Marielle Bascon

From: PUBCOMMENT-OCC
Sent: Friday, April 26, 2024 4:08 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016355002

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

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From: allysonalmeida@ymail.com
Sent: Friday, April 26, 2024 9:58 AM
To: PUBCOMMENT-OCC
Subject: Public comment on Permit Number WQ0016355002

REGULATED ENTY NAME VISTA TOWNHOMES WWTF

RN NUMBER: RN111757381

PERMIT NUMBER: WQ0016355002

DOCKET NUMBER:

COUNTY: WILLIAMSON

PRINCIPAL NAME: VISTA TOWNHOMES AUSTIN LLC

CN NUMBER: CN606154276

NAME: Allyson Almeida

EMAIL: allysonalmeida@ymail.com

COMPANY:

ADDRESS: 10901 VISTA HEIGHTS DR
GEORGETOWN TX 78628-2011

PHONE: 5126808472

FAX:

COMMENTS: I would like to request a public hearing regarding this recently submitted permit application. I have previously submitted comments and concerns over this permit however at that time I failed to request a public hearing on this matter.

Ellie Guerra

From: PUBCOMMENT-OCC
Sent: Friday, April 19, 2024 4:08 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016355002

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

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From: allysonalmeida@ymail.com <allysonalmeida@ymail.com>
Sent: Friday, April 19, 2024 11:50 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016355002

REGULATED ENTY NAME VISTA TOWNHOMES WWTF

RN NUMBER: RN111757381

PERMIT NUMBER: WQ0016355002

DOCKET NUMBER:

COUNTY: WILLIAMSON

PRINCIPAL NAME: VISTA TOWNHOMES AUSTIN LLC

CN NUMBER: CN606154276

NAME: Allyson Almeida

EMAIL: allysonalmeida@ymail.com

COMPANY:

ADDRESS: 10901 VISTA HEIGHTS DR
GEORGETOWN TX 78628-2011

PHONE: 5126808472

FAX:

COMMENTS: I am concerned about the approval of a newly submitted permit application, WQ0016355002, for development. My concerns about an approval of this permit affect environmental concerns of natural wildlife that have habitated this environment for more than 50+ years. The plans to develop and irrigate 6.5 acres with contaminated and polluted water will have a negative impact environmentally on wildlife, as well as the potential to harm heritage oak trees marked and preserved by the county, and the potential for other air quality and human health concerns. In addition, the subject property has one known cave on it with potentially more. The development adjacent to the proposed site has several caves which all remain protected and you cannot build anything within close proximity to such areas. The traffic safety and well being of potential residents is compromised if this development is approved due to ingress and egress of the development site. There is not sufficient land space to widen access roads and could pose life threatening issues in the event of an emergency if a multi-family housing project is approved. I am concerned for destruction of heritage oak trees that are over 100 years old facing danger by this project as the renderings in the application do not have these marked nor is the cave that is known to be present. As a concerned homeowner with a property directy behind the proposed development, it is not evident by proof of information the purchaser has done due diligence in the land which they want to develop and destroy natural habitations with potential hazardous implications to the Edwards Aquifer recharge zones. Since purchasing the land the new owners have not had livestock on the property for an agricultural exemption, yet they have not updated the county of this fact where they reap a huge financial benefit. The characteristic of this behavior, and a new permit application submitted after the initial permit application hasn't been approved after opposition, is indicative the narrative of plans will change only to result in an approval but it is unlikely that once approved, they will comply with all regulations necessary. While Texas remains in a drought with watering restrictions almost enforced year round, the thought of 150+ homes in a condensed area where homeowners already can't water, is very concerning. I stand in agreement with Eric Putt, an affected homeowner and public comment coordinator, that previously submitted an opposition on 4/9/2024. All of his highlighted concerns are valid and needs to be considered in this process.

Tammy Washington

From: PUBCOMMENT-OCC
Sent: Monday, August 4, 2025 3:14 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Vista Townhomes Austin, LLC TLAP/Permit No. WQ0016355002 - Comments and Request for Contested Case Hearing
Attachments: 2025.07.28 Georgetown Contested Case Hearing Request.pdf

H
RFR

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

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From: Laurie Gharis <Laurie.Gharis@tceq.texas.gov>
Sent: Monday, August 4, 2025 1:21 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: FW: Vista Townhomes Austin, LLC TLAP/Permit No. WQ0016355002 - Comments and Request for Contested Case Hearing

Laurie Gharis
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-1835
Cell Phone: 737-263-9116

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www.tceq.texas.gov/customersurvey

From: Campbell, Hanna <hcampbell@spencerfane.com>
Sent: Monday, July 28, 2025 4:47 PM
To: Laurie Gharis <Laurie.Gharis@tceq.texas.gov>
Cc: Faulk, Cody <cfaulk@spencerfane.com>; Hopinks-Baul, Carlota <chbaul@spencerfane.com>; Parker, Kelsey <kparker@spencerfane.com>; Lovett, Taryn <tlovett@spencerfane.com>
Subject: Vista Townhomes Austin, LLC TLAP/Permit No. WQ0016355002 - Comments and Request for Contested Case Hearing

On behalf of the City of Georgetown, please accept these public comments and request for a contested case hearing on the application by Vista Townhomes Austin, LLC for proposed new Texas Land Application Permit, Permit No. WQ0016355002, to authorize a domestic wastewater treatment facility in Williamson County, Texas.

We have faxed this due to the file size exceeding the eComment site's limit, but wanted to make sure it was received before 5:00pm. We will also be forwarding a copy via First Class Mail, as required.

Thank you,

Hanna Campbell Paralegal
Spencer Fane LLP

816 Congress Avenue, Suite 1200 | Austin, TX 78701
O 512.840.4557
hcampbell@spencerfane.com | spencerfane.com

SpencerFane

WILLIAM A. FAULK, III
DIRECT DIAL: 512-840-4549
cfaulk@spencerfane.com

July 28, 2025

Via e-File to: *www.tceq.texas.gov/agency/decisions/cc/comments.html*
Ms. Laurie Gharis, Chief Clerk (MC 105)
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Re: **The City of Georgetown, Texas's Request for Contested Case Hearing**
Applicant Names: Vista Townhomes Austin LLC (CN606154276)
Regulated Entity Name: Vista Townhomes WWTF
Regulated Entity Number: RN111757381
Application: TLAP Permit No. WQ0016355002
Location: Williamson County, Texas
EPA I.D.: TX0144614

Dear Ms. Gharis:

On behalf of the City of Georgetown (the "**City**"), please accept this request ("**Request**") for a contested case hearing and/or reconsideration of the Executive Director's decision regarding the application by Vista Townhomes Austin LLC ("**Applicant**") for proposed new Texas Land Application Permit ("**TLAP**") Permit No. WQ0016355002 (the "**Draft Permit**"), to authorize disposal of treated wastewater via surface irrigation in Williamson County, Texas ("**Application**"). The City's contact persons for this matter are below:

Cody Faulk, Partner
Carlota Hopinks-Baul, Attorney
Kelsey Parker, Attorney
Spencer Fane LLP
816 Congress Avenue, Suite 1200
Austin, TX 78701
(512) 840-4550
cfaulk@spencerfane.com
chbaul@spencerfane.com
kparker@spencerfane.com

I. INTRODUCTION

The City originally filed comments and a request for a contested case hearing on the Application on December 10, 2024 (the "**December 2024 Filing**"). The City's December 2024 Filing is incorporated into this filing by reference. After reviewing the Executive Director's response to public comments, dated June 20, 2025 (the "**Responses to Public Comments**" or "**RTC**"), the City maintains its concerns about the Application and continues to oppose the Application and issuance of the Draft Permit. By this filing, the City supplements and reasserts, restates, and resubmits the City's December 2024 Filing; requests the Executive Director to reconsider its Decision and Responses to Public Comments; and requests a contested case hearing.

II. GENERAL INFORMATION

Per the instructions in the RTC, the following general information is provided:

(1) Your name, address, daytime phone number and, if possible, fax number. All communications to the City regarding the Application should be directed to:

Cody Faulk
Carlota Hopinks-Baul
Kelsey Parker
Spencer Fane LLP
816 Congress Avenue, Suite 1200
Austin, TX 78759
Telephone: (512) 840-4550
cfaulk@spencerfane.com
chbaul@spencerfane.com
kparker@spencerfane.com

Skye Masson
City Attorney
City of Georgetown, Texas
P.O. Box 409
Georgetown, Texas 78627-0409
Telephone: (512) 930-8165
skye.masson@georgetown.org

(2) The name of the applicant, the permit number, and any other numbers listed on the June 26, 2025 Decision of the Executive Director to ensure this request is processed properly:

Applicant Name: Vista Townhomes Austin LLC (CN606154276)
Regulated Entity Name: Vista Townhomes WWTF (RN111757381)
Application: TLAP Permit No. WQ0016355002

Location: Williamson County, Texas
EPA I.D.: TX0144614

(3) A statement clearly expressing you are requesting a contested case hearing.

The City of Georgetown, Texas requests a contested case hearing.

(4) If the request is made by a group or association, the request must identify certain additional information

Not applicable.

III. BACKGROUND

A. Permittee Information

Vista Townhomes plans to operate the Vista Townhomes Wastewater Treatment Facility ("**WWTF**") to serve 60 townhomes and 95 apartment units (the "**Proposed Service Area**"), with each townhome producing 171.5 gallons per day of wastewater and each apartment producing 122.5 gallons per day of wastewater.[1] To operate its WWTF, Vista Townhomes applied for a new TLAP permit to authorize the disposal of treated domestic wastewater via surface irrigation over of public access land within the Edwards Aquifer Recharge Zone.

The WWTF would be located approximately 0.4 miles north of the Vista Heights Drive and State Highway 29 West intersection, in Williamson, County, Texas 78628, immediately adjacent to the City's corporate limits. The Draft Permit would authorize 24,000 gallons of treated effluent to be land applied by surface irrigation to 6.5 acres at an application rate of 9.4 acre-feet per acre per year. The Draft Permit also includes effluent limits and monitoring requirements.

The Vista Townhomes WWTF will utilize an activated sludge process plant with conventional mode for secondary treatment and a membrane bioreactor (MBR) for solids separation. Treatment units will include (1) headworks with fine screening; (2) an equalization

[1] In a previously filed TPDES permit application for a package plant to serve the same Proposed Service Area, the Applicant based its wastewater flows on an estimated 250 gallons per day per residential connection, consistent with the requirements in 30 TAC § 217.32(a)(3) and the typical number of occupants for residential units in this area (derived from typical single family residence information in the US Census Bureau for the City of Georgetown). The Applicant's use of significantly lower wastewater estimates in the subject TLAP application (e.g., reducing the wastewater estimate for apartment units by more than 50%) is not consistent with the aforementioned TCEQ regulation and typical residential occupancy values for this area. These reduced values result in an underestimate of the volume of treated wastewater produced by the WWTF and of the land application area required to dispose of the same.

tank; (3) six aerations basins with MBRs; (4) an Ultraviolet Light (UV) unit; (5) a sludge holding tank; and (6) a sludge dewatering screw press.

B. The City's Wastewater Treatment System

The City currently owns and operates five existing wastewater treatment plants ("**WWTPs**") and is in the process of constructing a sixth. At present, the City provides wastewater services to nearly 40,000 customers. The Vista Townhomes WWTF and the proposed disposal and services areas are all immediately adjacent to a residential neighborhood within the City's corporate limits (i.e., the Cole Estates subdivision), immediately adjacent to another residential subdivision in the City's extra territorial jurisdiction ("**ETJ**") (i.e., the Sage Creek subdivision), and in close proximity to (and within 5,000 feet of) other neighborhoods within the City's ETJ (e.g., Cimarron Hills, Oaks at San Gabriel, Cedar Hollow Crossing, Lost River Ranch, Middle Gabriel Estates, Estancia, and Crescent Bluff subdivisions). In fact, the City's Cimarron Hills WWTP is less than one mile from the proposed WWTF, and the proposed service area is within 1,200 feet of an active wastewater collection system that conveys wastewater to one of the City's interconnected WWTPs—the Dove Springs, Pecan Branch, and San Gabriel WWTPs are connected plants that treat 8.0 million gallons per day ("**MGD**"). The Cimarron Hills and Berry Creek plants can treat 0.24 MGD and 0.3 MGD respectively. Additionally, the City intends to begin construction of a lift station and major interceptor to divert flows from the South Fork Interceptor to the three interconnected WWTPs in the next two years, expanding its current wastewater treatment capacity.

IV. CONTESTED CASE HEARING STANDING REQUIREMENTS

Given the significant City interests affected by the Application and Draft Permit, the City hereby respectfully requests a contested case hearing based on the relevant and material disputed issues raised herein.

A. Legal Standards and Requirements for Hearing Requests

To be granted a contested case hearing request must: (1) comply with the applicable form and filing requirements set forth in the Texas Water Code ("**TWC**") and Texas Administrative Code ("**TAC**"); and (2) be filed by an "affected person." Specifically, a contested case hearing request must satisfy the conditions prescribed by TCEQ rules set forth in 30 TAC §§ 55.201, .203

and the TCEQ "may not grant a request for a contested case hearing unless [it] determines that the request was filed by an affected person as defined by Section 5.115" of the Texas Water Code. TWC § 5.556.

a. This Request fully satisfies the form and filing requirements for hearing requests.

The TCEQ's procedural requirements for contested case hearing requests are set forth in 30 TAC § 55.201. Pursuant to that rule, a contested case hearing request must be filed timely, in writing, and "may not be based on an issue that was raised solely in a public comment" that was later withdrawn. 30 TAC § 55.201(c). A hearing request must also contain:

(1) the name, address, daytime telephone number, and, where possible, fax number of the person who files the request;
(2) identify the personal justiciable interest affected by the application, including a brief, but specific, written statement explaining in plain language the requestor's location and distance relative to the proposed facility or activity that is the subject of the application, and how and why the requestor believes he or she will be adversely affected by the proposed facility or activity in a manner not common to members of the general public;
(3) request a contested case hearing;
(4) list all relevant and material disputed issues of fact that were raised by the requestor during the public comment period and that are the basis of the hearing request, specifying, to the extent possible, any of the ED's responses to the requestor's comments that the requestor disputes, the factual basis of the dispute, and any disputed issues of law; and
(5) provide any other information specified in the public notice of application.

30 TAC § 55.201(d).

As demonstrated above, this is a timely filed request and is also based on the City's timely-filed and not later withdrawn City Comment Letter. The required contact information for the City is provided in Part II above. T his Request identifies the City's personal justiciable interest affected by the Application and specifically explain how and why the City will be adversely affected by the WWTF in a manner not common to members of the general public.

An explicit request for a contested case hearing is contained, among other places, on the first page of this Request and in Part II above. Finally, Part V, below, lists the relevant and material disputed issues of fact raised by the City during the public comment period and specifies those of the ED's responses to public comment that the City disputes. Thus, the City has satisfied all the procedural requirements for a contested case hearing request.

b. The City is an "affected person" with unique and justiciable interests in and authority over matter affected by the Application and Draft Permit.

Under 30 TAC § 55.203, when determining who is an "affected person," the TCEQ rule provides as follows:

(a) For any application, an affected person is one who has a personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the application. An interest common to members of the general public does not qualify as a personal justiciable interest.

(b) Except as provided by §55.103 of this title (relating to Definitions), governmental entities, including local governments and public agencies, with authority under state law over issues raised by the application may be considered affected persons.

(c) In determining whether a person is an affected person, all factors shall be considered, including, but not limited to, the following:

(1) whether the interest claimed is one protected by the law under which the application will be considered;

(2) distance restrictions or other limitations imposed by law on the affected interest;

(3) whether a reasonable relationship exists between the interest claimed and the activity regulated;

(4) likely impact of the regulated activity on the health and safety of the person, and on the use of property of the person;

(5) likely impact of the regulated activity on use of the impacted natural resource by the person;

(6) for a hearing request on an application filed on or after September 1, 2015, whether the requestor timely submitted comments on the application that were not withdrawn; and

(7) *for governmental entities, their statutory authority over or interest in the issues relevant to the application.*

(d) In determining whether a person is an affected person for the purpose of granting a hearing request for an application filed on or after September 1, 2015, *the commission may also consider the following:*

(1) the merits of the underlying application and supporting documentation in the commission's administrative record, including whether the application meets the requirements for permit issuance;

(2) the analysis and opinions of the executive director; and

(3) any other expert reports, affidavits, opinions, or data submitted by the executive director, the applicant, or hearing requestor.

(e) In determining whether a person is an affected person for the purpose of granting a hearing request for an application filed before September 1, 2015, the commission may also consider the factors in subsection (d) of this section to the extent consistent with case law.

30 TAC § 55.203 (emphasis added).

The City is an "affected person" under 30 TAC § 55.203 entitled to a contested case hearing on issues raised in this hearing request because it has a "personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the [A]pplication" that are not

common to the general public. 30 TAC § 55.203(a). In addition, the City is a governmental entity "with authority under that law over issues raised by an application." 30 TAC § 55.203(b). This Request also provides information relevant to the "affected person" considerations enumerated in 30 TAC § 55.203(d).

In short, as a governmental entity providing wastewater treatment services to areas both inside and outside of its corporate limits, the City has a unique interest in the effects the WWTF will have on the environment and on public health, safety, and welfare within its jurisdiction. Further, the City has an interest, consistent with the State's regionalization policy, in reducing or eliminating the number of wastewater package plants to reduce or eliminate additional sources of pollution and protect water quality and public health and safety. To that end, the City owns and operates an extensive wastewater system that eliminates the regional need for package plants such as one described in the Application.

Therefore, considering the factors enumerated above, and as addressed in more detail below, the City is an "affected person" entitled to a contested case hearing on the issues raised in this Request.

c. As a home-rule municipality operating its own regional wastewater treatment and collection system, the City's Legislatively mandated interest in and statutory authority over the general health, safety, and welfare of persons residing within its corporate limits and ETJ is affected by the Application and Draft Permit.

