

**TOWNSHIP OF HOPEWELL
MERCER COUNTY, NEW JERSEY**

ORDINANCE NO. 03-1299

**AN ORDINANCE AMENDING AND SUPPLEMENTING
CHAPTER XVI "HEALTH" CONCERNING WELLS,
WELL TESTS AND WATER SUPPLIES AND AMENDING
THE "REVISED GENERAL ORDINANCES OF THE
TOWNSHIP OF HOPEWELL, 1978"**

BE IT ORDAINED, by the Township Committee of the Township of Hopewell, County of Mercer and State of New Jersey, as follows:

1. Chapter XVI "Health" wherein standards are established for wells, well tests and water supplies of the "Revised General Ordinances of the Township of Hopewell, New Jersey (1978) is amended by deleting therefrom the current provisions of Sections 16-6.1 through 16-6.8 and is hereby replaced with the following NEW LANGUAGE:

CHAPTER 16-6 WELLS, WELL TESTS, AND WATER SUPPLIES

16-6.1 Purpose. The purpose of this section is to assure that adequate water supply is available without adverse effect on others and to maintain the long-term natural equilibrium of the ground and surface waters of Hopewell Township.

16-6.2 Applicability. The provisions of this ordinance are applicable to all new, altered and replacement supply wells, wells on existing lots, and wells installed or to be partially or totally used for non-essential use. Residential subdivision applications creating more than one new lot and all site plan applications must satisfy the requirements of Section 17-149 et seq. of Hopewell Township's Municipal Land Use and Development Ordinance. In the event that the requirements of Section 17-149 are not applicable or are waived, then the provisions of this Chapter shall be applicable.

16-6.3 Prohibition. Based on the limited groundwater resources within Hopewell Township as outlined in M2 Associates March 2, 2001 report entitled "Evaluation of Groundwater Resources of Hopewell Township, Mercer County, New Jersey", no wells shall be permitted to be connected to a permanent irrigation system except if that system is used entirely for commercial agricultural purposes. In addition, no wells can be used for the filling of swimming pools.

16-6.4 Exemption. A replacement well as defined herein is exempt from the requirements of - Section 16-6 provided that the existing well is decommissioned in accordance with N.J.A.C. 7:9D-3 et seq. and there have been no changes to the floor space within the existing residence. A new well located more than twenty feet from an existing well - is not deemed a replacement well. If classified as a commercial farm by the Mercer County Agricultural Development Board, the applicant may apply for an exemption from all or part of the requirements of this Chapter from the Board of Health, which shall consider the farm status of the operation and its potential impacts on water resources in rendering a decision.

16-6.5

Definitions. "Abandoned well" shall mean any well which is not in use, has been illegally installed or improperly constructed, has been improperly maintained or is damaged, has not been maintained in a condition that ensures that the subsurface or percolation water of the State are protected from contamination, has been replaced by another well or connection to a public supply, is contaminated, is nonproductive, or no longer serves its intended use pursuant to the State Act.

"Abandonment or decommissioning of a well" shall mean the permanent closure or sealing of a well in accordance with N.J.A.C. 7:9D-3 et seq.

"Alter" means to enlarge, deepen or replace any portion of an existing water supply system. The terms "alteration" and "altered" shall be construed accordingly.

"Aquifer" shall mean the rock or sediment in a formation, group of formations, or part of a formation, which is saturated and sufficiently permeable to transmit economic quantities of water to wells and springs.

"Applicant" shall mean a developer or property owner submitting an application for development or permit to install or use a well.

"Application for development" shall mean the application form and all accompanying documents required by ordinance for approval of a subdivision plat, site plan, planned development, conditional use, zoning variance, or direction of the issuance of a permit pursuant to N.J.S.A. 40:55D-34 or N.J.S.A. 40:55D-36.

"Application for well permit" shall mean the application form and all accompanying documentation required by the Township for approval to locate, construct or alter a water supply in accordance with subsection 16-6.5 of this section and as authorized by N.J.A.C. 7:10-12.40.

"Building lot" shall mean a designated parcel, tract or area of land established by plat or otherwise permitted by law, to be used, developed or built upon as a unit and for which the water supply is obtained from a private on-site well.

"Community water supply system" shall mean a source and distribution system for potable water subject to the requirements of N.J.S.A. 58:12A-1.1 et seq. and N.J.A.C. 7:10-1.1 et seq.

