

ORDINANCE NO. 30-1009

AN ORDINANCE ADDING ARTICLE IV-F, ALTERNATIVE ENERGY, TO APPENDIX A OF THE CODE OF ORDINANCES FOR THE CITY OF WARREN RELATING TO ZONING.

THE CITY OF WARREN ORDAINS:

SECTION 1. That Appendix A, Article IV-F, Sections 4F.01 to 4F.10 of the Code of Ordinances be entitled Alternative Energy shall be added as follows:

ARTICLE IV-F. ALTERNATIVE ENERGY

DIVISION 1. PURPOSE

Section 4F.01 Purpose.

This section is intended to protect the public health, safety, and general welfare of the City of Warren by protecting groundwater from pollution, contamination or depletion resulting from construction, reconstruction, repair, or abandonment of geothermal systems.

DIVISION 2. DEFINITIONS

Section 4F.02 Definitions.

The following words, terms and phrases when used in this section shall have the following meanings:

Annular space means the space between the casing or well screen, and the wall of the borehole; between drilling pipe and casing; or between two separate strings of casing.

Aquifer means the subsurface water-bearing layer of soil, sand, gravel, or rock that will yield usable quantities of water to a well.

Borehole means a hole drilled or bored into the earth, usually for exploratory or economic purposes; a hole into which casing, screen, and other materials may be installed to construct a well.

Casing means an impervious, durable pipe placed in a borehole to prevent the walls of the borehole from caving, and to seal off surface drainage or undesirable water, gas, or other fluids and prevent entrance into a well.

Closed horizontal loop geothermal system means a geothermal system that consists of the following basic elements: underground loops of piping; heat transfer fluid; a heat pump, and an air distribution system. An opening is made in the earth. The closed horizontal loop geothermal system is constructed in the following way. A series of pipes are installed into the opening and connected to a heat exchange system in the building. The pipes form a "closed loop" and are filled with a heat transfer fluid. The fluid is circulated through the piping from the opening into the heat exchanger and back. The system functions in the same manner as the open loop system except there is no pumping of groundwater.

Closed vertical loop geothermal system means a geothermal system in which a borehole extends beneath the surface. Pipes are installed with U-bends at the bottom of the borehole. The pipes are connected to the heat exchanger and heat transfer fluid is circulated through the pipes.

Drinking water means water which is intended for human consumption and other domestic uses, and is considered to be free of harmful chemicals and disease-causing microorganisms.

Geothermal borehole means a hole drilled in the earth that piping is inserted for use into a geothermal system.

Geothermal system means a system for heating and/or cooling buildings using the earth's thermal properties in conjunction with electricity.

Groundwater means water beneath the earth's surface, located between saturated soil and rock, which supplies wells and springs.

Grout means a low permeability material that is placed in the space between the wall of the borehole and the casing of a well end, or placed in the annular space of the borehole. The placement of grout is to prevent the migration of water or fluid contaminants into and through the borehole. Grout shall consist of neat cement, high solids bentonite slurry, or hydrated bentonite chips.

Heat transfer fluid means any liquid used for the purpose of transferring thermal energy from the heat source to another location.

Open loop geothermal system means a geothermal system in which groundwater is pumped from a well into a heat exchanger located in a surface building. The water drawn from the earth is then pumped back into the aquifer through a different well or in some cases the same well (commonly referred to as "re-injection"). Alternatively, the groundwater could be discharged to a surface water body (also known as "pump and dump"). In the heating mode, cooler water is returned to the earth, while in the cooling mode, warmer water is returned to the surface water body.

Permeability means the propensity of a material to allow fluid to move through its pores or interstices.

Separation/Isolation distances means the distance of a source of contamination from a surface drinking water source, a groundwater source supply well, or any type of borehole.

Water supply well means a well used for extracting groundwater for human consumption.

Well means any excavation that is drilled, cored, driven, dug, bored, augured, jetted, washed, or otherwise constructed for the purpose of exploring for groundwater, monitoring groundwater, utilizing the geothermal properties of the ground, or extracting water from or injecting water into an aquifer. A well does not include an open ditch, drain tiles, an excavation made for obtaining or prospecting for oil, natural gas, minerals, or products mined or quarried, lateral geothermal heat exchange systems less than 20 feet deep, nor temporary dewatering wells such as those used during the construction of subsurface facilities only for the duration of the construction.

DIVISION 3. GENERAL PROVISIONS

Section 4F.03 *Permit required.*

- (1) No person or entity shall do any of the following without first obtaining a permit:
 - (a) Construct or install a geothermal system;
 - (b) Dig, bore, drill, replace, modify, repair, or destroy a well that is, is intended to be, or was part of a geothermal system; or
 - (c) Make any other excavation that may intersect groundwater without first obtaining a permit from the City and, for construction of a well, a permit from the Macomb County Health Department.
 - (d) Install a closed loop horizontal or closed loop vertical geothermal system. (No permit shall be issued for any open loop geothermal system because such systems are prohibited by Section 4F.05 below.)

