

The Texas Natural Resource Conservation Commission (commission) proposes new §§230.1-230.11, Groundwater Availability Certification for Platting.

BACKGROUND AND SUMMARY OF THE FACTUAL BASIS FOR THE PROPOSED RULES

The purpose of the proposed rules is to implement the provisions of Senate Bill (SB) 1323, 76th Legislature, 1999, which added §212.0101 and §232.0031 to the Local Government Code. New §212.0101(a), Local Government Code provides that if a person submits a plat to a municipality for the subdivision of a tract of land for which the intended source of water supply is groundwater under that land, the municipal authority responsible for approving plats by ordinance may require the plat application to have attached a statement that is prepared by a Texas licensed professional engineer that certifies that adequate groundwater is available for the subdivision. New §232.0031(a), Local Government Code provides that if a person submits a plat to a county for the subdivision of a tract of land for which the intended source of water supply is groundwater under that land, the commissioners court of a county by order may require the plat application to have attached a statement that is prepared by a Texas licensed professional engineer that certifies that adequate groundwater is available for the subdivision.

Under Local Government Code, §212.0101(b) and §232.0031(b), the commission is required to establish by rule the appropriate form and content of a certification to be attached to plat applications. Proposed Chapter 230 has been developed to establish the appropriate form and content of the certification. Local Government Code, §212.0101 and §232.0031, do not provide the commission with

any additional authority or jurisdictional responsibility related to plat applications or groundwater availability certification.

The proposed form and rules will be used and implemented only by the municipal and county authorities which choose to require groundwater availability certification. By municipal ordinance or county commissioner court order, the type(s) of subdivision subject to this platting requirement will be identified. The statute is permissive by allowing a municipal authority by ordinance or a county commissioner court by order to choose to require the plat application to have attached to it a statement, that is prepared by an engineer registered to practice in this state, which certifies that adequate groundwater is available for the subdivision. If the municipality or county commissioner court requires this certification under Local Government Code, §212.0101 and §232.0031, the use of the proposed form and rules under new Chapter 230 is mandatory.

Counties within designated priority groundwater management areas (PGMAs) were provided similar authority with the passage of SB 1, 75th Legislature, 1997. SB 1 added Texas Water Code, §35.019, which allows the commissioners court of a county in a designated PGMA to adopt water availability requirements in an area where platting is required if the commissioners court determines that the requirements are necessary to prevent current or projected water use in the county from exceeding the safe, sustainable yield of the county's water supply. In developing proposed Chapter 230, the commission reviewed and evaluated several groundwater availability regulations that had been adopted in the Hill Country PGMA counties (Bandera, Comal, Hays, and Kendall Counties). The commission

also reviewed proposed regulations developed by the Texas Center for Policy Studies for Blanco County.

The authority for counties within designated PGMA's under Texas Water Code, §35.019, is broader in scope than the authority granted to municipalities and counties under Local Government Code, §212.0101 and §232.0031. However, the commission considered various provisions from the existing county regulations developed under Texas Water Code, §35.019, that were determined to be applicable in the development of proposed Chapter 230. In addition, the commission reviewed and considered statutory and regulatory groundwater availability guidelines used in the states of Arizona and Michigan. While groundwater law differs in these two states from groundwater law in Texas, evaluation of the other state guidelines provided useful information for the development of proposed new Chapter 230.

The commission also utilized an external review group in the preparation of proposed Chapter 230. Informal meetings were held with review group members to discuss the scope of the rules and to obtain public and local government perspective on effectiveness, impact, and cost. Comments from the review group members (on an initial draft of the rules) were solicited and considered in preparing the rules as proposed. The review group consisted of active representatives from county government and county associations; scientific and engineering interests; and local and state management, planning, and regulatory agencies. Within the external review group, input was also solicited from a municipal association, a council of government, and a builders association.

In developing the proposed Chapter 230, the commission recognizes that multiple factors must be considered to determine the adequacy of groundwater availability for a proposed subdivision. The following describes some of these factors. Information about the landowner(s), plat applicant, and the property should be clearly identified. The purpose, size, proposed configuration, and the anticipated method of water delivery should also be clearly indicated. The ultimate groundwater demand for residential and non-residential uses for the proposed subdivision must be estimated. The aquifer(s) underlying the proposed subdivision which is planned to be used as the source of water must be identified and general geologic and groundwater information should be considered and understood. Site-specific groundwater availability and usability information must be obtained, evaluated, and understood. The estimated water demand must be weighed against the site-specific groundwater data and availability and usability determinations must be made. The effects of the proposed method of water delivery must be weighed against site-specific groundwater availability. Determining usability also requires an analysis of the quality of the available groundwater.

Proposed Chapter 230 provides the necessary guidance and requirements to demonstrate (certify) that adequate groundwater is available for a proposed subdivision if groundwater under the land is to be the source of water supply. Proposed Chapter 230 provides the form that is required to be attached to a plat application, and the information required by proposed Chapter 230 is indicated on the form. The proposed chapter provides for a standardized approach to statewide certification of groundwater availability for platting. If a platting authority voluntarily chooses to require certification, platted subdivisions should be built with an adequate water supply. This avoids the cost to local government

and taxpayers of having to provide unplanned or emergency service to a subdivision developed without an adequate water supply.

SECTION BY SECTION DESCRIPTION

Proposed new §230.1 (Applicability) provides for the condition under which the proposed Chapter 230 is in effect: if a municipal or county platting authority requires groundwater availability certification in the plat application and approval process under Local Government Code, §212.0101 or §232.0031, respectively. A municipal or county authority is not required to exercise this authority; however, if it does, the form and content of proposed Chapter 230 must be used. If required, proposed Chapter 230 is applicable for proposed subdivisions that will utilize groundwater under that land as the source of water supply. Proposed Chapter 230 does not replace other state and federal requirements applicable to public drinking water supply systems nor does it supercede the authority of counties in designated PGMA's under Texas Water Code, §35.019, or the authority of groundwater conservation districts under Texas Water Code, Chapter 36.

Proposed new §230.2 (Definitions) provides for definitions of certain words, terms, or phrases that are used in the rules. Definitions are provided for the following: aquifer, aquifer test, certification, drinking water standards, full build out, licensed driller, licensed professional engineer, plat applicant, requirements applicable to public drinking water supply systems, and state well report. Full build out is defined at the final expected number of residences, businesses, or other dwellings in the proposed subdivision. Licensed professional engineer is defined as an engineer who maintains a current license through the Texas Board of Professional Engineers in accordance with its requirements for professional

practice. Plat applicant is defined as the owner or the authorized representative or agent seeking approval of a proposed subdivision plat application pursuant to municipal or county authority.

Other words or terms that are used in the proposed chapter that are not defined have the same definition and meaning as commonly used in the practices applicable to hydrology and aquifer testing. Many of these definitions can be found in *Groundwater and Wells* (Driscoll, Fletcher G., 1986, Second Edition, Johnson Filtration Systems Inc., St. Paul, Minnesota 55112), *AWWA Standard for Water Wells* (ANSI/AWWA A100-97, 1998, American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235), *Groundwater* (American Water Works Association, 1989, Second Edition, American Water Works Association Manual M21, American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235), *Applied Hydrogeology* (Fetter Jr., C. W., 1980, Charles E. Merrill Publishing Co., A Bell & Howard Company, Columbus, Ohio 43216), and *Groundwater* (Freeze, Allan R. and Cherry, John A., 1979, Prentice-Hall Inc., Englewood Cliffs, New Jersey 07632).

Proposed new §230.3 (Certification of Groundwater Availability for Platting) contains procedural instructions for providing certification. Proposed §230.3(a) requires the certification to be prepared by a Texas licensed professional engineer. Proposed §230.3(b) provides that the plat applicant submit the certification to the municipal or county authority. Proposed §230.3(c) establishes the appropriate form and content that must be used for the certification. The proposed form in §230.3(c) is divided into sections that mirror the structure of proposed Chapter 230. The three-page form must be signed, sealed, and dated by a licensed professional engineer and submitted with the plat application. The

executive director is allowed to make minor changes to this form which do not conflict with the requirements of the chapter.

Proposed new §230.4 (Administrative Information) contains a listing of administrative information pertaining to the proposed subdivision that must be provided to the municipal or county platting authority. This information includes the name of the proposed subdivision, any previous name(s) that identifies the tract of land, the property owner's name(s) and contact information, the plat applicant's name and contact information, the licensed professional engineer's name and contact information, the location and property description of the proposed subdivision, and the tax assessor parcel numbers for the proposed subdivision property. The information required under §230.4 must be provided to the municipal or county platting authority on the form required under proposed §230.3 and is necessary to identify the property and person performing the certification.

