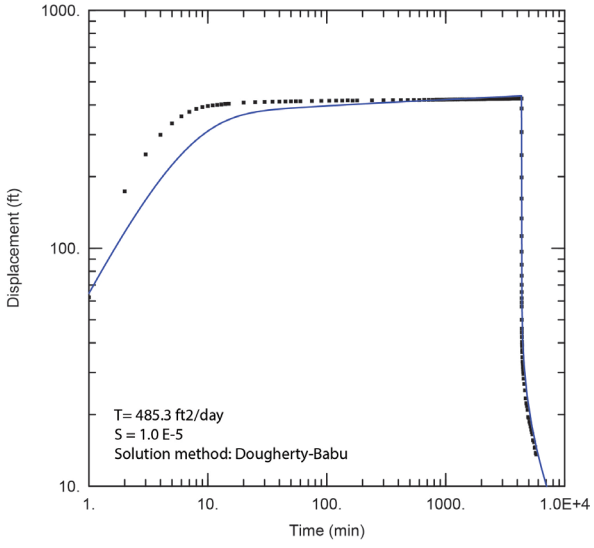
Barton Springs
Edwards Aquifer
CONSERVATION DISTRICT



Guidelines for Hydrogeologic Reports and Aquifer Testing

Barton Springs/Edwards Aquifer
Conservation District
Hays, Caldwell, and Travis Counties, Texas

Board Adopted - Marc~~h~~y 1~~2~~3, 2025~~16~~

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Barton Springs/Edwards Aquifer Conservation District
Hays, Caldwell, and Travis Counties, Texas

Aquifer Science Staff
Board Adopted - ~~May~~ March 13~~12~~, 2025~~2016~~

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~~This document is modified from original guidelines written by former District Hydrogeologist Nico Hauwert, P.G., and later revised by Aquifer Science staff in January 2007.~~ This version of the guidelines ~~were~~was revised from the previous 2016 version, which was written by ~~by the District's Aquifer Science Team~~ Brian, A. Smith, Ph.D., P.G. and Brian B. Hunt, P.G.~~, with reviews also provided by the District's Technical Team. Additional reviews were provided by Joe Vickers, P.G., Douglas A. Wierman, P.G., Alex S. Broun, P.G., and Rene Barker, P.G.~~

Cover
Photograph of pumping well in Kingsville City from the Goliad Sands pumping 700 gpm. Photo shows the orifice weir for measuring the flow rate, photo from Joe Vickers. Chart is an example of analytical solution used to estimate aquifer parameters for a Middle Trinity irrigation well (Onion Creek Golf Course well; August 2015).

I. Introduction

In accordance with the Barton Springs/Edwards Aquifer Conservation District's (District) Rules and Bylaws (Rules), Permit applicants seeking to export groundwater out of the District, to obtain a major amendment or a minor amendment (Rule 3-1.9(F)(G), or to permit a new nonexempt well with an annual pumpage volume of more than 2,000,000 gallons from the Edwards Aquifer or more than 650,000 gallons for the Trinity Aquifers, shall conduct an aquifer test and submit to the District a current Hydrogeological Report (Report) addressing the potential impacts associated with the proposed groundwater production or export. The Report is a required component of all administratively complete applications for such requested authorizations. District Rules define the Hydrogeologic Report as follows:

> *"a report, prepared by a Texas licensed geoscientist or a Texas licensed engineer in accordance with the District's guidance document, Guidelines for Hydrogeologic Reports and Aquifer Testing (Guidelines), which identifies the availability of groundwater in a particular area and formation and assesses the response of an aquifer to pumping over time and the potential for unreasonable impacts."*

Hydrogeologic studies provide essential baseline information for water-resource management for both the District and the permittee. Aquifer tests are a key component of hydrogeologic studies, however as Butler (2009) states, "an assessment of the response of an aquifer to pumping over the long term should not solely depend on information from a pumping test of limited duration; one must use other information on the regional hydrogeology, and so forth, to make that determination." These guidelines are intended to assist professionals involved in planning and conducting the aquifer test and also address the key elements of the ~~Hydrogeologic Report (~~Report~~)~~ that include other information ~~on~~such as ~~the~~ regional hydrogeology or local hydrogeologic boundary conditions.

An aquifer test work plan shall be prepared prior to conducting an aquifer test. Results of the aquifer test will be included in the Hydrogeological Report. Both the aquifer test work plan and Report need to be prepared by a Texas licensed professional geoscientist or engineer. Planning and implementation of the aquifer test shall be closely coordinated with the District to ensure that the proposed report is consistent with District standards and expectations specified in these guidelines. Prior to the commencement of the aquifer test, the applicant (or applicant's designated representative) shall have a meeting to discuss the proposed aquifer test work plan that shall be prepared pursuant to the Guidelines for Aquifer Test Work Plans (Design and Operation) (**Appendix A**). A written aquifer test work plan shall be submitted to the General Manager for review and approval prior to commencement of the test and shall include the required information for aquifer test work plans as specified in these guidelines. Once approved by the District, the aquifer test shall be conducted and the Report completed pursuant to the approved work plan and these guidelines. The applicant is responsible for all costs associated with the aquifer test.

The Report shall provide findings and conclusions addressing the response of an aquifer to pumping over time and the potential for causing unreasonable impacts. Applicants may not rely solely on reports previously filed with or prepared by the District. Deviation from these guidelines may occur only with prior District approval (see variance section below).

The District's Aquifer Science Team will evaluate the application to determine whether there is potential for unreasonable impacts (as define by District Rule) and produce findings in accordance with the process specified in District Rule 3-1.4.G. The evaluation of the potential for unreasonable impacts will apply the best available science and be performed on the basis of the Report, the aquifer test, and other factors relevant to the proposed production from the subject well/well field including but not limited to:

a. local geology and aquifer conditions including water quality;
b. construction and location of the subject well/well field;
c. target production zone, production capacity, and proposed production rate of the subject well/well field;
d. construction/completion of existing wells in the area of influence;
e. drawdown over time and distance attributed to pumping from the subject well/well field;
f. drawdown attributed to drought conditions and seasonal increases in pumping from existing wells;
g. drawdown attributed to pumping from existing wells and from future domestic and livestock wells;
h. proposed production relative to the Modeled Available Groundwater;
i. projected impacts on the relevant Desired Future Condition(s); and
j. projected impacts to regional surface water resources (springs and streams).

Permit applications may be deemed incomplete due to Reports that do not meet the District's minimum standards or deviate significantly from these guidelines without prior District approval. An applicant who incurs costs related to conducting an aquifer test knowingly bears the risk that the permit request may be denied or modified.

II. Purpose and Scope of Hydrogeologic Reports and Aquifer Testing

Based on the scale of the requested permit volume, the District has established tiered requirements as they pertain to aquifer tests and associated Reports (Table 1). Generally, the Tier 3 aquifer tests will require more extensive monitoring and data collection than tests for Tiers 1 and 2. Tier 3 aquifer tests will require a monitoring well network plan and the installation of one or more dedicated monitor wells. For Tier 1 Aquifer tests, an abbreviated single well test (specific capacity) may suffice, however, monitoring of nearby wells may be required if existing wells are accessible and adequate for monitoring.

Table 1: Tiered Structure for Aquifer Testing and Hydrogeologic Report Requirements (3-1.4.D).

Tier	Aquifer Test and Report Requirements	Anticipated Production Volume
0	None	<~~2,000~~650,000 gallons per year for Trinity Aquifer OR <2,000,000 gallons per year for Edwards Aquifer
1	Abbreviated aquifer test and Report	650,000 to 2,000,000 gallons per year for the Trinity Aquifer OR ~~>~~2,000,000 to 12,000,000~~*~~ gallons per year for the Edwards Aquifer
2	Hydrogeologic Report, and aquifer test m~~m~~ay require installation of new monitor wells if existing wells are not available or adequate for monitoring.	2,000,000 to 40,000,000 gallons per year for the Trinity Aquifer OR 12,000,000 to 40,000,000 gallons per year for the Edwards Aquifer ~~>12,000,000* to 200,000,000 gallons per year~~
3	Hydrogeologic Report, and aquifer test ~~-w~~will require monitoring well network plan and installation of one or more dedicated~~new~~ monitor wells.	>40~~200~~,000,000 gallons per year for all aquifers

*~~*The 12 MG/Yr value is the same as the drought management tiers. The value triggering a Tier 2 may be higher or lower depending upon the setting and level or risk of unreasonable impacts, as determined by the Aquifer Science Team's professional judgement.~~ *No Tier 1 Aquifer Test exists for new Edwards Permits*

Tier 1 Abbreviated Aquifer Test and Report

The purpose of the Tier 1 tests and Reports is to establish baseline information of the well and aquifer (yield, parameters, water quality). The Tier 1 tests and Reports are intended for ~~those~~ Trinity Aquifer wells that pump a relatively small volume and have a low risk for unreasonable impacts. Tier 1 tests do not apply to the Edwards Aquifer. Key elements of the Tier 1 Abbreviated Aquifer Test and Report include:

1. **Estimated aquifer properties:** Transmissivity needs to be calculated from an aquifer test using the standards outlined in these guidelines. Often these will be single-well (specific capacity) tests, however monitoring of nearby wells may be required if existing wells are readily accessible and adequate for monitoring. Storativity should be calculated if sufficient monitor well response is measured.

2. **Estimated extent and magnitude of well interference:** The report should address the short- and long-term impacts from the anticipated pumping on existing surrounding water wells. This can be done with simple distance-drawdown graphs (e.g. Cooper-Jacob) that project the effects of up to 7 years of pumping.

3. **Water quality:** The report should document and establish water chemistry of the groundwater produced at the end of the test, which at a minimum includes field parameters (conductivity, temperature, pH) and possibly laboratory results (common ions and anions, nutrients).

Tier 2 and 3 Hydrogeologic Test and Report

Tier 2 and 3 tests and reports are intended for those well systems that have proposed pumping volumes greater than ~~1~~2,000,000 gallons per year (see Table 1). Accordingly, the purpose is to make an assessment of the short- and long-term potential for unreasonable impacts to the regional aquifer system and existing surrounding water wells from the proposed pumping. An aquifer test is a key part of that evaluation, but other relevant hydrogeologic data, as described above, may also be evaluated, if available.

> *Note: The difference between Tier 2 and 3 Aquifer Test and Hydrogeologic Report is ~~related to~~ the monitoring well network plan (**Appendix B**) and installation of dedicated monitor wells for the aquifer test. Tier 2 testing will require the installation of monitor wells only if existing wells in the study area are not available or adequate for monitoring. In contrast, Tier 3 testing requires a monitoring well network to be established by the installation of at least one or more new dedicated monitor well~~s~~ for a test and identifying a sufficient amount of existing wells adjacent to the well or well field. A second monitor well may be required to measure the effects in different aquifers or in different locations of a widespread wellfield. The Tier 3 testing requirements are intended to ensure the best possible test and data collected for these large permit requests, and that the aquifer can be monitored for impacts on a long-term basis if/when the requested well production is approved and underway. The new dedicated monitor wells shall serve as a component of*

the "monitoring well network plan" submitted with the aquifer test work plan as required by the rules (3-1.4.D). The monitoring well network plan must be approved by the District and the monitoring wells shall be installed and/or identified prior to the commencement of the aquifer test.

Key elements of the Tier 2 and 3 Hydrogeologic Test and Report include:

1. **Estimated aquifer properties:** Hydrogeologic parameters including *transmissivity* and *storativity* need to be calculated from an aquifer test using appropriate published analytical models. Additionally, the Report should also identify the presence of boundary conditions such as barriers to groundwater flow, recharge, and other factors inherent to the aquifer or hydrologic conditions that may influence pumping over time.

2. **Estimated extent and magnitude of interference:** The Report should address the short and long-term impacts from the pumping on existing surrounding water wells. The Report should contain a map of the maximum measured drawdown from the aquifer test for the surrounding monitored wells. In addition, projected future drawdown from analytical models shall be done for at least 7 years. Future drawdown models should also include pumping from other known pumping centers within a 5-mile radius of the test well, including existing permitted wells pumping at their full permitted volume. Results will be used to evaluate the potential for unreasonable impacts to existing surrounding water wells.

3. **Water quality:** The Report should document water chemistry and detectable trends during the aquifer testing. The Report should discuss the risk of water quality changes due to pumping. In cases where pumping or ASR injection wells are located near the Edwards Aquifer's saline zone boundary, or where significant inter-aquifer flow could induce waters of differing and distinguishable water quality, further evaluations may be required. Results will be used to evaluate the potential for unreasonable impacts to the quality of water in existing surrounding water wells or the aquifer.

4. **Estimated impacts to regional water resources:** Regional water resources include aquifers, springs, and surface streams. The Report should attempt to quantify the short- and long-term impacts from the pumping on these water resources and Desired Future Conditions (DFCs) for the relevant aquifer(s). Results will be used to evaluate the potential for unreasonable impact to DFCs, regional aquifer conditions, springflows, or base flows to surface streams.

Variances to Hydrogeologic Reports and Aquifer Test

The District may consider a variance from certain requirements. Technical information and a memorandum from a Texas licensed geoscientist or engineer supporting and documenting the

rationale for the variance shall be submitted to the General Manger for consideration. Factors that may be considered include:

1. Relatively low requested production volume;
2. Sufficient data exist for the well or vicinity (e.g. existing hydrogeologic reports or aquifer tests);
3. Low potential for unreasonable impacts; and
4. Other relevant factors.

Deviations from the guidelines and/or the work plan requirements (**Appendix A**) can occur with approval from District Aquifer Science staff, which should be noted and described in the submitted work plan.

III. Hydrogeologic Report Outline

Below is a suggested outline of topics, tables, and figures that should be included in the Hydrogeologic Report (Report). Tier 1-3 Reports need to address their respective topics described in the Section II above. (However, the Tier 1 Abbreviated Hydrogeologic Report is, by its nature, a more concise document and does not address all the elements outlined below.)

A. Summary, Results and Conclusions

i) Description of the type of permit request, aquifer (target production zone), use type, volume, and other relevant factors.

ii) Conclusions of the Report as they relate to the purpose described in Section II.

B. Description of the Pumping Well Site and Water System

i) Description and map of the project area, the location of the well site(s), and system configuration including the location and volume of water-storage facilities.

- Figure*: sketch (map) of the test site*
  - *Note*: *Describe and map potential interference from nearby pumping wells.*

ii) Description of the current and anticipated annual pumping demands, including typical pumping schedules, such as, frequency, duration, peak demand hours, and pumping rates of the pumped well(s).

C. Hydrogeology and Conceptual Model (Tiers 2 and 3 only, except where indicated)

The data sources for this section should be the best available information, properly cited from the literature, and integrated with the data collected from this study.

i) Provide a description of the hydrogeologic conceptual model of the aquifer and well site. Discuss or provide:

  - Relevant hydrogeologic aspects of the aquifer, such as aquifer conditions (e.g. confined, semi-confined, unconfined), hydrostratigraphy, faulting, and boundary conditions (recharge or barriers).
  - Map of wells (exempt and nonexempt), surface ponds or reservoirs, major karst features, springs, or any other source of recharge and discharge for the project well site and surrounding area of influence. Data sources should include all publically available databases coupled with field reconnaissance or survey investigations.
  - Regional hydrogeologic elements such as recharge, flow, and discharge should be addressed in the conceptual model. Concepts such as pumping equilibrium, changes in storage, and capture related to pumping should be discussed.

- *Figures: Regional and local scale geologic and potentiometric maps*
- *Figures: Study area geologic and hydrogeologic cross sections*
  - The role of karst and fracturing and faulting in the conceptual model should also be directly discussed in addition to the heterogeneity and anisotropy of the aquifer and well field.

ii) Detailed well hydrostratigraphy and completion/construction information need to be presented in the Report. This should include geophysical logs of the pumping wells (required), and monitor wells (required for all wells used in a Tier 3 monitoring well network plan).
   - *Figures: Pumping and monitor well hydrostratigraphy and well completion diagrams.*
     - Well inventories, drilling and geophysical logs, pump depths, casing/annular seal specs, state well reports, and other relevant records should be included in the appendices of the report.
     - Electronic files (PDF and/or .WCL) of geophysical logs should be made available. Geophysical logs should include gamma ray, resistivity, and caliper.

iii) Potentiometric maps should be prepared showing the elevations of the potentiometric surface(s) of the aquifer(s) proposed for usage or that could be impacted.
     - Regional potentiometric maps can be based on existing or published data, while more local potentiometric maps should be based on water-level measurements taken prior to the aquifer test for the tested aquifer and, to the extent possible, all relevant aquifers that could be subject to capture.
   - *Figure: Regional and local potentiometric maps*

D. Aquifer Test Work Plan and Results

i) Aquifer Test Work Plan. Summarize the aquifer test design and operation outlined in **Appendix A**, and approved by the District.
     - *Note: Complete time-discharge records of the pumped well and water-level records of the pumped and monitor wells should be put into an appendix (and provided in digital format).*

ii) Aquifer test results. Discuss pre-test trends and water levels during the pumping and recovery phases as they might relate to influences from recharge, barometric effects, and other pumping wells. Any problems or inconsistencies with pumping rates or measurements must be discussed and documented.
   - *Figure: Map of the maximum measured drawdown during aquifer test. If more than one well is pumped, the sum of the maximum drawdown from each test must be presented. Maximum drawdown determinations may need to be adjusted for regional water-level trends.*
   - *Figures: Annotated hydrographs (arithmetic or non-log) water-level elevations versus time for all the data from each well.*
   - *Figures: Hydrographs of nearest stream flow, springflow, and rainfall station data covering a period of three months prior to the aquifer test through the recovery period.*

E. Analyses of Aquifer Test Data and Parameter Estimation

i) This section should describe the methods used and analytical model selected to estimate aquifer parameters.
     - All data manipulation (trend-correction) should be clearly described.

