of clandestine drug lab locations.

Date of Government Version: 10/31/2022
Date Data Arrived at EDR: 11/08/2022
Date Made Active in Reports: 01/24/2023
Number of Days to Update: 77

Source: Department of Community Health
Telephone: 517-373-3740
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: No Update Planned

DEL PART 201: Delisted List of Contaminated Sites

A deleted site has been removed from the Part 201 List because information known to the DEQ at the time of the evaluation does not support inclusion on the Part 201 List. This designation is often applied to sites where changes in cleanup criteria resulted in a determination that the site no longer exceeds any applicable cleanup criterion. A delisted site has been removed from the Part 201 List because response actions have reduced the levels of contaminants to concentrations which meet or are below the criteria for unrestricted residential use.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/01/2013
Date Made Active in Reports: 09/11/2013
Number of Days to Update: 41

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-373-9541
Last EDR Contact: 07/22/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 07/29/2022
Date Data Arrived at EDR: 08/18/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 67

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Quarterly

Local Land Records

LIENS: Lien List

An Environmental Lien is a charge, security, or encumbrance upon title to a property to secure the payment of a cost, damage, debt, obligation, or duty arising out of response actions, cleanup, or other remediation of hazardous substances or petroleum products upon a property, including (but not limited to) liens imposed pursuant to CERCLA 42 USC * 9607(1) and similar state or local laws. In other words: a lien placed upon a property's title due to an environmental condition

Date of Government Version: 11/17/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/30/2022
Number of Days to Update: 39

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-241-7603
Last EDR Contact: 01/10/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/19/2022
Date Data Arrived at EDR: 09/19/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 11

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

PEAS: Pollution Emergency Alerting System

Environmental pollution emergencies reported to the Department of Environmental Quality such as tanker accidents, pipeline breaks, and release of reportable quantities of hazardous substances.

Date of Government Version: 09/27/2022
Date Data Arrived at EDR: 10/18/2022
Date Made Active in Reports: 01/05/2023
Number of Days to Update: 79

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-373-8427
Last EDR Contact: 01/18/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 312-886-6186
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 08/11/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 50

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/10/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 01/13/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 09/19/2022
Date Data Arrived at EDR: 09/20/2022
Date Made Active in Reports: 12/22/2022
Number of Days to Update: 93

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 01/30/2023
Next Scheduled EDR Contact: 05/15/2023
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/12/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 10/17/2022
Date Data Arrived at EDR: 10/18/2022
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 84

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 01/18/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/04/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 64

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 01/04/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/26/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 13

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 84
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 11/29/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 11/23/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 12/20/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 01/24/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2022
Date Data Arrived at EDR: 10/21/2022
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 81

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 23

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 01/06/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 07/26/2021
Date Data Arrived at EDR: 07/27/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 01/30/2023
Next Scheduled EDR Contact: 05/15/2023
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/09/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/03/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 14

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 11/17/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 11/29/2022
Date Data Arrived at EDR: 11/30/2022
Date Made Active in Reports: 12/22/2022
Number of Days to Update: 22

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Quarterly

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/21/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/21/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/13/2022
Date Data Arrived at EDR: 09/14/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 82

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/13/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 08/03/2022
Date Data Arrived at EDR: 08/25/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 60

Source: EPA
Telephone: (312) 353-2000
Last EDR Contact: 11/29/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/15/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/25/2022
Date Data Arrived at EDR: 09/30/2022
Date Made Active in Reports: 12/22/2022
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 01/04/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 11/09/2021
Date Data Arrived at EDR: 10/20/2022
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 82

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 01/09/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/11/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 50

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/10/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Quarterly

PFAS NPL: Superfund Sites with PFAS Detections Information

EPA's Office of Land and Emergency Management and EPA Regional Offices maintain data describing what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 07/08/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 123

Source: Environmental Protection Agency
Telephone: 703-603-8895
Last EDR Contact: 01/10/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS FEDERAL SITES: Federal Sites PFAS Information

Several federal entities, such as the federal Superfund program, Department of Defense, National Aeronautics and Space Administration, Department of Transportation, and Department of Energy provided information for sites with known or suspected detections at federal facilities.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS TSCA: PFAS Manufacture and Imports Information

EPA issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. EPA publishes non-confidential business information (non-CBI) and includes descriptive information about each site, corporate parent, production volume, other manufacturing information, and processing and use information.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS RCRA MANIFEST: PFAS Transfers Identified In the RCRA Database Listing

To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: PFAS, PFOA, PFOS, PERFL, AFFF, GENX, GEN-X (plus the VT waste codes). These keywords were searched for in the following text fields: Manifest handling instructions (MANIFEST_HANDLING_INSTR), Non-hazardous waste description (NON_HAZ_WASTE_DESCRIPTION), DOT printed information (DOT_PRINTED_INFORMATION), Waste line handling instructions (WASTE_LINE_HANDLING_INSTR), Waste residue comments (WASTE_RESIDUE_COMMENTS).

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS ATSDR: PFAS Contamination Site Location Listing

PFAS contamination site locations from the Department of Health & Human Services, Center for Disease Control & Prevention. ATSDR is involved at a number of PFAS-related sites, either directly or through assisting state and federal partners. As of now, most sites are related to drinking water contamination connected with PFAS production facilities or fire training areas where aqueous film-forming firefighting foam (AFFF) was regularly used.

Date of Government Version: 06/24/2020
Date Data Arrived at EDR: 03/17/2021
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 601

Source: Department of Health & Human Services
Telephone: 202-741-5770
Last EDR Contact: 01/23/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Varies

PFAS WQP: Ambient Environmental Sampling for PFAS

The Water Quality Portal (WQP) is a part of a modernized repository storing ambient sampling data for all environmental media and tissue samples. A wide range of federal, state, tribal and local governments, academic and non-governmental organizations and individuals submit project details and sampling results to this public repository. The information is commonly used for research and assessments of environmental quality.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS NPDES: Clean Water Act Discharge Monitoring Information

Any discharger of pollutants to waters of the United States from a point source must have a National Pollutant Discharge Elimination System (NPDES) permit. The process for obtaining limits involves the regulated entity (permittee) disclosing releases in a NPDES permit application and the permitting authority (typically the state but sometimes EPA) deciding whether to require monitoring or monitoring with limits.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS ECHO: Facilities in Industries that May Be Handling PFAS Listing

Regulators and the public have expressed interest in knowing which regulated entities may be using PFAS. EPA has developed a dataset from various sources that show which industries may be handling PFAS. Approximately 120,000 facilities subject to federal environmental programs have operated or currently operate in industry sectors with processes that may involve handling and/or release of PFAS.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS ECHO FIRE TRAINING: Facilities in Industries that May Be Handling PFAS Listing

A list of fire training sites was added to the Industry Sectors dataset using a keyword search on the permitted facilitys name to identify sites where fire-fighting foam may have been used in training exercises. Additionally, you may view an example spreadsheet of the subset of fire training facility data, as well as the keywords used in selecting or deselecting a facility for the subset. as well as the keywords used in selecting or deselecting a facility for the subset. These keywords were tested to maximize accuracy in selecting facilities that may use fire-fighting foam in training exercises, however, due to the lack of a required reporting field in the data systems for designating fire training sites, this methodology may not identify all fire training sites or may potentially misidentify them.

Date of Government Version: 08/22/2018
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS PART 139 AIRPORT: All Certified Part 139 Airports PFAS Information Listing

Since July 1, 2006, all certified part 139 airports are required to have fire-fighting foam onsite that meet military specifications (MIL-F-24385) (14 CFR 139.317). To date, these military specification fire-fighting foams are fluorinated and have been historically used for training and extinguishing. The 2018 FAA Reauthorization Act has a provision stating that no later than October 2021, FAA shall not require the use of fluorinated AFFF. This provision does not prohibit the use of fluorinated AFFF at Part 139 civilian airports; it only prohibits FAA from mandating its use. The Federal Aviation Administration?s document AC 150/5210-6D - Aircraft Fire Extinguishing Agents provides guidance on Aircraft Fire Extinguishing Agents, which includes Aqueous Film Forming Foam (AFFF).

Date of Government Version: 08/22/2018
Date Data Arrived at EDR: 10/26/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

AQUEOUS FOAM NRC: Aqueous Foam Related Incidents Listing

The National Response Center (NRC) serves as an emergency call center that fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. The spreadsheets posted to the NRC website contain initial incident data that has not been validated or investigated by a federal/state response agency. Response center calls from 1990 to the most recent complete calendar year where there was indication of Aqueous Film Forming Foam (AFFF) usage are included in this dataset. NRC calls may reference AFFF usage in the ?Material Involved? or ?Incident Description? fields.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS: PFAS Contaminated Sites Listing

PFAS have been widely used in numerous industrial and residential applications since the 1950a??s. Their stability and unique chemical properties produce waterproof, stain resistant, and nonstick qualities in products. They are found in some firefighting foams and a wide range of consumer products such as carpet treatments, non-stick cookware, water-resistant fabrics, food packaging materials, and personal care products.

Date of Government Version: 08/25/2022
Date Data Arrived at EDR: 11/07/2022
Date Made Active in Reports: 01/24/2023
Number of Days to Update: 78

Source: Department of Environment, Great Lakes & Energy
Telephone: 517-284-9278
Last EDR Contact: 11/07/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Varies

AIRS: Permit and Emissions Inventory Data

Permit and emissions inventory data.

Date of Government Version: 09/13/2022
Date Data Arrived at EDR: 09/13/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 83

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-373-7074
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Annually

ASBESTOS: Asbestos Notification Listing
Asbestos

Date of Government Version: 09/30/2022
Date Data Arrived at EDR: 10/13/2022
Date Made Active in Reports: 10/31/2022
Number of Days to Update: 18

Source: Department of Licensing & Regulatory Affairs
Telephone: 517-284-7699
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Quarterly

BEA: Baseline Environmental Assessment Database
A BEA is a document that new or prospective property owners/operations disclose to the DEQ identifying the property as a facility pursuant to Part 201 and Part 213. The Inventory of BEA Facilities overlaps in part with the Part 201 Projects facilities and Part 213 facilities. There may be more than one BEA for each facility.

Date of Government Version: 11/09/2022
Date Data Arrived at EDR: 11/09/2022
Date Made Active in Reports: 01/24/2023
Number of Days to Update: 76

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-373-9541
Last EDR Contact: 11/02/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: No Update Planned

COAL ASH: Coal Ash Disposal Sites
Coal fired power plants in Southeast Michigan that have coal ash handling on site.

Date of Government Version: 04/01/2021
Date Data Arrived at EDR: 04/06/2021
Date Made Active in Reports: 06/24/2021
Number of Days to Update: 79

Source: Department of Environment, Great Lakes, and Energy
Telephone: 586-753-3754
Last EDR Contact: 12/20/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Varies

DRYCLEANERS: Drycleaning Establishments
A listing of drycleaning facilities in Michigan.

Date of Government Version: 07/11/2022
Date Data Arrived at EDR: 07/14/2022
Date Made Active in Reports: 09/22/2022
Number of Days to Update: 70

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-335-4586
Last EDR Contact: 01/13/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Quarterly

Financial Assurance 1: Financial Assurance Information Listing
Financial assurance information.

Date of Government Version: 09/29/2022
Date Data Arrived at EDR: 09/30/2022
Date Made Active in Reports: 12/13/2022
Number of Days to Update: 74

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-335-6610
Last EDR Contact: 12/20/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Semi-Annually

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 06/17/2022
Date Data Arrived at EDR: 06/22/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 6

Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-335-4034
Last EDR Contact: 12/05/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Varies

FINANCIAL ASSURANCE 3: Financial Assurance Information Listing
Financial assurance information for underground storage tank facilities.

Date of Government Version: 09/22/2022
Date Data Arrived at EDR: 10/12/2022
Date Made Active in Reports: 12/29/2022
Number of Days to Update: 78
Source: Department of Licensing & Regulatory Affairs
Telephone: 517-335-7279
Last EDR Contact: 01/06/2023
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Varies

LEAD CERT: Lead Safe Housing Registry
A listing of Michigan properties included in the Lead Safe Housing Registry.

Date of Government Version: 03/25/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 82
Source: Department of Community Health
Telephone: 517-335-9699
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Quarterly

NPDES: List of Active NPDES Permits
General information regarding NPDES (National Pollutant Discharge Elimination System) permits and NPDES Storm Water permits.

Date of Government Version: 07/05/2022
Date Data Arrived at EDR: 09/27/2022
Date Made Active in Reports: 12/13/2022
Number of Days to Update: 77
Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-241-1300
Last EDR Contact: 12/29/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Varies

UIC: Underground Injection Wells Database
A listing of underground injection well locations. The UIC Program is responsible for regulating the construction, operation, permitting, and closure of injection wells that place fluids underground for storage or disposal.

Date of Government Version: 10/14/2022
Date Data Arrived at EDR: 10/19/2022
Date Made Active in Reports: 01/04/2023
Number of Days to Update: 77
Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-241-1515
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Quarterly

WDS: Waste Data System
The Waste Data System (WDS) tracks activities at facilities regulated by the Solid Waste, Scrap Tire, Hazardous Waste, and Liquid Industrial Waste programs.

Date of Government Version: 08/11/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 10/31/2022
Number of Days to Update: 81
Source: Department of Environment, Great Lakes, and Energy
Telephone: 517-284-6562
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29
Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Semi-Annually

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Semi-Annually

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 11/22/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA PART 201: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Michigan.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/24/2013
Number of Days to Update: 176

Source: Department of Environment, Great Lakes, and Energy
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Michigan.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Environment, Great Lakes, and Energy
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Michigan.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/24/2013
Number of Days to Update: 176

Source: Department of Environment, Great Lakes, and Energy
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/08/2022
Date Made Active in Reports: 10/21/2022
Number of Days to Update: 74

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/16/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 10/29/2021
Date Made Active in Reports: 01/19/2022
Number of Days to Update: 82

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 01/27/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 01/06/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 12/20/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Annually

Oil/Gas Pipelines

Source: Endeavor Business Media

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data

Source: Endeavor Business Media

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Day Care Centers, Group & Family Homes
Source: Bureau of REgulatory Services
Telephone: 517-373-8300

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Department of Natural Resources
Telephone: 517-241-2254

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STREET AND ADDRESS INFORMATION

APPENDIX H

Water System ERP Summary

MHOG WTP Emergency Response Plan (ERP) Overview

The purpose of the MHOG WTP ERP is to provide clear and concise directions during an emergency. The Information contained in the ERP is of a sensitive nature in regards to overall system security. The plan is an attempt to contain the necessary information that will make response to emergencies more effective. As is true of all action plans, this one cannot be all-encompassing. This plan will evolve, however, and include future insights. This will occur at a frequency of no less than once per year. The last ERP revision occurred in 2018.