Proposed new §230.5 (Proposed Subdivision Information) provides that certain information pertaining to the proposed subdivision be provided on the form required under proposed §230.3. This information includes the purpose and size of the proposed subdivision, the number and size of proposed lots, and the anticipated method of water delivery. Under proposed §230.5(f), written application for service to existing water providers within a 1/2-mile radius of the subdivision must be supplied to the platting authority if the anticipated method of water distribution for the proposed subdivision is from an expansion of an existing public water supply system or from a proposed public water supply system. This application for service is required under existing §290.39(c)(1), concerning Rules and Regulations for Public Water Systems, General Provisions, if a public water supply is proposed.

Proposed new §230.6 (Projected Water Demand Estimate) requires that the total projected water demand for the proposed subdivision at full build out be estimated and reported on the form specified in proposed §230.3(c). At full build out, water demand estimates must be developed for residential and non-residential use and the total annual water demand estimate is to be determined. Under proposed §230.6(a), the residential water demand estimate at full build out is to be based on the current demand of any existing residential well(s) and the number of proposed housing units, the average number of persons per proposed housing unit, the gallons of water required per person per day, and the water demand estimate per proposed housing unit per year (reported in acre feet per year). Under proposed §230.6(b), any proposed non-residential uses must be specified by type of use and groundwater demand per year for each type of use. The non-residential demand estimate also includes the non-residential demand of any existing well(s) in the subdivision. Water demand estimates are necessary to determine the adequacy of the projected need to the projected supply.

Proposed new §230.7 (General Groundwater Resource Information) contains instructions for the reporting of general aquifer information and consideration of other information. Under proposed §230.7(a), the aquifer(s) underlying the proposed subdivision that is planned to be used as the source of water must be identified using common names that have been identified by the Texas Water Development Board. The information required under proposed §230.7(a) must be provided to the municipal or county platting authority on the form required under proposed §230.3. *Aquifers of Texas* (Ashworth, John B. and Hopkins, Janie, 1995, Texas Water Development Board Report 345, November, 1995) is a readily available resource that provides general information on the location, geology, quality, yield, common use, and specific problems of the state's aquifers and is available

electronically on the Texas Water Development Board's Internet Homepage at www.twdb.state.tx.us.

Proposed §230.7(b) requires that certain geologic and groundwater information be considered prior to conducting the aquifer test (required under proposed §230.8, concerning Obtaining Site-Specific Groundwater Data) to properly plan and design a successful aquifer test.

Proposed new §230.8 (Obtaining Site-Specific Groundwater Data) provides requirements for obtaining site-specific groundwater data relevant to the certification. Site-specific groundwater data is needed to determine groundwater availability for the proposed subdivision. Proposed §230.8(a) provides that this section is applicable only if the anticipated method of water distribution for the proposed subdivision is individual water wells on individual lots. If a public water supply system is anticipated, the site-specific groundwater data must be developed under 30 TAC Chapter 290, Subchapter D, concerning Rules and Regulations for Public Water Systems.

Proposed new §230.8(b) requires that existing wells within the subdivision be identified, located, and mapped by on-site surveys. Existing wells shall be located on the plat required by the municipal or county platting authority. Existing wells must be included in the demand estimates determined under proposed §230.6. Some existing wells may be used for aquifer testing purposes (as provided under proposed §230.8(c)).

Under proposed new §230.8(c), on-site aquifer testing is to be conducted to obtain sufficient information to allow for the evaluation of each aquifer that is being considered for the purpose of water supply for the proposed subdivision. Proposed §230.8(c)(1) provides that one test well and one

observation well will be required to conduct an adequate aquifer test. The location of the test and observation well(s) must be shown on the plat required by the municipal or county platting authority.

The commission considered several aquifer testing scenarios: a pumping test with no observation wells, an aquifer test with a single observation well, and an aquifer test with multiple observation wells. A pumping test with no observation wells would be the least expensive option and would give an indication of hydraulic conductivity. However, this scenario does not provide sufficient data to determine the coefficient of storage which is needed to adequately determine groundwater availability.

An aquifer test utilizing a test well along with a single observation well allows for the determination of the coefficient of storage and hydraulic conductivity and also allows for the detection of recharge or barrier boundaries. Drilling and utilizing an observation well for the aquifer test adds additional expense; however, the commission believes that the expense is justified by the additional aquifer data that can be gathered in this type of test. The commission believes that this aquifer data is necessary for determining groundwater availability for the range of aquifer types which may be encountered. Also, an existing well may be used as an observation well if it fully meets the requirements of proposed §230.8(c)(7).

Test data from an aquifer test with multiple observation wells can be analyzed by studying both time-drawdown and distance-drawdown relationships and can provide greater assurances that the determined coefficient of storage and hydraulic conductivity values are correct. While additional observation wells would be beneficial for verifying determined aquifer parameters, sufficient information should be

obtained from a single observation well if it is properly located and the test is properly conducted and evaluated. There may be situations (i.e., large areal developments, moderately productive carbonate aquifers, etc.) where the engineer may determine that additional observation wells are needed to adequately characterize the aquifer. Proposed §230.8(c)(8) provides guidance for determining the need for additional aquifer testing or observation wells. This determination will need to be made by the licensed professional engineer on a case-by-case basis, based on site-specific conditions.

Proposed new §230.8(c)(2) provides for the location of the test and observation wells. The general instructions provided in this paragraph are taken from Driscoll, 1986. Observation wells in unconfined aquifers should be placed no farther than 300 feet from the test well and no farther than 700 feet in thick confined aquifers. The observation well should also be placed no closer to the test well than two times the thickness of the aquifer's production zone. The wells must be placed within the proposed subdivision and the observation well must be located at a distance so that the time-drawdown data collected during the planned pumping period falls on a type curve of unique curvature. The optimal location for the observation well can be determined by best professional judgement after completion and evaluation of the test well (as provided in proposed §230.8(c)(4)).

Proposed new §230.8(c)(3) provides that lithologic and geophysical logging are required to map and characterize the geologic formation(s) and the aquifer(s) in which the test will be performed. This information is necessary to adequately understand the subsurface conditions and to understand the thickness and lithology of water bearing strata, aquifer characteristics, and groundwater quality. The subsection provides that the municipal or county authority may waive the requirement for geophysical

logs if the engineer can adequately demonstrate that the logs are not necessary to characterize the aquifer for testing purposes.

Proposed new §230.8(c)(4) provides for the development of the test and observation wells and well performance. The wells will be developed prior to conducting the aquifer test in order to repair damage done to the aquifer(s) by drilling. If the wells are not properly developed, the wells will not function efficiently and the information derived from aquifer testing will not be indicative of actual aquifer parameters. During development, the test well will be pumped for several hours to determine the specific capacity of the well (the rate of discharge of the well per unit of drawdown; commonly expressed in gallons per minute per foot), the maximum anticipated drawdown (lowering of water level), the volume of water produced at certain pump speeds and drawdown, and to properly locate observation wells to provide meaningful data. Water pumped from the well during its development shall not influence the initial well performance results. Aquifer testing required by this section must be performed before any acidization or other flow-capacity enhancement procedures are applied to the well.

Proposed new §230.8(c)(5) provides that groundwater quality be protected during construction of the wells to ensure that surface contaminants do not reach the subsurface environment and that undesirable groundwater, if encountered, is sealed off and confined to the zone(s) of origin. This requirement ensures that groundwater intended to be utilized by the subdivision is protected from man-affected activities or from cross-contamination from differing water-quality zones.

Proposed new §230.8(c)(6) addresses the duration of the aquifer test and recovery measurements.

While the duration of the aquifer test depends entirely on local and geologic conditions, it must be long enough to observe a straight-line trend on a plot of water level versus the logarithm of time pumped.

The test shall not begin until water levels have recovered at or near the levels prior to well development. Water pumped during the test should not influence the test results. At a minimum, a 24-hour uniform rate aquifer test is required; however, exceptions for shorter or longer testing periods are provided. The commission recognizes that under most scenarios, adequate aquifer test data can be obtained within a 24-hour testing period. If a straight-line trend of water level versus the logarithm of time pumped is not observed within a 24-hour period and it is impractical to continue the test, the test shall continue at least until a consistent pumping-level trend is observed and the failure to observe a straight-line trend shall be recorded. If pumping rates remain constant for a period of at least four hours and a straight-line trend is observed on a plot of water level versus the logarithm of time pumped before the 24-hour limit has been reached, the pumping portion of the test may be terminated. The frequency of water-level measurements during the aquifer test shall allow for an adequate definition of the time-drawdown data. Water-level recovery data shall also be obtained to verify the accuracy of the data obtained during the pumping portion of the test. If the test is for a proposed public water supply well, a 36-hour uniform rate aquifer test described in Chapter 290, Subchapter D, is required as provided under §230.8(a).