"Cone of Depression" shall mean the area around a-pumping well in which the head in the aquifer has been lowered.

"Developer" shall mean the legal or beneficial owner or owners of a lot or of any land proposed to be included in a proposed development including the holder of an option or contract to purchase, or other person having an enforceable proprietary interest in such land.

"Drawdown" shall mean the lowering of the water table of an unconfined aquifer or the potentiometric surface of a confined aquifer caused by pumping of groundwater from wells. Drawdown is determined by subtracting the depth to water from the static water level (determined prior to the start of pumping).

"Fracture Trace" shall mean the surface representation of a fracture zone.

"Groundwater" shall mean the water in the saturated zone that is under a pressure equal to or greater than atmospheric pressure.

"Groundwater Mining" shall mean the practice of withdrawing groundwater at rates in excess of natural recharge.

"Head" shall mean the height above a datum plane of a column of water. In a groundwater system, it is composed of elevation head and pressure head.

"Irrigation System" shall mean equipment including but not limited to pumps, piping, and sprinkler heads used to distribute water to grasses, landscape materials, and other vegetation.

"Local Enforcement Officer" shall mean the Township health officer or other technical representative of the Township as may be designated by the Hopewell Township Board of Health.

"Local agency" shall mean the Board of Health, which is the municipal agency responsible for review and approval of an application for well operation.

"NJDEP" shall mean the New Jersey Department of Environmental Protection.

"Non-Essential Use" shall mean a partial or total use, other than as water for a residence, including irrigation or filling of swimming pools, provided that a construction permit is required.

"Non-Essential Well" shall mean a well installed or used partially or totally for a purpose other than serving as the source of water for the residence.

"Observation Well" shall mean a non-pumping well used to observe the elevation of the water table or the potentiometric surface. Also known as monitoring well.

"Plot plan" shall be a map prepared by a New Jersey licensed professional engineer, based upon a plan of survey and identifying all existing and proposed septic systems and wells within 200 feet of the proposed well(s) in addition to requirements of N.J.A.C. 13:40-5.1 and subsection 16-12.6 of the Hopewell Township Sewage Disposal System Code.

"Private or non-public well" shall mean any water system/well that provides potable water solely to a property or structure intended as a single-family residence.

"Public well" shall mean any water system/well(s) that provides potable water to any property or structure that is not served by a private or nonpublic well and is not intended to serve a single-family residence.

"Pumping Test" shall mean a test made by pumping a well for a period of time and observing the change in water level in the aquifer.

"Pumping Test, constant rate" shall mean a pumping test during which the discharge rate from the pumping well is maintained at a constant rate for the duration of the test.

"Recovery" shall mean the rate at which the water level in a well rises after the pump has been shut off. Recovery is the inverse of drawdown.

"Repair" means the restoring or modifying of a well to improve its operation.

"Replacement Well" means a well installed for the sole purpose of replacing an existing private well that no longer meets the demands of the existing residence provided there are no alterations to the residence and the new well is installed within twenty (20) feet of the existing well.

"Specific Capacity" shall mean an expression of the productivity of a well, obtained by dividing the pumping rate by the drawdown level and described on the basis of the number of hours pumping prior to measurement of drawdown. The value will generally decrease with increased time of pumping.

"Static Water Level" shall mean the depth to water in the well prior to the commencement of pumping.

"Storage Coefficient" shall mean the volume of water an aquifer releases from or takes into storage per unit surface area of the aquifer per unit change in head. It equals the product of specific storage and aquifer thickness. Also known as storativity.

"Transmissivity" shall mean the rate at which water of a prevailing density and viscosity is transmitted through a unit width of an aquifer or confining bed under a unit hydraulic gradient. Transmissivity equals hydraulic conductivity times aquifer thickness.

"USEPA" shall mean the United States Environmental Protection Agency.

"Well Interference" shall mean the result of two or more pumping wells, the drawdown cones of which intercept. At a given location, the total well interference is the sum of the drawdowns due to each individual well.

Additional definitions included in Chapter. 17-149 Water Supply and Analysis requirements are also applicable.

16-6.6 Permits.