The City is a home-rule municipality, having the full powers of self-governance, and is authorized to exercise all authority incident to local self-government.[2] In addition to having the powers granted to it as a home-rule city via the Texas Constitution, the Legislature has also expressly granted home-rule cities regulatory authority within the ETJ over issues raised by or

[2] *See* Tex. Const. art. XI, § 5; Tex. Loc. Gov't Code § 51.072(a) and (b) ("(a) The [home-rule] municipality has full power of local self-government. (b) The grant of powers to the municipality by this code does not prevent, by implication or otherwise, the municipality from exercising the authority incident to local self-government."); *Lower Colo. Riv. Auth. v. City of San Marcos*, 523 S.W.2d 641, 643 (Tex. 1975), *Quick v. City of Austin*, 7 S.W.3d 109, 122 (Tex. 1999), *Dallas Merch. &Concessionaires Ass'n v. City of Dallas*, 852 S.W.2d 489, 490-91 (Tex. 1993) (Home-rule cities do not depend on the Legislature for specific grants of authority but, instead, have a constitutional right of self-government and, look to the Legislature only for specific limitations on their power). *See also*, *In re Sanchez*, 81 S.W.3d 794, 796 (Tex. 2002); *Proctor v. Andrews*, 972 S.W.2d 729, 733 (Tex. 1998) (For the Legislature to divest home-rule cities of their Constitutional authority, the Legislature's intent to do so must be expressed with "unmistakable clarity.")

relevant to the Application. The Legislature created municipal ETJ areas for all cities in order "to promote and protect the general health, safety, and welfare of persons residing in and adjacent to the municipalities."[3] Thus, the City has a Legislatively-mandated interest in promoting and protecting the general health, safety, and welfare of persons residing inside its city limits and ETJ. In the context of the Application, the City's interests are to promote and protect the general health, safety, and welfare of persons residing both in the ETJ and inside the city limits from the potentially harmful effects of an unnecessary package plant.

The Legislature has also granted cities statutory authority over or interest in issues relative to the Application via specific statutes, including, among others, the following:

- TWC Ch. 26, Subchapter E (relating to disposal system rules and water pollution control duties of cities);[4]
- TWC Ch. 7, Subchapter H (relating to water quality enforcement);[5]
- Tex. Health and Safety Code § 121.003(a) ("The governing body of a municipality . . . may enforce any law that is reasonably necessary to protect the public health.");
- Tex. Loc. Gov't Code § 551.002 ("A home-rule municipality may prohibit the pollution or degradation of and may police a stream, drain, recharge feature, recharge area, or tributary that may constitute or recharge the source of water supply of any municipality" and "may provide for the protection of and may police any watersheds . . . inside the municipality's boundaries or inside the municipality's [ETJ].");
- Tex. Loc. Gov't Code § 212.003(a) (relating to the ability of a municipality to adopt rules governing plats and subdivisions of land within its corporate boundaries and ETJ, including

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[3] Tex. Loc. Gov't Code § 42.001 ("PURPOSE OF EXTRATERRITORIAL JURISDICTION. The legislature declares it the policy of the state to designate certain areas as the extraterritorial jurisdiction of municipalities to promote and protect the general health, safety, and welfare of persons residing in and adjacent to the municipalities.").

[4] *See e.g.*, TWC § 26.177 ("A city may establish a water pollution control and abatement program for the city," which "shall encompass the entire city and . . . may include areas within its [ETJ] which in the judgment of the city should be included to enable the city to achieve the objectives of the city for the area within its territorial jurisdiction. The city shall include in the program the services and functions which, in the judgment of the city . . . will provide effective water pollution control and abatement for the city.").

[5] The enforcement authority and rights granted to cities via TWC § 7.351(a) are different from those of the general public, and having been granted special statutory enforcement rights over water quality matters, the City has authority under state law over issues raised by the Application and Draft Permit. TWC § 7.351(a) authorizes local governments to bring an action against a person for a violation or threatened violation of Chapter 26 of the TWC occurring in the jurisdiction of that local government in the same manner as the TCEQ may do so—that is, for injunctive relief, a civil penalty, or both.

rules related to the provision of water and sewer service to platted areas, in order to promote the healthful development of the city and public health, safety, and general welfare);[6]

- Tex. Loc. Gov't Code § 217.042 (A home-rule municipality, like the City, "may define and prohibit any nuisance within the limits of the municipality and within 5,000 feet outside the limits" and "enforce all ordinances necessary to prevent and summarily abate and remove a nuisance.");

- Tex. Loc. Gov't Code § 552.001 ("A municipality may [(1)]purchase, construct, or operate a utility system," including a sewer system, "inside or outside the municipal boundaries;" (2) "regulate the system in a manner that protects the interests of the municipality;" (3) "extend the lines of its utility systems outside the municipal boundaries;" (4) "sell water [or] sewer . . . service to any person outside its boundaries;" (5) "prescribe the kind of water . . . mains [and] sewer pipes . . . that may be used inside or outside the municipality;" and (6) "inspect those facilities and appliances, require that they be kept in good condition at all times, and prescribe the necessary rules, which may include penalties, concerning them.");

- Tex. Loc. Gov't Code Ch. 552, Subchapter C (relating to municipal drainage systems); and

- Tex. Loc. Gov't Code § 552.002(b) ("A home-rule municipality may buy, own, construct inside or outside the municipal limits, and maintain and operate a . . . sewage plant.").

In addition to the statutory interests enumerated above, regionalization and need in wastewater permitting cases are issues on which cities that operate wastewater collection and treatment systems, like the City, are uniquely poised to offer evidence. This is recognized by TWC § 26.003, which states that:

> It is the policy of this state and the purpose of this subchapter to . . . encourage and promote the development and use of regional and areawide waste collection, treatment, and disposal systems to serve the waste disposal needs of the citizens of this state; and to require the use of all reasonable methods to implement this policy.

This guiding principle of regionalization and need is enshrined in the introductory provisions of Chapter 26, listed second only to the recognition of private ownership rights of groundwater. Two other pieces of legislation were adopted to underscore this policy—TWC §§ 26.081[7] and

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[6] *Accord* Tex. Loc. Gov't Code § 214.013 ("A municipality may . . . require property owners to connect to [its] sewer system.").

[7] TWC § 26.081(a) ("The legislature finds and declares that it is necessary to the health, safety, and welfare of the people of this state to implement the state policy to encourage and promote the development and use of regional and

26.0282[8]—both relating to the TCEQ's consideration of the regionalization policy, need, and the availability of existing or proposed areawide or regional wastewater collection, treatment, and disposal systems in the issuance of TPDES permits.

The state regionalization policy articulated three times in the TWC is entirely consistent with the Legislature's creation of ETJs via the Texas Local Government Code. The issues of wastewater treatment regionalization and need cannot be evaluated or implemented without the ability to look "regionally" and "areawide"—i.e., beyond a city's corporate boundaries. The Legislature has adopted statutes that underscore a city's status as an affected person in cases such as the one at hand by creating ETJs; acknowledging cities' interest in the environment, and issues affecting the health, safety, and welfare in those areas; granting cities authority over issues such as those raised in wastewater permitting applications; and adopting policies relating to regionalization and need in wastewater permitting cases. As recognized by 30 TAC §§ 55.203(b) and 55.203(c)(7)—which establish "affected person" status for governmental entities that have authority under state law over issues raised in an application—this statutory framework means that it is entirely consistent with state law to allow a city's participation in wastewater permitting cases such as this, in which the proposed wastewater treatment plant, outfall, and/or outfall are in close proximity to (and within 5,000 feet of) such city's corporate boundaries and/or within its ETJ.

Further, pre-manufactured treatment facilities, like the WWTF, are designed to serve areas that could not be easily connected to an existing sewage treatment plant, which is not the case here. On the contrary, the City owns and operates—again, under legislative mandate—an extensive wastewater treatment and collection system that eliminates the need for package plants such as one described in the Application.

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area-wide waste collection, treatment, and disposal systems to serve the waste disposal needs of the citizens of the state and to prevent pollution and maintain and enhance the quality of the water in the state.").

[8] TWC § 26.0282 ("In considering the issuance, amendment, or renewal of a permit to discharge waste, the commission may deny or alter the terms and conditions of the proposed permit, amendment, or renewal based on consideration of need, including the expected volume and quality of the influent and the availability of existing or proposed areawide or regional waste collection, treatment, and disposal systems not designated as such by commission order pursuant to provisions of this subchapter. This section is expressly directed to the control and treatment of conventional pollutants normally found in domestic wastewater.").

As noted above, the City owns and operates five existing wastewater treatment plants and has been granted a permit for a sixth.[9] The City employs approximately 15 licensed wastewater treatment plant operators and 38 licensed wastewater collection system operators. The City currently provides wastewater service to approximately 39,756 customers. One of the City's wastewater treatment plants, the Cimarron Hills WWTP ("Cimarron Hills"), is within one mile of the WWTF (*see* Attachment 1 to the attached City Comment Letter) and has sufficient capacity to accept wastewater flows from the WWTF's proposed service area.[10] Moreover, Cimarron Hills is interconnected with the two largest City owned wastewater treatment plants, the Pecan Branch and San Gabriel WWTPs. In addition, the City is currently in the design phase of a lift station and major interceptor line that will divert flows from the Cimarron Hills WWTP to the City's South Forks interceptor, which conveys wastewater eastwards to the City's three interconnected WWTPs—Dove Springs WWTP, Pecan Branch WWTP, and San Gabriel WWTP. Together, the three, large, connected plants can currently treat 8.0 MGD, which is the equivalent of 80,000 people (at 100 gallons per day ("**GPD**") per person).[11] The City's two other WWTPs—the aforementioned Cimarron Hills WWTP and the Berry Creek WWTP—can treat up to 0.2 MGD and 0.3 MGD, respectively, providing the capacity for the City to serve approximately 5,000 more people (at 100 GPD/person). All in all, the City's five existing wastewater treatment facilities have the capacity to provide service to about 85,000 customers. Based on information from the US Census Bureau, the City population as of the April 1, 2020 census was 67,176.[12] Thus, the City has more than enough capacity to provide wastewater treatment service to customers within its city limits and ETJ, including those within the Proposed Service Area. In addition to its

[9] The City owns and operates the following wastewater treatment facilities: (1) the Cimarron Hills WWTF (TPDES Permit No. WQ0014232001); (2) the San Gabriel WWTF (TPDES Permit No. WQ0010489002); (3) the Dove Springs Plant (TPDES Permit No. WQ0010489003); (4) the Pecan Branch WWTF (TPDES Permit No. WQ0010489005); and (5) the Berry Creek WWTF (TPDES Permit No. WQ0010489006). In addition, the City holds TPDES Permit No. WQ0010489007 for the Northlands WWTF.

[10] The Cimarron Hills WWTP has an interim capacity of 0.24 MGD and a final capacity limit of 0.46 MGD.

[11] The city is working on increasing its treatment capacity by: expanding the capacity of its Dove Springs WWTF by an additional 1.0 MGD in March 2025; an additional 2.0 MGD at its Pecan Branch WWTF in the next two years; and adding two new WWTFs in the next five to six years (i.e., the 10 MGD Three Forks WWTP and 3.0 MGD Northlands WWTP).

[12] U.S. Census Bureau, *Quick Facts, Georgetown [C]ity, Texas,* https://www.census.gov/quickfacts/fact/table/georgetowncitytexas/PST045221.

treatment facilities, the City has existing wastewater collection systems located within three miles of the WWTF. *See* Attachment 1 to the attached City Comment Letter.

In summary, the City is an "affected person," with significant interests in issues relevant to the Application, because the WWTF would be located in close proximity to the City's wastewater collection system, corporate limits, and/or ETJ. That proximity directly affects the people and environment the City has a Legislative mandate to protect. Moreover, because the City owns and operates an extensive wastewater treatment and collection system that can serve the proposed development that would served by the Vista Townhomes WWTF, there is absolutely no need for the proposed package plant and the associated risk of water quality degradation, nuisance odors, and other threats to public and environmental health that are typical of such plants; authorizing the operation of a private wastewater treatment plant in close proximity to the City's existing wastewater infrastructure effectively creates a competitor to the City's wastewater utility. The creation of competition not only harms the City immediately by preventing the City from obtaining the maximum benefits of providing wastewater services at scale as residential development unfolds over the coming months and years, it also harms the City's ability to secure ratepayers that will use and fund the expansion of wastewater capacity that the City has invested in and is developing even now to serve the long-term population growth that the WWTF is intended to serve. Therefore, the City should be granted a contested case hearing so that it may represent and protect its interests in and uphold its statutory duties related to regionalization and need, environmental protection, and public health, safety and welfare.

V. THE CITY'S DISPUTED ISSUES

The City provided timely comments on many issues and finds that none of the Executive Director's responses to be satisfactory and that all issues raised in its comments remain in dispute. The City seeks a contested case hearing on the disputed issues identified below. The City has attempted to group comments into general categories of issues below and provide these explanations as to why the comments have not been addressed satisfactorily, without waiving any issues raised with more particularity in the City's original comments.

A. RTC No. 5, 19, 20 (City Comment A, H, I) – *Regionalization*

a. Issuance of Permit Violates the State's Regionalization Policy

Under TWC Section 26.081, TCEQ is to implement a policy to "encourage and promote the development and use of regional and area-wide waste collection, treatment, and disposal systems to serve the waste disposal needs of the citizens of the state and to prevent pollution and maintain and enhance the quality of the water in the state." To administer this policy, TWC § 26.0282 authorizes the Commission to deny or alter the terms and conditions of a proposed permit based on need and the availability of existing or proposed area-wide or regional waste collection, treatment, and disposal systems.

In the ED's Response to Comments for this matter, the ED stated that the regionalization policy does not apply to TLAPs "because they do not involve a discharge to water in the state." The City acknowledges that the TLAP for the Vista Townhomes WWTP includes a condition prohibiting discharges of pollutants into water in the state, which includes groundwater; however, the authorization to apply 9.4 acre-feet per year of treated effluent to 6.5 acres of land presents a significant concern of discharges of pollutants to shallow groundwater and interconnected surface water, given the geology and hydrogeology of this area, which is known to include springs and shallow groundwater-surface water connections. Given these site-specific conditions that present a significant risk if infiltration of treated effluent to shallow groundwater interconnected to surface water, the Draft Permit implicates state water quality standards and the state's regionalization policy. Furthermore, the ED's statement that regionalization does not apply to TLAP permits is contradicted by the administrative cases raising said policy in TLAP cases. *See*, e.g., *In re: Application of Lazy Nine Municipal Utility District and Forest City Sweetwater Limited Partnership For Proposed Permit WQ0014629001*, SOAH Docket No. 582-06-2596, TCEQ Docket No. 2006-0688-MWD, 2007 WL 1308372 (2007); *In re: Application of J. H. Uptmore and Associates for Proposed Wastewater Permit No. 14037-001*, SOAH Docket No. 582-99-1863, TNRCC Docket No. 1999-0767-MWD, 2001 WL 36084377 (2001); *In Re: Application of Midtex Partners, Ltd., for Water Quality Permit No. 14472-001*, SOAH Docket No. 582-06-1581, TCEQ Docket No. 2005-1720-MWD, 2007 WL 3085936 (2007).

The ED's response does not indicate any controls have been included in this Draft Permit to limit infiltration of treated effluent to shallow groundwater interconnected to surface water. TCEQ's regionalization evaluation includes the following steps:

(1) Identify all permitted domestic WWTPs or sanitary sewer collection systems within a three-mile radius of a proposed facility;

(2) Request service from the existing permitted system owner or operator;

(3) If approved, conduct a financial, managerial, and technical analysis if there is reason to believe that connecting to the existing system is unfeasible, cost prohibitive, or otherwise not a viable option;

(4) Request a pre-application meeting with TCEQ staff;

(5) If it is determined that regionalization is not a viable option for a project, the information gathered must be submitted to TCEQ to complete the "Justification of Permit."

Given the multiple municipal WWTPs within three miles of the proposed WWTF, it was unreasonable for the Vista Townhomes developer or the RTC to not consider regionalization. The regionalization analysis is not administratively burdensome—certainly not more so than the process of approving a new WWTF. If Vista Townhomes had conducted the regionalization evaluation, it would have likely discovered that it was more cost effective and efficient to connect to the existing infrastructure. Moreover, granting this Draft Permit is inconsistent with the Legislature's policy directive to *encourage and promote the development and use of regional and areawide waste collection, treatment, and disposal systems* per TWC §§ 26.003, 26.081(a), and 26.0282, and the TCEQ's Regionalization Policy for Wastewater Treatment.

b. The City has sufficient capacity available at its existing WWTPs to serve the Vista Townhomes development.

The City has comprehensively planned and constructed its wastewater treatment and collection systems to eliminate the need for small package plants serving individual subdivisions like the Vista Townhomes Proposed WWTF. This effort by the City is consistent with the State's regionalization policy.

As detailed above, the City has five existing WWTPs and is in the process of constructing a sixth. The combined capacity of these existing wastewater treatment plants is 8.5 MGD. Thus, the City clearly has more than enough capacity to provide wastewater treatment service to the sixty townhomes and ninety-five apartment units proposed to be constructed in the Proposed Service Area at the Applicant's requested levels of 0.024 MGD.

Moreover, the Cimarron Hills WWTP is within one mile from the proposed WWTF site, and the Proposed Service Area is within 1,200 feet of an active wastewater collection system that conveys wastewater to one of the City's interconnected WWTPs. Therefore, it is unreasonable to permit the construct a new WWTP when there is existing infrastructure, with sufficient capacity, within a mile of the development.

c. The Applicant did not attempt to request service from the City.

The Applicant did not make any written request or formal application for wastewater service to the Proposed Service Area from any of the WWTPs within three miles of the development, as a result it did not provide any such documentation to the Commission. Without this request, the City was unable to make a comprehensive evaluation of all potential points for connecting to the City's wastewater collection system in addition to those described above.

Moreover, the Applicant did not provide information pertaining to the cost of connecting infrastructure, despite regionalization typically costing less than developing a standalone WWTP. Had Vista Townhomes conducted a cost analysis of connection versus building a standalone facility, it would have likely discovered that it would be cheaper to connect to the existing infrastructure.

Despite the lack of effort on Vista Townhome's part in attempting to find a reasonable and cost effective solution to providing its development with wastewater services, the City anticipates that connecting the Proposed Service Area to the City's nearby, existing wastewater collection system (i.e., just 1,200 feet west of the Proposed Service Area) would proceed more quickly and be less costly than building the Package Plant and associated land application area.

The City is also in the process of constructing a lift station and major interceptor to divert flows from the South Fork Interceptor to the three interconnected WWTPs in the next two years, expanding its current wastewater treatment capacity. This new infrastructure may be able to be utilized by the Applicant either as is, or with minor modification, and may even further reduce Applicant's cost to connect to the City's wastewater system. On approval by the City Council, connection to existing or modified infrastructure be available to the Applicant.

B. RTC No. 6, 21 (City Comment B, J) – *Edwards Aquifer Recharge Zone Sensitivities*

a. The Edwards Aquifer Recharge Zone includes unique groundwater and hydrologically connected surface waters which require unique protection.

The Edwards Aquifer is a unique karst aquifer system due to its highly sensitive recharge zone and the interconnection of shallow groundwater and surface water. As a result, the City is concerned that the proposed discharge of treated effluent will have adverse effects on water quality in the recharge zone, specifically in the Middle Fork San Gabriel Tributary, the Middle Fork or South Fork San Gabriel river stems, and the City's Blue Hole park—which is just downstream of the proposed WWTF and effluent disposal area.

Despite not permitting discharge directly into the waters of the state, the land application of effluent is concerning considering the recharge process of the Edwards Aquifer. Beyond major seeps, the Aquifer recharges via infiltration of its highly porous karst limestone. The Commission's RTC does not provide sufficient assurances than the Drafter Permit will be protective of the underlying aquifer.

