



1575 Sawdust Road, Suite 400
The Woodlands, Texas 77380
Tel: 281.363.4039
www.quiddity.com

August 12, 2024

Mr. Zach Holland
Bluebonnet Groundwater Conservation District
1903 Dove Crossing Lane, Suite A
P.O. Box 269
Navasota, TX 77868
BGCD@bluebonnetgroundwater.org

Re: Non-Exempt Water Well Application – Water Well No. 1
Esra Grae Corporation (Proposed Riley Road Single-Family Development)

Dear Mr. Holland:

We are pleased to submit the non-exempt water well registration application for a proposed first water well on behalf of Esra Grae Corporation. We are requesting a Phase 1-a Hydrogeologic Report be completed by Bluebonnet Groundwater Conservation District (“BGCD”). This letter also serves a declaration that the District will comply with the BGCD management plan, BGCD regulations and actions during drought conditions, and BGCD’s well plugging guidelines and report closure to the applicable authorities, including the BGCD, per the requirements of Rule 8.5A1.

Enclosed is the District’s non-exempt water well application package including the following attachments:

- Non-Exempt Water Well Registration Application
- Water Well Operating Permit Application
- Water Well Location Maps
- General Well Construction Diagram

The application fee is included. This fee includes the \$75.00 well development fee, \$375.00 operating permit application fee, and \$1,500.00 phase 1-a hydrogeologic report fee.

If you have any questions or comments, please contact Jayson V. Taylor, EIT at 281-363-4039.

Sincerely,

Amy W. Stonaker, PE

AVA/jvt

K:\29234\29234-0005-01 Avanti - Riley Road Water Well Study and Coordination with BGCD\2 Design Phase\Reports\Water Well No. 1\1. BGCD Water Well Application Cover Letter.docx

Enclosures

cc: Mr. Houman Samanian – Esra Grae Corporation

Bluebonnet Groundwater Conservation District
1903 Dove Crossing Lane Suite A, P.O. Box 269
Navasota, TX 77868
Phone: 936-825-7303 Fax: 936-825-7331
Email: BGCD@bluebonnetgroundwater.org

BGCD Well ID #: _____

NON-EXEMPT WATER WELL REGISTRATION APPLICATION

Please complete all questions. Please print or type information, or place an "x" in the appropriate space.

Drill New Well: x Register an Existing Well: _____ Replace Existing Well: _____ Increase Size of Existing Well: _____
Increase Pump Size of Existing Well: _____ Abandon/Cap/Plug Existing Well: _____ Perform Dye Trace: _____

Well Owner Esra Grae Corporation Phone 713-627-1015

Address 9801 Westheimer Road, Suite 250, Houston, Texas, 77042

Fax: N/A Email: Houman Samanian: houman@ersagrae.com

Drilling Company N/A Phone N/A

Address N/A

Fax: N/A Email: N/A

Driller N/A License# N/A

Well Location: County Waller Well Site Address or Location: Riley Road Water Plant

Latitude 30°14'00.47"N **Longitude** 95°50'53.07"W

Proposed Water Use: Public Water Supply: x Industrial: _____ Recreational: _____ Commercial: _____

Hydraulic Fracturing: _____ Transport Outside of District: _____

Proposed depth: 650 ft. Aquifer Gulf Coast Date drilling is scheduled to begin N/A

Proposed casing size: 14 in. Proposed casing depth: 520 ft. Pump depth: 420 ft. Pump size 50 hp.

Type Pump: Turbine: _____ Submersible: X Windmill: _____ Other (specify): _____

Pump fuel or power source: Electricity: X Natural Gas: _____ Wind: _____ Other (specify) _____

Pump Bowls: Size 11" # of Stages: 5 Pump Column: Inside Diameter: 6 in. Length: 420 ft.

