

Upper Makefield *Township*

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APPLICATION FOR PERMIT TO DRILL WELL

In accordance with provisions of the Upper Makefield Township Codified Ordinance, Chapter 26, a permit to drill a water well is required prior to any drilling.

OWNER: _____ DRILLER: _____
ADDRESS: _____ ADDRESS: _____
PHONE: _____ PHONE: _____
FAX: _____ FAX: _____
EMAIL: _____ EMAIL: _____

LOCATION OF DRILL: _____ TMP: _____

USE OF WELL (Circle): Domestic Monitoring Production New Replacement Existing

PROPOSED DEPTH: _____ DIAMETER: _____ METHOD OF DRILLING: _____

METHOD OF STORAGE PROPOSED: _____

Is there an existing well on the property? Yes No

If yes, how will it be used? _____

If well is to be abandoned, method of abandonment: _____

In accepting this permit, Owner agrees to abide by the following conditions:

1. Issuance of this permit does not convey any rights to divert water.
2. This well will not be used for disposal of wastes or contaminated water.
3. In the event this well is abandoned, Owner will assume responsibility for plugging or sealing it in a manner satisfactory to the Township.
4. All wells require the attached Well Registration Form to be completed and returned to Upper Makefield Township within ten (10) days after well completion.
5. This permit is valid for one (1) year from date of issuance, if issued.
6. Vertical centerline of well minimum distance to any part of building not less than two feet (2').
7. This application must be accompanied by a diagram, drawn to scale, showing the following: lot size, location of all existing structures, location of proposed wells including dimensions to all boundary lines and structures, location of any streams or other bodies of water or deemed easements and distance to centerline of same. This diagram must be signed and dated by the person who prepared it.
8. No person shall engage in the use of dry ice, detergents, chlorine, acids or other chemicals in wells for the purpose of increasing or restoring yield without prior notice to Upper Makefield Township.
9. NOTE: If upon inspection this information is found to be incorrect, this permit will be revoked and the persons involved will be considered in violation of the Codified Ordinances and prosecuted for same.

Applicants Signature _____ Date _____

Applications and supporting documents can be submitted via email to CodeOffice@uppermakefield.org

Water test requirements:

- Table A:** Large chemical with ecoli and bacteria
Table B: Small chemical test with ecoli and bacteria
Table C: Replacement well with ecoli and bacteria
(See attached Ordinance)

Individual Water-supply Well Isolation Distances
BCDH Rules and Regulations Governing Individual Water Supply Systems

<u>Potential Pollution Source</u>	<u>Isolation Distance (ft.)</u>
1. Delineated wetlands or 100-year floodplain.	25
2. Storm drains, retention basins, storm water stabilization ponds and rainwater pits.	25
3. Community spray irrigation sites, sewage sludge and septage disposal sites.	100
4. Lakes, ponds, streams or other surface waters.	50
5. Farm silos, barnyards, manure pits or tanks or other storage areas of animal manure.	200
6. Subsurface sewage absorption areas, elevated sand mounds, cesspools, sewage seepage pits, single family spray irrigation systems, etc.	100
7. Septic tanks, aerobic tanks, sewage pump tanks, holding tanks.	50
8. Gravity sewer lines and drains carrying domestic sewage or industrial waste (unless item 9 applies).	50
9. Gravity sewer lines and drains using cast iron pipe with watertight lead caulked or neoprene gasketed joints, or Schedule 40 polyvinyl chloride (PVC) pipe with solvent welded joints.	10
10. Sewer lines and drains carrying domestic sewage or industrial waste under pressure (except welded steel pipe or concrete encased pipe).	50
11. Commercial preparation area or storage area of hazardous spray materials, fertilizers or chemicals; salt piles.	300

DRILL RECORD, GEOLOGIC LOG, YIELD AND TESTING REPORTS (TO BE RETURNED TO U.M.T. UPON COMPLETION OF WELL DRILLING PROJECT)