- *Table: Summary of input parameters used in the analytical solutions (pumping rate, aquifer thickness, distances, well construction details etc.)*
- *Figures: Annotated semi-log and log-log graphs of measured drawdown versus time in pumping and monitor wells. Include select theoretical curves (analytical models) used to calculate the parameters.*
    - *Methods should include straight-line (Cooper and Jacobs, 1946) and type curve models such as Theis (1935) or other analytical models. If numerous plots are generated, they can be put into an appendix.*

ii) Storativity should only be calculated from monitor well (not pumping well) data. Data from monitor wells farthest out generally result in the best estimates of storativity (Butler and Duffield, 2015; Butler, 2009).

iii) Deviations from these theoretical curves must be discussed and may include effects from: hydraulic boundaries (recharge and no flow), partial penetration, fluctuating pumping rate, delayed yield, leakage, atmospheric responses, regional water-level trends, and interference from other wells.

- *Table: Summary table of estimated aquifer parameters and methods. This should provide a range of results based on various selected methods. The preferred or averaged result and model should be indicated. A comparison to other published or nearby aquifer test values should be included.*

F. Potential Unreasonable Impacts Analysis (Tiers 2 and 3 only, except where indicated)

The effects of pumpage on wells and on the aquifer must be evaluated and discussed in this section as they relate to the potential for unreasonable impacts. Aquifer parameters selected for the evaluation should be representative of the potentially impacted area. Discuss the rationale of the parameters selected for the analyses.

Well interference (Tiers 1-3)

i) Discuss and map the estimated extent (area of influence) and magnitude of well interference on existing surrounding wells.

ii) Discuss and consider construction and location of the subject well/well field; target production zone, production capacity, and proposed production rate of the subject well/well field; construction/completion of existing wells in the area of influence; drawdown attributed to drought conditions and seasonal increases in pumping from existing wells; and drawdown attributed to pumping from existing wells and from future domestic and livestock well.

- *Figure: A plan view map of theoretical maximum drawdown for at least 7 years shall be shown on the final maps and cross sections. For Tier 2 and 3, theoretical maximum drawdown should include cumulative modeled drawdown of any permitted pumping centers within –a 5-mile radius of the test well.*
- *Figure: Chart showing the forecast of distance-drawdown from the pumping well for 1 week, 1 year, and 7 years. Cooper-Jacob plots are recommended.*

- *Figure: Hydrogeologic cross section (showing geologic formations and well completions, etc.) showing theoretical drawdown for at least 7 years.*

Impacts to regional water resources

i) Discuss the requested production volume in context with the Modeled Available Groundwater (MAG) and the DFC.
ii) Discuss potential short- and long-term impacts from the pumping on freshwater resources including springs and baseflow to surface streams.
iii) Discuss regional numerical or other analytical models and results relevant to the permit.

Changes in water quality

i) Document and discuss any water-quality changes that may have occurred due to pumping during the test.
    - Analytical results from the laboratory should be provided as appendices.
    - *Table: Summary of laboratory water-chemistry results. Should include comparison to EPA and TCEQ standards, in addition to other regional averages.*
    - *Figure: Plots showing water level, temperature, and conductivity during test.*

G. Supplemental Information

Due to the test-specific nature of these investigations, additional information can enhance the results and evaluation of the data. Below are some items that could be considered within the scope of work for the hydrogeologic studies and report:

- *Numerical modeling*
- *Dye tracing*
- *Surface geophysics*
- *Down-hole camera surveys*
- *Other reports or unpublished information or data.*

IV. Select References

Alley, William M., 2009, Update on Guidance for the Preparation, Approval, and Archiving of Aquifer-Test Results. Office of Groundwater Technical Memorandum 2009.01 <https://water.usgs.gov/admin/memo/GW/gw09.01.html>

Butler, J., 2009, Pumping Tests for Aquifer Evaluation—Time for a Change? Groundwater, Volume 47, Issue 5, September/October 2009, Pages: 615–617.

Butler, J. and G. Duffield, 2015, Aquifer Testing for Improved Hydrogeologic Site Characterization featuring AQTESOLV and the In-Situ Level TROLL, Course Notes, D. Kelleher (ed), Fort Collins, Colorado, October 27 and 28, 2015, 511 pages.

Cooper, H.H. and C.E. Jacob, 1946, A generalized graphical method for evaluating formation constants and summarizing well field history. Am. Geophys. Union Trans. Vol. 27, pp. 526-534.

Driscoll, F.R., 1986, Groundwater and Wells. Second Edition. Johnson Screens, St. Paul, Minnesota. Pp. 1089.

Hunt, B.B., B.A. Smith, J. Kromann, D. Wierman, and J. Mikels, 2010, Compilation of Pumping Tests in Travis and Hays Counties, Central Texas: Barton Springs Edwards Aquifer Conservation District Data Series report 2010-0701, 12 p. + appendices
<http://www.bseacd.org/uploads/BSEACD_DS_2010-0701.pdf>

Kruseman, G.P., and N.A. de Ridder, 1991, Analysis and Evaluation of Pump Test Data, Second Edition, ILRI, Netherlands. Pp. 377

Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage. Trans. Amer. Geophys. Union, Vol. 16, pp. 519-524.

Appendix A: Guidelines for Aquifer Test Work Plans (Design and Operation)

The aquifer test plan shall be submitted to the District prior to the test and should briefly address the key aspects outlined below. These guidelines will be used as a checklist during the pre-test meeting with the applicant or their consultant. The aquifer test work plan must be approved by the District Staff prior to commencement of the test.

Aquifer test design and operation should generally follow those discussed in Driscoll (1986) or other published resources.

1. **Initiation, Duration and Pumping Rate**
    a) Aquifer tests for most aquifers (especially the Edwards) should not be conducted during or immediately after significant rain or recharge events, because of the rapid change in water levels that often follows.
        - *Note: aquifer tests may occur during recharge events for deeply confined aquifers if the pre- and post-test data are sufficient to document trends.*
    b) Testing schedules should be coordinated with other area pumping wells to avoid interferences that could result in misleading or uncertain results.
    c) The test shall be designed to pump a minimum of three times the daily equivalent of the requested annual permitted volume (Table 2). Pumping tests should be a minimum of 48 hours duration for Tier 1 and 72-hours duration for Tier 2 and 3 permits. Longer duration pumping tests (four to five times the daily equivalent) are encouraged and could be required where the risk of impacts, or encountering aquifer boundaries, is high.
        - *Note: the duration of the test, rather than the pumping rate, increases the scale of the test (distance of measureable drawdown). The pumping rate has less of an effect on the scale of the test, but increases the ability to distinguish water-level fluctuation noise. In addition, unconfined aquifers generally result in slower response and need longer pumping durations for measured responses in monitor wells (Butler and Duffield, 2015). Longer test durations and larger pumping volumes should be considered if it is anticipated the permit would increase sometime in the future, such that the test would not need to be repeated.*

Table 2. Example duration calculation of a Tier 3 aquifer test

Annual Permit Request (gal)	Daily equivalent (gal)	Pumping target volume (gal)	Testing Rate ~~380~~ 190.3 gpm	Testing Rate ~~285~~ 142.8 gpm
100,000,000	274,000	3 x 274,000 = 822,000	72-h~~36 h~~our	96-hour

d) The aquifer test should be a constant-rate test. Well testing (step tests) should be performed prior to the aquifer test (allowing for recovery) in order to properly size the pump and estimate the optimal well yield for the test. Well testing should ideally be done prior to the final work plan.
   - *Note: Pumping rates should be measured frequently to verify that a constant discharge rate is being achieved. If a flow meter is used to measure flow, it should be calibrated prior to the test and verified using another calculation method, such as an orifice weir or by the time required to fill a storage vessel of known volume.*

e) Waste of the discharge should be avoided as much as possible, particularly during low water-level conditions in the aquifer and should be routed to storage tanks or to other water systems when possible. If the water must be discharged to surface drainages off-site, the pumped water should be routed so that it does not recharge into the tested aquifer in the vicinity of the pumping or monitor wells during the test. Discharge onto adjoining properties needs to be considered and avoided if possible, especially when it involves flooding and/or poor quality water. The applicant shall discuss the fate of discharged water in the work plan.

2. Aggregate Well Fields

a) If the study involves the assessment of two or more pumping wells, each well may be pumped separately to measure their combined effects. If the wells are sufficiently close, it may be possible to pump the wells simultaneously.

3. Well Completion (3-1.20)

a) All proposed pumping wells must be completed and equipped for the ultimate planned use or, at minimum, completed and equipped to isolate the target production zone for the ultimate planned use and production rate. Observation wells may be required. The applicant is responsible for all cost associated with the design, engineering, well construction, and other related expenses. The use of test wells must be approved by the District.

   - *Note: If the conversion of the test wells to final production involves significant modifications (well diameter, acidization, etc.) then a special condition of the permit, if granted, may be included to require a re-test of select wells after final completion to demonstrate the data can be reproduced. If the test of wells after final completion results in significant differences in aquifer parameters and measured response to surrounding wells, the full aquifer test may need to be repeated and the permit subject to staff-initiated amendments based on a new aquifer test.*

4. Number and Location of Monitor Wells

a) Monitor wells should be selected radially around the pumping well and include wells completed in the same aquifer.
   - *Provide a detailed map of pumping, monitor, and area wells.*
   - *Use analytical models (Cooper-Jacob) to help forecast distance and potential magnitude of drawdown to monitor wells using published aquifer parameters.*

b) For Tiers 2 and 3, some monitor wells may be selected that are in different aquifers to evaluate the potential for inter-aquifer communication.

c) Ultimately, it may be necessary for the Tier 2 testing, which have a significant risk of unreasonable impacts, to install one or more monitor wells in the absence of existing well-suited monitor wells.

d) For Tier 3, the aquifer test work plan shall also include a monitoring well network shall be established by installing one or more new monitor wells and identifying a sufficient number of existing wells adjacent to the well or well field prior to the commencement of the aquifer test in accordance with the District approved monitoring well network plan. The final monitoring well network plan and aquifer test work plan must be approved by the District (Appendix B).

5. Water-Level Data

a) Pre-aquifer test water-level measurements should be collected starting at least 1 week prior to pumping.

b) Post-test data collection in all wells should continue through the recovery phase, which should be about as long as the pumping phase.
   - *Note: recovery data often results in the best data for parameter estimation as head loss due to well construction is minimized (Butler and Duffield, 2015).*

c) Select monitor wells should be measured beyond the recovery period of the pumping phase to establish regional and local water-level trends and to observe any delayed response to pumping.
   - *Note: It is preferable that recovery lasts two to three times the duration of the pumping for complete recovery and also to measure trends.*

d) All water-level measurements should be within 0.1 feet precision. The use of automated data loggers and vented pressure transducers should be used whenever possible. The automated data should be verified with manual e-line measurements if the risk of hanging up the e-line is low.

e) Other means such as airlines or sonic meters, are generally discouraged from use but may be allowed as backup measurements.

f) All water-level data must be submitted in the report and made available in digital format (spreadsheet).

g) Care should be exercised to prevent (bacterial) contamination of monitor wells.

Note: The District may be able to provide continuous data from relevant existing monitor wells, and provide logistical support to identify, make introductions, and possibly assist with monitoring if time and resources allow.

6. Water Quality Data

a) Samples for major ions, nutrients, and other trace elements at the end of the test.
   - *Note: the list of parameters should be provided in the work plan.*

b) Field parameters (temperature, conductivity, pH) should be monitored throughout the test with tabular results provided in the appendices.

Appendix B: Monitoring Well Network Plan Outline

Tier 3 testing requires a monitoring well network to be established by the installation of at least one or more new monitor wells for a test and identifying a sufficient amount of existing wells adjacent to the well or well field. A second monitor well may be required to measure the effects in different aquifers or in different locations of a widespread wellfield. The Tier 3 requirement is meant to ensure the best possible test and data collected for these large permit requests. ~~The new~~ Dedicated monitor wells serve as a component of the "monitoring well network plan" submitted with the aquifer test work plan as required by the rules (3-1.4.D). Dedicated monitor well(s) drilled under the Tier 3 requirement have two intended functions: 1) to provide data during an aquifer test to satisfy the requirements of a Tier 3 production permit, and 2) to provide long-term monitoring of well field production after a Tier 3 permit has been issued. Dedicated monitor well(s) should not be pumping wells. The applicant is expected to facilitate access to dedicated monitoring well(s) for District staff as long as their associated Tier 3 production permit is active. The monitoring well network plan must be approved by the District and the monitoring wells shall be installed and/or identified prior to the commencement of the aquifer test.

A. Goal and purpose of project

Summarize and state the purpose and goal of the monitoring network. Include figures showing well network locations (including proposed and existing wells) and rationale for well locations.

B. Design and Construction

Provide information on the well design on each monitor well. Include figures and tables showing the construction and completion of each new well. Information should include: State well reports if available, geophysical data, downhole video, non-pumping and pumping water levels, well and casing depth and diameter, pump depth, or schematics for proposed modifications.

C. Monitoring well specifications and installation

Provide information on the monitor well including:

- Designated hydrogeologist/engineer and well drilling contractor.
- Schedule for completion of work.
- Assurances that the District can maintain access to the monitoring well network and equipment. ~~.~~
- Parties responsible for maintaining, repairing, and equipping the monitoring well network.

2-1. DEFINITIONS OF TERMS.

Unless the context hereof indicates a contrary meaning, the words hereinafter defined shall have the following meanings in these Rules and Bylaws and all other documents promulgated by the District.

"Abandoned Well" - a well that has not been used for a beneficial purpose for at least six consecutive months and/or a well not registered with the District. A well is considered to be in use in the following cases:

1. a nondeteriorated well which contains the casing, pump and pump column in good condition,

2. nondeteriorated well which has been capped,

3. the well is used in the normal course and scope and with the intensity and frequency of other similar users in the general community, or

4. the owner is participating in the Conservation Reserve Program authorized by Sections 1231-1236, Food Security Act of 1985 (16 U.S.C. Sections 3831-3836), or a similar governmental program.

"Act" - the District's enabling legislation, S.B. No 988 of the 70th Texas Legislature, now codified and amended in Special District Local Laws Code Chapter 8802 in conjunction with Chapter 36, Texas Water Code.

"Accounting Plan" – is a description of plans, formatted reports and diagrams describing how all ASR waters and recharge pressures will be accounted for and reported.

"Actual and Necessary Expenses" - expenses incurred while performing duties associated with District business or representing the District for purposes of the District.

"Aggregate Wells" - a well system comprised of two or more wells that are owned and operated by the same permittee and serve the same subdivision, facility, or area served by a Certificate of Convenience and Necessity (CCN) issued by the Texas Commission on Environmental Quality (TCEQ).

"Aggregate Withdrawal" - the amount of water withdrawn from two or more registered wells in a water system that is permitted under a single permit for a total pumpage volume of all wells in the aggregate system.

"Agricultural Use" – the use of groundwater for any of the following activities, including irrigation to support these agricultural uses:

1. cultivating the soil to produce crops for human food, animal feed, or planting seed or for the production of fibers;

2. the practice of floriculture, viticulture, silviculture, and horticulture, including the cultivation of plants in containers or non-soil media, by a nursery grower;

3. raising, feeding, or keeping animals for breeding purposes or for the production of food or fiber, leather, pelts, or other tangible products having a commercial value (Commercial Livestock Use);

4. planting cover crops, including cover crops cultivated for transplantation, or leaving land idle for the purpose of participating in any governmental program or normal crop or livestock rotation procedure;

5. engaging in wildlife management as defined in the District's Rules and as referenced under a written in-effect wildlife management plan;

6. raising or keeping equine animals; or

7. aquaculture, or active farming of fish, crustaceans or mollusks.

"Agricultural Well" - a well producing groundwater for agricultural uses, or irrigation to support agricultural uses. (A nonexempt well.)

"Agricultural Livestock Use" - see "Commercial Livestock Use"

"Alternative (Water) Supply" - a supply of water from some source other than groundwater from the Freshwater Edwards Management Zones.

"Alluvial Aquifer" - an aquifer composed of Quaternary stream or river alluvium or terrace deposits consisting of unconsolidated or cemented gravel, sand, silt and clay sediments.

"Alluvial Management Zone" - the management zone that is composed of an alluvial aquifer.

"Aquifer" - a hydrologically saturated permeable geologic unit (a formation or set of formations) that can transmit significant quantities of water under ordinary hydraulic gradients.

"Aquifer Storage and Recovery" (ASR) - the storage of water into a geologic formation, that is injected through a well during times when water is available and is subsequently recovered from the same well or well field during times when it is needed.

"Aquifer Storage and Recovery Project" - the multiphase aquifer storage and recovery project that is operated for the purpose of aquifer storage and recovery.

"Aquifer Storage and Recovery Pilot Testing" - the design and operation of aquifer storage and recovery activities to investigate and evaluate the suitability, feasibility, and efficacy of an ASR project. Testing includes activities related to feasibility testing, pilot testing, or cycle testing.

"Aquifer Storage and Recovery Pilot Test Permit" - a permit issued by rule to authorize the temporary production and recovery of restricted amounts of Class D Conditional Edwards

water or other tested source waters, for the purpose of aquifer storage and recovery activities related to feasibility testing, pilot testing, or cycle testing.

"Aquifer Storage and Recovery (ASR) Well" - a well used for both the storage and recovery of water from a geologic formation as part of an aquifer storage and recovery project. (A nonexempt well.)

"Artesian Zone" - that part of the Edwards Aquifer where water is confined in the aquifer under pressure so that the water will rise in the well casing or drilled hole above the bottom of the confining bed overlying the aquifer. This zone is coextensive with the part of the Edwards Aquifer that is downdip of the Recharge Zone.