- A. Well Permits. No person shall locate, construct, repair, deepen, abandon, decommission or alter any well, or utilize an existing well for any non-essential use, without first receiving a well permit from the Board of Health. All abandoned wells must be decommissioned in accordance with the procedure set forth in N.J.A.C. 7:9D, "Well construction; maintenance and sealing of abandoned wells, Subchapter 3.1 General requirements and procedures for the decommissioning of wells." Inspections shall be scheduled and performed by the Board of Health as part of the permit requirements. Emergency activity due to "no water" may proceed without inspection and prior to the issuance of a permit in order to restore water to a property. However, the Board of Health must be notified of the activity as soon as possible but no later than the next business day. Applicant shall post all appropriate fees for the applicable permit, including fees for non-essential use and non-essential wells as specified in Chapter 10.
- B. Construction Permits. No construction permit for a new home or other structure shall be issued unless the well intended to serve the home(s) or structure(s) has been drilled, tested and certified by the applicant's engineer or well driller as complying with State standards for the construction of public noncommunity and nonpublic water systems (N.J.A.C. 7:10-12.1 et seq.), subsections 16-6.6, 16-6.7 and 16-6.8 of this section, and approved by the Local Enforcement Officer.
- C. Pump Replacement Permits. No well pumps shall be replaced without first securing a well pump replacement permit. All buried wells shall be extended in accordance with N.J.A.C. 7:10-12.20 Wellhead requirements. Emergency pump replacements due to "no water" may proceed without inspection and prior to the issuance of a permit in order to restore water to a property. However, the Board of Health must be notified of the activity as soon as possible but no later than the next business day.
- D. Reports on the repair, replacement or abandonment of all wells and well pumps shall be submitted no later than thirty (30) days upon completion of permitted activity.
- E. Well Use Certificate of Compliance. No person shall begin operation of a well until the local agency has reviewed the report of the Local Enforcement Officer and issues a well use certificate of compliance.

16-6.7 Drilling and Location Requirements.

- A. Construction Criteria. All wells shall conform to the standards for the construction of nonpublic and noncommunity wells as promulgated by the New Jersey Department of Environmental Protection, N.J.A.C. 7:10-12.1 et seq., with the following amendments:
 - 1. A minimum of fifty (50) feet of well casing shall be provided for all wells.
 - 2. Hydrofracturing of the geologic formation to increase yields prior to aquifer testing is prohibited.

B. Location Requirements

1. No wells shall be located within 100 feet of any other existing or proposed well or within 10 feet of an existing or proposed lot line.
2. No existing well shall be built over by any realty improvement that would inhibit access to the well for any repair, replacement or decommissioning.

C. Permits Required. It shall be the responsibility of the owner or the applicant or well driller to obtain a permit prior to drilling.

D. Well Disinfection. All existing wells that are monitored, and all new wells shall be disinfected in accordance with the standards of the New Jersey Department of Environmental Protection.

16-6.8 Aquifer Testing Requirements.

All observation wells shall be tested for bacteriological quality prior to and post monitoring. The health department and the property owner of any existing residential well used as an observation well shall be notified of any unacceptable results immediately by the laboratory. Certified copies of the test results shall be submitted to the local enforcement officer.

A. New or Altered Wells, including residential subdivisions creating one new lot.

1. A three-part aquifer test will be conducted with the first part evaluating the peak demand, the second part determining the constant head yield and the third part determining the rate of recovery.
2. The first two parts of the aquifer test will be conducted in accordance with the procedures outlined in the 1986 New Jersey Geological Survey (NJGS) Groundwater Report Series No. 1 "Two-Part Pump Test for Evaluating the Water Supply Capabilities of Domestic Wells".
3. The Peak Demand Evaluation will be conducted in accordance with the following:
 - (a) Daily Demand equals 200 gallons multiplied by the number of bedrooms.
 - (b) Peak Load equals fifty (50) percent of the Daily Demand.
 - (c) Peak Rate equals three (3) gallons per minute multiplied by the number of bathrooms.
 - (d) Peak Time equals Peak Load divided by Peak Rate.
 - (e) The well will be pumped at a rate equal to the Peak Rate for a minimum duration equal to the Peak Time.