The following is a list of the sections contained in the ERP and their relevance.

1. System Locations – addresses of systems assets
2. Emergency Contacts – Important contacts needed during investigation, mitigation and correction of emergencies
3. Population Served – Population information and distribution throughout the four townships
4. Site schematics or "As Builts" – Location and types of system schematics
5. Plant and System Overview – Overview of the treatment and distribution components
6. Emergency Supplies on Hand – Location and quantity of emergency supplies
7. Bulk Chemical Storage – Location and quantity of chemical supplies in the plant and distribution system
8. Alternate Water Sources – Alternate sources that can be used during an emergency
9. Water Sampling and monitoring – Sampling during normal and emergency circumstances
10. Emergency Communication Procedures – Who to contact at the beginning of an emergency
11. Action Plans – The highest probability events that are expected to be encountered and can be prepared for
12. Records Preservation – Location of saved documents

APPENDIX I

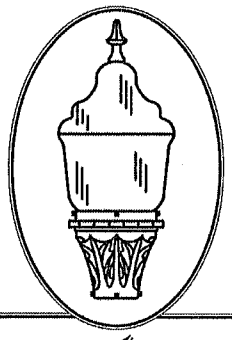
Public Outreach Information

MHOG Utilities @MHOGWater · Sep 29, 2021

#ProtectTheSource because our drinking water is essential to preserve our health and economy now and for future generations.
#SourceWaterProtectionWeek

5 5

HELPING TO PROTECT YOUR DRINKING WATER



HOWELL
MICHIGAN

You Are Now Entering

WELLHEAD PROTECTION AREA

Qty. 1
Reflective

30"

30"

Qty. 1
Reflective

30"

THE SIGN WORKS
HOWELL, MI
517-546-3620

PROJECT:	MHOG / Genoa Twp.	ACCT. MGR:	
ADDRESS:		CLIENT:	Alex
DESIGNER:	Matt Brown	SCALE:	
PHONE:	517-546-3620	DATE:	2-16-15

CUSTOMER APPROVAL:	LANDLORD APPROVAL:
DATE:	DATE:

PLACE STAMP HERE

4288 Norton Road
Howell, MI 48843

WELLHEAD PROTECTION

A program to protect groundwater, our local source of drinking water, from potential sources of contamination.

Fun Facts!

- The City of Howell and the **MHOG** water systems entered into a wellhead protection partnership due to the close proximity of their well fields.
- These 12 **groundwater** wells are permitted to produce a maximum of 10,350 gallons per minute or almost 15 million gallons per day.
- The two municipal well systems serve clean **drinking** water to a population of more than 25,000 people each day.
- The **clean** drinking **water** is supplied to these residents by almost 1,000,000 feet or approximately 200 miles of water mains.
- The City of **Howell** and MHOG municipal drinking water supply systems have a total of 12 groundwater wells.

Z	X	A	P	I	V	Y	R	S	M	I	T	F	Y	V
F	D	T	E	F	Y	M	F	D	W	B	Z	T	F	K
L	P	L	D	H	U	K	K	D	O	P	R	R	Q	G
P	E	S	T	I	C	I	D	E	S	X	H	T	D	B
C	N	Z	B	H	D	K	X	G	Z	A	A	L	D	Z
X	Y	M	L	V	N	J	H	N	L	U	C	N	E	Z
U	G	B	R	F	S	A	R	I	A	L	J	R	S	S
A	M	C	M	E	C	R	E	K	A	M	G	V	L	W
M	K	E	K	J	T	N	T	N	H	V	J	A	E	X
E	O	Y	E	P	F	A	A	I	I	W	C	H	I	R
L	C	T	O	V	T	V	W	R	F	I	Y	Z	A	L
N	I	X	L	L	S	W	J	D	M	A	K	S	P	M
W	T	V	N	A	L	A	O	E	N	L	N	C	G	H
C	P	J	Z	A	C	L	H	T	Z	U	O	J	L	O
L	E	W	S	U	H	C	E	L	T	K	O	E	W	G
E	S	E	A	C	Q	P	U	W	Z	T	I	R	R	Q
A	W	O	F	W	C	U	B	D	O	O	X	M	G	Y
N	D	I	E	H	V	Y	O	T	L	H	W	O	X	S
Z	S	L	L	E	F	L	U	Z	Y	I	W	H	P	K
Z	L	H	Y	S	A	T	U	R	A	T	E	D	J	X

How Can You Help Protect Your Drinking Water?

- Properly dispose of household hazardous waste: Do not dump items such as motor **oil**, fuel products, cleaners, paints, **pesticides** or prescription medications on the ground or into your household drain. Call the Livingston County Department of Public Works at 517-545-9609 for assistance in disposing of these items **safely**.
- Read labels and follow directions on all **chemicals**, fertilizers, pesticides and other hazardous products you use.
- Septic Systems and Unused Wells: Make sure that your **septic** tank is pumped periodically. Signs of system malfunction are: slow drains and flushing, back-ups and **saturated** drain fields. Unused and abandoned wells are direct conduits for contaminant introduction into the groundwater. For more information on how to properly plug abandoned wells and maintain septic systems, contact Livingston County Health Department at 517-546-9858 (http://www.lchd.org).

Word Search

- Look for the bolded words in *Fun Facts* and *How do you Help Protect your Drinking Water* and locate them in the Word Search.

Where Does Your Drinking Water Come From?

- Groundwater: Water that is located beneath the surface of the earth which recharges through the infiltration of rain and snow.
- Drinking Water: All drinking water in Livingston County, including the City of Howell and MHOG municipal drinking water, is supplied by groundwater wells.

What is Wellhead Protection?

- Wellhead Protection Plan: The City of Howell and MHOG have implemented this plan to protect the groundwater and your drinking water source.
- Mission Statement: It is the mission of MHOG and the City of Howell to continuously protect the local drinking water resource from existing and potential contamination for generations to come.

For More Information:

MHOG Water Authority:

517-545-5098

http://www.genoa.org/departments/utilities

City of Howell: 517-546-5309

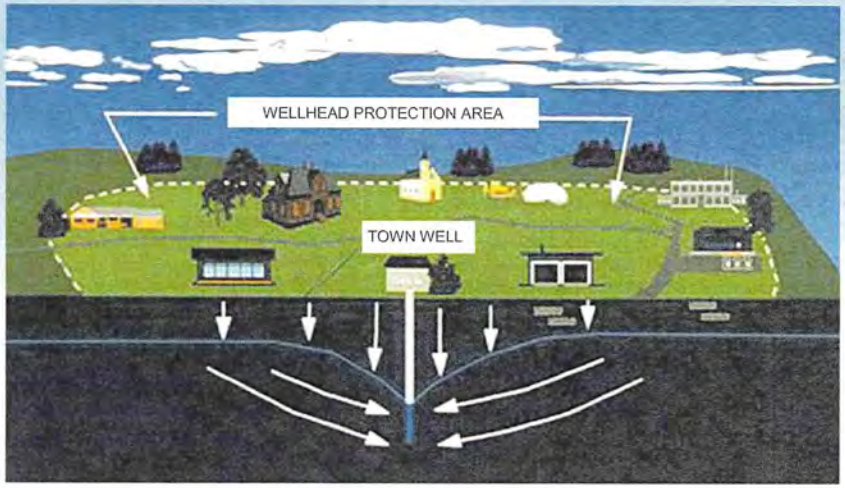
http://cityofhowell.org/water

Why Do We Need A Wellhead Protection Plan?

The diagram to the right shows how surface water and contaminants can seep through the surface of the earth and into our groundwater resource. The contaminated water can then flow into a water supply well. Learning about our water sources and spread the information to friends and neighbors! Please visit the City of Howell and MHOG websites for more information on protecting our groundwater resources.

Map showing MHOG and Howell's Wellhead Protection Delineation Areas

- Howell and MHOG have established three wellhead protection areas that are shown on the adjacent map.
- The wellhead protection areas are those areas that have been determined to contribute groundwater to the Howell and MHOG water supply systems over a 10 year period.
- The wellhead protection program provides mechanisms which reduce the risk of contamination from reaching the groundwater in these areas.



Why Build A Wellhead Protection Program

The wellhead protection areas within Marion and Howell Townships are host to a large groundwater reservoir that supplies thousands of Livingston County residents with a clean source of drinking water. These areas of the townships are still rural and mostly agricultural.

The wellhead protection area within the City of Howell is situated in the center of a variety of different development types. This area encompasses industrial, business district, family residential, mobile home district, and other landuse types. With established development in this area, a wellhead protection program is used to monitor the sources and alleviate the threat from environmental pollution.

The wellhead protection program is a good opportunity for the community to protect its drinking water source by working with area businesses, farmers, citizens, and local public agencies.

The goals of the wellhead protection program are to complete a comprehensive groundwater protection plan that address each of the following elements.

1. Wellhead Protection Area Delineation for the Ten Year Capture Zone.
2. Identify and Inventory Potential Sources of Contamination
3. Develop Management Approaches for Wellhead Protection
4. Contingency Planning for a Water Supply Emergency
5. Siting of New Wells for Population Growth or Replacement
6. Public Participation, Agency Duties, and Public Authority

Starting the program now will give the community the advantage of building a proactive rather than reactive program for groundwater protection. Most importantly, by getting involved with this program you will be protecting your wells, your community's public health, the environment, and the considerable economic investment in the public water supply system.

How You Can Protect Groundwater

Hazardous chemicals line our kitchen, bathroom, and garage shelves. Many cleaning products, paints, insecticides, herbicides, glues, etc. can contain toxic chemicals. Tossing these materials in the garbage or washing them down the drain can pollute our soil and water. Several safe practices include: using nonhazardous alternatives, buy only as much product as you need, follow the label instructions and share leftovers with others. Contact the Livingston Solid Waste Coordinator for more information about local drop-off points and other programs in the county.

The Michigan Groundwater Stewardship Program (MGSP) is a cooperative effort. It's designed to reduce the risks of groundwater contamination associated with the use of pesticides and nitrogen fertilizers. MGSP accomplishes this goal through education, technical assistance, cost share, and research. To learn more about these free programs please contact the Livingston/Ingham Groundwater Technician or the MSU Extension office.

For More Information:

Public Water Supplies	
Marion Township	(517) 546-1588
Oceola Township	(517) 546-3259
City of Howell Dept. of Public Service	(517) 546-3500
Emergency Response Team	
Howell Fire Department	(517) 546-3500
Livingston County	
Environmental Health Division	(517) 546-9858
Solid Waste Coordination	(517) 545-9609
Livingston Offices	
MSU Extension	(517) 546-3950
USDA - Natural Resources & Conservation Services	(517) 548-1553
Groundwater Stewardship Program	(517) 548-1553

This program was made possible by funding from the Michigan Department of Environmental Quality Wellhead Protection Grant Program and MHOG Water Authority & City of Howell Public Water Supply Systems

CITY OF HOWELL & MHOG WATER AUTHORITY

Public Water Supply Systems Wellhead Protection Program

A Program to Protect Public Water Supply Systems from Potential Contamination

Printed on 20% Post Consumer Recycled Paper

We are working hard to protect your drinking water by paulette skolarus

The source of municipal water serving Genoa Township's drinking water needs is water contained beneath the ground, hence groundwater. Observing potential sources of contamination, such as land-use activities, within what has been delineated as the "wellhead protection area" is protecting this area.

Livingston County and Township officials are working together to build a "wellhead protection area" to monitor and manage that groundwater. The wellhead protection area includes the wellfields and the recharge areas that contribute to replenishing water from the surface back to the ground.

Genoa Township and MHOG have established a wellhead protection area for the water supply system that operates from the wellfield in Marion and Howell Townships. A perimeter was investigated around the well field called "The Ten Year Delineation Zone". This means that contaminants water captured at the boundary of the capture zone would take approximately ten years to travel through the groundwater to reach the well fields.

While the aspect of this application may appear simple, it is far from being so. The goals of the wellhead protection program are to complete a comprehensive groundwater protection plan that address the following:

- Delineate the Wellhead Protection Area for the Ten Year Capture Zone
- Identify and Inventory Potential Sources of Contamination
- Develop Management Approaches for Wellhead Protection
- Establish contingency Planning for a Water Supply Emergency
- Sitting of New Wells for Population Growth or Replacement
- Establish Public Participation, Agency Duties, and Public Authority

This program has been started to give the community the advantage of building a proactive program that corrects problems before they occur, with the final objective to protect drinking water quality. Potential sources of contamination, therefore, are managed using best management practices that will minimize threats to the public water supply.

While community wells are important, your home's on-site well should also be evaluated for possible sources of contamination. Do you store gas, used oil, or other household hazardous waste near your wellhead? Do you apply fertilizers to your lawn?

Remember...What you put on or into the ground may eventually filter into your drinking water supply.

(For more information regarding wellhead protection programs, please contact Roger Andrews at the Livingston County Health Department: 517-546-9858, ext. 523.)

What is Wellhead Protection

Wellhead protection is a planning and management approach designed to protect public groundwater supply systems from contamination. The objective is to protect public water supply wells by controlling or managing all potential sources of contamination within a designated area surrounding the well or well field. The wellhead protection area is that part of the landscape that contributes water, and therefore potential contaminates, to the public water supply wells. An active wellhead protection program identifies areas that contribute water to public water supply wells, potential sources of contamination within those areas, and educates residents on developing best management practices that minimize threats to public water supplies.

Protecting groundwater for the future is a wise, cost-effective step which not only saves money for communities but also provides for the protection of public health and the environment.