Proposed new §230.8(c)(7) provides that existing wells and aquifer test data may be used if they meet the full requirements of the rule. An existing well may be used as an observation well if sufficient information is available for the well to demonstrate that it meets the requirements of this section. If a

previous aquifer test is used, it must have been performed on a well within a 1/4-mile radius of the subdivision that is utilizing the same aquifer (under approximately the same conditions) which is being considered as the source of water supply for the proposed subdivision.

Proposed new §230.8(c)(8) provides guidance for the determination of whether additional aquifer testing and observation wells are needed. The certifying engineer will have to determine if additional information is needed based on best professional judgement. The Theis and Cooper-Jacob nonequilibrium equations and acceptable modifications thereof, that are commonly used in evaluating aquifer test data, are based on well documented assumptions. To adequately determine groundwater availability, it is necessary that these assumptions, the site-specific information derived from the aquifer test, the size of the proposed subdivision, and the proposed method of water delivery be evaluated by the engineer to determine whether additional observation wells or aquifer testing is needed.

Proposed new §230.8(d) requires the information, data, and calculations prepared under this section be made available to the municipal or county platting authority, if requested, to document the requirements of this section as part of the plat application.

If groundwater is to be the source of water for the proposed subdivision, the commission recognizes that the water must be of sufficient quality to meet the intended use in order to be considered an adequate water supply. Proposed new §230.9 (Determination of Groundwater Quality) provides that the quality of groundwater be determined through the analysis of samples collected near the end of the aquifer test. The section provides the minimum suite of constituents which must be analyzed. If

individual water wells serving individual lots are the anticipated method of water distribution, the samples must be analyzed for chloride, conductivity, fluoride, iron, nitrate (as nitrogen), manganese, pH, sulfate, total hardness, total dissolved solid, and the presence/absence of total coliform bacteria. If a public water supply system is anticipated, the bacterial and chemical analysis required by 30 TAC Chapter 290, Subchapter F, concerning Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements For Public Water Supply Systems, must be utilized. The samples must be analyzed by a Texas Department of Health approved laboratory using methods approved by the commission. The information, data, and calculations required by this section shall be made available to the platting authority, if requested, to document the requirements of this section as part of the plat application.

Proposed new §230.10 (Determination of Groundwater Availability) outlines the steps to be taken to make a determination of groundwater availability. These determinations will be based on the anticipated method of water delivery, the annual groundwater demand estimate, and the aquifer parameters derived from the site-specific aquifer testing and water-quality sampling. The determinations must be made for the certification of groundwater availability under §230.11.

Proposed new §230.10(a) provides for the minimum time frames to be used in determining groundwater availability at full build out. Groundwater availability must be determined for ten- and 30-year time frames. The municipal or county platting authority may also require other time frames under their respective ordinance or order to correspond with ongoing local water planning initiatives and objectives. The ten-year time frame is required to allow municipalities or counties to assess short-term

availability and if alternative supplies of water are known or believed to be available for the proposed subdivision in the near future. The 30-year time frame is the time frame utilized by the Texas Water Development Board and the Regional Water Planning Groups under 31 TAC Chapters 357 and 358 in developing the state and regional water plans and under the Texas Water Development Board's proposed 31 TAC Chapter 364, the proposed model subdivision rules. The 30-year time frame will allow municipalities or counties to assess a longer term of groundwater availability for the proposed subdivision.

Proposed new §230.10(b) requires that the groundwater availability determination consider the anticipated method of water delivery for the proposed subdivision as identified under proposed §230.5 and be compared to the annual groundwater demand estimates at full build out as determined under proposed §230.6. The anticipated method of water delivery and the groundwater demand estimates at full build out will identify the number of wells which will be required for the proposed subdivision and the groundwater demands of the proposed subdivision on the underlying aquifer, respectively. This information must be considered and compared to site-specific aquifer parameters to make a determination of groundwater availability.

Proposed new §230.10(c) requires that aquifer parameters be determined utilizing the aquifer test data obtained under either proposed §230.8 for individual water wells or under 30 TAC Chapter 290, Subchapter D, for public water supply wells. The commission recognizes that site-specific aquifer parameters must be utilized to adequately determine groundwater availability for certification. The time-drawdown and time-recovery data obtained during the aquifer test is proposed to be used to

determine aquifer parameters utilizing the nonequilibrium equations developed by Theis or Cooper-Jacob, or acceptable modifications thereof. These are the most commonly used equations for determining aquifer parameters and evaluating aquifer test data. The commission recognizes that groundwater availability must consider the rate of yield of the pumped well and drawdown of the water level and the specific capacity, efficiency of the pumped well, transmissivity, coefficient of storage, and hydraulic conductivity of the aquifer. Recharge or barrier boundaries, if any are present, and thickness of the aquifer should also be considered in making groundwater availability determinations. This information must be provided to the municipal or county platting authority on the form required under proposed §230.3.

Proposed new §230.10(d) requires that the anticipated method of water delivery, the annual groundwater demand estimate, and the aquifer parameters be used to make groundwater availability determinations. Time-drawdown calculations are required to determine the amount of drawdown (water-level decline) at the pumped well (or at the pumped wells if multiple wells are anticipated) and the amount of drawdown at the boundaries of the proposed subdivision for the ten- and 30-year time frames and other time frames determined by the platting authority to be necessary. These calculations will allow the municipal or county platting authority to review the anticipated amount of drawdown at the pumped well(s) and at the boundary of the proposed subdivision at ten- and 30-years time.

Distance-drawdown calculations are required to determine the distance the well's (or wells' if multiple wells are proposed) cone-of-depression (area influenced by the pumpage of the well) will extend from the well for the ten- and 30-year time frames. This calculation will allow the municipal or county platting authority to review the anticipated distance the pumped well(s) will affect water levels and

other wells. Well interference calculations are required if multiple wells are proposed. These interference calculations will determine how the wells will affect each other for the ten- and 30-year time frames and will provide the basis for the certifying engineer to recommend spacing limits between individual wells and well yields (pumping rates) that will allow for the continued use of the wells for the ten- and 30-year time frames. These calculations will allow the municipal or county platting authority to review the anticipated groundwater availability and the density and number of water wells within the proposed subdivision. The municipal or county platting authority may also require the time-drawdown, distance-drawdown, and well interference calculations for any other specified time frame which they have so chosen. This information must be provided to the municipal or county platting authority on the form required under proposed §230.3.

Proposed new §230.10(e) requires the certifying engineer to compare the water quality analysis required under proposed §230.9 to primary and secondary drinking water standards. This requirement will allow the municipal or county platting authority to review the anticipated usability of the groundwater for its stated purposes, and thus assess the groundwater quality for supplying the proposed subdivision. A listing of the constituents that meet or exceed these standards must be provided to the municipal or county platting authority on the form required under proposed §230.3.

Proposed new §230.10(f) requires that the information, data, and calculations required by this section be made available to the platting authority, if requested, to document the requirements of this section as part of the plat application.

Proposed new §230.11 specifies the required engineer's statement and certification. Proposed new §230.11(a) requires the Texas licenced professional engineer to make groundwater availability and usability statements based on the determinations and calculations required under proposed §230.10 and to certify groundwater availability and usability based on the information developed under proposed §230.10. These statements must be provided to the municipal or county platting authority on the form required under proposed §230.3. These statements provide a summary of the groundwater availability determinations to the municipal or county platting authority and relate to the estimated drawdown of the aquifer at the pumped well(s) over a ten- and 30-year period, the estimated drawdown of the aquifer at the subdivision boundary over a ten- and 30-year period, the estimated distance from the pumped well(s) to the outer edges of the cone(s)-of-depression over a ten- and 30-year period, the recommended spacing limit between wells and the recommended well yields, and the sufficiency of available groundwater quality to meet the intended use of the platted subdivision.

