

Control Number: 46336



Item Number: 30

Addendum StartPage: 0

**SOAH DOCKET NO. 473-17-2560.WS
PUC DOCKET NO. 46336**

**APPLICATION OF THE CITY OF
TOMBALL TO OBTAIN WATER AND
SEWER CERTIFICATES OF
CONVENIENCE AND NECESSITY IN
HARRIS AND MONTGOMERY
COUNTIES, TEXAS**

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§
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§
§

**BEFORE THE

STATE OFFICE OF

ADMINISTRATIVE HEARINGS**

**DIRECT TESTIMONY
OF
RICHARD WEATHERLY, P.E**

**ON BEHALF OF APPLICANT,
CITY OF TOMBALL**

MAY 12, 2017

**RECEIVED
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FILING CLERK**

EXHIBITS

Exhibit RW-1	Resume
Exhibit RW-2	Publisher's Affidavit
Exhibit RW-3	PUC Order No. 6
Exhibit RW-4	PUC Order No. 4
Exhibit RW-5	Map of Existing Water CCNs
Exhibit RW-6	Map of Existing Sewer CCNs
Exhibit RW-7	Map of Proposed Sewer CCN with Adjacent Quadvest CCN
Exhibit RW-8	Revised Water CCN Map
Exhibit RW-9	Revised Sewer CCN Map
Exhibit RW-10	Application for Water and Sewer CCN
Exhibit RW-11	Pressure Test Results
Exhibit RW-12	Pressure Test Results

**DIRECT TESTIMONY OF DAVID ESQUIVEL,
WITNESS FOR APPLICANT, CITY OF TOMBALL**

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, occupation and business address.

A. My name is Richard Weatherly, P.E. I am a registered professional engineer in the State of Texas. I am a project manager and Associate at Freese and Nichols, Inc. (FNI), and I specialize in water and wastewater planning. My business address is 11200 Broadway Street, Suite 2320, Pearland, Texas 77584.

Q. On whose behalf are you presenting testimony in this proceeding?

A. I am testifying on behalf of FNI, which is under contract with the City of Tomball ("the City") to prepare and submit the City's application for obtaining water and sewer certificates of convenience and necessity (Exhibit RW-10).

Q. Please outline your education and professional background.

A. I graduated from the University of Texas with a Bachelor of Science degree in civil engineering in December of 2002. I began working for FNI in January of 2003. Since December 2007, I have been a Licensed Professional Engineer in Texas, holding license number 100211.

Q. Please briefly describe your work experience.

A. From 2003 to present, I have worked for FNI focusing on water and wastewater master planning. I am an Associate at FNI and have developed more than 20 system models for water, wastewater, and reuse system, master planning, capital improvement plans, and water and wastewater facilities for clients across Texas. I have provided water and wastewater consulting engineering services in the following areas:

- Water, wastewater, and reuse master plans;
- Water and wastewater condition assessments;
- Water, wastewater, and reuse capacity studies;

- 1 • Water and wastewater rate studies;
- 2 • Water and wastewater impact fee studies;
- 3 • Water supply and wastewater treatment planning, including wholesale agreements;
- 4 • Water alternative capacity requirement requests to the Texas Commission on
- 5 Environmental Quality ("TCEQ");
- 6 • Water system variance requests to TCEQ;
- 7 • Water, wastewater, and reuse design, including permitting;
- 8 • Unidirectional flushing programs to alleviate water quality and water age issues;
- 9 • Municipal engineering; and,
- 10 • Petroleum water supply and reuse planning.

11 A copy of my professional resume is attached as Exhibit RW-1.

12

13 **II. PURPOSE OF TESTIMONY**

14 **Q. Please describe your professional relationship with the City of Tomball.**

15 A. FNI is under contract with the City of Tomball for the purposes of preparing the City's

16 Water and Sewer CCN Application, submitting it to the Public Utility Commission of Texas

17 ("PUC") for issuance and defending it in this proceeding. I am the project manager for this

18 project at FNI.

19

20 **Q. What is the purpose of your testimony in this proceeding?**

21 A. FNI has been retained by the City to provide testimony on the water and wastewater

22 engineering components of the City's Water and Sewer CCN Application. Specifically, with

23 input from City staff on existing facilities and the desired service area (the City of Tomball

24 Corporate Boundary ("Limits") and Extra Territorial Jurisdiction ("ETJ")), I prepared the

25 application and Appendices A, B, C, F, and H of the application or supervised their preparation

26 directly. I compiled information from the City in Appendices D, E, and G. The entire CCN

27 application was prepared by me or under my direct supervision. FNI also prepared the public

28 notice that was mailed by the City after approval of the notice and notification list by the PUC. I

1 am providing expert testimony on the City's ability to provide continuous and adequate water
2 and sewer service.

3
4 **Q. Have you previously testified before the PUC or TCEQ?**

5 **A.** No, I have never previously testified before the PUC or TCEQ.
6

7 **Q. What exhibits have you prepared in support of your testimony?**

8 **A.** My direct testimony and testimony exhibits RW-1 through RW-12 were prepared by me
9 or under my direction, supervision, or control and are true and correct to the best of my
10 knowledge.
11

12 **III. PUBLIC NOTICE**
13

14 **Q. Please describe the public notice you prepared for the City of Tomball in**
15 **accordance with PUC requirements.**

16 **A.** FNI utilized the PUC template for notifying neighboring utilities, cities and landowners,
17 adding specific information about the City's Water and Sewer CCN application as necessary.
18 We then provided the City with the notice forms and mapping to be included with the notice as
19 well as the addresses where notice forms should be mailed. The City completed affidavits
20 certifying that the required notices were mailed by first class mail. Notice was published in a
21 general circulation newspaper, the Tomball Potpourri, on December 7, 2016 and December 14,
22 2016. FNI submitted the publisher's affidavits to the PUC on January 10, 2017, which is
23 attached as Exhibit RW-2. PUC deemed the notification sufficient on January 25, 2017 in PUC
24 Order No. 6 attached as Exhibit RW-3.
25

26 **Q. Based on your preparation of the notice and coordination with the City and PUC,**
27 **has the City given notice consistent with Texas Water Code Section 13.246 and PUC rule,**
28 **Title 30 Texas Administrative Code ("TAC") Section 24.106?**

29 **A.** Yes. In accordance with 16 TAC § 24.106, the notice included all information listed in
30 the PUC rules and accompanying instructions for completing a CCN application. The following
31 statement, "Persons who wish to intervene or comment should file with the PUC at the following

address: Filing Clerk, Public Utility Commission of Texas, 1701 North Congress Avenue, P.O. Box 13326, Austin, TX 78711-3326, within thirty (30) days from the date of this publication or notice. A public hearing will be held only if a legally sufficient hearing request is received or if the Commission on its own motion requests a hearing. Only those individuals who submit a written hearing request or a written request to be notified if a hearing is set will receive notice if a hearing is scheduled" was included and the maps attached to the notice showed the requested areas. The PUC-approved notice was submitted to the following entities:

(A) cities, districts, and neighboring retail public utilities providing the same utility service whose corporate boundaries or certificated service area are located within two miles from the outer boundary of the requested area.

(B) the county judge of each county that is wholly or partially included in the requested area; and

(C) each groundwater conservation district that is wholly or partially included in the requested area.

Notice was also submitted to each owner of a tract of land that was at least 25 acres in size and was wholly or partially included in the requested area. Notice was mailed to the owner of the tract of land according to the most current tax appraisal rolls of the applicable central appraisal district at the time the PUC received the application for the CCN. The City completed affidavits specifying every person and entity to whom notice was provided and the date that the notice was provided. PUC Order No. 4, attached as Exhibit RW-4, approved Staff's request that Tomball be given additional time until January 13, 2017 to file the necessary proof of notice, which was filed with PUC on January 10, 2017.

IV. REQUESTED CCN BOUNDARIES

Q. What are the geographic limits of the requested water and sewer CCN service area?

A. The CCN application includes Tomball's city limits and ETJ, minus the following eleven existing water and sewer CCN areas and existing water district boundaries: Harris County Improvement District 17 (HCID #17), Harris Montgomery Water Special Utility District ("HMW SUD"), Quadvest LP, Aqua Texas, Inc., Hardin Store Road Municipal District (MUD)

1, Harris County MUD 368, Harris County MUD 416, Albury Manor Utility Company, HOE Water Supply Company ("HOE WSC"), Nerro Supply Investors, LLC, and Pinehurst Decker Prairie WSC. Attached Exhibits RW-5 and RW-6 are maps showing the existing water and sewer CCNs and existing water district boundaries that were excluded from the requested City of Tomball water and sewer CCN service areas, respectively.

Q. What area is included in the City's ETJ?

A. Based on geographic information systems (GIS) data provided by the City, the ETJ extends one half mile from the City limits except for areas where the existing City of Houston ETJ adjoins.

Q. How did you identify the existing water districts and CCNs?

A. I downloaded information about existing water districts and water CCNs from the PUC and TCEQ websites. The City also met with the HMW SUD, Aqua Texas, Inc., and HOE WSC in person to confirm that their areas were adjacent only, but not overlapping. The City attempted to contact Quadvest, L.P. as well, but the City did not hear back from them until Quadvest filed its protest alleging overlap of its CCN area by Tomball. There has been some confusion about an overlap with Quadvest's CCN boundaries, but none exists. GIS confirms that the City's requested CCN area is adjacent but does not actually overlap with Quadvest's CCN. The lines on the original PUC maps are thick, which may confuse what GIS otherwise clarifies. Attached Exhibit RW-7 is a map showing the area specifically.

Q. Did you coordinate with PUC staff on the requested area?

A. Yes, PUC staff Gregory Charles and Kristy Nguyen reviewed all drafts of the water and sewer CCN service area, GIS, files, and mapping.

Q. Did the City receive any requests by landowners to be excluded from the proposed CCN area?

A. Yes, the DeNina Family Partnership, LTD, requested that its approximately 71 acres be excluded from the requested CCN service area for both water and sewer.

1 Q. What modifications, if any, must be made to the City's requested area to reflect land
2 removed from the requested area because of a qualified landowner's election to exclude
3 some or all of the landowner's election to exclude some or all the landowner's property
4 pursuant to Texas Water Code sections 13.2451(b) and 13.246(h) and 16 TAC section
5 24.102(h)?

6 A. In this case, this provision only applies to the DeNina tract and its request to opt out of
7 the City's requested CCN areas. Since opting out is required by statute and the City had no
8 objection, I have modified the application maps to show the removal of the DeNina Family
9 Partnership, LTD property. The revised maps are attached hereto as Exhibits RW-8 and RW-9.

10
11 V. CCN APPLICATION
12

13 Q. Please describe the CCN application preparation process.

14 A. FNI downloaded the PUC application for a new CCN from the PUC website and the
15 accompanying agency checklists. The City of Tomball submitted the following data to FNI for
16 the preparation of and inclusion in the application: city limit and ETJ GIS data, infrastructure
17 master plan, comprehensive annual financial report, list of water and sewer operators, TCEQ
18 inspection reports, and water meter billing data. Information on the City of Tomball water
19 system and wastewater treatment plants (including permits) was downloaded from TCEQ
20 websites. Landowner information (including parcel size and address) was obtained from the
21 Harris County Appraisal District ("HCAD") and Montgomery County Appraisal District
22 ("MCAD"). FNI worked with the City of Tomball when completing the CCN application forms
23 and met with the City of Tomball multiple times in person and via conference call to discuss
24 questions about the application. The complete application package was submitted to the City for
25 review prior to submission to PUC. We also coordinated with PUC staff.

26
27 Q. What did you rely on to prepare the application?

28 A. I relied on data received from the City of Tomball, data from "HCAD", data from
29 "MCAD", data from PUC, and data from TCEQ to prepare the CCN application.
30

1 **Q. Did you have any assistance preparing the application?**

2 A. Yes, I consulted with FNI staff members who have experience with preparing CCN
3 applications as well as the PUC and City of Tomball staff.
4

5 **VI. WATER CCN**
6

7 **Q. Does the City possess the technical capability to provide continuous and adequate**
8 **water service?**

9 A. Yes, the City is currently able to provide continuous and adequate water service to its
10 existing customers. The City of Tomball currently serves 3,380 connections according to the
11 TCEQ Drinking Water Watch Database. As a public water utility, the City of Tomball must
12 comply with the rules and regulations for public water systems set forth by TCEQ in 30 TAC
13 Chapter 290. The City is required to meet TCEQ water supply requirements of having a total
14 groundwater pumping capacity of 0.6 gallons per minute (gpm) per connection or 3.35 million
15 gallons per day (MGD). The City of Tomball is in compliance with TCEQ regulations with their
16 existing groundwater pumping capacity of 6.36 MGD. The City is required to meet the TCEQ
17 total storage capacity requirement of 200 gallons per connection, or 0.78 million gallons (MG),
18 and elevated storage capacity requirement of 100 gallons per connection, or 0.39 MG. The City
19 of Tomball is in compliance with TCEQ regulations with their existing ground storage capacity
20 of 2.15 MG and existing elevated storage capacity of 1.25 MG. Since City is able to provide at
21 least 200 gallons per connection of elevated storage, they are required to meet the TCEQ service
22 pumping capacity requirement of 0.6 gpm per connection or 3.35 MGD. The City of Tomball is
23 in compliance with TCEQ regulations with their existing service pumping capacity of 7.49 MGD
24 with the largest pump out of service. Based on TCEQ requirements, the City of Tomball is able
25 to serve an additional 3,420 connections and be in compliance with TCEQ minimum
26 requirements. According to TCEQ, the City must be able to maintain a minimum pressure of 35
27 pounds per square inch (PSI) at all points in the distribution system. FNI conducted pressure
28 testing at eight different locations in the City of Tomball water distribution system from October
29 25 to November 22, 2016. Results in attached Exhibits RW-11 and 12 show that during the
30 pressure testing period, the minimum water system pressure was 55.6 psi, far exceeding the
31 TCEQ required minimum pressure of 35 psi.

1
2 Additionally, FNI is preparing a water master plan to assist the City with planning for
3 growth beyond those who would be served in the requested service area. The master plan study
4 will evaluate the projected population growth and commercial development in the requested
5 service area, develop and calibrate hydraulic models to simulate actual system conditions,
6 analyze the existing and future systems, and develop projects to serve future water customers in
7 the next 25 years. All proposed water projects will be designed to meet TCEQ minimum
8 requirements.

9
10 **Q. Does the City possess a TCEQ-approved public water system that is capable of**
11 **providing drinking water that meets the requirements of Texas Health & Safety Code**
12 **Chapter 341, Texas Water Code section 13.241(b)(1) and the rules of the Commission?**

13 A. Yes, the City is capable of providing safe drinking water. Actually, the City currently
14 holds the designation of “Superior Public Water System” which is above and beyond the
15 minimum requirements. The criteria for this designation are outlined in 30 TAC §290.47(a) –
16 APPENDIX A and summarized below:

- 17 • Minimum of two certified operators;
- 18 • Microbiological record shows no violations of drinking water standards within the
19 previous 24 months;
- 20 • Water quality complies with all primary water quality parameters and secondary
21 constituent levels listed in drinking water standards;
- 22 • System operation complies with minimum acceptable operating practices set forth in 30
23 TAC §290.46;
- 24 • System capacities exceeds minimum water supply capacity requirements set forth in 30
25 TAC §290.45;
- 26 • Minimum of two wells with enough capacity to provide average daily consumption with
27 the largest well out of service;
- 28 • Well-maintained water system and facilities present a pleasing appearance to the public.

Q. What is the effect of granting the requested water certificate on the applicant?

A. Granting the water CCN will allow the City to ensure that new infrastructure meets TCEQ and City design criteria. TCEQ and City design criteria are important for ensuring water customers receive adequate water pressure at demand locations, water quality meets primary and secondary drinking water standards, and there is a sufficient amount of water stored to supply water during emergency conditions (i.e. fire-fighting, water line break, or water supply facility offline).

Q. What is the effect of granting the requested water certificate on landowners in the requested service area?

A. Granting the water CCN will allow the City to provide safe and reliable water service that promotes economic development in the region and provide a basis for regionalization of nearby water systems. Regionalization allows participating entities to make the most efficient use of their resources (i.e. supply sources, water lines and facilities) to better serve water customers. The City's existing and future water system, including pumping and elevated storage, also provides fire flow to the service area. With the water CCN, the City will be able to continue a network of water lines and facilities throughout the water CCN area in an efficient manner to serve existing and future customers in the water CCN area on a regional basis.

Q. What is the effect of granting the requested water certificate on any retail public utility that provides the same service that is already serving any area within two miles of the boundary of the requested area?

A. Granting the water CCN will allow the City to potentially connect to other water systems to provide an additional source of water and possible emergency interconnection, which benefits the entire geographic area.

VII. SEWER CCN

Q. Does the City possess the technical capability to provide continuous and adequate sewer service?

A. Yes, the City is currently able to provide continuous and adequate sewer service to its existing customers. The City also has the current technical capability to provide continuous and adequate sewer service to customers in the requested water CCN area who have asked for service. The City has also retained FNI to prepare a wastewater master plan to assist the City with planning for future growth, projecting approximately the next 25 years. Specifically, the master plan study will evaluate the projected population growth and commercial development in Tomball, develop and calibrate a hydraulic model to simulate actual system conditions, analyze the existing and future system, and develop projects to serve future wastewater customers. All proposed wastewater projects will be designed to meet TCEQ minimum requirements.

Q. What are those TCEQ minimum requirements?

A. TCEQ's design criteria rules for sewer systems set out in 30 TAC §217.53 (l)(1) dictates that collection systems must be designed to maintain a minimum velocity of 2 feet per second. Maintaining these velocities discourages the settling of solids. Additionally, §217.53 (j)(3) states, "an owner must ensure that the collection system has capacity to prevent a surcharge." TCEQ design criteria §217.61(c) states that "the firm pumping capacity of a lift station must handle the peak flow." Firm pumping capacity is defined as the maximum pumping capacity with the largest pumping unit out of service. TCEQ rule §217.67(a) also states that force mains shall be sized to convey the lift station pumping capacity at a minimum velocity of 3 feet per second for duplex lift stations and 2 feet per second with one pump operating at a lift station with three or more pumps.

Q. Does the City possess a TCEQ approved public wastewater system that is capable of treating wastewater to meet TCEQ minimum requirements?

A. Yes, the City's sewer system is a TCEQ-approved public wastewater system that is capable of effectively treating the City's wastewater flows and meeting the aforementioned TCEQ minimum requirements. The City holds TCEQ discharge permits TPDES Permit No.

1 10616-001 (North Wastewater Treatment Plant or "WWTP") and TPDES Permit No. 10616-002
2 (South WWTP). The North WWTP currently has a "satisfactory" compliance history
3 classification by TCEQ while the South WWTP has a "high" classification. Additionally, the
4 City has requested FNI's services to perform a critical needs assessment of the City's WWTPs to
5 ensure continued TCEQ compliance.

6
7 **Q. Explain what is the function of the assessment?**

8 A. The assessment is a study to determine the existing condition and capacity of the City's
9 two WWTPs.

10
11 **Q. What were the findings of the assessment?**

12 A. The assessment identified specific replacement and rehabilitation items to ensure
13 continued compliance with the City's TPDES permits. The City subsequently awarded a
14 contract to FNI to design the recommended improvements, which include replacing or
15 refurbishing the following components at one or both of the WWTPs: centrifuge, conductors,
16 clarifier equipment, motor control centers, blowers, existing pumps, air lift pumps,
17 hydropneumatic tank, electrical enclosures and conduits, non-potable water system pumps,
18 actuator on effluent weir gate, and variable frequency drives. A new grit classifier, intake fan
19 and exhaust vent, scum beach spray nozzles, centrifuge building, sluice gates, and ton cylinder
20 scale are also under design at the City's WWTPs.

21
22 **Q. What is the effect of granting the requested sewer certificate on the applicant?**

23 A. Granting the sewer CCN will allow the City to ensure that new infrastructure meets the
24 aforementioned TCEQ and City requirements. Properly constructed and maintained
25 infrastructure is important for the quality of life of current sewer customers and new customers
26 in the requested sewer CCN area. Sewer lines, lift stations and wastewater treatment plants
27 would be sized to reduce the risk of surcharging and sanitary sewer overflows. Surcharging in a
28 wastewater system occurs when wastewater lines are completely full and are under pressure.

Q. What is the effect of granting the requested sewer certificates on landowners in the requested service area?

A. Granting the sewer CCN will allow the City to provide safe and reliable sewer service that promotes economic development in the region and provide a basis for regionalization of nearby wastewater systems. The City's conventional wastewater treatment plants are designed to be expandable to treat additional wastewater flows as the City grows and serves more customers.

Q. What is the effect of granting the requested sewer certificate on any retail public utility that provides the same service that is already serving any area within two miles of the boundary of the requested area?

A. Granting the sewer CCN will allow the City to potentially connect to other wastewater systems to provide additional wastewater treatment capabilities. Utilities serving a small number of customers often utilize prefabricated "package" wastewater treatment plants. While package plants are helpful in a short term, less than 0.5 MGD flow situation, they are not sustainable long term and do not serve the goal of regionalization. By making use of the City of Tomball's expandable conventional treatment facilities, growing utilities have another, more sustainable option, for treating wastewater flow.

Q. Does this complete your testimony?

A. Yes, however, I reserve the right to revise and/or expand my testimony as additional facts or evidence become available during the hearing process.

Richard Weatherly, P.E.**Water and Wastewater Master Planning | Associate**

Richard Weatherly is a firm Associate and a Project Manager in FNI's Water and Wastewater Master Planning Group. He has developed more than 30 system models for water and wastewater system master planning, CIPs and regional facility studies for clients across Texas. Richard's experience includes training of clients in the use of modeling software and the integration of GIS into water and wastewater models.

**Relevant Project Experience**

Woodlands Wastewater Master Plan | San Jacinto River Authority | Project Manager
System-Wide Wastewater Modeling | City of Houston | Project Manager
Water/Wastewater/Reuse Master Plan | City of College Station | Assistant Project Manager
Utility Master Plan | City of Alvin | Project Manager
Water/Wastewater Master Plan | City of Fulshear | Project Manager
Wastewater Master Plan | City of Manvel | Project Manager
Water/Wastewater Impact Fee Study | City of Pearland | Project Manager
Water/Wastewater Master Plan | City of Huntsville | Assistant Project Manager
Water System Model Development | City of Port Arthur | Project Manager
Wastewater Master Plan | City of Conroe | Project Manager
Wastewater Master Plan | City of Tomball | Project Manager
Water and Sewer CCN Application | City of Tomball | Project Manager
Water Model Development | City of Richmond | Project Manager
Water/Wastewater Modeling for Downtown Revitalization Plan | City of Port Arthur | Task Leader
Long-Range Water Plan | City of Liberty | Project Manager
Water Master Plan | City of Grand Prairie | Project Engineer
Water/Wastewater Impact Fee Study | City of Webster | Project Manager
Water Master Plan | City of Fort Worth | Project Engineer
Wastewater System Master Plan | City of The Colony | Project Engineer
Wastewater Model Development | City of Frisco | Project Engineer
Wastewater Impact Fee and Master Plan | City of Lancaster | Project Engineer
Water Master Plan | City of Frisco | Project Engineer
Water/Wastewater Master Plan | City of Irving | Project Engineer
Water/Wastewater Master Plan and Integrated CIP | City of Kerrville | Project Manager
Water/Wastewater Master Plan | City of Mansfield | Project Manager
Water/Wastewater Impact Fee Study | City of Grand Prairie | Project Engineer
Southside Water Study | City of College Station | Project Engineer
Comprehensive Plan - Water/Wastewater Modeling | City of Jersey Village | Task Leader
Water Distribution System Evaluation | City of Wichita Falls | Project Manager
Southeast Water/Wastewater System Evaluation | City of College Station | Project Manager

Experience

15 years

Education

B.S., Civil Engineering,
University of Texas at Austin

Registration

Professional Engineer,
Texas #100211

Memberships

Water Environment
Association of Texas (Past
President of Southeast
Region)

American Water Works
Association

Awards

Marvin C. Nichols Award

FNI Innovator of the Year

MEMORANDUM



Innovative approaches
Practical results
Outstanding service

4055 International Plaza, Suite 200 • Fort Worth, Texas 76109 • 817-735-7300 • fax 817-735-7492

www.freese.com

TO: Sam Chang, Public Utility Commission of Texas

CC: Greg Charles and Kristy Nguyen, Public Utility Commission of Texas
David Esquivel, P.E., City of Tomball

FROM: Richard Weatherly, P.E., and Kristen Burns, E.I.T., Freese and Nichols, Inc.