- (f) The depth to water will be measured prior to the start of pumping to determine the Static Water Level.
 - (g) Depth to water measurements will be made at minimum intervals of five minutes during the Peak Demand Evaluation. Drawdown will be calculated by subtracting each measurement from the Static Water Level.
 - (h) The water level must be measured at the conclusion of the Peak Demand Evaluation and the Total Drawdown recorded.
 - (i) The well is deemed to have satisfied the Peak Demand Evaluation if it can be pumped for the Peak Time at the Peak Rate. If the well is incapable of yielding the Peak Rate for the Peak Time, a well use permit will not be issued.
 - (j) A well that does not satisfy the requirements of the Peak Demand Evaluation must be altered to increase storage or decommissioned, in accordance with appropriate NJDEP regulations.
4. The Constant Head Yield Evaluation will be conducted in accordance with the following:
- (a) Immediately upon completion of the Peak Demand Evaluation and without cessation of pumping, the pumping rate must be reduced within the well until drawdown within the well can be maintained at a constant head. A constant head condition exists if the drawdown within the well does not change more than a half (0.5) foot per hour.
 - (b) The depth to water must be measured in one-minute intervals until a constant head is maintained continuously for a minimum duration of ten (10) minutes. The Constant Head equals the depth to water within the well at the conclusion of the ten-minute interval.
 - (c) Once a Constant Head is determined, the pumping rate must be measured to determine the Constant Head Yield.
 - (d) The Constant Head Yield Evaluation commences upon determination of the Constant Head and Constant Head Yield. During the Constant Head Yield Evaluation, the well must continue to be pumped at a rate that maintains drawdown within the well within a half (0.5) foot of Constant Head determined prior to the start of the Constant Head Yield Evaluation.
 - (e) The depth to water and the pumping rate must be recorded every five minutes upon commencement of the Constant Head Yield Evaluation.
 - (f) If the pumping rate fluctuates more than ten (10) percent or the

drawdown changes more than a half (0.5) foot, the Constant Head Yield Evaluation must be restarted and the new Constant Head and Constant Head Yield must be maintained continuously for ten (10) minutes prior to re-commencement.

- (g) The duration of the Constant Head Yield Evaluation will equal to the lesser time duration of the following: i) the volume of water removed from the aquifer equals fifty (50) percent of the Daily Demand; or ii) two (2) hours.
- (h) At the conclusion of the Constant Head Yield Evaluation, the drawdown and pumping rate must be recorded.
- (i) The well is deemed to have satisfied the Constant Head Yield Evaluation if the Constant Head Yield multiplied by 1440 minutes per day exceeds twice the Daily Demand.
- (j) A well that does not satisfy the requirements of the Constant Head Yield Evaluation must be altered to increase the yield or decommissioned in accordance with appropriate NJDEP regulations.

5. Recovery Rate Evaluation

- (a) Immediately upon completion of the Constant Head Yield Evaluation, the pump is shut down and the Recovery Rate Evaluation commences.
- (b) Water levels are measured at a minimum interval of one (1) minute during the first ten (10) minutes of the Recovery Rate Evaluation and then at five (5) minute intervals for the next fifty (50) minutes and then at ten (10) minute intervals until the conclusion of the Recovery Rate Evaluation.
- (c) Residual Drawdown is calculated by subtracting the Recovery Rate Evaluation depth to water measurements from the static-water level measurement made prior to the start of the Peak Demand Evaluation.
- (d) The duration of the Recovery Rate Evaluation will equal to the lesser time duration of the following: i) the water level in the well recovers eighty (80) percent of the drawdown determined at the conclusion of the Constant Head Yield Evaluation; or ii) four (4) hours.
- (e) The well is deemed to have satisfied the Recovery Rate Evaluation if Residual Drawdown after four (4) hours of recovery is less than twenty (20) percent of total drawdown.
- (f) A well that does not satisfy the requirements of the Recovery Rate Evaluation must be altered to increase the yield or decommissioned in accordance with appropriate NJDEP regulations.