Proposed new §230.11(b) provides that by signature, seal, and date on the form required under proposed §230.3, the licensed professional engineer certifies that an adequate quantity of groundwater is available from the underlying aquifer(s) to supply the platted subdivision at full build out for the ten- or 30-year time periods or for other time frames specified by the platting authority. Proposed §230.11(c) provides that by signature, seal, and date on the form required under proposed §230.3, the licensed professional engineer certifies that the quality of water in the aquifer(s) which will be used to supply the platted subdivision is suitable for the water's intended use.

FISCAL NOTE

Bob Orozco, Technical Specialist with Strategic Planning and Appropriations, has determined that for the first five-year period the proposed rules are in effect, there will be no significant adverse fiscal implications for the commission and other units of state and local government as a result of administration or implementation of the proposed rules contained in Chapter 230, Groundwater Availability Certification for Platting.

The purpose of the proposed rules is to implement certain provisions of SB 1323, 76th Legislature, 1999 (an act relating to requiring certain plats for the subdivision of land to include proof of groundwater supply). SB 1323 amended the Texas Local Government Code by adding that municipal and county authorities responsible for approving plats may require a plat application, that intends to use groundwater under the land as its source of water, to have attached to it a statement, prepared by a registered engineer, that certifies that adequate groundwater is available for the subdivision. SB 1323 also requires the commission to establish the appropriate form and content of the certification of groundwater availability which is to be attached to a plat application when required.

The proposed rules also require that administrative information, information about the proposed subdivision, a projected water demand estimate for the proposed subdivision at full build out, and general groundwater information be provided. The proposed rules require that site-specific groundwater data be obtained through the drilling, logging, completion, and development of test and observation wells; through aquifer testing applied to these wells; and through groundwater quality analysis from samples collected from the test well. The proposed rules require that site-specific aquifer

parameters be determined, that specific groundwater availability determinations be calculated, and that specific groundwater availability and usability statements be completed. All of this information must be summarized on the proposed form contained in the proposed rules and must be signed, sealed, and dated by a licensed professional engineer.

The proposed rules do not supercede the authority of counties within designated priority groundwater management areas to adopt their own availability requirements if the commissioner's court determines that the requirements are necessary to prevent the county from exceeding the county's water supply.

PUBLIC BENEFIT

Mr. Orozco has also determined that for each of the first five years the proposed new rules are in effect, the public benefit anticipated from the platting authority's use of the proposed certification rules will be a standardized approach to statewide certification of groundwater availability for platting and the proper planning for the use of available groundwater supplies by assuring that platted subdivisions are built with an adequate water supply.

No significant adverse fiscal impacts are anticipated as a direct result of the proposed rules. These rules only specify the form and content of the groundwater availability certification and are not mandatory unless the platting authority voluntarily chooses to require this certification. The estimated costs provided in this fiscal note may occur if the platting authority chooses to require a groundwater availability certification as specified in SB 1323.

It is not known how many platting authorities will require a groundwater certification and it is also unknown how many persons will be required to submit a groundwater certification to a platting authority. It is also unknown how many land owners/developers may already conduct tests or analyses similar to the requirements of the proposed certification prior to considering developing land. It is anticipated that although some platting authorities may opt to require the proposed certification, there may be some or no additional cost because many of the requirements of the certification have already been accomplished prior to the application for platting. If a certification is required, and no previous groundwater analysis has been done, it is anticipated that the major items of expense required will be drilling, logging, and developing two wells; conducting the aquifer test; and making groundwater availability determinations. It is also anticipated that costs will vary on a case-by-case basis primarily because of differing aquifers and aquifer characteristics, the varying costs associated with the depth of the wells, and potential variances in well drilling and completion costs. Cost associated with drilling, logging, and developing the test and observation wells are anticipated to account for about 70% of the total cost if the platting authority opts to require the proposed certification. An estimated 15% of the total cost are anticipated to be associated with conducting the aquifer test.

If the platting authority opts to require the proposed certification, average total costs for plat applicants, based on a range of 200 to 400 feet wells in differing aquifer types, are anticipated to range from \$21,000 to \$28,000 with the variance primarily attributable to the drilling and construction of the wells. Under a worst-case scenario for these same wells, where best professional engineering judgement determines that additional observation wells and aquifer testing are required to adequately determine groundwater availability, cost can be anticipated to increase significantly. An additional observation

well would increase cost by at least 35% and additional aquifer testing would increase cost another 15%, increasing the average range of cost from \$31,500 to \$42,000. Under a best-case scenario for this same situation, where an existing well can be utilized as an observation well or a previous aquifer test is available, average cost could be expected to decrease significantly (by over 46%) to an estimated average range of cost from \$11,000 to \$14,500. It is also anticipated that costs could vary significantly from well to well, at various areas of the state, and at various engineering firms.

It is anticipated that some cost, potentially up to 70%, could be recouped by the plat applicant (developer) if the well or wells are completed and retained for future use on the property. Any lot (or lots) with an existing water supply well(s) will be of more value, and the cost associated with drilling, logging, and developing the well(s) could be passed on to the eventual buyer of the property. This cost would depend on the actual cost of the certification and associated well development and the number of lots that could absorb the cost. Also, the well or wells could be retained for use as public water supply wells if that is the intended method of water distribution for the proposed subdivision.

SMALL BUSINESS AND MICRO-BUSINESS ANALYSES

There may be some adverse effect on small businesses or micro-businesses as a result of these rules. In accordance with SB 1323, the purpose of the proposed rules is to establish the appropriate form and content of a certification to be attached to a plat application that demonstrates if adequate groundwater is available for a proposed subdivision. These proposed rules only specify the form and content of the groundwater availability certification and are not mandatory unless the platting authority opts to require

this certification. The estimated costs provided in this fiscal note may occur if the platting authority opts to require a groundwater availability certification as specified in SB 1323.

If the platting authority exercises its authority under the Local Government Code and requires the certification in the proposed rules, an aquifer test and the evaluation of data will be required to determine groundwater availability regardless of the size of the proposed subdivision. It is not anticipated that the size of the business will be a factor in the cost if a certification is required. However, it is anticipated that a small business or micro-business (small developer) would have a greater percentage of total revenue invested in drilling the wells and conducting and evaluating the aquifer test data. It is also anticipated that costs will also vary on a case-by-case basis primarily because of differing aquifers and aquifer types, the depth of the wells, and well drilling and completion procedures. It is also anticipated that costs could vary significantly from well to well, at various areas of the state, and at various engineering firms.

In general, cost associated with drilling, logging, and developing the test and observation wells are anticipated to account for about 70% of the total cost if the platting authority opts to require the proposed certification. An estimated 15% of the total cost are anticipated to be associated with conducting the aquifer test. Average total cost for plat applicants to comply with the proposed rules, based on a range of 200 to 400 feet wells in differing aquifer types, are anticipated to range from \$21,000 to \$28,000 with the variance primarily attributable to the drilling and construction of the wells. Under a worst-case scenario for these same wells, where best professional engineering judgement determines that additional observation wells and aquifer testing are required to adequately determine

groundwater availability, cost can be anticipated to increase significantly. An additional observation well would increase cost by at least 35% and additional aquifer testing would increase cost another 15%, increasing the average range of cost to \$31,500 to \$42,000. Under a best-case scenario for this same situation, where an existing well can be utilized as an observation well or a previous aquifer test is available, average cost could be expected to decrease significantly (by over 46%) for an estimated average range of cost from \$11,000 to \$14,500.

As a result of drilling and constructing the test and observation wells, a small business or micro-business could recoup some expenses directly by passing them along to the buyers of lots that have an existing water supply well or by retaining the wells for use as public water supply wells if that is the anticipated method of water distribution for the proposed subdivision.

It would not be legal or feasible to reduce the adverse effect, if any, on small businesses or micro-businesses and still achieve the purpose of the statute under which the rules are being adopted. Local Government Code, §212.0101(b) and §232.0031(b), require the commission to establish, by rule, the form and content of a certification to be attached to a plat application, that adequate groundwater is available for a subdivision. If a municipal authority or commissioners court chooses to require groundwater adequacy certifications, they must use the form and content specified by the commission. All the requirements of this rule are necessary for a county or municipality choosing to require a platting applicant to certify that adequate groundwater is available for subdivisions. The requirements under the rule would be necessary for a business, regardless of size, to certify groundwater adequacy if required by the local platting authority.