Moreover, the WWTF is unsuitable because the treated effluent storage lagoon would be located above the Edwards Aquifer, which violates TCEQ's prohibition on siting of wastewater facilities over a recharge zone of major or minor aquifers "unless the aquifer is separated from the base of the containment structure by a minimum of three feet of material with a hydraulic conductivity toward the aquifer not greater than 10-7 cm/sec [,] a thicker interval of more permeable material which provides equivalent or greater retardation of pollutant migration," or a synthetic membrane liner "with a minimum of 40 mils thickness and an underground leak detection system with appropriate sampling points." 30 TAC § 309.13(d) (emphasis added). The Applicant does not intend to install monitoring wells, which suggests it will not be installing a synthetic membrane liner either. *See* Applicant's Domestic Worksheet 3.0, Section 7.

Given the absence of sufficient soil depth for the installation of monitoring wells as part of an effective underground leak detection system and fact that the limestone bedrock in this area of the Edwards Aquifers allow significant recharge to both surface and groundwater along circuitous path-ways, construction and operation of the proposed treated effluent lagoon would pose an unnecessary risk of pollution to the Edwards Aquifer and hydrologically connected surface waters. Therefore, the permit should be denied.

b. The land application site is unsuitable for growing crops.

The City is concerned that the proposed land application site is not a suitable location due to the soils present at the site. Specifically, the EeB and ErB soil groups are not conducive to growing crops—a key component of an effective TLAP. Further, the soil layer is less than 12 inches of stony clay, cobbly clay, or other clay soils on top of bedrock (11 inches below ground surface). While some crops may be able to grow in in this shallow, high clay soil, root growth in such a shallow profile would tend to create pathways for rapid infiltration into the underlying, and highly transmissive, limestone bedrock. The Commission's solution is to require that the Applicant would be required to import soils should the present soil not be sufficient to sustain crops. The importation of nearly 7 acres of adequate soil is not only impractical but extremely cost prohibitive. Thus, the permit should also be denied on the basis that the proposed application area would also not be suitable and the lack of reasonable alternatives to make the land suitable for application.

c. Endangered and sensitive karst species are present in the land application zone.

The limestone bedrock deposits in the application area are known to provide suitable environments for endangered and sensitive karst-dwelling species. Therefore, siting either a treated effluent lagoon or a treated effluent land application in this area is deeply concerning from the prospective of protecting wildlife and endangered species. For example, the Draft Permit does not include limits or conditions to ensure that water quality remains protective of the Georgetown salamander. Given the difficulty of identifying karst features and karst-dwelling species in the subsurface and the risk of harm posed by permitting the proposed associated disposal area, TCEQ should not issue this permit.

C. RTC No. 13, 22, 23 (City Comment E, K, L) – *Water Quality Concerns*

The draft permit is not protective of groundwater quality and hydrologically connected surface waters, or of existing uses of such surface waters in accordance with Texas Surface Water Quality Standards, including protection of public health and enjoyment of waters in the state and aquatic and terrestrial life. The City is primarily concerned that the proposed discharge poses risks to water quality in the Edwards Aquifer and hydrologically connected surface waters, and may create unsanitary or unsafe water quality conditions, which may affect the health and safety of its citizens,

their enjoyment of such waters as they pass through the City's corporate and ETJ limits, and other non-human receptors.

The Application includes inaccurate information regarding the concentration of nitrogen in treated effluent. The Application underestimates nitrogen by assuming 20 mg/L rather than a more conservative 30 mg/L. The Commission's RTC do nothing to address this underestimation. What is more, is that TCEQ's attempt to abate nitrogen concerns is only addressed by a *once annual* Total Kjeldahl Nitrogen and nitrate-nitrogen sampling event. Moreover, no phosphorus, PFAS, or bacteria estimate is provided for the treated effluent, and only once annual phosphorus sampling is required. Taken together, the incorrect estimates and infrequent sampling yield an incomplete and unrealistic picture of the nutrient concentration of treated water. This is compounded by the fact that the overall flow of the development is being underestimated (discussed next).

D. RTC No. 11 (City Comment C) – *Underestimated Flow*

The TALP application significantly reduced the flow from what was requested in the TPDES permit. The ED's RTC contends that the change in permitted disposal volume is due to the method of disposal; however, there is no reason to believe that changing the method of disposal (surface water discharge vs. land application) would in any way reduce the wastewater generation and treated effluent discharge rates. Moreover, the change from 184 to 155 connections does not equate a flow rate change from 0.36 MDG to 0.024 MGD. The Application includes inaccurate information regarding the calculation of flow. For example, the wastewater flows for the residential connections in the Proposed Service Area are based on arbitrary values (i.e., 171.5 gallons/day per townhome and 122.5 gallons/day per apartment), rather than the values established in 30 TAC § 217.32(a)(3) and the engineering conventions for such residential connections (assuming 2.5 people and 100 gallons per person per day for townhomes and 1.9 persons and 100 gallons per person per day for apartments). These incorrect estimates yield an incomplete and unrealistic picture of the volume of treated water and the land application rate and area required to ensure protection of water quality in groundwater and hydrologically connected surface waters.

E. RTC No. 14, 24 (City Comment F, M) – *Health and Safety Concerns*

The Draft Permit is not protective of the public health and safety of nearby residents considering the treated effluent will be applied in the middle of a residential neighborhood via irrigation. Nothing in the Commission's RTC alleviates these concerns.

Because of the location of the land application, it remains necessary that the Applicant's treated effluent should be required to (1) comply with the requirements for Type 1 reclaimed water (e.g., bacteriological testing; and routine biweekly sampling); (2) maintain of a chlorine residual in the treated effluent pond to prevent noxious bacterial growth and attendant nuisance odors; and (3) maintain nitrogen and phosphorus limits that ensure protection against pollution of groundwater and interconnected surface water.

The Draft Permit does not contain sufficient operational requirements or any irrigation-related limits to safeguard water quality in both groundwater and hydrologically connected surface waters—this imperative considering the hydrologic sensitivity of the Edwards Aquifer. As mentioned above, the soils currently present in the application area do not support crops which are the intended method of uptake for excess nutrients. In addition, the Draft Permit does not require the installation of a robust subsurface leak detection system for the treated effluent pond.

At present, the Draft Permit does not require adequate sampling and monitoring. For example, the while the WWTF would operate around the clock, it would only be monitored via grab sample **once per month** for biochemical oxygen demand and total suspended solids. This is a significant underrepresentation of the effluent. Moreover, the Commission only requires an **annual** sampling of total nitrogen, nitrate-nitrogen, total phosphorous, and electrical conductivity. This sampling frequency and testing regime does not provide adequate assurances to the City or the public that the treated effluent will not introduce other pollutants to the Edwards Aquifer or that the plant is producing an effluent meeting the requirements of the Draft Permit during unmonitored periods.

The Draft Permit does not contain sufficient limits and conditions to protect the Edwards Aquifer ecosystem, groundwater quality, or the hydrologically connected surface waters. Moreover, the Draft Permit is inconsistent with Texas' regionalization policies, which intends for the state to utilize the existing area-wide waste collection, treatment, and disposal systems to prevent pollution and minimize the infrastructure footprint. Considering the foregoing, the permit should be denied.

VI. SUMMARY OF DISPUTED ISSUES FOR REFERRAL

The City has identified critical issues that the Commission should explore through an open and public contested case hearing. At a minimum, the City requests that the following issues be referred to the State Office of Administrative Hearings for a contested case hearing:

(1) Whether the Application and Draft Permit are consistent with the Legislature's statutory directives regarding wastewater regionalization as expressed in TWC §§ 26.003 and 26.081–26.086, including whether issuance of the Draft Permit is contrary to the state's regionalization policy;
(2) Whether the Application is substantially and materially complete and accurate;
(3) Whether the Draft Permit is adequately protective of water quality;
(4) Whether there is a need for the WWTF;
(5) Whether the Draft Permit includes adequate provisions to protect the health of nearby residents and aquatic and terrestrial wildlife;
(6) Whether the Draft Permit includes adequate provisions to protect endangered, threatened, rare, or otherwise sensitive species; and
(7) Whether the issuance of the Draft Permit would be adequately protective of groundwater.

The City reserves the right to raise and pursue any and all issues that may be relevant to its interest in the event of a contested case hearing.

Respectfully submitted,

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ATTORNEYS FOR CITY OF GEORGETOWN, TEXAS

ATTACHMENT 1

December 10, 2024

Via e-File to: www.tceq.texas.gov/agency/decisions/cc/comments.html
Ms. Laurie Gharis, Chief Clerk (MC 105)
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Re: **The City of Georgetown, Texas's Request for Contested Case Hearing**
Applicant Name: Vista Townhomes Austin LLC (CN606154276)
Regulated Entity Name: Vista Townhomes Wastewater Treatment Facility (RN111757381)
Application: TPDES Permit No. WQ0016355002
Location: Williamson County, Texas

Dear Ms. Gharis:

On behalf of the City of Georgetown (the "**City**"), please accept these public comments and request for a contested case hearing on the application by Vista Townhomes Austin, LLC (the "**Applicant**") for proposed new Texas Land Application Permit ("**TLAP**"), Permit No. WQ0016355002, to authorize a domestic wastewater treatment facility in Williamson County, Texas (the "**Application**"). The City's contact persons for this matter are below:

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I. INTRODUCTION

The Application was received by the Texas Commission on Environmental Quality (the "**TCEQ**") on February 26, 2024 and declared administratively complete by the Executive Director ("**ED**") on March 22, 2024. The ED completed its technical review and prepared a draft permit. The Notice of Application and Preliminary Decision was issued on November 1, 2024 and published on November 10, 2024. The public comment period on the Application ends on December 10, 2024. These public comments and request for a contested case hearing are timely and properly filed under 30 Tex. Admin. Code Ann. ("**TAC**") 55.201(c) and (d).

If approved, the draft permit would authorize the disposal of effluent from a package plant (the "**Proposed Package Plant**") at a daily average flow not to exceed 0.024 million gallons per day ("**MGD**"). The effluent will be land applied via surface irrigation of 6.5 acres of public access land. The Proposed Package Plant and disposal site would be located approximately 0.4 miles north of the intersection of Vista Heights Drive and State Highway 29 West, in Williamson County, Texas 78628, immediately adjacent to the City's corporate limits.

II. REQUEST FOR A CONTESTED CASE HEARING

A. Affected Person Analysis / Standing

(1) Applicable Rules

In determining who is an "affected person," the TCEQ rule provides as follows:

RULE § 55.203 Determination of Affected Person

(a) For any application, an affected person is one who has a personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the application. An interest common to members of the general public does not qualify as a personal justiciable interest.

(b) Except as provided by § 55.103 of this title (relating to Definitions)[1], governmental entities, including local governments and public agencies, with authority under state law over issues raised by the application may be considered affected persons.

(c) *In determining whether a person is an affected person, all factors shall be considered, including, but not limited to, the following:*

(1) *whether the interest claimed is one protected by the law under which the application will be considered;*

(2) *distance restrictions or other limitations imposed by law on the affected interest;*

(3) *whether a reasonable relationship exists between the interest claimed and the activity regulated;*

(4) *likely impact of the regulated activity on the health and safety of the person, and on the use of property of the person;*

(5) *likely impact of the regulated activity on use of the impacted natural resource by the person;*

[1] Barring participation by non-river authority state agencies in contested case hearings unless the state agency is the applicant. *See* 30 TAC § 55.103.

(6) for a hearing request on an application filed on or after September 1, 2015, whether the requestor timely submitted comments on the application that were not withdrawn; and
(7) *for governmental entities, their statutory authority over or interest in the issues relevant to the application.*

(d) In determining whether a person is an affected person for the purpose of granting a hearing request for an application filed on or after September 1, 2015, *the commission may also consider the following:*
(1) *the merits of the underlying application and supporting documentation in the commission's administrative record, including whether the application meets the requirements for permit issuance;*
(2) *the analysis and opinions of the executive director; and*
(3) *any other expert reports, affidavits, opinions, or data submitted by the executive director, the applicant, or hearing requestor.*

(e) *In determining whether a person is an affected person for the purpose of granting a hearing request for an application filed before September 1, 2015, the commission may also consider the factors in subsection (d) of this section to the extent consistent with case law.*[2]

The City is an "affected person" entitled to a contested case hearing on issues raised in its hearing request because the City has interests related to legal rights, duties, privileges, powers, or economic interests affected by the Application that are not common to the general public and is an affected person under 30 TAC § 55.203(a). In addition, the City has "statutory authority over" and "interest in the issues relevant to the Application within the meaning of 30 TAC § 55.203(b). The City is also providing additional information to the Commission in this letter, per 30 TAC § 55.203(d)(1), (d)(3) and (e). For example, as discussed more fully below, the City provides wastewater treatment services to areas both inside and outside of its corporate limits, the City has authority over or an interest in the effects on the environment and on public health, safety, and welfare from the Proposed Package Plant and the Proposed Package Plant's wastewater disposal onto land immediately adjacent to a residential neighborhood within the City corporate limits as well as City's ETJ, and the City has an interest in eliminating new potential sources of pollution and protecting the Edwards Aquifer, a significant source of the City's drinking water.

(2) The City's Wastewater Treatment System

According to the Application, the Proposed Package Plant would service 60 townhomes and 95 apartment units (the "**Proposed Service Area**"), with each townhome producing 171.5 gallons per day of wastewater and each apartment producing 122.5 gallons per day of wastewater.[3] The Proposed Package Plant, proposed disposal area, and Proposed Service Area are

[2] 30 TAC § 55.203 (emphasis added).

[3] In a previously filed TPDES permit application for a package plant to serve the same Proposed Service Area, the Applicant based its wastewater flows on an estimated 250 gallons per day per residential connection, consistent with the requirements in 30 TAC § 217.32(a)(3) and the typical number of occupants for residential units in this area (derived from typical single family residence information in the US Census Bureau for the City of Georgetown). The Applicant's use of significantly lower wastewater estimates in the subject TLAP application (e.g., reducing the wastewater estimate for apartment units by more than 50%) is not consistent with the aforementioned TCEQ regulation and typical residential occupancy values for this area. These reduced values result in an underestimate of the volume of treated wastewater produced by the Proposed Package Plant and of the land application area required to dispose of the same.

all immediately adjacent to a residential neighborhood within the City's corporate limits (i.e., the Cole Estates subdivision), immediately adjacent to another residential subdivision in the City's ETJ (i.e., the Sage Creek subdivision), and in close proximity to (and within 5,000 feet of) other neighborhoods within the City's ETJ (e.g., Cimarron Hills, Oaks at San Gabriel, Cedar Hollow Crossing, Lost River Ranch, Middle Gabriel Estates, Estancia, and Crescent Bluff subdivisions).

The City has an interest, consistent with the State's regionalization policy, in reducing or eliminating the number of wastewater package plants so as to reduce or eliminate additional sources of pollution, and protect water quality and public health and safety. To that end, the City owns and operates an extensive wastewater system that eliminates the regional need for package plants such as one described in the Application. The City owns and operates five existing wastewater treatment plants and has a permit for a sixth to be constructed in the near future.[4] The City employs approximately 15 licensed wastewater treatment plant operators and 38 licensed wastewater collection system operators. The City currently provides wastewater service to approximately 39,756 customers. One of the City's wastewater treatment plants, the Cimarron Hills wastewater treatment plant ("**WWTP**"), is within approximately one mile of the Proposed Package Plant (see **Attachment 1**) and has sufficient capacity to accept wastewater flows from the Proposed Service Area.[5] In addition, the City is currently in the design phase of a lift station and major interceptor line that will divert flows from the Cimarron Hills WWTP to the City's South Forks interceptor, which conveys wastewater eastwards to the City's three interconnected WWTPs – Dove Springs WWTP, Pecan Branch WWTP, and San Gabriel WWTP. Together, the three, large, connected plants can currently treat 8.0 MGD, which is the equivalent of 80,000 people (at 100 gpd/ person).[6] The two other plants—the aforementioned Cimarron Hills Plant and the Berry Creek Plant—can treat 0.24 MGD and 0.3 MGD, respectively—which is the combined equivalent of 5,000 people (at 100 gpd/person). Based on information from the US Census Bureau available online at https://www.census.gov/quickfacts/fact/table/georgetowncitytexas#, the City population as of the April 1, 2020 census was 67,176. Thus, the City has more than enough capacity to provide wastewater treatment service to its customers within its corporate limits, its ETJ, and the Proposed Service Area.

The City also has existing wastewater collection systems located well within one mile of the Proposed Service Area. The existing collection system is located approximately 1,200 to the west of the Proposed Service Area and conveys wastewater to the aforementioned Cimarron Hills WWTP. In addition, as noted above, the City anticipates the construction of a lift station and major interceptor that will divert wastewater flows to the South Fork Interceptor, and thence to the City's

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[4] The City owns and operates the following wastewater treatment facilities: Cimarron Hills WWTP (WQ0014232001); San Gabriel WWTP (WQ0010489002); Dove Springs WWTP (WQ0010489003); Pecan Branch WWTP (WQ0010489005); and Berry Creek WWTP (WQ0010489006). In addition, the City holds TPDES Permit No. WQ0010489007 for the Northlands WWTP, which is not yet under construction.

[5] The Cimarron Hills WWTP has an interim capacity of 0.24 MGD and a final capacity limit of 0.46 MGD.

[6] The City is working on increasing its treatment capacity by expanding the capacity of its Dove Springs WWTP by an additional 1.0 MGD in March 2025, an additional 2.0 MGD at its Pecan Branch WWTP in the next two years, and adding two new WWTPs in the next five to six years (i.e., the 10 MGD Three Forks WWTP and 3.0 MGD Northlands WWPT, which will serve the west side of Georgetown).

three interconnected WWTPs, in the next two years. Thus, the City's wastewater collection system has sufficient capacity to serve the Proposed Service Area even as the City continues to grow over the next few years.

(3) The City's Interests in the Application

The City is a home-rule municipality, having the full powers of self-governance, and is authorized to exercise all authority incident to local self-government.[7] In addition to having the powers granted to it as a home-rule city via the Texas Constitution, the Legislature has also expressly granted home-rule cities regulatory authority within the ETJ over issues raised by or relevant to the Application. The Legislature created municipal extraterritorial jurisdiction areas for all cities for the following purposes: "to promote and protect the general health, safety, and welfare of persons residing in and adjacent to the municipalities."[8] Thus, the City has a Legislatively mandated interest in promoting and protecting the general health, safety, and welfare of persons residing inside its city limits and ETJ. In addition, the City "may define and prohibit any nuisance within the limits of the municipality and within 5,000 feet outside the limits" and "enforce all ordinances necessary to prevent and summarily abate and remove a nuisance."[9] In the context of the Application, the City's interests are to promote and protect the general health, safety, and welfare of persons residing in the City's corporate limits and ETJ from deleterious effects caused by the Proposed Package Plant in an area immediately adjacent to both the City's corporate limits and its ETJ.