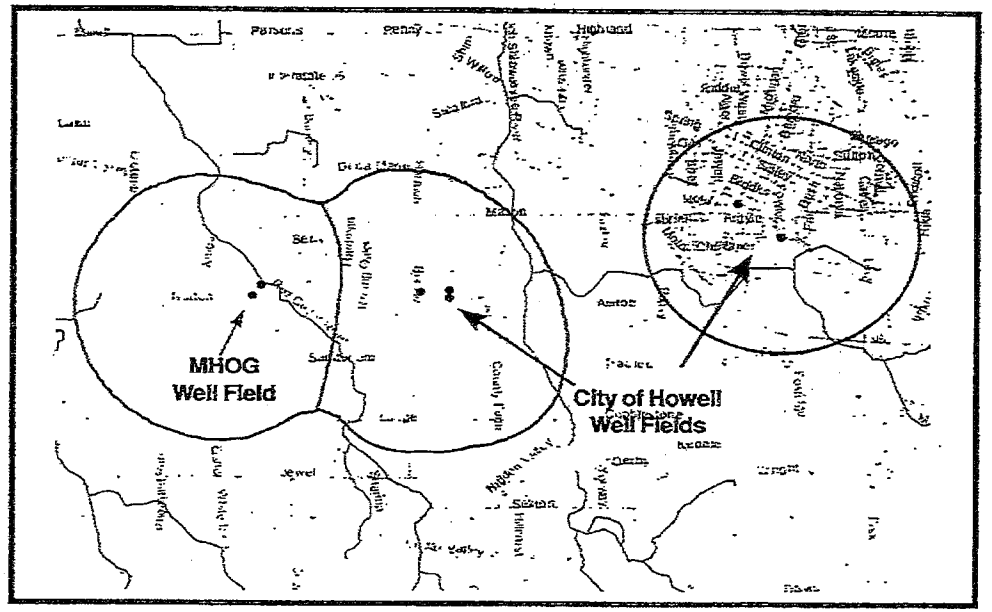
Groundwater & Pollution

Groundwater is water that exists beneath the soil surface from just a few feet to several hundred feet. Water typically enters and exits the ground through a combination of natural processes such as rain and snowfall, as well as bodies of water including lakes, rivers, streams, and wetlands. For example, when it rains water infiltrates into the ground through the soil until it reaches a depth where all the air spaces become saturated. This creates a reservoir of water beneath the surface. Depending on local soil characteristics, groundwater movement can flow vertically and/or horizontally.

Because of the unique nature in which water enters the ground and moves beneath the ground, groundwater can be vulnerable to pollution. Certain land use activities that take place above groundwater (industry, waste dumping, farming, etc.) may introduce contaminates that can be carried in through the groundwater movement and recharge processes. One way you can protect groundwater from land use contaminants is by participating in this pollution preventive groundwater protection program.

Wellhead Protection Areas

The City of Howell and Marion, Howell, Oceola, and Genoa (MHOG) Townships have established two wellhead protection areas. Both water supply systems operate from well fields in Marion & Howell Townships, and the City of Howell operates an additional well field within the City limits. A perimeter was investigated around all three of the well fields for each of the two public water systems called "The Ten Year Capture Zone". This means that contaminants at the boundary of the capture zone would take approximately ten years to travel through the groundwater to reach the well fields. The entire area inside the capture zone is considered the wellhead protection area. Any potential sources of contamination inside the capture zone are identified as part of the overall protection program. The wellhead protection areas for the two public water supplies are identified in the map illustration below. It's critical to implement this wellhead protection program because the area has potential to supply a large number of Livingston County residents.



A total of six production wells operate within the wellhead protection areas to meet the demands of the two water supply systems. All wells have been drilled to depths between 390 to 460 feet. Each well has the capacity to pump water at the rate of 1000 to 1400 gallons per minute. At full production, these wells could withdraw approximately 1.2 million gallons of groundwater per week.

Photo by BUDDY MOOREHOUSE

historic Lee House after its demolition.

historic Lee House comes down

By Amy Kemnic
STAFF WRITER

Brighton's historic Lee House was demolished in the blink of an eye last week.

Preparations for the demolition began on Wednesday, May 26, and by mid-afternoon the next day, most of the house — located on East Grand River Avenue — was gone. The home was owned by the adjacent First Presbyterian Church of Brighton, which delayed the demolition for several months, hoping someone could step forward and relocate the 1840 home.

"We had four different people who had the desire and felt they had the wherewithal to do it, but each one ran into roadblocks," said Scott Griffith of the church property committee.

The main problems the interested individuals encountered were

Continued on page 12

ll schools s parental concerns

dogs turn up nothing sweep of high school

Howie Lonskey. The audience consisted of over 150 parents —mostly of middle school and high school children in the district.

As the meeting started, a bomb-sniffing dog from the Michigan Department of State Police was making its rounds at Howell High School to guarantee its security in ht of a recent bomb threat found one of the school's bathroom walls. The threat indicated that the school would blow up Friday, May 28.

Breiner, McPherson Middle School Principal Doug Paige and Highlander Way Middle School Principal Chuck Kraegel briefly outlined the recent bomb threats that have been uncovered at the secondary schools and the steps each school has taken since the threats were found.

Continued on page 12

l Day scheduled ut county

Cemetery Road.

HARTLAND: Livingston County's biggest Memorial Day parade begins at noon, and winds its way down Hartland Road and through the village area. The Rev. Mark Spaw, the outgoing pastor at Hartland's First United Methodist Church, is this year's grand marshal.

HAMBURG: The parade in Hamburg steps off at 10 a.m. through the village area, ending with a ceremony at the Hamburg Cemetery.

HOWELL: The parade begins at 10 a.m., stepping off down Grand River Avenue.

PINCKNEY: The parade in Pinckney begins at 1 p.m., concluding with a ceremony at the Town Square.

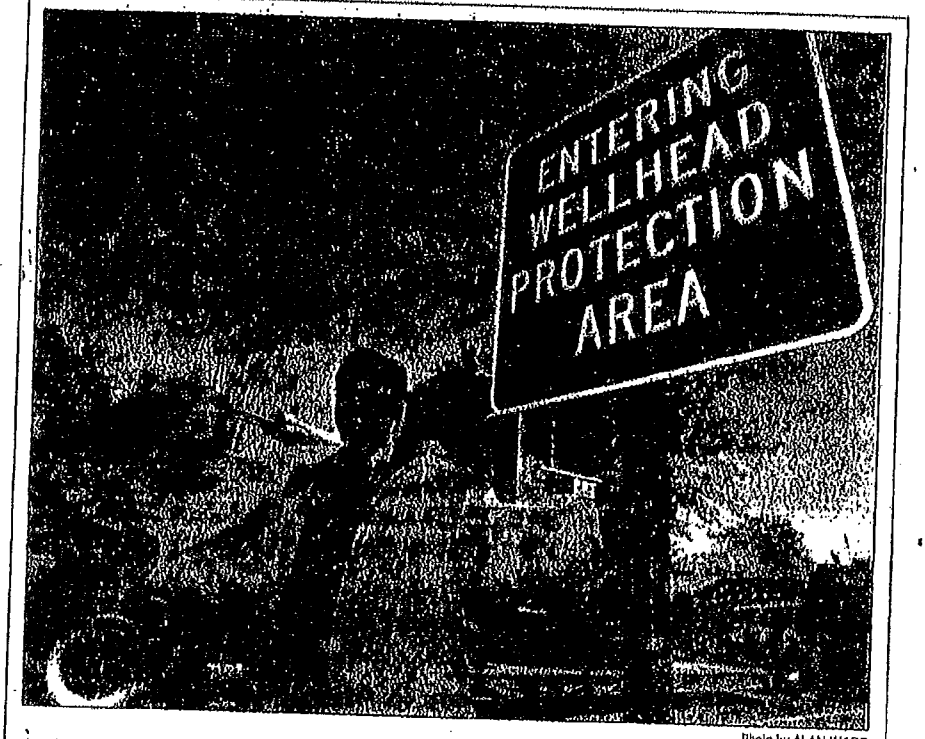


Photo by ALAN WARD

Environmental sanitarian Roger Andrews stands on County Farm Road with one of the signs marking the wellhead protection area in Marion Township.

Wellhead program aims keep water supply safe

By Maureen Patzer
STAFF WRITER

While hundreds of Marion Township residents are seeing signs indicating they are "Entering a Wellhead Protection Area," few may actually realize what that designation means.

"We want people to stop and think about the fact that what they put in the ground can come back out of their faucets," said John Hanifan, head of the Livingston County Solid Waste Department. "We want people to consider using best management practices and groundwater stewardship."

To that end, the City of Howell, Marion, Howell, Oceola and Genoa townships (MHOG) have begun a program to protect two wellheads in Marion Township, a program that will actually benefit thousands of Livingston County residents.

"There are approximately 12,323 people in Livingston County served by these two water supply systems," said Roger Andrews of the Livingston County Health Department. "There are 291 homes inside the wellhead protection area, which is

Continued on page 6

DETAILS

- Residents with questions regarding the new MHOG wellhead protection program currently under way within Marion Township will have an opportunity to meet with program representatives at 7 p.m. Tuesday, June 29, at the Marion Township Hall.
- The meeting is in keeping with the goals of the wellhead protection program, which include education and public outreach, as well as controlling or managing all potential sources of contamination.
- Another goal of the program: finding and capping abandoned wells that are often a source of contaminates.
- For more information about the wellhead protection program, contact Roger Andrews at the Livingston County Health Department at (517) 546-9850.

Officials working to protect drinking water

Continued from page 1

approximately a one-mile radius around the two wellfields."

The program is a joint effort involving township officials, Michigan State University Cooperative Extension, the Livingston County Health Department, businesses and residents. Wellhead protection programs are relatively new to Michigan, meaning the MHOG program makes Livingston County one of a handful of participants.

Funding for the program is coming from a $15,000 state grant.

The goal of the wellhead protection program: education and public outreach regarding the two wellfields as well as controlling or managing all potential sources of contamination. That means additional attention will be paid to preventing heavy industry from being established in the area; residents will be able to participate in education programs; and once in place, the wellhead protection program will be used as a foundation for local officials to enact ordinances covering planning, hazardous substances and other development issues.

What the program isn't: an anti-growth campaign.

"Some people might take it that way, but Marion Township is mostly agricultural anyway — what we really want to do is to stop the things that might have a negative effect on the aquifer," Andrews said.

The bottom line: protecting groundwater and thus drinking water quality.

"It's really a proactive approach, said Terry Wilson, head of the Department of Public Services for the City of Howell. "It does mean more work for us but we see it as beneficial as water is a non-renewable resource."

For more information about the wellhead protection program, contact Roger Andrews at the Livingston County Health Department at (517) 546-9850.

TEST YOUR GROUNDWATER KNOWLEDGE

Another goal of the MHOG wellhead protection program: teaching residents about safe groundwater protection practices. To rate your groundwater IQ, read the following lists and check all groundwater practices you currently follow. The scoring system is listed at the end of the quiz.

RISKY PRACTICES:

- I store old pesticides that haven't been used for years.
- I use a pesticide without checking the directions.
- I hose down a pesticide spilled on the drive.
- I apply pesticides and fertilizers when I have time.
- I fertilize the lawn before it begins to grow in the spring.
- I use a pesticide on my "sick" tree.
- I leave fertilizer on the sidewalk.
- I have a private well on my property even though I'm hooked into a public water supply.

SAFE PRACTICES:

- I get rid of unwanted pesticides by taking them to a "Clean Sweep" site.
- I read and follow label directions on pesticides.
- I collect spilled pesticide and reuse it, or dispose of it at a Clean Sweep site. Liquid pesticide spills can be collected with an absorbent product like kitty litter.
- I check the weather forecast to avoid application of pesticides and fertilizers when rain is predicted. Heavy rains will reduce the effectiveness of the product and increase risk of groundwater contamination.
- I fertilize the lawn at least three weeks after spring green-up to improve turf health and reduce risk for groundwater contamination.
- I diagnose tree problems by calling an expert and considering all treatment options. Not all plant problems require a pesticide.
- I sweep fertilizer off the sidewalk and driveway so rainwater doesn't carry it into drainage systems that connect to rivers, streams and lakes.
- If I have a private well on my property and since the well is in use, I recorded its location with the local health department. If not, I had it properly plugged by a licensed well driller.

WHAT'S YOUR SCORE? Tally up the number of SAFE practices checked from above.

0-6 — GROUNDWATER ALERT! Your activities present a high risk of groundwater contamination.

7-8 — MEDIUM RISK. Your activities present a potential risk of groundwater contamination. You can make improvements.

9 — LOW RISK. Congratulations! You are a groundwater protection partner.

Qualifying historic homes may get tax break

HARTLAND

Some properties in Hartland Township that may qualify for listing in the State Historical Register would be eligible for a new 25 percent state tax credit on rehabilitation expenses, according to Barbara Krueger of the Hartland Area Historical Society.

Under two bills signed by Gov. John Engler in January, residential homeowners may be eligible for the tax credit if the renovations they have made cost at least 10 percent of the property's State Equalized Value (SEV).

However, the property must also be listed on the State Historical Register, the National Register of Historic Sites or included in a locally protected historic district. In addition, the work must have been done according to the standards for rehabilitation set by the Secretary of the Interior.

Several meetings will take place this summer and next fall to provide more information on he new legislation, Krueger said. They are scheduled for Friday, June 11, in Bay City; Saturday, Sept. 25, in Lansing; and Friday, Oct. 8, in Rochester.

The fee is $8.50 for each participant. For more information, contact the Michigan Historic Preservation network, (248) 625-8181, or the State Historic Preservation Office, (517) 373-1630.

Just because a home is old doesn't necessarily make it eligible for the State Register, according to Krueger. It must also have a connection to a significant person or incident, have distinguishing architectural features, or be associated with events that made a significant contribution to the local patterns of history.

While few individual properties in Hartland Township could stand alone as an historic property, their association with the Hartland Area Project could make structures over 50 years old throughout the entire village eligible for such a designation, Krueger said.

The fact that the village is relatively unchanged since it was first platted in the 1840s, and the school district's status as the second consolidated school district in the state, also could contribute to eligibility, she added.

Irrigation For Home Lawns

Turf Maintenance Tips To Preserve Water Quality

G. T. Lyman, P.E. Rieke, & J.M. Vargas Jr.

MICHIGAN STATE UNIVERSITY EXTENSION

Watering the lawn is a necessary activity for many homeowners who desire a high quality turf. When done correctly, irrigating turf will ensure better density and growth that allows the turf to compete more effectively with weeds and to reduce other pest problems. A healthy turf can offer outstanding protection of water resources by significantly reducing surface runoff and soil erosion and increasing the infiltration rate of water into the soil. The first watering event after a fertilizer or pest control application is the most critical when considering environmental impact. Excessive water after application has a much higher potential to move these products past the active plant growing zone in runoff or leachate. By imposing a light irrigation (0.2") after application, these products will be moved into the thatch and root zone where they are intended. Once there, the potential for them to move off the site is significantly reduced.

Understanding a few basics of turf growth and the effects of supplemental irrigation can help determine the best approach for your property. The major factors involved in proper irrigation are the desired level of maintenance, soil conditions, the water delivery system, weather conditions, and the timing of water application.