"Austin Chalk Aquifer"- an aquifer composed of the upper Cretaceous Austin Chalk Group.

"Austin Chalk Management Zone"- the management zone that is composed of the Austin Chalk Aquifer.

"Authorized Agent" - a person authorized by the well owner or landowner to serve as their legal representative in matters related to the permitting process, activities and regulations of the District.

"AWWA" - American Water Works Association.

"Bad Water Line" - the eastern boundary of Edwards Aquifer water in the Barton Springs segment of the Edwards Aquifer characterized by having more than 1,000 milligrams per liter (mg/l) of total dissolved solids.

"Baseline Pumpage" - the average monthly representative water use for the user for the corresponding months during the years 1988, 1989, and 1990, or a representative three-year period approved by the District. Retail water utilities may set these goals on a per capita basis or a per connection basis system-wide, calculating usage from either the actual number of residents, the number of active connections multiplied by a mutually agreeable per capita standard, or the total number of connections served by the system. If permitted pumpage for any permittee is within 10% of a three-year average annual usage, a permittee may calculate the individual monthly target pumpage volume based on the permitted pumpage. Baseline pumpage may be adjusted for current conditions within the system and approved administratively by the District.

"Beneficial Use" or "Beneficial Purpose" – use for a beneficial purpose as defined by Texas Water Code 36.001(9)

"Best Available Science" - conclusions that are logically and reasonably derived using statistical or quantitative data, techniques, analyses, and studies that are publicly available to reviewing scientists, and can be employed to address a specific scientific question.

"Barton Springs Segment" - that segment of the Edwards Aquifer that is hydrologically connected to Barton Springs, and is the term used to distinguish this segment from the San Antonio segment of the Edwards Aquifer and from the northern Edwards Aquifer.

"Board" - the Board of Directors of the Barton Springs/Edwards Aquifer Conservation District.

"Buffer Zone" or "Buffer Water Volume" – the proximal zone of an ASR storage and recovery well in which the stored water has mixed with the native groundwater zone. This zone includes the horizontal and vertical extent of the mixed water.

"Capping" - equipping a well with a securely affixed, removable device that will prevent the entrance of surface pollutants into the well.

"Capped Well" - a Well that is closed or capped with a covering approved by the District, and capable of preventing surface pollutants from entering the Well and sustaining a weight of at least four 400 pounds or, in the case of an Artesian Well, an artesian pressure of up to 400 pounds, as necessary to effectively prevent water from flowing out of the Well and running over the surface of the ground above the Well or wasting through the strata through which it passes.

"Casing" - a watertight pipe which is installed in an excavated or drilled hole, temporarily or permanently, to maintain the hole sidewalls against caving, advance the borehole, and in conjunction with cementing and/or bentonite grouting, to confine the ground waters to their respective zones of origin, and to prevent surface contaminant infiltration.

"Certificate of Convenience and Necessity" (CCN) - a permit issued by TCEQ which authorizes and obligates a retail public utility to furnish, to make available, to render or extend continuous and adequate retail water or sewer utility service to a specified geographic area.

"Cessation" - a temporary discontinuance of groundwater production from water wells authorized under a Conditional Production Permit during Stage III Critical Drought conditions.

"Cistern" - an in-ground storage facility for water. Abandoned or deteriorated facilities will be treated as hand dug wells for sealing, capping, or plugging purposes.

"Closed Loop Geothermal Well" - a vertical closed system well used to circulate water and other fluids or gases through the earth as a heat source or heat sink. (An exempt well.)

"Closed Loop Geothermal Well System" - a system of Closed Loop Geothermal Wells drilled and equipped for the purpose of utilizing the subsurface as a source of energy for heat exchange in heating and cooling systems. These are sealed systems; no water is to be produced or injected. (An exempt well.)

"Commercial Livestock Use" - the use of groundwater associated with watering, raising, feeding, or keeping commercial livestock and/or poultry, of any variety. Commercial Livestock is considered to be hooved mammals raised in an agricultural setting (on land recorded and

taxed in the County as an agricultural land use) for profit or for its labor, or to make produce such as food or fiber, leather, pelts or other tangible products having a commercial value, including cattle, horses, mules, asses, sheep, goats, llamas, alpacas, and hogs, as well as species known as ungulates that are not indigenous to this State from the swine, horse, tapir, rhinoceros, elephant, deer, and antelope families. This term includes any animal that is stabled, confined, or fed at a facility that is defined by TCEQ rules as an Animal Feeding Operation or a Concentrated Animal Feeding Operation. (**Commercial Livestock as defined herein is considered an Agricultural Use.)**

"Commercial Use" - the use of water by a business or business establishment in which the water use is associated with building, supplying, selling or providing products, goods, services or repairs. Commercial use may include multi-family residences such as apartments, hotels, restaurants, office buildings, warehouses that use water in the above-described processes, or use water primarily for employee and customer conveniences (i.e. flushing of toilets, sanitary purposes, and limited landscape watering). This includes use in any business enterprise for which monetary consideration is given or received, and which will typically increase water demand compared to typical domestic use.

Commercial use includes the use of water by institutional facilities or establishments dedicated to public service, such as a school, university, church, hospital, nursing home, prison, or government facility. All facilities dedicated to public service are considered institutional regardless of ownership.

"Commercial Well" - a well producing groundwater for commercial use. (A nonexempt well.)

"Conditional Production Permit" - an authorization issued by the District allowing the withdrawal of a specific amount of Edwards groundwater from a nonexempt well for a designated period of time, generally in the form of a specific number of gallons per District fiscal year, which is subject to complete cessation, temporary curtailment, or reduction of the amount of groundwater that may be withdrawn during District-declared drought stages. Conditional Production Permits may be Class A, Class B, Class C, or Class D (See 3-1.24), and are applicable only to the Western and Eastern Freshwater Edwards Management Zones.

"Confining Bed" - a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

"Confined Animal Feeding Operations (CAFO)" - an animal feeding operation is a lot or facility, other than an aquatic animal production facility, where animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and in which the animal confinement areas do not sustain crops, vegetation, forage growth, or post-harvest residues in the normal growing season over any portion of the lot or facility. (**A CAFO is considered Commercial Livestock and is therefore a type of Agricultural Use.)**

"Conservation" - water saving practices, techniques, and technologies that will reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses.

"Conservation Permit" - a general permit by rule that is held by the District itself and contains the volume of water previously associated with permitted pumpage but that is now either permanently retired Historic Use under all conditions or that part of Historic Use retired under Extreme Drought.

"Consumer Price Index" - means the annual revised Consumer Price Index for All Urban Consumers, as published by the Bureau of Labor Statistics of the United States Department of Labor or a similar index if that index is unavailable. For calculation purposes, the beginning base month is December 2014.

"Continuing Arrangement" - an ongoing relationship between a water provider and any individual customer, subdivision, or other water user, whereby the water provider has water delivery infrastructure in place and operational, and water is available for direct, on-site use by the customer, subdivision, or water user upon demand. The continuing arrangement dates from the day the water was first made available for actual on-site delivery to the customer, subdivision, or water user. A continuing arrangement does not include contractual obligations to provide water at some future date, nor does it include providing water to any subdivision of property by any water user currently served by the provider.

"Cubic Feet Per Second" (cfs) - the rate of flow representing a volume of one cubic foot passing a given point during one second of time. This rate is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute.

"Cycle Testing" - an aquifer testing activity or protocol associated with ASR projects, for which the testing activities involve repeat cycles of storing and recovering waters. There may be multiple cycles in an ASR testing project

"Demand Reduction Measure" - a specific action to be taken by defined categories of users to reduce the pumpage demand on the aquifer(s), typically defined by a User Drought Contingency Plan (UDCP).

"Designated Alternative Water Supply Well" - a well in the Middle Trinity or Lower Trinity Management Zone that has been specified in a District Conditional Production Permit as an alternative source of water to be substituted for the curtailed portion of the Edwards groundwater in the Conditional Production Permit.

"Desired Future Condition" (DFC) – quantified description of physical characteristics of an aquifer or subdivision of an aquifer that is desired at one or more future times to include the end of the 50-year water planning period, as defined and adopted in joint planning by a Groundwater Management Area under Texas Water Code, Section 36.108.

"Deteriorated Well" - a well that, because of its condition, will cause or is likely to cause pollution of any water in this State, including groundwater.

"Dewatering Well" - a well that is constructed on a temporary basis for the purpose of producing groundwater to lower the water table or potentiometric surface to allow for construction or use of underground space. (An exempt well.)

"Director" - an elected or appointed member of the Board of Directors of the District.

"Discharge" - the amount of water that leaves an aquifer by natural or artificial means.

"District" - the Barton Springs/Edwards Aquifer Conservation District.

"District Management Plan" - the prevailing plan promulgated and adopted by the District, as amended and revised by the Board from time to time, that defines the conditions in the District, and the groundwater management goals and objectives to achieve the District's legislative mandate.

"District Office" - the main office of the District at such location as may be established by the Board.

"Domestic Use"- the use of by a person or household in which the well produces groundwater by connection to a household for personal needs or for household purposes such as drinking, bathing, heating, cooking, sanitation or cleaning, and landscape irrigation. Ancillary use may include watering of domestic animals.

"Domestic Well" - a well producing groundwater for domestic use.

"Drill" - drilling, equipping, completing wells, or modifying the size of wells or well pumps/motors (resulting in an increase in pumpage volume) whereby a drilling or service rig must be on location to perform the activity.

"Drought" - a shortfall in groundwater recharge, generally brought about by below-normal rainfall for an extended period of time that is accompanied by high rates of pumping from aquifers, that has the potential for substantial negative impacts to water supply wells and to endangered species at Barton Springs.

"Drought Indicator Well" - a well designated as such by the District Board or staff that is used for specific District needs including the determination of drought conditions. (An exempt well.)

"Drought of Record" - the historical period when natural hydrological conditions provided the least amount of water. For the District, the drought of record occurred from 1950 through 1956.

"Drought Contingency Plan" (DCP) - a plan by the District or other regulatory entities that is designed to reduce demand on the available water supply through a process that becomes more restrictive as drought conditions worsen.

"Drought Stage" - one of three designated drought conditions that the District may declare when not in a No-Drought condition.

"Eastern Freshwater Edwards Management Zone" - the management zone that includes the Edwards Aquifer and the portion of the Upper Trinity Aquifer where there is significant hydrological connection to the overlying Edwards Aquifer located between (1) the eastern boundary of the Western Freshwater Edwards Management Zone, generally corresponding to the Edwards Aquifer's saturated thickness of approximately 100 feet and certain structural boundaries, and (2) the western boundary of the Saline Edwards Management Zone, generally corresponding to the so-called "bad water line." This zone only applies to the area described in Special District Local Laws Code Section 8802.003 which excludes the Shared Territory (see figures 1, 2, and 3).

"Ecological Flow Reserve" - the part of the discharge from the Edwards Aquifer at Barton Springs that is (1) derived from permanently retired Historic Use and retired Historic Use under Extreme Drought (i.e., held under the Conservation Permit), and (2) associated with quantified recharge enhancement projects in the District and urban/suburban leakage from water supply and wastewater lines, to the extent such quantities are included in groundwater availability modeling. Ecological Flow Reserve is a protected volume, not subject to further permitting.

"Edwards Aquifer" - the water-bearing zone comprised of the Edwards and associated limestone formations.

"Edwards Outcrop" - the Edwards and associated limestone formations found at the surface. This area is generally referred to as the Edwards Aquifer Recharge Zone.

"Emergency Response Period" (ERP) - in Extreme Drought, deep within the most severe Stage IV Exceptional Drought, a regulatory period declared by the Board and established by Board Order in which the Board may order additional curtailment of water use by any and all permittees and other users of the Freshwater Edwards Aquifer. Such actions apply only to the two Freshwater Edwards Management Zones. See also "Extreme Drought." The District may be in the physical condition of Extreme Drought without having the institutional condition of an ERP declared.

"Exempt Well" - a well whose use and characteristics do not require a permit for the production of groundwater within the District, as specified in Section 3-1.3 of these Rules and Bylaws.

"Existing Well" - any well in the District that was drilled on or before August 13, 1987.

"Export of Groundwater" - see "Transport of Groundwater."

"Extreme Drought" - a severe drought period, deep within a Stage IV Exceptional Drought, that is characterized by the sustained flow at Barton Springs at or below ten cubic feet per second (cfs) on a ten-day running average basis. An Extreme Drought is a physical condition of the aquifer and is not a declared drought stage; during Extreme Drought conditions the Board may declare an ERP for additional emergency management action (see also "Emergency Response Period)." The District may be in the physical condition of Extreme Drought without having the institutional condition of an ERP declared.

"Extreme Drought Withdrawal Limitation" - the maximum amount of groundwater that may be pumped from the Freshwater Edwards Aquifer by all groundwater users in the District during Extreme Drought, to be achieved by imposition of the most stringent current regulatory restrictions on nonexempt users in the Eastern and Western Freshwater Edwards Management Zones.

"Fault" - a fracture or fracture zone in a rock or body of rock, along which there has been movement of the geologic formation on one side of the fault plane relative to the other side, parallel to the fracture.

"Fees" - charges imposed by the District pursuant to Rule, Order, or the Act.

"Fiscal Year" - the business year of the District begins on September 1 of each year and ends on August 31 of the following year.

"Fracture" - a plane along which there is a break in the geologic formation, but along which there has been no obvious movement. This is sometimes called a "joint."

"Freshwater Edwards Management Zones" - a collective term for the two management zones of the Freshwater Edwards Aquifer, viz., Western Freshwater Edwards Management Zone and Eastern Freshwater Edwards Management Zone. This zone only applies to the area described in Special District Local Laws Code Section 8802.003 which excludes the Shared Territory (see figures 1, 2, and 3).

"Groundwater or Underground Water" - water percolating or otherwise able to move beneath the earth's surface; by statute, this excludes water co-produced with oil and gas extraction.

"Groundwater Reservoir" - a specific subsurface water-bearing reservoir having ascertainable boundaries and containing groundwater.

"Hand-Dug Well" - wells with a diameter greater than 36 inches and less than 100 feet in depth installed by hand digging or by auger drilling are considered to be hand-dug wells.

"Hand-Held Hose" - a garden hose less than one inch in diameter attended by one person, possibly fitted with a manual or automatic shutoff nozzle.

"H.B. 3405"- House Bill No. 3405 is an Act relating to the territory, jurisdiction, and powers of the Barton Springs/Edwards Aquifer Conservation District, including its authority to regulate certain wells for the production of groundwater and imposing a cap on certain fees passed by the 84th Texas Legislature effective June 19, 2015.

"Historic Use Status" - a status applied to authorized groundwater withdrawals of a specified amount and for a designated use from (1) all registered nonexempt wells in the Saline Edwards, Upper, Middle and Lower Trinity Management Zones, and from (2) those registered nonexempt wells in the Eastern or Western Freshwater Edwards Management Zone approved by the District prior to September 9, 2004. A change in type of use of such withdrawals may terminate the Historic Use Status of that well.

"Historical Production Permit" - an authorization with Historic Use Status issued by the District for a designated period of time allowing the withdrawal of a specific amount of groundwater from a nonexempt well, generally in the form of a specific number of gallons per District fiscal year.

"Hydrogeological Report" - a report, prepared by a Texas licensed geoscientist or a Texas licensed engineer in accordance with the District's guidance document, *Guidelines for Hydrogeologic Reports and Aquifer Testing (Guidelines*), which identifies the availability of groundwater in a particular area and formation, and assesses the response of an aquifer to pumping over time and the potential for unreasonable impacts.

"Impervious Cover" - any structure or any street, driveway, sidewalk, patio, or other surface area covered with concrete, brick, paving, tile, or other non-permeable material.

"Incidental Use" - a beneficial use of water which is of a minor nature. Transport of water outside the District by a permittee which totals five percent or less, but in no case more than 5,000,000 gallons of that permittee's fiscal year 1998 annual permitted pumpage volume, or the initial permitted pumpage volume for permittees permitted after fiscal year 1998, is considered incidental use.

"Index Well" - a designated observation or monitoring well that is constructed in accordance with permit requirements or provisions to measure or monitor the quantity (water levels) or quality of water within the aquifer.

"Industrial Use" - the use of groundwater in processes integral to the production of primary goods or services provided by industrial or manufacturing facilities and used primarily in the building, production, manufacturing, or alteration of a product or goods, or a well used to wash, cleanse, cool, or heat such goods or products. Industrial use includes the use of water in the generation of electricity by means other than hydroelectric, including the use of water for cooling purposes, uses associated with plant personnel, and fire protection at a facility.

"Industrial Well" - a well producing groundwater for industrial use. (A nonexempt well.)

"Injection Well" - a well used to inject water or other material into a subsurface formation or into pipe or tubing placed in the formation for the purpose of storage or disposal of the fluid. (An exempt well.) This includes:

1. an air-conditioning return flow well used to return water that has been used for heating or cooling in a heat pump to the aquifer that supplied the water,

2. a cooling water return flow well used to inject water that has been used for cooling,

3. a drainage well used to drain surface fluid into a subsurface formation,

4. a saltwater intrusion barrier well used to inject water into a freshwater aquifer to prevent the intrusion of salt water into fresh water,

6. a sand backfill well used to inject a mixture of water and sand, mill tailings, or other solids into subsurface mines,

   and

7. a subsidence control well used to inject fluids into a non-oil-producing or non-gas-producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water.

"Irrigation Use" - the application of water, not associated with agricultural irrigation use, to plants or land in order to promote growth of plants (non-agricultural crops), turf grasses, or non-orchard trees. Irrigation use includes but is not limited to athletic fields, parks, golf courses, and landscape irrigation not tied to domestic use.

"Irrigation Well" - a well producing groundwater for irrigation use. (A nonexempt well.)