SUBJECT: Response to Order No. 3 on Docket No. 46336

DATE: January 9, 2017

PROJECT: Application of the City of Tomball to Obtain Water and Sewer CCNs in Harris and Montgomery Counties

RECEIVED
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PUBLIC UTILITY COMMISSION
FILING CLERK

On November 17, 2016, the Public Utility Commission (PUC) of Texas issued Order No. 3 deeming the City of Tomball's application to obtain new water and sewer Certificates of Convenience and Necessity (CCNs) in Harris and Montgomery Counties administratively complete. Order No. 3 also outlined notice requirements and a procedural schedule. Order No. 4, issued on January 5, 2017, extended the procedural schedule.

Freese and Nichols, Inc. (FNI) has assisted the City of Tomball in providing a response to Order No. 3. The response consists of the following items:

1. Affidavit evidencing proof of notice of neighboring systems, cities and landowners including a list of entities notified and a copy of the notification letter.
2. Publishers affidavit evidencing proof of notice of publication and copies of the proposed water and sewer CCN mapping that was available for viewing at Tomball City Hall.

We look forward to your review and please contact Richard Weatherly (713) 600-6824 or Kristen Burns (832) 456-4735 if you have any questions or comments.

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-2

COT0016

14

PUBLIC UTILITY COMMISSION



AFFIDAVIT OF NOTICE TO NEIGHBORING UTILITIES, CUSTOMERS AND AFFECTED PARTIES
DOCKET NO. 46336

STATE OF TEXAS
COUNTY OF Harris

has provided individual notice to the following entities:

_____	See Attached	_____	DATE: <u>11/29/2016</u>
_____	List of Entities	_____	_____
_____	Notified	_____	_____
_____		_____	_____

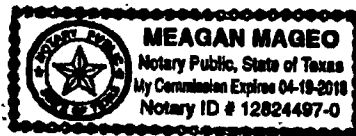
OATH

I, David Esquivel, PE, being duly sworn, file this form as
Public Works Director (indicate relationship to applicant, that is owner,
member or partnership, title of officer of corporation, or other authorized representative of applicant);
that in such capacity, I am qualified and authorized to file and verify such form, am personally familiar
with the notices given with this application, and have complied with all notice requirements in the
application and application acceptance letter; and that all such statements made and matters set forth
therein are true and correct.

David Esquivel
Applicant's Authorized Representative

If the applicant to this form is any person other than the sole owner, partner, officer of the applicant, or
its' attorney, a properly verified Power of Attorney must be enclosed.

Subscribed and sworn to before me this 29 day of November, 2016 to certify which
witness my hand and seal of office.



Meagan Mageo
Notary Public in and for the State of Texas

Meagan Mageo
Print or Type Name of Notary Public

Commission Expires 04-19-2018

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-2

Attachment for Affidavit of
Notice to Neighboring Utilities,
Customers and Affected Parties

City of Tomball

Docket No. 46336

Entities Notified
615 Willow Creek Development LTD
B J Services Company USA
Baker Hughes Oilfield Operations Inc
Bcde LTD
Brown Road Timber Resources LLC
Browning Diana Lynn
Cadwalder Anstrand Family
CC Telge Road LP
Cherry Ventures LP
Cunningham Interests II LTD
Denina Family Ptnr LTD
Exxon Mobil Corporation
First Baptist Church Of Tomball
Hendricks Randal A
JC Yang LLC
JM Assets LP
Klein ISD
Lang Carolyn
Maple Group LTD A Texas LTD PartnerSHip
Maple Residential LTD Et Al
Maritia LP
Matthews Richard C & Judy
Meuth Thomas L & Brenda J
Michel Family Irrevocable Trust
Michel Melvin E & Tracy A
Midkiff James J
Milmo Maxine I
Missouri Pacific Railroad Company
Mueller Allen H
North Harris County College
Par Real Estate Holdings LLC
Parquint 2920 LP
Raburn Resources LLC
Randall John W Jr & Tracy A
RMDMG LTD
Schultz Beverly
Schultz Sandra
Smith Family Trust
State Of Texas
Tcc Development Inc
Teppco Crude Pipeline LP
Theis A W
Theis A W Jr
Tomball 39 Partners LLP
Tomball Country Club

Entities Notified
Tomball Economic Dev Corp
Tomball Gun Club Inc
Tomball ISD
Tomball Texas Hospital Company LLC
Turrubiarres Jose
Valrin Ken & Betty
Wall Janice F
Wal-Mart Stores Inc
Wilkins Larry G
Wilson Kenneth R & Sonja K
Zion Road Properties LLC
Eiland, Nancy May
Huebner, Martha M-Trustee
Montgomery County
Moore, Robert & Thomas Moore
Neidigk Ranch LTD
Schlei, Marvin M & Rhonda Trustees
Stedham Pauline Michel
Walker, Michel G
Albury Manor Utility Company
Aqua Texas Inc
Arch Utility
Bilma PUD
Bridgestone MUD
Champs Water Company Inc
Charterwood MUD
City Of Houston
City Of Stagecoach
Coastal Water Authority
Cy Forest WSC
Cypress Creek Utility District
Cypress Forest PUD
Cypress Garden Mobile Home Sub
Cypress Hill MUD 1
Cypress Klein Utility District
Cypresswood Estates
Dowdell PUD
Encanto Real Utility District
Faulkey Gully MUD
Grant Road PUD
Gulf Coast Waste Disposal Authority
Hardin Store Road MUD 1
Harris County
Harris County FCD
Harris County ID 17

Entities Notified
Harris County MUD 1
Harris County MUD 18
Harris County MUD 24
Harris County MUD 273
Harris County MUD 280
Harris County MUD 281
Harris County MUD 282
Harris County MUD 286
Harris County MUD 360
Harris County MUD 364
Harris County MUD 365
Harris County MUD 367
Harris County MUD 368
Harris County MUD 383
Harris County MUD 387
Harris County MUD 388
Harris County MUD 389
Harris County MUD 391
Harris County MUD 401
Harris County MUD 416
Harris County MUD 468
Harris County MUD 480
Harris County MUD 530
Harris County MUD 531
Harris County WCID 114
Harris County WCID 119
Harris-Galveston Coastal Subsidence District
Harris-Montgomery Counties MUD 386
HMW SUD
HOE WSC
Inline Development Corporation
J&S Water Co LLC
Johnston Water Utility LLC
Kleinwood MUD
Lake Forest Utility District
Lincoln Square Water System
Lone Star GCD
Louetta North PUD
Malcomson Road UD
Monarch Utilities I LP
Montgomery County MUD 123
Montgomery County MUD 137
Montgomery County MUD 46
Montgomery County MUD 60
Montgomery County

Entities Notified
Nerro Supply Investors LLC
North Harris County Regional Water Authority
Northampton MUD
Northpointe WCID
Northwest Harris County MUD 10
Northwest Harris County MUD 15
Northwest Harris County MUD 19
Northwest Harris County MUD 30
Northwest Harris County MUD 32
Northwest Harris County MUD 5
Oakmont Public Utility District
Orchard Crossing
Pine Knob Estates Water
Pinehurst Decker Prairie WSC
Pinewood Community LP
Pitcairn WSC
Port Of Houston Authority
Quadvest LP
Rosehill Ranchettes Water System
San Jacinto River Authority
SC Utilities
South Central Water Company
Spring Creek Forest PUD
T&W Water Service
Tall Pines Utility Inc
Telge Pines Poa Inc
Timbercrest Partners LLC
Twan Development LLC
Utilities Investment Co Inc
Waynewood Place Civic Club Inc
Westwood Magnolia Parkway Improvement District
Windwood Water System Inc
Winterhaven HOA
Wood Trace MUD 1
Wood Trace MUD 2
Wood Trace MUD 3
Woodland Oaks Utility Co Inc
Woodmark Water LC
Northwest Water Systems Inc

Notice to Neighboring Systems, Cities and Landowners

**NOTICE OF APPLICATION TO OBTAIN CERTIFICATES OF CONVENIENCE
AND NECESSITY (CCN) FOR THE PROVISION OF WATER AND SEWER
SERVICE IN MONTGOMERY AND HARRIS COUNTIES, TEXAS**

To: «AddressBlock»

Date Mailed: 11/28/2016

The City of Tomball has submitted an application with the Public Utility Commission of Texas to obtain CCNs to provide water and sewer service in Montgomery and Harris Counties.

The proposed utility area is located within approximately 0 miles from downtown Tomball, Texas, and is generally bounded on the north by Hardin Store Road; on the east by 0.75 miles east of Hufsmith Kohrville Road; on the south by Boudreaux Road; and on the west by 2 miles west of SH 249.

The total area being requested includes approximately 11,830 acres for water, 12,320 acres for sewer, and serves 12,000 current customers.

See enclosed map of the proposed service area.

A request for a public hearing must be in writing. You must state (1) your name, mailing address, and daytime telephone number; (2) the applicant's name, application number or another recognizable reference to this application; (3) the statement, "I/we request a public hearing"; (4) a brief description of how you or the persons you represent, would be adversely affected by the granting of the application for a CCN; and (5) your proposed adjustment to the application or CCN which would satisfy your concerns and cause you to withdraw your request for a hearing.

Persons who wish to intervene or comment should write the:

Public Utility Commission of Texas
Central Records
1701 North Congress, P.O. Box 13326
Austin, TX 78711-3326

within thirty (30) days from the date of this publication or notice. A public hearing will be held only if a legally sufficient hearing request is received or if the Commission on its own motion requests a hearing. Only those individuals who submit a written hearing request or a written request to be notified if a hearing is set will receive notice if a hearing is scheduled.

If a public hearing is requested, the Commission will not issue the CCN and will forward the application to the State Office of Administrative Hearings (SOAH) for a hearing. If no settlement is reached and an evidentiary hearing is held, the SOAH will submit a recommendation to the Commission for final decision. If an evidentiary hearing is held, it

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-2

will be a legal proceeding similar to a civil trial in state district court.

If you are a landowner with a tract of land at least 25 acres or more, that is partially or wholly located within the proposed area, you may request to be excluded from the proposed area (or "opt out") by providing written notice to the Commission within (30) days from the date that notice was provided by the applicant. All requests to opt out of the requested service area must include a large scale map and a metes and bounds description of the tract of land.

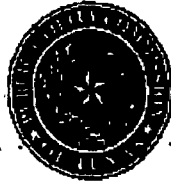
Persons who meet the requirements to opt out, and wish to request this option should file the required documents with the:

Public Utility Commission of Texas
Central Records
1701 North Congress, P.O. Box 13326
Austin, TX 78711-3326

A copy of the request to opt out of the proposed area must also be sent to the applicant. Staff may request additional information regarding your request.

Si desea informacion en Espanol, puede llamar al 1-512-936-7221

PUBLIC UTILITY COMMISSION



PUBLISHER'S AFFIDAVIT
DOCKET NO. 46336

STATE OF TEXAS
COUNTY OF Harris

Before me, the undersigned authority, on this day personally appeared

David G. Gorman

who being by me duly sworn, deposes and that (s)he is the

Sales Rep of the Tomball Potomac
(TITLE) (NAME OF NEWSPAPER)

that said newspaper is regularly published in Harris
(COUNTY/COUNTIES)

and generally circulated in Harris, Texas;
(COUNTY/COUNTIES)

and that the attached notice was published in said newspaper on the following dates, to wit:

12/7/16 + 12/14/16
(DATES)

David G. Gorman
(SIGNATURE OF NEWSPAPER REPRESENTATIVE)

Subscribed and sworn to before me this 14 day of December, 2016
to certify which witness my hand and seal of office.

[Signature]
Notary Public in and for the State of Texas

Kenia Lee
Print or Type Name of Notary Public

Commission Expires 12/14/20

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-2

PUBLIC UTILITY COMMISSION



PUBLISHER'S AFFIDAVIT
DOCKET NO. 46336

STATE OF TEXAS

COUNTY OF Montgomery

Before me, the undersigned authority, on this day personally appeared

Daniel Graham

who being by me duly sworn, deposes and that (s)he is the

Sales Rep of the Tarbell Petroleum
(TITLE) (NAME OF NEWSPAPER)

that said newspaper is regularly published in Montgomery
(COUNTY/COUNTIES)

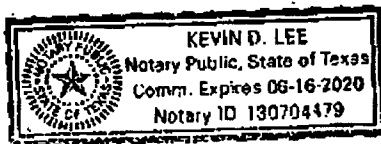
and generally circulated in Montgomery, Texas,
(COUNTY/COUNTIES)

and that the attached notice was published in said newspaper on the following dates, to wit:

12/7/16 + 12/14/16
(DATES)

Daniel Graham
(SIGNATURE OF NEWSPAPER REPRESENTATIVE)

Subscribed and sworn to before me this 14 day of December, 2016
to certify which witness my hand and seal of office.



Kevin Lee
Notary Public in and for the State of Texas

Kevin Lee
Print or Type Name of Notary Public

Commission Expires 6/16/20

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-2

ALWAYS OPPORTUNITY FOR ADVANCEMENT

ADVERTISE IT!

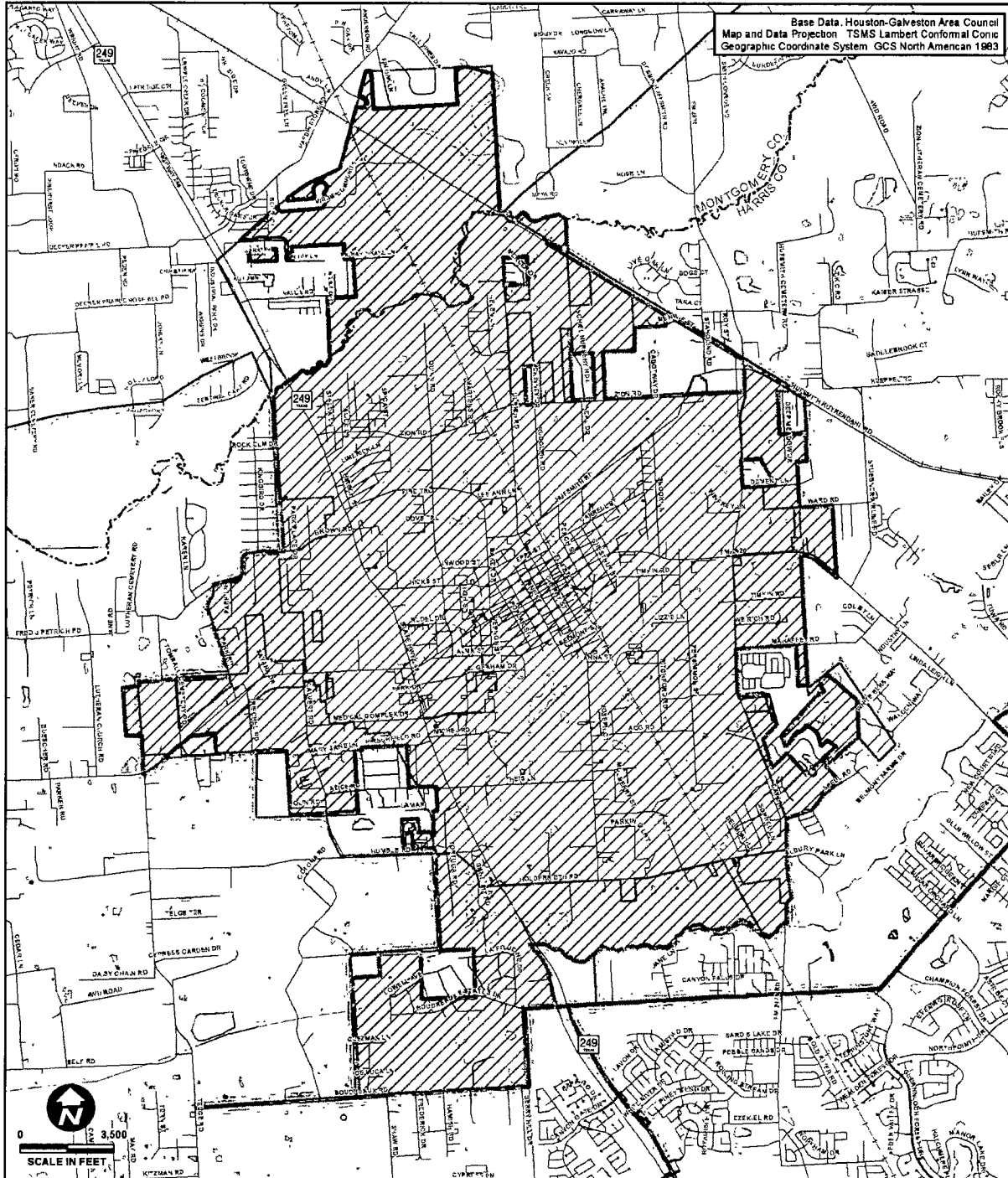
The winning bid is decided not by low price but by this standard:

The General has the right to reject any and all bids and to waive the
 filing informalities. CYP 12/7 12/14/16

southeasttexas.com

erly, P.E.

Ex. RW-2



DRAFT FIGURE 1 CITY OF TOMBALL PROPOSED WATER CCN

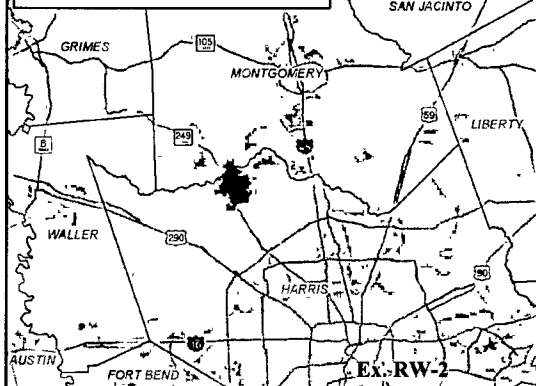
LEGEND

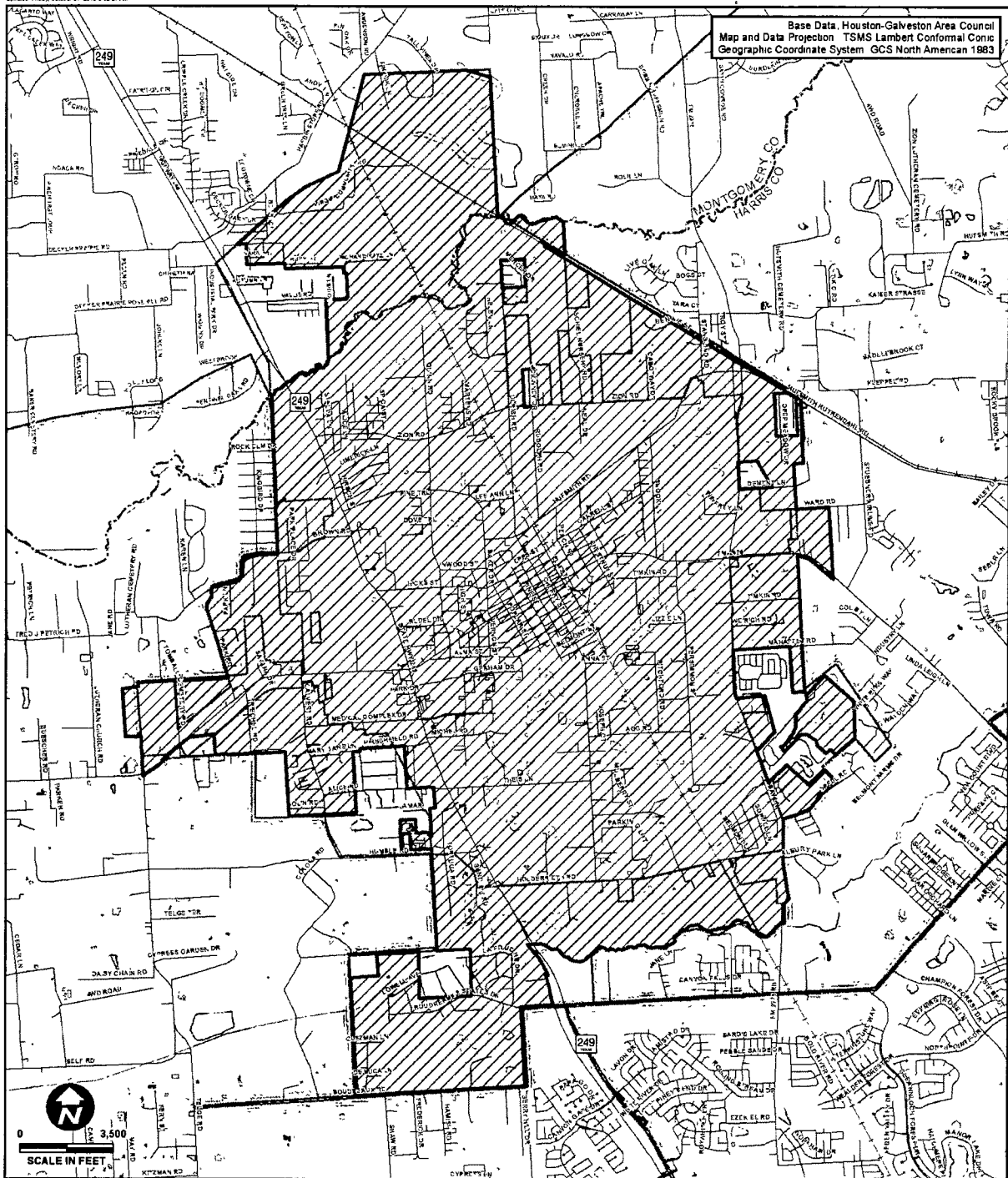
-  Proposed Water CCN
-  Tomball ETJ
-  Houston ETJ
-  County Line
-  Pond/Lake
-  Stream
-  Road
-  Railroad



FREESE & NICHOLS Company of Richard Weatherly, P.E.