Pump discharge pipe: Size 6 in. Rated pump horsepower: 50 **Pump Discharge:** 350 gpm

Water bearing formation: Evangeline Layer

Estimated Annual Water Production: _____ Acre-Feet or 76,650,000 Gallons

If the water produced from this well will be used in whole or in part on property other than the property where the well is located, **describe the location where the water will be used.** Transportation of water produced and moved to another location may require a District Transportation Permit. See District Rules, Section 10 or contact the District office for information.

The water produced from the proposed water well will only be used to proposed Riley Road single-family residential development (shown in attached land use plan) located wholly within Bluebonnet Groundwater Conservation District.

BLUEBONNET GROUNDWATER CONSERVATION DISTRICT

Permit form approved on: _____

By: _____ Zach Holland, General Manger

(Continued) NON-EXEMPT WATER WELL DRILLING PERMIT FORM (Continued)

The following documentation, attachments and fee payments must accompany this form when it is submitted for consideration by the District.

- a. Plat or map showing location of the property and location on property of well for which form is submitted.
- b. If owner and/or operator of a well is different from property owner, provide written documentation from property owner authorizing construction and operation of this well.
- c. All the information and documentation required for the type and class of well for which authorization is requested by Section 8 of the District Rules and that information and documentation required by Rule 8.5.
- d. Forms for non-exempt well authorizations must be accompanied by the information required by Rule 8.5A1:
 - a. 8.5A1(e) – a statement of the projected effect of the proposed withdrawal on the aquifer or aquifer conditions, depletion, subsidence, or effects on existing permit holders or other groundwater users in the District;
 - b. 8.5A1(f) – the applicant’s water conservation plan or a declaration the applicant and subsequent user will comply with the District’s management plan;
 - c. 8.5A1(g)(2) – well construction diagram;
 - d. 8.5A1(g)(3) – a map showing the location of the proposed well or wells, all existing well, hydrologic features, and geologic features located within half (1/2) mile radius of the proposed well or wells site;
 - e. 8.5A1(h) – the applicant’s well closure plan or a declaration the applicant will comply with well plugging guidelines and report closure to the applicable authorities, including the District.
- e. Payment for applicable fees must accompany the form. Additional fees may apply as documented in the District’s adopted Fee Schedule.

Well Development Fee	\$75.00	
Operating Permit Application Fee	\$375.00	
Hydrogeologic Report Fee – applicable if well completed with eight (8) inches or greater inside casing diameter		
	Phase I-a Report (less than 200MG/yr)	Phase I-b Report (> 200MG/yr)
District Prepared Report	\$1,500.00	\$7,500.00
Applicant Prepared/District Review	\$500.00	\$1,500.00

- f. Forms for new non-exempt wells must be accompanied by an Operating Permit Application and, if appropriate, a Transport Permit Application.

I, the undersigned applicant, hereby agree and certify that:

- a. this well will be drilled within 30 feet of the location specified and not elsewhere;
- b. I will furnish the District with a copy of the completed driller’s log, any electric log, the well completion report, and any water quality test report within 60 days of completion of this well and prior to production of water there from (other than such production as may be necessary to the drilling and testing of such well);
- c. in using this well, I will avoid waste, achieve water conservation, protect groundwater quality and the water produced from this well will be for a beneficial use;
- d. I will comply with all District and State well plugging and capping guidelines in effect at the time of well closure;
- e. I agree to abide by the terms of the District Rules, the District Management Plan, and orders of the District Board of Directors currently in effect and as they may be modified, changed, and amended from time to time;
- f. I hereby certify that the information contained herein is true and correct to the best of my knowledge and belief.

Signature:  Date: 8/27/2024

Printed Name: Amy W. Stonaker, PE Title: Senior Engineer

Bluebonnet Groundwater Conservation District

303 E. Washington Ave., P.O. Box 269

Navasota, TX 77868

Phone: 936-825-7303 Fax: 936-825-7331

Email: BGCD@bluebonnetgroundwater.org

BGCD Well ID #: _____

WELL OPERATING PERMIT APPLICATION

Please complete all questions. Please print or type information or place an "x" in the appropriate space.