Basics of Turfgrass Growth

The natural cycle for cool season grasses found on Michigan lawns has two distinct growth peaks during the year. The first is in the spring when growth increases rapidly following winter dormancy. Characteristic warming temperatures and abundant rainfall during this period promote vigorous growth. Depending on weather conditions, this first growth surge will peak during May or June. Following this period in July and August, weather patterns usually provide higher temperatures and low rainfall. The cool season turfgrasses respond by reducing the amount of leaf and root growth. Extended periods of these conditions will cause the turf to go dormant (stops growth and turns brown). This is a natural processes that allows the plant to survive these conditions. The crown of the plant (which is the critical growing point) remains alive - waiting for adequate water. Supplemental irrigation during this period can prevent dormancy and allow the turf to remain green throughout the summer stress period. During late August through October, leaf growth increases as temperatures cool and rainfall is normally more available. Root growth during this period becomes more active and continues into the fall while soil temperatures remain above freezing. The late summer/early fall period is considered the second growth peak of the season. Weather conditions each year determine the duration of the active or dormant growing conditions.

Setting Goals

Setting objectives for your lawn and the level of maintenance which you are willing to commit is the first step in determining your irrigation practices. If you desire a high quality lawn and have a reliable irrigation system, this goal will be easier to achieve. Medium or low maintenance lawns would not normally be irrigated, and dormancy during the hot, dry periods would be expected. Some homeowners welcome this dormancy as a relief from regular mowing! The amount of water involved in achieving a high quality turf will vary from year to year, depending on weather patterns. It is important to note that an abrupt change in watering practices from regular irrigation to no irrigation during the heat stress period might be harmful to the turf. Dormancy must be induced gradually to condition the grass plant to tolerate the onset of hot and dry conditions. The cost and availability of water in your area should also be considered when setting your irrigation goals.

Soil Type

The amount of water required by a lawn is influenced by the soil type. Sandy soils hold less water than loamy soils, so the turf dries out faster in

sands. Low volume, frequent applications insure that excessive water doesn't move past the plant zone. Soils with more silt and clay or organic matter can hold more water per application. However, compacted clay soils do not accept water readily and runoff can occur from sloping sites. The goal is to match the delivery rate of the irrigation system with the infiltration rate of the soil.

Amount and Timing of Irrigation

Generally, lawn turf requires 0.5 to 1.5 inches of water per week. The amount of water you apply will vary depending on the weather conditions and rainfall events. Periods of high temperatures, coupled with full sun and high wind will require more water. It is important to note that the water can come from either rainfall or irrigation. Light, frequent applications of water are much more productive than heavy applications once a week. Remember that turf roots are naturally shorter during hot and dry weather and water moved past the root zone is of no benefit. Research at Michigan State University also indicates that damage from certain turf diseases and insects are reduced when light, frequent (daily) irrigation is used compared to a heavy, infrequent sequence. That corresponds to 0.1 to 0.2 inches of water for each irrigation event. Applying this amount could correspond to 10-60 minutes of irrigation depending on the output of your system. The rate and pattern of delivery for your system can be measured by placing cans in the lawn throughout the irrigation pattern. Turn on the system for one hour and measure the amount collected. Use this information to determine how long it will take to provide the amount needed. An in-ground irrigation system is more expensive, but will give better coverage is easier to use. Hose end sprinklers are not as easy to use and uniform coverage is a challenge.

The best time of day for watering is early afternoon just prior to the highest temperature period of the day. This takes advantage of the cooling effects of water. You should slightly increase the amount during high temperatures and sustained wind to account for evaporation.

Wrap It All Together Success

First, choose a level of quality or maintenance that is compatible with your objectives and choose a range of total water needed (0.5-1.5 inches per week). Pick a specific amount after making adjustments for weather and soil conditions. Then split that amount up into light frequent events. During dry, hot periods, this will be daily irrigation.

Be aware of poor distribution when irrigating during periods of high winds. Additional irrigation cycles may be needed to achieve adequate distribution and prevent dry spots. On sloping lawns, apply shorter cycles with repetition will permit time for infiltration and reduce potential for runoff.

Finally, take control of the sprinkler! Coordinate the irrigation with rain events and don't overload your lawn by irrigating in the rain. Install a rain over-ride device on your irrigation system to prevent wasting water. During rainy periods turf off a clock-controlled irrigation system. Remember that keeping the water where the turf can use it is the most efficient and environmentally sound program.

Calibrating Your Irrigation System

1. Set collection cans out on the lawn throughout the distribution pattern of the irrigation system.
2. Run the irrigation system for 1 hour.
3. Measure the amount of water collected in the cans and approximate the average.
4. Find your rate of application in column 1 and set your timer to deliver the desired amount of water.

Application Rate	Minutes to apply 0.1 Inch	Minutes to apply 0.2 Inch
.20	30	60
.25	24	48
.30	20	40
.35	17	35
.40	15	30
.45	13	27
.50	12	24

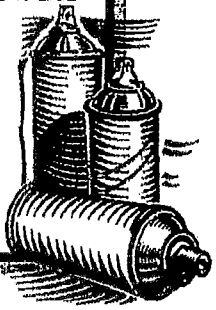
HOUSEHOLD HAZARDOUS WASTE
COLLECTION DAY:
NOVEMBER 21

ACCEPTABLE MATERIALS

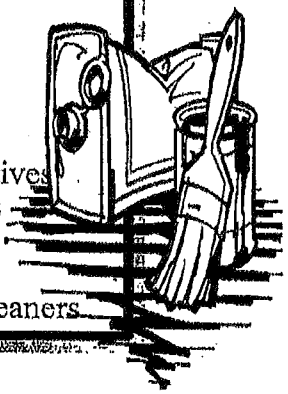
KITCHEN/BATHROOM
Floor Care Products
Nail Polish
Furniture Polish
Oven Cleaners
Scouring Powders
Spot & Stain Removers
Chlorine Bleach
Toilet Cleaners
Grout sealer/primer
Moth Balls
Aerosol Cans

GARAGE
Antifreeze
Brake Fluid
Metal Polish
Transmission Fluid
Fuel Oil
Kerosene
Engine Cleaners
1 LB. Propane Cylinders

GARDEN
Bug spray
Ant & Roach Powder
Weed Killer
Fly Strips
Herbicides
Insecticides
Fungicides
Rat Poison



WORKSHOP
OIL BASED PAINT ONLY
Paint Stripper & thinner
Turpentine
Primer
Varnish
Glue, Solvent Based
Mineral Spirits
Wood Stain & Preservatives
Photographic Chemicals
Lighter Fluid
Fiberglass Epoxy
Upholstery & Carpet Cleaners



UNACCEPTABLE MATERIALS

UNKNOWN OR UNLABELED WASTES
COMMERCIAL OR INDUSTRIAL WASTES
USED MOTOR OIL
RADIOACTIVE MATERIAL
EXPLOSIVES
AMMUNITION
SMOKE DETECTORS
LATEX PAINT

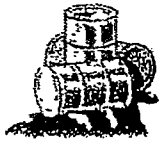
NO LATEX PAINT

Call (517) 545-9609 to schedule an appointment

Livingston County Solid Waste Coordination Department

WHEN USED OIL IS DUMPED, IT'S A SERIOUS POLLUTANT.

- In Michigan, an estimated 11 million gallons of used oil are dumped in sewers, empty lots, on weeds and in landfills by people who change their own oil.
- Used motor oil contains toxic substances, like lead, produced during engine use. Dumping used oil sends oil and its contaminants into ground and surface water.
- One quart of oil will foul the taste of 250,000 gallons of water.
- One pint of oil can create an acre-size slick on surface water.
- Oil kills the floating organisms in fresh water that feed fish.. Oil kills aquatic life.



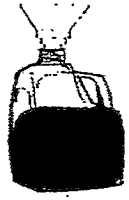
WHEN USED OIL IS RECYCLED, IT RECOVERS A VALUABLE RESOURCE.

Used oil can be collected and rerefined. Rerefined oil is as good a lubricant as new oil.

Used oil can be reprocessed. Utilities and industries use it to supplement other fuels and also to manufacture other petroleum proudcts.

HERE'S HOW YOU DO IT:

Drain your oil into a reusable container, such as a milk jug.



Take it to a participating station listed on this brochure.

If you don't find a collection center near you, ask your full service station if they will take your oil.

IMPORTANT: DON'T MIX OTHER WASTES WITH USED OIL. SUCH MIXTURES CAN CREATE HAZARDS AND MAKE RECYCLING MORE DIFFICULT.

COLLECTION CENTERS

CALL AHEAD TO CONFIRM!

BRIGHTON:

Autoworks
420 W. Grand River
(810)-227-2272

BC Marathon Auto Repair
9934 Weber
(810) 227-4611

CARS Plus Marathon
525 E. Grand River
(810) 227-8510

Mechanics Auto Supply
4990 Old US 23
(810) 227-7377

Victory Lane Quick Oil Change
9557 E GrandRiver
(810) 229-0313

FOWLERVILLE

Fowlerville Exit Shell
936 Grand Avenue
(517) 223-9129

HARTLAND

Sunoco
10440 Highland Rd
(810) 632-5504

HOWELL

Cruz-n
2825 E. Grand River
(517) 546-1113

Howell Auto Center
63 Schroeder Park Dr.
(517) 546-5470

Jim Moore's Auto Service
2339 W. Grand River
(517)546-7490

Purdue Shell
6000 Pinckney Rd
(517) 548-1566

Tractor Supply Co.
3652 Grand River
(517) 548-7600

Victory Lane Quick Oil Change
3150 E. Grand River
(517) 548-5400

PINCKNEY

John Colone Chrysler
1295 E. M-36
(313) 878-3154

DON'T DUMP IT!

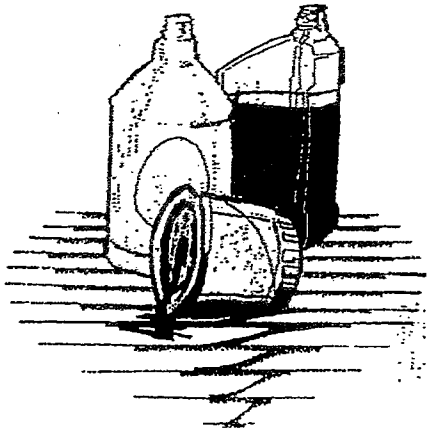
RECYCLE USED OIL!

FOR MORE INFORMATION, CALL THE LIVINGSTON COUNTY SOLID WASTE COORDINATION DEPT

(517) 545-9609

Livingston County
Solid Waste Coordination Department
304 E. Grand River Ave.
Howell, MI 48843
(517) 545-9609
Fax: (517) 546-7265

USED MOTOR OIL



DON'T DUMP IT!
RECYCLE IT!

LIVINGSTON COUNTY

YOUR SEPTIC SYSTEM MAINTENANCE RECORD

Use the chart below to keep a record of your septic system maintenance. This will also remind you of when you need to schedule your next inspection & pumping. Remember, do it every 2 to 3 years! If you move, leave this card with the new homeowner.

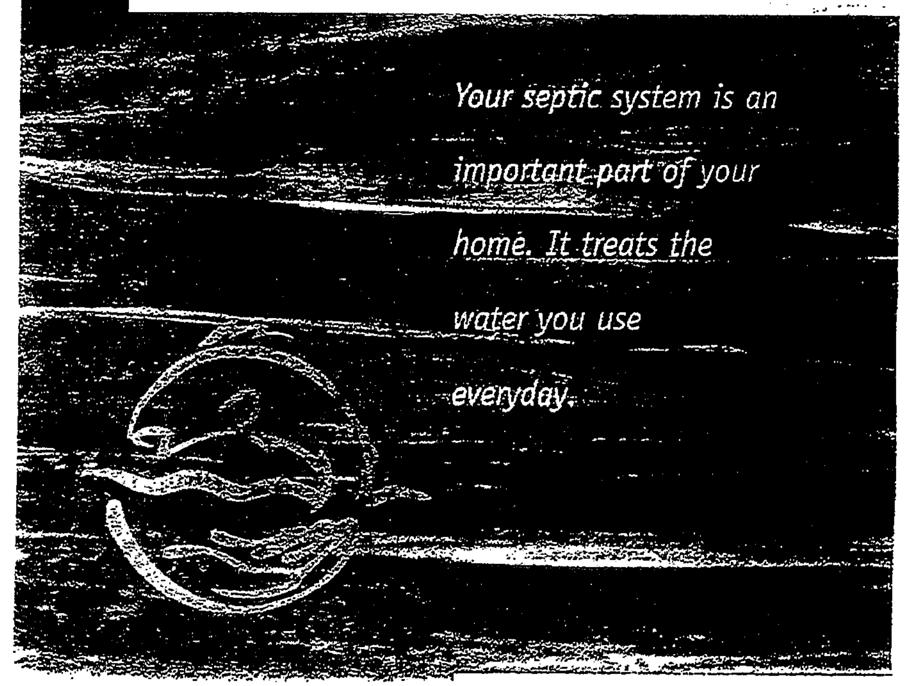
DATE	WORK DONE	BY WHOM	COST

Keep this card handy. Call the Livingston County Health Department at [illegible]-9850 for more information.

A cooperative education effort between the Huron River Watershed Council ([illegible]) and the City of Ann Arbor Water Utilities Department ([illegible]).

Keep septic safe

MAKE YOUR HOME SAFER FOR YOU AND OUR WATER



Wa... from your bathrooms, kitchen, and washing machine all go into a septic tank where solids settle out. Most of these solids are digested by bacteria. The remaining liquid then flows into a drainfield where it slowly filters through soil. Organisms in the soil consume the remaining wastes.

PROTECT YOUR INVESTMENT IN YOUR WASTEWATER TREATMENT SYSTEM!

Follow these tips to make sure your septic system functions properly.

Have your septic tank pumped & inspected every 2 to 3 years. Septic tanks should be pumped out every 2 to 3 years by a reputable septic tank service contractor, who is required to have a state permit to handle and dispose of the material. Businesses are listed in the telephone directory. For more information, you can also call the County Health Department at 517.546-9850.

Use less water. Don't let the water run while shaving, brushing your teeth, washing your hands, washing dishes, etc. Spread your laundry washing out over the week to avoid putting a lot of water into the drainfield at once.

Avoid using chemicals. Chemicals such as drain cleaners, toilet bowl cleaners, and "miracle system cleaners" will kill the bacteria which break down sludge in your septic system. An alternative drain cleaner is 1/2 cup of baking soda, followed by a 1/2 cup of vinegar poured down the drain. Let that sit a few minutes and then follow with boiling water.

Don't use a septic system for the disposal of anything other than toilet wastes and the water used for bathing, laundry, and dishwashing. The system cannot handle other waste such as cigarette butts, diapers, coffee grounds, tampons, condoms, and grease.