PROPOSED WATER CCN AND VICINITY





DRAFT FIGURE 2
CITY OF TOMBALL
PROPOSED SEWER CCN

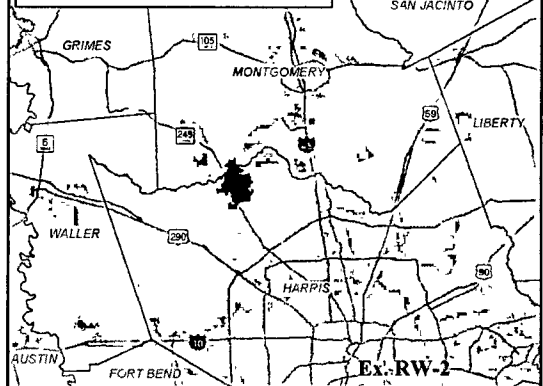
LEGEND

-  Proposed Sewer CCN  Pond/Lake
 Tomball ETJ  Stream
 Houston ETJ  Road
 County Line  Railroad



FREESE
NICHOLS Son of Richard Weatherly, P.E.

PROPOSED SEWER CCN AND VICINITY



Ex. RW-2

DOCKET NO. 46336

APPLICATION OF CITY OF
TOMBALL TO OBTAIN WATER AND
SEWER CERTIFICATES OF
CONVENIENCE AND NECESSITY IN
HARRIS AND MONTGOMERY
COUNTIES

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PUBLIC UTILITY COMMISSION

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2017 JAN 25 PM 12:13
PUBLIC UTILITY COMMISSION
OF TEXAS FILING CLERK

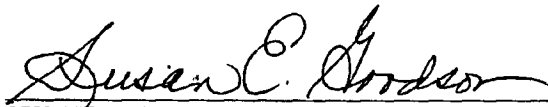
**ORDER NO. 6
DEEMING NOTICE SUFFICIENT**

This Order addresses Commission Staff's January 23, 2017 recommendations in this application. Commission Staff stated that on January 10, 2017, the City of Tomball submitted affidavits of notice; proving that the City provided mailed notice to neighboring systems, landowners, and cities on November 29, 2016 and published notice for two consecutive weeks on December 7 and 14, 2016. Commission Staff recommended that the notice of this application provided by Tomball be deemed sufficient. Commission Staff also requested that this application be referred to the State Office of Administrative Hearings (SOAH) for a hearing on the merits.

Consistent with Commission Staff's recommendation, Tomball's notice is deemed sufficient. Commission Staff's request for referral to SOAH will be addressed in a subsequent order.

SIGNED AT AUSTIN, TEXAS the 25⁴⁷ day of January 2017.

PUBLIC UTILITY COMMISSION OF TEXAS



SUSAN E. GOODSON
ADMINISTRATIVE LAW JUDGE

Q:\CADM\Docket Management\Water\CCN\46xxx\46336-6 notice suff.docx

DOCKET NO. 46336

RECEIVED

2017 JAN -5 PM 12:49

PUBLIC UTILITY COMMISSION
PUBLIC UTILITY COMMISSION
FILING CLERK
OF TEXAS

APPLICATION OF CITY OF
TOMBALL TO OBTAIN A WATER
AND SEWER CERTIFICATE OF
CONVENIENCE AND NECESSITY IN
HARRIS AND MONTGOMERY
COUNTIES

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**ORDER NO. 4
EXTENDING DEADLINES**

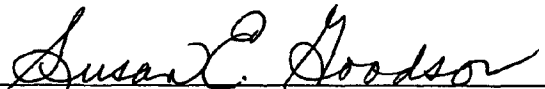
This Order addresses Commission Staff's December 28, 2016 request to give the City of Tomball additional time to file affidavits regarding the provision of and publication of notice. On November 17, 2016, Order No. 3 was issued requiring Tomball to provide notice of its application to affected entities and to publish notice in newspapers of general circulation in Harris and Montgomery Counties. A deadline of December 19, 2016 was established as the deadline for Tomball to file affidavits regarding the provision of and publication of notice of its application. To date, Tomball has made no such filing. Commission Staff requested Tomball be given until January 13, 2017 to file the necessary proof of notice.

Commission Staff's request is granted. On or before **January 13, 2017**, Tomball shall file affidavits regarding the provision of and publication of notice of its application.

On or before **January 27, 2017**, Commission Staff shall file additional comments regarding the sufficiency of notice provided, along with a proposed procedural schedule, if appropriate.

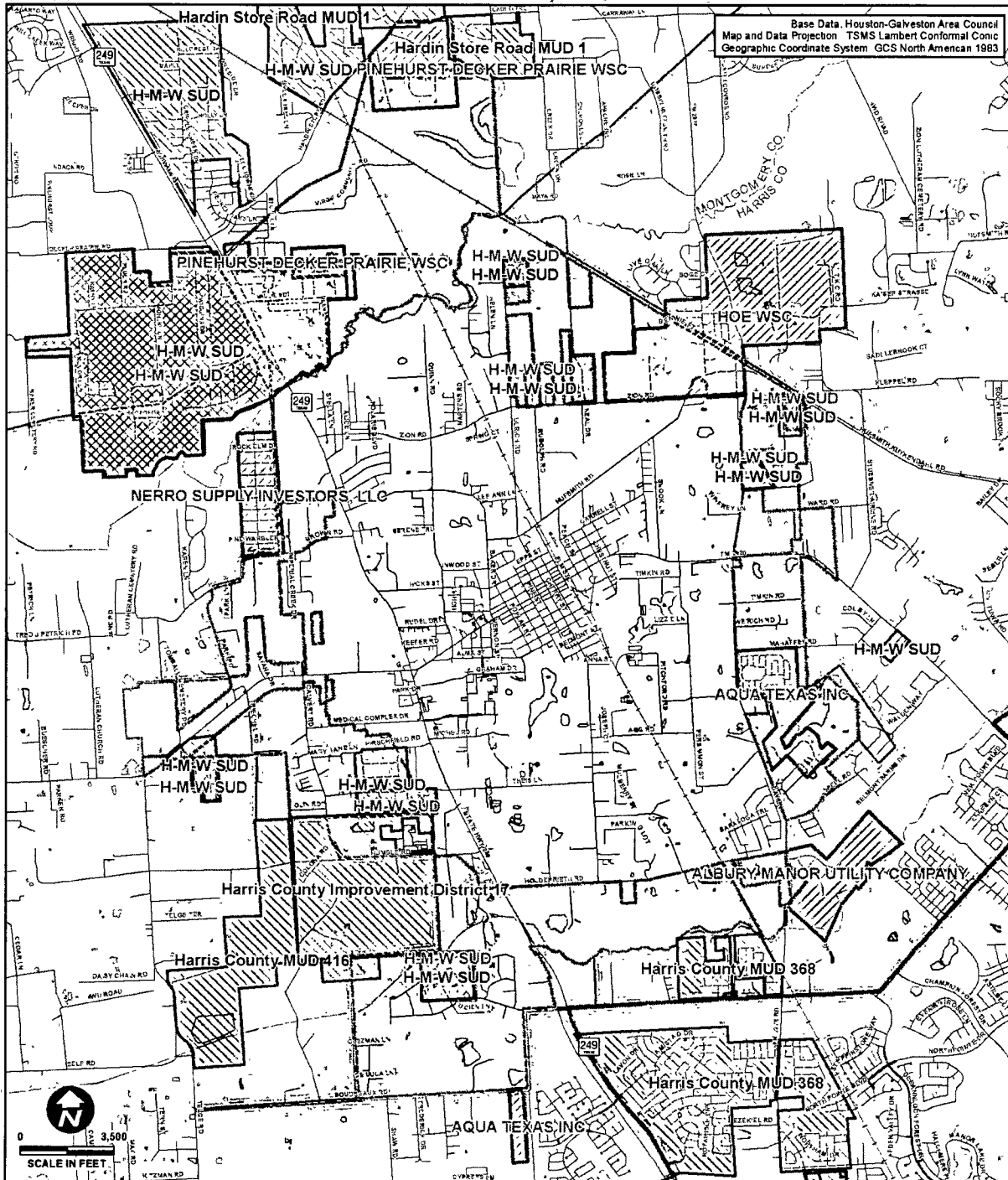
SIGNED AT AUSTIN, TEXAS the 5th day of January 2017.

PUBLIC UTILITY COMMISSION OF TEXAS



SUSAN E. GOODSON
ADMINISTRATIVE LAW JUDGE

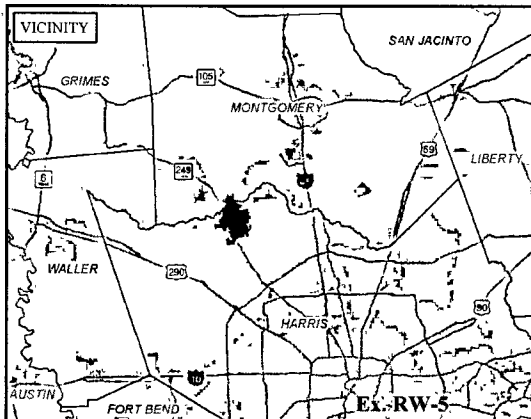
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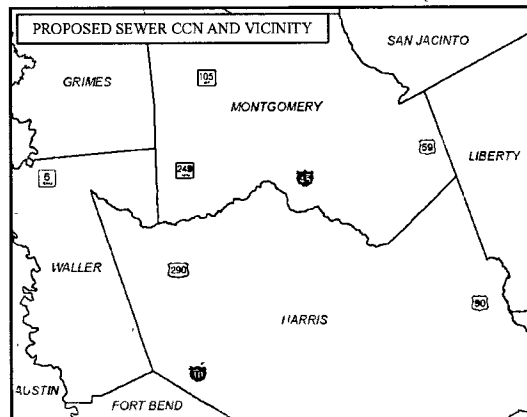
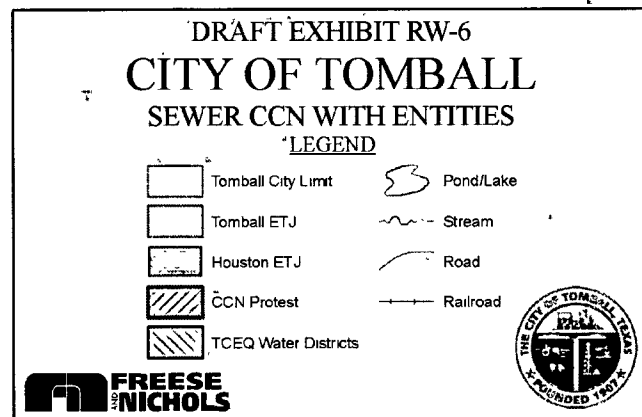
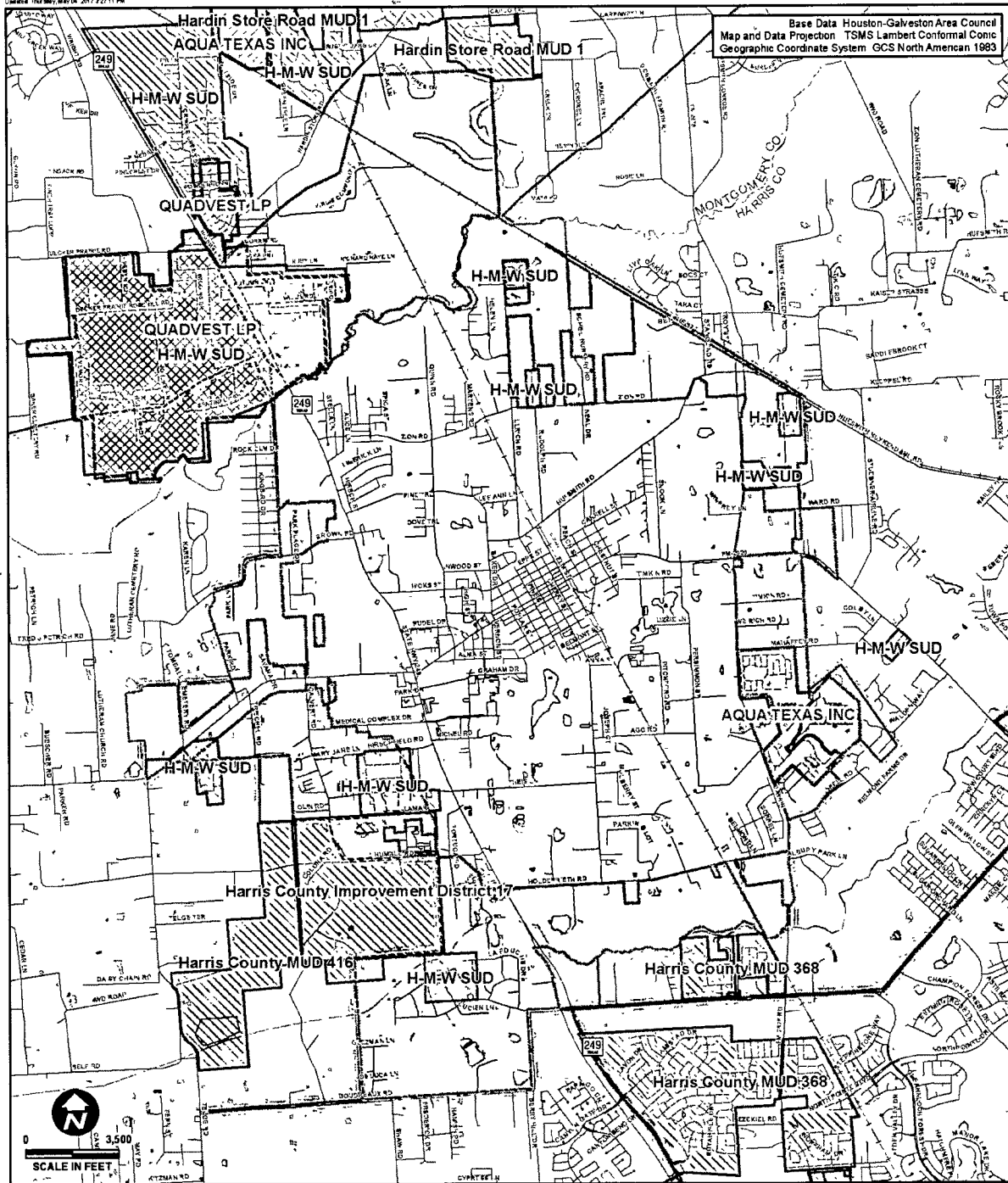


DRAFT EXHIBIT RW-5
CITY OF TOMBALL
 EXISTING WATER CCNS AND UTILITIES
LEGEND

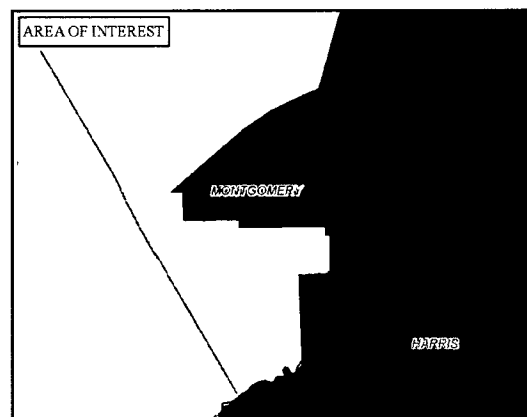
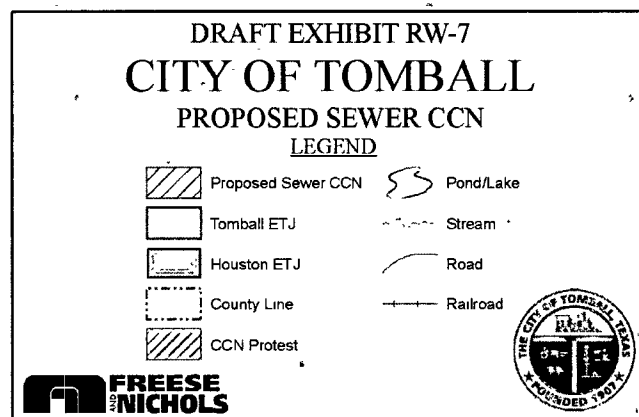
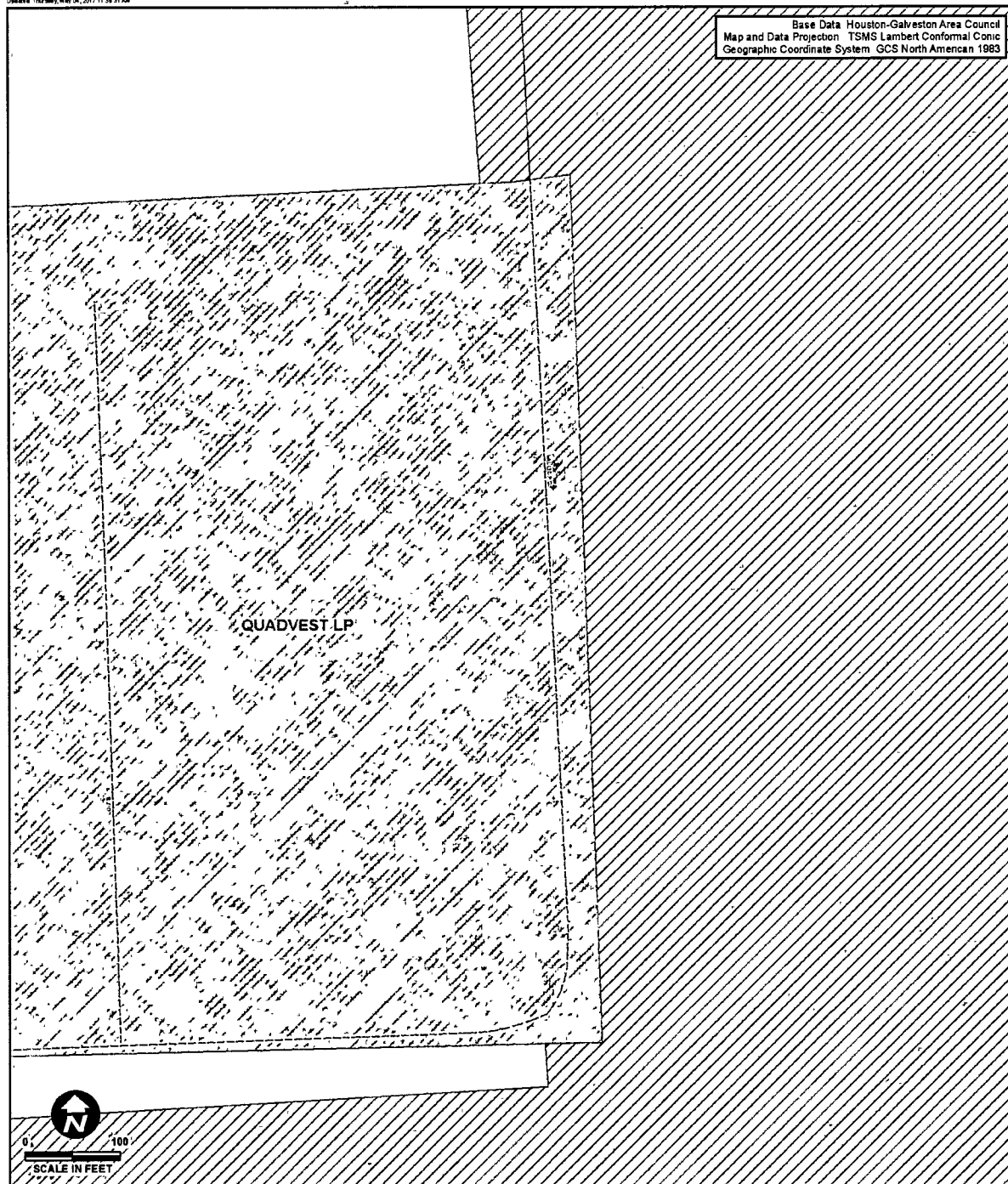
- | | | | |
|--|----------------------|--|-----------|
| | Tomball City Limit | | Pond/Lake |
| | Tomball ETJ | | Stream |
| | Houston ETJ | | Road |
| | Existing CCNs | | Railroad |
| | TCEQ Water Districts | | |

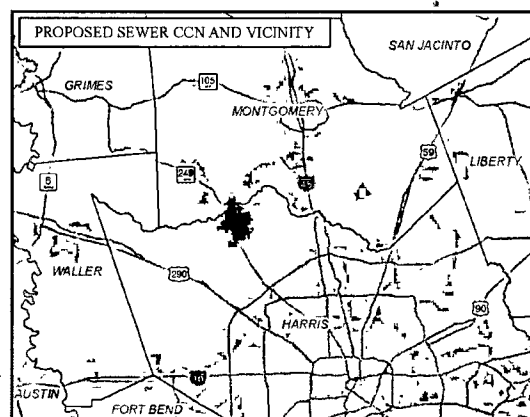
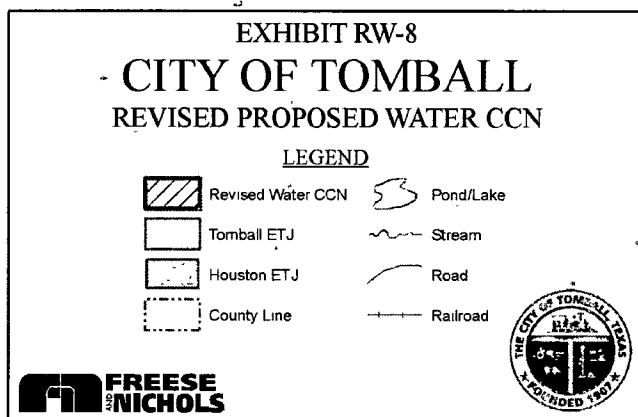
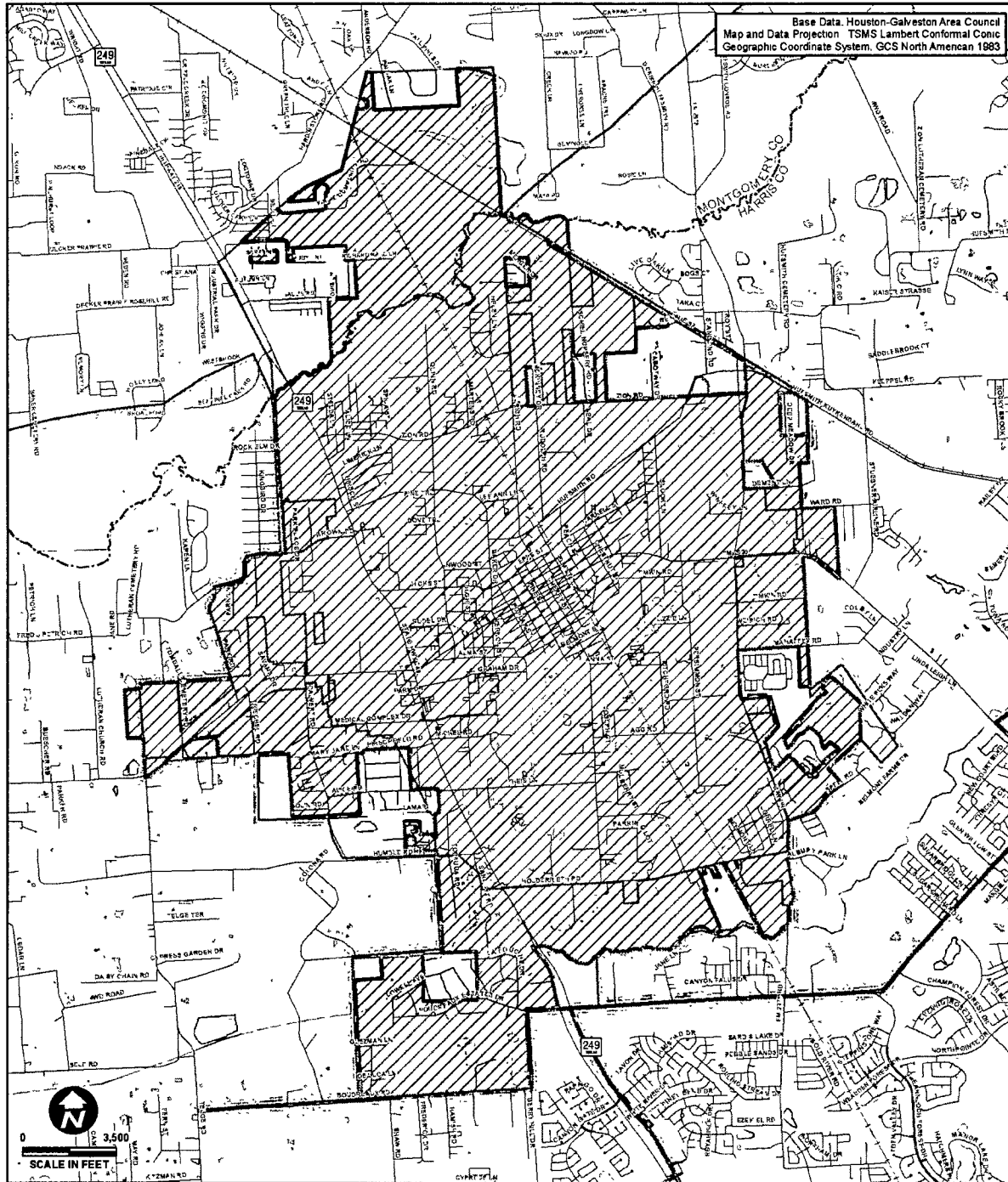
Freese and Nichols
 Son of Richard Weatherly, P.E.