"Karst" – geomorphological definition: a terrain and topography usually associated with limestone, dolomite, and gypsum formations, characterized by distinctive landforms above and below the surface such as sinkholes, caves, and underground drainages which have developed due to a combination of high rock solubility, well-developed secondary porosity (such as fractures, solution cavities, and caves), the physical structure of the rock, and the presence of an aggressive sub-surface hydrology.

Hydrogeological definition: an integrated mass transfer system in soluble rocks with a permeability structure dominated by conduits dissolved from the rock and organized to facilitate the circulation of fluids.

"Landowner" - any person, firm, partnership, or corporation that bears ownership of the land surface either by ownership, contract, lease, easement, or any other estate in the land.

"Landscape Irrigation" - the use of water to irrigate lawns, yards, and/or outdoor plants.

"Late Payment" - a payment received more than ten days after the due date.

"Licensed Water Well Driller" - any person who holds a license issued by the State of Texas pursuant to the provisions of the Texas Water Well Drillers Act and the substantive rules of TDLR's Well Drillers and Pump Installers Program.

"Licensed Water Well Pump Installer" - any person who holds a license issued by the State of Texas pursuant to the provisions of HB 1648, 72nd Texas Legislative Session and the substantive rules of the TDLR's Water Well Drillers and Pump Installers Program.

"Limited Production Permit" - a permit issued for nonexempt groundwater use associated primarily with domestic or livestock uses authorized under District Rule 3-1-.20.B. (A nonexempt well.)

"Line Loss" - see shrinkage.

"**Livestock**" – see "Non-Commercial Livestock."

"Lower Trinity Aquifer" - an aquifer comprising the Sligo and Hosston Members of the Travis Peak Formation.

"Lower Trinity Management Zone" - the management zone that is composed of the Lower Trinity Aquifer.

"Management Zone" - a geographic or hydrostratigraphic subdivision of the District having common characteristics that are different from those of other subdivisions and that serve as a basis for differentiated groundwater management provisions.

"Material Amendment" - when used in the District's Fee Schedule, means an amendment to a Production Permit for any purpose other than agricultural use that increases the amount of water permitted by more than ten percent in one fiscal year or by more than 25 percent in any three-year period. The renewal on or after September 1, 2007, of a permit that was issued on or before September 9, 2004, is considered to be a material amendment if the permit as renewed increases the amount of water permitted by an amount that exceeds the specified limits.

"Maximum Production Capacity" - the maximum production capacity of a well, which may be based on a 36-hour pump test conducted at the time the well was initially constructed or placed into service. The use of this term only applies to permits issued pursuant District Rules 3-1.55.1 and 3-1.55.4 (H.B. 3405).

"Mean Sea Level" - an average sea level reference datum determined by the National Oceanic and Atmospheric Administration used as a reference in the measurement of elevations.

"Meter" - a water flow measurement device which meets AWWA standards for the line size, pressures, and flows, and which is properly installed according to the manufacturer's specifications; or other measuring device approved by the District capable of measuring the actual volume of water pumped and maintaining a cumulative record of measured flows.

"Meter Reading" - a monthly written report of the reading taken from the water flow measurement device installed on a permitted well. Permitted users are required to submit these reports to the District on a monthly basis.

"Middle Trinity Aquifer" - an aquifer comprising the Lower Member of the Glen Rose Limestone, and the Hensell Sand and Cow Creek Limestone Members of the Travis Peak Formation.

"Middle Trinity Management Zone" - the management zone that comprises principally the Middle Trinity Aquifer, except that the upper boundary of this zone is defined to exclude elevated Ca-SO4 water-bearing units in the upper portion of the Lower Glen Rose; this boundary may also be coincident with the top of a "reef" unit in the upper portions of the Lower Glen Rose Formation (when present).

"**Modify**" - to alter the physical or mechanical characteristics of a well, its equipment, or production capabilities in a manner that may effectively increase production capacity. Modifications increasing production capacity include, but are not limited to, increasing the size of the inside diameter of the pump discharge column pipe of a well in any way, modifying or replacing the maximum designed production capability of a pump or pump motor, modifying the depth or diameter of a well bore. This does not include repair or maintenance of equipment, well houses or enclosures, or replacement with comparable equipment.

"Modeled Available Groundwater" (MAG) - the amount of water that the TWDB Executive Administrator determines may be produced on an average annual basis to achieve a desired future condition established under Texas Water Code, Section 36.108. The MAG includes both exempt and nonexempt well production.

"Monitor Well" - a well that is constructed by non-governmental entities to measure or monitor the quality, quantity, or movement of substances, elements, chemicals, or fluids beneath the surface of the ground. Included within this definition are environmental soil borings, piezometer wells, observation wells, and recovery wells (nonexempt wells). The term shall not include any well that is used in conjunction with the production of oil, gas, coal, lignite, or other minerals.

"Multi-user Well" – a nonpublic water supply well that is used within the District to provide water for beneficial use, and is shared by the well owner and multiple property owners other than the well owner.

"Municipality" – a community, town, city, or other local government under a municipal jurisdiction that provides potable water, through a central distribution system operated by the municipality, for the purposes of beneficial end uses such as domestic, recreational, commercial, industrial, institutional, wholesale, or other municipal public spaces.

"Native Groundwater Zone" – the groundwater naturally occurring in the geologic formation which has not mixed with the stored water and is discretely unaffected by the buffer zone mixing.

"New Well" - any well that is not an existing well or any existing well that has been modified to increase groundwater production after August 13, 1987.

"No-Drought Status" - this stage is in effect when discharge at Barton Springs is above a certain flow rate and when the water level elevation in the District's Lovelady monitor well is above a certain level, and/or the District determines that no conditions exist that constitute drought conditions.

"Nonexempt Well" - a well required to obtain a well drilling authorization for well drilling or modification and a permit for the production of groundwater from within the District.

"**Non-Commercial Livestock Use"** - the use of groundwater associated with watering, raising, feeding, or keeping non-commercial livestock and/or poultry, of any variety, for sustenance. Domesticated horses, cattle, goats, sheep, swine, poultry, ostriches, emus, rheas, antelope, and other similar animals involved in farming or ranching operations, on land recorded and taxed in the County as an agricultural land use. Dogs, cats, birds, fish, reptiles, small mammals, potbellied pigs, and other animals typically kept as pets are considered domestic. Livestock-type animals kept as pets or in a pet-like environment are not considered livestock. (An exempt well.)

"Notice of Alleged Violation" - a written notification of an alleged violation of District Rules and Bylaws that is issued to a Respondent once the Board, or the General Manager if delegated by the Board, has determined that sufficient evidence exists to warrant such allegations and that outlines the specific alleged Rule violations, penalties, and procedures and conditions for possible early resolution.

"Notice of Violation" - a written notification of a violation of District Annual Overpumpage Rules that is issued to a Respondent once the General Manager has determined that sufficient evidence exists to warrant such allegations and that outlines the specific alleged Rule violations, penalties, and procedures and conditions for possible early resolution.

"Nursery Grower" - a person who grows more than 50 percent of the products that the person either sells or leases, regardless of the variety sold, leased, or grown. For the purpose of this definition, "grow" means the actual cultivation or propagation of the product beyond the mere holding or maintaining of the item prior to sale or lease and typically includes

activities associated with the production or multiplying of stock such as the development of new plants from cuttings, grafts, plugs, or seedlings.

"Observation Well" – any well that is used to collect observations of water level drawdown and recovery during an aquifer test.

"Open or Uncovered Well" - an artificial excavation at least ten feet deep and not more than six feet in diameter, that is dug or drilled for the purpose of producing groundwater, or for injection, monitoring, or dewatering purposes, and is not capped or covered as required by the District.

"Operate or Operations" - to produce or cause to produce water from a well or to use a well for injection or closed-loop heat exchange purposes.

"Overpumpage" - to produce water from a well in excess of the amount authorized to be withdrawn in accordance with the permitted pumpage volume issued by the District.

"Per Capita" - one individual or person, a unit of population; may be phrased as a standard value such as: one active residential account or meter equals 3.0 per capita.

"Permit Amendment" - a minor or major change in the Production Permit.

"Permittee" - a person who is required to obtain a permit from the District.

"Permit" – a term used collectively for authorizations issued by the District for well drilling, well modification, groundwater production, or transfers of produced groundwater out of the District.

"Person" - includes a corporation, individual, organization, cooperative, government or governmental subdivision or agency, business trust, estate, trust, partnership, association, or any other legal entity.

"Plugging" - the absolute sealing of a well bore in accordance with approved District standards.

"Plugging Authorization" - an authorization issued by the District which defines the methods for the permanent closure of a well.

"Pollution" - the alteration, thermal, chemical, or biological quality of, or the contamination of, any water in the State that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to public health, safety, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.

"Potentiometric Surface" - the surface defined by the elevation to which water from a specific aquifer will rise in a well (water level) at all geographic locations of that aquifer.

"Primary Use" – the principal activity and primary groundwater use type that is designated as a superior and major functional use type of a groundwater producing well.

"Production Fee" - a fee based upon the total authorized permit volume imposed by the District on each well or aggregate system for which a Production Permit is issued.

"Production Permit" or "Operating Permit" – a term used collectively for authorization(s) (Historical, Class A Conditional, Class B Conditional, Class C Conditional, Class D Conditional Production Permits) issued by the District allowing the withdrawal of a specific amount of groundwater from a nonexempt well for a designated period of time, generally in the form of a specific number of gallons per District fiscal year.

"Proportional Adjustment" - a management practice meaning that a temporary curtailment or cessation of groundwater production from a conditional production permitted water well is proportional when the adjustment is maintained at a constant ratio in relation to the adjustment to all other conditional production permitted water wells.

"Public Water System" - a system that provides water for human consumption through pipes or other constructed conveyances, which include all uses described under the TCEQ's definition for drinking water. Such a system must have at least 15 service connections or serve at least 25 individuals at least 60 days out of the year. This term includes community water systems, non-transient non-community water systems, and transient non-community water systems which maintain and operate collection, treatment, storage, and distribution facilities for providing potable water. An individual is deemed to be served by a public water system if he lives in, uses as his place of employment, is a patron of a business establishment, or works in a place to which drinking water is supplied from the system, 30 TAC §290.38(66).

"Pumpage, or Groundwater Production" - all water withdrawn from the ground, measured at the wellhead.

"Recharge" – water that infiltrates to the water table of an aquifer through natural or manmade processes.

"Recharge Well" - a well used only for the storage of water into a geologic formation as part of an aquifer storage and recovery project. (A nonexempt well). See also "Aquifer Storage and Recovery Well" pursuant 30 TAC §331.2.

"Recharge Zone" - generally, that area where the stratigraphic units constituting the Edwards Aquifer crop out, including the outcrops of other geologic formations in proximity to the Edwards Aquifer, where caves, sinkholes, faults, fractures, or other permeable features would create a potential for recharge of waters from the surface into the Edwards Aquifer. The recharge zone is identified as that area designated by the Texas Commission on Environmental Quality on the agency's official maps.

"Recovery" – the action or activities involving the withdrawal of stored water from a geologic formation as part of an aquifer storage and recovery project.

"Recovery Amount" or "Recoverable Amount" – A percentage of the stored water volume that can be subsequently recovered and is determined to be the volume of water that the permittee is authorized to recover under the Source and Recovery Permit.

"Recovery Efficiency" – A percentage of the stored water volume that is subsequently recovered and is considered recoverable based on satisfying and not exceeding a set target water quality criterion for the recovered water.

"Recovery Well" or "ASR Recovery Well" - a well used only for the recovery of water from a geologic formation as part of an aquifer storage and recovery project. (A nonexempt well.)

"Recreational Use" – the use of water by an entity (public or private), person, or corporation in which the water use is associated with outdoor recreational activities including but not limited to:

1. individual or group water sporting activities;

2. boating, swimming, or fishing activities;

3. water park activities;

4. park or camping activities;

5. golf course water hazard ponds other open watercourse of a similar nature on a golf course;

6. activities relating to the development of historical, archaeological, or scientific sites;

7. natural or man-made amenity pond on private or public property; or

8. activities for the conservation and preservation of scenic areas that primarily provide entertainment, enjoyment, relaxation, and incidentally provide fish and wildlife benefits that are not otherwise defined as wildlife management uses.

"**Recreational Well**" - a well producing groundwater for recreational use. (A nonexempt well.)

"Red Tag" - an official seal, tag, or label placed on a well or its equipment, or the act of placing the tag or label, to indicate that further pumping of groundwater, or operation of the well, or continuing with other District regulated activities is not permitted by the District, will be in violation of District Rules, and may subject the well owner and operator to civil suit and/or penalties.

"Reduction Goal" - the amount of reduction in permitted pumpage volume, expressed in a percentage from baseline pumpage volume for each drought stage.

"Register" - a visual display that is built-in to water meters and that allows direct reading at the meter of the aggregate amount of water that has passed through the meter from the time it was installed.

"Regular Production Permit" - a term used to describe the initial Production Permits issued in accordance with Section 4 of H.B. 3405 and Rule 3-1.55 related to the conversion of Temporary Permits in the Shared Territory. Upon issuance, the converted Temporary Permits will be considered Production Permits subject to all Rules, laws, and Orders of the District applicable to permit holders including Permit Conditions and Requirements Rule 3-1.11.

"Remediation Well" - a well used to pump contaminated water or fluids or vent contaminated air from the ground. (An exempt well.)

"Repair and Maintenance" of a well - procedures employed or the work done in the normal course of operation to ensure safe and proper operation, water quality, proper sanitary measures, and normal replacement, restoration, or repair of well components, provided those repairs *do not alter the original state of the well or increase the original groundwater production capacity of the well.* Repair of well components or equipment may include work done on *damaged or deteriorated equipment and materials or the construction involved in establishing seals and safeguards to protect groundwater.* This term also includes the repair or replacement of the pump provided the replacement pump does not exceed the maximum design production capacity of the pump being replaced, or increase the original maximum production capacity of the well.

"Replacement Well" – a well that is drilled to replace a deteriorated well where:

1. the well that is being replaced is permanently plugged;

2. the replacement well is drilled within 250 ft from the original well;

3. the well will not be completed or equipped in such a way that it will increase production capacity (e.g., modification);

4. the well will be used to produce the same or less amount of groundwater and for the same purpose of use of the original well;

5. the well has a cone of depression similar to that of the original well; and

6. the replacement well complies with all applicable District Rules and regulations, including current District Well Construction Standards.

"Retail Public Water Supply Use" – the use of groundwater by a public or private water utility that operates, maintains, or controls facilities for providing potable water supply service to

the ultimate consumer for compensation. Water supplied by a retail public water supplier to customers within its service area may include end uses such as human consumption, commercial, industrial, irrigation, institutional, or other uses of the retail customer.

"Retail Public Water Supply Well" - a nonexempt well producing groundwater for retail public water supply use.

"Rules" - standards and regulations promulgated by the District.

"Saline Edwards Management Zone" - the management zone that includes the Edwards Aquifer east of a designated boundary line corresponding to points where its water chemistry generally comprises total dissolved solids concentrations of 1,000 mg/L, colloquially known as the "bad water line."

"Scientific Monitor Well" - a well used primarily for scientific monitoring of an aquifer, for monitoring associated with an aquifer test monitoring network (observation well), or for monitoring associated with compliance monitoring network, specifically for water-quality sampling and/or taking water-level measurements, by local, state, and federal government entities. (An exempt well.)

"Shared Territory" - the territory described by Special Districts Local Laws Section 8802.0035 which includes the area inside the boundaries of the Edwards Aquifer Authority and Hays County but not within the boundaries of the Plum Creek Conservation District as the boundaries existed on February 1, 2015. The District has jurisdiction over groundwater and any wells drilled to produce water from any aquifer other than the Edwards Aquifer in the Shared Territory (see figure 1).

"Shrinkage" - the loss of water between the producing well(s) meter and the customers' meters in a water system. [Note: when the amount of shrinkage becomes excessive (greater than 15% of pumpage volume) the loss of water may become waste. See also "line loss."]

"Sinkhole" - a naturally occurring solution or collapse depression characterized by subterranean drainage.

"Source and Recovery Permit" – an individual permit that authorizes 1) the temporary production of Class D Fresh Edwards water for ASR projects and 2) the recovery of stored water from a recovery well for the purpose of ASR in accordance with TCEQ 30 §TAC 331.

"Source Water" –water that is used for the purpose of aquifer storage and recovery, and is considered a permissible source of water for ASR projects in accordance with TCEQ 30 §TAC 331.19, TCEQ 30 §TAC 331.186.

"Special Provisions" - conditions or requirements added to a permit which may be more or less restrictive than the Rules as a result of circumstances unique to a particular situation.

"Spring" - a point(s) of natural discharge from an aquifer.

"Stage I Water Conservation Period" – a calendar-driven period that is in effect each year between May 1 and September 30 when not in a more severe declared drought stage. Permittees within the District will be expected to implement the voluntary measures described in their UDCPs in order to achieve water use reductions during this period when increased water use is typically observed. At least 10 percent reduction in monthly water use is recommended for all permittees.

"Stage II Alarm Drought" - the first of three drought severity stages that the District may declare when aquifer conditions reach drought stage levels. At least 20 percent reduction in monthly water use is required for all permittees.

"Stage III Critical Drought" - the second of three drought severity stages that the District may declare when aquifer conditions reach drought stage levels. At least 30 percent reduction in monthly water use is required for individual Production Permit holders.

"Stage IV Exceptional Drought" - the third of three drought severity stages that the District may declare when the aquifer conditions reach drought stage levels. At least 40 percent-reduction in monthly water use is required for most permittees. This drought stage only applies to the Freshwater Edwards Management Zones.