Drill New Well: ☒ Register an Existing Well: _____ Replace Existing Well: _____ Increase Size of Existing Well: _____

Increase Pump Size of Existing Well: _____ Abandon/Cap/Plug Existing Well: _____ Perform Dye Trace: _____

Well Owner Esra Grae Corporation Phone 713-627-1015Address 9801 Westheimer Road, Suite 250, Houston, Texas, 77042Fax: N/A Email: Houman Samanian: houman@ersagrae.com**Drilling Company** N/A Phone N/AAddress N/AFax: N/A Email: N/A**Driller** N/A License# N/A**Well Location:** County Waller 911 address of well site N/A**Latitude** 30°14'00.47"N **Longitude** 95°50'53.07"W**Proposed Water Use:** Public Water Supply: ☒ Industrial: _____ Recreational: _____ Commercial: _____

Hydraulic Fracturing: _____ Transport Outside of District: _____

Status of well as of application date:

_____ Operating Well (Date drilled _____)

_____ Well Completed but not operating (Date Drilled _____)

☒ Well Development permit attached or awaiting approvalAuthorization to produce the following quantity of water annually from this well is: 76,650,000 Gallons

A well operating permit is normally issued for a period of one year (12 months). If a permit for a longer period of time is requested, attach a statement detailing the reasons for a longer permit period and the period of time requested.

If the water produced from this well will be used in whole or in part on property other than the property where the well is located, **describe the location where the water will be used.** Transportation of water produced and moved to another location may require a District Transportation Permit. See District Rules, Section 10 or contact the District office for information.The water produced from the proposed water well will only be used to proposed Riley Road single-family residential development (shown in attached land use plan) located wholly within Bluebonnet Groundwater Conservation District.**BLUEBONNET GROUNDWATER CONSERVATION DISTRICT**

Permit application approved on: _____

By: _____ Zach Holland, General Manger

(Continued) WELL OPERATING PERMIT APPLICATION (Continued)

The following documentation, attachments and fee payments must accompany this application when it is submitted for consideration by the District.

- a. Plat or map showing location of the property and location on property of well for which application is submitted.
- b. If the owner and/or the operator of well is different from the property owner, provide written documentation from the property owner authorizing construction and operation of this well.
- c. All the information and documentation required for the type and class of well for which authorization is requested by Section 8 of the District Rules and in particular that information and documentation required by Rule 8.5.
- d. If this permit application is for a well completed with an inside casing diameter of eight (8) inches or greater, or for any of the conditions enumerated in District Rule 8.5 F, a current hydrogeological report (a report completed within 18 months of the date of this application is considered current) shall be submitted with this application.
- e. Payment for applicable fees must accompany application. For a non-exempt well the appropriate Operating Permit Application Fee (\$375.00 + \$750.00 if inside casing diameter is eight (8) inches or greater) must be included.
- f. The applicant's water conservation plan and if any subsequent user of the water is a municipality or entity providing retail water services, the water conservation plan of that municipality or entity shall also be provided. In lieu of a water conservation plan, a declaration that the applicant and/or a subsequent user if any subsequent user is a municipality or entity providing retail water services will comply with the District Management Plan.
- g. The applicant's Drought Contingency Plan and a copy of any subsequent user's Drought Contingency Plan or a declaration that the applicant or a subsequent user will comply with District rules, policies and Board actions in drought conditions.

I, the undersigned applicant, hereby agree and certify that:

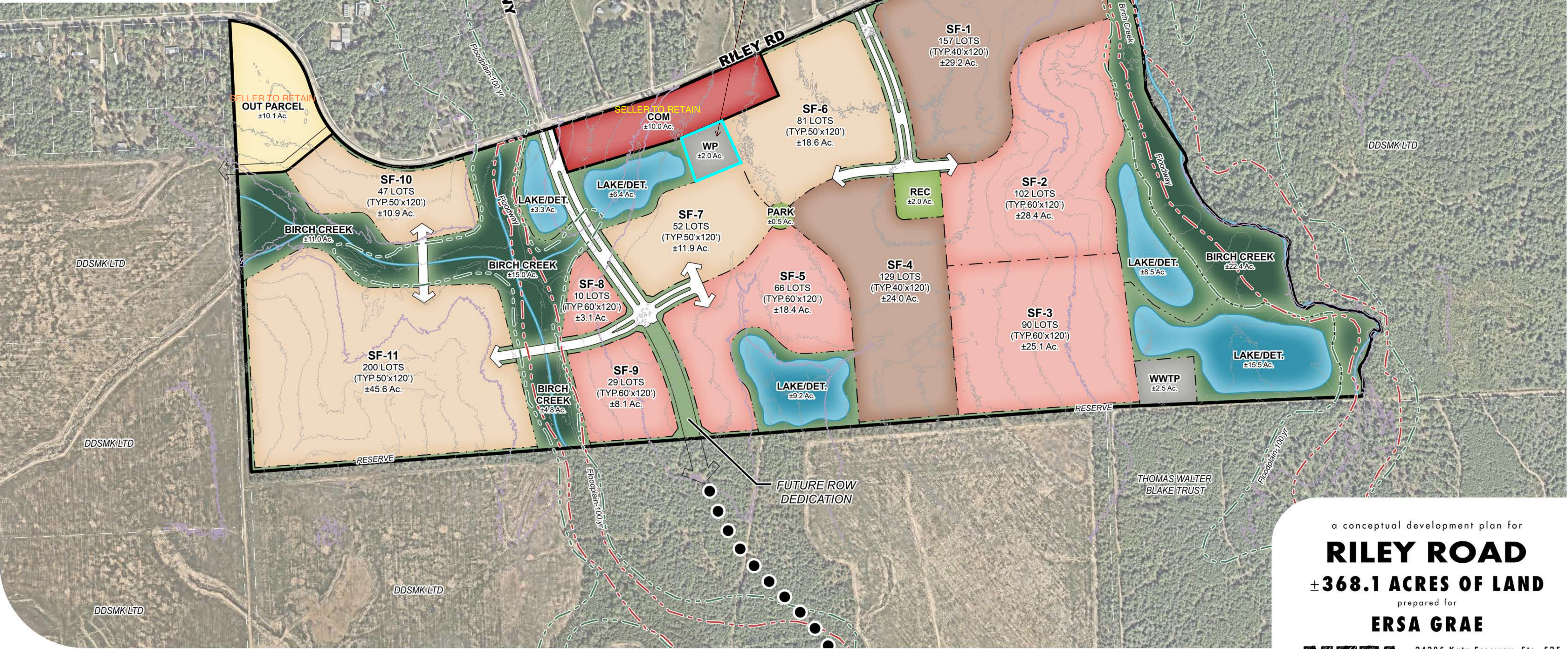
- a. in using this well, I will avoid waste, achieve water conservation, protect groundwater quality and the water produced from this well will be for a beneficial use;
- b. I will comply with all District and State well plugging and capping guidelines in effect at the time of well closure;
- c. I agree to abide by the terms of the District Rules, the District Management Plan and orders of the District Board of Directors currently in effect and as they may be modified, changed and amended from time to time;
- d. I hereby certify that the information contained herein is true and correct to the best of my knowledge and belief.