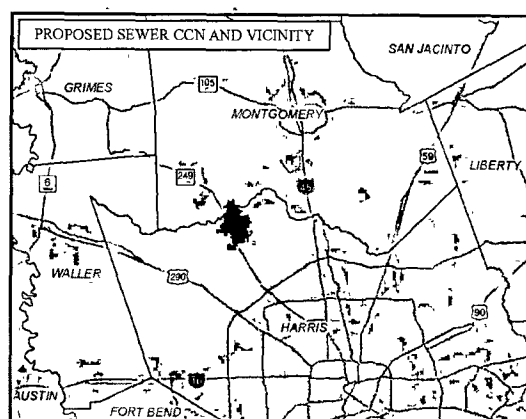
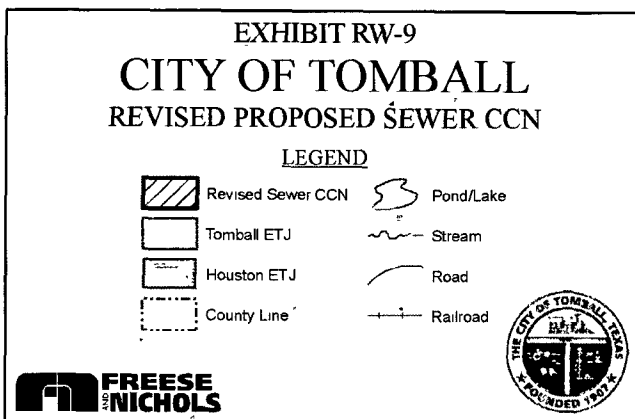
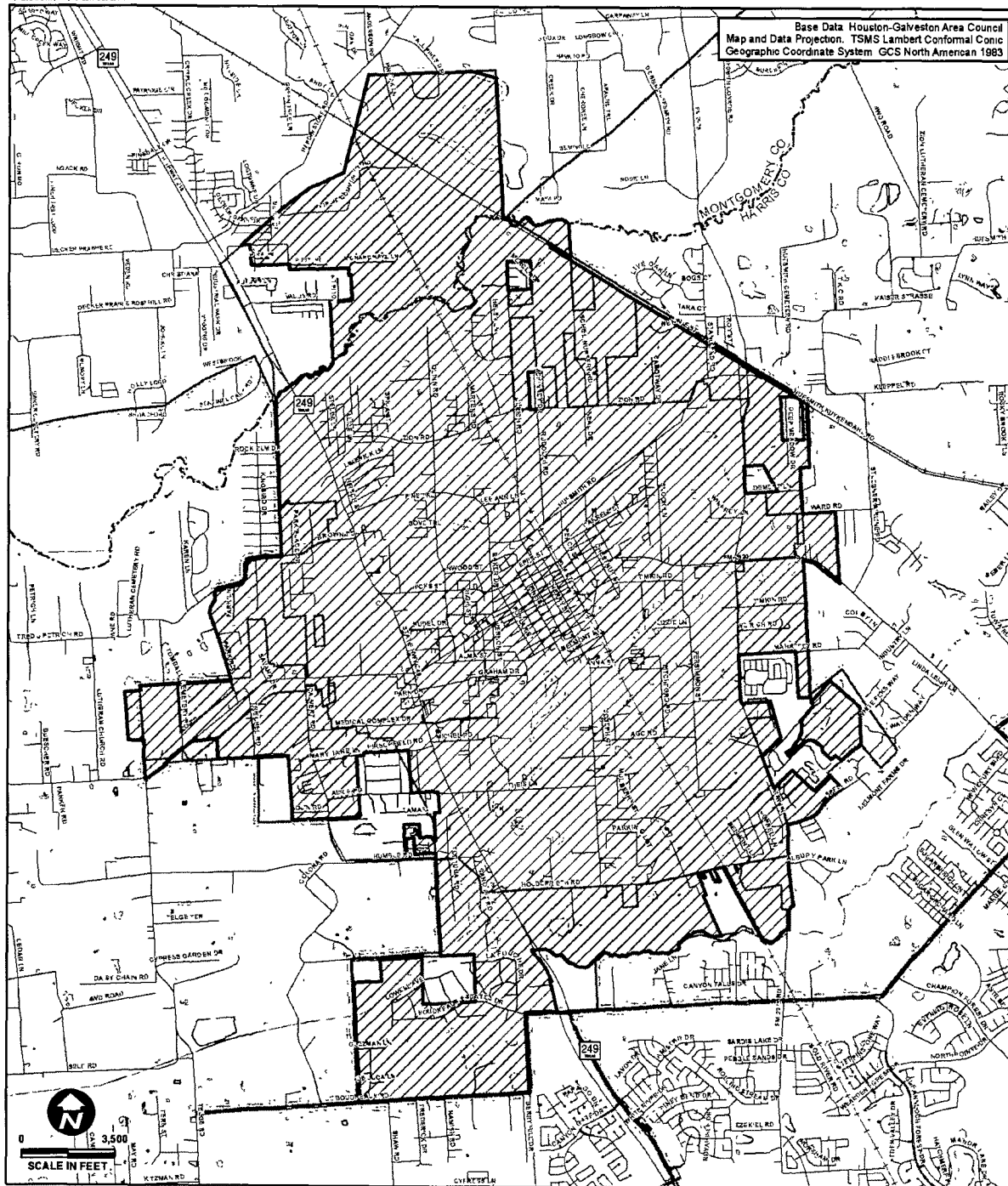


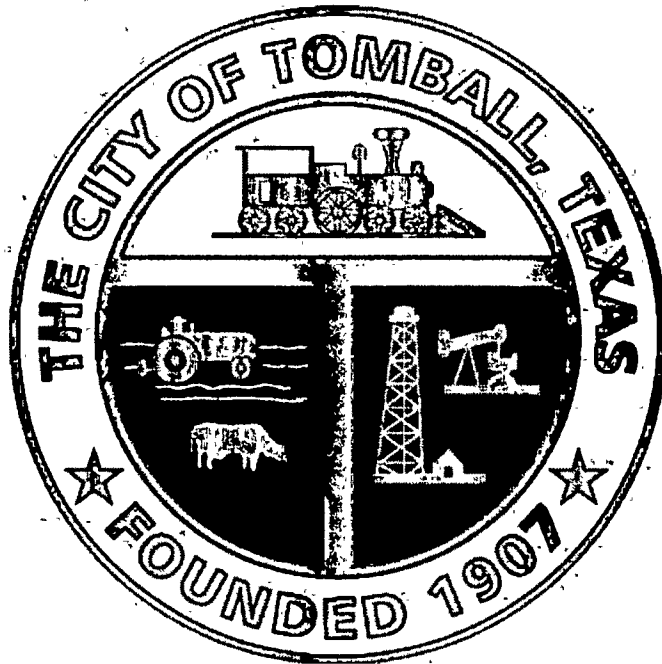


Base Data: Houston-Galveston Area Council
 Map and Data Projection: TSMG Lambert Conformal Conic
 Geographic Coordinate System: GCS North American 1983









City of Tomball

Application for Water and Sewer CCN

August 2016



OATH

STATE OF Texas
COUNTY OF Harris

I, David Esquivel, being duly sworn,
file this application as Director of Public Works (indicate relationship to Applicant,
that is, owner, member of partnership, title as officer of corporation, or other authorized
representative of Applicant); that, in such capacity, I am qualified and authorized to file
and verify such application, am personally familiar with the maps and financial information
filed with this application, and have complied with all the requirements contained in this
application; and, that all such statements made and matters set forth therein are true and
correct. I further state that the application is made in good faith and that this application
does not duplicate any filing presently before the Public Utility Commission of Texas.

I further represent that the application form has not been changed, altered or amended
from its original form.

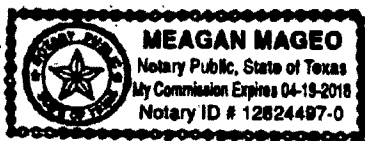
**I further represent that the Applicant will provide continuous and adequate
service to all customers and qualified applicants for service within its certificated
service area.**

David Esquivel
AFFIANT
(Utility's Authorized Representative)

If the Affiant to this form is any person other than the sole owner, partner, officer of the
Applicant, or its attorney, a properly verified Power of Attorney must be enclosed.

SUBSCRIBED AND SWORN TO BEFORE ME, a Notary Public in and for the State of Texas,
This day 25 of August 20 16

SEAL



Meagan Mageo
NOTARY PUBLIC IN AND FOR THE
STATE OF TEXAS

Meagan Mageo
PRINT OR TYPE NAME OF NOTARY

MY COMMISSION EXPIRES 04-19-2018



PURSUANT TO PUC CHAPTER 24, SUBSTANTIVE RULES APPLICABLE TO WATER AND SEWER SERVICE PROVIDERS, SUBCHAPTER G: CERTIFICATES OF CONVENIENCE AND NECESSITY

Application to Obtain or Amend a Water or Sewer Certificate of Convenience and Necessity (CCN)

Docket Number: _____

(this number will be assigned by the Public Utility Commission after your application is filed)

7 copies of the application, including the original, shall be filed with

Public Utility Commission of Texas
Attention: Filing Clerk
1701 N. Congress Avenue
P.O. Box 13326
Austin, Texas 78711-3326

If submitting digital map data, two copies of the portable electronic storage medium (such as CD or DVD) are required.

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Application to Obtain or Amend a Water or Sewer Certificate of Convenience and Necessity (CCN)

Purpose of Application

☐ Obtain	☐ New Water CCN	☐ New Sewer CCN
☐ Amend	☐ Water CCN# (s) _____	
☐ Amend	☐ Sewer CCN#(s) _____	

1. Applicant Information

Applicant

Utility name:

Certificate number:

Street address (City/ST/ZIP/Code):

Mailing address(City/ST/ZIP/Code):

Utility Phone Number and Fax:

Contact information

Please provide information about the person(s) to be contacted regarding this application. Indicate if this person is the owner, operator, engineer, attorney, accountant manager, or other title related to the applicant.

Name:

Title:

Mailing address:

Email:

Phone and Fax:

List all counties in which service is proposed:

A. Check the appropriate box and provide information regarding the legal status of the applicant:

- ☐ Investor Owned Utility ☐ Individual ☐ Partnership
- ☐ Home or Property Owners Association ☐ For-profit Corporation
- ☐ Non-profit, member-owned, member-controlled cooperative corporation
(Water Code Chapter 67, Water Supply or Sewer Service Corporation)
- ☐ Municipality ☐ District ☐ Other - Please explain:

B. If the applicant is a For-Profit business or corporation, please include the following information:

- i. A copy of the corporation's "Certification of Account Status" from the Texas State Comptroller of Public Accounts.
- ii. The corporation's charter number as recorded with the Office of the Texas Secretary of State: _____
- iii. A listing of all stockholders and their respective percentages of ownership.
- iv. A copy of the company's organizational chart, if available.
- v. A list of all directors and disclose the title of each individual.
- vi. A list of all affiliated organizations (if any) and explain the affiliate's business relationship with the applicant.

C. If the applicant is a Texas Water Code (TWC) Chapter 67 water supply or sewer service corporation please provide:

- i. A copy of the Articles of Incorporation and By-Laws.
- ii. The corporation's charter number as recorded with the Office of the Texas Secretary of State.
- iii. Identification of all board members including name, address, title, and telephone number.
- iv. A copy of the corporation's *Certificate of Account Status* from the Texas Comptroller of Public Accounts.

2. Location Information

- A. Are there people already living in the proposed area? ☐ Yes ☐ No
- If YES, are any currently receiving utility service? ☐ Yes ☐ No
- If YES, from WHOM? _____

B. Demonstrate the Need for Service by providing the following:

Have you received any requests for service in the requested service area?

☐ Yes ☐ No

If YES, provide the following:

- i. Describe the service area and circumstances driving the need for service in the requested area. Indicate the name(s) and address(es) of landowner(s), prospective landowner(s), tenant(s), or resident(s) that have requested service; and/or
- ii. Describe the economic need(s) for service in the requested area (i.e. plat approvals, recent annexation(s) or annexation request(s), building permits, septic tank permits, hospitals, etc.); and/or
- iii. Discuss in detail the environmental need(s) for service in the requested area (i.e. failing septic tanks in the requested area, fueling wells, etc.); and/or
- iv. Provide copies of any written application(s) or request(s) for service in the requested area; and/or
- v. Provide copies of any reports and/or market studies demonstrating existing or anticipated growth in the requested area.
- vi. If none of these items exist or are available, please justify the need for service in the proposed area in writing. See Appendix

Note: Failure to demonstrate a need for additional service in the proposed service area may result in the delay and /or possible denial of the application.

C. Is any portion of the proposed service area inside an incorporated city or district?

☐ Yes ☐ No

If YES, within the corporate limits of: _____

Provide a copy of any franchise, permit, or consent granted by the city or district. If not available please explain:

D. Is any portion of the proposed service area inside another utility's CCN area?

☐ Yes ☐ No

If YES, has the current CCN holder agreed to decertify the proposed area?

If NO, are you seeking dual or single certification of the area? Explain why decertification of the area is in the public interest:

3. Map Requirements

Attach the following hard copy maps with each copy of the application:

- A. A location map delineating the proposed service area with enough detail to accurately locate the proposed area within the county.
- B. A map showing only the proposed area by:
 - i. metes and bounds survey certified by a licensed state or register professional land surveyor; or
 - ii. projectable digital data with metadata (proposed areas should be in a single record and clearly labeled). Also, a data disk labeled with the applicant's name must be provided; or
 - iii. following verifiable natural and man-made landmarks; or
 - iv. a copy of recorded plat map with metes and bounds.
- C. A written description of the proposed service area.
- D. Provide separate and additional maps of the proposed area(s) to show the following:
 - i. all facilities, illustrating separately facilities for production, transmission, and distribution of the applicant's service(s); and
 - ii. any facilities, customers or area currently being served outside the applicant's certificated area(s).

Note: Failure to provide adequate mapping information may result in the delay or possible denial of your application.

Digital data submitted in a format other than ArcView shape file or Arc/Info E00 file may result in the delay or inability to review applicant's mapping information.

For information on obtaining a CCN base map or questions about sending digital map data, please visit the Water Utilities section of the PUC website for assistance.

See Appendix

4. New System Information or Utilities Requesting a CCN for the First Time

- A. Please provide the following information:
 - i. a list of public drinking water supply system(s) or sewer system(s) within a 2 mile radius of the proposed system; See Appendix
 - ii. copies of written requests seeking to obtain service from each of the public drinking water systems or sewer systems listed in a. 1 above or documentation that it is not economically feasible to obtain service from each entity;
 - iii. copies of written responses from each system or evidence that they did not reply; and
 - iv. for sewer utilities, documentation showing that you have obtained or applied for a wastewater discharge permit.
- B. Were your requests for service denied? ☐ Yes ☐ No See Appendix

- G. Date service is scheduled to commence: _____

- iii. Date of last TCEQ water and/or sewer system inspection(s): _____
- iv. Attach a copy of the most recent TCEQ water and/or sewer inspection report letter(s). See Appendix
- v. For each system deficiency listed in the TCEQ inspection report letter; attach a brief explanation listing the actions taken or being taken by the utility to correct the listed deficiencies, including the proposed completion dates.

TCEQ Water System			TCEQ Sewer System		
Other:			Other:		
Total Water			Total Sewer		

E. If this application is for a water CCN only, please explain how sewer service is or will be provided:

F. If this application is for a sewer CCN only, please explain how water service is or will be provided:

G. Effect of Granting a Certificate Amendment.

Explain in detail the effect of granting of a certificate or an amendment, including, but not limited to regionalization, compliance and economic effects on the following:

- i. the applicant,
- ii. any retail public utility of the same kind already serving the proximate area; and
- iii. any landowner(s) in the requested area.

H. Do you currently purchase or plan to purchase water or sewer treatment capacity from another source?

i. ☐ No, (skip the rest of this question and go to #6)

ii. ☐ Yes, Water

Purchased on a ☐ Regular ☐ Seasonal ☐ Emergency basis?

Water Source	% of Total Treatment

Water Source	% of Total Treatment

iii. ☐ Yes, Sewer treatment capacity

Purchased on a

☐ Regular

☐ Seasonal

☐ Emergency basis?

Sewer Source	% of Total Treatment

iv. Provide a signed and dated copy of the most current water or sewer treatment capacity purchase agreement or contract.

I. Ability to Provide Adequate Service.

Describe the ability of the applicant to provide adequate service, including meeting the standards of the commission, taking both of the following items into consideration:

- i. the current and projected density; and
- ii. the land use of the requested area.

J. Effect on the Land. Explain the effect on the land to be included in the certificated area.

6. Financial Information

A. For new water and/or sewer systems and for applicants with existing CCNs who are constructing a new stand-alone water and/or sewer system:

- i. the applicant must provide an analysis of all necessary costs for constructing, operating, and maintaining the system, and the source of that capital (such as a financial statement for the developing entity) for which the CCN is requested for at least the first five years. In addition, if service has been offered by an existing retail water service provider as stated in #4.A., but the applicant has determined that the cost of service as finally offered renders the project not economically feasible, the applicant must provide a comparison analysis of all necessary costs for acquiring and continuing to receive service from the existing system for the same period.
- ii. Attach projected profit and loss statements, cash flow worksheets, and balance sheets (projected five year financial plan worksheet is attached) for each of the first five years of operation. Income from rates

should correlate to the projected growth in connections, shown on the projected profit and loss statement.

- iii. Attach a proposed rate schedule or tariff. Describe the procedure for determining the rates and fees and indicate the date of last change, if applicable. Attach copies of any cost of service studies or rate analysis worksheets.

B. For existing water and/or sewer systems:

- i. Attach a profit and loss statement and current balance sheet for existing businesses (end of last fiscal year is acceptable). Describe sources and terms for borrowed capital such as loans, bonds, or notes (profit and loss and balance sheet worksheets are attached, if needed).
- ii. Attach a proposed rate schedule or tariff.

See Appendix

❖ **Note: An existing water and/or sewer system may be required to provide the information in 6.A.i. above during the technical review phase if necessary for staff to completely evaluate the application**

C. Identify any funds you are required to accumulate and restrict by lenders or capital providers.

D. In lieu of the information in #6.A. thru #6.C., you may provide information concerning loan approvals within the last three (3) years from lending institutions or agencies including the most recent financial audit of the applicant.

❖ **Note: Failure to provide adequate financial information may result in the delay or possible denial of your application.**

7. Notice Requirements

A. All proposed notice forms must be completed and submitted with the application. Do not mail or publish the notices until you receive written approval from the commission to do so. See Appendix

B. The commission cannot grant a CCN until proper notice of the application has been given. Commission rules do not allow a waiver of notice requirements for CCN applicants.

C. It is the applicant's responsibility to ensure that proper notice is given to all entities that are required to receive notice.

D. Recommended notice forms for publication, neighboring cities and systems, landowners with 25 acres or more, and customers are included with this application for use in preparing proposed notices. (Notice forms are available in Spanish upon request.)

E. After reviewing and, if necessary, modifying the proposed notice, the commission will send the notice to the applicant after the application is accepted for filing along with instructions for publication and/or mailing. Please review the notice carefully before providing the notice.

F. Notice For Publication:

The applicant shall publish the notice in a newspaper with general circulation in the county(ies) where a CCN is being requested. The notice must be published once each week for two consecutive weeks beginning with the week after the notice is received from the commission. Proof of publication in the form of a publisher's affidavit shall be submitted to the commission within 30 days of the last publication date. The affidavit shall state with specificity each county in which the newspaper is of general circulation.

G. Notice To Neighboring Utilities:

- i. List all neighboring retail public utilities and cities providing the same utility service within the following vicinities of the applicant's proposed certificate area.
- ii. For applications for the issuance of a NEW CCN, the applicant must mail the notice with a copy of the proposed CCN map to all cities and neighboring retail public utilities providing the same utility service within five (5) miles of the requested service area.

- iii. For applications for the AMENDMENT of a CCN, the applicant must mail the notice with a copy of the proposed CCN map to all cities and neighboring retail public utilities providing the same utility service within two (2) miles of the requested service area.

H. Notice to Customers:

Investor Owned Utilities (IOUs) that are currently providing service without a CCN must provide individual mailed notice to all current customers. The notice must contain the current rates, the date those rates were instituted and any other information required in the application.

- I. The commission may require the applicant to deliver notice to other affected persons or agencies.

Do not publish or send copies of the proposed notices to anyone at the time you submit the application to the commission. Wait until you receive written authorization to do so. Authorization occurs after the commission has reviewed the notices for completeness, and your application has been accepted for filing. Once the application is accepted for filing, you will receive written authorization to provide notice. Please check the notices for accuracy before providing them to the public. It is the applicant's burden to ensure that correct and accurate notice is provided.

APPENDIX A

Location Information

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-10

2. Location Information

B. Demonstrate the Need for Service.

The City of Tomball currently provides water and sewer service to customers in the proposed CCN. The proposed CCN will allow the City to continue serving existing customers and facilitate orderly growth and environmentally safe and consistent water and sewer services.