Must be signed by well driller and/or professional geologist

1. General Information:

TMP#: _____

Subdivision/Lot #: _____

Property Owner: _____

Address: _____

Phone No.: _____

Drilling Co. _____ Driller's Name _____

State License No. _____

Address _____

Phone No. _____

Well Use: (check one)

Domestic

Monitoring

Production

Other, specify: _____

Estimated average daily use during peak 30-day period gpd _____

Wastewater Disposal:

Onsite septic (locate on plan)

Spray Irrigation (locate on plan)

Other, specify: _____

Is Well Metered? Yes No

Well Location Map (not to exceed 1" = 400')

Attached to this form

2. Well Construction Information:

Start Date: _____	<u>Water bearing Zones</u>		
Completion Date: _____	Depth (bgs)	Yield (gpm)	bgs = below ground surface;
Drilling method: _____	_____	_____	btc = below top of casing measurements
Depth drilled (bgs): _____	_____	_____	must be in feet and gallons per minute (gpm)
Depth of completed well (bgs): _____	_____	_____	
Grout (bgs):			
Top _____	Total yield at end of drilling:	_____	
Bottom _____			

<u>Casing:</u>	Top (bgs)	Bottom (bgs)	Diameter (in)	Material
Casing 1	_____	_____	_____	_____
Casing 2	_____	_____	_____	_____
Open hole	_____	_____	_____	_____

Geologic Log (can be attached):

Description	Top (bgs)	Bottom (bgs)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Pump information:

Pump intake (bgs): _____

Optional Pump Information:

Installation Date: _____

Pump Installer: _____

Pump manufacturer: _____

Pump type: _____

Pump capacity (hp) _____

hp = horse power

**WELL REGISTRATION FORM FOR EXISTING WELLS
(TO BE RETURNED TO U.M.T. UPON COMPLETION OF WELL DRILLING PROJECT)**

1. Well Construction:

- 3 gallons per minute (gpm) certified rate of flow from the well
- depth to water information
- geologic descriptions

2. Water Quality:

A. Small Chemical Test

- Samples analyzed by a State approved laboratory for the following parameters:

Physical Characteristics	SMCL (mg/L)	Well P/F*	SMCL = Secondary Maximum Contaminant Level
Turbidity	5 NTU	_____	
Color	15 color units	_____	
Threshold Odor Number	3 threshold odor numbers	_____	
pH*	6.5-8.5 pH units	_____	*Well P/F = pass/fail
Chemical Characteristics			
Chloride	250	_____	Notes:
Nitrate + Nitrite (as Nitrogen)	10	_____	
Iron	0.3	_____	
Manganese	0.05	_____	
Copper	1	_____	
Hardness	250	_____	
Detergent (MBAS)	0.5	_____	
Total Dissolved Solids (TDS)	500	_____	
TCE (Trichloroethylene)	5 ug/L	_____	
Bacteriological Characteristics			
Total Coliform	0 per 100 mL	_____	
Total Plate Count	< 500 counts/mL	_____	
Fecal Coliform	< 1 per 100 mL	_____	

- Copy of the sample results to the Code Enforcement Officer within 30 days
- Any proposed treatment system must be certified by a professional engineer.

3. Purchaser notification:

- copy of water quality certification must be provided to the purchaser for the property specifying each contaminant not in compliance with the standards and a written description of treatment system, to include instructions on how to maintain the system

Township Code: Chapter 26 Water

Part 3 Private Wells and On-Site Sewage Disposal Systems

[Adopted 3-21-1978 by Ord. No. 56]

§ 26-301 **Permit required.**

No private well or private on-site sewage disposal system may be constructed or installed on any lot on which a structure which shall be supported by such system or systems is to be constructed unless the owner or applicant has obtained a zoning permit pursuant to the provisions of the Upper Makefield Township Zoning Ordinance.^[1]

[1] *Editor's Note: The Joint Municipal Zoning Ordinance is on file in the Township offices and is accessible via the Township website.*

§ 26-302 **Well yields.**

[Amended 4-17-1985 by Ord. No. 115; 8-16-1989 by Ord. No. 151; 4-18-1990 by Ord. No. 156; 4-21-1999 by Ord. No. 216]

A. Definitions. The following definitions shall apply to this Part:

ANNULUS

The annular space between the casing and the wall of the borehole.