Signature:  Date: 8/27/2024

Printed Name: Amy W. Stonaker, PE Title: Senior Engineer

LAND USE ANALYSIS

DEVELOPABLE		±963 LOTS	±243.4 Ac.
SF	TYP. 40'x120'	(30%)	±286 LOTS ±53.2 Ac.
SF	TYP. 50'x120'	(40%)	±380 LOTS ±87.0 Ac.
SF	TYP. 60'x120'	(30%)	±297 LOTS ±83.1 Ac.
COM	COMMERCIAL		±10.0 Ac.
	OUT PARCEL		±10.1 Ac.
PARKS / RECREATION / OPEN SPACE			±108.7 Ac.
PARK	REC. CENTER & PARKS	(0.7%)	±2.5 Ac.
	DRAINAGE / DETENTION	(11.7%)	±42.9 Ac.
	FLOODWAY/CREEK	(14.5%)	±53.2 Ac.
	LANDSCAPE / OPEN SPACE	(2.7%)	±10.1 Ac.
UTILITIES & EASEMENTS			±4.5 Ac.
WP	WATER PLANT		±2.0 Ac.
WWTP	WASTEWATER TREATMENT PLANT		±2.5 Ac.
CONSTRAINTS			±11.5 Ac.
	STREETS	(3.1%)	±11.5 Ac.
PROJECT TOTAL			±368.1 Ac.