"Storage Radius" or "Target Storage Volume Radius"– the horizontal radial extent of all stored water from an ASR recovery well in which source waters were recharged into a geologic formation for subsequent retrieval.

"Stored Water Zone" or "Stored Water Volume" – the proximal zone of an ASR storage and recovery well in which the stored water has not mixed with the native groundwater zone. This zone includes the horizontal and vertical extent of all non-mixed stored water.

"Stratum" - a layer of rock having a similar composition throughout.

"Subsidence" - the lowering in elevation of the land surface caused by withdrawal of groundwater.

"Substantial Alteration" - procedures employed or the work done on the well that involves reaming, setting casing, or grouting in association with well repairs or changes in a well configuration/ design provided those repairs or changes *do not significantly alter the original state of the well or increase the original groundwater production capacity of the well*.

"Surface Completion" - sealing off access of undesirable water, surface material, or other potential sources of contamination to the well bore by proper casing and/or cementing procedures.

"Sustainable Yield" - the amount of groundwater available for beneficial uses from an aquifer under a recurrence of drought of record conditions, or worse, without causing unreasonable

impacts. An evaluation of sustainable yield will be based on historic data on groundwater storage, usage, recharge, water quality, and spring flow of the aquifer.

"Target Storage Volume (TSV)" - The sum of stored water volume plus the buffer zone volume.

"Target Pumpage" - the reduced level of monthly permitted pumpage required by the permittee's UDCP by drought stage.

"TCEQ" - Texas Commission on Environmental Quality.

"TDLR" - Texas Department of Licensing and Regulation.

"Temporary Curtailment" - a temporary reduction in the permitted volume of groundwater allowed to be produced by a water well authorized under a Conditional Production Permit during declared drought conditions.

"Temporary Permit" – an interim authorization to drill, operate, or perform another activity related to a nonexempt well in the Shared Territory (see figure 1) from June 19, 2015 (the effective date of H.B. 3405) until the date that the District takes a final, appealable action on issuance of a Regular Production Permit. This authorization includes Temporary Production Permits and Temporary Well Drilling Authorizations.

"Test Well" - a well that is constructed to be used solely for hydrogeological evaluation of the aquifer(s), and assessment of prospective uses of water. (A nonexempt well.)

"Total Dissolved Solids" (TDS) - a measurement of the quantity of minerals, chemical compounds, elements, or other matter contained in a state of solution by water.

"Transfer of Groundwater" - see "Transport of Groundwater."

"Transport of Groundwater" - transferring or exporting out of the District groundwater that is authorized by a District Production Permit. The terms "transfer" or "export" of groundwater are used interchangeably within TWC Chapter 36 and these Rules.

"Transport Permit" - an authorization issued by the District allowing the transfer or transporting of a specific amount of groundwater out of the District for a designated period of time. All applicable permit rules also apply to transport permits.

"Trigger" - specific conditions of aquifer water level elevations, spring discharges, and water quality that the District will monitor and use as indicators of drought conditions for purposes of declaring the various drought severity stages.

"Trinity Group Aquifer" - includes the Upper Member of the Glen Rose Formation, known as the Upper Trinity; the Lower Member of the Glen Rose Formation, and the Hensel Sand and Cow Creek Limestone Members of the Travis Peak Formation, known as the Middle

Trinity; and the Sligo and Hosston Members of the Travis Peak Formation, known as the Lower Trinity.

"Unreasonable Impacts" – a significant drawdown of the water table or reduction of artesian pressure as a result of pumping from a well or well field, which contributes to, causes, or will cause:

1. well interference related to one or more water wells ceasing to yield water at the ground surface;

2. well interference related to a significant decrease in well yields that results in one or more water wells being unable to obtain either an authorized, historic, or usable volume or rate from a reasonably efficient water well;

3. well interference related to the lowering of water levels below an economically feasible pumping lift or reasonable pump intake level;

4. the degradation of groundwater quality such that the water is unusable or requires the installation of a treatment system;

5. the Desired Future Condition (DFC) to not be achieved;

6. depletion of groundwater supply over a long-term basis, including but not limited to chronic reductions in storage or overdraft of an aquifer;

7. a significant decrease in springflow or baseflows to surface streams including a decrease that may cause an established minimum springflow or environmental flow rate to not be achieved; or

8. land subsidence.

"Upper Trinity Aquifer" - an aquifer comprising the upper member of the Glen Rose Limestone.

"Upper Trinity Management Zone" - the management zone that is composed of the portion of the Upper Trinity Aquifer.

"User" - a person who produces, distributes, or uses water from the aquifer(s).

"User Conservation Plan" (UCP) - a conservation plan submitted to the District by a permitted user, which is approved by the District Board and in accordance with the District Water Conservation Plan.

"User Drought Contingency Plan" (UDCP) - a drought contingency plan submitted to the District by a permitted user, which is approved by the District Board as an integral part of the District permit, and in accordance with the District Drought Contingency Plan.

"Variance" - an authorized exception to requirements or provisions of the Rules, granted by the District's Board of Directors.

"Waste" - as used herein shall have the following meaning:

1. The withdrawal of groundwater from a groundwater reservoir at such rate and in such an amount that causes or threatens to cause the intrusion therein of water not suitable for agricultural, municipal, domestic, or stock raising purposes.

2. The flowing or producing of wells from a groundwater reservoir when the water produced therefrom is not used for a beneficial purpose or is not used for such purposes with a reasonable degree of efficiency; includes line losses in excess of those determined to be unavoidable.

3. The escape of groundwater from one groundwater reservoir to any other reservoir or geologic strata that does not contain groundwater.

4. The pollution or harmful alteration of the character of the groundwater by means of salt water or other deleterious matter admitted from another stratum or from the surface of the ground.

5. Willfully or negligently causing, suffering, or allowing groundwater to escape into any river, creek, natural watercourse, depression, lake, reservoir, drain, sewer, street, highway, road, road ditch, or onto any land other than that of the owner of the well other than the natural flow of natural springs, unless such discharge is authorized by permit, rule, or order issued by the TCEQ under TWC Chapter 26 *"Water Quality Control*."

6. The loss of groundwater in the distribution system and/or storage facilities of the water supply system, which should not exceed 15 percent of total pumpage. This loss is also termed "shrinkage."

7. To willfully cause or knowingly permit the water from an artesian well to run off the owner's land or to percolate through the stratum above which the water is found, unless the water is used for a purpose and in a manner in which it may be lawfully used on the owner's land.

8. Groundwater pumped for irrigation that escapes as irrigation tailwater onto land other than that of the owner of the well unless permission has been granted by the occupant of the land receiving the discharge.

"Water Level Elevation" - the measure or estimate of a water surface in a well or aquifer as measured in feet above mean sea level.

"Water Meter Seal" - a physical seal that is installed in or on the water meter to prevent tampering with meter readings.

"Water Pollution Abatement Plan" (WPAP) - a project impact assessment and pollution prevention proposal.

"Water-Quality Report" - a report prepared by the Texas Department of Health, the U.S. Geological Survey or any other governmentally- or District-approved laboratory that is the product of testing the water for bacteria, solids, elements, chemicals, or contaminants.

"Water Table" - the upper boundary of the saturated zone in an unconfined aquifer.

"Water Tight Seal" - a seal that prohibits the entrance of liquids or solutions, including water, which may enter through the wellhead and potentially contaminate the well.

"Water Table Zone" - that part of the aquifer confined only by atmospheric pressure. In the Freshwater Edwards Management Zones, this zone is coextensive with the area designated by the TCEQ as Recharge Zone.

"Water Utility" - any person, corporation, public utility, water supply or sewer service corporation, municipality, political subdivision or agency operating, maintaining, or controlling in this State, facilities (such as a public water supply well) for providing potable water service for compensation. A Water Utility under these District Rules may be either a "retail public water supply" or a "wholesale public water supply" as defined under TCEQ rules.

"Water Well" - any drilled or excavated facility, device, or method used to withdraw groundwater from the groundwater supply.

"Well" - any artificial excavation or borehole constructed for the purposes of exploring for or producing groundwater, or for injection, monitoring, or dewatering purposes.

"Well Abandonment" - leaving a well unused, unattended, and improperly protected from contamination and/or sources of pollution. Abandoned wells must be capped, permanently closed, or plugged in accordance with approved District standards.

"Well Drilling Authorization" or "Well Development Authorization" - authorization issued to the owner of the property to construct, drill, or modify a nonexempt well within the District in compliance with approved District Rules and standards. This authorization is not a permit to produce groundwater from the well; a Production Permit is also required for that purpose.

"Well Elevation" - the ground surface elevation of the well bore.

"Well Field" - the collection of nonexempt wells located on a contiguous tract of land or on tracts of noncontiguous land, without intervening private ownership or private control, owned or controlled by a person, and operated to produce groundwater for one or more non-exempt use purposes.

“Well Interference” - measurable drawdown in the water table or reduction of artesian pressure in a well due to pumping from another well.

"Well Owner" - any person, firm, partnership, or corporation that has the right to produce groundwater from the land either by ownership, contract, lease, easement, or any other estate in the land or in the groundwater. The term includes but is not limited to a person that holds the permit for the well or owns a possessory interest in: (1) the land upon which a well or well system is located or to be located; (2) the well or well system; or (3) the groundwater withdrawn from a well or well system.

“Well Pumps and Equipment” - equipment and materials used to obtain water from a well, including the seals and safeguards necessary to protect the water from contamination.

“Well Registration” - the creation of a record of the well by use and a well identification number for purposes of registering the well as to its geographic location and for notification to the well owner in cases of spills or accidents, data collection, record keeping and for future planning purposes (see Rule 3-1.1).

“Well Report (Log)” - an accurately kept record, made during the process of drilling, on forms prescribed by the TDLR’s Water Well Drillers and Pump Installers Program, showing the depth of the well bore, thickness of the formations, character of casing installed, together with any other data or information required by the Water Well Drillers and Pump Installers Program, or any other special purpose well log that may be available for a given well such as a gamma ray log, a temperature log, an electric log, or a caliper log.

“Western Freshwater Edwards Management Zone” - the management zone that includes the Edwards and the portion of the Upper Trinity Aquifer where there is significant hydrological connection to the overlying Edwards Aquifer. The zone encompasses the area west of a designated boundary line corresponding generally to the Edwards Aquifer’s saturated thickness of approximately 100 feet and/or in certain nearby areas by the surface traces of larger-throw faults. This zone only applies to the area described in Special District Local Laws Code Section 8802.003 which excludes the Shared Territory (see figure 1, 2, and 3).

"Wildlife Management Use" - the designated use of groundwater under a wildlife management plan for the following purposes:

1. to propagate a sustaining breeding, migrating, or wintering population of indigenous wild animals (free ranging, noncaged, nonfenced);

2. to provide habitat management;

3. to provide supplemental supplies of water or natural food for the purpose of sustaining wildlife needs or wildlife habitats; or

4. to protect federally listed endangered species under a federal permit if the land and groundwater resources are included in a habitat preserve and are subject to a conservation easement or conservation development under a federally approved habitat conservation plan.

A wildlife management plan must be approved by Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, or other governmental agency with authority to approve and regulate wildlife management plans. The wildlife management plan shall clearly demonstrate the owner's intent to use groundwater for wildlife management purposes and shall specify the groundwater well(s) intended for this use.

"Withdraw or Withdrawal" - the act of extracting groundwater by pumping or any other method other than the discharge of natural springs.

"Wholesale Public Water Supply Use" – the use of groundwater by a public or private entity that for compensation supplies water to another political subdivision, municipality, wholesale supplier, or retail water utility for resale to the ultimate retail consumer. Water supplied by a wholesale public water supplier may be raw or potable and may include end uses such as human consumption, commercial, industrial, irrigation, institutional, or other uses.

"Wholesale Public Water Supply Well" - a nonexempt well producing groundwater for wholesale public water supply use.

3-1.4. APPLICATION FOR REGISTRATION, PRODUCTION PERMITS, SOURCE AND RECOVERY PERMITS, TRANSPORT PERMITS, WELL PLUGGING, WELL DEVELOPMENT, WELL DRILLING, OR WELL MODIFICATION AUTHORIZATION.

A. Administrative Completeness of Application.

1. Applications for well registrations, Production Permits, Conditional Production Permits, Transport Permits, well pluggings, well development, well drilling, amendments, or well modification authorizations shall be made in the name of the well owner or property owner on a form or forms provided by the District. The sworn, original application must be submitted and signed by the owner or an authorized agent of the owner who may be required to provide the District with a notarized authorization from the owner. This agent may be the well driller, lessee or renter of the property or well, power of attorney, or other appropriate agent. District staff will determine if an application is administratively complete.

2. Applicant's Signature:

a. If the Applicant is an individual (landowner), the application shall be signed by the Applicant or his/her duly appointed agent. The agent must present Power of Attorney as authority to represent the Applicant.

b. If the application is submitted by a partnership, the application must be signed by at least one of the general partners duly authorized to bind all of the partners. A copy of the Resolution or other authorization to make the application must be submitted along with the application.

c. If the application is submitted by a corporation, government agency, county, municipality, or any other political subdivision, the application shall be signed by a duly authorized official. A copy of the Resolution or other authorization to make the application must be submitted along with the application.

d. In the case of an estate or guardianship, the application shall be signed by the duly appointed guardian or representative of the estate.

e. If the Applicant is any other entity, the application shall be signed by the duly authorized representative of such entity. In any case, proof of authorization must accompany the application.

3. An administratively complete application shall consist of the submission to the District of an original, completed, signed, and notarized application, payment of all applicable application fees, inspection fees, and other District-imposed fees; submission of any required maps, documents,

ownership information, or supplementary information required by the General Manager or the General Manager's designated representative; the submission of a Hydrogeological Report if required by Rule 3-1.4(D); and any other documentation required by the District as part of the application. The District will not take action on an application which is not administratively complete or which has preceded in a manner not consistent with District Rules. Applicants submitting incomplete applications will be notified by the District in writing.

4. Applicants exempted under the District Rules from obtaining a Production Permit must submit a District-approved application form for well registration with the District and pay the applicable application and inspection fees. Such exempted wells are still subject to District Well Construction Standards.

5. Application and production permit requirements are the same for groundwater to be used inside the District's jurisdiction or to be transported outside of the District's jurisdiction. Applicants drilling a well or seeking a Production Permit for which the well will produce less than two million gallons per year from the Edwards Aquifer or 650,000 gallons from any of the Trinity Aquifers may submit one application which will have one permit review process.

6. Fees included with Application. The application must be accompanied by the application fee, and other fees as appropriate. The application fee must be submitted with the application in order to start the processing review period. Payment of all fees, including water production fees, remains the responsibility of the property owner.

7. All applications for **Well Drilling Authorization or Modification** for nonexempt wells must contain, in addition to any information determined necessary for the evaluation of the application by the General Manager or the General Manager's designated representative, the following specified information in sufficient detail to be acceptable to the District.

    a. Nature, Purpose, and Location. Provide a detailed statement describing:

        i. The nature and purpose of the various proposed uses including proposed uses by persons other than the well owner;

        ii. The proposed well location, location map, and the proposed receiving area from groundwater produced from the well; noting any proposed transfer; and

iii. The location and purpose of any water to be resold, leased, or transported.

b. Pumpage Volume. Provide a detailed statement describing:

i. The estimated pumping rate, and

ii. The anticipated pumpage volume.

c. Well Schematic. A proposed well design schematic with specifications to include: the total depth, borehole diameter, casing diameter and depth, annular seal interval(s), annular sealing method, calculated grout volumes, surface completion specifications, and any other pertinent well construction information.

d. Well Development Plan. A plan that describes the process for handling cuttings and fluids during well development.

e. ASR Wells. For ASR wells, provide the additional information:

i. Anticipated source and recovery volumes associated with this well

ii. A description of the proposed ASR concept and project operational design, including site configuration, instrumentation, flushing, operation management, recharge rates and methods, and equipment (e.g. well head/downhole piping, valves, etc).

f. Aquifer Test Plan and Hydrogeological Report. An aquifer test plan to include the required information as specified in the District's *Guidelines for Hydrogeological Reports and Aquifer Testing*. A Hydrogeological Report in accordance with Section D below, will be required for any new or modified wells that will be part of an existing permitted aggregate well system and will have an anticipated pumpage greater than two million gallons per year from the Edwards Aquifer or 650,000 gallons per year from any of the Trinity Aquifers from the referenced new or modified well.

g. Declarations. Provide the following written declaration statements:

i. A declaration that the applicant will comply with the District Rules and all groundwater use permits and plans promulgated pursuant to the District Rules.

ii. A declaration that the applicant will comply with well plugging and capping guidelines set forth in these Rules and will report well closures as required in Rule 3-5.

h. Notice Information. For wells for which notice must be provided under Section B below, the following information and notice must be mailed accordingly:

i. A tax plat location map showing locations of the proposed well, the existing well, or well field to be modified, mapped wells within a half-mile radius of the proposed well, the existing well, or well field, all properties within a half-mile radius of the proposed well or the existing well, and mapped CCNs or public water supply services areas within a half-mile radius of the proposed well, the existing well, or well field. This provision is subject to technical evaluation by District staff based on site-specific conditions.

ii. A mailing list of registered well owners within a half -mile radius of the proposed well, the existing well, or well field. The mailing list should include the property owner's name, mailing address, and physical well address.

iii. A mailing list of public water suppliers within a half-mile radius of the proposed well or the existing well. The mailing list should include the public water supplier's name, mailing address, and physical well address.

iv. Other facts and considerations deemed necessary by the General Manager for protection of the public health and welfare and conservation and management of natural resources in the District.