APPENDIX B

Map Requirements

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-10

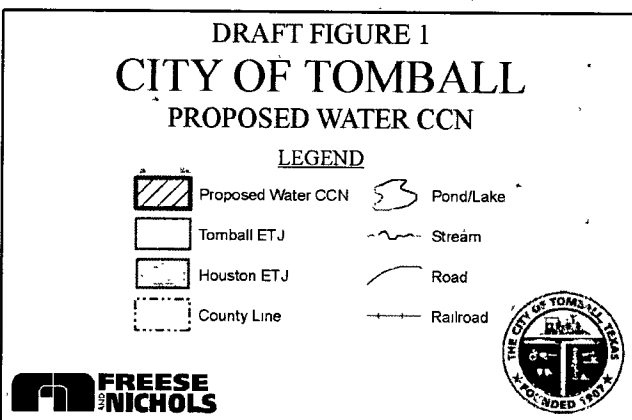
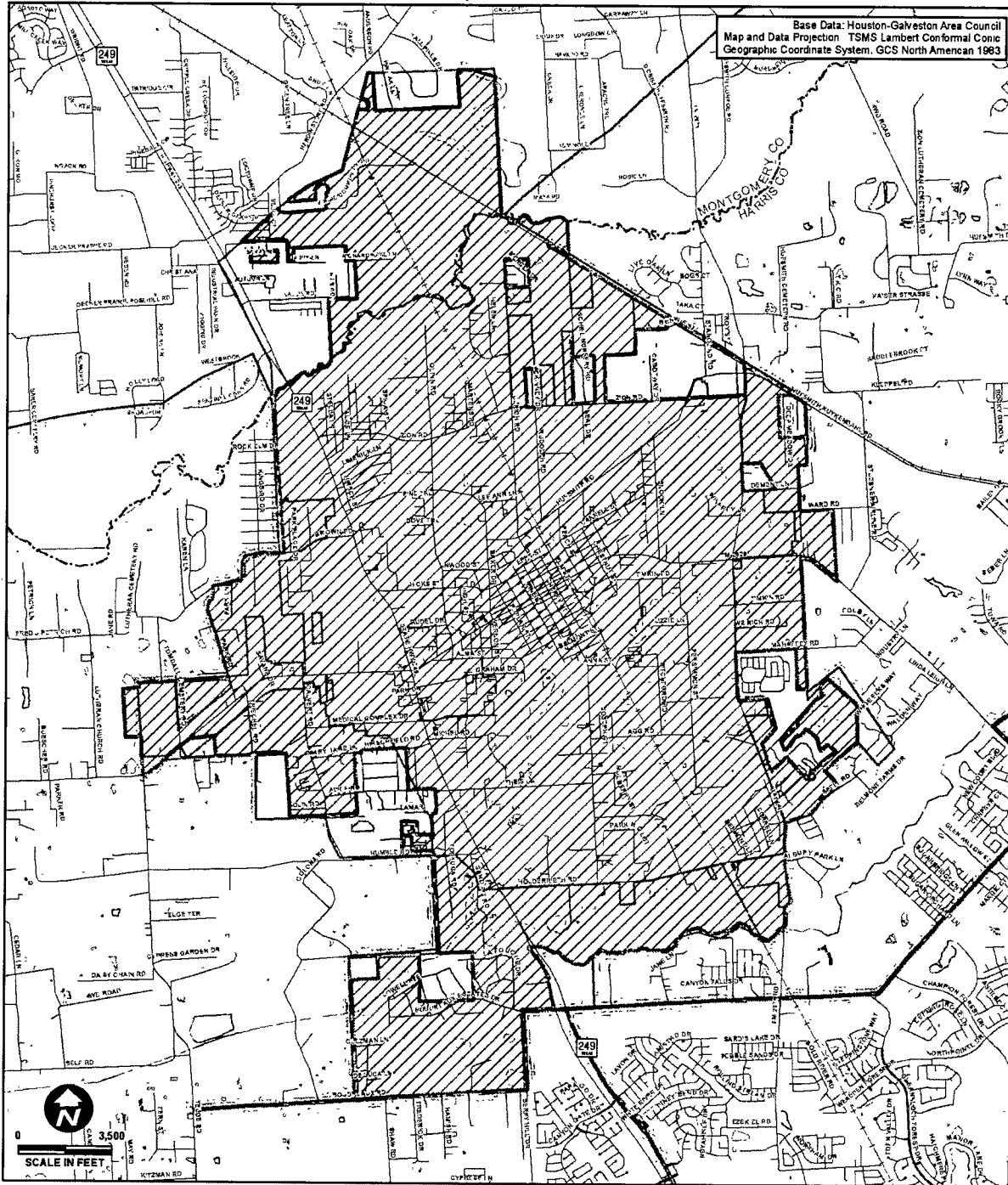
3. Map Requirements

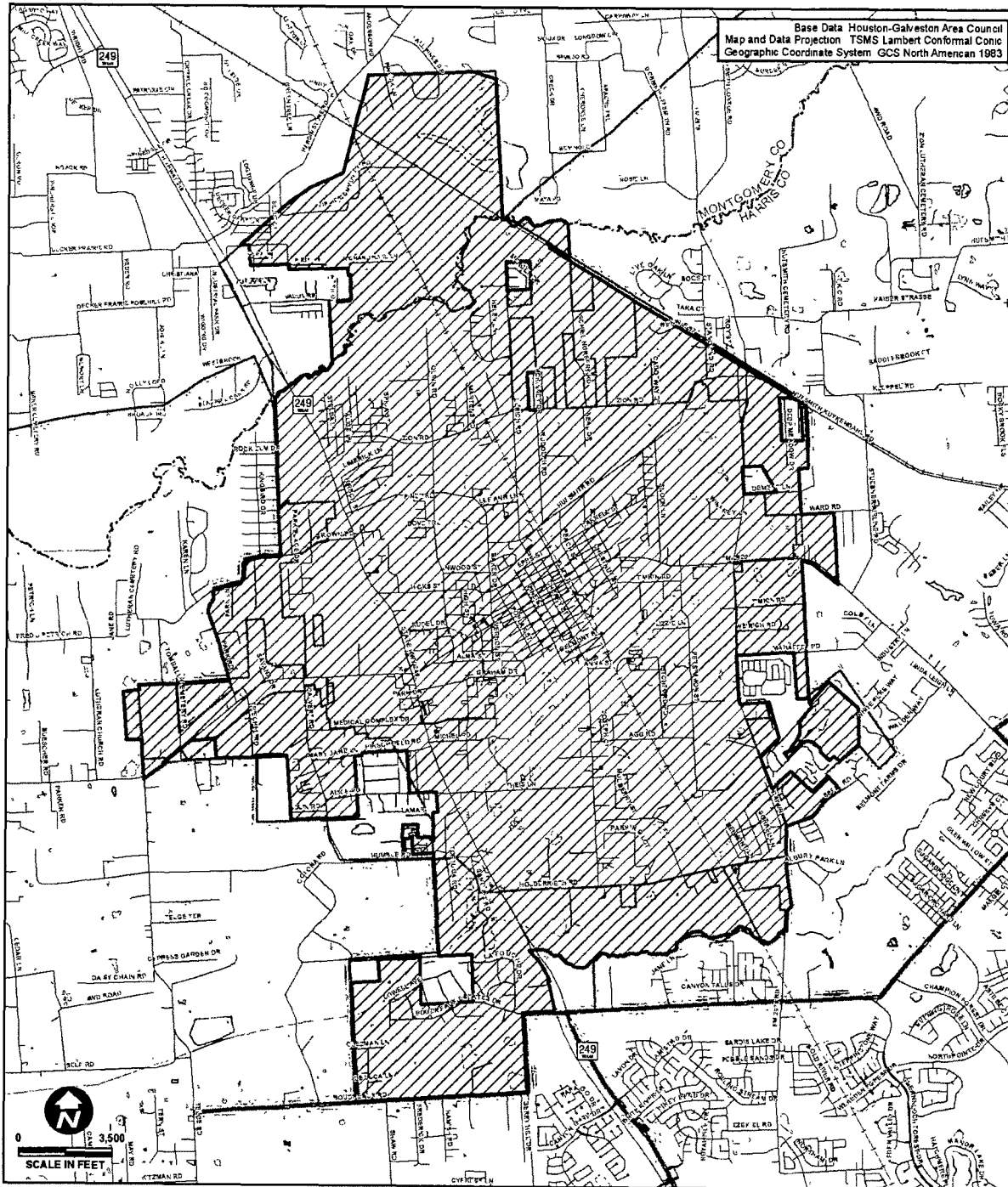
C. A written description of the proposed service area.

The proposed utility service areas will consist of the City limits and the extra-territorial jurisdiction (ETJ), excluding existing CCNs. Shown on Figures 1 and 2.

The proposed utility service area is located approximately 0 miles from downtown Tomball, Texas, and is generally bounded on the north by Hardin Store Road; on the east by Stuebner-Airline Road; on the south by Boudreaux Road; and on the west by Lutheran Church Road.

The proposed utility service areas span two counties, Harris and Montgomery. The proposed water service area is approximately 12,100 acres and the proposed sewer service area is approximately 12,800 acres.

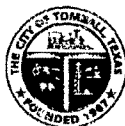




DRAFT FIGURE 2
CITY OF TOMBALL
PROPOSED SEWER CCN

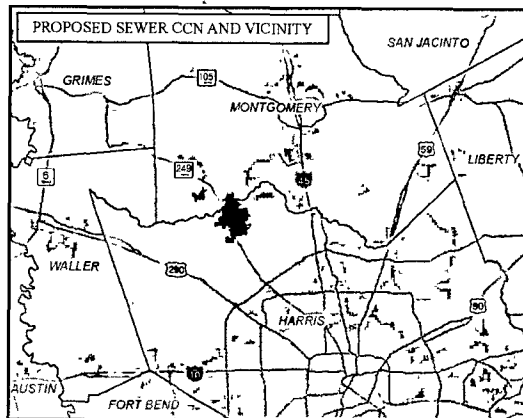
LEGEND

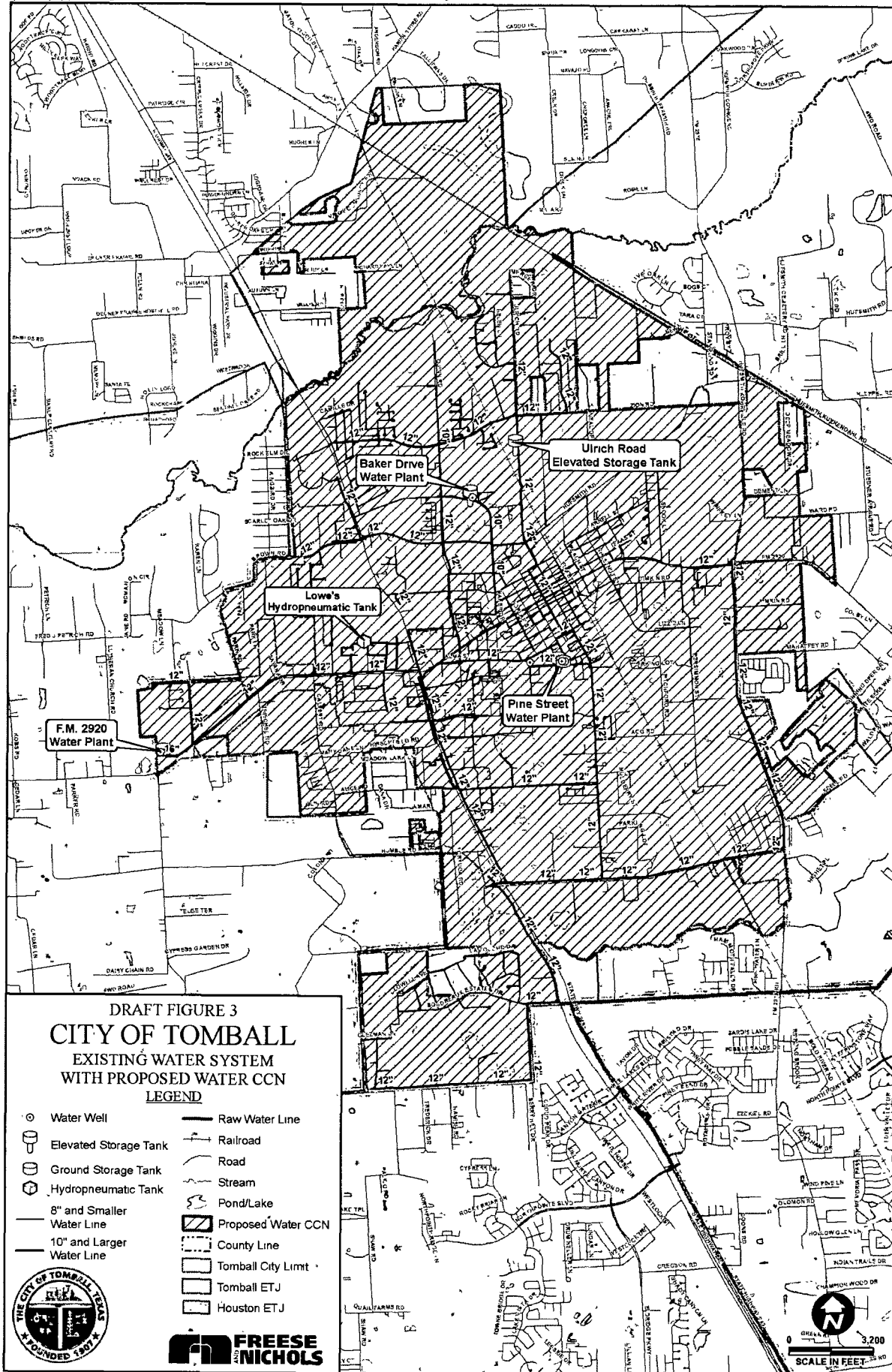
-  Proposed Sewer CCN  Pond/Lake
 Tomball ETJ  Stream
 Houston ETJ  Road
 County Line  Railroad

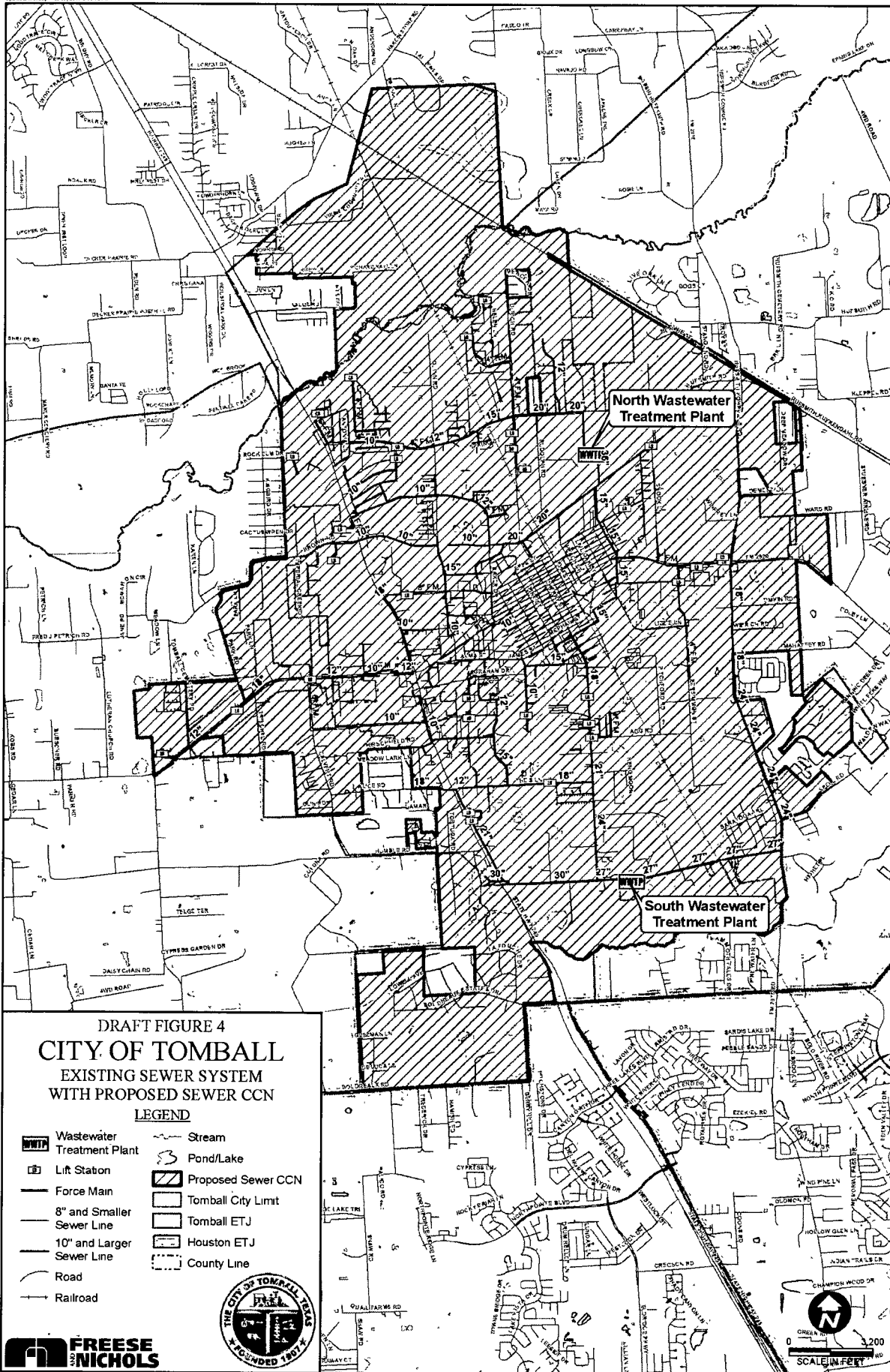


Direct Testimony of Richard Weatherly, P.E.

COT0055

**Ex. RW-10**





APPENDIX C

Information on Utility Requesting CCN for the First Time

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-10

4. Utilities Requesting a CCN for the First Time

A. Please provide the following information:

- i. a list of public drinking water system(s) or sewer system(s) within a 2 mile radius of the proposed system;

List of Water Utility Systems within 2 Mile Radius of Proposed CCN

Utility Name	Water CCN Number
CITY OF TOMBALL	-
ALBURY MANOR UTILITY COMPANY	11507
INLINE DEVELOPMENT CORPORATION	12946
AQUA TEXAS INC	13203
HOE WSC	12756
QUADVEST LP	11612
H-M-W SUD	10342
PINEHURST DECKER PRAIRIE WSC	11768
CHAMPS WATER COMPANY INC	10972
JOHNSTON WATER UTILITY LLC	12788
LINCOLN SQUARE WATER SYSTEM	12938
NORTHWEST WATER SYSTEMS INC	10336
PINEWOOD COMMUNITY LP	13158
QUADVEST INC	11612
CYPRESS GARDENS HOMES	12999
MONARCH UTILITIES I LP	12983

List of Sewer Utility Systems within 2 Mile Radius of Proposed CCN

Utility Name	Sewer CCN Number
CITY OF TOMBALL	-
INLINE DEVELOPMENT CORPORATION	20879
QUADVEST LP	20952
AQUA TEXAS INC	21065
H-M-W SUD	20734
CHAMPS WATER COMPANY INC	20385
PINEWOOD COMMUNITY LP	21030
SOUTH CENTRAL WATER COMPANY	20964
MONARCH UTILITIES I L P	20899
TWAN DEVELOPMENT LLC	21069

ii. copies of written requests seeking to obtain service from each of the public drinking water systems or sewer systems listed in a. 1 above or documentation that it is not economically feasible to obtain service from each entity;

The City of Tomball currently provides water and sewer service to customers in the proposed CCN. The City of Tomball requests to maintain water and sewer service.

iii. copies of written responses from each system or evidence that they did not reply; and

Not applicable.

iv. for sewer utilities, documentation showing that you have obtained or applied for a wastewater discharge permit.

The City of Tomball currently maintains the following TCEQ discharge permits: WQ10616-001 and WQ10616-002.

B. Were you requests for service denied?

No. The City of Tomball currently provides water and sewer service to customers in the proposed CCN. The City of Tomball requests to maintain water and sewer service.

APPENDIX D

City of Tomball

Infrastructure Master Plan

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-10

ORDINANCE NO. 2014-12

AN ORDINANCE OF THE CITY OF TOMBALL, TEXAS, ADOPTING THE CITY'S LAND USE ASSUMPTIONS AND CAPITAL IMPROVEMENTS PLAN; CONTAINING OTHER PROVISIONS RELATING TO THE SUBJECT; AND PROVIDING FOR SEVERABILITY.

* * * * *

WHEREAS, the City Council of the City of Tomball, Texas (the "City") has reviewed and evaluated its land use assumptions and capital improvements plan in the time and manner required by law; and

WHEREAS, the City Council has employed qualified professionals to prepare its land use assumptions and capital improvements plan for the City, and each was considered by the City's advisory committee, and such assumptions and plan were filed with the City, along with the advisory committee's comments; and

WHEREAS, the City Council has called, given notice of, and conducted a public hearing on such assumptions and plan in the time and manner required by law; and

WHEREAS, the City Council now desires to adopt such land use assumptions and capital improvement plan in accordance with said Chapter 395, Texas Local Government Code; now, therefore,

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF TOMBALL, TEXAS:

Section 1. **Findings.** The facts and matters set forth in the preamble of this Ordinance are hereby found to be true and correct.

Section 2. **Land Use Assumptions and Capital Improvements Plan.** The land use assumptions and capital improvements plan included in the "Infrastructure Master Plan &

Capital Recovery Fee Determination 2012 to 2022,” prepared by CLR, Inc., Gunda Corporation, and Rydan & Associates LLC same being attached hereto as Exhibit “A” and made a part hereof for all purposes, are hereby in all things approved and adopted.

Section 5. **Severability Clause.** In the event any clause phrase, provision, sentence, or part of this Ordinance or the application of the same to any person or circumstances shall for any reason be adjudged invalid or held unconstitutional by a court of competent jurisdiction, it shall not affect, impair, or invalidate this Ordinance as a whole or any part or provision hereof other than the part declared to be invalid or unconstitutional; and the City Council of the City of Tomball, declares that it would have passed each and every part of the same notwithstanding the omission of any such part thus declared to be invalid or unconstitutional, whether there be one or more parts.

Section 6. This Ordinance shall become effective fourteen days after the final reading and adoption of this Ordinance when the caption hereof is caused to be published once in the official newspaper of the City, by the City Secretary, as required by law. The City Secretary is directed to publish the caption of this Ordinance in the City’s official newspaper within 14 days after the passage of the ordinance.

FIRST READING:

READ, PASSED AND APPROVED AS SET OUT BELOW AT THE MEETING OF
THE CITY COUNCIL OF THE CITY OF TOMBALL HELD ON THE 19TH DAY OF MAY
2014.

COUNCILMAN HUDGENS	<u>AYE</u>
COUNCILMAN STOLL	<u>AYE</u>
COUNCILMAN DEGGS	<u>AYE</u>
COUNCILMAN TOWNSEND	<u>AYE</u>
COUNCILMAN KLEIN QUINN	<u>AYE</u>

SECOND READING:

READ, PASSED AND APPROVED AS SET OUT BELOW AT THE MEETING OF
THE CITY COUNCIL OF THE CITY OF TOMBALL HELD ON THE 2ND DAY OF JUNE
2014.