Keep cars and trucks away from the drainfield and septic tank. Never build or pave over the drainfield. Driving or building on your tank or drainfield can compact soil and break pipes. Soil compaction and paving prevents oxygen from getting into the soil. This oxygen is needed by bacteria to break down and treat sewage.

Keep a record of when your septic system has been inspected and pumped. Keep this card and use the other side as a record.

MAINTAINING YOUR SEPTIC SYSTEM IS GOOD FOR YOU, TOO!

It saves you money!

A failed septic system is very expensive to fix. Periodic maintenance will prevent failure to a properly constructed system.

It protects your drinking water!

Improperly functioning septic systems can contaminate nearby wells with nitrate, which can pose a serious threat to infants and some adults.

Fertilizing Home Lawns

Turf Maintenance Tips To Preserve Water Quality

P.E. Rieke & G. T. Lyman

MICHIGAN STATE UNIVERSITY EXTENSION

The first step in developing a fertilizer program for your lawn is to identify the objectives for the lawn area on your property. There are a wide range of functions that homeowners demand from their lawns. Many property owners desire a formal appearance where the lawn provides a uniform and manicured setting. Others may utilize their lawns as highly trafficked play areas, while others are interested in as little maintenance as possible to provide a reliable and stable surface. Carefully consider the function for your lawn along with the growing conditions on your property and then set realistic objectives for your lawn. The fertilizer programs described below are structured into three different levels of maintenance - low, medium and high. Choose the level of maintenance which will best fit the level of input you want to dedicate to your lawn area and also achieve the objectives you have prescribed.

All property owners should understand the environmental considerations of their lawn maintenance activities. The use of fertilizers can be conducted in a manner which will minimize the potential for off-site movement. Properly fertilized turfgrasses can provide an excellent filter for environmental contaminants, yet excessive, poorly timed, or misapplied fertilizers have the potential for off-site movement resulting in degraded water resources. Of particular concern is fertilizer particles that land on impervious surfaces such as driveways and sidewalks. These materials are likely to runoff in rainwater and be carried downstream. Be aggressive in sweeping these particles back into the lawn area where they will be utilized. Homes located in urban areas with curb and gutter systems that are connected to stormwater drainage systems should consider themselves connected to surface water resources via the storm water handling system. Sensitive sites such as waterfront properties should refer to the "Maintaining Waterfront Turf" factsheet for special instructions.

The three main components of turf fertilizers are nitrogen (N), phosphorus (P), and potassium (K) (potash). A fertilizer labeled 20-5-15 contains 20 % nitrogen, 5 % phosphorus, and 15% potash by weight. The importance of each of these components is discussed individually below.

Soil Testing

Knowing the conditions of your soil is one of the most important factors in growing a healthy lawn. Your MSU Extension office can instruct you on how to conduct a soil test through the MSU Plant and Soil Nutrient Laboratory.

Components Of A Fertility Program

Nitrogen

Nitrogen is an essential nutrient for all plant growth and is available in many forms from garden centers or professional lawn care services. To successfully meet the objectives of most lawn areas, annual applications of nitrogen are required. The total amount of nitrogen required each season will vary depending on the desired level of maintenance and the growing conditions on your property. Recommendations for the amount of nitrogen and time of application for each maintenance level (low, medium, high) are listed below in the Timing Chart.

High maintenance situations are considered to be where a high quality, uniform, dense lawn or athletic field is desired and an irrigation system is available. This primary turfgrass species used in this situation is Kentucky bluegrass. The medium maintenance situation is for most general lawn or athletic field areas where no supplemental irrigation will be applied, but the intention is to optimize turf growth for quality, density, or playing conditions. The low maintenance situation is intended for lawn areas where the lowest level of input to maintain turfgrasses for a stable surface is desired.

Please consider the environmental responsibility of applying nitrogen to your lawn. Nitrogen is easily dissolved in water. When too much nitrogen is available for turfgrass plants to consume and excessive water is present, nitrogen has the potential to move away from the lawn and into water resources. This situation can be easily avoided by following these suggestions.

- Do not apply more than 1 pound of nitrogen to 1000 square feet of lawn per application.

In general, the recommendations located on lawn fertilizer bags are designed to apply the desired

amount - 1 pound of nitrogen per 1000 square feet of lawn. For example, if a bag of fertilizer lists that it will cover 5,000 square feet of lawn, it will deliver approximately 5 pounds of nitrogen to that area. Follow the bag directions and don't over apply.

• Consider using slow release forms of nitrogen.

Slow release nitrogen fertilizers are designed to release nitrogen to the plant slowly over a longer period of time. Slow release fertilizers include organic sources such as poultry manure or sewage sludge. Others include common nitrogen sources such as urea or ammonia nitrate which are coated with materials that release the nitrogen slowly over time. The portion of slow release nitrogen available in the fertilizer product is listed as "water in-soluble" nitrogen on the label. Choose those products with slow release nitrogen to reduce the potential for off-site movement.

• Keep fertilizers off impervious surfaces

Sweep fertilizer particles from driveways and sidewalks back onto the lawn area. This will prevent them from moving downstream during rainfall events.

Phosphorus

Phosphorus is a common component in most turfgrass fertilizers. It is an important element for turf growth and is critical for establishment of new seedlings. Phosphorus levels in soil are stable and a soil test will reveal the amount needed annually on your lawn. Most Michigan soils have adequate phosphorus levels and therefore continual applications of phosphorus may not be necessary.

Phosphorus is a primary water quality concern in Michigan. Phosphorus applied to lawns is quickly bound to soil particles after the fertilizer has been adequately watered into the lawn. It is important to sweep these fertilizer particles from impervious surfaces to reduce the potential for them to move away from lawn areas. Sensitive lawn sites adjacent to lakes, streams and ponds should use no-phosphorus fertilizers when soil levels for lawns are adequate.

Potassium

Potassium is also a primary turfgrass fertilizer element. It is usually applied in a range from 1/2 to the full rate of nitrogen at each application. Potassium levels in soil are relatively stable and a soil test will reveal the amount needed annually on your lawn. Those soils below 120 pounds of K per acre are low for lawn turf, and above 250 pounds of K per acre need no additional potassium. Potassium is not regarded as a major water quality concern.

Putting Your Program Together

Identify the objectives for your lawn and choose your nitrogen fertility program from the chart below that will best fit your objectives. Phosphorus and potassium should be added to the program based on soil test information.

Once you have picked the level of maintenance and quality for your lawn, you can now target the application time for the most effective use of the nutrients. The application times listed in the table take advantage of late fall fertility. Research at Michigan State University has demonstrated several benefits for late fall nitrogen applications. During this time of year the top growth of the plant slows down as the temperatures cool, but the root growth continues to be active. Fertility at this time of year will enhance the root growth and the plant is able to store additional carbohydrates. These reserves provide vigorous spring green-up, allowing the traditional early spring fertilizer applications can be delayed. This adjustment helps limit the heavy top growth usually associated with early spring fertilizer applications. Environmental studies at MSU reveal that this late fall application does not pose an elevated risk to water quality. The application times listed in the table are general guidelines for the mid-Michigan area. Adjustments can be made for growing conditions in northern or southern areas.

TIMING CHART

Pounds of Nitrogen Per Thousand Square Feet Of Lawn

Fertility Level	April	May	June	July	Aug.	Sept.	Oct.	Nov.
Low (1-2 # Total)						1.0	and / or	1.0
Medium (3 # Total)	1.0	or	1.0			1.0		1.0
High (4-6 # Total)	1.0	and/or	1.0	.5-1.0	.5-1.0	1.0		1.0

Special Considerations

You will need to adjust fertility for grasses grown in shady areas by reducing the overall nitrogen applied. The overall nitrogen applied can also be reduced by approximately 1 pound of N per thousand square feet when returning clippings to the turf.

Sample Press Release

For Immediate Release:
[*Date*]

Contact: [*Name*]
[*Phone #*]

Protect Your Drinking Water... Protect the Source!

[*City*],[*State*]—Have you ever thought about where your drinking water comes from, beyond the faucet? Did you know that what you do in and around your home can affect not only the quality of your water but also the quality of your neighbor's water? Find out where your drinking water really comes from and learn about how you can help protect it during a [*Duration of campaign*]-month-long drinking water source awareness campaign, starting [*Start date*], sponsored by [*Name of sponsor*]. The campaign will provide information on

- The source of your local drinking water
- The value of safe drinking water
- Potential threats to your local drinking water
- Steps you can take to protect your drinking water
- Contact information for additional resources on drinking water protection.

Safe drinking water is essential to a community's quality of life and continued economic growth. Yet citizens may not always be aware of safe drinking water issues in their community and may not realize what needs to be done to protect drinking water and keep it safe for their families and businesses. Drinking water wells across the country are being contaminated daily by common activities, such as pouring motor oil and household chemicals down drains, using too much pesticides and fertilizers, and littering streets with refuse that will eventually run off into rivers and streams. When water supplies are not safe, the health of the community — especially of the young, the old, and the sick — is jeopardized. In addition, communities may experience a loss of tax revenues from real estate and new jobs as businesses refuse to locate to or remain in communities with known or suspected water contamination problems.

Protecting drinking water sources is the first line of defense in ensuring safe drinking water. If communities are aware of their drinking water sources and of potential threats to these sources, they can take steps to keep the sources safe and improve their local environment. There is something everyone — from retirees to school kids to individuals in their homes — can do to help. To find out what you can do, contact [*Contact name and phone number*].

[*Acknowledgment*]

# # #

GROUNDWATER PROTECTION FACT SHEET

RAISING PUBLIC AWARENESS ABOUT GROUNDWATER PROTECTION THROUGH COMMUNITY-BASED INFORMATION & EDUCATION

DEQ MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
RUSSELL J. HARDING, DIRECTOR
JANUARY 1997

LOCAL LEADERSHIP FOR GROUNDWATER PROTECTION

Groundwater protection at the local level can have a powerful effect when the entire community joins together to reduce hazards. Leadership to develop education, public information, and regulatory programs to address local needs is essential for a sustainable future.

COMMUNITIES THROUGHOUT MICHIGAN HAVE TAKEN STEPS TO PROTECT GROUNDWATER

- Genoa Township (Livingston County) and Springfield Township (Oakland County) were among the first communities to adopt groundwater protection policies and amend site plan review standards to include groundwater quality concerns.
- Oxford Village (Oakland County) used zoning and right-to-know inspections (carried out by the fire department) to reduce groundwater threats to the public water supply system.
- The City of Parchment and Cooper Township (Kalamazoo County) jointly developed a wellhead protection program and coordinated regulatory program.
- The City of Novi (Oakland County) through the fire marshal, administers a Hazardous Substance Ordinance which applies to new and existing businesses.
- Manistee County initiated a cooperative groundwater protection planning process with municipalities. Site plan review standards and overlay districts for wellhead protection are two of the zoning approaches being considered by individual municipalities.

For additional examples of local planning, education, wellhead protection, and groundwater protection programs, contact the MDEQ Office of Groundwater Planning and Special Services: 517/373-0014.

STEPS FOR EDUCATION PROGRAM DEVELOPMENT

Step #1: Organize a groundwater protection team to develop and help implement a public awareness campaign. Invite representatives from neighboring communities to participate. Make the group as diverse as possible by including business representatives, civic groups, environmental groups, teachers, fire department, planning commission, etc.

Step #2: Identify land uses and activities (existing and potential new development) which are potential sources of groundwater contamination. Ask questions and research answers. Take advantage of state, county, and university expertise.

Step #3: Identify options and opportunities for communicating with selected groups and the community as a whole. Search for ways to define the economic and communitywide importance of clean groundwater.

Step #4: Assess community resources and ways to connect groundwater protection with other ongoing activities such as economic development, household recycling/waste disposal, fire department right-to-know surveys, household hazardous waste collection programs, etc. Look for opportunities to add groundwater references into existing programs.

Step #5: Identify activities which will raise awareness about groundwater protection needs in the community. Assign responsibilities for carrying out the steps.

Step #6: Track progress and publicize successes. Give recognition and thanks to citizens, businesses, and organizations which take the lead with groundwater protection.

PUBLIC INFORMATION METHODS

- Library displays.
- Cable television shows.
- Portable table display and outreach at community events.
- Articles for the local newspaper.
- Fact sheets prepared for businesses — with emphasis on low-cost ways to fill floor drains, provide secondary containment for hazardous substances, etc.
- Community newsletters.
- School science fair projects focusing on groundwater flow and groundwater protection.
- Public information [illegible] with the water [illegible]
- Information rack [illegible] and flyers from [illegible] government agencies.
- [illegible] demonstration project.

EXAMPLES OF PRIVATE SECTOR PARTICIPATION AND SUPPORT

- Septic system service provides cost reduction for pumpouts during a specified time period.
- Well driller helps residents understand how they can safely fill and close out-of-service wells.
- Chamber of Commerce sponsors waste reduction seminars and [illegible] awards.
- Business representatives participate in citizen advisory committee.

GROUNDWATER GUARDIAN: BUILDING TOWARD RESULTS

The Groundwater Foundation based in Nebraska, in cooperation with a group of Michigan-based advisors, invites local governments to "sign up" to become Groundwater Guardian Communities.

To achieve Groundwater Guardian status, a community must: (1) form a local Groundwater Guardian Team; (2) submit an annual entry; (3) work with community leaders to develop and implement "Result Oriented Activities," and (4) submit a progress report.

The Groundwater Guardian Team is the first and most important step for a program. The team must be organized before the community can enter the program, and should include representatives from the following sectors: (1) citizen organizations; (2) business and agriculture; (3) education; and (4) government. Each team is responsible for planning and carrying out three "result oriented" activities.

For further information about the Groundwater Guardian Program, contact Christine Spitzley, c/o Tri-County Regional Planning Commission, Lansing, 517/393-0342 or The Groundwater Foundation, PO Box 22558, Lincoln, Nebraska 68542 1-800-858-4844.

Pursuant to Act 451 of 1994, as amended, total number of copies printed: 1,000; total cost: $48.00; cost per copy: $.048.

MICHIGAN GROUNDWATER PROTECTION STRATEGY GOALS

1. Protect public health and environment by preventing future degradation of groundwater and restoring to productive use groundwater that has already been contaminated;
2. Manage and protect groundwater as part of overall water management, recognizing the interrelationship between groundwater and surface water; and
3. Create a cooperative management environment for all levels of government, business and industry, and citizen organizations which encourages and rewards groundwater protection.