B. Non-Essential Wells and Non-Essential Usage of Wells

1. Prior to conducting an aquifer test, the applicant shall submit the design of such aquifer test and qualifications of the persons and firm who will be performing the test, to the Local Enforcement Officer.
2. The design of the aquifer test shall be developed using the applicable guidance from "Guidelines for Preparing Hydrogeologic Reports for Water Allocation Permit Application with an Appendix on Aquifer - Test analysis Procedures" NJGS GSR 29 (1992 or most recent edition) or successor document.
3. Phases - The aquifer test will be conducted in three phases, which are the background phase, the pumping phase, and the recovery phase.
 - (a) The first phase will involve the collection of background water levels prior to the start of the test. The second phase will involve the pumping of water from the well and the monitoring of water-level drawdown in the observation and pumping wells. The third phase will involve the recovery of water levels in the observation and pumping wells after the pump has been shut down. This third phase of the test should be, at a minimum, the same length as the pumping phase.
 - (b) The aquifer test (all three phases) shall not be conducted during precipitation event or events in which, total precipitation exceeds or equals half (0.5) of an inch. Precipitation must be recorded with a National Weather Service-acceptable rain gauge on site during all phases of testing, and measurements for each day must be included in the hydrogeologic report. If precipitation occurs during the test, the applicant should provide precipitation amounts and sufficient data to show that the precipitation did not recharge the aquifer during the test and adversely impact the testing results. If precipitation amounts exceeding one half (0.5) of an inch are recorded, the test must be repeated.
 - (c) The pump must be installed in the pumping well at least forty-eight (48) hours prior to the start of the background phase.
 - (d) Prior to starting the background phase, water levels in the test well and observation wells must be permitted to stabilize for a minimum of three days after all drilling activities are complete.
 - (e) During the background phase, water levels must be collected at a minimum once per hour for the twenty-four (24) hour period prior to the start of pumping. It is the applicant's responsibility to collect

sufficient data to determine background conditions and to ensure that antecedent influences can be fully characterized. Barometer measurements and additional water-level measurements can be made by the applicant to evaluate the change in water levels resulting from barometric pressure changes and/or influences from off-site pumping.

- (f) On the day of the pumping phase, water levels shall be collected from all wells to determine static water levels prior to the start of pumping. Water levels in wells on neighboring properties should be allowed to stabilize at or near static water level prior to the start of pumping. For any observation well which has been pumped within the twenty-four (24) hours preceding the test, two depth to water measurements at least one (1) hour apart shall be collected to show that the well has fully recovered prior to the start of pumping.
- (g) When the pump is started, the flow rate shall be adjusted immediately to a uniform pumping rate as required for a constant-rate test and in accordance with the approved aquifer test plan. The flow rate shall not vary more than ten (10) percent throughout the test. If the flow rate fluctuates more than ten (10) percent, the test may be deemed invalid and the applicant required to repeat the notification and testing process.
- (h) Water-level measurements during the pumping phase of the test shall be collected in accordance with Table 1. This same schedule shall be followed for the recovery phase of testing upon shut down of the pump in the test well.

Table 1: Minimum Frequency of Water-Level Measurements in Wells During Pumping and Recovery Phases of Aquifer Test

Time Since Pumping Began or Stopped	Test Well	Observation Wells
0 to 5 minutes	0.5 minutes	0.5 minutes
5 to 10 minutes	1 minute	1 minute
10 to 30 minutes	2 minutes	2 minutes
30 to 60 minutes	5 minutes	5 minutes
60 to 120 minutes	10 minutes	10 minutes
2 to 24 hours	30 minutes	30 minutes

- 4. Rate and Duration - The minimum pumping rate will equal 120 percent of the maximum anticipated use rate. The minimum duration of the pumping phase will be twenty-four (24) hours. The minimum duration of the recovery phase will be twenty-four (24) hours.
- 5. If the demand exceeds 100,000 gallons per day, a New Jersey Water Allocation Permit must be obtained from the New Jersey Department of Environmental Protection.

6. The pumping rate will be measured by equipping the discharge pipe with an orifice/manometer apparatus and calibrated flow meter to instantaneously measure flow rate and determine total volume pumped from the well.
7. The discharge shall be directed so that it leaves the site without infiltrating to the aquifer. Any and all permits required by the NJDEP for the discharge of water must be obtained prior to starting the test.
8. Observation Wells
 - (a) The number of observation wells required per aquifer test will depend on the maximum daily demand. Observation wells must be located in such a manner that will yield the most accurate information concerning the aquifer.
 - (b) Observation wells should be completed to similar depths as the pumping well.
 - (c) Observation wells must be located parallel and perpendicular to strike of the primary regional fractures and . those intersected by the tested well. Additional observation wells should be located to evaluate potential secondary fractures and impacts to adjacent properties.
 - (d) A fracture trace analysis showing the location and orientation of fractures beneath the site must be included with the aquifer test plan. This same analysis with additional information regarding septic system locations must be included in the hydrogeologic report. This fracture trace analysis must be used to identify all observation wells on the site and should be used to identify neighboring property owner wells to be monitored during the test.
 - (e) One observation well should be located within 200 feet but no more than 500 feet of the pumping well. If required, a second observation well must be within 1,000 feet of the pumping well.
 - (f) The observation wells and pumping well must have a geologic log describing the depth and types of soils and rocks encountered and the depth and yields of all waterbearing fractures. Furthermore, the logs must include static water-level measurements and total yield estimates for each well.
 - (g) Table 2 lists the number of observation wells required for anticipated maximum daily demand.