8. All applications for **Source and Recovery Permits** must contain, in addition to any information required pursuant 30 TAC § 331 or determined necessary for the evaluation of the application by the General Manager or the General Manager's designated representative, the following specified information in sufficient detail to be acceptable to the District.

a. Nature and Purpose: Provide a detailed statement describing the nature and purpose of the proposed ASR project including the proposed end uses of the waters stored and recovered.

b. Site Location: Provide detailed maps describing:

i. The extent and boundary of the ASR project area;

ii. The estimated Target Storage Volume radius;

iii. The location of all source water;

iv. The wellfield layout design including all proposed ASR recovery wells, source production wells, monitoring wells, and the regional hydraulic gradient flows;

v. The distribution system and connection piping for the ASR project, including the route for how source water will be distributed to the storage and recovery well location;

vi. Receiving point of the recovered water;

vii. The location of all other registered wells in the half mile radius of the recovery well.

c. If the applicant is seeking a Class D Production Permit as an authorized source water, please describe the following:

i. The estimated pumping rate at which Class D water will be withdrawn from each source production well;

ii. The requested annual Class D volume and a description of how the requested pumpage volume was determined. The applicant shall provide pumpage volume calculations based on the anticipated pumping capabilities, pumping times, pumping frequency, storage and recovery capabilities of all the ASR wells, and other pertinent data to substantiate approximate groundwater production. Authorized permit volumes shall be determined based upon factors such as source production well capacity, injection well intake capacity, anticipated injection rates and aquifer storage capacity. The requested pumpage volume should be reasonable and non-speculative.

d. Provide a detailed statement describing the receiving aquifer and location coordinates for all ASR wells for which stored water will be recovered. Provide information on water quality, geochemistry, and hydrogeology.

e. Provide a detailed statement describing the anticipated source (s) waters to be stored. Provide information on water quality, geochemistry, and water treatment for all source water.

f. ASR Site Configuration. Provide a detailed statement describing:

i. Anticipated source and recovery volumes associated with this well.

ii. A description of the proposed ASR concept and project operational design, including site configuration, instrumentation, flushing, operation management recharge rates and methods, and equipment (e.g. well head/downhole piping, valves, etc).

iii. Provide a well schematic with well construction specifications for all ASR wells. Please provide a discussion on how each well will be used for storage and recovery.

g. Project Operations and Demand Trends. Provide a detailed statement describing:

i. The target storage volume (TSV) for the ASR project. Describe whether the operation will implement and preserve a storage buffer within the receiving aquifer and the anticipated buffer volume.

ii. An estimate of total volume to be stored annually.

iii. Project Phases. Describe the project phases over the long-term, the planned schedule for those phases, the duration of those phases, the anticipated source waters for each phase, estimated volumes of those sources waters to be produced and the anticipated volumes to be stored and recovered for each phase. Provide a 10-year outlook for estimated annual recovery.

iv. Project Operations. Describe the storage and recovery periods/timeframes. Describe whether the system will be operated for seasonal storage, long-term storage, or both. Describe the recovery volume as an estimate of total volumes to be recovered on an annual basis.

h. Recoverability Analysis. Provide a recoverability analysis to determine a recoverable amount as defined in the District's Rule 2. A report shall be submitted and describe the applicant's methods for estimating the percentage of stored water that will be recovered. The report shall describe the following:

i. Whether storage in receiving formation can successfully be recovered for beneficial use, taking into account the injected water may be commingled to some degree with the native groundwater;

ii. Volume of source waters to be stored;

iii. Buffer zone water;

iv. Estimated recovery efficiency based on target water quality criterion;

v. Potentiometric data;

vi. Porosity, permeability, and transmissivity data;

vii. Migration and regional flow gradients;

viii. Natural discharge;

ix. Relevant groundwater modeling;

i. Hydrogeological Report. A Hydrogeological Report, in accordance with District Rule 3-1.4(D).

j. Accounting Plan. Provide a detailed reporting format and diagrams describing how all ASR waters and recharge pressures will be accounted for and reported. The accounting plan shall depict where the meters will be located on the system piping, and the type of meters that will be installed. The plan shall describe how the following will be metered, calculated and reported on a monthly basis:

i. The volume of source water produced (Class D);

ii. The volume of source water(s) stored (total for each source water); and

iii. The volume of recovered water from storage (total volume recovered);

iv. The total storage volume of all source waters remaining after recovery (total for each source water);

v. The volume of native groundwater withdrawn from the ASR well (if applicable);

vi. Monthly average recharge pressures for each ASR well.

k. ASR Monitoring. Provide a description of how the ASR project will be operated, monitored and evaluated. The plan should outline, at minimum, the monitoring parameters and activities, a monitoring and sampling schedule, data sources that will be used, and a list of responsible personnel.

l. UCP and UDCP. A User Conservation Plan (UCP), a User Drought Contingency Plan (UDCP), and the State proposed/approved Drought Contingency Plan (if required by TCEQ).

m. Related Permits and Authorizations. Provide a copy of all ASR application materials submitted to the TCEQ to obtain or modify an ASR Permit or ASR Test Permit. Provide any relevant materials or correspondence submitted to TCEQ Drinking Water division or Edward Aquifer Protection Program division relating to ASR operations. Provide notice of any pending, denied, or remanded authorization from a local, state, or federal agency relating to ASR.

n. Active Source Permits. Provide a copy of all permits relating to the source waters.

o. Reports. Provide a copy of all feasibility and testing reports relevant to the ASR project.

p. Transfers. If the stored and recovered groundwater is to be resold, leased, or otherwise transferred to others, provide the location to which the groundwater will be delivered, the purpose for which the groundwater will be used, and a copy of the legal documents establishing the right for the groundwater to be sold, leased, or otherwise transferred, including but not limited to any contract for sale, lease, or transfer of groundwater.

q. Declarations. Provide the following written declaration statements:

i. A declaration that the applicant will comply with the District Rules and all groundwater use permits and plans promulgated pursuant to the District Rules.

ii. A declaration that the applicant will comply with well plugging and capping guidelines set forth in these Rules and will report well closures as required in Rule 3-5 and Rule 5.

iii. A declaration that the applicant will take all necessary steps to ensure the water quality of the aquifer is protected due to the operations of an ASR project.

iv. A declaration that the applicant understands a landowner owning surface property over the TSV radius owns the water unless ownership has been severed.

v. A declaration that the applicant will comply will all applicable TCEQ rules pursuant 30 §TAC 331.

r. Notice Information. For wells for which notice must be provided under Section B below, the following information must be provided, and notice must be mailed accordingly:

i. A tax plat location map showing locations of the proposed well, the existing well, or well field to be modified, mapped wells within a half-mile radius of the proposed well, the existing well, or well field, all properties within a half-mile radius of the proposed well or the existing well, and mapped CCNs or public water supply service areas within a half-mile radius of the proposed well, the existing well, or well field. This provision is subject to technical evaluation by District staff based on site-specific conditions.

ii. A mailing list of registered well owners within a half-mile radius of the proposed well, the existing well, or well field. The mailing list should include the property owner's name, mailing address, and physical well address.

iii. A mailing list of public water suppliers within a half-mile radius of the proposed well or the existing well. The mailing list should include the public water supplier's name, mailing address, and physical well address.

iv. A mailing list of groundwater conservation districts or entity that have jurisdiction over other water sources, and for which those water sources will be used for storage and recovery within this District.

v. For wells with an anticipated total storage volumes of more than 200,000,000 gallons, the applicant will be required to mail notice as dictated below:

a. Applications for 200-300 million gallons per year shall provide notice via first class mail within a one-

mile radius from the proposed well, existing well, or well field.

b. Applications for 300-400 million gallons per year shall provide notice via first class mail within a one and one-half (1.5) mile radius from the proposed well, existing well, or well field.

c. Applications for more than 400 million gallons per year shall provide notice via first class mail within a two-mile radius from the proposed well, existing well, or well field.

s. Other facts and considerations deemed necessary by the General Manager for protection of the public health and welfare and conservation and management of natural resources in the District.

9. All applications for **Production Permits** for nonexempt wells must contain, in addition to any information determined necessary for the evaluation of the application by the General Manager or the General Manager's designated representative, the following specified information in sufficient detail to be acceptable to the District.

a. Permit Type. Provide a statement of the type of Production Permit that is being requested (e.g., Historical Trinity, Class C Conditional Edwards, etc.).

b. Nature, Purpose, and Location. Provide a detailed statement describing:

i. The nature and purpose of the various proposed uses including proposed uses by persons other than the well owner,

ii. The well location and the proposed receiving area from groundwater produced from the well; note any proposed transfer, and

iii. The location and purpose of any water to be resold, leased, or transported.

c. Pumpage Volume. Provide a detailed statement describing:

i. The estimated pumping rate at which water will be withdrawn from each well, and

ii. The requested permit pumpage volume; a description of how the requested pumpage volume was determined. The applicant shall provide pumpage volume calculations based on the type of use, anticipated pumping capabilities, pumping times, pumping frequency, and other pertinent data to substantiate approximate groundwater production. The requested pumpage volume should demonstrate reasonable non-speculative demand.

d. Demand Trends. Provide a detailed statement describing:

i. A projected annual volume breakdown by type of use (e.g. PWS, commercial, irrigation, industrial).

ii. A projected quarterly timeline detailing the anticipated pumpage volumes for the first three to five years of pumping.

iii. An explanation of future demands and long term system growth.

iv. For public water suppliers, provide an estimated or calculated per capita and/or household consumption.

e. Conservation Practice. Describe any conservation measures or practices that are anticipated or are currently in place.

f. Demonstration of Backup Supply. For Class B or Class C Edwards Production Permits subject to Rule 3-1.24(D)(E), provide a detailed statement describing:

i. An explanation that includes adequate documentation of the applicant's capability and commitment to use an Alternative Water Supply in the event of a drought declaration. Must provide specific information or contractual agreements that demonstrate the certain ability and binding commitment to switch from the to-be-permitted volume of groundwater to some Alternative Water Supply source(s) on a 100% basis.

ii. For Public Water Supply systems, the reasonable likelihood that all necessary physical infrastructure and supporting agreements, rates, and tariffs will be in place within the first year of the permit.

iii. A declaration statement stating the applicant's capability and commitment to use an Alternative Water Supply in the event of a drought declaration.

g. Hydrogeological Report. A Hydrogeological Report, in accordance with Section D below.

h. UCP and UDCP. A User Conservation Plan (UCP), a User Drought Contingency Plan (UDCP), and the State proposed/approved Drought Contingency Plan (if required by the TCEQ).

i. Related Permits and Authorizations. Provide notice of any application to the TCEQ to obtain or modify a Certificate of Convenience and Necessity (CCN) to provide water or wastewater service with water obtained pursuant to the requested Production Permit. Provide notice of any pending, denied, or remanded authorization from a local, state, or federal agency relating to water or wastewater.

j. Transfers. If the groundwater is to be resold, leased, or otherwise transferred to others, provide the location to which the groundwater will be delivered, the purpose for which the groundwater will be used, and a copy of the legal documents establishing the right for the groundwater to be sold, leased, or otherwise transferred, including but not limited to any contract for sale, lease, or transfer of groundwater.

k. Declarations. Provide the following written declaration statements:

    i. A declaration that the applicant will comply with the District Rules and all groundwater use permits and plans promulgated pursuant to the District Rules.

    ii. A declaration that the applicant will comply with well plugging and capping guidelines set forth in these Rules and will report well closures as required in Rule 3-5 and Rule 5.

l. Notice Information. For wells for which notice must be provided under Section B below, the following information must be provided and notice must be mailed accordingly:

    i. A tax plat location map showing locations of the proposed well, the existing well, or well field to be modified, mapped wells within a half-mile radius of the proposed well, the existing well, or well field, all properties within a half-mile radius of the proposed well or the existing well, and mapped CCNs or public water supply services areas within a half-mile radius of the proposed well, the existing well, or well

field. This provision is subject to technical evaluation by District staff based on site-specific conditions.

ii. A mailing list of registered well owners within a half-mile radius of the proposed well, the existing well, or well field. The mailing list should include the property owner's name, mailing address, and physical well address.

iii. A mailing list of public water suppliers within a half-mile radius of the proposed well or the existing well. The mailing list should include the public water supplier's name, mailing address, and physical well address.

iv. For wells with an anticipated annual pumpage volume more than ~~200~~40,000,000 gallons, the applicant ~~will be required to mail notice as dictated below~~shall provide notice via first class mail within a two-mile radius from the proposed well, existing well, or well field.~~:~~

~~a. Applications for 200-300 million gallons per year shall provide notice via first class mail within a one-mile radius from the proposed well, existing well, or well field.~~

~~b. Applications for 300-400 million gallons per year shall provide notice via first class mail within a one and one-half (1.5) mile radius from the proposed well, existing well, or well field.~~

~~c. Applications for more than 400 million gallons per year shall provide notice via first class mail within a two-mile radius from the proposed well, existing well, or well field.~~

m. Other facts and considerations deemed necessary by the General Manager for protection of the public health and welfare and conservation and management of natural resources in the District.

10. In addition to the above information, Production Permit applications or major amendment applications with proposed annual groundwater production for more than ~~200~~40,000,000 gallons will require an aquifer test work plan and a monitoring well network plan pursuant to Section D below related to Hydrogeological Reports and Aquifer Tests. The applicant may request a 90-day extension subject to approval by the General Manager if needed to satisfy the requirements of Subsection D.

11. Potential for Unreasonable Impacts. All applications required to conduct an aquifer test and submit a Hydrogeological Report pursuant to District Rule 3-1.4.D. will be evaluated by the General Manager to assess the potential to cause unreasonable impacts pursuant to District Rule 3-1.4.G. Applications for proposed production that are found to have potential for causing unreasonable impacts will receive written notification of the General Manager's preliminary finding prior to the expiration of the application review period. Upon receipt of written notification of the General Manager's preliminary finding, the applicant will be granted a 90-day extension to the application review period to provide the following additional application requirements unless the applicant requests that the application be directly referred to the Board as provided below.

    a. The applicant shall submit a written description of avoidance measures and actions that the applicant proposes to implement either before or after groundwater production commences in an effort to avoid the occurrence of unreasonable impacts.

    b. The applicant shall submit a compliance monitoring plan subject to District review and approval and consistent with minimum plan requirements pursuant to District Rule 3-1.11.B.

    c. The applicant shall submit other facts and considerations deemed necessary by the General Manager.

    d. In addition to the above requirements, the applicant may opt to submit a mitigation plan subject to District review and approval and consistent with minimum requirements pursuant to District Rule 3-1.11.C. The District-approved mitigation plan shall be incorporated into a binding agreement between the permittee and the District, which will be incorporated as special provisions of the permit.

    The above plans and information shall be submitted within 30 days of receipt of notification of the General Manager's preliminary finding of potential for unreasonable impacts and may be incorporated in whole or in part as special provisions of the permit. Alternatively, the applicant may request that the application be directly referred to the Board, pursuant to District Rule 3-1.4.G.6, for consideration without the completed information requirements under Subsection 11~~0~~ a-d above prompted by the General Manager's preliminary finding of unreasonable impacts provided that the application requirements of items 1-9 of this Section have been satisfied.

12. In addition to the above information required for Production Permit applications, an application for a Transport Permit must contain the following information:

a. Information describing the projected effect of the proposed transporting of water on aquifer conditions, including flow at Barton Springs, depletion, subsidence, or effects on existing permit holders or other groundwater users within the District.

b. Information describing the availability of water in the proposed receiving area during the period for which the water transport is requested.

c. A description of the indirect costs and economic and social impacts associated with the proposed transporting of water.

d. Any proposed plan of the applicant to mitigate adverse hydrogeologic, social, or economic impacts of the proposed transporting of water in the District.

e. A description of how the proposed transport is addressed in any approved regional water plan(s) and the certified District Management Plan.

f. A technical description of the facilities to be used for transportation of water and a time schedule for any construction thereof.

B. Notice.

1. Applicants must provide public notice for the following types of permit applications:

a. All new individual Production Permit applications for more than two million gallons to be produced from the Edwards Aquifer;

b. All new individual Production Permit applications for more than 650,000 gallons to be produced from any of the Trinity Aquifers;

c~~b~~. Well Drilling Authorizations or Modification applications for wells with anticipated annual pumpage of more than two million gallons from the Edwards Aquifer;

d. Well Drilling Authorizations or Modification applications for wells with anticipated annual pumpage of more than 650,000 gallons from any of the Trinity Aquifers;

e~~c~~. Notice of intent to transport any groundwater out of the District;

fd. All major permit amendments, as defined in Section 3-1.9 of these Rules;

and

ge. All new Source and Recovery Permit applications

2. Such notices shall be published in one or more newspapers of general circulation in the county in which the subject well is located as determined by the District, in a form approved by the District. Public notice shall include a 28-day public response period beginning the day after the day said notice is published in a newspaper of general circulation within the District. If the notice is published in more than one newspaper, the public comment period expires the later of the date specified in the notice or 28 days after the day said notice is published in the newspaper of general circulation within the District. Applicants shall publish notice not later than ten business days after receiving an administratively complete determination from the General Manager or the General Manager's designated representative.

3. All required permit applications must have notice provided by the applicant, in a form approved by the District, by certified first-class mail to all registered well owners with wells located within a radius described in Rule 3-1.4.A.(7)(h) and Rule 3- 1.4.A.(8)(b)(vii)(for Source and Recovery Permit applications). Notification of any property owner served by a retail water utility is not required of any applicant if notice is provided to the retail water utility. Applicants shall provide notice by certified first class mail not later than ten business days after receiving an administratively complete determination from the General Manager or the General Manager's designated representative.

4. Applicants may not publish notice or provide notice by mail until the General Manager or the General Manager's designated representative determines that the application for which notice is required is administratively complete.

5. Under no circumstances will a public hearing be held, or action taken on the application by the Board prior to the termination of the 28-day public response period.

6. All public notices for newspaper circulation, covered by this Section, must contain at least the following information:

a. The name and address of the applicant;

b. The date the application was filed;

c. The location and a description of the well that is the subject of the application; and

d. A brief summary of the information in the application.