DRAFT REGULATORY IMPACT ANALYSIS

The commission has reviewed the proposed rulemaking in light of the regulatory analysis requirements of Texas Government Code, §2001.0225, and has determined that the rulemaking is not subject to §2001.0225 because it does not meet the definition of a “major environmental rule” as defined in that statute. “Major environmental rule” means a rule the specific intent of which is to protect the environment or reduce risks to human health from environmental exposure and that may adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state. The specific purpose of the proposed rules is to implement certain provisions in SB 1323 which direct the commission to establish the appropriate form and content of a groundwater certification to be attached to a plat application to demonstrate if adequate groundwater is available for a proposed subdivision. The form and content of the proposed rules are intended to allow municipal or county platting authorities to consider groundwater availability in their decision-making. These rules only specify the form and content of the groundwater availability certification and are not mandatory unless the platting authority opts to require the certification as specified in SB 1323. If a platting authority opts to require the proposed certification, it is not anticipated that these rules could have an adverse material effect on the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state. Furthermore, these rules are not a “major environmental rule” because their specific intent is not to protect the environment or reduce risks to human health from environmental exposure, but to provide a public benefit by establishing uniform

standards for platting authorities who choose to require certification of adequate groundwater availability for the subdivision of land.

In addition, §2001.0225 only applies to a major environmental rule, the result of which is to:

1. exceed a standard set by federal law, unless the rule is specifically required by state law;
2. exceed an express requirement of state law, unless the rule is specifically required by federal law;
3. exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program or;
4. adopt a rule solely under the general powers of the agency instead of under a specific state law.

This rulemaking does not meet any of these four applicability requirements of a “major environmental rule.” Specifically, the proposed rules do not exceed a standard set by federal law nor exceed the requirement of a delegation agreement because there is no federal equivalent for provisions in the Texas Local Government Code. The proposed rules do not exceed an express requirement of state law because the statute requires the commission to enact rules for certifying that groundwater is “adequate.” Groundwater which will be used for drinking water can only be adequate if it is of sufficient quantity

and quality. These rules all relate to that determination of adequacy. The proposed rules were not developed solely under the general powers of the agency, but are proposed under the specific authority of the Texas Local Government Code, as amended by SB 1323.

TAKINGS IMPACT ASSESSMENT

The commission has prepared a takings impact assessment for these rules pursuant to Texas Government Code, §2007.43. The following is a summary of that assessment. Local Government Code, §212.0101 and §232.0031, require the commission, by rule, to establish the appropriate form and content of a certification to be attached to plat applications. Local Government Code, §212.0101 and §232.0031, do not provide the commission with any additional authority or jurisdictional responsibility related to plat applications or groundwater availability certification.

The use of the proposed form and rules is not mandatory. A municipal authority by ordinance or a county commissioner court by order shall determine if the proposed form and rules shall be used in the plat application process for that municipality or county, respectively. The proposed form and rules will be used and implemented only by the municipal and county authorities which choose to do so. The action to establish the form and rules in itself does not create a burden on private real property. The proposed rules establish standards for certification of groundwater availability if a municipality or county chooses to require certification.

Implementation of the form and rules would not decrease the current value of the tract of land. The land value will increase with the subdivision of the land regardless of whether the plat application is accepted as proposed or whether the municipal or county authority requires the plat application to be amended after

the authority's analysis of the information required under the form and rules that will be attached to the plat application. Adequate groundwater either does or does not exist on the land. The certification implemented in these rules does not change that fact and therefore cannot constitute a burden on the property.

COASTAL MANAGEMENT PROGRAM CONSISTENCY REVIEW

The executive director has reviewed the proposed rulemaking and found that the rules are neither identified in Texas Coastal Coordination Act Implementation Rules, 31 TAC §505.11, relating to Actions and Rules Subject to the Coastal Management Program (CMP), nor will they affect any action/authorization identified in Coastal Coordination Act Implementation Rules, 31 TAC §505.11. Therefore, the proposed rules are not subject to the CMP.

PUBLIC HEARING

A public hearing on this proposal will be held in Austin on March 7, 2000 at 2:00 p.m. in Building F, Room 3202A at the Texas Natural Resource Conservation Commission complex, located at 12100 Park 35 Circle. Individuals may present oral or written statements when called upon in order of registration. Open discussion will not occur during the hearing; however, an agency staff member will be available to discuss the proposal 30 minutes before the hearing and will answer questions before and after the hearing.

Persons with disabilities who have special communication or other accommodation needs, who are planning to attend the hearing, should contact the Office of Environmental Policy, Analysis, and Assessment at (512) 239-4900. Requests should be made as far in advance as possible.

SUBMITTAL OF COMMENTS

Comments may be submitted to Angela Slupe, Office of Environmental Policy, Analysis, and Assessment, MC 205, P.O. Box 13087, Austin, Texas 78711-3087 or faxed to (512) 239-4808. All comments should reference Rule Log Number 1999-028-230-WT. Comments must be received by 5:00 p.m., March 13, 2000. For further information, please contact Kelly Mills, Water Quality Planning and Assessment Section, (512) 239-4512.

STATUTORY AUTHORITY

The new sections are proposed under Local Government Code, §212.0101 and §232.0031. Both sections of the Local Government Code provide that the commission shall establish, by rule, the appropriate form and content of a groundwater availability certification to be attached to a plat application.

Texas Water Code, §5.103 and §5.105, authorize the commission to adopt rules necessary to carry out its responsibilities and duties under the Texas Water Code and other laws of Texas.

No other codes or statutes will be affected by this proposal.

CHAPTER 230. GROUNDWATER AVAILABILITY CERTIFICATION FOR PLATTING

§§230.1-230.11

§230.1. Applicability.

(a) Subdivisions utilizing groundwater as the source of water supply. In the plat application and approval process, municipal and county authorities may require certification that adequate groundwater is available for a proposed subdivision if groundwater under that land is to be the source of water supply. The municipal or county authority is not required to exercise their authority under Local Government Code, §212.0101 or §232.0031. However, if they do exercise their authority, the form and content of this chapter must be used.

(b) Use of this chapter. If required by the municipal or county authority, the plat applicant and the Texas licensed professional engineer shall use this chapter and the attached form to certify that adequate groundwater is available under the land of a subdivision subject to platting under the Local Government Code, §212.004 and §232.001. These rules do not replace other state and federal requirements applicable to public drinking water supply systems. These rules do not supercede the authority of counties within designated priority groundwater management areas under Texas Water Code, §35.019, or the authority of groundwater conservation districts under Texas Water Code, Chapter 36.

§230.2. Definitions.

The following words and terms, when used in this chapter, shall have the following meanings, unless the context clearly indicates otherwise. If a word or term used in this chapter is not contained in this section, it shall have the same definition and meaning as used in the practices applicable to hydrology and aquifer testing.

(1) **Aquifer** - A geologic formation, group of formations, or part of a formation that contains water in its voids or pores and may be used as a source of water supply.

(2) **Aquifer test** - A test involving the withdrawal of measured quantities of water from or addition of water to a well and the measurement of resulting changes in water level in the aquifer both during and after the period of discharge or addition for the purpose of determining the characteristics of the aquifer. For the purposes of this chapter, bail and slug tests are not considered to be aquifer tests.

(3) **Certification** - A statement of professional opinion based on specific data, knowledge, and belief.

(4) **Drinking water standards** - As defined in commission rules covering drinking water standards contained in §§290.101-290.121 of this title (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Supply Systems).

(5) **Full build out** - The final expected number of residences, businesses, or other dwellings in the proposed subdivision.

(6) **Licensed driller** - Any person who holds a water well drillers license issued by the Texas Department of Licensing and Regulation pursuant to 16 TAC Chapter 76 (relating to Water Well Drillers and Water Well Pump Installers).

(7) **Licensed professional engineer** - An engineer who maintains a current license through the Texas Board of Professional Engineers in accordance with its requirements for professional practice.

(8) **Plat applicant** - The owner or the authorized representative or agent seeking approval of a proposed subdivision plat application pursuant to municipal or county authority.

(9) **Requirements applicable to public drinking water supply systems** - The requirements contained in commission rules covering public drinking water supply systems in §§290.38-290.47 of this title (relating to Rules and Regulations for Public Water Systems).

(10) **State Well Report** - A recorded log on forms prescribed by the Texas Department of Licensing and Regulation, at the time of drilling, showing the depth, thickness, character of the different strata penetrated, location of water-bearing strata, depth, size and type of casing installed,

together with any other data or information required by the executive director of the Texas Department of Licensing and Regulation.

§230.3. Certification of Groundwater Availability for Platting.

(a) Certification. The certification required by this chapter must be prepared by a Texas licensed professional engineer.