Table 2. Aquifer Test Requirements for Non-Essential and Non-Essential Usage Wells

Average Demand (gallons per day)	No. of Observation Wells
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0 to 800	3
800 to 1,999	3 (minimum of 1 new well)
2,000 to 9,999	3 (minimum of 2 new wells)
10,000 to 99,999	6 (minimum of 2 new wells)
100,000 or more	Obtain NJDEP Water Allocation Permit

9. Evaluation of Results

- (a) Precipitation - A test conducted during a period in which one half (0.5) of an inch or more of precipitation are recorded at or near the site must be repeated.
- (b) If the pumping rate does not exceed 120 percent of the maximum daily demand or cannot be maintained for a minimum of twenty-four (24) hours, the aquifer beneath the site will be deemed insufficient to meet the proposed demands and the applicant must reduce site demands.
- (c) If the pumping rate varies by more than ten (10) percent of the average flow rate, the entire test shall be repeated.
- (d) If the pump shuts down during the pumping phase, the entire test must be repeated.
- (e) If water levels in the pumping and/or observation wells exceed the measurement capacity of the devices used for measuring changes in water levels, and measurements are not recorded with other devices in accordance with the schedule listed in Table 1, the test must be repeated.
- (f) If the pumping data indicate a change in aquifer transmissivity as a result of fracture dewatering, all analyses of the potential radius of influence and impacts to neighbors, streams, and wetlands must be conducted using the lowered aquifer transmissivity. If this lowered transmissivity indicates that the anticipated demand cannot be supported by the aquifer beneath the site, the applicant must reduce the site demand.
- (g) For purposes of evaluating water-level recovery, the recovery phase duration will be equal to the pumping phase duration. For example, if the pumping phase is twenty-four (24) hours in duration, water levels twentyfour (24) hours after the pump has been turned off will be compared to the pre-pumping static water level to assess recovery rates and residual drawdown.
- (h) If residual drawdown in the pumping well or any observation wells exceeds ten (10) percent but is less than twenty (20) percent of the total drawdown at the end of the recovery phase, the applicant must show through standard/recognized aquifer test analytical procedures and calculations that the well or wells are capable of full recovery. If full

recovery cannot be shown or groundwater mining/dewatering has occurred, the applicant must reduce site demands.

- (i) If residual drawdown in the pumping well or any observation well exceeds twenty (20) percent of the total drawdown at the end of the recovery phase, the aquifer will be deemed insufficient to meet the proposed site demands and the applicant must reduce site demands.
- (j) If the drawdown is measured to be more than one (1) foot at any existing adjacent property well or along the property boundary, the applicant's hydrogeologist must evaluate long-term potential impacts to adjacent properties based on the actual condition of wells in that zone or along that portion of the site boundary.
- (k) If a drawdown of five (5) feet or more is noted in any existing adjacent property well, or is projected at any property boundary then the aquifer will be deemed to have insufficient transmissivity to support the proposed site demands and the applicant must reduce demand to ensure that drawdown will not exceed five (5) feet at any site boundaries.
- (l) If drawdown is projected to exceed ten (10) feet in any adjacent wells after thirty (30) days of continuous pumping assuming no recharge, then the aquifer will be deemed insufficient to meet the applicant's demands and the demands must be reduced to ensure that well use during a drought will not adversely impact neighboring wells.
- (m) If drawdown is measured or projected to induce leakage from streams or wetlands partially or entirely dewatered, then the demand must be reduced to prevent adverse impacts to streamflow or wetlands.

10. Additional Testing - Any test that must be repeated, restarted, or reconducted at a reduced demand, must satisfy all the requirements of this ordinance including but not limited to re-notification of all property owners within 500 feet and resubmission of an aquifer test plan for Local Enforcement Officer approval prior to implementation of the test.

16-6.9 Water Quality Evaluation.