The Legislature has also granted cities statutory authority over or interest in issues relative to the Application via specific statutes. For example:

- Tex. Water Code Ann. ("**TWC**") Ch. 26, Subchapter E (relating to disposal system rules and water pollution control duties of cities);[10]

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[7] See Tex. Const. art. XI, § 5; Tex. Loc. Gov't Code Ann. § 51.072(a) and (b) ("(a) The [home-rule] municipality has full power of local self-government. (b) The grant of powers to the municipality by this code does not prevent, by implication or otherwise, the municipality from exercising the authority incident to local self-government."); *Lower Colo. Riv. Auth. v. City of San Marcos*, 523 S.W.2d 641, 643 (Tex. 1975); *Quick v. City of Austin*, 7 S.W.3d 109, 122 (Tex. 1999); *Dallas Merch. &Concessionaires Ass'n v. City of Dallas*, 852 S.W.2d 489, 490-91 (Tex. 1993) (Homerule cities do not depend on the Legislature for specific grants of authority but, instead, have a constitutional right of self-government and, look to the Legislature only for specific limitations on their power). *See also, In re Sanchez*, 81 S.W.3d 794, 796 (Tex. 2002); *Proctor v. Andrews*, 972 S.W.2d 729, 733 (Tex. 1998) (For the Legislature to divest home-rule cities of their Constitutional authority, the Legislature's intent to do so must be expressed with "unmistakable clarity.")

[8] Tex. Loc. Gov't Code Ann. § 42.001 ("Purpose of Extraterritorial Jurisdiction. The legislature declares it the policy of the state to designate certain areas as the extraterritorial jurisdiction of municipalities to promote and protect the general health, safety, and welfare of persons residing in and adjacent to the municipalities.").

[9] Tex. Loc. Gov't Code Ann. § 217.042.

[10] *See e.g.*, TWC § 26.177(a)&(b) ("A city may establish a water pollution control and abatement program for the city," which "shall encompass the entire city and . . . may include areas within its [ETJ] which in the judgment of the city should be included to enable the city to achieve the objectives of the city for the area within its territorial

- TWC Ch. 7, Subchapter H (relating to water quality enforcement);[11]
- Tex. Health & Safety Code Ann.§ 121.003(a) ("The governing body of a municipality . . . may enforce any law that is reasonably necessary to protect the public health.");
- Tex. Loc. Gov't Code Ann. § 551.002 ("A home-rule municipality may prohibit the pollution or degradation of and may police a stream, drain, recharge feature, recharge area, or tributary that may constitute or recharge the source of water supply of any municipality" and "may provide for the protection of and may police any watersheds . . . inside the municipality's boundaries or inside the municipality's [ETJ].");
- Tex. Loc. Gov't Code Ann. § 212.003(a) (relating to the ability of a municipality to adopt rules governing plats and subdivisions of land within its corporate boundaries and ETJ, including rules related to the provision of water and sewer service to platted areas, in order to promote the healthful development of the city and public health, safety, and general welfare);[12]
- Tex. Loc. Gov't Code Ann. § 217.042 (A home-rule municipality, like the City, "may define and prohibit any nuisance within the limits of the municipality and within 5,000 feet outside the limits" and "enforce all ordinances necessary to prevent and summarily abate and remove a nuisance.");
- Tex. Loc. Gov't Code Ann. § 552.001 ("A municipality may [(1)]purchase, construct, or operate a utility system," including a sewer system, "inside or outside the municipal boundaries;" (2) "regulate the system in a manner that protects the interests of the municipality;" (3) "extend the lines of its utility systems outside the municipal boundaries;" (4) "sell water [or] sewer . . . service to any person outside its boundaries;" (5) "prescribe the kind of water . . . mains [and] sewer pipes . . . that may be used inside or outside the municipality;" and (6) "inspect those facilities and appliances, require that they be kept in good condition at all times, and prescribe the necessary rules, which may include penalties, concerning them.);
- Tex. Loc. Gov't Code Ann. Ch. 552, Subchapter C (relating to municipal drainage systems); and
- Tex. Loc. Gov't Code Ann. Ch. 551.002 ("A home-rule municipality may buy, own, construct inside or outside the municipal limits, and maintain and operate a . . . sewage plant.").

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jurisdiction. The city shall include in the program the services and functions which, in the judgment of the city . . . will provide effective water pollution control and abatement for the city.").

[11] The enforcement authority and rights granted to cities via TWC § 7.351(a) are different from those of the general public and, having been granted special statutory enforcement rights over water quality matters, the City has authority under state law over issues raised by the Application and Draft Permit. TWC § 7.351(a) authorizes "local government[s]" to bring an action against a person for a violation or threatened violation of Chapter 26 of the TWC occurring in the jurisdiction of that local government in the same manner as the TCEQ may do so—that is, for injunctive relief, a civil penalty, or both.

[12] *Accord* Tex. Loc. Gov't Code § 214.013(a)(2) ("A municipality may . . . require property owners to connect to [its] sewer system.").

In addition, regionalization and need in wastewater permitting cases are issues on which cities that operate wastewater collection and treatment systems, like the City, are uniquely poised to offer evidence. TWC § 26.003 provides that:

> It is the policy of this state and the purpose of this subchapter to . . . encourage and promote the development and use of regional and areawide waste collection, treatment, and disposal systems to serve the waste disposal needs of the citizens of this state; and to require the use of all reasonable methods to implement this policy.

This guiding principle of regionalization and need is enshrined in the introductory provisions of Chapter 26, listed second only to the recognition of private ownership rights of groundwater. Two other pieces of legislation were adopted to underscore this policy—TWC §§ 26.081[13] and 26.0282[14]—relating to the consideration of the regionalization policy, need, and the availability of existing or proposed areawide or regional wastewater collection, treatment, and disposal systems.

The state regionalization policy articulated three times in the Texas Water Code is entirely consistent with the Legislature's creation of ETJs via the Tex. Loc. Gov't Code. The issues of wastewater treatment regionalization and need cannot be evaluated or implemented without the ability to look "regionally" and "areawide"—beyond a city's corporate boundaries. The Legislature has adopted statutes that underscore a city's status as an affected person in cases such as the one at hand by creating ETJs, acknowledging cities' interest in the environment, and issues affecting the health, safety, and welfare in those areas, granting cities authority over issues such as those raised in wastewater permitting applications, and adopting policies relating to regionalization and need in wastewater permitting cases. It is consistent with state law to allow a city's participation in wastewater permitting cases when the facility, outfall, and discharge route are within a city's ETJ. Therefore, the City has authority under state law over issues raised in the application as required for governmental entities under 30 TAC §§ 55.203(b) and 55.203(c)(7).

In summary, the City has interests in issues relevant to the Application because the City has an interest in preventing and abating nuisance conditions within 5,000 feet outside its corporate limits and the Proposed Package Plant and disposal area are both *immediately* adjacent to the City's corporate limits as well as its ETJ'. In addition, the City owns and operates a wastewater treatment plant that can serve the Proposed Service Area. As is detailed more fully below, the City should be granted a contested case hearing to represent the City's interests in regionalization and need, environmental effect, and public health, safety and welfare including pursuing a reduction of

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[13] TWC § 26.081(a) ("The legislature finds and declares that it is necessary to the health, safety, and welfare of the people of this state to implement the state policy to encourage and promote the development and use of regional and area-wide waste collection, treatment, and disposal systems to serve the waste disposal needs of the citizens of the state and to prevent pollution and maintain and enhance the quality of the water in the state.").

[14] TWC § 26.0282 ("In considering the issuance, amendment, or renewal of a permit to discharge waste, the commission may deny or alter the terms and conditions of the proposed permit, amendment, or renewal based on consideration of need, including the expected volume and quality of the influent and the availability of existing or proposed areawide or regional waste collection, treatment, and disposal systems not designated as such by commission order pursuant to provisions of this subchapter. This section is expressly directed to the control and treatment of conventional pollutants normally found in domestic wastewater.").

package plants and eliminating risk of water quality degradation (including in the Edwards Aquifer, which is an important drinking water supply source for the City, and interconnected surface water bodies that flow through the City's ETJ and corporate limits) and nuisance odors and upsets from such plants, to ensure that the health, safety, and welfare of residents in the City limits and in its ETJ will be maintained, and that the plant operator has the technical, managerial, and to ensure that the Applicant and/or plant owner/operator has a good compliance history and the financial capability to construct, operate and maintain the plant. There is a reasonable relationship between the City's stated concerns and the proposed activities to be regulated under the draft permit.

B. Request for Contested Case Hearing

The Proposed Package Plant, disposal area, and Proposed Service Area are *immediately* adjacent to the City's corporate limits and ETJ. The City has a legislatively mandated interest in promoting and protecting the general health, safety, and welfare of persons residing inside its city limits and ETJ (including, but not limited to, by the prohibition of nuisance conditions within 5,000 feet of its corporate limits). Local governments, such as the City, with authority under state law over issues contemplated by an application, are considered affected persons under 30 TAC § 55.203. For the reasons articulated above, the City has justiciable interests that will be adversely affected by this Application.

The City requests that it be granted party status. The City also requests a contested case hearing.

III. COMMENTS ON THE APPLICATION

A. The City has existing permitted wastewater treatment capacity that could meet the need expressed by the Applicant, and the Applicant fails to demonstrate the need for the facility in the context of Regionalization

The City owns and operates an extensive wastewater system that eliminates the need for package plants such as one described in the Application. The City owns and operates five existing wastewater treatment plants, has a permit for a sixth to be constructed in the near future.[15] The City employs approximately 15 licensed wastewater treatment plant operators and 38 licensed wastewater collection system operators. The City currently provides sewer service to approximately 39,756 wastewater customers.

As noted above, one of the City's wastewater treatment plants, the Cimarron Hills WWTP, is within one mile of the Proposed Package Plant (see Attachment 1). In addition, the Proposed Service Area is within 1,200 feet of a wastewater collection system that conveys wastewater to the City's three interconnected WWTPs—i.e., Dove Springs WWTP, the Pecan Branch WWTP, and the San Gabriel WWTP. Together, just these three large, connected plants can treat 8.0 MGD,

[15] *See* n.4, supra.

which is the equivalent of 80,000 people (at 100 gpd/ person). The two other plants—the aforementioned Cimarron Hills Plant and the Berry Creek Plant—can treat 0.24 MGD and 0.3 MGD, respectively—which is the combined equivalent of 5,000 people (at 100 gpd/person). Based on information from the US Census Bureau available online at: https://www.census.gov/quickfacts/fact/table/georgetowncitytexas#, the City population as of the April 1, 2020 census was 67,176. Therefore, the City has more than enough capacity to provide wastewater treatment service to the 60 townhomes and 95 apartment units proposed to be constructed in the Proposed Service Area at the Applicant's requested levels.

The City also has an existing wastewater collection system located well within one mile of the Proposed Service Area. The existing collection system is located approximately 1,200 to the west of the Proposed Service Area and conveys wastewater to the aforementioned Cimarron Hills WWTP. In addition, as noted above, the City anticipates the construction of a lift station and major interceptor that will divert wastewater flows to the South Fork Interceptor, and thence to the City's three interconnected WWTPs, in the next two years. Thus, the City's wastewater collection system has sufficient capacity to serve the Proposed Service Area even as the City continues to grow over the next few years.

The City has planned and constructed its wastewater treatment and collection system to eliminate the need for small package plants serving single subdivisions such as the Proposed Package Plant, consistent with the State's regionalization policy. Because the City's current wastewater treatment and wastewater collection system have sufficient capacity in the area of the Proposed Package Plant to serve the Proposed Service Area, the Applicant has failed to demonstrate the need for the proposed facilities; therefore, consistent with the State's regionalization policy, the TLAP should be denied.

B. The Application fails to demonstrate that the Applicant's proposed facilities satisfy TCEQ's requirements for unsuitable site characteristics

TCEQ regulations do not allow wastewater treatment facilities to be located within a 100-year floodplain. 30 TAC §309.13(a). The Applicant represented that its proposed land application site would not fall within the 100-year floodplain of the Middle Fork San Gabriel River. To support this assertion, the Applicant relied on FEMA FIRM Panel 48491C0275E. (the "**FEMA Map**"). That reliance was misplaced.

The absence of a floodplain on the FEMA Map in the area of the proposed discharge and related facilities does not mean that the Proposed Package Plant is not in a 100-year floodplain. The FEMA floodplain maps typically only show watersheds that are one square mile or more in size. Thus, the fact that no floodplain is shown for the small area in question does not mean that there is not 100-year floodplain present. More thorough analysis of the floodplain extent and water surface elevation is required to accurately assess whether the site of the Proposed Package Plant and disposal area is suitable—especially in light of the existence of a tributary running through northwestern extent of the Applicant's Proposed Service Area (identified as Middle Fork San Gabriel Tributary 13 in Williamson County's floodplain studies mapping system, available online at: https://wilcomaps.wilco.org/vertigisstudio/web/?app=d5a5b30e7e51447e8bd674eef03ee642).

Placement of the Proposed Package Plant and/or disposal area within a 100-year floodplain would pose a significant threat to the surface water and groundwater quality in the receiving stream and in the Edwards Aquifers, which is recharged by hydrologically connected surface waters (e.g., the Middle Fork San Gabriel Tributary 13, as well as the Middle Fork and South Fork of the San Gabriel River).

The site of the Proposed Package Plant is also unsuitable because the treated effluent storage lagoon would be located over the Edwards Aquifer, which violates TCEQ's prohibition on siting of wastewater facilities over a recharge zone of major or minor aquifers "unless the aquifer is separated from the base of the containment structure by a minimum of *three feet* of material with a hydraulic conductivity toward the aquifer not greater than 10-7 cm/sec [,] a *thicker interval* of more permeable material which provides *equivalent or greater retardation of pollutant migration*;" or a synthetic membrane liner "with a minimum of 40 mils thickness and an underground leak detection system with appropriate sampling points." 30 TAC § 309.13(d) (emphasis added). Here, the Applicant has stated that it does not intend to install monitoring wells, suggesting it will not be installing a synthetic membrane liner. *See* Applicant's Domestic Worksheet 3.0, Section 7. However, the soil information provided by the Applicant does not show that the separation criteria have been met as there are only an 11" layer of clay soils and, thereunder, bedrock with a hydraulic conductivity of 1.41 x 10-4 cm/sec in the area of the proposed storage lagoon. *See* pp. 22, 23, and 27 of Attachment O to Applicant's Permit Application. Given the absence of sufficient soil depth for the installation of monitoring wells as part of an effective underground leak detection system and fact that the limestone bedrock in this area of the Edwards Aquifer allows for significant recharge to both surface and groundwater along circuitous pathways, construction and operation of the proposed treated effluent lagoon would pose an unnecessary risk of pollution to the Edwards Aquifer and hydrologically connected surface waters (e.g., the nearby Middle Fork San Gabriel Tributary 13, as well as the Middle Fork and South Fork of the San Gabriel River). Therefore, the permit should be denied.

In addition, the information provided in the Application indicates the proposed land application site is not a suitable location as soils present at the site (EeB and ErB soil groups) are not conducive to growing crops—the soil layer is less than 12" of stony clay, cobbly clay, or other clay soils on top of bedrock (11" below ground surface). While some crops may be able to grow in clay soils, root growth in such a shallow soil profile would tend to create pathways for rapid infiltration into the underlying, and highly transmissive, limestone bedrock. Thus, the permit should also be denied on the basis that the proposed land application area would also not be suitable.

Finally, because the limestone bedrock deposits in this area are known to provide suitable environments for karst-dwelling species, including endangered karst-dwelling species, siting either a treated effluent lagoon or a treated effluent land application site is concerning from the prospective of protecting wildlife and endangered species. Given the difficulty of identifying karst features and karst-dwelling species in the subsurface and the risk of harm posed by permitting the proposed Package Plant and associated disposal area, TCEQ should not issue this permit.

C. Granting the draft permit is not consistent with the Legislature's policy directive to encourage and promote the development and use of regional and areawide waste collection, treatment, and disposal systems per TWC §§ 26.003, 26.081(a), and 26.0282, and the TCEQ's Regionalization Policy for Wastewater Treatment

(1) The City owns and operates a wastewater treatment facility or collection system located within one mile of the Proposed Package Plant and can provide wastewater treatment services to the Applicant at the levels requested

The City owns and operates a wastewater treatment plant and wastewater collection system located with three miles of the Proposed Package Plant. As detailed in above, the City actually currently owns and operates five wastewater treatment plants (one of which is within one mile of the Proposed Package Plant). The City also has a permit to construct a sixth wastewater treatment plant, and owns land on which it plans to seek authorization to construct a seventh wastewater treatment plant. The City's existing wastewater treatment plants together provide 8.5 MGD in treatment capacity—sufficient to provide wastewater service to 85,000 people. The City currently provides sewer service to approximately 39,756 wastewater customers. Thus, the City clearly has more than enough capacity to provide wastewater treatment service to the 60 townhomes and 95 apartment units proposed to be constructed in the Proposed Service Area at the Applicant's requested levels of 0.024 MGD. As detailed elsewhere in this letter, the City also has existing wastewater collection systems for all of its plants, and such a system is currently located within approximately 1,200 feet of the Proposed Service Area. In addition, City is currently designing a lift station and major interceptor to divert wastewater from the nearby Cimarron Hills WWTP to the South Fork interceptor, which conveys wastewater eastward to the City's interconnected wastewater treatment system. Finally, the City employs approximately 15 licensed wastewater treatment plant operators and 38 licensed wastewater collection system operators who are fully trained and capable of operating the City's extensive wastewater treatment and collection system.

(2) The proposed service area is located within the City's updated wastewater master plan, which generally describes how wastewater service will be provided to the studied region

The City updated its 2018 Wastewater Master Plan in 2022 and the Proposed Service Area is located in close proximity to areas included in the Updated Wastewater Master Plan (see **Attachment 2**). As with all municipal master plans, the Updated Wastewater Master Plan provides a general outline for accomplishing the City's and community's mutual goals—in this case the goal of providing wastewater services to the west side of the City, including the Proposed Service Area.

With regards to the City's provision of wastewater service to the Proposed Service Area, the Applicant did not make a written request for service, which would have allowed the City to make a comprehensive evaluation of all potential points for connecting to the City's wastewater collection system. In addition, the Applicant did not provide information pertaining to the type and cost of connecting infrastructure. The City's preliminary oral response to the Applicant assumed that there would be no other development in the area and no cost-sharing or economies

of scale that would mitigate the cost to the Applicant or relieve it of the burden of bearing the entire cost of new regional infrastructure. However, there is other development occurring in the area and there may be alternatives to connecting infrastructure described in the City's Updated Wastewater Master Plan that could be considered and approved by the City Council.