AQUICLUDE

A part of a geologic formation, formation or group of formations with virtually no capacity to transmit water.

AQUIFER

Rock or sediment in a geologic formation, part of a formation or group of formations which has the capacity to store and transmit water to wells and springs at a reasonable cost.

AQUITARD

A saturated but poorly permeable part of a formation, formation or group of formations which does not transmit water freely to a well or spring. However, an aquitard may transmit appreciable amounts of water to or from adjacent aquifers.

BOREHOLE STORAGE

The volume of water contained in the well under nonpumping conditions. It is obtained by multiplying the area of the borehole cross-section for the height of the water column. In a domestic well (six-inch diameter), borehole storage equals approximately 1 1/2 gallons per foot of water column.

COMBINED YIELD

The combination of well yield as defined below plus contribution to well flow from borehole storage over a minimum two-hour period.

LONG-TERM PUMPING TEST

The pumping test of a well lasting 48 hours or longer.

QUALIFIED GROUNDWATER PROFESSIONAL

Professional geologist/hydrogeologist licensed to practice in the Commonwealth of Pennsylvania.

WATER-BEARING ZONE

Fractures or other openings in the bedrock which yield measurable quantities of water on a continuous basis and contribute to the yield of the well.

WELL YIELD

Amount or volume of water that flows from the aquifer into the well and measured at the completion of all drilling and well development in accordance with the procedures outlined below in Subsection C of this section.

- B.** A drill record, geologic log and testing report shall be prepared for each well and shall include the name, address, phone number and signature of the professional geologist and/or licensed Pennsylvania well driller. This information shall be provided to the Township along with a map which indicates the location of this well on the land development plan at a scale not exceeding one inch equals 400 feet and will be required for the issuance of a building permit.
- C.** The information submitted to the Township pursuant to Subsection B above shall include data on well yield collected in accordance with the following procedures:
- (1)** Well yield shall be measured with an accuracy of +/-10% and reported in gallons per minute (gpm). The yield of the well, at the completion of drilling and well development, shall be determined by means of a continuous flow test of minimum two-hour duration. If the yield of the well is determined with the use of the drilling rig, by airlifting, the required two-hour period shall begin after the groundwater stored in the borehole has been evacuated. If a submersible pump is used to ascertain the yield of the well, the two-hour period shall commence when the water level in the well drops at a rate of 1/2 foot per hour or less while maintaining the pumping rate constant.
 - (2)** Determination of well yield shall be accomplished in the absence of significant precipitation events, or the effect from precipitation shall be properly accounted for.
 - (3)** Any factors that may artificially inflate the well yield, including, but not limited to, recirculation of water, recharge from precipitation, addition of water by driller, etc. must be included in the information submitted to the Township.
 - (4)** Location and yield of water-bearing zones encountered during drilling shall be recorded as accurately as possible by the geologist present at the site and/or by the driller.
 - (5)** Daily measurements of water levels in the well shall be collected at the start and end of drilling and included in the record. Measurements shall be made with appropriate tools and with an accuracy of +/- 0.1 foot.
 - (6)** Yields of three gpm or more are considered sufficient for domestic wells in Upper Makefield Township, provided:
 - (a)** The yield of three gpm or more is obtained from water-bearing zones located below 150 feet and some of the yield is from a depth of 200 feet or more.
 - (b)** The well can sustain a pumping rate of 4 1/2 gpm for a minimum of two hours from aquifer contribution and borehole storage.
 - (7)** Yields of less three gpm are considered inadequate for domestic wells in Upper Makefield Township. However, a permit can be issued by the Township, at its sole discretion, when certification signed by a professional geologist/hydrogeologist indicates the well can provide a reliable, long-term supply.
 - (8)** The yield of a well shall be determined based solely on the contribution of water-bearing zones located below 150 feet. That is, water-bearing zones encountered to a depth of 150 feet and the yield thereof shall not be included in the computation of well yield, except as noted below (§ 26-304).