- A. Groundwater samples must be collected from all newly constructed or altered wells.
- B. The samples must be collected in accordance with the NJDEP Field Procedures Manual.
- C. At a minimum, the samples shall be analyzed by a NJDEP-certified laboratory for iron, manganese nitrate, total coliform, fecal coliform, hardness, Gross Alpha Particle Activity, arsenic, copper, and lead. The samples shall also be analyzed for

volatile organic compounds for which the USEPA or NJDEP has determined maximum contaminant levels using USEPA Method 524.2.

- D. Field measurements of pH, conductivity, and total dissolved solids shall be made with calibrated instruments.
- E. If site conditions indicate potential historic use of pollutants, such as heavy metals, pesticides, herbicides, and/or other volatile or semi-volatile organic compounds at or near the site, these analyses must be conducted.
- F. Based on past historical operations at the site or at nearby properties, the Local Enforcement Officer may require additional analyses of groundwater to assess potential future and current impacts.
- G. The results of the water sample analyses will be used to assess water quality.

16-6.10 Property Owner Notification for Nonessential Wells and Nonessential Uses.

- A. Notice requirements for nonessential wells and nonessential uses.
 - 1. Owners of existing wells on lots located within 500 feet of the subdivision/site plan boundary shall be given an opportunity to have their wells monitored during the aquifer test.
 - 2. Such opportunity shall be given by the applicant by notice via certified mail and shall give the time and place of the aquifer test.
 - 3. A notice acceptable to Hopewell Township is included in Appendix A. This notice may be modified with approval of the Township attorney and the local enforcement officer. If the application is pending before a board, the board with jurisdiction must also approve the change.
 - 4. The notice shall indicate that such existing well may be monitored if agreed to by the well owner provided the well is readily accessible.
 - 5. Such notice shall indicate that the existing well owner must respond within seven (7) days and the applicant's responsibility is to monitor up to three (3) wells on properties within 500 feet of the subdivision boundaries.
 - 6. The applicant shall provide a certificate of insurance for itself and all contractors utilized and pay all costs associated with the monitoring of any existing residential well.
 - 7. Prior to monitoring, all buried wells must be raised to a minimum of twelve inches above grade to allow access and retrofitted with pitless well adapters etc. per N.J.A.C. 7:1012.20 well head requirements.
 - 8. All wells shall be chlorinated each time they are opened for service or monitoring, unless the owner specifically waives the requirement of

chlorination in writing. Bottled water shall be provided to the homeowners during the monitoring period and while the chlorine is detected above the acceptable limits of chlorination in the public water standards.

9. The costs of extending, restoring or replacing a well damaged as a result of testing shall be the responsibility of the applicant.
10. The applicant shall indemnify and hold the Township and its consultants and representatives harmless from any liability in connection with these testing requirements.

B. Response.

1. If the owner of the lot within 500 feet of the subdivision boundaries decides to participate by agreeing to have their existing well monitored, they shall notify the applicant by certified mail or other traceable delivery, with postage or costs prepaid by the applicant.
2. Such response shall be provided within seven (7) days of receipt of the certified notice from the applicant.
3. If the applicant receives no response within the time provided, the response shall be deemed to be negative.
4. All reasonable efforts must be made to protect the potability of water from the monitored well.

C. Selection of Wells For Monitoring.

1. In the case when more than three property owners within 500 feet of the subdivision boundaries decide to participate and to have their existing wells monitored, only the three closest properties need to be monitored.
2. However, if any of the property owners requesting monitoring have wells completed to a depth less than 100 feet, these wells must also be monitored in addition to the three other wells.
3. A map depicting the location of all wells to be monitored and a list of all property owners within 500 feet of the subdivision boundary that requested monitoring is to be submitted to the Local Enforcement Officer for review and approval prior to implementing the test.
4. The observation wells on neighboring properties should be selected to assess if the cone of depression from the pumping well will extend beyond the property boundary in any direction.
5. The Local Enforcement Officer reserves the right to retain a professional hydrogeologist to review the proposed monitoring locations and to make

recommendations to revise the locations to be monitored.

16-6.11 Reporting Requirements.

A. New or Altered Supply Wells

1. The lot owner's well driller or engineer shall certify and furnish to the local enforcement officer the following information:
 - (a) Addendum to well permit application showing the exact well location.
 - (b) Date drilled.
 - (c) Casing diameters.
 - (d) Yield in gpm as defined above.
 - (e) Geologic formation or rock type based upon maps and field observation.
 - (f) Depth.
 - (g) Depth of casing (50 foot minimum required).
 - (h) Static water level (the elevation or depth of water in well prior to pumping or after pumping as measured from top of casing).
 - (i) Pumping level (in feet).
 - (j) Hours pumped.
 - (k) Drawdown in feet.
 - (l) Peak-demand yield.
 - (m) Constant-head yield.
 - (n) Recovery rate.
 - (o) Recovery time.
 - (p) Depth to bedrock.
 - (q) Elevation at ground surface.
 - (r) Pump type and specifications.