(3) Other faster and less costly alternatives for connecting to the city's wastewater exist

The Updated Wastewater Master Plan covers the Proposed Service Area, so it is a given that some portions will develop faster or differently than planned. Therefore, the City has several processes or mechanisms to provide more nimble and nuanced evaluations of how wastewater service might be provided in a specific instance. Those alternatives have not been discussed by the City and the Applicant since the Applicant did not submit a written request for service from the City. In addition, the Application does not include information about the construction time and costs for the Proposed Package Plant and land application area. Nevertheless, the City anticipates that connecting the Proposed Service Area to the City's nearby, existing wastewater collection system (~1,200 feet west of the Proposed Service Area) would proceed more quickly and be less costly than building the Package Plant and associated land application area.

There are other residential developments in the area as well as wastewater collection and treatment system improvements that may align with the Applicant's schedule. Some of this new infrastructure may be able to be utilized by the Applicant either as is, or with some upsizing, and may significantly reduce Applicant's cost to connect to the City's wastewater system compared to the costs of the regional infrastructure described in the Updated Wastewater Master Plan. In other words, there may be service alternatives available to the Applicant that are not presented in the Application that make connection to the City's wastewater system both timely and cost-effective. On approval by the City Council, those alternatives would be available to the Applicant.

D. The Application is not substantially complete and accurate

The Application is materially incomplete in that it fails to provide relevant information that is necessary for the TCEQ to conduct a full analysis of the possible effects of the Proposed Package Plant and land application area on water quality, karst features and karst-dwelling species, surrounding existing uses (e.g., livestock and crop production), and the need / justification for their construction. The missing information includes, but is not limited to, the following:

- the Applicant's failure to provide correspondence with the City, demonstrating that a request for service was made by the Applicant and denied by the City;
- cost information to allow for a comparison of the cost to build the Proposed Package Plant versus the cost to connect to the City's existing, nearby wastewater collection system;
- the absence of information regarding surrounding land uses;
- a geological assessment and information about karst features within the Proposed Service Area and in close proximity thereto;

- information about potential karst-dwelling species within the Proposed Service Area or in close proximity thereto.

In addition, the Application includes the following inaccurate information: wastewater flows for the residential connections in the Proposed Service Area are based on arbitrary values (171.5 gallons/day per townhome and 122.5 gallons/day per apartment) rather than the values set forth in 30 TAC § 217.32(a)(3) and the engineering conventions for such residential connections (assuming 2.5 people and 100 gallons per person per day for townhomes and 1.9 persons and 100 gallons per person per day for apartments); the concentration of nitrogen in treated effluent is underestimated (assumed to be 20 mg/L rather than a more conservative 30 mg/L); and no phosphorus estimate is provided for the treated effluent. Taken together, these incorrect estimates yield an incomplete and unrealistic picture of the volume of treated water, nutrient concentration therein, and the land application rate and area required to ensure protection of water quality in groundwater and hydrologically connected surface waters, beneficial uses of the same (including crop production and other agricultural uses), and environmental receptors (including livestock, wildlife, karst-dwelling species, and other aquatic life).

In the absence of accurate and complete information, the TCEQ cannot conclude that the Proposed Package Plant is needed, justified, and can be built and operated without adverse impacts to, inter alia, groundwater and surface water quality, karst features, and karst-dwelling species (including endangered species). Thus, because the state's regionalization policy cannot be shown to be implemented or that an exception is therefrom is justified, the permit should be denied.

E. The draft permit is not protective of groundwater quality and hydrologically connected surface waters, or of existing uses of such surface waters in accordance with Texas Surface Water Quality Standards, including protection of public health and enjoyment of waters in the state and aquatic and terrestrial life

Given that the slightest plant upset would adversely affect the water quality in the treated effluent pond and groundwater and surface waters to which the treated effluent may flow, the City is concerned that the proposed discharge poses risks to water quality in the Edwards Aquifer and hydrologically connected surface waters, and may create unsanitary or unsafe water quality conditions, which may affect the health and safety of its citizens, their enjoyment of such waters as they pass through the City's corporate and ETJ limits, and other non-human receptors (including karst-dwelling species).

As noted above, the concentration of nitrogen appears to be underestimated in the Application and no information is provided regarding other pollutants (e.g., phosphorus, bacteria, per- and polyfluoroalkyl substances or "**PFAS**") in the treated effluent. At the proposed irrigation rate over the relatively small land application area, there is an unacceptable risk that nitrogen and other pollutants may "break through" and affect water quality in the Edwards Aquifer and hydrologically connected surface waters in the absence of permit limits to safeguard water quality for drinking water and other beneficial uses (including aquatic life protection for endangered karst-dwelling species).

A study prepared by Glenrose Engineering in November 2011 for the Greater Edwards Aquifer Alliance regarding the impact of land-applied wastewater effluent on the Edwards Aquifer identified significant increases of nitrogen concentrations in surface water bodies in proximity to the land application sites, with resulting adverse changes to the aesthetic, chemical, and biological condition of those water bodies (algal blooms, low dissolved oxygen ("**DO**") conditions, cloudy/murky conditions, etc.). *See* **Attachment 3** at 11–19. Given the interconnection of shallow surface water and surface water in the recharge zone of the Edwards Aquifer, the City is concerned that the proposed discharge of treated effluent will have similar adverse effects on water quality in the Middle Fork San Gabriel Tributary 13, the Middle Fork or South Fork San Gabriel river stems, and the City's Blue Hole park, which is just downstream of the proposed Package Plant and effluent disposal area. Adverse changes to the water quality of these streams may result in the impairment of the beneficial uses of these water bodies—e.g., aquatic and wildlife uses, recreational uses, etc.—may affect the health of City residents and persons recreating in Blue Hole and the Middle Fork and South Fork San Gabriel River stems, and may have significant adverse economic impacts on river-front businesses in the City and other nearby businesses that are rely on Blue Hole park goers, river recreational users, and other tourist traffic spurred by the community's investment in river related recreational opportunities and waterfront businesses.

Because the draft permit does not contain limits and conditions to safeguard groundwater quality, the quality of hydrologically connected surface waters, beneficial uses, and human and non-human receptors, the draft permit is inconsistent with Texas' antidegradation and regionalization policies, the latter of which includes the promotion of use of existing area-wide waste collection, treatment, and disposal systems to prevent pollution. In light of the foregoing, the permit should be denied.

F. The Draft Permit is not protective of the public health and safety of nearby residents

The City is also concerned about the public health risk posed by the Proposed Package Plant to nearby City residents. The City is concerned that the very close distance of the Proposed Package Plant, treated effluent storage pond, and land application area to adjacent residences poses the potential for nuisance odors and health risks, including the contamination of groundwater wells (due to over-irrigation), and the potential exposure of residents to harmful pathogens via vectors (e.g., flies), aerosols (e.g., bacteria containing mists), and the receiving water (e.g., bacteria and viruses in the treated wastewater). Because the treated effluent will be used in the middle of a residential neighborhood to irrigate hay for livestock feed, the permit should require the Applicant's treated effluent to comply with the requirements for Type 1 reclaimed water (e.g., bacteriological testing; and *biweekly* sampling), the maintaining of a chlorine residual in the treated effluent pond to prevent noxious bacterial growth and attendant nuisance odors, as well as nitrogen and phosphorus limits that ensure protection against pollution of groundwater and interconnected surface water and the creation of nuisance conditions in such surface waters. In the absence of such conditions, the draft permit is not protective of public health and the safety of nearby residents; for this reason, the permit should be denied.

G. The Draft Permit does not protect 'the habitat of karst-dwelling species, including endangered species

The Proposed Package Plant and land application area are proposed to be sited in a Karst Zone 1 area—that is, an area "known to contain endangered karst invertebrate species." *See* TCEQ Chief Engineer's Office, Water Programs, "Optional Enhanced Measures for the Protection of Water Quality in the Edwards Aquifer and Related Karst Features that May be Habitat for Karst Dwelling Invertebrates," RG-348B at 5, 7 (Sept. 2007), available online at: https://www.tceq.texas.gov/downloads/publications/rg/appendix-b-to-rg-348.pdf. In addition, the City is aware that at least four karst features have been mapped in the Sage Creek subdivision and that the Georgetown salamander, an endangered karst-dwelling species, has been identified in upstream and downstream segments of the Middle Fork San Gabriel River. *See* Williamson County, Known Locations of Salamander Springs (Nov. 2011), available online at: https://www.wilcotx.gov/DocumentCenter/View/1355/Map-of-the-Approximate-Locations-of-the-Salamander-Species-PDF.

However, the draft permit does not include permit limits or other conditions to ensure protection of water quality protective of the Georgetown salamander, such as requiring a 100-foot setback or buffer from the centerline of streams as is required under the City's ordinance relating to "Water Quality Regulations for Property Located Over the Edwards Aquifer Recharge Zone." City's Unified Development Code § 11.07.030, available online at: https://library.municode.com/tx/georgetown/codes/unified_development_code?nodeId=UNDECO_CH11ENPR_S11.07WAQUREPRLOOVEDAQREZO_S11.07.030SPBUSTBUP. This, despite the fact that "the primary threat to both [the Georgetown and Salado salamanders] is habitat modification in the form of degraded water quality and quantity"; that these species "depend on high-quality water in sufficient quantities for survival, growth, and reproduction"; that "[t]he Georgetown salamander is thought occur exclusively in springs along two tributaries of the San Gabriel River drainage in the vicinity of Georgetown in Williamson County" (and in proximity to the Proposed Service Area); and that "substrate modification [also poses] a threat to both of these species since interstitial spaces are a critical component of their surface habitat." *See* Industrial Economics, Incorporated Memorandum to the U.S. Fish and Wildlife Service, "Screening Analysis of the Likely Economic Impacts of Critical Habitat Designation for the Georgetown and Salado Salamanders" at 3 (Apr. 13, 2021), available online at: https://downloads.regulations.gov/FWS-R2-ES-2020-0048-0032/content.pdf.

In the absence of permit provisions requiring a robust groundwater monitoring system to ensure the Proposed Package Plant and associated land application area do not degrade groundwater quality and water quality in hydrologically connected surface waters, to prevent the filling of interstitial spaces, and to provide such other protections as may be necessary to ensure the protection of the Georgetown salamander and other karst-dwelling species (such as limiting irrigation rates to prevent contamination of the Edwards Aquifer), the permit should be denied.

H. The draft permit does not contain sufficient operational requirements to ensure that water quality is protected

(1) The draft permit does not contain irrigation-related limits to safeguard water quality in both groundwater and hydrologically connected surface waters

As noted above, the draft permit does not contain permit limits or conditions that limit the amount of nitrogen applied to the land application area, the rate of application, limits for other drinking water pollutants (e.g., PFAS constituents), or that require the installation of a robust subsurface leak detection system for the treated effluent pond. In the absence of such conditions, there is an unacceptable risk that the use of treated effluent for irrigation of hay at the Proposed Service Area will pollute, degrade, or otherwise adversely affect groundwater (i.e., the Edwards Aquifer) and/ or hydrologically connected surface waters. Therefore, the permit should be denied.

(2) The draft permit does not require adequate sampling and monitoring

The Proposed Package Plant would operate 24/7, but only be monitored by grab sample once per month for biochemical oxygen demand ("**BOD**") and total suspended solids ("**TSS**"). This means that that less than 15 minutes of the facility's operations over a three-month period must be monitored. And because grab samples in two consecutive months could be taken as much as 59 days apart, treated effluent could violate water quality standards for some or all of that time without any means of detection or notice. This sampling frequency and testing regime does not provide adequate assurances to the City or the public that the treated effluent will not introduce other pollutants to the Edwards Aquifer or that the plant is producing an effluent meeting the requirements of the draft permit during the long periods of time that the plant is unmonitored. Because the proposed land application area lies over the Edwards Aquifer, a significant source of drinking water supply for the City, sampling for only BOD and TSS—and only on a monthly basis—is not sufficient protect the Edwards Aquifer.

More frequent monitoring of BOD, TSS, and other pollution indicators should also be required given the porosity of limestone bedrock in this area and attendant high potential for interconnection with shallow surface water bodies (including the Middle Fork San Gabriel Tributary 13, which flows through the northwest extent of the Applicant's Proposed Service Area; Middle Fork San Gabriel river; and South Fork San Gabriel river), which flows through the City's ETJ and corporate limits and affect water quality in Blue Hole, a scenic pond on the South San Gabriel River that provides water recreation for residents and tourists and draws a significant amount of tourist traffic to nearby restaurants and other businesses.

Finally, with regard to the type of sampling, a grab sample only reflects performance at the single, short point in time when the sample was collected, and then only if the sample is properly collected. The results can change depending on time of day or whether the plant is operating near its average daily flow rate. More than likely, these samples will be taken during daylight hours when flows are at their lowest part of the diurnal curve, so plant performance will be at its best.

Composite sampling[16] techniques are more representative of the characteristics of the effluent over a longer period of time and more accurately reflect how the treatment plant is performing at all points along the diurnal curve. Although grab sampling may be fine for pH, DO, or total residual chlorine, which can change quickly in water once the sample is taken, composite sampling would be more appropriate for other parameters like BOD, TSS, ammonia nitrogen, total phosphorous, and E. coli. Also, if a single grab sample does not meet permit conditions, adjustments to the plant can be made and additional grab samples taken to get the average back in compliance with the permit parameter.[17]

Respectfully submitted,

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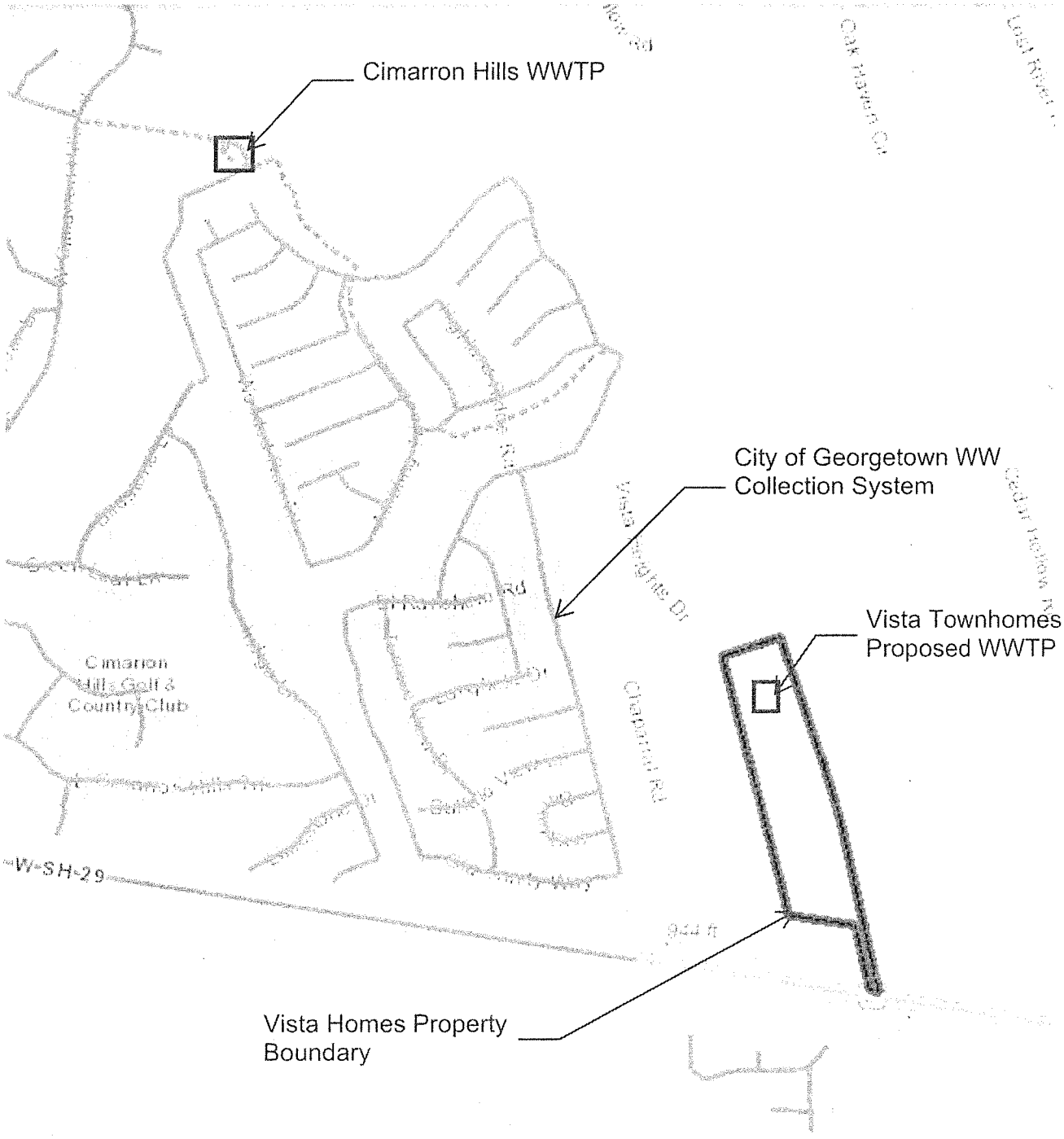
ATTORNEYS FOR CITY OF GEORGETOWN

[16] Composite sampling consists of a collection of numerous individual discrete samples taken at regular intervals over a period of time, like 24 hours, or continuous sampling.

[17] While unscrupulous, such a practice would still meet the permit's sampling requirements. This is a widely known problem in the industry and should not be exacerbated by issuing permits with lax sampling requirements.