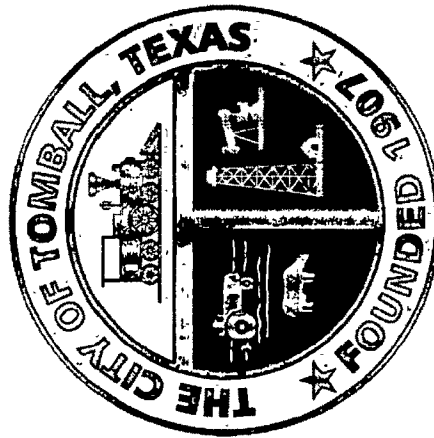
COUNCILMAN HUDGENS	<u>AYE</u>
COUNCILMAN STOLL	<u>AYE</u>
COUNCILMAN DEGGES,	<u>AYE</u>
COUNCILMAN TOWNSEND	<u>AYE</u>
COUNCILMAN KLEIN QUINN	<u>AYE</u>

Gretchen Fagan
Gretchen Fagan, Mayor

ATTEST:

Doris Speer
Doris Speer, City Secretary

CITY OF TOMBALL
INFRASTRUCTURE MASTER PLAN
&
CAPITAL RECOVERY FEE DETERMINATION
2012 TO 2022



Prepared By

CLR, Inc.
Engineering * Surveying * GIS
19530 F.M. 362 Waller, Texas 77484



RYDAN & ASSOCIATES LLC
ENGINEERING & FLOODPLAIN MANAGEMENT
HAZARD MITIGATION & GRANT ADMINISTRATION

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-10

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19530 F.M. 362

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Office 713-462-0993

Report Editor

Water System

Wastewater System

Parks, Trails, & Sidewalks

Capital Recovery Fee Calculations

Kyle A. Bertrand, PE
TX PE No. 84575
Date



Traffic & Transportation

TBPE Firm Registration No.: F-3531

6161 Savoy, Suite 550

Houston, Texas 77036

Office 713-541-3530

Lokesh Vijayagopal, P.E., PTOE
TX PE No. 108937
Date

RYDAN & ASSOCIATES LLC

ENGINEERING & FLOODPLAIN MANAGEMENT

HAZARD MITIGATION & GRANT ADMINISTRATION

TBPE Firm Registration No.: 12901

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Cypress, Texas 77429

Office 281-970-8085

Population Projections

Land Use Projections

Drainage System

John A. Laser, PE, CFM
TX PE No. 86970
Date

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-10

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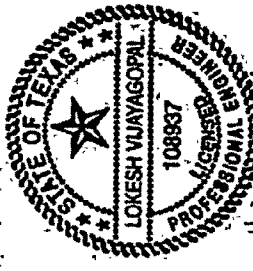
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Kyle A. Bertrand, PE

TX PE No. 84575

4/10/14

Date



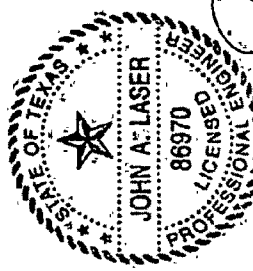
[Signature]

Lokesh Vijayagopal, P.E., PTOE

TX PE No. 108937

4/8/2014

Date



[Signature]

John A. Laser, PE, CFM

TX PE No. 86970

4/10/14

Date

Direct Testimony of Richard Weatherly, P.E.

Ex. RW-10

**INFRASTRUCTURE MASTER PLAN
&
CAPITAL RECOVERY FEE DETERMINATION
2012 TO 2022**

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1.0 Executive Summary

The City of Tomball Infrastructure Master Plan & Capital Recovery Fee Determination for 2012 to 2022 is an update to the Infrastructure Master Plan & Impact Fee Determination for 2007 to 2012 as required by Texas Local Government Code. The City of Tomball retained CLR, Inc. to update this capital improvements plan using generally accepted engineering and planning practices to meet State requirements, review and evaluate its current land use assumptions, and update its capital improvements plan.

Infrastructure improvements necessary to accommodate projected growth/development within the City of Tomball jurisdiction were identified based on population and land use projections. Improvements were identified for the City's Potable Water System, Wastewater System, Drainage System, Traffic & Transportation Network, Parks, Trails & Sidewalks, and its Natural Gas Distribution System.

The 2012 estimated population of the City of Tomball is 11,121, plus an additional 3,241 in the extra-territorial jurisdiction (ETJ), for a total estimated population of 14,362. The 2022 population forecast for the City of Tomball is 13,156, plus an additional 3,834 in the extra-territorial jurisdiction (ETJ), for a total estimated population of 16,990. Population from 2012 to 2022 is projected to increase 18.3%, at an annualized growth rate of 1.695%.

The City of Tomball is approximately 12 square miles (7,670 acres) in area with an additional 8.6 square miles (5,515 acres) included in Tomball's ETJ. Projected 2022 increases in developed acreage were calculated to be 440 acres (27.9% increase) in residential land, and 227 acres (18.9% increase) in commercial land.

City of Tomball 2012 Potable Water System currently is estimated at 6,654 connections, with Average Daily Demand (ADD) usage of 2.26 MGD. Water Production ADD is projected at 2.67 MGD with 7,950 connections for end of FY 2022, based on current 5-Year average water production of 335.9 gpd per Living Unit Equivalent (LUE). This report projects a 1,000 gpm production Water Plant, at a probable cost of \$3.83M, and an increase in the water distribution network, amounting to probable cost of \$12.31M, will be necessary to meet future demands.

City of Tomball 2012 Wastewater System currently is estimated at 6,654 connections, with Average Daily Flow (ADF) usage of 1.507 MGD. Wastewater Collection ADF is projected at 1.684 MGD for 7,950 connections for end of FY 2022, based on current 5-Year average wastewater collection of 211.9 gpd per LUE. This report projects four lift stations and an increase in the wastewater collection network, amounting to a probable cost of \$14.45M, will be necessary to meet future demands. TCEQ criteria may require the design of a 0.35 MGD expansion to the south wastewater treatment plant, for probable cost of \$0.53M in design costs, but projected flow capacity will not require construction to commence.

Projected increases in development acreage is within all watershed sub-basins, however for 10-year constructability, sub-basins selected for improvements are limited to M118, M121, M124, & M125. Estimated channel drainage system project costs for projected growth to 2022 amounts to \$46.76 M. Estimated detention improvements costs for projected growth to 2022 amounts to \$44.36 M.

An analysis of existing and projected roadway capacity was done for major roadways near the City of Tomball utilizing the Houston-Galveston Area Council (H-GAC) population growth factor to develop volume projections for 2017 & 2035. Based on volume projections, by 2017 FM 2920 (Main Street) from Telge Road to SH 249 (a two-lane roadway) will be operating at Level of Service (LOS) E, and by 2035 the roadway will be operating at LOS F. To bring the roadway to an acceptable LOS D, this segment should be widened to six lanes. Volume projections also predict that the volumes on Hufsmith-Kuykendahl Road (a two-lane roadway) from Stuebner-Airline Road to Kuykendahl Road, will be operating at LOS F by 2035. To bring the roadway to LOS C, this segment of the road should be widened to four lanes. LOS A being ideal traffic conditions with free flow of vehicles, and LOS F being grid-lock of traffic and unacceptable conditions.

For the 2022 population projection of 13,156, existing park space will proportion to approximately 8.81 acres per 1,000 residents. Approximately 15.7 acres of City of Tomball park development will be necessary to meet 10 acres per 1,000 residents by the end of 2022.

Historically, the City's natural gas distribution has not been included in this report. However, basic information has been included in this update to better centralize all infrastructure owned and operated by the City and provide reference for future planning.

This Capital Improvement Plan was developed in accordance with Texas Local Government Code §395, describing existing capital improvements and their total capacities, identifying necessary capital improvements or facility expansions and their costs, establishing a service unit for each category of capital improvements, projecting service units and demand necessitated by new development based on approved land use assumptions projected over a period of 10 years. From this Capital Improvement Plan a Maximum Capital Recovery Fee Determination was made for each service unit category.

The Maximum Impact Fees calculated are as follows:

Facility	Service Unit	Effective Date	Current Fee	Maximum Fee Calculated By This Report
Water Production	LUE	06/01/2012	\$ 1,329.12	\$ 3,319.37
Wastewater Collection	LUE	06/01/2012	\$ 1,653.23	\$ 2,322.57
Drainage System (by sub-basin)				
M118	Per Acre	06/01/2009	\$ 6,023.90	\$ 5,757.81
M121E	Per Acre	06/01/2009	\$ 6,828.71	\$ 7,886.69
M121W	Per Acre	06/01/2009	\$ 4,985.14	\$ 6,692.00
M124	Per Acre	N/A	\$ -	\$ 13,041.36
M125	Per Acre	06/01/2009	\$ 574.40	\$ 436.88

April 10, 2014

Page 2 of 62

2.0 Plan Objective

The objective of this report is to identify infrastructure improvements necessary to accommodate projected growth/development within the City of Tomball jurisdiction. The focus of the studies conducted and recommendation provided are for a period of 10 years beginning 2012 and ending 2022. The studies and resulting recommendations utilize population and development projections, updated herein, City of Tomball Zoning Ordinance and Comprehensive Plan, and existing infrastructure records provided by the City of Tomball.

Probable costs associated with the improvements identified will be calculated and include costs of construction, land acquisition (when appropriate), engineering design, surveying, and other necessary consultant services. Of the improvements identified, the costs of those necessitated by new development and/or significant redevelopment will be utilized to calculate maximum capital recovery fees in accordance with Local Government Code, Title 12, Planning and Development, Chapter 395, Financing Capital Improvements Required by New Development in Municipalities, Counties and Certain Other Local Governments. The Capital Recovery Fees determined will establish maximum fees that can be adopted by the City if desired.

Population projects, land use, and drainage infrastructure data contained in this report are summaries from a Master Drainage Plan (MDP) prepared for the City of Tomball under separate contract. Only data required for the final recommendations and conclusions of this report have been included.

Basic steps used to identify necessary infrastructure improvements included:

- Estimation of current (2012) land use and distribution of population.
- Estimation of future (2022) land use and distribution of population.
- Review of Existing (2012) Infrastructure with respect to projected growth/development
- Determination of infrastructure improvements necessary to serve 2022 conditions.
- Calculation of Probable Costs associated with identified infrastructure improvements.
- Determination of maximum capital recovery fees.

April 10, 2014

Page 3 of 62

3.0 Population Projections

History and Previous Projections

Several reports produced for the City of Tomball have included population projections for the City and the ETJ:

1. The 2002 Infrastructure Master Plan (IMP) by PBS&J;
2. The 2007 Infrastructure Master Plan by LAN; and,
3. The 2009 Tomball Comprehensive Plan.

All three of these documents utilized population projections developed by the Houston-Galveston Area Council (H-GAC) and the Texas Water Development Board (TWDB). The 2002 IMP refers to the 2000 Census population of 9,089 for the City of Tomball, but uses H-GAC and TWDB population projections that are based on the 1990 Census when the population was reported to be 6,370. Since this information is dated, population projections from the 2002 IMP will not be discussed further.

Both the 2007 IMP and the Comprehensive Plan include population projections developed by H-GAC using the 2000 Census population of 9,089 as a basis. Projections developed by the TWDB, also using the 2000 data, were included for reference in the 2007 IMP. The methodologies employed by these agencies to develop these projections will not be reviewed, but it should be noted that neither agency utilizes methods that incorporate variables particular to the City in estimating future growth. Populations for the county or region are estimated at a gross level and allocated to smaller jurisdictions on a percentage basis. The projections for the City appear in the following table. The figures for 1990 and 2000 are reported by the U.S. Census Bureau.

Year	H-GAC 2035	TWDB 2006
1990	6,370	6,370
2000	9,089	9,089
2010	12,238	12,059
2020	15,281	15,429
2030	19,541	18,150

The authors of the 2007 IMP developed estimates of the City and ETJ population employing land use density assumptions from the 2002 IMP and population density statistics from the 2000 Census to derive estimates for 2007 and 2017. The combined population estimates for these two data points was used in this report to produce comparable statistics for the years of interest noted in the following section.

2010 Census & Current Projection

The U.S. Census Bureau has reported a 2010 population of 10,753 for the City of Tomball. This figure represents an absolute growth of 1,664 persons at a compounded annual growth rate of approximately 1.7% from the 2000 Census population of 9,089. The Census count represents a point-in-time estimate of the actual population which is unknown and may vary on a daily, weekly or monthly basis within the reporting year.

The following table presents the reported 2000 and 2010 US Census population for the City and projections developed for this IMP using the annualized growth rate of approximately 1.7% from 2000 to 2010. An estimate of the population for the Tomball extra-territorial jurisdiction (ETJ) based on 2010 Census Block data was provided by the Greater Houston Partnership in association with the Tomball Economic Development Corporation. The estimate of 3,241 for 2012 was discounted by the annualized growth rate of 1.7% to derive a 2010 population estimate of 3,134.

Year	Within City Limits	Tomball ETJ	Combined
2000	9,089	n/a	n/a
2010	10,753	3,134	13,887
2012	11,121	3,241	14,362
2015	11,696	3,409	15,105
2020	12,721	3,708	16,429
2022	13,156	3,834	16,990
2025	13,836	4,033	17,869
2030	15,049	4,386	19,435

To appreciate the differences in the projections for the 20-year time horizon (2010-2030), it should be noted that the annualized growth rate for the City of Tomball from 1990 to 2000 was 3.6% or approximately twice the growth rate for the latest 10-year period. The comparison of past and present population projections is not intended to imply that any particular forecasting methodology is superior to another since all forecasting of population is basically a best-guess formulated primarily on past history. A chart comparing population projections for the City of Tomball from the

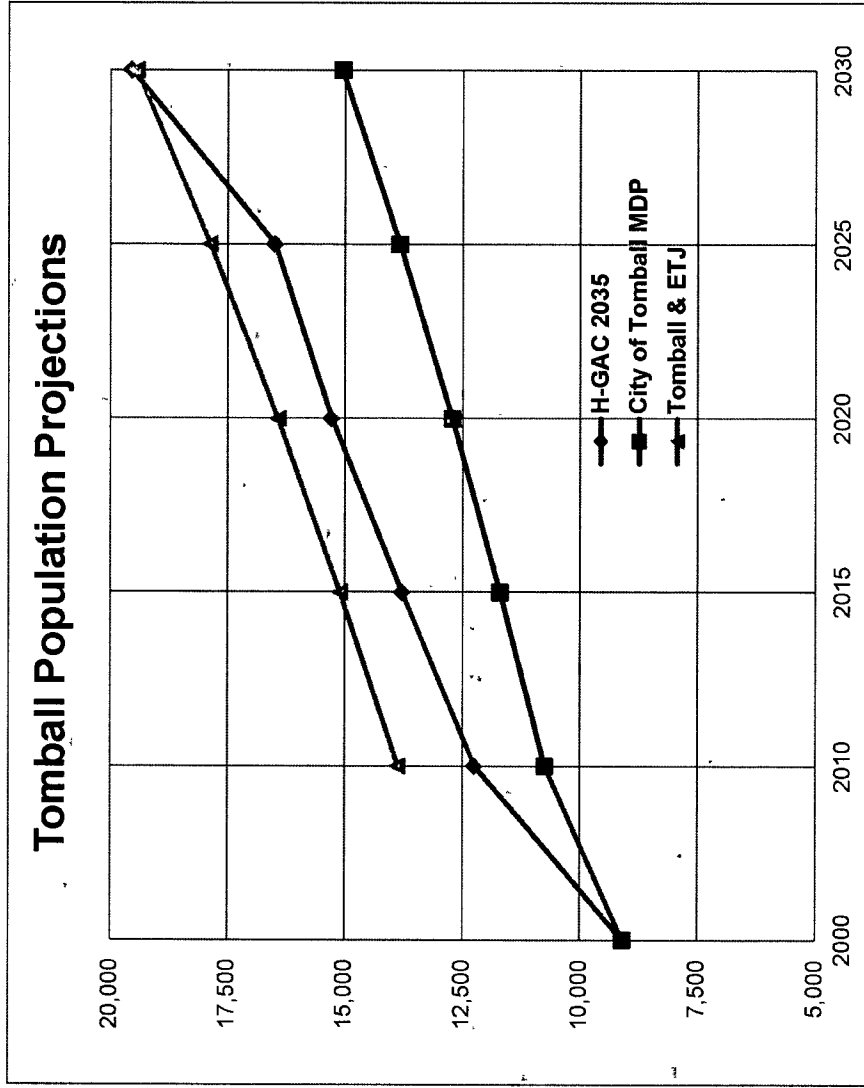
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Ex. RW-10

H-GAC 2035 forecast with the projections developed for this IMP appears at the top of the next page. The combined projection for the City and ETJ developed for this report is also included in the graph.



Two major highway projects scheduled to begin construction in 2013 could likely impact population growth trends in the Tomball area. First, construction on both Segments F1 and F2 of the Grand Parkway is planned for the summer of 2013 with completion of both segments anticipated by the end of 2015. Segment F1 will connect State Highway 249 with U.S. Highway 290 while Segment F2 will extend from SH 249 to IH 45. The

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Ex. RW-10

planned intersection of the Grand Parkway with SH 249 is positioned near the current intersection of SH 249 with Boudreaux Road. The second project involves upgrading SH 249 to a six-lane toll road from north of Spring-Cypress to FM 2920. Eventually, this project will include a second phase to extend the toll road, to be named the "Tomball Tollway", to FM 1774 in Montgomery County. Long-term, the Texas Department of Transportation plans to extend the project to SH 6 at Navasota.

On May 23, 2012, while text of this report was being drafted, the U.S. Census Bureau released estimates of 2012 population for states, cities and various other political subdivisions. The Bureau estimated a 2012 population of 10,964 for the City of Tomball. The Bureau's estimated growth in population from 2010 to 2012 is less than 60% of that projected for use in this report, resulting in an annualized growth rate of approximately 1%.

4.0 Land Use Projections

General

The City of Tomball is approximately 12 square miles (7,670 acres) in area with an additional 8.6 square miles (5,515 acres) included in Tomball's ETJ. Of the area within the ETJ, approximately 6.1 square miles (3,936 acres) is located in Harris County while 2.5 square miles (1,579 acres) lies within Montgomery County.

Land use within the City of Tomball and ETJ has been defined and described in several recent documents including the 2007 Infrastructure Master Plan, the 2009 Comprehensive Plan, and the Tomball Zoning Ordinance (2008-01). See **Tomball Zoning & Tomball Comprehensive Land Use Plan Exhibits**. The Zoning Ordinance and Comprehensive Plan provide the basis for guiding future land use, and the difference between these two documents should be clarified.

According to the City of Tomball Website:

"The purpose of a Comprehensive Plan is to anticipate growth and to guide that growth in a manner that provides Tomball with a balance of land uses that promote economic growth and improve quality of life."

"The Comprehensive Plan is not a zoning ordinance and it does not affect existing zoning regulations. Instead, it provides the foundation for making changes or developing new regulations that implement identified goals, objectives, and actions."

The Zoning Ordinance provides the legal framework for regulating development within the City. Again, with reference to the City's Website:

"Zoning is a system of land use regulation that controls the development of land in the corporate City limits. It is a legal mechanism by which the City of Tomball is able to regulate land uses so as to protect the public health, safety, and/or general welfare. Land is mapped into different zones with the primary purpose of promoting compatible land uses and to separate incompatible uses."

In addition, while the Comprehensive Plan provides guidance for development within the City limits and ETJ, the Zoning Ordinance only applies within the City. While the City has regulatory authority over certain development activities in the ETJ, those activities that do not fall within the purview of the City are subject to regulation by Harris and Montgomery counties, and by the requirements of utility districts, utility providers, and homeowner associations.

Existing Land Use

At any point in time, the existing land use in Tomball and the ETJ may be established by visual inspection and/or by inspection of the tax records maintained by Harris and Montgomery counties. Visual inspection of each parcel within Tomball and the ETJ was not feasible, even using aerial photographs, due to the large number of parcels within this area. Tax records of both the Harris County Appraisal District (HCAD) and the Montgomery County Appraisal District (MCAD) were used for production of this report. Not all areas are included in the tax records. In particular, public roads and right-of-way (ROW) are excluded, and other areas owned by public entities, such as drainage basins and channels, may be

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excluded as well. However, with the exception of one large tract along the eastern portion of the ETJ in Montgomery County, almost all of the area within Tomball and the ETJ is included in the tax records exclusive of the ROW areas.

Both the HCAD and MCAD records identify land use on a parcel basis using the "Texas Property Tax Assistance Property Classification Guide". The Guide classifies properties by 21 broad categories. The HCAD and MCAD records used the following broad categories for classifying real property:

- Single Family Residential (A)
- Multi-Family Residential (B)
- Vacant Lots and Tracts (C)
- Agricultural and Timber (D)
- Farm and Ranch Improvements (E)
- Commercial and Industrial (F)
- Utilities (J)
- Residential Inventory (O)
- Exempt Property (X)

Most of these categories have sub-divisions which allow further insight into type of property use on a parcel basis. In addition to the Guide classification system, HCAD also identifies parcels by use of its own classifications. This information is accessible in the GIS database developed for this report in the event that further analysis is desired. Also see **Tomball Land Use by State Code Exhibit**.

To develop statistics for the existing 2012 land use, 4,493 properties from the City Tomball's Zoning records and from HCAD analyzed by state classification. An additional 2,028 parcels in the ETJ were examined. Agricultural land, undeveloped areas, and areas not included in the tax and zoning records are reflected in the "Other" category in this table. Land use is a dynamic process and the information represents a snapshot in time. In addition, the state tax classification may not accurately represent actual land use in all cases.

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Ex. RW-10

The following table displays 2012 existing land use for the City of Tomball and its ETJ.

2012 Land Use, Estimated

Within City Limits	Area (Acres)	Parcels Developed	Land Use Density (Acres/Parcel)	Population	Population Density (Persons/Acre)	Population Density (Persons/Parcel)
Residential, Developed	1,578.5	2,442	0.65	11,121	7.05	4.55
Commercial, Developed	1,200.8	547	2.20	n/a	n/a	n/a
Industrial, Developed	3.5	1	3.47	n/a	n/a	n/a
Other	4,887.6	21	n/a	n/a	n/a	n/a
Total City	7,670.4	3,011	n/a	11,121	1.45	n/a
Within ETJ						
Residential, Developed	1,643.2	1,070	1.54	3,241	1.97	3.03
Commercial, Developed	427.1	84	5.08	n/a	n/a	n/a
Industrial, Developed	8.8	1	8.75	n/a	n/a	n/a
Other	3,436.3	10	n/a	n/a	n/a	n/a
Total ETJ	5,515.4	1,165	n/a	3,241	0.59	n/a
Categories defined by State Classification						
Total City & ETJ	13,186			14,362		

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Projected Land Use

Regardless of the existing usage, currently developed property was projected for future years under the same classification as the existing use. For undeveloped property, the Zoning description provided guidance for parcels within the City limits and the Comprehensive Plan served as guidance in the ETJ when determining future land use. The methodology employed for projecting residential development is complex and is included as an appendix to this report. The methodology used to project non-residential development is described in the following narrative. GIS software was employed to execute the analysis. Non-residential land use was forecast for 2022 and 2030, although data for intermittent years may be estimated without a great deal of additional effort using the GIS files.