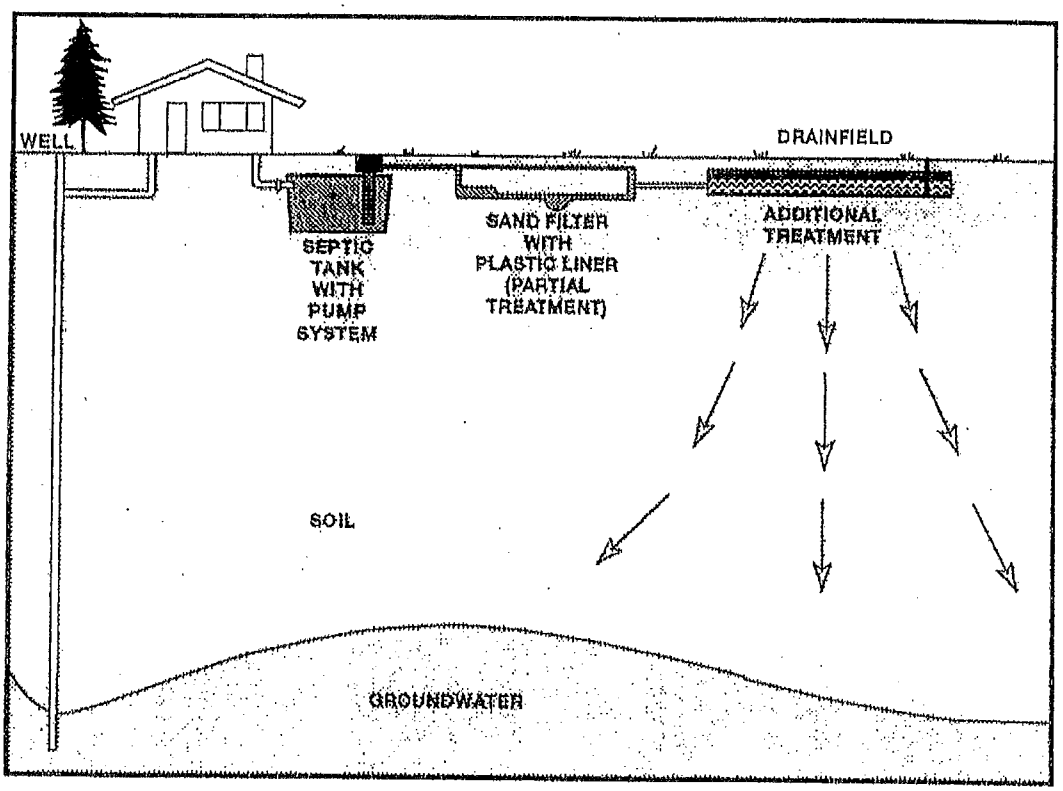
Office of Groundwater Planning and Special Services
Michigan Department of Environmental Quality
P.O. Box 30473
Lansing, MI 48909
Telephone: (517) 373-0014

Printed on Recycled Paper

GROUNDWATER PROTECTION FACT SHEET

On-site Wastewater Systems With Sand Filters: Maintenance Needs For Groundwater Protection

DEQ Michigan Department of Environmental Quality
John Engler, Governor
Russell J. Harding, Director
November 1998



SAND FILTER SYSTEMS HELP PROTECT GROUNDWATER

When properly designed, installed, and maintained, on-site wastewater treatment systems can provide effective treatment of wastewater.

Sand filter systems, incorporated into the on-site wastewater treatment system design, have worked well in some tight (clay) soil conditions, and have also helped to improve the operation of existing septic systems in Michigan. Sand filters provide a high quality effluent that minimizes or eliminates the impact of the septic system on groundwater beyond the property boundary — provided that proper siting, operation and maintenance take place.

SAND FILTER BEDS REQUIRE MAINTENANCE

Proper maintenance of sand filters is ***absolutely essential.*** Without routine maintenance, sand filters will eventually fail — costing the property owner and the community time, trouble and cleanup funds.

Property owners are responsible for the maintenance of on-site systems which they own. Trained wastewater professionals can be hired to provide basic maintenance services once or twice a year, as needed. County and/or local agencies may provide technical assistance or oversight of maintenance activities. Public agencies also enforce standards to protect groundwater, surface water, and public health.

GOVERNMENT RESPONSIBILITIES FOR ASSURING ON-SITE SYSTEM MAINTENANCE

On-site wastewater treatment systems (including systems with sand filters and drainfields) are appropriate systems for use in rural, **low-density** areas. When properly sited, designed, operated, and maintained, on-site systems provide for long-term wastewater disposal without threatening water quality.

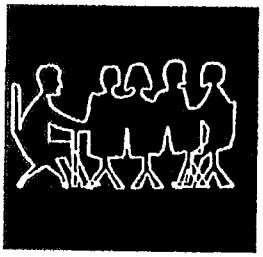
Property owners and local officials sometimes think that county and district environmental health agencies are responsible for maintaining septic systems and assuring groundwater protection — this is not a correct assumption. Property owners are responsible for maintaining their own on-site wastewater treatment systems in conformance with county code requirements.

LAND USE PLANNING FOR SITE DEVELOPMENT LOCATIONS

Local land use planning that incorporates protection of natural features, groundwater, and surface water is important for maintaining the quality of these resources and for long-term enjoyment of low-density areas served by on-site systems.

Areas where soils, topography, and drainage are generally suitable for on-site wastewater treatment systems can be identified as part of a land use planning process. On-site wastewater treatment systems, including sand filter systems, are suitable for low-density areas. Centralized wastewater treatment systems are useful for moderate and high-density development.

Local governments are responsible for anticipating development pressures and guiding the development in ways which help achieve local objectives. County health departments can assist as technical advisors in the land use planning process.



RESPONSIBILITIES OF TOWNSHIPS, VILLAGES, AND CITIES

Under Michigan law, townships, villages and cities are responsible for cleanup and remediation if sewage disposal facilities fail. The law specifying these requirements is Part 31 of the Natural Resources and Environmental Protection Act (NREPA). Local governments in Michigan have, in several cases, been forced to pay for sewer extensions when failing septic systems created water quality problems.

Local governments can also help protect groundwater in the following ways:

- By incorporating groundwater protection into local planning and zoning;
- By providing fact sheets about on-site wastewater treatment system maintenance to residents;
- By assuring that maintenance for sand filters is specified when the master deed for a condominium or subdivision association is approved; and/or
- By working with county health departments to develop fee-based governmental programs to assure inspections and maintenance.

When public wastewater treatment systems are constructed, public agencies are responsible for assuring system operation and maintenance. Public agencies sometimes contract with private wastewater professionals to provide this service.

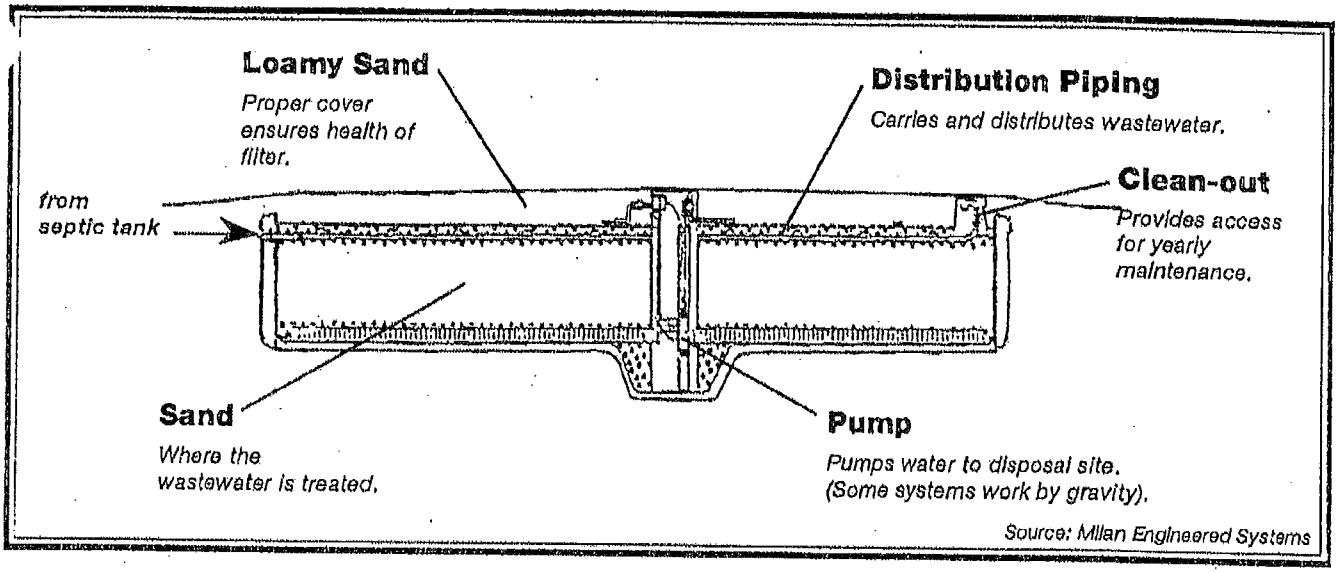
COUNTY HEALTH DEPARTMENT RESPONSIBILITIES

County and district health departments, in cooperation with local boards of health and county commissioners, can update their sanitary codes to allow technology which will provide adequate on-site wastewater treatment. Because sand filter technology has been proven effective for statewide use, some counties are updating their sanitary codes to allow for sand filter systems.

County and district health departments can also work cooperatively with local governments to identify options for assuring sand filter maintenance and financing. Options for assuring maintenance include requirements for maintenance contracts, deed restrictions, fees to homeowner associations, and/or fees to government agencies to assure periodic inspections and maintenance.

County health departments are viewed by local officials as the knowledgeable source of information about environmentally-safe methods for on-site wastewater treatment and disposal. It is the responsibility of county health department staff to keep informed about advances in technology and making these options available to developers and residents.

INTERMITTENT SAND FILTER DESIGN FOR HOUSEHOLD WASTEWATER



WHAT IS A SAND FILTER?

A sand filter is a constructed bed of sand or other suitable material (usually 2 - 3 feet deep) into which pretreated waste from the septic tank is discharged. The sand filter may be above ground, below ground, open, or covered. A plastic liner is usually installed to contain the sand filter media and prevent infiltration of groundwater. The main purpose of the liner is to keep shallow groundwater out of the bed.

Partially treated wastewater from the septic tank is applied in small doses to a bed of specified sand. Wastewater is treated through filtering and biological action as it slowly trickles through the sand media. Bacteria in the sand bed break down the organic materials in the wastewater, resulting in water that is substantially cleaner. Wastewater is then discharged to a drainfield for further treatment.

In a standard on-site sewage disposal system, final wastewater treatment takes place in the drainfield. In areas with a high groundwater table or areas where the receiving soil is excessively permeable, there is a potential for wastewater to reach sensitive areas before treatment is complete. The addition of a sand filter to an on-site sewage system provides for greater treatment before discharge to the soil — hence enhancing protection of groundwater and public health.

Sand filter options, including intermittent sand filters and recirculating sand filters, make it possible to install systems to meet the needs of specific sites.

CHECKLIST FOR SEPTIC TANK AND SAND FILTER MAINTENANCE

The following items are recommended to be included in a routine septic tank and sand filter inspection:

Septic tank: Schedule septic tank pumpouts every 3-5 years.

Septic tank effluent pump system: Check pumps, timer settings, float switches, and valves. Repair or replace, as needed. If meters are present, record and evaluate pump cycles and pump run time.

Distribution pipe cleanout: Flush the manifold laterals to remove accumulated solids and to keep holes clear. Failure to flush laterals will eventually lead to clogging of the distribution piping.

Pressure check distribution system: Pressure should be measured in the distribution pipe network. Higher than normal pressures indicate partial clogging of distribution holes.

Check observation sumps: Check for partial clogging of the sand and drainage system.

These maintenance tasks can be carried out by a trained technician and do not typically require the expertise of an engineer. One or two inspections a year are usually recommended.

PROPERTY OWNER RESPONSIBILITIES FOR SAND FILTER MAINTENANCE

Property owners are responsible for sand filter maintenance. Depending on county and local program options, property owners may pay a fee to a homeowners association, contract directly with a septic system maintenance company, or pay a governmental agency to provide the service.

ARE SAND FILTER SEPTIC SYSTEMS COST-EFFECTIVE?

Sand filter septic systems are often a cost-effective approach to on-site wastewater treatment. Although more expensive to install than a standard septic system, sand filters are often a cost-effective solution for difficult sites. Systems in Michigan are being installed at a cost of $8,000 - $12,000 — although specific costs vary with land costs and with technology.

Maintenance costs of $100 - $150 per year for a sand filter system are typical. If the sand filter media needs to be replaced, costs are higher. However, with regular inspections, the need for expensive maintenance can often be avoided. In the long run, maintenance is lower for sand filter systems because the sand filter minimizes the potential for clogging of the drainfield — a problem which leads to costly drainfield replacement.

For further information about septic system and sand filter requirements, contact your county or district health department.

Special appreciation is extended to the following individuals who served as advisors to this project:
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Contacts for the Michigan On-Site Wastewater Recycling Association.

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DEQ Michigan Department of Environmental Quality

MICHIGAN GROUNDWATER PROTECTION STRATEGY GOALS

1. Protect public health and environment by preventing future degradation of groundwater and restoring to productive use groundwater that has already been contaminated;
2. Manage and protect groundwater as part of overall water management, recognizing the interrelationship between groundwater and surface water; and
3. Create a cooperative management environment for all levels of government, business and industry, and citizen organizations which encourages and rewards groundwater protection.

Drinking Water and Radiological Protection Division
Michigan Department of Environmental Quality
P.O. Box 30630
Lansing, MI 48909-8130
Telephone: 517-335-9054
Internet: http://www.deq.state.mi.us

EQC 2036d (11/98)

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GROUNDWATER PROTECTION FACT SHEET

ABANDONED WELLS AND CISTERNS: ELIMINATING AN UNNECESSARY RISK

DEQ MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
RUSSELL J. HARDING, DIRECTOR
JANUARY 1997

HAZARDS FROM ABANDONED WELLS AND CISTERNS

Abandoned wells, old dug wells, and cisterns are found throughout Michigan — especially in older communities and on farms. Abandoned wells pose health and safety hazards:

- People (especially children) and small animals may fall into open wells and be injured or killed. Large-diameter hand dug wells and cisterns are particularly a concern.
- Unsealed abandoned wells are routes for groundwater contamination. Runoff water carrying bacteria, sediment, fertilizer, pesticides and other chemicals may flow directly into the groundwater. The direct flow bypasses the natural filtering and degradation processes that take place when runoff infiltrates the soil.
- Abandoned wells may allow contaminated water to move between two aquifers.
- Open wells may be accidentally or intentionally used as waste disposal pits.

WHAT IS AN ABANDONED WELL?