7. All public notices for mailout, covered by this Section, must contain at least the following information:

a. The name and address of the applicant in 14 point type printed at the top of the notice in such a manner that clearly and conspicuously shows the notice is from the applicant;

b. The date the application was filed;

c. The location and a description of the well that is the subject of the application;

d. A map showing all properties within a half-mile radius of the proposed well and nearby roads and/or other distinguishing geographic features; and

ed. A brief summary of the information in the application.

8. Upon completion of the published and mailed public notice, the District shall be provided with proof of publication of public notice. The applicant shall submit to the District office within ten business days after the date of publication an original newspaper clipping which shows the date of publication and the name of the newspaper and copies of the certified mailing receipt(s) which shows the post marked date the notices were mailed and the names and addresses of the intended recipient(s).

C. Decision to Hold Public Hearing.

1. On any application for nonexempt well permits not authorized by a general permit, the General Manager may schedule a hearing if the General Manager determines that a hearing will be beneficial to the District's consideration of the application, if the applicant requests a hearing, or if the General Manager receives protests to the application and the protest includes a request for a public hearing from any person having a personal justiciable interest, including any party to whom notice is

provided in accordance with Paragraph B above and otherwise complies with District Rule 4-9.13(B). A hearing will not be held for Temporary Permits issued under Section 4(d) of H.B. 3405.

2. The District shall conduct a public hearing for:

   a. major amendment applications,

   b. Transport Permit applications,

   c. new Production Permit applications with proposed groundwater production of more than 2,000,000 gallons annually from the Edwards Aquifer or more than 650,000 gallons annually from any of the Trinity Aquifers, and

   d. All new Source and Recovery Permit applications.

3. The General Manager shall make a determination whether to schedule a hearing on an application within 60 days of the date the application is administratively complete.

4. The Board of Directors at a regular or special Board meeting may conduct a hearing on any application.

5. A hearing on an application will be held within 35 days of the date the determination to schedule a hearing is made.

6. Except for hearings referred to the State Office of Administrative Hearings (SOAH), the final hearing may occur at the same time and immediately following the preliminary hearing. For a hearing conducted by SOAH, the final hearing on the application concludes on the latest of the dates of SOAH's proposal for decision; any exceptions to the proposal for decision, and any replies to exceptions to the proposal for decision are presented to the Board of Directors.

7. Hearings shall be conducted in accordance with District Rule 4-9 related to notice and hearing process.

D. Hydrogeologic~~al~~ Report and Aquifer Tests.

1 . Applicants seeking to export groundwater out of the District, to obtain a major amendment or a minor amendment in accordance with 3-1.9(F)(G), to obtain a Source and Recovery Permit for ASR, or to permit a new nonexempt well with an annual pumpage volume of more than 2,000,000 gallons from the Edwards Aquifer or more than 650,000 gallons annually

from any of the Trinity Aquifers, shall conduct an aquifer test and hydrogeologic report in accordance with the requirements outlined below in 3-1.4(D)3(a) and ~~submit to the District a current Hydrogeological Report~~ address~~ing~~ the potential impacts associated with the proposed groundwater production or export. Any amendment that leads to a total permitted volume associated with a higher test class (see 3.a. Table 1) shall meet the aquifer test and report requirements of the higher test class.

2. The a~~A~~quifer t~~T~~est and h~~H~~ydrogeologic r~~R~~eport must be prepared by a Texas licensed professional geoscientist or engineer pursuant to the District's guidance document, *Guidelines for Hydrogeologic Reports and Aquifer Testing (Guidelines*).

3. Aquifer Tests. A written aquifer test work plan shall be submitted to the General Manager for review and approval prior to commencement of the test and shall include the required information for aquifer test work plans as specified in the *Guidelines*. Planning and implementation of the aquifer test work plan shall be closely coordinated with the District to ensure that the proposed ~~study~~ aquifer test design is consistent with District standards and expectations specified in the *Guidelines*.

   a. The aquifer test shall be conducted and the report completed pursuant to the *Guidelines* and the following tiered requirements:

~~**Table: Tiered Structure for Aquifer Testing Requirements**~~

	~~**Anticipated Production Volume, or**~~ ~~**Anticipated Target Storage Volume**~~	~~**Aquifer Test Requirements**~~
~~**Tier 1**~~	~~>2,000,000 to 12,000,000 gallons per year~~	~~Abbreviated pump test and report~~
~~**Tier 2**~~	~~>12,000,000 to 200,000,000 gallons per year~~	~~Hydrogeologic report and may require installation of new observation wells if existing wells are not available or adequate for monitoring. For ASR projects, additional water quality monitoring may be required in lieu of installing observation wells.~~
~~**Tier 3**~~	~~>200,000,000 gallons per~~	~~Will require an aquifer test work plan and monitoring well~~

	~~year~~	~~network plan. Will require installation of one or more new observation wells.~~

Table 1. Test-class structure for aquifer test and report requirements.

Test Classes	***Edwards Aquifer*** Anticipated Production or Storage Volume (gallons / year)	***Trinity Aquifer*** Anticipated Production or Storage Volume (gallons / year)	Aquifer Test and Report Requirements
Class 0	0 – 2,000,000	0 – 650,000	No pump test required
Class 1	2,000,001 – 12,000,000	650,001 – 2,000,000	Single well pump test and hydrogeologic report
Class 2	12,000,001 – 40,000,000	2,000,001 – 40,000,000	Aquifer test with at least one (1) observation well[a]
Class 3	> 40,000,000	> 40,000,000	Aquifer test with monitor-well network plus new scientific monitor well[b]

a – An aquifer test work plan is to be submitted to and approved by the District General Manager prior to an applicant conducting an aquifer test and submitting a hydrogeologic report. At the discretion of the General Manager, installation of one or more scientific monitoring wells may be required if nearby existing wells are not available for monitoring. For ASR projects, additional water quality monitoring may be required in lieu of installing a monitoring well(s).

b – An aquifer test work plan and monitoring well network plan are to be submitted to and approved by the District General Manager prior to an applicant conducting an aquifer test and submitting a hydrogeologic report. Installation of one or more scientific monitoring wells will be required.

b. For wells with proposed annual pumpage or for ASR projects with a proposed TSV over ~~20~~40,000,000 gallons (Tier 3), the aquifer

test work plan shall also include a monitoring well network plan. Pursuant to the *Guidelines*, a monitoring well network shall be established by installing one or more new ~~observation~~ scientific monitoring wells and identifying a sufficient number of existing wells adjacent to the well or well field prior to commencement of the aquifer test in accordance with the District-approved monitoring well network plan. The final aquifer test work plan and monitoring well network plan must be approved by the District.

c. The monitoring well network plan shall contain the following minimum requirements:

i. General Information:

a. Goal and purpose of project.
b. Description of local geologic and hydrogeologic conditions.
c. Location map showing network well locations (including proposed and existing wells) and rationale for well locations.

ii. Design and Construction:

a. Well design plans or schematics on construction of each new well.
b. Completion and construction data for each existing well that will be used in the monitoring well network (e.g. State well reports if available, geophysical data, downhole video, non-pumping and pumping water levels, well and casing depth and diameter, pump depth, or schematics for proposed modifications).
c. Monitoring well equipment specifications and installation.
d. Designated hydrogeologist/engineer and well drilling contractor.

iii. Schedule for completion of work.

iv. Assurances that the District can maintain access to the monitoring well network and equipment. For newly drilled scientific monitoring wells required for Tier 3 permits, the District must be granted access to the well for monitoring purposes for the duration of active well production after the permit application is approved. In addition to providing aquifer

testing data, scientific monitor wells required under this rule are intended for long-term monitoring of aquifer conditions in the vicinity of permitted production, and ~~should~~shall not be utilized as pumping wells by the permittee.

v. Parties responsible for maintaining, repairing, and equipping the monitoring well network.

d. The established monitoring well network may potentially be converted to a compliance well network as part of a permit provision.

4. Hydrogeological Report. The report must include hydrogeologic information as specified in the *Guidelines* and shall provide findings and conclusions addressing the response of an aquifer to pumping over time and the potential for causing unreasonable impacts. Applicants may not rely solely on reports previously filed with or prepared by the District. If a Hydrogeological Report is required by this Section, the Hydrogeological Report is a required component of all administratively complete Production Permit and ASR applications.

5. Well Construction. All proposed pumping and ASR wells must be completed and equipped for the ultimate planned use or, at minimum, completed and equipped to isolate the target production zone for the ultimate planned use and production rate. Observation wells may be required per the *Guidelines*. The applicant is responsible for all cost associated with the design, engineering, well construction, and other related expenses.

6. Variance to Hydrogeologic Reports and Aquifer Test Requirements. The District may consider a variance from certain requirements. Technical information and a memorandum from a Texas licensed geoscientist or engineer supporting and documenting the rationale for the variance shall be submitted to the General Manger for consideration and approval. Factors that may be considered include:

a. Relatively low requested production volume;

b. Sufficient data exists for the well or vicinity (e.g. existing hydrogeologic reports or aquifer tests);

c. Low potential for unreasonable impacts; and

d. Other relevant factors.

7. District Review. The General Manager will review the applicant's

submitted Hydrogeologic Report and will determine whether there is potential for unreasonable impacts (as defined by District Rule). Permit applications may be deemed incomplete due to Hydrogeologic Reports that do not meet the District's minimum standards or deviate significantly from the *Guidelines* without prior District approval. An applicant who incurs cost related to conducting an aquifer test knowingly bears the risk that the permit request may be denied or modified.

E. Applications submitted during District-declared drought. Applications to drill any well requiring a Production Permit that are submitted during a District-declared drought will be referred to the Board for consideration and/or public hearing. Applicants should be aware that during times of District-declared drought, the Board may require additional information from the applicant, may place special conditions on the application and/or permit, may authorize the drilling but modify the Production Permit, or may delay or deny the application entirely if the Board determines that it does not meet all the requirements of District Rules 3-1.4 and 3-1.6.

F. Applications approved during District-declared drought. Although the District must take action on permit applications in accordance with Rule 3-1.4(C), for wells (a) within the Freshwater Edwards Management Zones, or (b) that are intended by the applicants to provide groundwater as a substitute to water being provided at the time of permit issuance by those water utilities that are able to provide water to the applicants, any permits having applications that are approved by the Board during a District-declared drought, including amendments of existing permits to increase permitted pumpage, shall contain a special provision delaying the effective date of the permit so long as the District remains in a District-declared drought.

G. Applications found to have potential for unreasonable impacts.

1. Policy. The District seeks to manage total groundwater production on a long-term basis while avoiding the occurrence of unreasonable impacts. The preferred approach to achieve this objective is through an evaluation of the potential for unreasonable impacts using the best available science to anticipate such impacts, monitoring and data collection to measure the actual impacts on the aquifer(s) over time once pumping commences, and prescribed response measures to be triggered by defined aquifer conditions and implemented to avoid unreasonable impacts. Mitigation, if agreed to by the applicant, shall be reserved and implemented only after all reasonable preemptive avoidance measures have been exhausted and shall serve as a contingency for the occurrence of unreasonable impacts that are unanticipated and unavoidable through reasonable measures.

2. Evaluation of potential for unreasonable impacts. All applications required to conduct an aquifer test and submit a Hydrogeological Report pursuant to District Rule 3-1.4.D. will be evaluated by the General Manager to assess the potential to cause unreasonable impacts. The

evaluation of the potential for unreasonable impacts will apply the best available science and be performed on the basis of the Hydrogeologic Report, the aquifer test, and other factors relevant to the proposed production from the subject well/well field including but not limited to:

a. local geology and aquifer conditions including water quality;

b. construction and location of the subject well/well field;

c. target production zone, production capacity, and proposed production rate of the subject well/well field;

d. construction/completion of existing wells in the area of influence;

e. drawdown over time and distance attributed to pumping from the subject well/well field;

f. drawdown attributed to drought conditions and seasonal increases in pumping from existing wells;

g. drawdown attributed to pumping from existing wells and from future domestic and livestock wells;

h. proposed production relative to the Modeled Available Groundwater;

i. projected impacts on the relevant Desired Future Condition(s); and

j. projected impacts to regional surface water resources (springs and streams).

3. General Manager's Preliminary Finding. Pursuant to District Rule 3-1.4.A.10, the General Manager shall evaluate the application and issue to the applicant a preliminary finding, subject to Board consideration, of the potential for unreasonable impacts.

4. General Manager's Statement of Position. For applications found to have potential for unreasonable impacts that are not directly referred to the Board, the General Manager shall provide a statement of position with the findings and recommendations for consideration by the Board. The statement of position may include recommended special permit provisions incorporating elements of the measures and plans submitted pursuant District Rules 3-1.4.A.10 and 3-1.11, and other reasonable measures necessary to avoid or mitigate for unreasonable impacts. Such measures may include:

a. reduction of authorized permit volume and/or pumping rate;

b. phased permit volumes with conditional increases;

c. ongoing aquifer monitoring;

d. one or more index wells with defined compliance levels and prescribed responses;

e. temporary pumping curtailments;

f. permanent permit volume reductions;

g. mitigation measures if applicable; and

h. other reasonable measures necessary to avoid the occurrence of unreasonable impacts.

5. Board Action. Pursuant to District Rule 3-1.6.A. related to consideration of unreasonable impacts, the Board may consider applications found by the General Manager to have potential for unreasonable impacts and may take action to approve or deny the permit application in full, approve for a reduced amount, approve with special provisions or take any other appropriate action to avoid or mitigate unreasonable impacts.

6. Direct Referral Process. In lieu of completion of the additional information requirements prompted by the General Manager's preliminary findings pursuant to District Rule 3-1.4.A.10, the applicant may opt to request direct referral of the application to the Board for a hearing on whether the application complies with all statutory and regulatory requirements, including whether there is the potential for causing unreasonable impacts.

   a. The applicant may request direct referral by submitting a written request to the General Manager within ten days of receipt of the notification of the General Manager's preliminary finding of potential for unreasonable impacts. Within a reasonable time after receipt of the request, the General Manager shall declare the application administratively complete, provided that the application contains all required information pursuant to District Rule 3-1.4.A.1-9, and shall promptly provide written notification to the applicant in accordance with Rule 3-1.6.B.

   b. An application that is directly referred to the Board is subject to and the applicant must comply with District Rules 3-1.4 and 4-9 regarding notice; comment and hearing; and, if desired, request for

contested case hearing, and request for a contested case to be conducted by SOAH.

c. Persons desiring to comment on or protest an application subject to a direct referral must likewise comply with the applicable District Rules 3-1.4 and 4-9.

d. The General Manager will include with such applications for the Board's consideration, the preliminary findings of potential for unreasonable impacts and supporting evidence, but shall not include recommendations for special permit provisions to avoid or mitigate for unreasonable impacts described under Rule 3-1.4.A.10.a-d.

e. If after hearing, the Board determines an application has the potential for causing unreasonable impacts, the Board may order a remand to reopen the record for further proceedings on recommendations to avoid or mitigate unreasonable impacts.

3-1.6. ACTION ON PERMITS.

A. Permits. Before approving, modifying, delaying, or denying a permit, the District shall consider whether:

1. The application conforms to the requirements of these Rules and is accompanied by the appropriate fees,

2. The proposed use of water is dedicated to beneficial use at all times including whether there are reasonable assurances of definite, nonspeculative plans and intent to use the water for specific beneficial uses during the Production Permit term,

3. The proposed use of water would not cause or contribute to waste, and the applicant has agreed to avoid waste and achieve water conservation. In assessing the acceptability of the proposed volume of water to be permitted, the District will apply industry and regional standards for permitted usage to assure the prospective use is commensurate with reasonable, nonspeculative demand,

4. The proposed use of water would not unreasonably affect existing groundwater and surface water resources by causing the potential for unreasonable impacts. In determining whether the proposed use of water is unreasonable under this Subsection, the District may consider the criteria of the term “unreasonable impacts” as defined in District Rule 2-1, Definitions of Terms, and any other information relevant to whether the proposed use is unreasonable,

5. The proposed use of water would not be otherwise contrary to the public welfare,

6. The proposed use of water is consistent with the approved District Management Plan or an approved regional water supply plan,

7. The applicant has agreed that reasonable diligence will be used to protect groundwater quality and that the applicant will follow well plugging guidelines at the time of well closure, and report closure to the District and all other applicable government agencies,

8. The water is used within the term of the Production Permit,

9. The approved User Drought Contingency Plan (UDCP) for the prospective well yields a maximum volume of authorized groundwater production from

the Western and Eastern Freshwater Edwards Management Zones that, when added to all other authorized amounts under District permits for these management zones, as restricted by UDCPs, and to other estimated withdrawals from specified (exempt) wells withdrawals in these management zones, does not exceed the Extreme Drought MAG that the District has determined, using considerations identified in 3-1.6(A)(12) below, is required to achieve the Extreme Drought DFC Withdrawal Limitation for the Edwards Aquifer, as specified in Section 3-1.23(A) of these Rules,

10. The approved User Drought Contingency Plan for the prospective well in any other management zone yields a maximum volume of authorized groundwater production that, when added to all other authorized amounts under District permits for that management zone, as restricted by their UDCPs, and to other estimated withdrawals from exempt wells in these management zones, does not exceed the amount required to achieve the applicable DFC for the aquifer, as specified in Section 3-1.23 of these Rules. In making this determination, the District shall consider the following: a. the applicable MAG amount, b. the TWDB estimate of total groundwater produced by exempt wells, c. the amount of groundwater under permits that have been previously authorized by the District, d. a reasonable estimate of the amount of groundwater actually produced under permits issued by the District, and e. yearly precipitation and production patterns.