Methodology for Non-residential Future Land Development

Properties currently used for residential purposes or projected for residential development were removed from consideration for non-residential development. Of 4,493 parcels in the City Zoning database, 2,844 were designated for residential use through 2030 leaving 1,649 properties for existing or potential non-residential development. Of the 1,649 non-residential properties, 568 had some type of structure listed in the tax records, leaving 1,081 properties determined to be undeveloped. Of the 2,028 properties in the ETJ, 1,450 were designated for residential use through 2030 leaving 578 properties for existing or potential non-residential development. Of those 578 properties, 95 were listed as having a structure on site, leaving 483 properties as undeveloped.

Step 1: The acreage associated with existing developed commercial and exempt properties was determined for the area within the City limits and the ETJ. This total area was increased by a factor of 1.7%, compounded annually, which is the same growth factor employed for projecting population growth. The resulting projected growth in non-residential development from 2012 to 2022 was determined to be 302.8 acres. The projected acreage increase in non-residential development was divided between the City (75%) and ETJ (25%).

Step 2: The 2012 undeveloped non-residential acreage was used as the basis for assigning growth for 2022. Within the City limits, the following zoning descriptions associated with the undeveloped parcels provided the categories for growth: General Retail, Commercial, Office, and Old Town/Mixed Use. Within the ETJ, the following Comprehensive Plan land use descriptions served as categories for growth: Commercial, Employment/Office, and Mixed Use. The relative percentage of undeveloped acreage in each category to the total undeveloped acreage was used to allocate the projected growth acreage to those categories. Allocations for the City and ETJ were conducted separately.

Step 3: The GIS database of non-residential properties was utilized to select undeveloped parcels that were associated with the categories listed in Step 2. Priority was given to selecting undeveloped properties along existing or expected major transportation categories: SH 249 and SH 249 Expressway, Hufsmith-Kohnville Road (FM 2978), East and West Main Street (FM 2920), Holderlieth Road, Hufsmith, Zion, and Cherry Street.

Step 4: The same process was employed for projecting land use by parcel for 2030. The effective percentage increase in developed non-residential land use from 2012 to 2030 was calculated to be 583 acres (35.4%) with or 303 acres (18.4%) projected as being developed by 2022 and an additional 280 acres being developed by 2030.

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The following table displays the results of land use projections for the City of Tomball and its ETJ for 2022. 2022 Projected Land Use was apportioned to characteristic categories for residential, commercial, and industrial land use by acreage, and actual acreage and effective percentage increases were calculated. Increases were projected at 440 acres and 27.9% for developed residential land, and 227 acres and 18.9% for developed commercial land.

2022 Land Use, Projected

	Area (Acres)	Parcels Developed	Land Use Density (Acres/Parcel)	Population	Population Density (Persons/Acre)	Population Density (Persons/Parcel)
Within City Limits						
Residential, Developed	2,018.1	2,558	0.79	13,156	6.52	5.14
Commercial, Developed	1,427.63	648	2.20	n/a	n/a	n/a
Industrial, Developed	3.5	1	3.47	n/a	n/a	n/a
Other	4,221.2	20	n/a	n/a	n/a	n/a
Total City	7,670.4	3,227	n/a	13,156	1.72	n/a

Categories defined by State Classification/Zoning

	Area (Acres)	Parcels Developed	Land Use Density (Acres/Parcel)	Population	Population Density (Persons/Acre)	Population Density (Persons/Parcel)
Within ETJ						
Residential, Developed	1,691.8	1,267	1.34	3,834	2.27	3.03
Commercial, Developed	503.1	106	4.75	n/a	n/a	n/a
Industrial, Developed	8.8	1	8.75	n/a	n/a	n/a
Other	3,311.8	10	n/a	n/a	n/a	n/a
Total ETJ	5,515.4	1,384	n/a	3,834	0.70	n/a

Categories defined by State Classification/Comprehensive Plan

13,186 16,990

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Comments on Methodologies

The methodologies employed to allocate projected population growth and land use to individual parcels within the City limits and ETJ creates a hypothetical version of the future. Although the selection of individual parcels follows certain rules, any number of undeveloped parcels could be eligible for selection, and a different scenario could easily result from selecting one parcel rather than another. In that sense, the process is somewhat arbitrary. Since the analyses were developed using GIS tools, and the output files are being provided to the City as products of this project, alternative scenarios may be developed with relative ease.

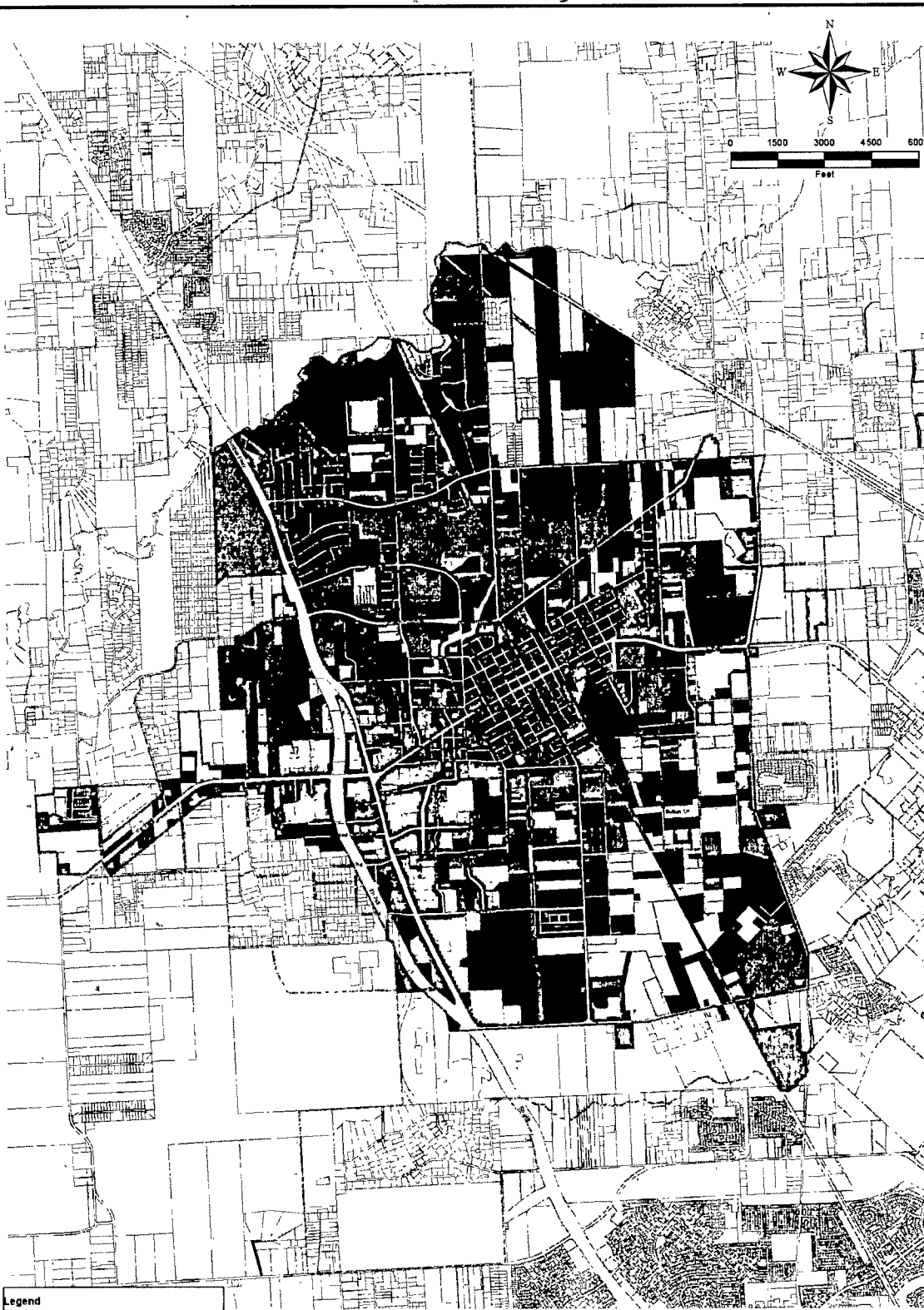
In addition, the HCAD and MCAD records that serve as the basis for categorizing and selecting properties are not without faults when used for the purposes described in the preceding narrative. The primary use of these records is taxation and not to serve as a database for land use analysis. However, these records were considered the best available data for the purpose of developing this IMP.

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Ex. RW-10



- Legend**
- A Single Family Residential
 - B Multifamily Residential
 - C1 Vacant Lots and Land Tracts
 - C2 Delisted Lots and Land Tracts
 - C3 Vacant/Revised Streets/Open Space/Parkways
 - D1 Native Pasture and Hay/Open Space
 - D2 General Commercial/Arts
 - E1 Rural Land not qualified for Open Space and Improvements
 - F1 Commercial
 - F2 Industrial and Manufacturing
 - G1 Utilities Electric
 - G2 Utilities Telephone
 - G3 Utilities Railroad
 - H1 Residential Greenery
 - THBR Timberland
 - X Exempt Property

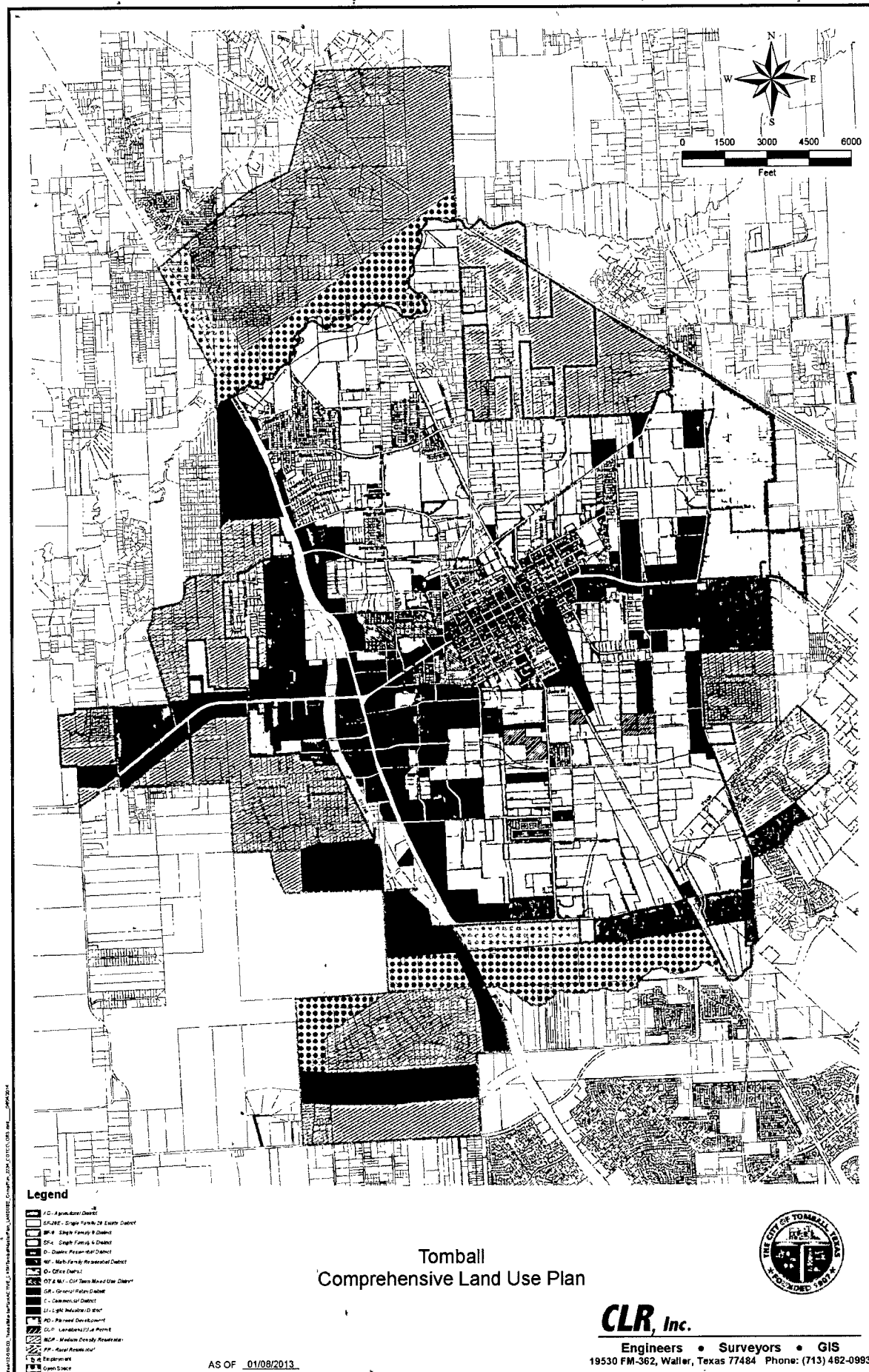
Tomball
Land Use by State Code

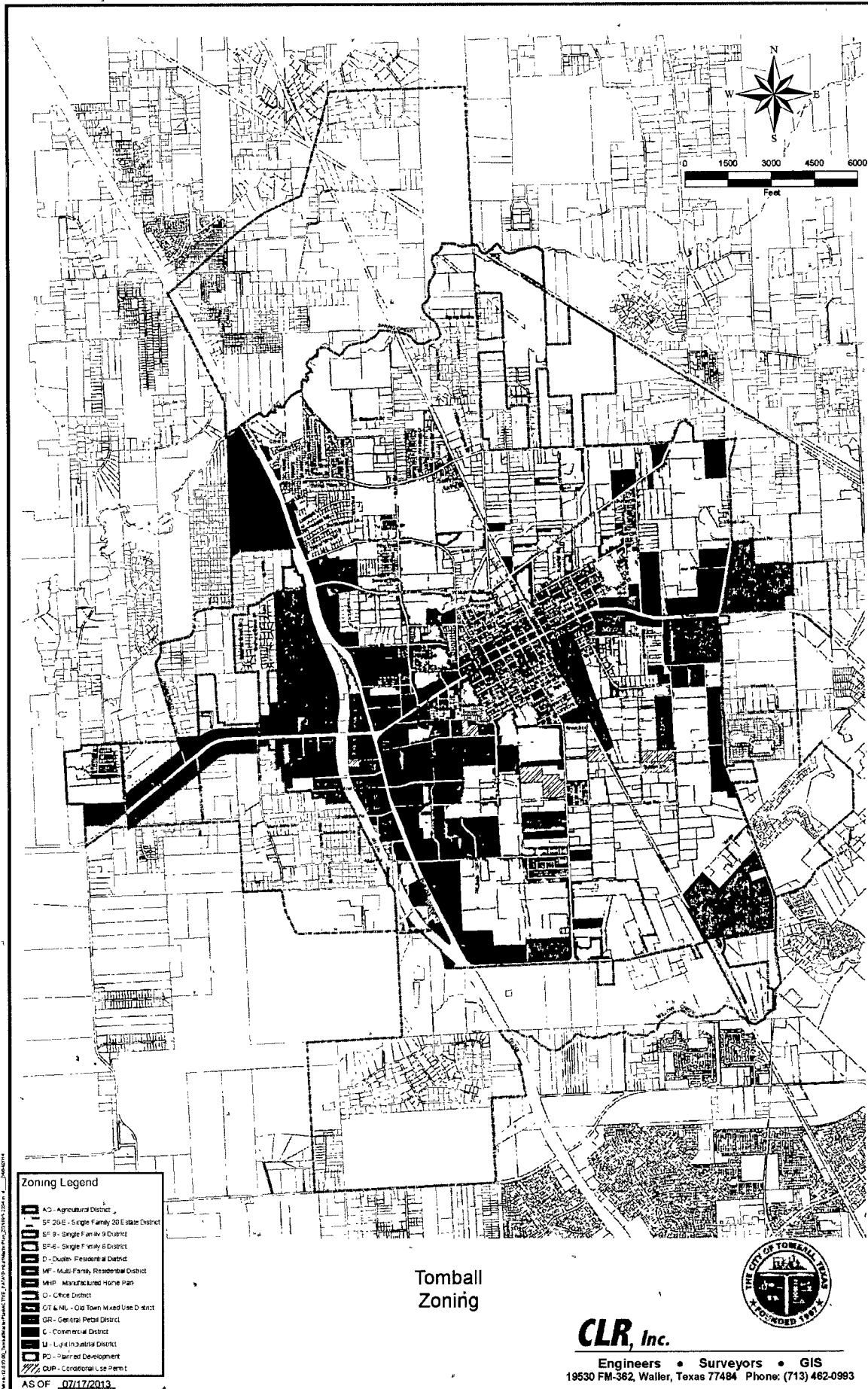


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AS OF 03/12/2013





5.0 Potable Water System

The City of Tomball's water system consists of two primary components, water supply and water distribution. Currently, potable water is supplied by groundwater pumped from 2 aquifers by 6 wells at 4 production facilities operated by the City of Tomball. Facilities include 5 storage tanks and ancillary metering and disinfection (chlorine) equipment. Water well pump submergence was reported to be between 52 and 160 feet of depth.¹

Water is distributed through approximately 99 miles of transmission and distribution lines ranging from 1.5-inch to 16-inch diameter, with system pressure maintained by elevated storage and booster pumps. Existing transmission and distribution line pipe materials consist of iron, steel, and PVC (polyvinylchloride) with the oldest lines originating in the late 1950's. The Water Distribution System Plant locations are shown in the **Tomball Master Plan Water Distribution System Exhibit**.

Existing Water System

The following table summarizes the existing water production and storage facilities:

Water Plant	Well Number (U.S.G.S. #)	Well Capacity (Estimated 2012) (gpm)	Aquifer	Ground Storage (gallons)	Elevated Storage (gallons)	Booster Pumps (No./gpm)
Pine Street	1 (Onsite) (LJ-60-60-10G)	548	Chicot	400,000	750,000	2 – 1,600 1 – 1,000
	2 (Onsite) (LJ-60-60-11G)	1,856	Evangeline	N/A	N/A	N/A
	3 (Offsite) School Street (LJ-60-60-111)	741	Chicot	N/A	N/A	N/A
Baker Street	4 (Onsite) (LJ-60-59-324) (See Note 1)	784	Evangeline	200,000 (See Note 2)	N/A	1 – 600 2 – 500
Ulrich Road	See Note 3	N/A	N/A	N/A	500,000	N/A
F.M. 2920	5 (Onsite) (LJ-60-60-15) 6 (Onsite)	786 578	Evangeline Chicot	500,000	N/A	3 – 1000
Totals		5,293		1,100,000	1,250,000	8,800

Notes

1. The Baker Street well has continued to experience a high concentration of hydrogen sulfide gas and therefore it does not contribute to the City's supply.
2. The storage tank at the Baker Street plant is constructed as an elevated tank. However, the tank bowl is below the operating pressure plane and therefore operates as a ground storage tank.
3. Elevated tank functions as primary control for the pressure pumping operates for both the Pine and Baker plants.

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Ex. RW-10

Historical Water Use

City of Tomball historical data was used to develop existing and projected requirements. The City tracks meter count and monthly water consumption in five categories: single family residential, multifamily (combined), commercial, public municipal, and flushed/emergency. The following table quantifies annual water metered and pumped for the previous five fiscal years.

CITY OF TOMBALL											
Annual Water Metered and Water Pumped (in thousands of gallons)											
FISCAL YEAR	RESIDENTIAL METERED	COMMERCIAL METERED	MULTI-FAMILY METERED	FLUSHED PUMPED & EMERGENCY	PUBLIC MUNICIPAL	TOTAL METERED & FLUSHED	TOTAL PUMPED	PERCENT METERED / PUMPED	# ACTIVE MTRS	AVERAGE EQUIV CONN'S	LUE GPD/CONN
2008 FY	271983	308332	64981	12000	8752	666048	774190	86.03%	3326	6472	327.7
2009 FY	290763	323787	65522	12024	8152	700248	790389	88.59%	3369	6515	332.4
2010 FY	240544	292952	75357	12000	6058	626911	709131	88.41%	3394	6540	297.1
2011 FY	364966	329679	97205	14000	8865	814715	922723	88.29%	3447	6593	383.5
2012 FY	279463	297707	82524	12000	6068	677762	823204	82.33%	3508	6654	339.0

For the purposes of this report, one Equivalent Single Family Connection (ESFC) equals one Living Unit Equivalent (LUE). For Fiscal Years 2008 to 2012 the average daily demand per ESFC required 335.9 gpd of water production. 5-Year average water production percentages for five categories follows: single family residential 41.4%, multifamily 11.0%, commercial 44.7%, public municipal 1.1%, and flushed/emergency 1.8%.

State Design Criteria

The Texas Commission on Environmental Quality (TCEQ) criteria specified in TAC, Title 30, part I, Chapter 290, Subchapter D, Rules and Regulations for Public Water Systems, 9/13/00, provides minimum acceptable design and construction practices to ensure public facilities are properly sized to produce and distribute safe potable water. This criterion includes:

- Connection – Defined as, a single residential unit or each commercial or industrial establishment to which drinking water is supplied from the system.
- Maximum Daily Demand – 2.4 times average daily demand
- Peak Hourly Demand – 1.25 times maximum daily demand (prorated to an hourly rate)
- Minimum Water System Capacity Requirements:

Wells (2 or more) – total capacity of 0.6 gallons per minute (gpm) per connection

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Ex. RW-10

Booster Pumps (the lesser of)

Two or more pumps with total capacity of 2 gpm per connection, or

Minimum of 1,000 gpm with capacity to meet peak hourly demands with the largest pump out of service

Storage – Total capacity of 200 gallons per connection, including elevated storage of 100 gallons per connection.

Nominal Operating Pressure = 35 psi throughout system/20 psi minimum during firefighting event

Adequacy of Existing System

- Existing City of Tomball water production facilities were evaluated based on TCEQ criteria as follows:

2012 Existing System vs. TCEQ Minimum Requirements

<u>With Baker Plant</u>	<u>Existing Capacity</u>	<u>Required Capacity</u>	<u>Meets Minimum</u>
Wells	5,293 gpm	3,992 gpm	Yes
Firm Booster Pump Capacity	8,800 gpm	4,656 gpm	Yes
Total Storage	2,350,000 gal	1,330,800 gal	Yes
Elevated Storage	1,250,000 gal	665,400 gal	Yes
Nominal Operating Pressure	55 psi	35 psi	Yes
<u>Without Baker Plant</u>			
Wells	4,509 gpm	3,992 gpm	Yes
Firm Booster Pump Capacity	7,200 gpm	4,656 gpm	Yes
Total Storage	2,150,000 gal	1,330,800 gal	Yes
Elevated Storage	1,250,000 gal	665,400 gal	Yes
Nominal Operating Pressure	55 psi	35 psi	Yes

Based on the available City of Tomball 2012 data for existing Water System conditions (6,654 conn at 2.26 MGD ADD), all components meet or exceed TCEQ minimum requirements both with and without operation of the Baker Street Plant facilities. The existing distribution system (lines 6" and larger) will be modeled to establish nominal operating pressure nodes.

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Projected Improvements

To determine recommended water system improvements, CLR analyzed historical data, TCEQ criteria, and projected water demand through 2022. The recommended improvements include facilities in both the current City corporate boundary and in the ETJ necessary to serve the projected development.