Wells that are no longer in use or that are in such disrepair that they do not yield groundwater are called "abandoned wells." Wells that are contaminated and will no longer be utilized are also classified as abandoned wells.

Usually the term "abandoned well" refers to small-diameter drilled wells which were once used as a source of drinking water or water for lawns.

Hand-dug wells and cisterns are also called abandoned wells but are different in structure and do not have a standard well casing pipe. Dug wells are often 2 - 6 feet in diameter and between 10 - 30 feet deep. Such wells may be lined with brick, field stone, or cement crocks.

Hand-dug wells may have been originally constructed as a source of drinking water. Such wells were also used as cisterns to store rainwater. Originally hand-dug wells and cisterns were an important asset to property — now they are a liability.

IDENTIFYING ABANDONED WELL LOCATIONS

Local governments and citizen organizations can help protect groundwater by searching for and mapping abandoned well locations. Finding abandoned wells often requires a deliberate, highly-visible effort. Communitywide publicity through newspaper articles or public meetings helps to raise awareness and initiate action.

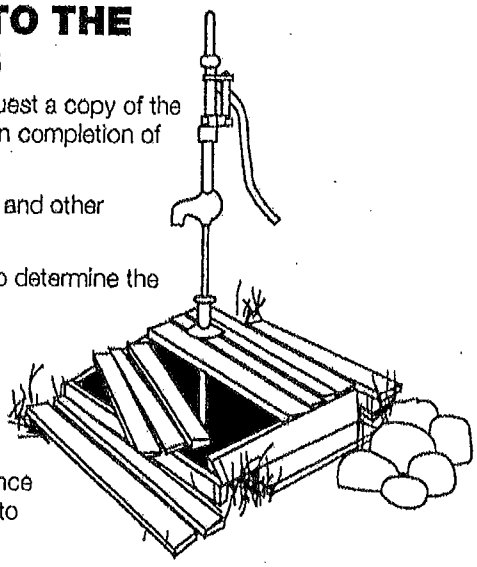
Potential tragedies can be avoided simply by plugging abandoned wells and packing impermeable material from the bottom to the top.

Materials used for plugging abandoned wells include impermeable swelling bentonite clay, neat cement (Portland cement and water), or concrete grout (Portland cement, sand, and water). For further information, refer to the Michigan Water Well Construction and Pump Installation Code or MSU extension Bulletin WQ 40.

Seek professional assistance from a well driller for the following types of wells:

- Drilled wells
- Flowing wells
- Wells greater than 100 feet deep
- Wells where water is seeping from around the casing
- Wells which produce gas
- Wells where pumping equipment is difficult to remove.

PROCEDURES COMMON TO THE PLUGGING OF ALL WELLS



1. Contact your local health department and request a copy of the well log — a record filed by the well driller upon completion of the well (required by state law since 1967).
2. Remove all pumping equipment, pipes, debris and other obstructions from the well.
3. Measure the well depth and casing diameter to determine the volume of plugging material needed.
4. Plug the well following procedures from the Michigan Water Well Construction and Pump Installation Code.
5. Remove or cut off the well casing at least 4 feet below ground level to eliminate interference with future site use. It is usually not necessary to remove the entire casing.
6. Mound and compact low-permeability soil over the plugged well to prevent ponding of surface water.
7. Contact the local health department to obtain the abandoned well reporting form required by state law. File a copy of the plugging report with the property deed.

CAN I PLUG THE WELL MYSELF?

Two types of wells can often be successfully plugged by well owners with a minimum of special equipment: (1) driven wells (pointed well screen attached to a steel pipe, less than 30 feet deep); and (2) large-diameter dug wells and cisterns.

Costs range from $25 to $150 or more, depending on the well depth, casing diameter, amount of plugging material used, and other factors. Before attempting to plug the well yourself, review state well plugging regulations and make sure that you understand all steps. It is costly to correct mistakes since the defective plug must be drilled out.

Dug wells and cisterns can be plugged by placing alternating layers of clean soil (not more than 10 feet thick) with layers of bentonite chips or pellets (at least 6 inches thick). The upper four feet of concrete crock, stone, or brick should be removed. After the top layer of bentonite chips or pellets has been placed, water should be added to expand the bentonite. The surface layer of soil should be mounded slightly at the top and compacted to help offset settling and drain water away from the site. For complete instructions, please refer to the Michigan Water Well Construction and Pump Installation Code and MSU Extension Bulletin WQ 40.

FOR FURTHER INFORMATION:

For information about state regulations and well abandonment procedures: contact Mr. Mike Gaber, Well Construction Unit, Michigan Department of Environmental Quality; 517/335-8304. Technical references, including MSU Bulletin WQ 40 and a public information video are available.

To locate a well drilling contractor near you: Check the telephone directory yellow pages under Water Well Drilling & Service; contact the Michigan Groundwater Association (formerly the Michigan Well Drillers' Association) at 313/428-0020; or call your local health department.

TECHNICAL REFERENCES:

1. "Plugging Abandoned Wells," Michigan State University Extension, Water Quality Series Bulletin WQ 40, February 1993, available through County MSU Extension offices; and
2. "Well Decommissioning for Groundwater Protection," Michigan Department of Agriculture, Groundwater Stewardship Program, Draft, August 1996. For copies, telephone, 517/335-6528.

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Office of Groundwater Planning and Special Services
Michigan Department of Environmental Quality
P.O. Box 30473
Lansing, MI 48909
Telephone: (517) 373-0014

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GROUNDWATER PROTECTION FACT SHEET

POLLUTION PREVENTION AT SMALL COMMERCIAL & INDUSTRIAL FACILITIES

DEQ MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
RUSSELL J. HARDING, DIRECTOR
JANUARY 1997

SMALL BUSINESSES AND ENVIRONMENTAL CONTAMINATION

As of September 1996, 2600 sites of environmental contamination and over 6500 leaking underground storage tank sites were identified on Michigan's inventory lists. About 20% - 25% of the environmental contamination sites and about 90% of the leaking underground storage tank sites involve small businesses.

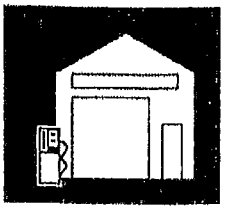
Hazardous substances which are of concern include materials such as fuels, oils, degreasers, acids, reactive materials, and toxic chemicals. These materials can reach groundwater through floor drains, septic systems, stormwater runoff, and leaking tanks and pipelines — as well as by direct spills.

Many of these pathways to groundwater can be eliminated or blocked through common-sense management practices. Local governments, county health departments, nonprofit organizations, and state agency representatives are working together to alert and inform small businesses about potential hazards, environmental impacts, and costs.

LAND USES AND HAZARDOUS SUBSTANCES

More than 50 categories of commercial and industrial land uses have the potential for contaminating groundwater because they utilize hazardous substances in their daily operations. The following categories of businesses sometimes use hazardous substances:

- Automotive sales and service
- Vehicle maintenance garages--public and private
- Gasoline service stations
- Manufacturing firms which use solvents or other chemicals
- Transportation terminals
- Airport operations
- Furniture repair and refinishing
- Laundries and dry cleaners
- Laboratories
- Metal products
- Warehouse operations for paints, solvents, and chemicals
- Junk yards; salvage yards; resale/refinishing shops
- Food processing and food products
- Lawn care businesses; pest control
- Lumber and wood production
- Auto body and repair shops
- Apparel and textile products
- Printing and publishing; silkscreening
- Stone, clay, and glass products
- Other manufacturing which uses solvents and oils
- Chemicals and paint manufacturing
- Petroleum and coal product storage
- Power washing for buildings
- Electronic and other electrical equipment
- Engine and electrical repair
- Paper and allied products
- Fuel oil dealers
- Pest control services
- Leather processing



UNDERGROUND STORAGE TANKS AND PIPING

Underground storage tanks, whether new or old, can pose a risk to groundwater. Secondary containment (such as double-walled tanks) and other groundwater protection measures are good investments and may be required by state regulations.

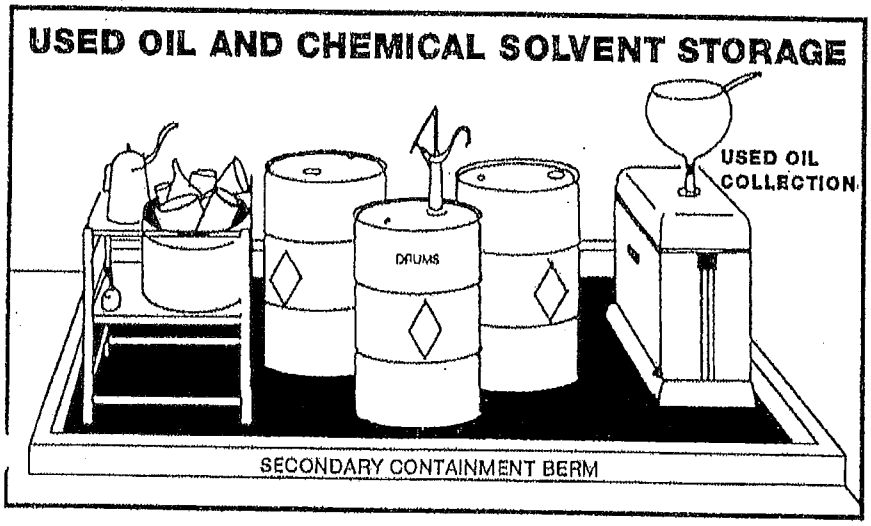
SECONDARY CONTAINMENT FOR ABOVEGROUND STORAGE OF HAZARDOUS SUBSTANCES

Secondary containment is an enclosure — without an open outlet — designed to trap and control leaks and spills.

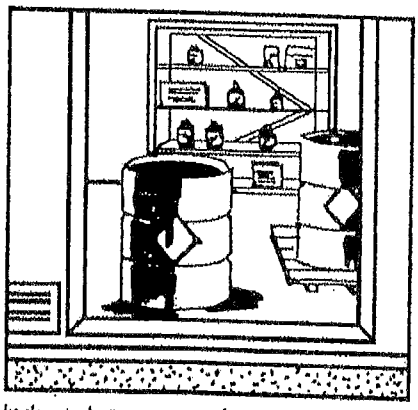
Secondary containment structures vary in design and cost. Options include small sheds (with proper ventilation), drum holding areas with berms and impervious floors, double-walled tanks, and solvent storage rooms without floor drains.

Two common construction materials for outdoor secondary containment areas are (1) poured concrete; and (2) block-type structures using re-bar, in combination with grouting to enhance strength. Concrete block is low-cost and may be adequate inside buildings. Concrete block is rarely recommended for outdoor locations, however, because it can easily crack and doesn't weather well. Sealants or liners should be used with concrete block to assure proper containment.

Welded metal containers provide excellent secondary containment. Metal containers may be prefabricated or specially constructed for a particular facility. Angle iron with a welded basket, bolted to the floor, has been used by some industries. Fiberglass and other plastics may also be useful.



Source: Clinton River Watershed Council, modified by MCEQ



Indoor storage room for hazardous substances.

INDOOR STORAGE AND USE AREAS

From a groundwater protection standpoint, indoor storage of hazardous substances is usually preferable to outdoor storage. Indoor storage avoids weathering of containers, direct spills to the ground, and the accumulation of precipitation.

An interior room which serves as a secondary containment area is a logical, low-cost approach to safe storage. Examples include:

- Turning a work room into a secondary containment room by blocking general purpose floor drains.
- Using a cutoff room with a "sill-type" entrance. (The room is "cut off" from the main building by a fire-rated wall).
- Creating a permanent secondary containment area within a larger work room by building a berm around existing tanks or a drum storage area.

Note: *Indoor storage may increase fire hazards! Fire safety and environmental protection regulations should be reviewed before indoor secondary containment facilities are designed.*

HAZARDOUS WASTE MANAGEMENT AND DISPOSAL

- ❑ Is any hazardous substance or waste (even diluted waste) allowed to enter the sanitary sewer? If yes, permission from the wastewater treatment plant operator should be obtained.
- ❑ Is the facility a small quantity generator of hazardous waste? Is the facility a conditionally-exempt generator of hazardous waste?
- ❑ If the facility is a regulated generator of hazardous waste, has an EPA identification number been obtained?
- ❑ Does the hazardous waste transporter have an EPA identification number?
- ❑ Are hazardous waste manifests (shipping papers) retained for at least three years?
- ❑ Do you have on file the locations and facilities that will receive the hazardous waste?

RECYCLING AND WASTE REDUCTION

- ❑ Are solvents, used oil, antifreeze, automotive batteries, etc. recycled?
- ❑ Are there alternative materials which are less hazardous (or nonhazardous) which could be substituted for hazardous substances?
- ❑ Could basic changes in manufacturing, parts cleaning, or processing reduce quantities of hazardous waste generated?
- ❑ Could small quantities of chemicals be purchased? Although the unit price of chemicals may be relatively high in small quantities, waste resulting from expired or unused chemicals is avoided.

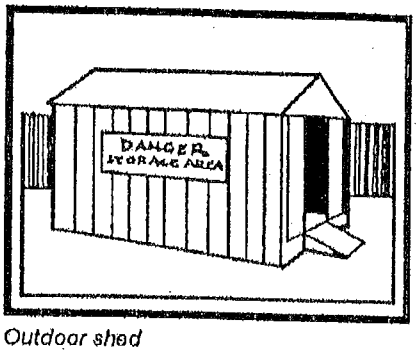
CONTACT THE ENVIRONMENTAL ASSISTANCE CENTER FOR WASTE REDUCTION & RECYCLING INFORMATION

1-800-662-9278

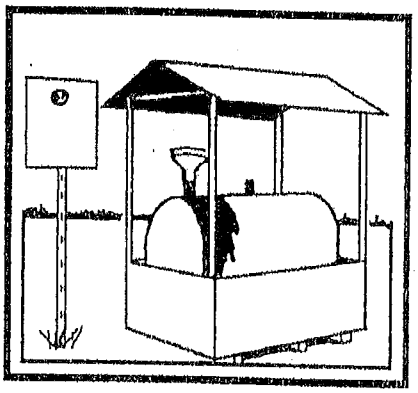
Service from the Environmental Assistance Division, Michigan Department of Environmental Quality include: telephone consultations; on-site, confidential technical assistance; access to national pollution prevention/waste reduction resources; publications; workshops; and information on vendors of waste reduction/pollution prevention goods and services.

For a listing of waste reduction tips related to specific types of businesses, request the 1993 fact sheet titled "Preventing Groundwater Contamination" (8 pages).