(b) Submission of information. The plat applicant shall provide to the municipal or county authority the certification of adequacy of groundwater under the subdivision required by this chapter.

(c) Form required. If required by the municipal or county authority to certify that adequate groundwater is available under the land to be subdivided, plat applicants and licensed professional engineers shall use this chapter and complete the following form. The executive direct may make minor changes to this form that do not conflict with the requirements of these rules.

Figure: 30 TAC §230.3(c).

FIGURE 30 TAC §230.3(c)
CERTIFICATION OF GROUNDWATER AVAILABILITY FOR PLATTING

Use of this form: If required by a municipal authority pursuant to §212.0101, Local Government Code or a county authority pursuant to §232.0031, Local Government Code, the plat applicant and the Texas licensed professional engineer shall use this form based upon the requirements of Title 30, Texas Administrative Code (TAC), Chapter 230 to certify that adequate groundwater is available under the land to be subdivided (if the source of water for the subdivision is groundwater under the subdivision) for any subdivision subject to platting under §§212.004 and 232.001, Local Government Code. The form and Chapter 230, TAC do not replace state requirements applicable to public drinking water supply systems.

Administrative Information (30 TAC, §230.4).

1. Name of Proposed Subdivision: _____
2. Any Previous Name Which Identifies the Tract of Land: _____

3. Property Owner's Name(s): _____
Address: _____
Phone: _____
Fax: _____
4. Plat Applicant's Name: _____
Address: _____
Phone: _____
Fax: _____
5. Licensed Professional Engineer's Name: _____
Address: _____
Phone: _____
Fax: _____
Certificate Number: _____
6. Location and Property Description of Proposed Subdivision: _____

7. Tax Assessor Parcel Number(s).
Book: _____
Map: _____
Parcel: _____

Proposed Subdivision Information (30 TAC, §230.5).

8. Purpose of Proposed Subdivision (single family/multi-family residential, non-residential, commercial): _____

9. Size of Proposed Subdivision (acres): _____
10. Number of Proposed Lots: _____
11. Average Size of Proposed Lots (acres): _____
12. Anticipated Method of Water Distribution.

Expansion of Existing Public Water Supply System:	Yes	No
New (Proposed) Public Water Supply System:	Yes	No
Individual Water Wells to Serve Individual Lots:	Yes	No
Combination of Methods:	Yes	No
Description (if needed): _____		
13. Additional Information (if required by the municipal or county authority): _____

Note: If public water supply system is anticipated, written application for service to existing water providers within a 1/2-mile radius should be attached to this form [30 TAC, §230.5(f)].

Projected Water Demand Estimate (30 TAC, §230.6).

14. Residential Water Demand Estimate at Full Build Out (includes both single family and multi-family residential).
 Number of Proposed Housing Units (single and multi-family): _____
 Average Number of Persons per Housing Unit: _____
 Gallons of Water Required per Person per Day: _____
 Water Demand per Housing Unit per year (acre feet/year): _____
 Total Expected Residential Water Demand per Year (acre feet/year): _____
15. Non-residential Water Demand Estimate at Full Build Out.
 Type(s) of Non-residential Water Uses: _____

 Water Demand per Type per Year (acre feet/year): _____
16. Total Water Demand Estimate at Full Build Out (acre feet/year): _____
17. Sources of Information Used for Demand Estimates: _____

General Groundwater Resource Information (30 TAC, §230.7).

18. Identify and describe, using Texas Water Development Board names, the aquifer(s) which underlies the proposed subdivision: _____

Note: Users may refer to Aquifers of Texas (Texas Water Development Board Report 345, 1995) to verify aquifer names. This reference is available via the Internet (www.twdb.state.tx.us).

Obtaining Site-Specific Groundwater Data (30 TAC, §230.8).

- | | | | |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| 19. | Have all known existing, abandoned, and inoperative wells within the proposed subdivision been located, identified, and shown on the plat as required under §230.8(b)? | Yes | No |
| 20. | Were the geologic and groundwater resource factors identified under §230.7(b) considered in planning and designing the aquifer test required under §230.8(c)? | Yes | No |
| 21. | Have test and observation wells been located, drilled, logged, completed, developed, and shown on the plat as required by §230.8(c)(1 through 4)? | Yes | No |
| 22. | Have all reasonable precautions been taken to ensure that contaminants do not reach the subsurface environment and that undesirable groundwater has been confined to the zone(s) of origin (§230.8(c)(5))? | Yes | No |
| 23. | Has an aquifer test been conducted which meets the requirements of §§230.8(c)(1 and 6)? | Yes | No |
| 24. | Were existing wells or previous aquifer test data used? | Yes | No |
| 25. | If yes, did they meet the requirements of §230.8(c)(7)? | Yes | No |
| 26. | Were additional observation wells or aquifer testing utilized? | Yes | No |

Note: If expansion of an existing public water supply system or a new public water supply system is the anticipated method of water distribution for the proposed subdivision, site-specific groundwater data shall be developed under the requirements of 30 TAC, Chapter 290, Subchapter D (related to Rules and Regulations for Public Water Systems) and the applicable information and correspondence developed in meeting those requirements shall be attached to this form pursuant to §230.8(a).

Determination of Groundwater Quality (30 TAC, §230.9).

- | | | | |
|-----|-------------------------------------------------------------------------------------|-----|----|
| 27. | Have water quality samples been collected as required by §230.9? | Yes | No |
| 28. | Has a water quality analysis been performed which meets the requirements of §230.9? | Yes | No |

Determination of Groundwater Availability (30 TAC, §230.10).

- | | | | |
|-----|---------------------------------------------------------------------|-----|----|
| 29. | Have the aquifer parameters required by §230.10(c) been determined? | Yes | No |
| 30. | If so, provide the aquifer parameters as determined. | | |

Rate of yield and drawdown: _____
 Specific capacity: _____
 Efficiency of the pumped well: _____
 Transmissivity: _____
 Coefficient of storage: _____
 Hydraulic conductivity: _____
 Were any recharge or barrier boundaries detected? Yes No
 If yes, please describe: _____

Thickness of aquifer(s): _____

- | | | | |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------|
| 31. | Have time-drawdown determinations been calculated as required under §230.10(d)(1) | Yes | No |
| 32. | Have distance-drawdown determinations been calculated as required under §230.10(d)(2)? | Yes | No |
| 33. | Have well interference determinations been made as required under §230.10(d)(3)? | Yes | No NA |
| 34. | Has the anticipated method of water delivery and the annual groundwater demand estimates at full build out been taken into account in making these determinations? | Yes | No |
| 35. | Has the water quality analysis required under §230.9 been compared to primary and secondary public drinking water standards as required under §230.10(e)? | Yes | No |
| | Does the concentration of any analyzed constituent exceed the standards? | Yes | No |
| | If yes, please list the constituent(s) and concentration measure(s) which exceed standards: _____ | | |

Engineer’s Statements and Certification (30 TAC, §230.11).

Groundwater Availability and Usability Statements.

36. Drawdown of the aquifer at the pumped well(s) is estimated to be _____ feet over a 10-year period and _____ feet over a 30-year period.
37. Drawdown of the aquifer at the property boundary is estimated to be _____ feet over a 10-year period and _____ feet over a 30-year period
38. The distance from the pumped well(s) to the outer edges of the cone(s)-of-depression is estimated to be _____ feet over a 10-year period and _____ feet over a 30-year period.
39. The recommended minimum spacing limit between wells is _____ feet with a recommended well yield of _____ gallons per minute per well.
40. Available groundwater is / is not (circle one) of sufficient quality to meet the intended use of the platted subdivision.

Certification of Groundwater Availability

41. I, _____, Texas Licensed Professional Engineer, certificate number _____, based on the information developed and presented in and attached to this form, certify that an adequate quantity of groundwater is available from the aquifer(s) under the subdivision to supply the platted subdivision at full build out for _____ years. Date: _____ (affix seal)

Certification of Groundwater Usability

42. I, _____, Texas Licensed Professional Engineer, certificate number _____, based on the information developed and presented in and attached to this form, certify that the quality of water in the aquifer(s) which will be used to supply the platted subdivision is suitable for the water’s intended use. Date: _____ (affix seal)

§230.4. Administrative Information.