ATTACHMENT 1

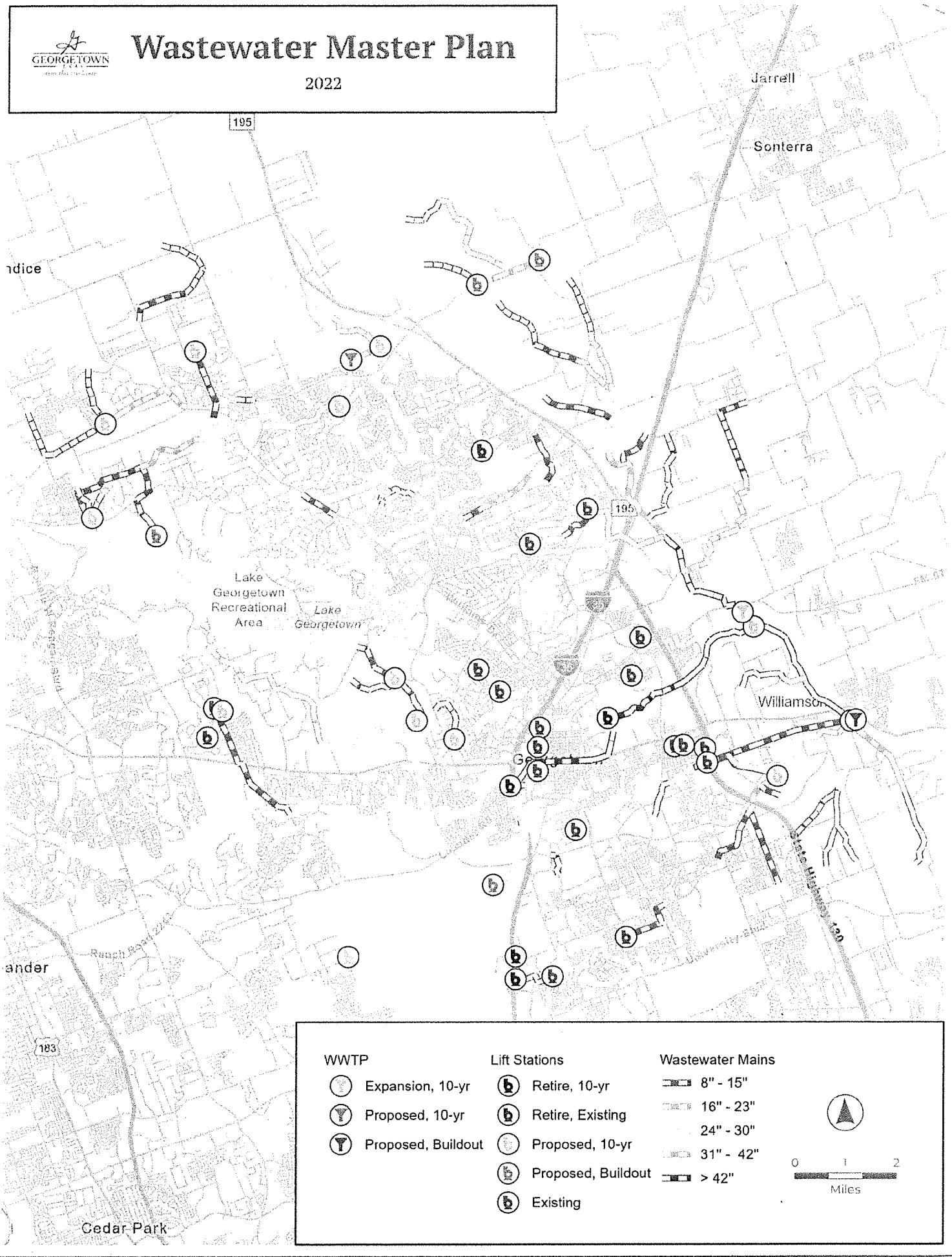
City of Georgetown, Tex. Wastewater Facilities
in Vicinity of Proposed Service Area for Vista Townhomes WWTP



ATTACHMENT 2

Wastewater Master Plan

2022



ATTACHMENT 3

Land-Applied Wastewater Effluent Impacts on the Edwards Aquifer

Prepared for:

Greater Edwards Aquifer Alliance

and

Save Our Springs Alliance

By:

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D Lauren Ross

4 November 2011

November 2011

Contents

Tables

Figures

Acknowledgements

This work draws upon many years of research regarding the vulnerability of and threats to the Edwards Aquifer conducted by the Edwards Aquifer Authority, the Barton Springs/ Edwards Aquifer Conservation District, the United States Geological Survey, and the City of Austin. I would like to recognize the contributions of Barbara Mahler, Raymond Slade, George Veni, George Rice, Geary Schindel, Martha Turner, Chris Herrington, Mateo Scoggins, Ed Peacock, Scott Hiers, David Johns, Nico Hauwert, Sylvia Pope, Joan Balogh, and Nancy McClintock for decades of faithful effort to understand and protect the Edwards Aquifer.

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Executive Summary

This report examines existing evidence that wastewater effluent discharged in the Barton Springs and San Antonio Edwards Aquifer contributing zones under Texas Land Application Permits (TLAPs), issued by the Texas Commission on Environmental Quality, have failed to protect springs, creeks, rivers, and groundwater. Significant findings of the study include:

- The total TLAP-permitted daily flow in the Barton Springs Edwards Aquifer contributing zone is 5.75 million gallons per day, compared with only 3.18 million gallons per day in the San Antonio Edwards contributing zone. On a per acre basis, the permitted effluent in the Barton Springs Edwards Aquifer contributing zone is 24 times the amount in the San Antonio Edwards Aquifer contributing zone.
- Across the Barton Springs and San Antonio Edwards Aquifer recharge zones from Austin to Brackettville, there are currently no TLAPs. A recently proposed TLAP system over the Barton Springs Edwards Aquifer recharge zone presents a significant new threat to aquifer water quality.
- TLAPs are wildly inconsistent in terms of requirements for wastewater treatment, offline effluent storage volume, irrigation area size, or downgradient monitoring. The result of these inconsistencies is widely different levels of protection for downgradient springs, streams, rivers, and wells.
- Sparsely available monitoring data from streams and/or springs downstream from TLAPs indicate significant degradation of the high quality water that would naturally occur at those locations.
- Regulations governing TLAPs should be overhauled to provide a consistent and high level of water quality protection across the Edwards Aquifer.

In the context of the thin soils, numerous springs, and delicately sensitive Texas Hill Country streams, rivers, and aquifers, any wastewater effluent system represents the threat of permanent and significant degradation. Only by soundly based and strictly enforced regulations can we balance provision of wastewater infrastructure to suburban residences with protection of the natural streams and springs that draw people to these areas.

Introduction

In the drought-prone, arid area of the Texas Hill Country, springs, creeks, rivers, and groundwater are valued for their clarity and purity. These pristine water characteristics arise out of a unique natural setting of geology, soils, and vegetation. Partly ***because*** of their limited water supply, watersheds that sustain Texas Hill Country streams and aquifers have remained primarily rural ranch land.

With the combined pressures of increasing population and water importation, however, rural ranch land is rapidly being converted to suburban development. Along with more people and more water comes more wastewater. Because of their unique sensitivity to pollution, the Texas Commission on Environmental Quality (TCEQ) and its predecessor agencies have traditionally refused to grant wastewater effluent discharge permits within the San Antonio Edwards and Barton Springs recharge and contributing zones. An alternative permit, the Texas Land Application Permit (TLAP), has been granted instead. A TLAP requires that all wastewater effluent be irrigated onto fields or wooded areas, rather than being piped directly into a river or stream.

Until recently the number of TLAPs within the Texas Hill Country watersheds has been small. In 2003, for example, the volume of effluent disposal through TLAP permitted systems for the Barton Springs contributing zone was 1.7 million gallons per day.[1] As more people choose to live outside of the central urban areas, however, the volume of wastewater effluent being disposed of through TLAPs is burgeoning. By 2010, 7.2 million gallons per day of effluent irrigation had been permitted in the Barton Springs Edwards Aquifer contributing zone.

This report examines available evidence that current TLAP standards have failed to protect springs, creeks, rivers, and groundwater. It identifies significant permit inconsistencies; and short-comings of the current regulations governing TLAP permits terms. It recommends necessary regulatory changes to protect the character and quality of pristine Texas Hill Country streams and springs against an onslaught of expanding development and larger wastewater effluent volumes that come with increased human habitation.

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[1] Herrington, Chris, Matthew Menchaca and Matthew Westbrook, *Wastewater Disposal Practices and Change in Development in the Barton Springs Edwards Aquifer Recharge Zone,* City of Austin Watershed Protection Department, 2010, and personal communication.

Setting

This study addresses effects of wastewater effluent disposal in the San Antonio and Barton Springs Edwards Aquifer contributing zones shown in Figure 1. This study region was selected because of its uniquely beautiful landscape; the importance of springs and stream flow in an otherwise water-short setting; and because the characteristics of these springs and streams make them naturally vulnerable to degradation from wastewater effluent. The following sections provide additional information on the streams and aquifers in the study region.

Natural Stream Conditions

There are ten major streams or rivers that originate in the contributing or recharge zones and carry water across the recharging limestone to sustain flow in the Edwards Aquifer. From west to east, these are the West Nueces, the Nueces, the Frio, the Sabinal, Hondo Creek, the Medina, the Guadalupe, the Blanco Rivers, Onion Creek and Barton Creek. In addition to these major rivers and creeks, there are numerous smaller creeks with unique biological habitat and beauty that contribute flow to the aquifer and springs. The pristine conditions of these creeks are also shared by other creeks and rivers near to, but outside of the Edwards Aquifer area, like the Pedernales River and its tributary Lick Creek.

Photograph 1. East Lick Creek in Travis County, Prior to Effluent Irrigation Impacts

Flow in these streams and rivers are characterized by two distinct regimes: a high flow regime shortly following storm rainfall; and a long duration low or baseflow regime. The long duration of the low-flow baseflow regime provides little to no dilution of any pollutants from wastewater effluent.

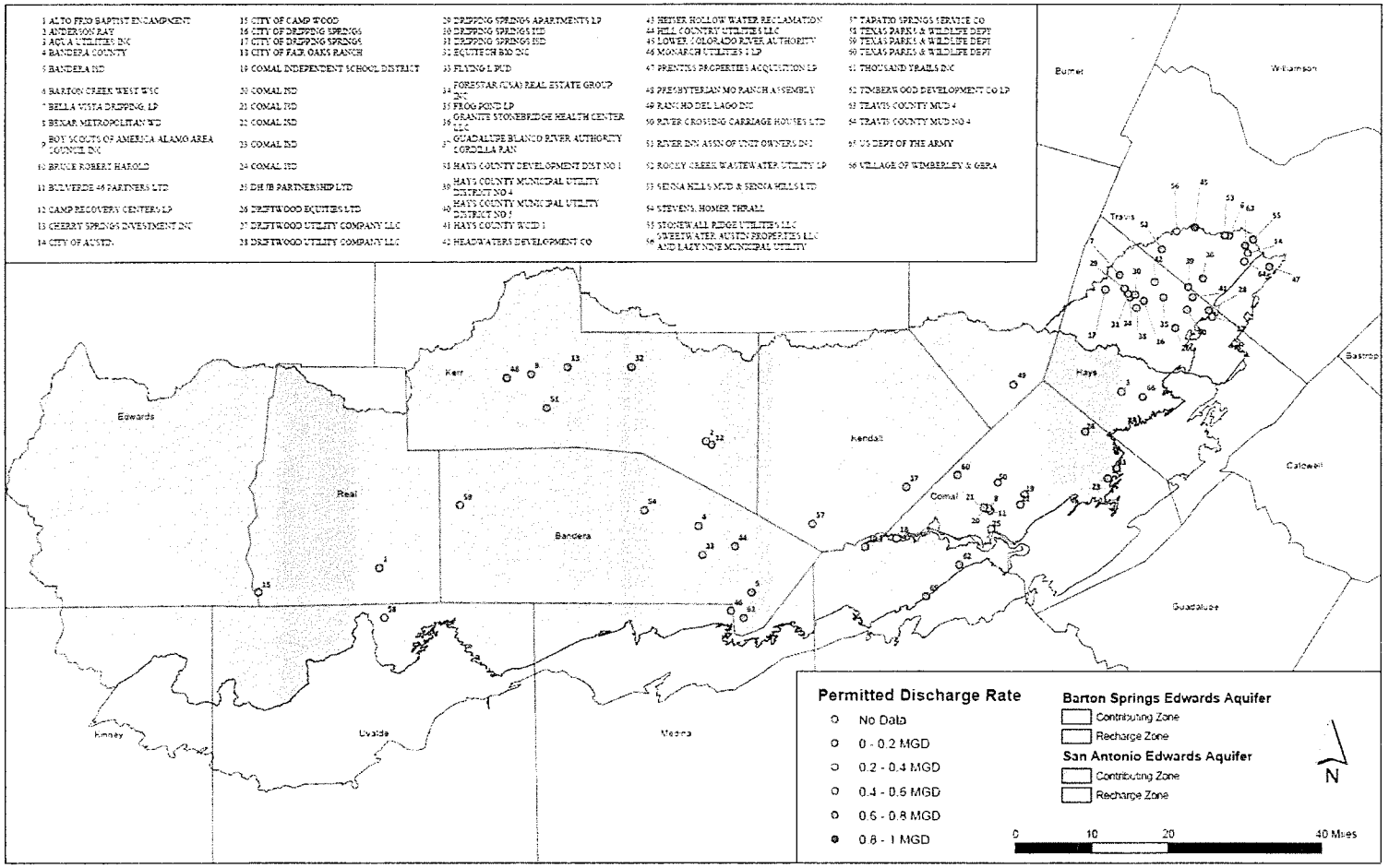
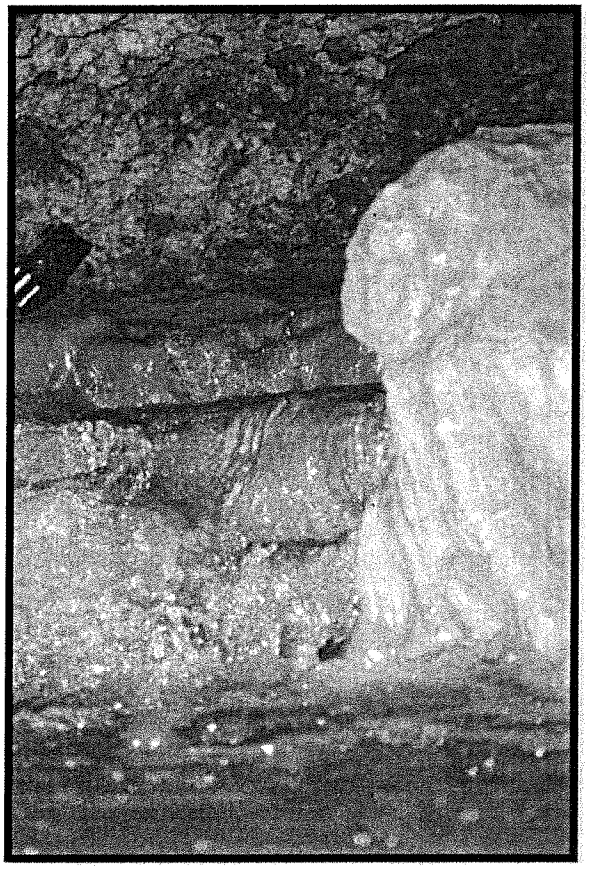


Figure 1. TLAPs Permitted within the San Antonio and Barton Springs Recharge and Contributing Zones

These Hill Country streams are also characterized by very low nutrient concentrations. Typical total phosphorous concentrations during baseflow conditions in a pristine Hill Country stream range from about 0.003 to 0.010 milligrams per liter and total nitrogen ranges from about 0.1 to 0.7 milligrams per liter.[2] Streams with these nutrient concentrations are classified as "oligotrophic." Oligotrophic waters are clear, with little algae. They have consistently high dissolved oxygen levels that support fish and other aquatic life.

Edwards Aquifer

Both the San Antonio and the Barton Springs Edwards Aquifers are karst systems. Groundwater flows through voids dissolved from the limestone. These voids range in size from pencil-width or smaller, to "big enough to drive a truck through." Water can move through a karst aquifer from recharge to discharge points in a matter of hours. The large passageways and rapid movement offer little opportunity for filtration or natural attenuation. Pollution that enters this aquifer shows up quickly in springs or wells. Karst aquifers are uniquely vulnerable to damage from pollution, including wastewater effluent.



Photograph 2. Underground Flow of Water in Blowing Sink Cave, Travis County, Texas

Pollution enters the Edwards Aquifer with the flow of recharging water. Understanding the source of water into the Edwards, both under natural conditions and in the presence of effluent irrigation conditions, is important to protecting the aquifer from pollution. Water can enter the Edwards Aquifer from four sources:

1. from upstream watersheds through recharge

[2] Herrington, Chris, *Impacts of the Proposed HCWCID 1 Wastewater Discharge to Bear Creek on Nutrient and DO Concentrations at Barton Springs,* City of Austin Watershed Protection Department, 2008; and Mabe, J.A., "Nutrient and biological conditions of selected small streams in the Edwards Plateau, Central Texas, 2005–06, and implications for development of nutrient criteria." *U.S. Geological Survey Scientific Investigations Report 2007–5195*, 2007.

features in creek channels;

2. through soil and fractured rock;
3. through internal drainage into sinkholes; and
4. from overlying or adjacent aquifers.

A recent study by Hauwert[3] estimated that 27% to 36% of the Barton Springs discharge might be sourced from upland areas rather than from stream bottoms. That study also determined that the proportion of rainfall recharging through soil-covered areas increased from 3% of rainfall during average rainfall conditions to 26% of rainfall during wet conditions.

This experimental finding is significant in two ways for understanding the potential effect of TLAPs on Edwards Aquifer water quality. First, the findings indicate direct connection between upland areas, where effluent irrigation occurs, and the underlying aquifer. There is no requirement that effluent first migrate to a channel bottom for aquifer degradation to occur. Second, aquifer recharge through soils regularly irrigated with effluent will be significantly higher than through soils saturated only by rainfall.

Wastewater treatment plants built for Shady Hollow and Travis Country residential developments in the 1980s irrigated wastewater effluent onto the recharge zone. Both plants were closed in the early 1990s to protect the Barton Springs Edwards Aquifer water quality. Currently there are no TLAPs for either the San Antonio or Barton Springs Edwards Aquifer recharge zones. There is, however, currently a permit application before the Texas Commission on Environmental Quality for such a system.[4]

A significant portion of the Edwards groundwater enters the aquifer through openings in the bottom of streams. Water to these stream bottoms is provided from their entire watersheds, which may stretch as far as 50 miles beyond the recharge zone boundary. These relatively large contributing watersheds gather rainfall runoff and then funnel it across stream bottom recharge features where the Edwards Limestone crops out. Wastewater effluent disposal within both the recharge and contributing areas would potentially affect the aquifer water quality.

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[3] Hauwert, Nico. *Groundwater Flow and Recharge within the Barton Springs Segment of the Edwards Aquifer, Southern Travis and Northern Hays Counties, Texas.* Dissertation, University of Texas at Austin, 2009, page 213.
[4] Jeremiah Venture, L.P., February 1, 2007.

Wastewater Effluent

Of the wastewater generated and disposed of within the study area, the majority is municipal or domestic wastewater. Domestic wastewater is a mix of human urine and feces, soaps, detergents, cleaning products, body care products, and pharmaceuticals. The Federal Clean Water Act, originally passed in 1972 and subsequently amended, requires communities to treat wastewater before releasing it into streams or rivers.

Wastewater treatment however, usually addresses only a couple of wastewater characteristics. Oxygen demand is treated by inoculating wastewater with a concentrated liquor of biological microorganisms; and then supporting their growth by bubbling air into the mixture. After a certain amount of time, this mixture is transferred to a clarifying basin where suspended solids settle to the bottom of the basin. The clearer water flows over the top edge of the basin into the next basin. Chlorine is added to sterilize pathogens, and the wastewater effluent is then discharged to streams or rivers.

