HTGCD Certification of Groundwater Availability For Tier 2 Permit
Well Performance Test

The test well must be drilled and completed according to applicable HTGCD Rules and must comply with all County and State Regulations. This form is to be completed and submitted to the District as part of the reporting requirements for a Well Performance Test. The completed report does not eliminate or substitute for the requirements of the TCEQ, Hays County or other State Agencies regarding Public Water Supply Wells. It is the applicant's responsibility to obtain any necessary permits from other agencies. Additional information may be required by HTGCD for Tier 2 Permits.

Administrative Information

1. HTGCD Well Construction Notification Number (Well Registration #):

2. Name of Proposed Permit:

3. Any Previous Name Which Identifies the Tract of Land:

4. Property Owner's Name(s):

Address:

Phone:

Fax: Email:

5. Permit Applicant's Name (If different from Property Owner):

Address:

Phone:

Fax: Email:

6. Texas Licensed Professional Engineer or Geoscientist's Name:

Address

Phone:

Fax: Email:

License Number:

7. Location and Legal Property Description of Proposed Permit:

Proposed Tier 2 Permit Information

8. Purpose of requested Permit; (single family/multi-family residential, community, non-community)

9. Size of Permit area (acres):

10. Number of Proposed Lots (if applicable):

11. Average Size of Proposed Lots (acres):

12. Anticipated Method of Water Distribution:

13. Expansion of Existing Public Water Supply System? Yes No

14. New (Proposed) Public Water Supply System? Yes No

15. Individual Water Wells to Serve Individual Lots? Yes No

Projected Groundwater Demand Estimate
16. Groundwater demand estimate shall account for indoor and outdoor demand at full build out.(acre feet/year) Demand shall be estimated by the following:
Number of Proposed Housing Units at full build out:
Average Number of Persons per Housing Unit (which shall be estimated at 1 person per bedroom plus 1 additional person):
Assume a per day per person usage rate of 110 gallons; and provide the total expected residential water demand per year for the entire proposed Permit (acre feet/year):
17. Non-residential groundwater demand estimate at full build out or full usage shall be provided. Non-residential uses shall be specified by:
Type(s) of groundwater use (ie:irrigation):
Water Demand per Type per Year (acre feet/year):
18. Total Expected Groundwater Demand Estimate at Full Build Out (acre feet/year):
19. Sources of Information Used for Demand Estimates:

Well Construction Diagrams & Test Duration - Guidelines
20. Well construction diagram: Create a well construction diagram for the pumping well on an 8 1/2'' x 11" sheet of paper that details: GPS location and elevation of well, permit name, borehole diameter and depth intervals; total depth of borehole; casing diameter, wall thickness, type (steel, pvc etc.) and depth intervals; screen diameter, wall thickness, type, slot sizes and depth intervals; filter pack interval, volume and material; type and depth of packers; volume, interval and type of annular space fill material; surface completion detail including casing sizes and elevation above ground or cement pad; pump size and setting depth of intakes; and static water-level.
21. Duration of aquifer test and recovery. The duration of the aquifer test depends entirely on local and geologic conditions. The pumping rate during the test shall meet or exceed the proposed maximum pumping rate required for the permit at its peak demand at full build-out. Water pumped during the test may not be allowed to influence the test results by locally recharging the aquifer.
22. At a minimum, a 24-hour uniform-rate well performance 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 shall be extended beyond the 24-hour minimum limit until the straight-line trend is observed. The plot of water level versus the logarithm of time pumped for the pumping well shall be included in the final report.
23. If it is impractical to continue the test until a straight-line trend of water level versus the logarithm of time pumped is observed 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 and the possible causes and implications of this discussed in the report.
24. The frequency of water level measurements during the well performance 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). The District strongly recommends that a pressure transducer with a data acquisition system be used to record water levels in the pumping well due to their ability to collect rapid early time data. If water levels are collected electronically, an electronic copy of the data file shall be submitted to the District with the final report.
25. 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 well performance test and shall be recorded with the same frequency as those taken during the pumping portion of the well performance test. The District strongly recommends that a pressure transducer with a data acquisition system be used to record water levels in the pumping well during the recovery phase of the test due to their ability to collect rapid early time data. Time-recovery measurements shall continue until the water levels have recovered to pre-pumping levels or at least to 90% of that level