At a minimum, the following general administrative information as specified in §230.3(c) of this title (relating to Certification of Groundwater Availability for Platting), shall be provided for a proposed subdivision for which groundwater under the land will be the source of water supply:

(1) the name of the proposed subdivision;

(2) any previous or other name(s) which identifies the tract of land;

(3) the name, address, phone number, and facsimile number of the property owner or owners;

(4) the name, address, phone number, and facsimile number of the person submitting the plat application;

(5) the name, address, phone number, facsimile number, and registration number of the licenced professional engineer preparing the certification as required in this chapter;

(6) the location and property description of the proposed subdivision; and

(7) the tax assessor parcel number(s) by book, map, and parcel.

§230.5. Proposed Subdivision Information.

At a minimum, the following information pertaining to the proposed subdivision shall be provided as specified in §230.3(c) of this title (relating to Certification of Groundwater Availability for Platting):

(1) the purpose of the proposed subdivision, for example, single family residential, multi-family residential, non-residential, commercial, or industrial;

(2) the size of the proposed subdivision in acres;

(3) the number of proposed lots within the proposed subdivision;

(4) the average size (in acres) of the proposed lots in the proposed subdivision;

(5) the anticipated method of water distribution to the proposed lots in the proposed subdivision including, but not limited to:

(A) an expansion of an existing public water supply system to serve the proposed subdivision (if groundwater under the subdivision is to be the source of water supply);

(B) a new public water supply system for the proposed subdivision;

(C) individual water wells to serve individual lots; or

(D) a combination of methods;

(6) if the anticipated method of water distribution for the proposed subdivision is from an expansion of an existing public water supply system or from a proposed public water supply system, evidence required under §290.39(c)(1) of this title (relating to Rules and Regulations for Public Water Systems) which shall be provided demonstrating that written application for service was made to the existing water providers within a 1/2-mile radius of the subdivision.

(7) any additional information required by the municipal or county authority as part of the plat application.

§230.6. Projected Water Demand Estimate.

(a) Residential water demand estimate. Residential water demand estimates at full build out shall be provided as specified in §230.3(c) of this title (relating to Certification of Groundwater Availability for Platting). Residential demand estimates shall, at a minimum, be based on the current demand of any existing residential well including those identified under §230.8(b) of this title (relating to Obtaining Site-Specific Groundwater Data), or §290.41(c) of this title (relating to Rules and Regulations for Public Water Systems), and:

- (1) the number of proposed housing units at full build out;
 - (2) the average number of persons per housing unit;
 - (3) the gallons of water required per person per day;
 - (4) the water demand per housing unit per year (acre feet per year); and
 - (5) the total expected residential water demand per year for the proposed subdivision (acre feet per year).
- (b) Non-residential water demand estimate. Water demand estimates at full build out shall be provided for all non-residential uses as specified in §230.3(c) of this title. Non-residential uses shall be specified by type of use and groundwater demand per year (acre feet per year) for each type of use. The estimate shall also include the existing non-residential demand of any well including those identified under §230.8(b) of this title or §290.41(c) of this title.
- (c) Total annual water demand estimate. An estimate of the total expected annual groundwater demand, including residential and non-residential estimates at full build out (acre feet per year), shall be provided as specified in §230.3(c) of this title.

(d) Submission of information. The sources of information used and calculations performed to determine the groundwater demand estimates as required by this section shall be provided to the municipal or county authority as specified in §230.3(c) of this title. The plat applicant shall provide any additional groundwater demand information required by the municipal or county authority as part of the plat application.

§230.7. General Groundwater Resource Information.

(a) Aquifer identification. Using Texas Water Development Board aquifer names, the aquifer(s) underlying the proposed subdivision which is planned to be used as the source of water for the subdivision shall be identified and generally described as specified in §230.3(c) of this title (relating to Certification of Groundwater Availability for Platting).

(b) Geologic and groundwater information. To meet the requirements of this chapter, the following geologic and groundwater information shall be considered in planning and designing the aquifer test under §230.8(c) of this title (relating to Obtaining Site-Specific Groundwater Data):

(1) the stratigraphy of the geologic formations underlying the subdivision;

(2) the lithology of the geologic strata;

(3) the geologic structure;

(4) the characteristics of the aquifer(s) and their hydraulic relationships;

(5) the recharge to the aquifer(s), and movement and discharge of groundwater from the aquifer(s); and

(6) the ambient quality of water in the aquifer(s).

§230.8. Obtaining Site-Specific Groundwater Data.

(a) Applicability of section. This section is applicable only if the proposed method of water distribution for the proposed subdivision is individual water wells on individual lots. If expansion of an existing public water supply system or installation of a new public water supply system is the proposed method of water distribution for the proposed subdivision, site-specific groundwater data shall be developed under the requirements of Chapter 290, Subchapter D of this title (relating to Rules and Regulations for Public Water Systems) and the information developed in meeting these requirements shall be attached to the form required under §230.3 of this title (relating to Certification of Groundwater Availability for Platting).

(b) Location of existing wells. All known existing, abandoned, and inoperative wells within the proposed subdivision shall be identified, located, and mapped by on-site surveys. Existing well locations shall be illustrated on the plat required by the municipal or county authority.

(c) Aquifer testing. Utilizing the information considered under §230.7(b) of this title (relating to General Groundwater Resource Information), an aquifer test shall be conducted to characterize the aquifer(s) underlying the proposed subdivision. The aquifer test must provide sufficient information to allow evaluation of each aquifer that is being considered as a source of residential and non-residential water supply for the proposed subdivision. Appropriate aquifer testing shall be based on typical well completions. An aquifer test conducted under this section utilizing established methods shall be reported as specified in §230.3(c) of this title and shall include, but not be limited to, the following items.

(1) Test well and observation well(s). At a minimum, one test well (i.e., pumping well) and one observation well, shall be required to conduct an adequate aquifer test under this section. Additional observation wells shall be used for the aquifer test if it is practical or necessary to confirm the results of the test. The locations of the test and observation well(s) shall be shown on the plat required by the municipal or county authority.

(2) Location of wells. The test and observation well(s) must be placed within the proposed subdivision and shall be located by latitude and longitude. The observation well(s) shall be located at a radial distance such that the time-drawdown data collected during the planned pumping period fall on a type curve of unique curvature. In general, observation wells in unconfined aquifers should be placed no farther than 300 feet from the test well, and no farther than 700 feet in thick, confined aquifers. The observation well should also be placed no closer to the test well than two times the thickness of the aquifer's production zone. The optimal location for the observation well(s) can be determined by best

professional judgement after completion and evaluation of the test well as provided in paragraph (4) of this subsection.

(3) Lithologic and geophysical logs. The test and observation wells shall be lithologically and geophysically logged to map and characterize the geologic formation(s) and the aquifer(s) in which the aquifer test(s) is to be performed.

(A) A lithologic log shall be prepared showing the depth of the strata, their thickness and lithology (including size, range, and shape of constituent particles as well as smoothness), occurrence of water bearing strata, and any other special notes that are relevant to the drilling process and to the understanding of subsurface conditions.

(B) Geophysical logs shall be prepared which provide qualitative information on aquifer characteristics and groundwater quality. At a minimum, the geophysical logs shall include an electrical log with shallow and deep-investigative curves (e.g., 16-inch short normal/64-inch long normal resistivity curves or induction log) with a spontaneous potential curve.

(C) The municipal or county authority may, on a case-by-case basis, waive the requirement of geophysical logs as required under this section if the licensed professional engineer can adequately demonstrate that the logs are not necessary to characterize the aquifer(s) for testing purposes.

(4) Well development and performance. The test and observation well(s) shall be developed prior to conducting the aquifer test to repair damage done to the aquifer(s) during the drilling operation. Development shall insure that the hydraulic properties of the aquifer(s) are restored as much as practical to their natural state.

(A) Well development procedures applied to the well(s) may vary depending on the drilling method used and the extent of the damage done to the aquifer(s).

(B) During well development, the test well shall be pumped for several hours to determine the specific capacity of the well, the maximum anticipated drawdown, the volume of water produced at certain pump speeds and drawdown, and to determine if the observation well(s) are suitably located to provide useful data.

(C) Water pumped out of the well during well development shall not be allowed to influence initial well performance results.

(D) Aquifer testing required by this section shall be performed before any acidization or other flow-capacity enhancement procedures are applied to the test well.

(5) Protection of groundwater. All reasonably necessary precautions shall be taken during construction of test and observation wells to ensure that surface contaminants do not reach the subsurface environment and that undesirable groundwater (water that is injurious to human health and

the environment or water that can cause pollution to land or other waters) if encountered, is sealed off and confined to the zone(s) of origin.

