

PREDRILLING SITE REVIEWS AND WELL PERMITTING

Introduction

Local health departments (LHD) are responsible for issuing water well construction permits for single family residential homes, type II public water supplies, and type III public water supplies. Most LHDs also issue permits for irrigation and industrial water wells. The permitting process can vary greatly from LHD to LHD. However, a general overview of the well permitting process is as follows:

1. Individual applies for a well construction permit prior to drilling the well.
2. LHD evaluates the permit application and conducts an office pre-drilling site review.
3. LHD may or may not make a visit to the proposed well site prior to issuing the permit.
4. LHD issues the well permit.
5. Well installation is completed, and contractor submits a water well and pump installation record to the LHD.
6. LHD evaluates the well record for accuracy and completeness.
7. LHD may or may not conduct an onsite final inspection of the system.
8. Water samples (based on well permit requirements) are collected by the well owner, well driller or LHD.
9. LHD deems the well installation either approved or not based on the well record, water sample results, and a final inspection, if applicable.

Pre-Drilling Site Review

A Predrilling Site Review (PDSR) is the proactive phase of the well permitting process that assesses the proposed water well drilling site, before drilling is started, to determine if:

1. There is a likely potential to encounter a water quality or quantity problem.
2. The water well site is near a known potential source of ground water contamination. (A list of State of Michigan websites where sanitarians can search for contamination information is provided in this chapter.)
3. An "institutional control" established under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, is in effect in the vicinity of the water well.
4. Plat restrictions or restrictive covenants addressing minimum water well depth or other water well construction features are in place.
5. The water well location complies with minimum isolation distance requirements as specified in the State Well Code.
6. The water well will be accessible for maintenance.
7. The proposed water well will be constructed by a registered Contractor (or the property owner).

An **Office Predrilling Site Review** consists of, but is not limited to, a review of the following factors:

1. A detailed site plan showing the location of the proposed water well, distances from the water well to contamination sources (e.g. septic systems, sewer lines, fuel or chemical storage tanks, animal feedlots, pesticide application areas, etc.), buildings, roadways, and property lines. Sources of contamination on adjacent parcels, if known, must be included.
2. Deed restrictions or restrictive covenants.
3. Water well records.
4. Land use limitations such as institutional controls.
5. Contaminant source inventories (see “State of Michigan Websites for Contamination Information” in this chapter).
6. Hydrogeological studies (if submitted by the permit applicant).

A **Field Predrilling Site Review** consists of the same components as an **Office Predrilling Site Review**, except that an on-site assessment of the proposed water well site is made to verify the site plan details. Checklists for performing Office and Field PDSRs can be found in this chapter.



STATE OF MICHIGAN WEBSITES FOR CONTAMINATION INFORMATION

Water Withdrawal and Contamination Investigation Unit:

www.michigan.gov/deg

Click on "Water", then "Drinking Water", then "Contamination Investigation". Users can retrieve "Replacement Well Construction and Well Abandonment Specifications", and "Water Quality (arsenic, nitrate, VOC) Maps by County".

Environmental Mapper:

www.mcgi.state.mi.us/EnvironmentalMapper/

Part 201 Contamination Sites:

www.michigan.gov/deg

Click on "Land", then "Part 201 Site Search".

Part 213 Leaking Underground Storage Tanks:

www.michigan.gov/deg

Click on "Land", then "Leaking Underground Storage Tank Sites".

Part 211 Underground Storage Tanks:

www.michigan.gov/deg

Click on "Land", then "Underground Storage Tank List".

Part 117 Septage Application Sites:

www.mcgi.state.mi.us/miswims

Part 615 Oil & Gas Wells:

www.michigan.gov/deg

Click on "Land", then "Gas, Oil, and Minerals", then "Oil & Gas", then "Maps of Oil and Gas Wells".

Part 111 Hazardous Waste Sites:

www.deq.state.mi.us/tsd

Part 115 Landfills:

www.michigan.gov/deg

Click on "Waste", then "Solid Waste", then "Solid Waste Facilities".