Samples & Logs
26. Representative drill cuttings shall be collected at 10-foot intervals throughout the depth of the borehole. All samples or a cut of all samples shall be properly washed, bagged and labeled and submitted to the District.
27. A minimum of one representative groundwater sample shall be taken from the aquifer following industry standards. The District requires the date, time and depth of the sampling. The District also requires information on the laboratory that ran the water sample along with the date and time the sample was analyzed. Note: Groundwater from any well that may be used to supply water to the public must also test for contaminates following TCEQ standards. This data shall be added to the Well PerformanceTest Report
28. The aquifer to be produced must be indentified as: the Upper Trinity, Middle Trinity or Lower Trinity Aquifer. If possible, the productive Geologic formation within the aquifer shall also be identified (For example: Middle Trinity Aquifer, Cow Creek formation)
29. Geophysical logs shall be run which provide qualitative information on aquifer characteristics and groundwater quality. When hole conditions permit, the geophysical logs shall include but not be limited to, 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 and natural gamma ray. As a minimum requirement for cased holes, a natural gamma ray log shall be run and the logging program discussed with the District. A paper copy and a digital recording of the geophysical logs shall be included in the test report.

Determination of Groundwater Quality
30. Water samples shall be analyzed for:
calcium;
magnesium;
manganese;
iron;
potassium;
chloride;
sodium;
fluoride;
silica
sulfate
nitrate (as nitrogen)
bicarbonate
carbonate
conductivity;
pH;
total hardness;
total dissolved solids;
31. Conductivity and pH values shall be measured in the field during the pumping phase of the test until stable for two hours of pumping. Conductivity values should be considered stable when they are within plus or minus 10%. pH values should be considered stable when they are within plus or minus 0.1 standard pH units.

Determination of Groundwater Availability
33. The following aquifer parameters shall be determined and the basis of the determination noted:
Rate of yield and drawdown:
Specific capacity:
Transmissivity:
Coefficient of storage:
Hydraulic conductivity:
Recharge or barrier boundaries, if any are present:
Thickness of the aquifer(s)
34. Have time-drawdown determinations been calculated? Yes No
35. Have distance-drawdown determinations been calculated: Yes No
36. Have well interference determinations been made? Yes No
37. Has the anticipated method of water delivery, the annual groundwater demand estimates at full build out, and geologic and groundwater information been taken into account in making these determinations? Yes No
38. Has the water quality analysis been compared to primary and secondary TCEQ public drinking water standards? Yes No
39. Does the concentration of any analyzed constituent exceed the published TCEQ standards? Yes No
If yes, please list the constituent(s) and concentration measure(s) which exceed standards:
Groundwater Availability and Usability Statements
40. The 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.
41. The drawdown of the aquifer at the property bounary is estimated to be _____ feet over a 10-year period and _____ feet over a 30-year period.
42. 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.
43. The recommended minimum spacing limit between wells is _____ feet with a recommended well yield of _____ gallons per minute per well.
44. Available groundwater is / is not (circle one) of sufficient quality to meet the intended use of the permit.

Certification of Groundwater Availability from Well Performance Test. Must be signed by a Texas Licensed Professional Engineer or Texas Licensed Professional Geoscientist.
I, _____, Texas Licensed Professional Engineer or Texas Licensed Professional Geoscientist (circle which applies), certificate number_____, based on best professional judgment, current groundwater conditions, and the information developed and presented in this form, certify that adequate groundwater is available from the underlying aquifer(s) to supply the anticipated use of the proposed Permit. Date:_____ (affix seal)