Section 4F.04 *Application procedure.*

- (1) The application may be made by the property owner; a representative of the property owner authorized in writing by the property owner such

as a tenant authorized under a lease, or the well driller, and shall be accompanied by the required filing fee.

- (2) Applications for City permits shall be made to the City Engineer on approved forms and shall contain the information required in Section 4F.05 of this Ordinance.
- (3) Permits shall be issued for the particular parcel of property on which the geothermal system is to be constructed and/or installed. The locations of the loops that are part of any closed loop geothermal system shall be completely located within the property's boundaries.
- (4) A site plan showing the proposed location, number of wells, and location of loops must be submitted to the City Engineer for review and approval. The plan must include the calculated, anticipated volume of grout that will be needed.

Section 4F.05 *Permit requirements.*

- (1) Permits may be issued only for closed loop geothermal systems. A horizontal closed loop geothermal system shall be no more than 20 feet deep.
- (2) Boreholes shall be drilled by water well drillers registered/licensed in the State of Michigan.
- (3) The standing column well geothermal system, including heat pump exchanger, piping, and all other related systems shall be installed by a geothermal well installation contractor, who is certified in the proper installation methods as specified by the geothermal system manufacturer.
- (4) The property owner shall maintain a well log of the borehole and "as built" plans showing the location and specifications of closed loop geothermal system components.
- (5) Borehole piping shall be high density polyethylene as specified in International Ground Source Heat Pump Association standards for closed loop heat pumps.
- (6) The annular space of the boreholes must be grouted for the full depth of the borehole using high solid bentonite grout.
- (7) Heat transfer fluids must be non-toxic, environmentally safe material approved by the City Engineer.

- (8) All wells permits must be obtained from the Macomb County Health Department (or its successor agency) and must comply with the Michigan Water Well Construction and Pump Installation Code, Groundwater Quality Control, Part 127, 1978 P.A. 368, as amended, and all rules and regulations promulgated pursuant thereto, or any replacing statute and regulations.

Section 4F.06 *Permit fee.*

The geothermal system permit fee shall be in the amount established by resolution of the City Council and shall be paid when the application is filed.

Section 4F.07 *Permit revocation.*

- (1) The City Engineer may revoke a permit if:
 - (a) Any action or any geothermal system violates a provision of this article or applicable City ordinance; or
 - (b) There are factual inaccuracies in a permit application or the documents supporting it.
- (2) The City Engineer shall notify the property owner and occupant in writing of a permit revocation.
- (3) The property owner or occupant may appeal a revocation within 21 days to the Public Service Director who shall hold a hearing on that revocation to allow the appellant to prove the geothermal system complies with this article or applicable City ordinance or that the statements in the application and supporting documents are true.
- (4) When a permit is revoked, the property owner shall immediately abandon the geothermal system as required by this section. Except in cases where the City Engineer reasonably determines that groundwater contamination is an imminent risk, the obligation to abandon the geothermal system after revocation shall be stayed while any appeal is pending.

Section 4F.08 *System testing.*

Pipes for geothermal system permitted under this section shall be tested hydrostatically at one and one-half times the maximum system design pressure, but not less than 100 psi (689 kPa), for a duration of not less than 15 minutes. All geothermal systems must be pressure checked by a licensed geothermal system contractor every five years from the date of its initial successful test. Results shall be filed with the City Engineer. If the

test results show the system fails to meet these requirements, the City Engineer may require the property owner to shut down and /or repairs the system.

Section 4F.09 *System abandonment.*

Abandonment of a geothermal system shall comply with the laws, rules and regulations applicable to abandonment of water supply wells. Heat transfer fluid must be removed by displacement with grout. The top of the borehole must be uncovered and capped with grout.

Section 4F.10 *Conflict with other regulations.*

If any provision of this section conflicts with any applicable state or federal law, rule or regulation which is more strict or which is determined to preempt a provision of this section, the applicable state or federal requirement shall control.

Section 4F.11 *Violation and penalty.*

Any violation of any provision of this section shall constitute a municipal civil infraction punishable by a civil fine of not less than \$100 but not more than \$1,000. Each day of that a condition exists that violates any provision of this sections shall constitute a separate offense.

Section 4F.12-60. Reserved.

SECTION 2. This Ordinance shall take effect on April 13, 2015.

I HEREBY CERTIFY that the foregoing Ordinance No. 30-1009 was adopted by the Council for the City of Warren at its meeting held on March 24, 2015.

Published: April 8, 2015

PAUL WOJNO
City Clerk