a conceptual development plan for

RILEY ROAD

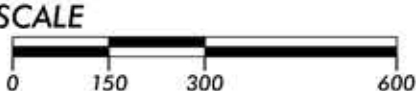
±368.1 ACRES OF LAND

prepared for

ERSA GRAE

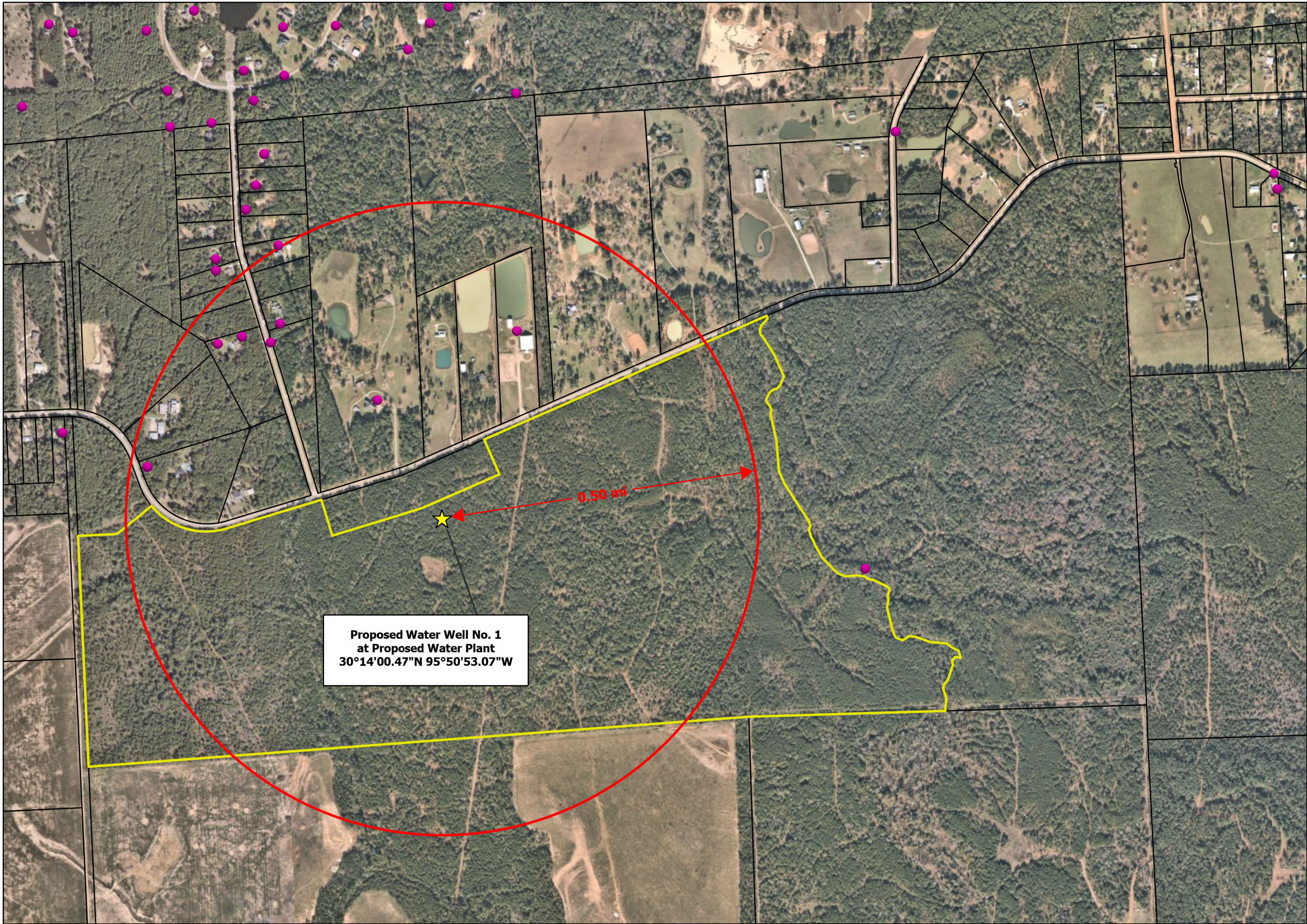


24285 Katy Freeway, Ste. 525
Katy, Texas 77494
Tel: 281-810-1422



HOU-25002
MARCH 13, 2024

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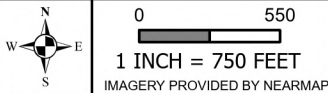
VICINITY MAP
1 INCH = 10 MILES

Legend

- ★ Proposed Water Well
- SDRDB well locations
- TWDB Groundwater
- 1/2 Mile Buffer
- Riley Road Tract
- WCAD Parcels