Part 31 Groundwater Discharge Sites:

www.mcgi.state.mi.us/miswims

OFFICE PREDRILLING SITE REVIEW CHECKLIST

Owner _____ Site Address _____

Permit/Application Number _____

A. Application Review

1. Site sketch - Required information provided? (Checklist)

Proposed well location _____ Existing wells _____ Existing/proposed building _____
Roads and driveways _____ Existing/ proposed septic tank/drainfield _____
North arrow shown _____ Fuel storage tanks _____ Sewer lines (sanitary/storm) _____
Surface water (lakes, ditches, etc.) _____ Septic tank, drainfield, fuel tanks on adjacent
property _____ Property lines _____

2. Fee paid? YES NO

3. Application signed and dated? YES NO

B. Proposed water well location acceptable? YES NO

C. Any deviations requested? YES NO
If yes, specify on permit.

D. Existing wells on site? YES NO

If yes, will water wells continue in use after construction of
new well? YES NO

(If existing well(s) meet definition of an abandoned well, it must be plugged.
Plugging must be a permit condition.)

E. Is proposed well in a subdivision? YES NO

If yes, any subdivision/deed restrictions relating to well
construction? YES NO

List subdivision/deed restrictions on permit.

F. Has available ground water data (water well records, computerized
data bases, etc.) been reviewed? YES NO

1. Any of the following contamination sources or aquifer concerns
exist? YES NO

Salt Water ___ Hydrogen Sulfide ___ Methane ___ High Iron ___ Arsenic ___ Nitrates

Other _____

Known ground water contamination site _____ Act 451, Part 201 site

L.U.S.T. _____ Other _____

Flowing Well Area ___ Unprotected aquifer ___ Fractured (Karst) Limestone ___ Bacteriological ___

Bedrock within 25 ft of surface _____ Low Production/dry hole area _____

Other _____

2. Are special well construction requirements necessary? YES NO

Type of special construction requirements _____

3. Special sampling necessary? YES NO

Type of sampling _____

Sampling frequency: Initial sample only _____ Monthly _____ Quarterly _____ Annual _____

Other _____

Evaluated By: _____

Date: _____

FIELD PREDRILLING SITE REVIEW CHECKLIST

Owner _____ Site Address _____

Permit Number _____

A. Is water well site location information provided on application accurate? YES NO

B. Is site sketch accurate? YES NO

Check site for:

Proposed well location _____ Existing wells _____ Existing/proposed building _____

Roads and driveways _____ Existing/ proposed septic tank/drainfield _____ North arrow shown _____

Fuel storage tanks _____ Sewer lines (sanitary/storm) _____ Surface water (lakes, ditches, etc.) _____

Septic tank, drainfield, fuel tanks on adjacent property _____ Property lines _____

C. Are overhead or buried utility lines near proposed water well? YES NO

D. Will trees or other obstructions interfere with water well drilling rig setup? YES NO

E. Does the site topography allow access for water well drilling rig? YES NO

F. Will water well be accessible for maintenance after site development is completed? YES NO

G. Proposed water well location approved? YES NO

If proposed well location is not approved, is there an acceptable location? YES NO

If yes, mark location on site sketch.

Comments _____

Evaluated By _____ Date _____

ISOLATION DISTANCES

Introduction

Michigan law requires that certain minimum isolation distances be maintained when constructing a new well near a potential contamination source, such as a fuel storage tank, septic system, or an animal feedlot.

The actual location of your well will often be determined by factors other than sources of contamination or geologic conditions. Land surface features such as steep slopes and poorly drained areas are considerations in the location of the well. Whenever possible, wells should be located at higher elevations than the surrounding areas to decrease the potential for contamination.

In general, minimum isolation distances should not be the standard. In some cases, for example a well installation near a groundwater contamination site, the isolation distance should be maximized to provide the well owner with the best possible chance of maintaining a safe water supply.

Local Health Department Authority

Local health departments (LHD) have the authority to increase isolation distance based on various factors such as groundwater conditions or contamination sources. LHDs also have the authority to decrease the isolation distance from a well to a potential source of contamination through the use of deviations. Deviations are issued on a case by case basis. Criteria for issuance of deviations are set forth in R 325.1613 of the Rules for Part 127, and R 325.10809 of the Rules for Act 399.

Public vs. Private Water Supplies

Different types of wells may have different isolation distances. For example, a single family household well may require 50 foot minimum isolation from the septic tank and drainfield while a multi-family apartment building may require 75 foot isolation.