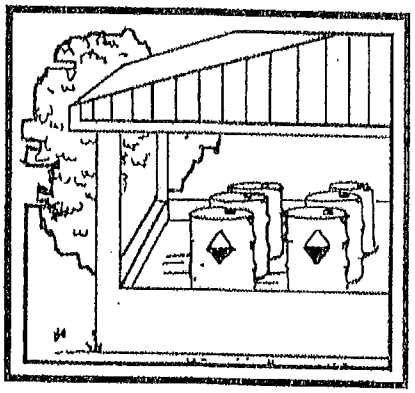
Secondary Containment



Outdoor shed



Fabricated metal

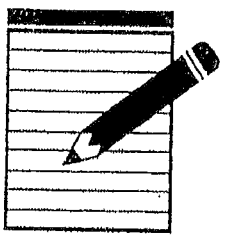


Pole shed

Source: Modified from "Small Business Guide to Secondary Containment", Secondary Containment Work Group, Clinton River Watershed Council, 1990.

Hazardous Waste Reduction Checklist For Small Businesses

An inventory and assessment of a business workplace for purposes of identifying ways to reduce waste and prevent pollution can save costs and improve efficiencies. Most importantly, on-site management by business owners themselves can help assure groundwater protection for the future.



INVENTORY OF HAZARDOUS SUBSTANCES AND POLLUTING MATERIALS

- ☐ What types of chemicals, hazardous materials, petroleum products, and/or hazardous wastes are used, stored or generated at the facility? (A list should be submitted to the local fire department in accordance with Firefighter Right-to-Know requirements.)
- ☐ What quantities of each type of substances are used, stored, or generated?
- ☐ Are containers labeled according to their hazardous characteristics? (e.g., flammable, corrosive, toxic, and/or reactive)
- ☐ Are record-keeping procedures in place so that the quantities of hazardous substances entering and leaving the facility are known?
- ☐ Are Material Safety Data Sheets (MSDSs) kept on file?

PREVENTING GROUNDWATER CONTAMINATION THROUGH SAFE STORAGE AND HANDLING

- ☐ Are storage containers sealed and leak-proof? (primary containment)
- ☐ Are hazardous substances stored inside or in a structure protected from weather and vandalism? If not, secondary containment will be extremely important.
- ☐ Are there locations (such as loading docks or other outdoor locations) where leaks of hazardous substances could reach the ground or groundwater? If yes, secondary containment structures should be provided.
- ☐ Do floor drains in general purpose work areas meet one of the following specifications:
  - ☐ 1. Connect to a wastewater treatment plant (with permission from the operator)
  - ☐ 2. Connect to a closed holding tank (so that wastewater can be safely disposed)
  - ☐ 3. Function in accordance with a state groundwater discharge permit (and/or an EPA Class 5 Well permit)
- ☐ Are floor drains in work areas blocked so as to prevent the flow of wastewater or hazardous substances into septic systems, dry wells, the ground or groundwater?
- ☐ Are drums stored in a designated, curbed location, where they will not be accidentally tipped over or punctured?
- ☐ Has a spill prevention plan been prepared? Has a Pollution Incident Prevention Plan (PIPP) been prepared and reviewed with employees?
- ☐ Are employees trained to handle hazardous substance emergencies? Are emergency telephone numbers prominently posted? Is a spill cleanup and containment kit available?
- ☐ Are drums and storage areas properly labeled?

GROUNDWATER HAZARDS FROM FLOOR DRAINS

The risk of soil and groundwater contamination due to improper floor drains is substantial. When wastewater and washwater carrying solvents, oils, and other pollutants are washed into the ground, concentrations of pollutants can build up. Very small amounts of contaminants can pollute large amounts of groundwater.

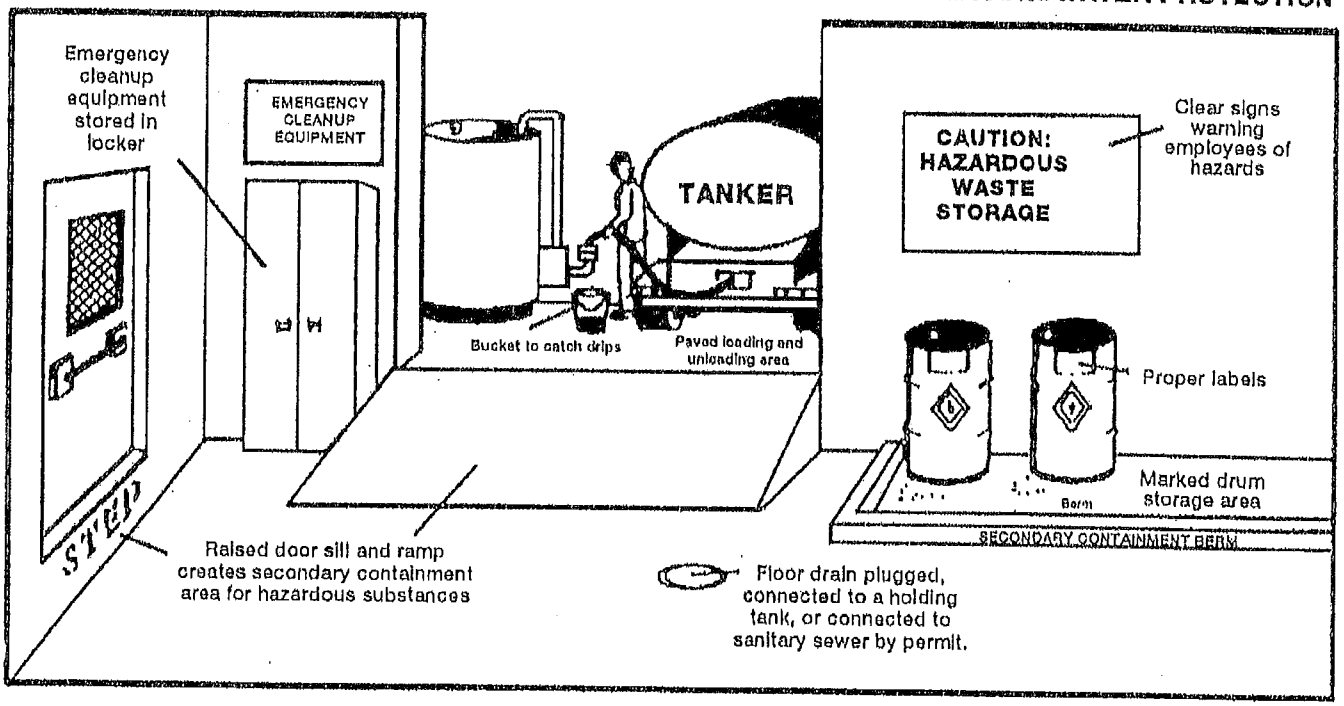
An estimated 5,000 - 6,000 facilities in Michigan have improper floor drains discharging to the ground or groundwater. General purpose floor drains should not be connected to septic systems, dry wells, streams, ditches, or the ground.

According to Michigan laws and regulations, businesses and government facilities may use general purpose floor drains to dispose of liquid wastes only if one of the following is in place:

1. The floor drain connects to a municipal wastewater treatment plant and approval to discharge has been received from the wastewater treatment plant operator;
2. The floor drain discharges to a closed holding tank from which the wastewater is subsequently collected by a licensed hauler for disposal at an approved facility; or
3. The discharge to ground or surface water is permitted or exempted by the Michigan Department of Environmental Quality under Part 31 of the Natural Resources and Environmental Protection Act (NREPA).

Businesses and government agencies are urged to close off general purpose floor drains in their facilities. Even when a business does not directly discharge wastewater to floor drains, the presence of the drain creates a potential environmental hazard since wastewater or chemicals may be inadvertently poured into the drain.

AN INTERIOR WORK AREA OR STORAGE ROOM CAN BE DESIGNED FOR GROUNDWATER PROTECTION



Source: Waste Systems Institute of Michigan, Inc. Modified by Clinton River Watershed Coun

POTENTIAL LEGAL LIABILITY AND CLEANUP INFORMATION

Under Michigan law, property owners and facility operators are required to clean up environmental contamination which results from their activities. Remedial action always requires considerable time and money.

For information about legal liability and responsibilities, contact the Michigan Department of Environmental Quality (MDEQ). The MDEQ Environmental Response Division is responsible for sites of environmental contamination. The MDEQ Underground Storage Tank (UST) Division is responsible for underground storage tank registration, inspections, and cleanup. Contact the following Lansing offices to obtain the telephone number of the district office closest to you:

MDEQ Environmental Response Division: 517/373-9837

MDEQ Underground Storage Tank Division: 517/373-8168

Spills of hazardous substances should be reported to the Pollution Emergency hotline: **1-800-292-4706.**

SEARCH FOR POLLUTION PREVENTION OPPORTUNITIES

Each business operation is unique. As a result, the waste reduction and pollution prevention practices that are economical and useful at one facility may not work for others. Managers are encouraged to complete a waste reduction and pollution prevention audit at each facility.

Employees can be a valuable resource when considering pollution prevention activities. It may be useful to include employees in the planning process and to provide economic incentives to reduce waste.

For facility-specific information on recycling and waste reduction options, contact the Environmental Assistance Center of the Michigan Department of Environmental Quality: P.O. Box 30457, Lansing, MI 48909; Telephone: 517/373-9400.

For assistance with environmental permit requirements, contact the Permit Coordinator, Environmental Assistance Division at 517/335-4235. County and local regulations may also apply.

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Telephone: 517-373-0014

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HAZARDOUS WASTE IN MY HOME?

While much concern about hazardous waste has fallen on manufacturers, your own household may contain about 30 pounds of hazardous substances.

WHAT IS A HAZARDOUS WASTE?

There are four categories of hazardous substances; POISONS like pesticides, FLAMMABLE substances like gasoline and solvents, CORROSIVE chemicals like acids or drain cleaners, REACTIVE substances that may explode or cause a fire when they come in contact with another chemical.

HOW DO YOU DISPOSE OF YOUR HAZARDOUS WASTE?

Many insecticides, weed killers, automotive and cleaning products, paints and hobby supplies contain hazardous chemicals that can cause problems if used improperly and when the need for disposal arises. Dumping these chemicals on the ground, in the trash or down the drain may present a health hazard to you, your family, neighbors, and sanitation workers. The information provided on the inside of this pamphlet is a guide to the best disposal practices for common products. If you have questions on a particular product contact one of the references.

PREVENTION IS THE BEST SOLUTION

You can minimize the need for special disposal and the health hazard of having these chemicals around the house by following these guidelines:

* Read the product label before buying.
* Use a non-hazardous substitute product when possible. This may save you money and protect the environment. (Exp. vinegar for a cleaning solution)
* Don't buy more hazardous products than you need. Why buy a gallon when a quart will do.
* Use the product up but don't over apply. Read the directions on the label and if you have leftovers see if a friend can use it.

If you have questions call one of the references listed below.

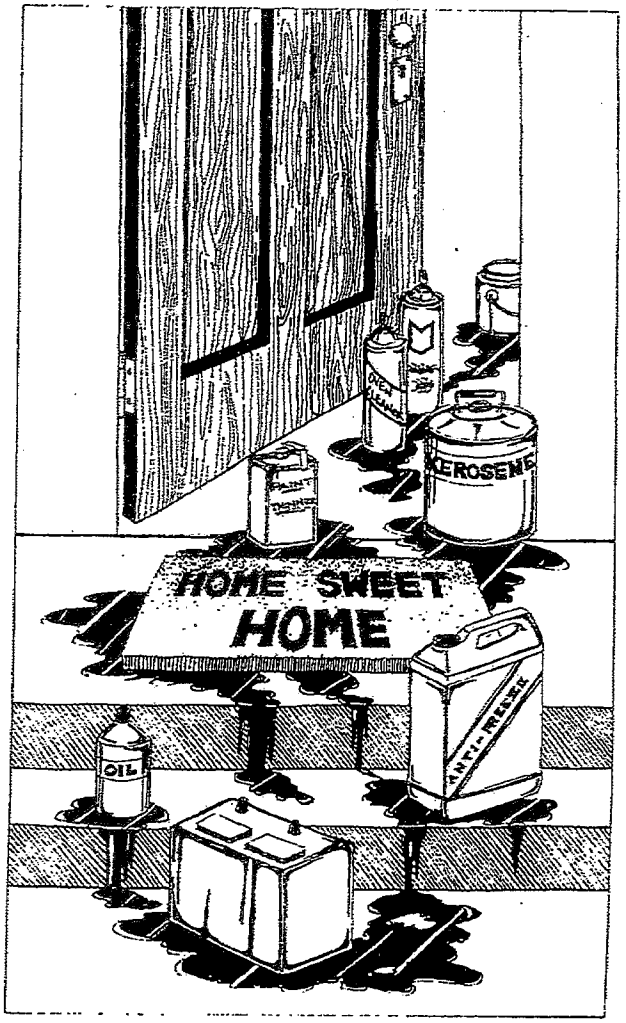
Your local Health Department or County Cooperative Extension Service

D.N.R. Office of Waste Management
517/373-2730

Center for Environmental Toxicology
517/353-6469

Center for Environmental Health Science
517/335-8350

HOUSEHOLD HAZARDOUS WASTE



MANAGING HOUSEHOLD HAZARDOUS WASTES

TYPE OF WASTE	RECYCLE THE WASTE Contact one of the references listed.	HOUSEHOLD HAZARDOUS COLLECTION PROGRAM Contact one of the references listed.	FLUSH DOWN DRAIN Use plenty of water.	PLACE IN TRASH Special handling may be required* or Follow Label Disposal Instructions
Aerosol cans: empty	NO	NO	NO	YES
full or partially full	NO	YES	NO	NO
Automotive products: oil, brake fluid, transmission fluid	YES	NO	NO	*
Antifreeze: small amounts	NO	NO	NO	YES
large amounts	NO	YES	NO	NO
Caustics: oven cleaner, drain cleaner bleach	NO	YES	*	*
Cosmetics: nail polish, nail polish remover, perfume, after shave	NO	NO	NO	*
Flammables: acetone, alcohol, gasoline, lacquer, paint thinner	NO	YES	NO	NO
Oils: kerosene, heating oil	YES	NO	NO	NO
Pesticides	NO	YES	NO	*
Pesticides containers (empty)	NO	NO	NO	*
Paints: oil based or lead	*	YES	NO	NO
latex	*	NO	NO	SOLIDIFY
Medications	NO	NO	YES	*

* Follow label instructions for use and disposal / Use up for intended purpose / Solidify liquids using sawdust or commercial absorbant.

MHOG Utilities @MHOGWater · Sep 29, 2021

#ProtectTheSource because our drinking water is essential to preserve our health and economy now and for future generations.
#SourceWaterProtectionWeek

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