11. For Class B and Class C Conditional Production Permits, the applicant has demonstrated to the Board's satisfaction the certain ability and binding commitment to switch from the to-be-permitted volume of groundwater to some Alternative Water Supply source(s) on a 100% basis,

12. In order to protect the public health and welfare and to conserve and manage the groundwater resources in the District during times of drought, the District may prioritize groundwater use, place special requirements on, modify, delay, or deny a Production Permit for a new well during a District declared drought, and

13. The District may impose more restrictive permit conditions on new permit applications and on applications for increased use by historic users if the limitations:

a. Apply to all subsequent new permit applications and increased use by historic users, regardless of type or location of use,

b. Bear a reasonable relationship to the District's approved Management Plan, and c. Are reasonably necessary to protect existing use.

B. Time for Action. After the application is administratively complete, the General Manager or the General Manager's designated representative will promptly provide written notification to the applicant. The District shall promptly consider and act on each administratively complete application (see Rule 3-1.4(C)). If a hearing is called to consider any of the foregoing applications, the District will conduct the hearing within 35 days after the General Manager determines that a hearing is necessary, and the District's Board will act to approve, modify, delay, or deny the application within 60 days after the date the final hearing on the application is concluded. The failure of the District to act within this time period shall not affect the District's jurisdiction over or the merits of an application. An administratively complete application requires submission of all information set forth within these Rules. If any applications for nonexempt wells are administratively incomplete 90 days after receipt of the application by the District, the District, by certified mail, return receipt requested, will notify the applicant of the missing documentation and the need to complete the application. Applications that remain administratively incomplete will expire 90 days following the above-mentioned notice to the applicant. Upon expiration of the application, the applicant may request reconsideration or an extension by the Board. Request must be made within ten days of receiving notice of an expired application.

C. Action by General Manager. The District's General Manager or the General Manager's designated representative may act for the District in approving any application for well registration; new in-District Edwards Production Permits for 2,000,000 gallons or less; new in-District Trinity Production Permits for 650,000 gallons or less; minor amendments to Edwards permits of 2,000,000 gallons or less; minor amendments to Trinity permits of 650,000 gallons or less; and well drilling, plugging, well modification, or other well development applications so long as the District does not receive any protests to the application nor any requests for a contested case hearing from any person having a personal justiciable interest, including any party to whom notice is provided in accordance with Rule 3-1.4(B), above. The General Manager shall schedule a public hearing for all major amendment applications, for all Transport Permit applications, for all new Edwards Production Permit applications with proposed groundwater production of more than 2,000,000 gallons annually or new Trinity Production permit applications of more than 650,000 gallons annually and refer the applications to the Board for action. The

General Manager will refer all new nonexempt well drilling applications, all Production Permit applications, and all major pumpage amendments received by the District during periods of District-declared Drought to the Board for action.

3-1.9. PERMIT AMENDMENTS.

A. Minor amendments include:

1. Transfers of ownership without any change in use;

2. Reductions in permitted volume or changing use of a well from nonexempt to exempt;

3. Reductions in permitted volume due to a use type change;

4. Substantial alteration of a well;

5. Increases in use of 10% or less of permitted pumpage for users permitted for more than 12,000,000 gallons annually;

6. Increases of up to 2,000,000 gallons annually for users permitted for 12,000,000 gallons or less from the Edwards Aquifer;

7. Increases of up to 650,000 gallons annually for users permitted for 2,000,000 gallons or less from the Trinity Aquifer.

8~~7~~. Increases of 20% or less in total storage volume or the recoverable amount of a Source and Recovery Permit.

9~~8~~. Converting two or more wells individually permitted by the same permittee into an aggregate system under one permit; and

10~~9~~. Converting to a multi-user well. All other amendments, including all amendments pertaining to Transport Permits, permit reclassifications, Source and Recovery permits, and use type changes that increase the permitted volume such that it is no longer a minor amendment pursuant Section A(5)(6) in this Rule are major amendments.

B. Major amendments shall be subject to all the requirements and procedures applicable to issuance of a Production Permit for a new well or, if applicable, a Transport Permit or Source and Recovery Permit

C. Amendments to change the use type of a Production Permit will require the recalculation of the permitted volume to be commensurate with the reasonable nonspeculative demand of the new use type.

D. The General Manager or the General Manager's designated representative may grant minor amendments without public notice and hearing. If two or more minor amendments are requested during any fiscal year for an increase in pumpage and

the combined increase in volume requested in the amendments exceeds the limits described in Rule 3-1.9(A), then the amendment which results in a pumpage increase in excess of the limits specified in Rule 3-1.9(A) will be considered a major amendment subject to Rule 3-1.9(B).

E. Minor amendment applications must include a detailed justification for the increase including but not limited to: analysis of average daily, weekly, and/or monthly water usage and pumpage records; a breakdown by types of use (domestic, commercial, irrigation, industrial, etc.); estimated or calculated per capita and/or household consumption; explanation of increased demands or system growth; anticipated pumpage needs; local water use trends; conservation practices in effect; a revised UCP and UDCP; information about current procedures to locate and repair leaks and the system's current percentage of line loss; and any other pertinent information required by the District.

F. Permittees with annual permitted pumpage volumes greater than 12,000,000 gallons requesting multiple minor amendment pumpage increases that total more than 20% of the permitted pumpage volume of the fiscal year three years prior to the most recent amendment may be required to submit a current Hydrogeological Report to the District office. (Example: Permittee A is permitted for 50,000,000 gallons in FY 1996. The permittee files three minor amendments between 1997 and 1999, one for 5,000,000 gallons, another for 3,000,000 gallons, and another for 4,000,000 gallons, a total of 12,000,000 gallons increase since 1996. The District may require a hydrogeological test as a condition of the most recent amendment application for 4,000,000 gallons.) A current Hydrogeological Report is one that has been completed within the three years preceding the date of the applications. The Hydrogeological Report shall be in accordance with Rule 3-1.4(D).

G. Permittees requesting a minor amendment may be required to submit a Hydrogeological Report at the General Manager's discretion based on aquifer condition, type of modification, status of adjacent wells, local water use trends, and other aquifer management considerations.

H. Application for a permit amendment shall be made upon forms supplied by the District and must be accompanied by an application processing fee established by the Board. No application processing fee will be required from permittees requesting a reduction in permitted volume or changing use of a well from nonexempt to exempt.

I. Permittees requesting an increase in pumpage volume must have a Board-approved UCP and a Board-approved UDCP on file at the District office. Permittees will be required to update their UCP and UDCP to reflect their new permitted pumpage amount and/or new ownership.

J. Applications for either minor or major amendments to increase annual permitted pumpage volumes submitted during any District-declared drought shall be referred to the Board for consideration and/or public hearing. A failure to achieve droughtmandated targeted monthly permitted pumpage reduction requirements does not in itself justify a pumpage increase.

K. Permit to Remain in Effect.

1. If a permittee, in connection with the renewal of a permit or otherwise, requests a change that requires an amendment to the permit under District Rules, the permit as it existed before the permit amendment process remains in effect until the later of: a. The conclusion of the permit amendment or renewal process, as applicable; or b. Final settlement or adjudication on the matter of whether the change to the permit requires a permit amendment.

2. If the permit amendment process results in the denial of an amendment, the permit as it existed before the permit amendment process shall be renewed without penalty, consistent with Rule 3-1.8. 3. The District may initiate an amendment to an operating permit, in connection with the renewal of a permit or otherwise, in accordance with the District Rules. If the District initiates an amendment to an operating permit, the permit as it existed before the permit amendment process shall remain in effect until the conclusion of the permit amendment or renewal process, as applicable.

3-1.24. CONDITIONAL PRODUCTION PERMITS.

A. Purpose. The purpose of this Section is to provide for the effective and sustainable management of the Barton Springs segment of the Edwards Aquifer by regulating the production of groundwater from new permitted wells or existing wells with increased permitted pumpage. The continuing usage and reliance upon such wells during Stage II Alarm, Stage III Critical, and Stage IV Exceptional Droughts may exceed the Extreme Drought MAG of the aquifer, and thereby may pose an interference between water wells and potentially cause the cessation of springflow.

B. Applicability and Limitation.

1. All applications for new Production Permits and Production Permit amendments for wells proposing to withdraw groundwater from the Eastern or Western Freshwater Edwards Management Zones and issued after September 9, 2004, shall be designated as Conditional Production Permits.

2. The total annual actual production of groundwater from the Freshwater Edwards Management Zones, aggregating estimated exempt use and all production under both Historical Production Permits and Conditional 100 Production Permits shall, to the maximum extent practicable, not exceed the applicable All-Conditions MAG, which is 16.0 cfs. Under the All Conditions MAG, total annual actual production under Historical Production Permits and Class A, B, and C Conditional Production Permits including estimated exempt well production, shall not exceed 14.0 cfs, reserving 2.0 cfs for Class D Conditional Production Permits.

C. Class A Conditional Permits. Class A Conditional Permits shall be designated in accordance with the following criteria and shall be subject to the following provisions.

1. Permits satisfying the following criteria shall be designated as Class A Conditional Production Permits:

a. The Permit was approved and issued prior to April 12, 2007.

b. An application for a pumpage amendment or a new Production Permit was in process by the District as of April 12, 2007.

c. A permit is issued for an existing nonexempt and previously unpermitted well:

i. that was drilled before April 12, 2007,

ii. that maintains the type of use that existed on or before April 12, 2007, and

iii. whose authorized groundwater production does not exceed 2,000,000 gallons annually from the Edwards Aquifer~~.~~

d. A permit is issued for an existing well that:

i. is no longer exempt in accordance with Rule 3-1.3,

ii. was drilled before September 9, 2004,

iii. is not in an area in which a water supplier has a valid CCN or, if located in an area where a water supplier has a valid CCN, the supplier is not readily able to supply water without extraordinary additional cost or time delay, and iv. is permitted for groundwater production that does not exceed 2,000,000 gallons annually from the Edwards Aquifer.

e. The pumpage is authorized by District Rule 3-1.20.B relating to Limited Production Permits.

2. Except for Limited Production Permits authorizing production under Rule 3-1.20.B from certain wells in the Freshwater Edwards Management Zones and permits satisfying the criteria of provision (c) and (d) of this Section, existing Class A Conditional Permits shall be irrevocably reclassified as Class B Conditional Permits upon the declaration of a Stage IV Exceptional Drought. Upon reclassification, these permits shall be subject to all of the requirements applicable to Class B Conditional Permits including production fees and drought curtailment requirements.

D. Class B Conditional Permits. Class B Conditional Permits shall be designated in accordance with the following criteria and shall be subject to the following provisions.

1. Permits satisfying the following criteria shall be designated as Class B Conditional Permits:

a. A permit or permit application was not in process or approved prior to April 12, 2007,

b. An amendment to authorized pumpage under a Historical or Class A Conditional Permit is issued for increased pumpage where the aggregate total of the authorized pumpage volume at the time the

amendment application was submitted and the amendment volume does not exceed 2,000,000 gallons annually from the Edwards Aquifer (the volume of any increase in authorized pumpage greater than 2,000,000 gallons annually shall not be classified as a Class C).

2. Class B Conditional Permits shall not be reclassified as Class A Conditional Permits.

E. Class C Conditional Permits. Class C Conditional Permits shall be designated in accordance with the following criteria and shall be subject to the following provisions.

1. The permit was approved and issued after March 24, 2011.

2. Monthly groundwater production shall be limited to the monthly baseline permitted volumes established in the approved UDCPs of each individual permit. For permits issued prior to October 11, 2012, this provision shall not be enforced until after October 11, 2013.

3. Class C Conditional Permits shall not be reclassified as Class A or B Conditional Permits.

F. Class D Conditional Permits. Class D Conditional Permits shall be designated in accordance with the following criteria and shall be subject to the following provisions.

1. 2.0 cfs of authorized production under a Class D Conditional Permit shall be reserved for groundwater production associated with Aquifer Storage and Recovery projects where stored water is recovered and used to supplement Freshwater Edwards supplies during District-declared drought or for supply management in times of need.

2. The total aggregate volume of pumpage authorized by Class D Conditional Permits shall not exceed 2.0 cfs (471,778,000 gallons/year).

3. Class D Conditional Permits shall not be reclassified as Class A, B or C Conditional Permits.

G. New Production Permit Applications. Applications for new Conditional Production Permits shall be processed pursuant to District Rule 3-1.4, including as applicable the demonstration required for Class B and C Permit applications to the satisfaction of the District Board.

H. Pumpage Amendment Applications. Applications for pumpage amendments to existing Conditional Production Permits shall comply with District Rule 3-1.9 and all other applicable District Rules and regulations.

1. An applicant with a Historical Production Permit in the Freshwater Edwards Management Zones who is applying for a pumpage amendment, upon receiving said amendment after consideration and if approved by the Board, shall be issued a Conditional Production Permit only for the authorized additional withdrawal amount of groundwater, which shall be separate from but associated with the Historical Production Permit for the duration of the Historical Permit, unless terminated by the permittee or the District pursuant to District Rules. (Example: Permittee X has a Historical Production Permit for 50 million gallons per year and files and receives a permit amendment of 70 million gallons per year. The District would issue permittee X a Conditional Production Permit for 70 million gallons per year, giving permittee X a combined total available authorized pumpage volume of 120 million gallons per year. The 50 million gallon Production Permit would retain its Historic Use Status.) Under no circumstance shall the pumpage amendment, as a Conditional Production Permit, be considered for Historic Use Status designation.

2. Applicants seeking a permit amendment to an existing Conditional Production Permit of the same class, upon receiving said amendment after consideration and if approved by the Board, shall have the original Conditional Production Permit amended to reflect the authorized increase in groundwater withdrawal.

I. Term of Conditional Production Permits.

1. All Class A Conditional Production Permits are effective for the fiscal year of issuance, and unless otherwise stated on the permit, shall not be issued for a term longer than one year, except as provided for in District Rule 3-1.7(C.) Renewal of all Class A Conditional Production Permits are governed by Rule 3-1.8, Permit Renewal.

2. All Class B and C Conditional Production Permits are effective for the fiscal year of issuance and, unless otherwise stated on the permit, are issued for a term of 30 years, provided an annual review confirms: a. all infrastructure, contracts, rates, and facilities for 100% substitution with an alternative water supply that were demonstrated to the Board as a condition

of initial permit approval have been effectively deployed within the first year and effectively remain in place for all subsequent years; and b. all other Rules of the District are met, including Rule 3-1.8, Permit Renewal. Failure to comply with both provisions (a) and (b) of this Subsection, in the sole judgment of the Board, shall result in the expiration of the Conditional Production Permit, or such other action as the Board may take.

3. All Class D Conditional Production Permits are effective for the fiscal year of issuance and, unless otherwise stated on the permit, shall not be issued for a term longer than one year, except as provided in District Rule 3-1.7(C.) J. Other Limitation on Volumes Authorized Under Certain Conditional Production Permits. Conditional Edwards Production Permits using Designated Alternative Water Supply Well(s) as the required alternative supply will be permitted up to a volume not to exceed the non-speculative water demand during the term of the Production Permit minus the volume of the Historical Edwards Production Permit, if any.

3-1.25. VARIANCE REQUESTS: GENERAL.

A. Application. An applicant may by written petition to the Board request a variance from the requirements of District Rule 3-1, except Sections 3-1.23 and 3-1.24, relating to maximum withdrawals from the Freshwater Edwards Management Zones and Conditional Production Permit applications, requirements, or restrictions. A variance request under this Section shall be accompanied with any variance request fee set by the Board pursuant to District Rule 3-1.16. A petition for a variance request shall include the following information:

1. the specific rule citation for which the variance is sought,

2. the nature of the variance requested,

3. a detailed explanation as to why the variance should be granted, and

4. any additional information, materials, maps, or documents required by the General Manager or the General Manager's designated representative.

B. This Section is not applicable for variance requests relating to drought as addressed under District Rule 3-7.10.

C. Basis for Variance Approval. In evaluating a request, the Board shall act based on the following considerations:

1. There are special circumstances existing on the property on which the application is made related to size, shape, area, topography, hydrogeology, surrounding conditions, and location that do not apply generally to other properties in the vicinity;

2. A variance is necessary to permit the applicant the same rights in the use of property that are presently enjoyed by other properties in the vicinity, but which rights are denied to the property on which the application is made;

3. The granting of the variance on the specific property will not adversely affect any other provision of the District's Rules and Bylaws;

4. The variance, if granted, will be no material detriment to the public welfare or injury to the use, enjoyment, or value of property in the vicinity for such activities that are under the jurisdictional authority of the District;

5. Whether the operations proposed are reasonable under the circumstances and conditions prevailing in the vicinity considering the particular location and the character of the improvements located there;

6. Whether alternative options are available to the applicant such that if pursued a variance would not be required;

7. Whether the operations proposed are consistent with the health, safety, and welfare of the public when and if conducted in accordance with the authorization or permit conditions to be imposed;

8. Granting the variance would be in accordance with the intent of the District's Mission Statement, Rules and Bylaws, and certified Management Plan; and

9. The recommendations of the General Manager or the General Manager's designated representative.

D. District Action. A variance request shall be considered by the Board after public notice and hearing pursuant to the requirements of District Bylaw 4-9 and completion of a 2~~0~~8-day public response period pursuant to District Rule 3-1.4(B). The applicant requesting the variance shall receive written notification of the District's action.

E. Variance Conditions.

1. The Board may grant a variance for a term and with any conditions the Board deems appropriate, which shall be set out in the Order granting the variance request.

2. The Board may require an applicant granted a variance to file reports with the District containing such information as is relevant to monitoring the continuing appropriateness of the variance and compliance with the terms and conditions of the variance.

F. Rescission of Variance. By Order, the Board may rescind an Order granting a variance at any time due to changed circumstances, new information, or failure of the holder of the variance to abide by the terms and conditions of the variance or any Order of the Board.