(6) Duration of aquifer test and recovery. The duration of the aquifer test depends entirely on local and geologic conditions. However, the test shall be of sufficient duration to observe a straight-line trend on a plot of water level versus the logarithm of time pumped. Water pumped during the test shall not be allowed to influence the test results. Aquifer testing shall not commence until water levels (after well development) have completely recovered to their pre-development level or at least to 90% of that level.

(A) At a minimum, a 24-hour uniform rate aquifer test shall be conducted. Testing shall continue long enough to observe a straight-line trend on a plot of water level versus the logarithm of time pumped. If necessary, the duration of the test should be extended beyond the 24-hour minimum limit until the straight-line trend is observed.

(i) If it is impractical to continue the test until a straight-line trend of water level versus the logarithm of time pumped is observed within the 24-hour limit, the test shall continue at least until a consistent pumping-level trend is observed. In such instances, failure to observe the straight-line trend shall be recorded.

(ii) If the pumping rates remain constant for a period of at least four hours and a straight-line trend is observed on a plot of water level versus the logarithm of time pumped before the 24-hour limit has been reached, the pumping portion of the test may be terminated.

(iii) The frequency of water level measurements during the aquifer test shall be such that adequate definition of the time-drawdown curve is made available. As much information as possible shall be obtained in the first ten minutes of testing (i.e., pumping).

(B) Water-level recovery data shall be obtained to verify the accuracy of the data obtained during the pumping portion of the test. Recovery measurements shall be initiated immediately at the conclusion of the pumping portion of the aquifer test and shall be recorded with the same frequency as those taken during the pumping portion of the aquifer test. Time-recovery measurements shall continue until the water levels have recovered to pre-pumping levels or at least to 90% of that level. If such recovery is not possible, time-recovery measurements should continue until a consistent trend of recovery is observed.

(7) Use of existing wells and aquifer test data.

(A) An existing well may be utilized as an observation well under this section if sufficient information is available for that well to demonstrate that it meets the requirements of this section.

(B) The municipal or county authority may accept the results of a previous aquifer test in lieu of a new test if:

(i) the previous test was performed on a well located within a 1/4-mile radius of the subdivision;

(ii) the previous test fully meets all the requirements of this section;

(iii) the previous test was conducted on an aquifer which is being considered as a source of water supply for the proposed subdivision; and

(iv) aquifer conditions (e.g., water levels, gradients, etc.) during the previous test were approximately the same as they are presently.

(8) Need for additional aquifer testing and observation wells. Based on best professional judgement, the engineer who is certifying the water availability will have to determine if additional information is needed. The Theis and Cooper-Jacob nonequilibrium equations, and acceptable modifications thereof, are based on well documented assumptions. Using these assumptions, the site-specific information derived from the aquifer test required by this section, the size of the proposed subdivision, and the proposed method of water delivery, the engineer shall determine if additional observation wells or aquifer tests are needed to adequately determine the groundwater availability necessary for certification under this chapter.

(d) Submission of information. The information, data, and calculations required by this section shall be made available to the municipal or county authority, if requested, to document the requirements of this section as part of the plat application.

§230.9. Determination of Groundwater Quality.

(a) Water quality analysis. Water samples shall be collected near the end of the aquifer test for chemical analysis. Samples shall be collected from each aquifer being considered for water supply for the proposed subdivision and reported as specified in §230.3(c) of this title (relating to Certification of Groundwater Availability for Platting).

(1) For proposed subdivisions where the anticipated method of water delivery is from an expansion of an existing public water supply system or a new public water supply system, the samples shall be submitted for bacterial and chemical analysis as required by Chapter 290, Subchapter F of this title (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements For Public Water Supply Systems).

(2) For proposed subdivisions where the anticipated method of water delivery is from individual water supply wells on individual lots, samples shall be analyzed for the following:

(A) chloride;

(B) conductivity;

(C) fluoride;

(D) iron;

(E) nitrate (as nitrogen);

(F) manganese;

(G) pH;

(H) sulfate;

(I) total hardness;

(J) total dissolved solids; and

(K) presence/absence of total coliform bacteria.

(3) Conductivity and pH values may be measured in the field, and the other constituents shall be analyzed in a Texas Department of Health approved laboratory using methods approved by the commission.

(b) Submission of information. The information, data, and calculations required by this section shall be made available to the municipal or county authority, if requested, to document the requirements of this section as part of the plat application.

§230.10. Determination of Groundwater Availability.

(a) Time frame for determination of groundwater availability. At a minimum, both a short- and long-term determination of groundwater availability shall be made, each considering the estimated total water demand at full build out of the proposed subdivision. Groundwater availability shall be determined for ten years and 30 years and for any other time frame(s) required by the municipal or county authority.

(b) Other considerations in groundwater availability determination. Groundwater availability determinations shall take into account the anticipated method of water delivery as identified under §230.5 of this title (relating to Proposed Subdivision Information) and will be compared to annual demand estimates at full build out as determined under §230.6 of this title (relating to Projected Water Demand Estimate).

(c) Determination of aquifer parameters. The parameters of the aquifer(s) being considered to supply water to the proposed subdivision shall be determined utilizing the data obtained during the aquifer test required under §230.8 of this title (relating to Obtaining Site-Specific Groundwater Data) for individual water wells or under Chapter 290, Subchapter D of this title (relating to Rules and Regulations for Public Water Systems) and reported as specified in §230.3(c) of this title (relating to Certification of Groundwater Availability for Platting). The time-drawdown and time-recovery data obtained during the aquifer test shall be used to determine aquifer parameters utilizing the nonequilibrium equations developed by Theis or Cooper-Jacob, or acceptable modifications thereof. The following aquifer parameters shall be determined:

- (1) rate of yield and drawdown;
- (2) specific capacity;
- (3) efficiency of the pumped (test) well;
- (4) transmissivity;
- (5) coefficient of storage;
- (6) hydraulic conductivity;

(7) recharge or barrier boundaries, if any are present; and

(8) thickness of the aquifer(s).

(d) Determination of groundwater availability. Using the information and data identified and determined in subsections (b) and (c) of this section, the following calculations shall be made.

(1) Time-drawdown. The amount of drawdown at the pumped well(s) and at the boundaries of the proposed subdivision shall be determined for the time frames identified under subsection (a) of this section.

(2) Distance-drawdown. The distance(s) from the pumped well(s) to the outer edges of the cone(s)-of-depression shall be determined for the time frames identified under subsection (a) of this section.

(3) Well interference. For multiple wells in a proposed subdivision, calculations shall be made to:

(A) determine how pumpage from multiple wells will affect drawdown in individual wells for the time frames identified under subsection (a) of this section; and

(B) determine a recommended minimum spacing limit between individual wells and well yields from the wells that will allow for the continued use of the wells for the time frames identified under subsection (a) of this section.

(e) Determination of groundwater quality. The water quality analysis required under §230.9 of this title (relating to Determination of Groundwater Quality) shall be compared to primary and secondary public drinking water standards and the findings documented as specified in §230.3(c) of this title.

(f) Submission of information. The information, data, and calculations required by this section shall be made available to the municipal or county authority, if required, to document the requirements of this section as part of the plat application.

§230.11. Engineer's Statements and Certification.

(a) Groundwater availability and usability statements. Based on the information developed under §230.10 of this title (relating to Determination of Groundwater Availability), the licensed professional engineer shall provide the following information as specified in §230.3(c) of this title (relating to Certification of Groundwater Availability for Platting):

(1) the estimated drawdown of the aquifer at the pumped well(s) over a ten-year period and over a 30-year period;

(2) the estimated drawdown of the aquifer at the subdivision boundary over a ten-year period and over a 30-year period;

(3) the estimated distance from the pumped well(s) to the outer edges of the cone(s)-of-depression over a ten-year period and over a 30-year period;

(4) the recommended minimum spacing limit between wells and the recommended well yield; and

(5) the sufficiency of available groundwater quality to meet the intended use of the platted subdivision.

(b) Certification of groundwater availability. By signature, seal, and date as specified in §230.3(c) of this title, the licensed professional engineer completing the form and providing the data required by this chapter to the municipal or county authority certifies that an adequate quantity of groundwater is available from the underlying aquifer(s) to supply the platted subdivision at full build out for the ten- or 30-year time periods or for other time periods as specifically required by the municipal or county platting authority.

(c) Certification of groundwater usability. By signature, seal, and date as specified in §230.3(c) of this title, the licensed professional engineer completing the form and providing the data

required by this chapter to the municipal or county authority certifies that the quality of water in the aquifer(s) which will be used to supply the platted subdivision is suitable for the water's intended use.