- (s) Observation methods and measurement details.
2. If in the judgment of the local enforcement officer, there is reason to believe that the purpose of this section may in any way be contravened by the proposed withdrawal, additional test pumping may be required by the enforcement officer.
 3. Unless it can be demonstrated by the lot owner's engineer that yields are above the required rate of discharge for the system and there is no detrimental effect on surrounding wells, lawn irrigation systems are prohibited. Increased storage may be recommended.
- B. Reporting Requirements for non-essential wells and nonessential uses.
1. An application shall include a report by a qualified hydrogeologist on the aquifer conditions beneath the site and demonstrate that adequate water supply is available without adverse effect on neighboring wells and other resources, including but not limited to wetlands and streams. A qualified hydrogeologist shall be an individual who has received a minimum of a bachelor's degree in geology at an accredited institution or has completed an equivalent of thirty (30) semester hours of geological education while obtaining a bachelor's or master's degree in a related field of engineering or science at an accredited institution. Such a person must also demonstrate five years of professional work experience in the practice of applying geologic principles to interpretation of groundwater conditions. The individual should provide a resume or curriculum vitae to document education and experience requirements. The report shall cover or include site specifics on the following:
 - (a) The report shall document the design and implementation of the aquifer test.
 - (b) The report shall include all water-level data collected during the aquifer test.
 - (c) The report must include supporting data and calculations used to determine the average daily and peak-day demands as well as the average annual demands.
 - (d) The report must include calculations of aquifer characteristics such as transmissivity and storage coefficient, calculations of the cone of influence, potential impacts to adjacent well owners, and the long-term sustained yield for the wells.
 - (e) All water-level measurements obtained during the aquifer test shall be included with the report in electronic format acceptable to the Township.
 - (f) The report shall include a detailed hydrogeologic description of the

aquifers encountered beneath the site and adjacent properties.

- (g) The report must include a detailed evaluation of the water-supply demand for an average and peak day and this demand should be supported with information on anticipated population, expected unit density, and size of units.
 - (h) An inventory of all wells within 1000 feet of the proposed site boundaries should be appended. This inventory should be submitted in electronic format acceptable to the Township.
 - (i) Figures depicting site geology, topography, water-level elevations, groundwater flow, and development plans shall be included.
 - (j) In addition, all water-quality sampling data shall be tabulated and summarized in the report. Only one copy of the laboratory reports is necessary for filing with the Township.
 - (k) The report should include a detailed evaluation of potential impacts from subsurface sewage disposal systems on groundwater quality. A site plan depicting well, septic leach field, and fracture trace locations at a minimum scale of one (1) inch equals 200 feet should be included. For any and all locations where a fracture or set of fractures intersects one or more wells and/or septic leach fields, a detailed assessment of treatment technologies should be included. The treatment technologies should provide adequate assurances that any and all groundwater pumped from the wells will satisfy Federal and New Jersey Drinking Water Standards and will not be adversely impacted by the septic leach field discharges.
 - (l) The hydrogeologic report shall include the name and license number of the well driller and pump installer. The report should include the names of the persons and firm responsible for collecting the water-level measurements. In addition, the report should include copies of the completed NJDEP Well Records.
- C. On receipt of the report specified above, the Local Enforcement Officer shall review the report and make comments and/or recommendations regarding the well application to the appropriate municipal agency.
- D. The local agency shall not approve a well use application unless the applicant's report, the Local Enforcement Officer's report and its own analysis support a conclusion that the applicant's plans for water supply will not unreasonably contravene the purposes of this section. The agency may disapprove an applicant's water supply plans giving its reasons, or may require additional surveys or tests before approving the application, or the local agency may approve the application and issue a well use permit when it is satisfied that the requirements of this section have been met.

Date Introduced: November 6, 2003
Date Advertised: November 13, 2003
Date Adopted: December 4, 2003

Francesca A. Bartlett
Mayor

Attest:

Annette C. Bielawski
Municipal Clerk