Act 399 PA 1976 (Safe Drinking Water Act) contains minimum isolation distances for public water supplies (Type I, Type II, and Type III).

**MICHIGAN DEPARTMENT ENVIRONMENTAL QUALITY
OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
ENVIRONMENTAL HEALTH SECTION**

MINIMUM WELL ISOLATION DISTANCES
(From Contamination Sources and Buildings)
Part 127, Act 368, P.A. 1978 And Act 399, P.A. 1976

The following lists sources of contamination and the well isolation distances required from those sources by state codes. The DEQ and local health departments have authority to issue deviations from these minimum isolation distances on a case by case basis. Criteria for issuance of deviations are set forth in R 325.1613 of the Rules for Part 127, and R 325.10809 of the Rules for Act 399.

* = For the isolation distances marked with a single asterisk, the isolation distance is for a source of contamination which is not specifically listed in the rules. However, the source of contamination is interpreted as belonging in a general contamination source group (example - a sewage holding tank is the same as a septic tank) which is listed in the rules, and therefore, the isolation distance listed in this document is required.

** = For the isolation distances marked with a double asterisk, the isolation distance is from a source of contamination which is not specifically named in the rules. However, the DNRE has established a recommended isolation distance based on the contaminant involved, the risk to public health, and other factors. Under the general authority of a health officer's responsibility to protect the public health, health officers may modify this recommended isolation distance, either increasing or decreasing it, on a case by case basis.

REQUIRED MINIMUM ISOLATION DISTANCE (FEET)			
Contamination Source	Part 127, Act 368 PA 1978	Act 399, PA 1976	
		IIb and III	I and IIa
Agricultural chemical/ fertilizer storage or preparation area	150	800	2000
Animal/poultry yard	50	75	200
Brine wells/injection wells	**150	**800	**2,000
Building or projection thereof	3	3	3
Cemetery/graves	**50	*75	*200
Cesspool	50	75	200
Chemical Storage	150	800	2,000
Contaminant plumes, known (Part 201, LUST sites, etc.)	**150	**800	**2,000

Drainfield	50	75	200
Drywell	50	75	200
Footing Drains	10	10	10
Fuel/chemical storage tanks – Underground or abovegrade and associated piping			
depot/tank farm	300	800	2,000
1,100 gal. or larger, without secondary containment	300	800	2,000
1,100 gal. or larger with secondary containment	50	800	2,000
less than 1,100 gal. which store motor or heating fuel for noncommercial purpose or consumptive use on premises where fuel is stored	50	800	2,000
less than 1,100 gal. which store motor fuel for commercial purpose	*50	800	2,000
located in a basement, regardless of size	*50	800	2,000
Grease trap	50	*75	*200
Kennels	50	*75	*200
Landfill or dump sites (Active or inactive)	800	800	2,000
Liquid Petroleum (LP) Tanks (See comments on last page)			
Liquid waste draining into the soil	50	*75	200
Metering station for pipelines	*300	*300	*300
Municipal wastewater effluent or sludge disposal area (land surface application or subsurface injection)	300	800	2,000
Oil or gas wells	300	300	300
Other wastewater handling or disposal unit	50	*75	*200

Petroleum product processing or bulk storage	300	800	2,000
Pipelines			
gas, oil, etc.	*300	*300	*300
natural gas (See comments on last page)			
Privy/Outhouse	50	75	200
Seepage pit	50	75	200
Septic tank	50	75	200
Septage waste (land application area)	800	800	2,000
Sewage holding tank	50	*75	*200
Sewage lagoon serving a single family dwelling	50	75	200
Sewage lagoon effluent – land application area	50	800	2,000
Sewage or liquid waste draining into soil	50	*75	*200
Sewage pump chamber, transfer station, or lift station	50	75	200
Sewers			
Buried gravity sewer (sanitary or storm) - Service weight or heavier ductile-iron or cast iron, or schedule 40 PVC, all with watertight joints	10	75	200
Buried pressure sewer (sanitary or storm) Watertight joints (pressure tested after installation to 100 psi), equivalent to Schedule 40 or SDR 21, and meets or exceeds ASTM Specifications D1785-91 or D2241-89	10 (by written deviation only)	75	200
Buried gravity or pressure sewer (sanitary or storm), constructed of materials not meeting the specifications listed in the two categories above, or the materials are unknown	50	75	200
Sump pit			
Receiving other than household waste (footing drain, roof drain, etc.)	10	10	10