WATER WELL LOCATION MAP
1/2 MILE RADIUS

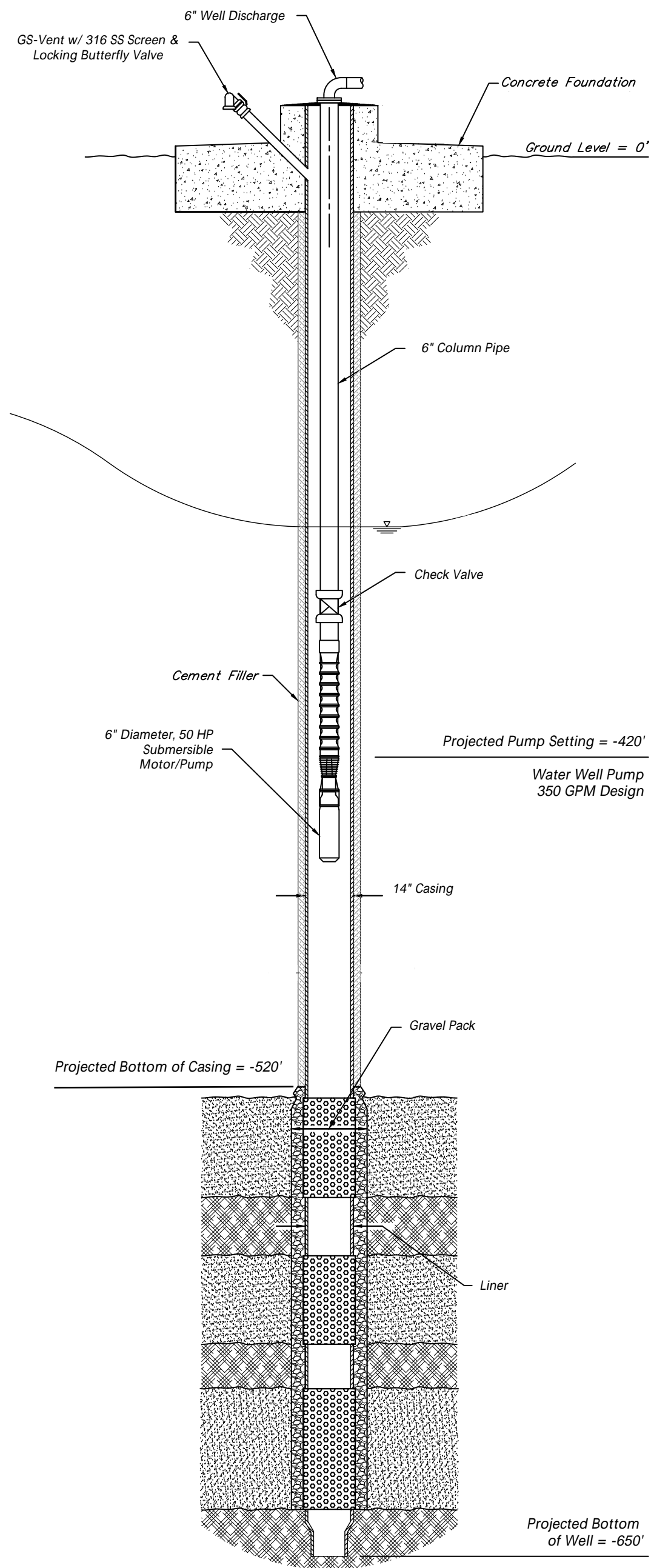
RILEY ROAD TRACT
WALLER COUNTY, TEXAS



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QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290



WATER WELL PROFILE
NOT TO SCALE

TYPICAL WATER WELL PROFILE



William R. Hutchison, Ph.D., P.E., P.G.
Independent Groundwater Consultant
909 Davy St.
Brenham, TX 77833
512-745-0599
billhutch@texasgw.com
www.texasgw.com

September 3, 2024

Mr. Zach Holland
General Manager
Bluebonnet Groundwater Conservation District
PO Box 269
Navasota, TX 77868-0269

RE: Phase I-a Report: Riley Road Water Well 1

Dear Mr. Holland,

This letter represents the Phase I-a report for the Riley Road Water Well 1 permit application that I received from you via email on August 29, 2024.

“Estimated Annual Water Production” is 76.65 million gallons per year, which is below the 200 million gallon per year threshold for Phase I of the permit application process . Therefore, the application requires the preparation of a Phase I-a analysis of potential drawdown.

Well Locations on HAGM Grid

The latitude and longitude data on the application were used to convert the location data to x- and y-coordinates in the GAM coordinate system using Surfer, a commercial gridding program. The FORTRAN program *PointRC.exe* was used to find the HAGM cell for those x- and y-coordinates. The results of this effort yielded that the well is in HAGM row 30, column 96.

The applications noted a well depth of 650 feet, which would place the bottom of the well within the Evangeline Aquifer (HAGM layer 2).

Grid Parameters, HAGM Parameters, HAGM Results, Theis Parameters

The Excel spreadsheet named *BGCD Parameters.xlsx* contains the data needed for the review and Phase I-a calculations for cells designated in the four counties of the Bluebonnet Groundwater Conservation District. The data for row 30, column 96 were copied and transposed into the spreadsheet *Riley Road WW 1 Phase I-a Tables.xlsx*. Results for layers 1 and 2 (Chicot and Evangeline Aquifers) are summarized into four tables as follows:

- Table 1: Grid Parameters
- Table 2: HAGM Parameters
- Table 3: HAGM Results
- Table 4: Theis Parameters (modified from standard Phase I-a Tables as discussed below)

Table 1. Grid Parameters for Riley Road Water Well 1

County Name	Waller	Waller
County Code	237	237
Outcrop Layer	1	1
Layer	1	2
Row	30	30
Column	96	96
x-coordinate (GAM-ft)	6228100	6228100
y-coordinate (GAM-ft)	19339358	19339358
Surface Elevation (ft MSL)	267	267
Cell Top Elevation (ft MSL)	267	242
Cell Bottom Elevation (ft MSL)	242	-508
Cell Thickness (ft)	25	750
Clay Thickness (ft)	0	261
Clay Thickness (% of Cell Thickness)	0.00	34.80