Based on this report's earlier projection of City of Tomball annualized growth rate of approximately 1.7%, water demand was projected at the same rate to FY 2022 as shown in the following table. Water Production Average Daily Demand (ADD) is projected at 2,913,380 gpd for 7,874 connections for end of FY 2022.

CITY OF TOMBALL					
Projected Water Production Requirements (Gallons)					
PROJECTED ¹					
FISCAL YEAR	ANNUAL PUMPED	ADD PUMPED	AVG EQUIV CONN'S ²	LUE GPD/CONN ³	
2013	913,883,350	2,503,790	6767	370.0	
2014	929,414,100	2,546,340	6882	370.0	
2015	945,214,950	2,589,630	6999	370.0	
2016	961,285,900	2,633,660	7118	370.0	
2017	977,626,950	2,678,430	7239	370.0	
2018	994,238,100	2,723,940	7362	370.0	
2019	1,011,119,350	2,770,190	7487	370.0	
2020	1,028,270,700	2,817,180	7614	370.0	
2021	1,045,692,150	2,864,910	7743	370.0	
2022	1,063,383,700	2,913,380	7874	370.0	

¹ Projections based on 1.7% growth rate; see Population projection section 3.0

² Average of Connections Projected for Given Fiscal Year.

³ 335 9 GPD Historical 5-YR Average + 10% Factor of Safety = 370 GPD for planning.

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Ex. RW-10

The following table provides a summary of the projected water supply system demands, for end of FY 2022 loads, when evaluated against TCEQ minimum requirements (without operation of the Baker Street Plant facilities).

2022 Projected System vs. 2012 TCEQ Minimum Requirements

(Without Baker Plant)

	<u>Existing Capacity</u>	<u>Required Capacity</u>	<u>Meets Minimum</u>
Wells	4,509 gpm	4,725 gpm	No
Firm Booster Pump Capacity	7,200 gpm	5,511 gpm	Yes
Total Storage	2,150,000 gal	1,574,800 gal	Yes
Elevated Storage	1,250,000 gal	787,400 gal	Yes
Nominal Operating Pressure	55 psi	35 psi	Yes

Based on the projected water demands of the study period, the City of Tomball will be required by TCEQ criteria to increase its well production by 216 gpm. For practical water well construction to also serve water demands beyond 2022, CLR recommends Standard Water Plant sizing to include a 1,000 gpm Well, a 400,000 gal GST, 3 - 600 gpm total booster pumps, a maintenance building and emergency generator. With contingencies, engineering and surveying, the total Water Plant cost estimate amounts to \$3.83M.

To meet projected needs, the City will require additional distribution lines to serve developing areas and for replacement of substandard lines, less than 8-inch, with minimum 8-inch diameter lines. The following table provides a summary of the projected water distribution system demands, for end of FY 2022 with loads distributed utilizing land use and density projections. The 20.8 mile total of additions represents a 21% increase in the water distribution network. Estimated future Water Distribution costs in 2013 dollars, amounts to \$13.22M.

Water Line Unit Cost Data used to calculate the 10-year Water Distribution System CIP costs can be found in APPENDIX C. Costs do not include allowances for private crossings (RR or pipeline), legal or fiscal costs, or right of way/leasehold acquisition costs.

Future Water Distribution System Projects, 2012 to 2022

Project No.	Description	Priority (1)	Quantity	Units	Unit Cost	Total Cost
1	12-inch Water Line along Zion Road and E. Hufsmith Road from Neal Street east to F.M. 2978 E. ROW	1	6,700	LF	\$ 127.00	\$ 850,900.00
2	12-inch Water Line along F.M. 2978 from North of F.M. 2920 north to E. Hufsmith Road (East & West)	1	12,600	LF	\$ 127.00	\$ 1,600,200.00
3	12-inch Water Line along E. Hufsmith Road from Ulrich Road to Zion Road (includes Railroad Crossing)	1	8,300	LF	\$ 127.00	\$ 1,054,100.00
4	12-inch Water Line through new development between Ulrich Road and Zion Road	2	4,400	LF	\$ 127.00	\$ 558,800.00
5	12-inch Water Line along S. Persimmon Street from Agg Road to Holderlieth Road	2	5,700	LF	\$ 127.00	\$ 723,900.00
6	12-inch Water Line along S. Persimmon Street from F.M. 2920 to Agg Road	2	4,500	LF	\$ 127.00	\$ 571,500.00
7	12-inch Water Line along Agg Road from S. Pitchford Road to S. Persimmon Street	2	1,200	LF	\$ 127.00	\$ 152,400.00
8	8-inch Water Line along S. Pitchford Road	2	3,600	LF	\$ 88.00	\$ 316,800.00
9	8-inch Water Line between S. Pitchford Road and S. Persimmon Street south of channel south of Lizzie Lane	2	1,200	LF	\$ 88.00	\$ 105,600.00
10	12-inch Water Line along Calvert Road and Alice Road from F.M. 2920 to High Meadows Rd	2	7,700	LF	\$ 127.00	\$ 977,900.00
11	12-inch Water Line along Agg Road from Mulberry Street to S. Pitchford Road (includes Railroad Crossing)	2	1,900	LF	\$ 127.00	\$ 241,300.00
12	12-inch Water Line along the Future Medical Complex Drive from S. Holderlieth to S. Cherry Street	2	3,900	LF	\$ 127.00	\$ 495,300.00
13	12-inch Water Line along the Future Agg Rd from S. Persimmon Street to Hufsmith-Kohrville Road	2	2,100	LF	\$ 127.00	\$ 266,700.00
14	12-inch Water Line along the Future Agg Rd east of Hufsmith-Kohrville Road to E.U.	3	2,600	LF	\$ 127.00	\$ 330,200.00
15	8-inch Water Line between Quinn Road and Julia Street of Hunterwood (includes Railroad Crossing)	3	1,500	LF	\$ 88.00	\$ 132,000.00
16	8-inch Water Line along Future Commercial Park Drive between Medical Complex Drive and Thesis Lane	4	1,100	LF	\$ 88.00	\$ 96,800.00
17	12-inch Water Line along Park Road from F.M. 2920 to Brown Road	4	3,900	LF	\$ 127.00	\$ 495,300.00
18	12-inch Water Line along Ulrich Road north of Zion to replace existing 6-inch Water Line	4	4,500	LF	\$ 127.00	\$ 571,500.00
19	8-inch Water Line along Rudolph Road	4	3,700	LF	\$ 88.00	\$ 325,600.00
20	12-inch Water Line along Brown Road from Park Road to Orchard Grove Drive	4	4,300	LF	\$ 127.00	\$ 546,100.00
21	8-inch Water Line along Hospital Road between E. Hufsmith Road and E. Carrell Street	5	1,400	LF	\$ 88.00	\$ 123,200.00
22	8-inch Water Line along Snook Lane from F.M. 2920 south ROW north to the Cedar Post Street backlot WL	5	2,800	LF	\$ 88.00	\$ 246,400.00
23	12-inch Water Line along F.M. 2920 from N. Willow to S. Persimmon	5	2,400	LF	\$ 127.00	\$ 304,800.00
24	12-inch Water Line along SH 249 Bypass west ROW from Brown Road south to Lowel's	5	4,100	LF	\$ 127.00	\$ 520,700.00
25	12-inch Water Line along Business SH 249 east ROW from Brown Road south to Rudel Drive	5	4,000	LF	\$ 127.00	\$ 508,000.00
26	12-inch Water Line along Hirschfield Road from SH 249 Bypass W. ROW east to Business SH 249	5	1,600	LF	\$ 127.00	\$ 203,200.00
27	12-inch Water Line along SH 249 Bypass west ROW from Alice Road south to Holderlieth Road	5	4,900	LF	\$ 127.00	\$ 622,300.00
28	8-inch Water Line along Business SH 249 west ROW from Thesis Lane south to Holderlieth Road	5	3,200	LF	\$ 88.00	\$ 281,600.00
Totals			109,800	LF		\$ 13,223,100.00
(1) Priority Rating of 1 is highest priority, and 5 is lowest priority						

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6.0 Wastewater System

The City of Tomball's wastewater system consists of two primary components, wastewater collection and wastewater treatment.

Currently, wastewater water is treated at 2 facilities, both operated by the City of Tomball. The north wastewater treatment plant is located at Neal Road south of Zion, and discharges into J231-00-00 then to Boggs Gully and eventually to Spring Creek. The south wastewater treatment plant is located at Holderrieth Road near S. Cherry and discharges into M121-00-00 then to Willow Creek.

Wastewater is collected through approximately 80 miles of sanitary sewer lines including 6-inch to 36-inch diameter gravity sanitary sewer, and 4-inch to 12-inch pressure force mains in two networks. The dividing line between the collections systems for the North and South Wastewater Plants generally follows SH249 Business South from Spring Creek, turns East remaining near Medical Complex Drive until it turns North on FM 2978 until Zion Road. Existing collection line pipe materials consist of clay, steel, and PVC (polyvinylchloride) with the oldest lines originating in the late 1950's.

Existing Wastewater System

Wastewater Treatment Plants

The north facility was completed in 1974 as a 0.75 MGD Sewage Treatment Plant (STP), and subsequently expanded in the late 80's to 1.5 MGD. This facility operates as a complete mix plant with four mixing basins and two clarifiers. The north service area presently serves approximately 4,270 acres and 2,459 connections.

The south facility was placed in service in 1999 as a 1.5 MGD STP. This facility operates as an extended aeration-oxidation facility, with one aeration channel, two clarifiers, and associated units. Facilities include ancillary metering and disinfection (chlorine) equipment. The south service area presently serves approximately 3,400 acres and 4,194 connections.

The following table summarizes the existing wastewater treatment facilities:

Wastewater Plant	Permit/Discharge Number	Plant Capacity (MGD)	Discharge	Lift Station (gpm)
Neal Road	TX 0022361/ 001-A	1.5	Spring Creek	4,500
Holderrieth Road	TX 0117595/ 001-A	1.5	Willow Creek	4,475

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Lift Stations

Presently the City operates 11 sanitary sewer lift stations, not including the 2 located within the wastewater treatment plant sites. Private lift stations also exist within the City and serve areas that are not currently served by public gravity sewers. Public lift station general locations and capacities are shown below. The capacities shown are firm capacities with one pump out of service.

Existing Lift Station Capacities			
LS #	Lift Station Name	Firm Capacity (gpm)	LUE Equiv ² Capacity
-	North WWTP	4500	7645
-	South WWTP	4475	7603
1	Northstar	250	425
2	Sherwood	380	646
3	Hunterwood	175	297
4	Hufsmith	350	595
5	Tomball Hills	225	382
6	Persimmon	108	183
7	Jergens Park	36	61
8	Matheson Park	125	212
9	FM 2920 & Park Rd.	340	578
10	Hicks	50-150	
11	School	200-300	
	(1) Lift station capacity with largest pump out-of-service		
	(2) Based on 211.9 gpd per LUE		

Collection System

The City's collection system is comprised of approximately 80 miles of gravity sewers and force mains ranging in size from 4-inch to 36-inch diameter. City of Tomball topography requires some isolated collection systems to pump by Lift Station before continuing as gravity lines.

The Wastewater Treatment Plants and sanitary sewer collection system are shown in the **Tomball Master Plan Sanitary Sewer System Exhibit**.

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Historical Wastewater Flows

City of Tomball historical data was used to develop existing and projected requirements. As a Texas Pollutant Discharge Elimination System permit holder the City submits water quality discharge-monitoring reports (DMRs) to the TCEQ.

The following table quantifies DMR reported flows for the previous five years.

Historical Wastewater Treatment Plant Flows					
	2008	2009	2010	2011	2012
North Wastewater Treatment Plant					
Annual Flow (MG)	231.0	216.1	195.3	177.4	203.3
Average Daily Flow (MGD)	0.633	0.592	0.535	0.486	0.557
Plant Capacity (MGD)	1.500	1.500	1.500	1.500	1.500
% of Total Plant Capacity Used	42.2%	39.5%	35.7%	32.4%	37.1%
South Wastewater Treatment Plant					
Annual Flow (MG)	305.1	290.5	276.7	292.4	346.8
Average Daily Flow (MGD)	0.836	0.796	0.758	0.801	0.950
Plant Capacity (MGD)	1.500	1.500	1.500	1.500	1.500
% of Total Plant Capacity Used	55.7%	53.1%	50.5%	53.4%	63.3%
Total Average Daily Flow (MGD)	1.469	1.388	1.293	1.287	1.507
LUE					
Average Daily Flow per LUE (gpd)	6472	6515	6540	6593	6654
	227.0	213.0	197.7	195.2	226.5
Total Water Demand					
Annual Water Demand (MG)	774.19	790.40	709.13	922.72	823.20
Average Daily Demand (MGD)	2.121	2.165	1.943	2.528	2.255
% of Wastewater Treated vs Water Pumped	69.3%	64.1%	66.6%	50.9%	66.8%

For the purposes of this report, one Equivalent Single Family Connection (ESFC) equals one Living Unit Equivalent (LUE). For Years 2008 to 2012 the average daily flow per ESFC was 211.9 gpd of wastewater treatment.

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Wastewater flow was assumed to follow the 5-Year average water production percentages for five categories as follows: single family residential 41.4%, multifamily 11.0%, commercial 44.7%, public municipal 1.1%, and flushed/emergency 1.8%.

State Design Criteria

The TCEQ maintains minimum standards for public wastewater treatment and collections systems. The criteria are contained in Chapter 317 of the TCEQ regulations titled "Design Criteria for Sewerage Systems". The following minimum standards were utilized to determine adequacy of the existing system and to size necessary improvements.

- Estimation of wet weather flows as 400 percent of average day flow rates (collection system).
- The layout of collection lines are placed to provide flexibility toward future land use changes and economic considerations.
- Maximum sewer capacities were calculated for pipes flowing full at not less than 2 feet per second using standard grades on Manning's formula with an assumed "n" factor of 0.013.
- In order to avoid under-designs, which can occur without long range planning, trunk lines sizes were based upon consideration of the size of an area and an allowance for full development. The interim improvements for the study period consider future growth and provide a base system for the ultimate improvements.
- Lift Station design to follow TCEQ Chapter 317 - Design Criteria for Sewerage Systems § 317.3. Lift Stations
- STP design to follow TCEQ Chapter 317 - Design Criteria for Sewerage Systems § 317.4. Wastewater Treatment Facilities
- STP Design flow is defined as the wet weather maximum 30-day average flow. Peak flow is defined as the highest two hour flow expected to be encountered under any operational conditions, including times of high rainfall (generally the two-year, 24-hour storm is assumed - 4.85-inch for City of Tomball) and prolonged periods of wet weather. For new systems, the peak flow to average annual flow ratio is normally in the range between three and five to one, although other peaking factors may be warranted.
- Per TCEQ criteria an STP at 75% of flow capacity requires the design of a plant expansion, and an STP at 90% of flow capacity requires construction to commence on the expansion design.

Adequacy of Existing Wastewater System

Based on the available City of Tomball 2012 data for existing Wastewater System conditions (6,654 conn at 1.507 MGD ADF), both Wastewater Treatment Plants, all Lift Stations, and Sanitary Sewer Collection facilities meet or exceed TCEQ minimum requirements.

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Projected Improvements

To determine recommended wastewater system improvements, CLR analyzed historical data, TCEQ criteria, and projected wastewater flow through 2022. The recommended improvements include facilities in both the current City corporate boundary and in the ETJ necessary to serve the projected development area.

Wastewater flow was projected to FY 2022, based on this report's earlier projection of the City of Tomball's annualized growth rate of approximately 1.7%, as shown in the following table. Wastewater Collection Average Daily Flow (ADF) is projected at 1,787 MGD for 7,874 connections for end of FY 2022. Wastewater flow projections based on historical flow per LUE is shown below.

Projected Wastewater Treatment Plant Flows											
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Projected Averages											
Total Average Daily Flow (MGD)	1,507	1,536	1,562	1,589	1,616	1,643	1,671	1,700	1,728	1,758	1,787
Case 1: Future LUEs reflect historical LUEs											
LUE	6654	6767	6882	6999	7118	7239	7362	7487	7614	7743	7874
Average Daily Flow per LUE (gpd)	226.5	227.0	227.0	227.0	227.0	227.0	227.0	227.0	227.0	227.0	227.0
North Wastewater Treatment Plant											
Annual Flow (MG)	203.3	207.2	210.8	214.3	218.0	221.7	225.5	229.3	233.2	237.1	241.1
Average Daily Flow (MGD)	0.557	0.57	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.65	0.66
Plant Capacity (MGD)	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
% of Total Plant Capacity Used	37.1%	37.9%	38.5%	39.1%	39.8%	40.5%	41.2%	41.9%	42.6%	43.3%	44.0%
South Wastewater Treatment Plant											
Annual Flow (MG)	346.8	353.5	359.5	365.6	371.8	378.1	384.6	391.1	397.7	404.5	411.3
Average Daily Flow (MGD)	0.950	0.97	0.98	1.00	1.02	1.04	1.05	1.07	1.09	1.11	1.13
Plant Capacity (MGD)	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
% of Total Plant Capacity Used	63.3%	64.6%	65.7%	66.8%	67.9%	69.1%	70.2%	71.4%	72.6%	73.9%	75.1%
Increase 2012-2022											0.280
Increase 2012-2022											0.10
Increase 2012-2022											6.9%
Increase 2012-2022											64.6
Increase 2012-2022											0.18
Increase 2012-2022											11.8%

However, the wastewater plants are normally designed for more flow per connection, as higher use is possible from future connections. Higher use is also possible from existing connections, without additional development (for example, higher occupancies in residences and hotels or changes in use of non-residential properties). The table that follows shows flow projections based on 300 gpd/LUE for existing and new development.

Projected development may also overload existing lift stations. Individual lift station demand vs capacity will have to be monitored to determine when pump or wet well upgrades are needed or required. Three new lift stations are included in the Capital Improvement Plan (CIP) cost estimate table for wastewater collection lines.

To meet projected needs, the City will require additional sanitary sewer collection lines to serve developing areas. The following table provides a summary of the projected wastewater collection system demands, for end of FY 2022 with estimated loads distributed utilizing land use and density projections. The 15.7 mile total of additions represents a 19.7% increase in the wastewater collection network. Estimated future wastewater collection system costs in 2013 dollars, amount to \$13.5M.

Sanitary Sewer Unit Cost Data used to calculate the 10-year Wastewater Collection System CIP costs can be found in APPENDIX C. Costs do not include allowances for private crossings (RR or pipeline), legal or fiscal costs, or right of way acquisition costs.

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Future Wastewater Collection System Projects, 2012 to 2022

Project No.	Description	Priority (1)	Quantity	Units	Unit Cost (2)	Total Cost
1	18-inch Gravity Sanitary Sewer along Zion Road from Neal Street to Cabotway Road	1	2,600	LF	\$222.00	\$577,200.00
2	18-inch Gravity Sanitary Sewer along E. Hulsmith Road from existing 36-inch line to Zion Road	2	3,900	LF	\$222.00	\$865,800.00
3	12-inch Gravity Sanitary Sewer along F.M. 2978 from north of F.M. 2920 to Dement Road	2	1,400	LF	\$142.00	\$198,800.00
4	12-inch Gravity Sanitary Sewer along F.M. 2978 north of Dement Road	2	3,600	LF	\$142.00	\$511,200.00
5	18-inch Gravity Sanitary Sewer along Liberty Lane from Hicks	2	2,000	LF	\$92.00	\$184,000.00
6	18-inch Gravity Sanitary Sewer along S. Persimmon Street from Agg Road to Holdemeth Road	3	5,600	LF	\$222.00	\$1,243,200.00
7	12-inch Gravity Sanitary Sewer along S. Persimmon Street north of Agg Road	3	3,600	LF	\$142.00	\$511,200.00
8	12-inch Gravity Sanitary Sewer along S. Pritchard Road and Agg Road to S. Persimmon Street	3	4,700	LF	\$142.00	\$667,400.00
9	18-inch Gravity Sanitary Sewer along Calvert Road and Alice Road from F.M. 2920 to SH 249	3	8,100	LF	\$222.00	\$1,798,200.00
10	15-inch Gravity Sanitary Sewer along Zion Road and E. Hulsmith Road from Cabotway Road to Standlind Rd	3	2,600	LF	\$182.00	\$473,200.00
11	8-inch Gravity Sanitary Sewer along Ulm Road	3	3,500	LF	\$92.00	\$322,000.00
12	6-inch Force Main along Ulm Road	3	3,600	LF	\$62.00	\$223,200.00
13	Lift Station at the end of Ulm Road (Design Flow = 375 gpm)	3	1	LS	\$400,000.00	\$400,000.00
14	8-inch Gravity Sanitary Sewer along Agg Road east of Mulberry Street	3	1,300	LF	\$92.00	\$119,600.00
15	12-inch Gravity Sanitary Sewer along E. Hulsmith Road from Standlind Road across F.M. 2978	4	1,600	LF	\$142.00	\$227,200.00
16	10-inch Gravity Sanitary Sewer along Quinn Road	4	4,000	LF	\$112.00	\$448,000.00
17	6-inch Force Main along Quinn Road	4	4,200	LF	\$62.00	\$260,400.00
18	Lift Station at the end of Quinn Road (Design Flow = 430 gpm)	4	1	LS	\$400,000.00	\$400,000.00
19	10-inch Gravity Sanitary Sewer along the Future Medical Complex Drive west of Cherry Street	4	1,800	LF	\$112.00	\$201,600.00
20	8-inch Gravity Sanitary Sewer along the Future Medical Complex Drive west of School Street	4	1,100	LF	\$92.00	\$101,200.00
21	8-inch Gravity Sanitary Sewer along the Future Michel Road extension east of Commercial Park Drive	4	1,200	LF	\$92.00	\$110,400.00
22	18-inch Gravity Sanitary Sewer along Park Road from F.M. 2920 to Brown Road	4	4,500	LF	\$222.00	\$999,000.00
23	15-inch Gravity Sanitary Sewer along Brown Road from Park Road to Orchard Grove Drive	4	5,200	LF	\$182.00	\$946,400.00
24	8-inch Force Main along Brown Road from Orchard Drive to Park Road	4	5,200	LF	\$72.00	\$374,400.00
25	Lift Station at Brown Road and Orchard Grove Drive (Design Flow = 1,000 gpm)	4	1	LS	\$550,000.00	\$550,000.00
26	8-inch Gravity Sanitary Sewer along Rudolph Road north of E. Hulsmith Road	4	1,200	LF	\$92.00	\$110,400.00
27	8-inch Gravity Sanitary Sewer along Rudolph Road south of Zion Road	5	2,400	LF	\$92.00	\$220,800.00
28	10-inch Gravity Sanitary Sewer along the Future Med Complex east of Hulsmith-Kohnville Road	5	2,200	LF	\$112.00	\$246,400.00
29	8-inch Tomball Cemetery Rd north of F.M. 2920	6	1,000	LF	\$92.00	\$92,000.00
30	10-inch Gravity Sanitary Sewer along Spal Road from S. Persimmon to F.M. 2978	6	1,000	LF	\$112.00	\$112,000.00
(1) Priority Rating of 1 is highest priority and 5 is lowest priority						
(2) Unit Price for Gravity Sanitary Sewer Includes Manholes						
					Construction Total	\$13,455,200.00

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