Receiving household waste (laundry, softener backwash, sink waste, etc.)	50	75	200
Surface water (lake, river, stream, pond, ditch, etc.)	10	75	200
Unfilled space below ground surface (except an approved basement, basement offset, or crawl space beneath single family dwelling)	10	10	10

Comments: Natural gas and liquid petroleum (LP) are not considered sources of ground water contamination because of the volatile gas nature of the fuels. If leaks occur, the gases escape into the atmosphere. Leaked gases do not migrate downward into the soil. Wells should be sufficiently isolated from natural gas lines or LP tanks to minimize the potential for damage to the lines or tanks during well construction or repair, trenching of water lines, etc., and to allow accessibility to the well.

DEVIATIONS

LHDs have the authority to issue deviations for **minimum isolation distances** for individual well installations. Deviations should not be issued for political reasons, economic considerations or public relations. The deviation shall be requested, in writing, prior to well drilling. Types of documentation submitted to the LHD for a deviation approval include: location and sources of contamination, detailed site plan, neighboring well details, and proposed well construction details. Depending on the situation, a hydrogeological study and test wells may also be required.

Criteria for issuance of deviations are set forth in R325.1613 and are listed below:

Rule 113. (1) A health officer may issue a deviation if the spirit and intent of these rules are observed and the public health, safety, and welfare are assured.

Water service line to remain not in compliance with the provisions of these rules when extensive changes or repairs to a water supply system are made if the water service line is located beneath a permanent structure or pavement.

A well may be located closer to a potential or known source of contamination if the dimensions of the property do not permit compliance and if any of the following conditions exist:

- Groundwater flow direction is away from the well.
- The depth of the well and depth of grouting will provide protection of groundwater quality and the public health.
- The well is replacing a well on a site where a habitable structure exists.

A well may be required to be located more than the specified minimum distance from a source of contamination if the minimum specified distance will not protect groundwater quality or the public health due to local groundwater conditions, geology, or other factors.

10 feet to a pressurized sewer that meets all of the following requirements:

- pressure tested, not less than 100 pounds per square inch and watertight
- ASTM specification D 1785-91 or D 2241-89
- schedule 40 or SDR 21

A health officer may require a study of the hydrogeological conditions of a site to support a deviation issued pursuant to the provisions of this subrule.

3 feet to a building if all of the following conditions exist:

- well is a replacement well
- can not meet minimum distance
- access for maintenance

Casing less than 25 feet below the ground surface if the well will not be used to supply water to habitable structures or for human consumption and if both of the following conditions exist:

- water supply system are identified as not being suitable for human consumption
- water supply system are separated from any potable water supply system

Casing less than 25 feet below the ground surface if there is reason to believe that potable water of suitable quantity does not exist at a reasonable depth of more than 25 feet and if either of the following conditions exists:

- isolation distance is increased
- a confining layer is present above the aquifer.

Length of casing to be grouted for rotary-bored or augered wells to be decreased if the well is more than 100 feet deep and if a confining layer is not penetrated.

Casing extend more than 25 feet below the ground surface if there is reason to believe that nonpotable water is or may be present in the upper bedrock.

Flowing well discharge:

- Control of the flow is not practical.
- Control of the flow will likely result in the production of sand or turbidity in the water.
- The discharge is for a beneficial use.

Deviations from the rules shall be made, in writing, by a health officer and shall state the reasons for each deviation. A health officer may require special well construction features as a condition for the issuance of a deviation and may require well construction features that are more stringent than these rules when deemed necessary to protect the groundwater quality or the public health. Reasons for the issuance of a deviation or special well construction features as a condition for the issuance of a deviation by a health officer shall be based upon any of the following factors:

- Site hydrogeology
- Site topography
- Site dimensions
- Soil characteristics
- Depth of well
- Type of well
- Well pumping rate
- Well drilling method
- Distance from contamination sources
- Presence of groundwater contamination
- Other similar factors