- (9) The driller or professional geologist shall indicate on the well record the appropriate setting for the submersible pump.

§ 26-303 **Well casing.**

[Amended 4-21-1999 by Ord. No. 216]

All wells shall be cased for a minimum of 40 feet, and the casing shall extend a minimum of five feet into competent bedrock. The casing shall extend a minimum of one foot above final grade, and the annulus shall be grouted with cement or equal material so as to form a tight seal.

§ 26-304 **Well depth.**

[Amended 4-21-1999 by Ord. No. 216]

All domestic wells shall be drilled to a minimum depth of 200 feet (or more, where necessary) in order to meet Upper Makefield Township requirements pertaining to well yield. It should be noted that this is the minimum depth required, and many wells may have to be drilled deeper. Conversely, when, due to above normal yields (for domestic wells), drilling of the well is terminated at less than 200 feet, the long-term reliability of the well as a source of water supply shall be certified by a professional geologist.

§ 26-305 **Water quality.**

[Added 4-21-1999 by Ord. No. 216; amended 8-1-2007 by Ord. No. 277]

The quality of the groundwater at the well shall be determined via bacteriological and chemical analysis of a sample collected after pumping the well for a minimum of two hours. This information shall be submitted to the Township together with the information set forth in § 26-302B above. The analysis shall be performed by a state-approved laboratory and shall include the following parameters:

Secondary Contaminants

SMCL

(mg/L)

pH*	6.5 to 8.5 units
Temperature*	N/A degrees
Chloride	250
Sulfate	250
Total dissolved solids	500
Color	15 color units
Odor	3 threshold odor numbers
Turbidity	0.5 to 1 NTU**
Iron	0.3
Manganese	0.05
Copper	1

NOTES:

SMCL = Secondary maximum contaminant level

* Can be measured in the field

** Performance standard

Microbiological Contaminants

	MCLG
Total coliforms*	0

NOTES:

MCLG = Maximum contaminant level goal

* If positive, analyze for fecal coliform

Inorganic Chemicals

	MCL (mg/L)
Arsenic	0.010
Barium	2.0
Cadmium	0.005
Chromium	0.1
Lead	0.005
Mercury	0.002
Nitrate + Nitrite (as Nitrogen)	10.0

Volatile Organic Chemicals

	MCL (mg/L)
Benzene	0.005
Carbon Tetrachloride	0.005
o-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
1,2-Dichloroethane	0.005
1,1-Dichloroethylene	0.007
cis-Dichloroethylene	0.07
trans-1,2-Dichloroethylene	0.1
Dichloromethane	0.005
1,2-Dichloropropane	0.005
Ethylbenzene	0.7
Monochlorobenzene	0.1
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1.0
1,2,4-Trichlorobenzene	0.07
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.005
Trichloroethylene	0.005
Vinyl Chloride	0.002
Xylenes (Total)	10.0

Synthetic Organic Chemicals

Alachlor	0.002
Atrazine	0.003
Chlordane	0.002
Dibromochloropropane	0.002
Ethylenedibromide	0.00005
Hexochlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Simazine	0.004
Carbofuran	0.04
2,4D	0.07
Endothal	0.1

NOTES:

MCL = Maximum contaminant level

§ 26-306 Information required by Township.

[Amended 4-17-1985 by Ord. No. 115; 4-21-1999 by Ord. No. 216]

Prior to the issuance of a building permit and/or a certificate of use and occupancy, and upon completion of the installation of any private well (whether or not any permit is required), the owner of the premises upon which the well has been installed shall produce a certificate of quality for the water within the well, a certificate setting forth the rate of flow of water from the well and information stating the depth to water and the geologic description.

§ 26-307 Violations and penalties.

[Amended 12-6-1995 by Ord. No. 186; 4-21-1999 by Ord. No. 216]

Any person, firm or corporation who shall violate any provision of this Part shall, upon conviction thereof, be sentenced to pay a fine of not more than \$600 plus costs and, in default of payment of said fine and costs, to a term of imprisonment not to exceed 30 days. Each day that a violation of this Part continues shall constitute a separate offense.