Wastewater effluent permits do ***not*** require treatment to remove metals, pharmaceutical chemicals, or the wide range of chemicals found in body care products, soaps, detergents, pesticides, or other cleaning products. These chemicals remaining in treated effluent are undesirable additions to pristine streams or aquifers. They reduce oxygen levels, kill fish, and stimulate algae blooms. These chemicals contribute to the occurrence of cancer, birth defects and impaired health. Even at very low concentrations, nutrients, toxic metals, pesticides, and pharmaceuticals disrupt aquatic life. Some of these chemicals may accumulate in fatty tissue, impair ability to reproduce, escape predation, maintain proper metabolism, and/or lead to premature death.

Municipal wastewater typically contains 20 to 85 milligrams per liter of total nitrogen. Approximately 60% of the nitrogen will be in the form of ammonia; and 40% bound up in plant and animal tissue. Activated sludge and similar treatment processes typically reduce effluent total nitrogen concentrations to 15 to 35 milligrams per liter. Advanced biological nitrification/denitrification processes can achieve total nitrogen concentrations of 2 to 10 milligrams per liter.[5]

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[5] Solomon, Clement, et al. *Trickling Filters: Achieving Nitrification.* National Small Flows Clearinghouse. http://www.nesc.wvu.edu/pdf/WW/publications/eti/TF_tech.pdf, September 25, 2011.

Elevated nutrients in drinking water can also significantly affect human health. Elevated nitrate concentrations have been linked to methemoglobinemia (blue baby syndrome), bladder and ovarian cancers in older women, and brain cancer in children of women using private well water during pregnancy. When combined with factors like low vitamin C or high meat intake, more than 10 years of exposure to water with more than 5 milligrams per liter of nitrate has been associated with a significant increase in the risk of colon cancer. Studies have also found positive associations between higher levels of nitrate intake during pregnancy and infant neural tube and congenital heart defects.[6]

Although nutrients are essential for a healthy ecosystem, natural ecosystems are precisely tuned to historical nutrient timing and concentrations. Nutrients higher than historical levels disrupt habitat. Increased plant growth pulls more oxygen out of the water when the dead plant matter decomposes. Excessive plant material also reduces stream velocities and increases sediment bottom deposition.

Current Texas Land Application Permits (TLAPs) in the Barton Springs and San Antonio Edwards Contributing Zones

Texas has historically recognized the sensitivity of the Edwards Aquifer by refusing to permit wastewater effluent discharges directly into creek and rivers within the San Antonio and Barton Springs Edwards Aquifer recharge and contributing zones. Wastewater treatment systems within these areas have been required to obtain a Texas Land Application Permit (TLAP), rather than a Texas Pollution Discharge Elimination System (TPDES) permits. In February 2009 TCEQ granted a direct discharge permit to Hays County Municipal Utility District No.1 (Belterra Subdivision), overturning decades of precedent requiring a more protective permit standard. To date there have been no TLAPs issued for either the San Antonio or Barton Spring Edwards Aquifer recharge zones.

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[6] Mary H. Ward, Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health, Department of Health and Human Services, Bethesda, MD, Jean D. Brender, Department of Epidemiology and Biostatistics, Texas A&M Health Science Center, School of Rural Public Health, College Station, TX, Nitrate in Drinking Water: Potential Health Effects in Dubrovsky, N.M., Burow, K.R., Clark, G.M., Gronberg, J.M., Hamilton P.A., Hitt, K.J., Mueller, D.K., Munn, M.D., Nolan, B.T., Puckett, L.J., Rupert, M.G., Short, T.M., Spahr, N.E., Sprague, L.A., and Wilber, W.G., 2010, The quality of our Nation's waters—Nutrients in the Nation's streams and groundwater, 1992–2004: U.S. Geological Survey Circular 1350, 174 p. http://water.usgs.gov/nawqa/nutrients/pubs/circ1350.

Effluent disposal under TLAP is generally more protective of creeks, rivers, springs, and the aquifer, compared with a TPDES disposal permit. Effluent receives additional treatment within plant roots and soil in several ways. Water is removed by plant roots and evapotranspiration, reducing the hydraulic pressure to carry contaminants beyond the disposal field. Soil organisms and plants convert nutrients into living cells. Toxic chemicals are transformed into safer substances. Chemicals are bound to organic matter and clay. Metals precipitate and are bound into the soil by iron and clay.

Whether or not these processes work effectively, however, depend on several aspects of the TLAP system:

- the chemical quality of treated effluent;
- the effluent application rate;
- soil depth;
- offline effluent storage capacity, used when the soil is saturated or frozen;
- excess vegetation removal; and
- monitoring and adjusting effluent irrigation in response to weather and rain.

Permit copies were obtained for this report from the TCEQ for 64 out of a total of 70 TLAPs issued for systems operating within the contributing zones of the San Antonio and Barton Springs Edwards Aquifer. Basic characteristics regarding the permitted flow, effluent quality, application rates, and storage volume were extracted from the TLAPs and are presented in Appendix A.[7]

The degree to which TLAPs degrade rivers, streams, and springs depends partly on the volume of wastewater that is treated and disposed of within a given area. Figure 1 illustrates the high density of TLAP systems in the Barton Springs Edwards Aquifer contributing zone compared with the San Antonio Edwards Aquifer contributing zone. An analysis of the data supports the visual impression. Table 1 compares TLAPs in the San Antonio and Barton Springs Edwards contributing zones. The permitted effluent volume in the Barton Springs Edwards Aquifer contributing zone is almost twice the volume permitted in the San Antonio contributing zones, even though the San Antonio contributing area is 17 times larger. On a per-area basis, there is 24 times as much wastewater effluent permitted for

[7] Permits for six systems in the San Antonio Edwards contributing zone were not located. These permits are listed in Appendix B.

irrigation in the Barton Springs Edwards Aquifer contributing zone compared with the San Antonio Edwards.

Table 1. Permitted TLAP Effluent in the Barton Springs Edwards Aquifer Contributing Zone Compared with the San Antonio Edwards

Aquifer	Total Flow (MGD)	Total Irrigated Area (acres)	Zone Area (acres)	GPD per Acre
Barton Springs	5.75	2,063	238,557	24
San Antonio Edwards	3.18	1,461	4,177,172	1

River, stream, well and spring degradation also depends on the degree of effluent treatment before it is irrigated onto the soil. There is a wide variety of effluent treatment methods, effluent quality standards, effluent storage capacity, and irrigation area size requirements in TLAPs issued within the study area. Table 2 lists the different types of treatment technologies and the number of permits associated with each. Of the 64 TLAPS, 44 use the activated sludge treatment method described above. Twelve of the TLAPs either fail to specify any required treatment method, or specify a treatment method less effective than activated sludge.

Table 2. Treatment Technologies for TLAPs in the Study Area

Treatment Methods	
Treatment Method	**Number of TLAPs**
activated sludge	44
septic tank	6
single stage nitrification	2
not specified	2
membrane bioreactor	2
septic and textile filter	1
S&L Fast K 1086 T	1
facultative lagoon	1
disk filtration	1
Cycle-let	1
aerobic treatment	1
aeration basin	1

Out of the 64 TLAPs, only 10 specify limits on nutrient discharges. Of these 10 that specify nutrient limits, eight limit only ammonia nitrogen. An ammonia limitation does ***not***, however, reduce available nitrogen in the discharge. In the activated sludge system used in each of these eight systems ammonia nitrogen is converted to nitrate nitrogen.[8] Nutrient nitrogen is not removed; it is simply converted to a different form.

In addition to differences in treatment methods and nutrient standards, TLAPs in the San Antonio Edwards and Barton Springs contributing zones differ widely in terms of the allowed application rates and the required effluent storage volume. An examination of the information in Appendix A indicates that the permit-allowed application rates range from 0.08 to 12.20 acre-feet per acre per year. The most common application rate is 4.88 acre-feet per acre per year, equivalent to the subsurface drip irrigation rate of 0.1 gallons per day per square foot. Twenty seven of the 64 current permits specify this application rate. Note, however, that the next section describes three systems with this application rate that exhibit indications of downstream degradation.

Out of 64 TLAPs, only 43 specify an effluent storage volume requirement. Twenty-one TLAPs have no effluent storage requirements. All permit-required volumes have been converted to "days of storage." See Appendix A. This measure is the number of days for which the entire permitted flow could be contained in the storage volume. Since the value of effluent storage is the ability to postpone irrigation during saturated or frozen soil conditions, this measure in days is comparable between facilities across the range of permitted flows.

Of those that require effluent storage, required volumes range across five orders of magnitude, from 0.08 to 308 days. Effluent storage required for subsurface irrigation systems ranges from 0.08 to 70 days; and the average is 5.8 days. For surface irrigation systems the range is 12 to 308 days and the average is 70 days. The wide difference in average storage reflects differences in TCEQ regulations for subsurface and surface irrigation TLAPs. This wide difference in average storage requirements does not, however, reflect any difference in the sorptive capacity of the soils. In general, systems with less storage will be less protective of rivers, streams, wells, and springs than those with more storage. For

[8] Solomon, Clement, et al., *Trickling Filters: Achieving Nitrification*; National Small Flows Clearinghouse, http://www.nesc.wvu.edu/pdf/WW/publications/eti/TF_tech.pdf, September 25, 2011.

this and other reasons, subsurface irrigation systems represent a greater risk of degradation compared to surface irrigation.

Evidence of Degradation from TLAP Wastewater Systems

Monitoring to determine whether TLAPs have damaged streams, creeks, springs, and wells is not required by Texas environmental regulations; nor is it a requirement of most permits. Nevertheless, water monitoring programs by other agencies indicate stream and aquifer degradation in streams and springs associated with TLAPs. This section summarizes some of the available water quality measurements indicating TLAP systems have resulted in degraded water quality.

Hays County Water Control Improvement District No. 1

Hays County Water Control Improvement District No. 1, for the Belterra Subdivision, holds a subsurface irrigation permit for 150,000 gallons per day. The irrigation area is 35 acres in the Bear Creek watershed, tributary to Onion Creek, and located about seven stream miles upstream of the Barton Springs Edwards Aquifer recharge zone. The authorized application rate for this drip irrigation system is 4.88 acre-feet per acre per year. The system has 2.2 days of effluent storage, and the treatment limits, on a daily average, are 20 milligrams per liter biochemical oxygen demand and 20 milligrams per liter total suspended solids. There are no nitrogen or phosphorous effluent limits.

The City of Austin collected water quality samples from Bear Creek at seven locations to determine whether wastewater effluent irrigation associated with the Belterra Subdivision may have caused creek degradation.[9] The City's program includes monitoring from a spring at Aspen Drive upstream of possible TLAP irrigation field influences, downstream to a riffle at Bear Creek Pass. The City has also monitored four tributary locations to assess the impact of their inflows on Bear Creek water quality.

[9] Turner, Martha, *Bear Creek Receiving Water Assessment – January 2009 – March 2010,* City of Austin Watershed Protection Department, SR-10-10, September 2010.

The City's monitoring and data analysis found higher nitrate concentrations at sites immediately below the Belterra TLAP irrigation fields compared with nitrate in the spring above the irrigation fields.[10] The average nitrate concentration increased from 0.47 milligrams per liter upstream, to 1.31 milligrams per liter downstream of the TLAP irrigation area. See Figure 2. This nitrogen concentration increase shifts Bear Creek across the classification boundary between an oligotrophic and a mesotrophic stream at 0.7 milligrams per liter.

Chlorophyll-a concentrations, a measure of algae, were also higher in the Davis Pond immediately downstream from the irrigation fields, compared with the pond at Bear Creek Pass. Similarly, there are significantly higher occurrences of plants and algae above the Davis Pond, compared with the sampling site at Bear Creek Pass.[11]

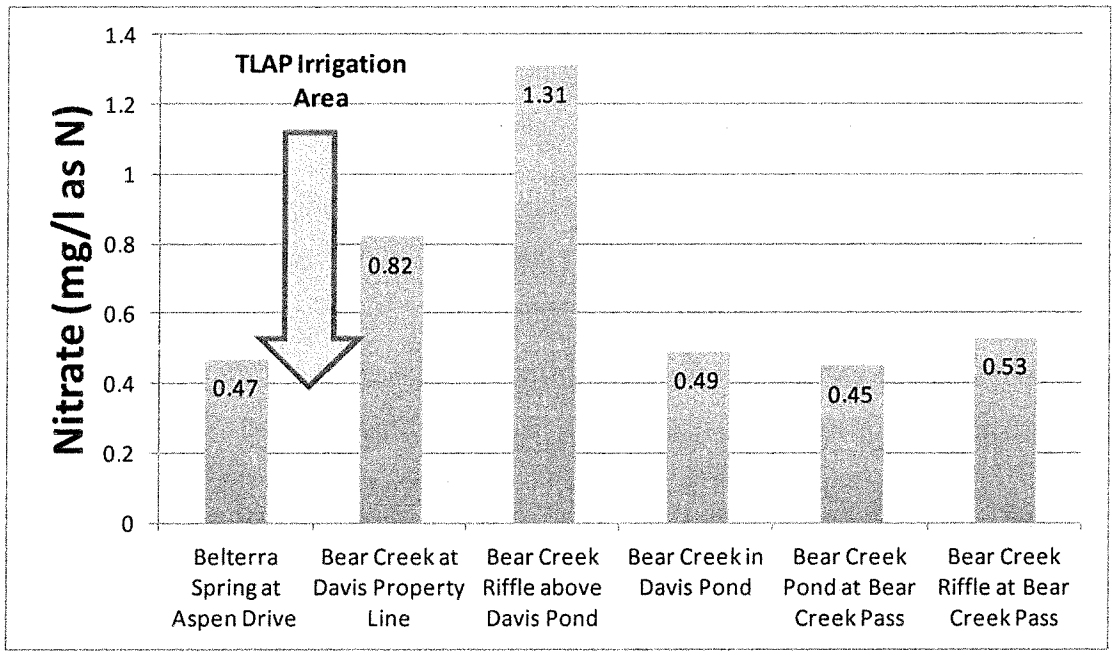

Figure 2. Increased Average Nitrate Concentration Downstream from Belterra TLAP Irrigation Area

[10] Turner, Martha, *Bear Creek Receiving Water Assessment – January 2009 – March 2010,* City of Austin Watershed Protection Department, SR-10-10, September 2010, page 10.
[11] Turner, Martha, *Bear Creek Receiving Water Assessment – January 2009 – March 2010,* City of Austin Watershed Protection Department, SR-10-10, September 2010.

Sources other than effluent irrigation could produce higher nitrate concentrations and algae indicators downstream from the TLAP irrigation fields. These sources include subdivision fertilization, cattle ranching, and suburban stormwater runoff. There are several factors, however, that suggest that the observed water quality degradation is associated with the TLAP system, rather than any of these alternative sources:

- Nitrate concentrations are similar in Bear Creek at the Davis property line and in the Davis Pond. The property line site is above the influence of any cattle on the Davis property.
- Nitrate concentrations are highest during low flow situations. If the source were storm runoff, high concentrations would be observed during high flow, storm runoff conditions.
- Nitrate concentrations are highest during winter months. This pattern is consistent with TLAP effluent application when plant uptake is reduced.
- Algae occurrence increased during baseflow following heavy rains, suggesting that nutrients in the irrigation field may be flushed during these events.

In addition to sampling in the main stem of Bear Creek, the City of Austin also sampled two tributaries. One tributary north of the pond has relatively better quality than Bear Creek. Contributions from this tributary dilute nutrients and improve Bear Creek water quality.

Measurements on samples collected by the City of Austin from the western tributary to Bear Creek are similar to those of the main stem below the Belterra irrigation fields. This western tributary is downstream from the Highpointe subdivision, which is located on its headwaters. Like Belterra, Highpointe is served by a TLAP effluent irrigation system. This system is permitted for 300,000 gallons per day, subsurface irrigated on 68.87 acres. The application rate, 4.88 acre-feet per acre per year, is the same as Belterra's. Effluent treatment standards for Highpointe are the same as for Belterra.

Similarly to the situation in Bear Creek above and below the Belterra effluent irrigation fields, nitrates were relatively low (less than 0.004 milligrams per liter) in the western tributary above the Highpointe TLAP fields; and increase below the TLAPS irrigation fields to about 0.64 milligrams per liter.[12]

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[12] Turner, Martha, *Bear Creek Receiving Water Assessment – January 2009 – March 2010,* City of Austin Watershed Protection Department, SR-10-10. September 2010, Figure 11.

Barton Creek West

Barton Creek West is a residential subdivision in the Barton Creek watershed. The subdivision is located about 8 miles west of downtown Austin on Bee Caves Road. The Barton Creek West Homeowners Association, Inc. was registered in April 1985; and the subdivision currently consists of 398 homes.[13] The TLAP authorizes treatment and surface irrigation of 126,000 gallons of effluent per day on 53.3 acres of native grass. The allowed application rate is 2.7 acre-feet per acre per year. The system includes 62.7 acre-feet of storage to store 162 days of effluent. Treatment limits, on a daily average, are 10 milligrams per liter biochemical oxygen demand and 15 milligrams per liter total suspended solids. The permit does not restrict nitrogen or phosphorous in the treated effluent.

The City of Austin has monitored water quality in Scenic Bluff Spring, downstream of the irrigation fields since 1997. Average nitrate concentrations in this pool are 1.3 milligrams per liter[14]; and the maximum observed concentration is 5.9 milligrams per liter. Nitrate concentrations in uncontaminated wells and springs from the Glen Rose formation, from which this spring emerges, are about 10 to 50 times lower than these concentrations; on the order of 0.1 milligrams per liter.

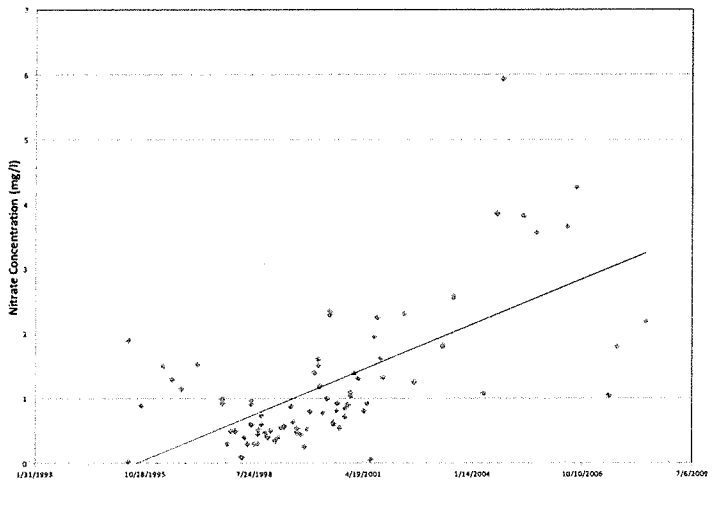


Figure 3. Increasing Nitrate Concentrations in Scenic Bluff Springs Over Time

[13] Barton Creek West HOA. https://community.associawebsites.com/sites/BartonCreekWestHOA/Pages/AcwDefault.aspx, September 25, 2011.
[14] Nitrate concentration as nitrogen.