Table 2. HAGM Parameters for Riley Road Water Well 1

County Name	Waller	Waller
County Code	237	237
Outcrop Layer	1	1
Layer	1	2
Row	30	30
Column	96	96
Hydraulic Conductivity (ft/day)	1.25	1.90
Transmissivity (gpd/ft)	234	10,659
Leakage (1/day)	3.20E-05	6.40E-06
Storativity (dimensionless)	1.54E-01	9.00E-03
Elastic Storativity (dimensionless)	2.03E-06	6.13E-05
Inelastic Storativity (dimensionless)	2.03E-04	6.13E-03

Table 3. HAGM Results for Riley Road Water Well 1

County Name	Waller	Waller
County Code	237	237
Outcrop Layer	1	1
Layer	1	2
Row	30	30
Column	96	96
Groundwater Elevation in 2009 (ft MSL)	248	239
Groundwater Elevation in 2080 (ft MSL)	216	203
DFC Drawdown (ft)	32	36
Artesian Head (ft)	-19	-3
Subsidence in 2009 (ft)	0.05	0.05
Subsidence in 2080 (ft)	0.14	0.14
Subsidence from 2009 to 2080 (ft)	0.09	0.09
Cell Pumping in 2009 (AF/yr)	0	50.69
Cell Pumping in 2080 (AF/yr)	0	35.37

Table 4. Theis Parameters for Riley Road Water Well 1

County Name	Waller
County Code	237
Outcrop Layer	1
Layer	4
Row	30
Column	96
Drawdown in Production Well at 100 gpm for 36 hours	19.54
Drawdown 1/2 mile from Production Well at 100 gpm for 36 hours	1.06
Drawdown 1/2 miles from Production Well at 100 gpm for 1 year	6.78
Drawdown-Pumping Ratio for Production Well for 36 hours	0.19540
Drawdown-Pumping Ratio for 1/2 mile from Production Well for 36 hours	0.01056
Drawdown-Pumping Ratio for 1/2 mile from Production Well for 1 yr	0.06777

Theis Equation Calculations

Groundwater production data from the permit applications were used along with the drawdown-pumping ratios contained in Table 4 to develop three estimates of drawdown for each well:

- Scenario 1: drawdown in the production well after 36-hours of pumping at three times the average annual pumping rate

- Scenario 2: drawdown in a well ½ mile from the production well after 36 hours of pumping at three times the annual pumping rate
- Scenario 3: drawdown in a well ½ mile from the production well after one year at the average pumping rate.

Results of these calculations are presented in Table 5.

Table 5. Theis Results for Riley Road Water Well 1

Production Summary	Value
Annual Permit Production Limit (gallons)	76,650,000
Annual Permit Production Limit (acre-feet)	235
Average Pumping Rate (gpm)	146
3X Average Pumping Rate (gpm)	438
Permit Capacity (gpm)	350

Evangeline		
Drawdown Calculations	Drawdown - Pumping Ratios	Calculated Draw down (ft)
Production Well - 36 hours (3X avg pumping)	0.19540	85.49
1/2 mile from Production Well - 36 hours (3X avg pumping)	0.01056	4.62
1/2 mile from Production Well - one year (avg pumping)	0.06777	9.88

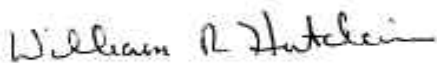
These data represent the best integrated data of the area from a regional perspective. The local-scale data will be developed as part of the Phase II investigation. This will include more site-specific information and data on aquifer depth, clay content, and aquifer parameters calculated from the 36-hour pumping test.

Recommendation

Based on the results of the Phase I-a report, the application should be approved, and the Phase II investigation should proceed to verify the Phase I-a estimates related to the aquifer (e.g. depth to bottom of Jasper Aquifer and clay content) and related to aquifer performance (e.g. drawdown at the end of the 36-hour pumping test and aquifer transmissivity).

I appreciate the opportunity to work with you on this effort. Please call me at 512-745-0599 or email me at billhutch@texasgw.com if you have any questions.

Sincerely,



William R. Hutchison, Ph.D., P.E., P.G.