Figure 3 is a graph of nitrate concentrations in Scenic Bluff Spring as a function of time. The graph shows a clear trend of increasing concentrations. Grotto Spring, also apparently downgradient from the irrigation fields shows a similar trend of increasing nitrate concentrations with time.

Hebbingston Hollow, downstream from Bluff Springs, has been dammed to form a small pond. The presence of a thick algae layer across the entire surface of the pool on June 11, 2009 demonstrates the consequences of the high nitrate concentrations measured in the spring.

Photograph 3. Algae-Covered Pool Downstream from Barton Creek West Irrigation Fields

Residential lawn fertilization may be another source for the observed nitrate concentration increases over time in the two springs downstream from the Barton Creek West effluent irrigation fields. Monitoring by the City of Austin, however, suggests that stream nitrogen concentrations downstream from suburban residential areas on septic systems are relatively low compared with similar areas irrigated with effluent. See Figure 4. This difference suggests that irrigated effluent is at least partly the source of the elevated nitrate concentrations observed in Bluff Springs.

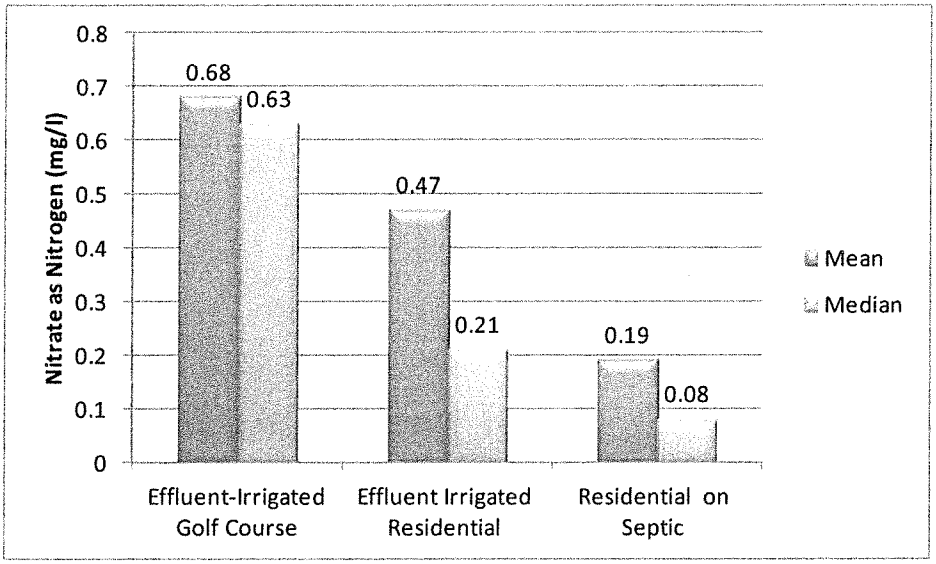


Figure 4. Nitrate Concentration in Barton Creek Canyons Baseflow

West Cypress Hills

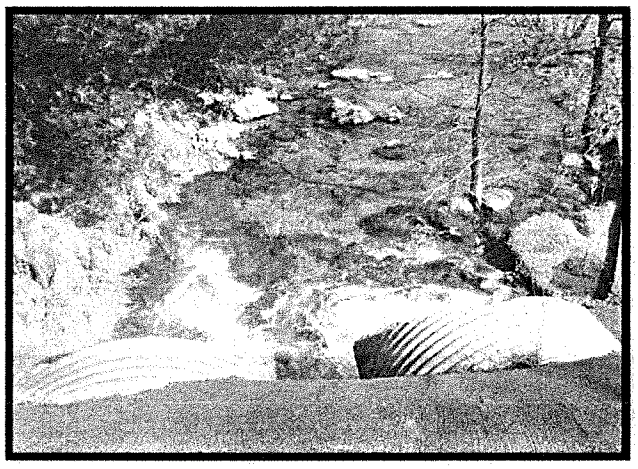
West Cypress Hills is a residential subdivision located about 16 miles west of central Austin. Although the system is located just outside of the contributing zone to the Barton Springs Edwards Aquifer, it is included here because soils, geology, climate, and regulatory requirements for wastewater effluent are similar to many of the systems within the subject area of this study. This is another TLAP system for which water quality measurements in East Lick Creek above and below the TLAP irrigation fields are available. There is also another branch of Lick Creek, West Lick Creek without wastewater effluent irrigation, for which water quality measurements provide a comparable reference.

West Cypress Hills is proposed to be constructed in three phases. The first phase, begun in 2003, encompassed construction of 88 residences.[15] The second and third phases of the development contemplate construction of an additional 244 and 895 residences, respectively. The final phase of this permit would allow 31,000 gallons per day to be applied through a subsurface drip irrigation system to 72.08 acres. Allowed application rates are 4.88 acre-feet per acre per year. At least three days of effluent storage are required. Effluent permit limits are 20 milligrams per liter biochemical oxygen

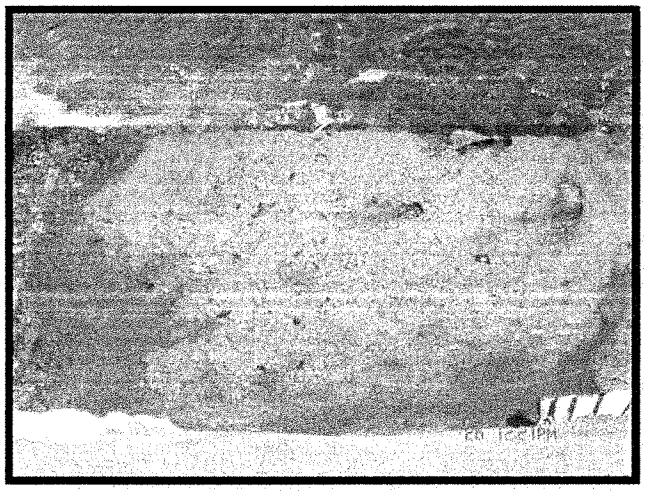
[15] The Moore Group, *Cypress Ranch Phase One*, Section One. Engineer's Report. April 6, 2003.

demand and 20 milligrams per liter total suspended solids, on a daily average basis. There are no nutrient limit requirements.

The owner's representative collected water quality samples from springs and streams upstream and downstream from the West Cypress Hills TLAP irrigation area in June and September 2007. Nitrate concentrations in these data, presented in Figure 5 show a pattern similar to the one observed downstream from the TLAP irrigation areas for Belterra and Barton Creek West.



Photograph 4. West Lick Creek Downstream from Pedernales Canyon Trail



Photograph 5. Algae in East Lick Creek Downstream from Pedernales Canyon Trail

Nitrate concentrations are low upstream from the irrigation fields. These concentrations rise sharply just downstream from the irrigation fields. Further downstream concentrations are once again lower. More extensive algae coverage of the creek, and the presence of algae types like *Cladophora,* however, indicate that the trophic state of the stream has been altered even where nutrient measurements in the water column are relatively low. Photograph 4 and Photograph 5 depict the difference in algae coverage in East Lick Creek downstream for the currently irrigated areas, compared with clear flow in West Lick Creek, where there are currently no effluent-irrigated fields in the watershed.

As with any suburban development, there are other potential nutrient sources. The West Cypress Hills developer originally believed that the source of the nitrogen might be a commercial plant nursery, a horse barn, or storm runoff from Highway 71. Nitrate concentrations from stream locations downgradient from these sites, however, are lower than at sites below the effluent irrigation areas.

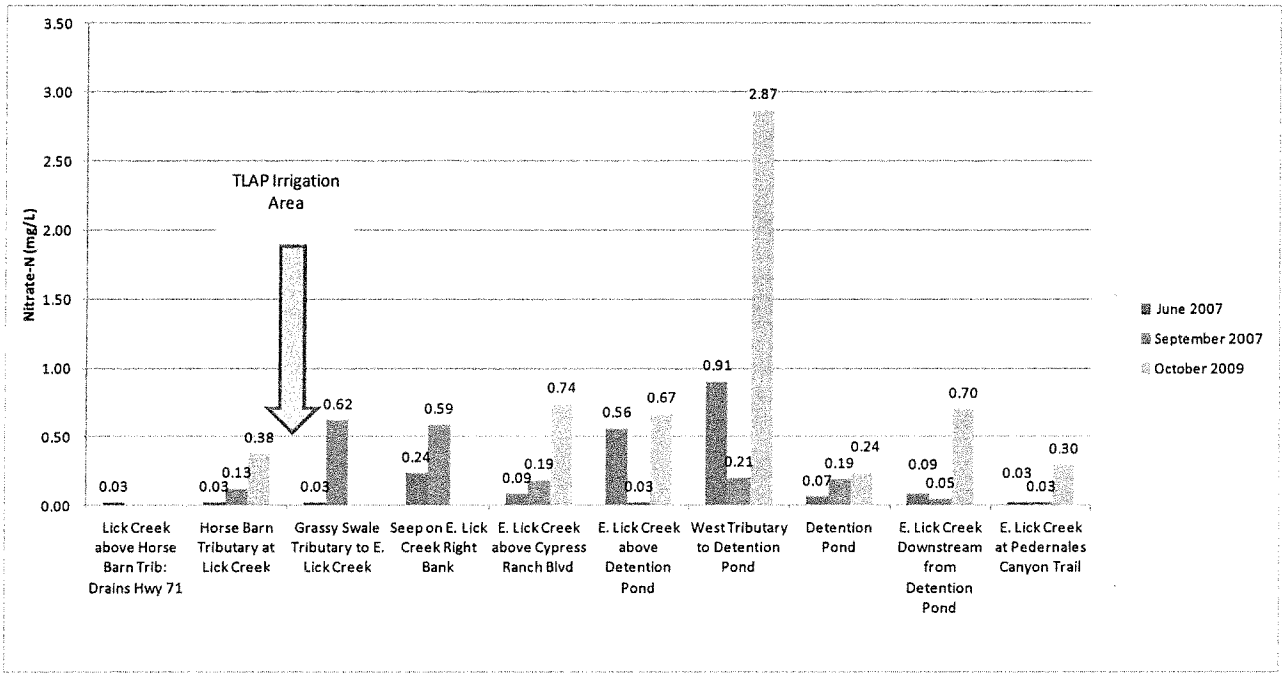


Figure 5. Nitrate Concentrations Above and Below West Cypress Hills TLAP Irrigation Fields

Other possible sources are residential lawn fertilization and compost used to revegetate the construction site.

Effluent Land Application in Other Areas

The soils, climate, and geology of the Edwards Aquifer are unique. There is evidence from other locations, however, that corroborate groundwater degradation from the land application of effluent in similar systems. A study of well and spring water quality in the karstic Wakulla Spring in northern Florida found nitrate-nitrogen concentrations increased from about 0.2 to 1.1 milligrams per liter downstream from a 17 million gallon per day wastewater spray field farming operation on 313 acres. The largest contribution to the nitrogen load, 55%, was attributed to municipal wastewater. Nitrate isotope signatures ($\delta^{15}N$ and $\delta^{18}O$) in groundwater match those of the effluent.

Boron and chloride concentrations were elevated. One pharmaceutical compound, carbamazepine (an anti-convulsant drug) was also detected in the groundwater. Spring-fed streams in Florida have experienced a proliferation of nuisance aquatic vegetation and algal growth.[16]

TLAP Noncompliance with Regulation Requirements

The following section discusses recommended improvements to current TLAP regulatory requirements. Before recommending regulatory improvements, however, it seems important to identify inadequate implementation of existing regulations.

Required Soil Monitoring

TCEQ regulations do not require stream, river, well, or spring monitoring downstream from effluent irrigation areas. 30 TAC §309.20 (b)(4) does, however, require pre-operational and annual soil testing of pH, total nitrogen, potassium, phosphorus, and conductivity. This requirement is included as part of each TLAP in Special Provision 10: "*The permittee shall submit the results of the soil sample analyses to the TCEQ Regional Office and Water Quality Compliance Monitoring Team of the Enforcement Division during September of each year.*"

A search of TCEQ records, however, indicates reported soil monitoring results for only two of the 64 TLAPs within the study area. Even for these limited reported data, only 2 out of the 18 include the required nitrogen measurements. Given indications of nutrient migration from the effluent irrigation fields resulting in significant water degradation, the failure by TCEQ to regulate and enforce what is clearly intended to be an early warning system on nutrient accumulation in the soil disposal zone is troubling.

Failure to Properly Review TLAP Applications

Numerous parties, including the City of Austin, Barton Springs Edwards Conservation District, the Lower Colorado River Authority, Hays County, and Save Our Springs Alliance are currently contesting a TLAP for Jeremiah Venture to treat and irrigate 330,000 gallons per day of wastewater effluent over

[16] Katz, Brian, Dale Griffin, J. Hal Davis, "Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: chemical and microbiological indicators." *Science of the Total Environment,* 407, 2872-2886, 2009.

the recharge area of the Barton Springs Edwards Aquifer. There are currently no surface or subsurface TLAP systems permitted within the San Antonio or Barton Springs Edwards Aquifer recharge zones.

Given the potential significance of this precedent-setting permit, and using the legal authority and resources of the contested hearing process, the City of Austin, Save Our Springs Alliance and Save Barton Creek Association undertook an in-depth review of the Jeremiah Venture TLAP application. The results of the review indicated that the TLAP application failed to represent the potential for significant degradation in the following ways:

- Effluent irrigation was proposed for areas where the soils were determined to be unsuitable for effluent irrigation because they were too rocky, thin, and clayey, and/or had more than 50% bedrock outcrop. Other irrigation areas were determined to be unsuitable because they were on gradients approaching 15% and soil water holding capacities were less than 2 inches.[17]
- The applicant's assessment identified four sinkholes, no caves, four solution cavities, and 14 closed non-karstic depressions. By comparison, a geologic assessment by the City of Austin,[18] conducted over eight days, identified nine cave features, 35 sinkholes, 27 karst depressions, 24 non-karst closed depressions, 23 solution enlarged fractures, 39 solution cavities, and 3 swallow holes. The applicant's assessment failed to characterize the potential for wastewater effluent migration through a sensitive karst region into the underlying Barton Springs Edwards Aquifer.
- Irrigation field sizing is based on a water balance of effluent irrigation, rainfall, runoff, evapotranspiration, and deep percolation. This water balance is particularly sensitive to the evapotranspiration estimates. The applicant's water balance was based on estimated evapotranspiration rates for dryer conditions west of the proposed Hays County location. The significance of this difference was that the applicant overestimated the volume of water that could be applied to the proposed irrigation area by 29%; and underestimated the required effluent storage volume by almost half.[19]

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[17] SOAH Docket No. 582-09-1617; TCEQ Docket No. 2008-1858-MWD. *Application of Jeremiah Venture, L.P. for a New TLAP, Permit No. WQ0014785001*, Direct Testimony of Dr. Lawrence (Larry) P. Wilding. July 31, 2009, pages 50-51.
[18] Hauwert, Nico, *Preliminary Phase I Assessment of the Jeremiah Ventures Site,* for the City of Austin, September 25, 2009.
[19] Ross, Lauren, *Engineering Analysis of Jeremiah Ventures L.P. Proposed Wastewater Irrigation Areas; Draft,* December 2009.

- As required by TCEQ regulations, the applicant provided a water balance for the wettest year of record: 2004. The wettest year of record does not, however, necessarily capture critical rainfall and evapotranspiration conditions. Weather conditions during 2007, a year with a lower rainfall total than 2004, are more restrictive in terms of both effluent irrigation area and storage volume. Nevertheless, the applicant was allowed to size these facilities based on a model using 2004 data.

The applicant proposed to provide wastewater service to 1450 residences. The number of residences that could be served using a water balance based on the appropriate evapotranspiration rates and providing buffers to the City of Austin-identified recharge features is 800. This significant financial incentive to the applicant to misrepresent actual site conditions can only be addressed by consistent and careful review by the authorizing agency, the Texas Commission on Environmental Quality.

Recommendations

Given the number of currently permitted TLAP systems, particularly in the Barton Springs Edwards Aquifer contributing zone, and existing evidence of degraded streams and springs, several changes to TLAP regulations are warranted. These changes include:

- Given that karst features beneath irrigation areas cannot be completely identified, mapped or defined, spray effluent irrigation, as well as subsurface effluent irrigation, over recharge areas should be prohibited.
- Consistent effluent standards to limit concentrations of total nitrogen and phosphorous should be established. Any limitation based upon ammonia nitrogen alone provides no additional protection. Advanced wastewater treatment methods can consistently reduce total phosphorous concentrations to near or below 0.01 milligrams per liter.[20] Combined total nitrogen and total

[20] EPA Region 10, *Advanced Treatment to Achieve Low Concentration of Phosphorus,* April 2007, http://yosemite.epa.gov/r10/water.nsf/Water+Quality+Standards/AWT-Phosphorus/$FILE/AWT+Report.pdf, September 26, 2011.

phosphorous removal systems can achieve annual average concentrations less than 3 milligrams per liter and 0.1 milligrams per liter, respectively.[21]

- Subsurface effluent application does not increase soil storage or treatment capacity. In fact, because the potential evapotranspiration from the surface of tree and plant leaves is lost, the effluent storage and treatment capacity for subsurface effluent application is actually less than for surface applications. Furthermore, subsurface application bypasses the surface soil barrier to chemical and microbial migration.[22] Current rules should be changed to require the same effluent storage capacity for subsurface as for surface application systems.
- The same engineering basis should be used to determine effluent application rates and storage volume requirements for both surface and subsurface systems. That basis should be a daily time-step water balance using historic rainfall rates and evapotranspiration rates from representative weather stations within 25 miles of the proposed facility. The water balance modeling period should be the period of record.
- The leaching allowance in the current TLAP regulations is, essentially, an amount of effluent allowed to deep percolate into underlying aquifers. The leaching allowance should be eliminated.
- TLAPs should require downgradient monitoring, including nitrate, boron, chloride concentrations, nitrogen and oxygen isotope signatures and measures of the occurrence of algae, to identify any wastewater effluent contamination of springs, streams, and wells.[23]
- In addition to the current general prohibition, TLAPs should require soil monitoring to measure saturated or frozen conditions and prevent effluent application.
- Existing regulations requiring regular soil monitoring should be expanded to include a process for identifying soil monitoring results that would trigger a re-examination of the permit terms to prevent wastewater effluent chemical migration to streams, springs, and wells.

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[21] Kang, Shin, Kevin Olmstead, Krista Takacs, James Collins, *Municipal Nutrient Removal Technologies Reference Document,* EPA 832-R-08-006, September 2008, http://water.epa.gov/scitech/wastetech/upload/mnrt-volume1.pdf, September 26, 2011.

[22] Katz, Brian, Dale Griffin, J. Hal Davis, "Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: chemical and microbiological indicators." *Science of the Total Environment,* 407, page 2884, 2009.

[23] Katz, Brian, Dale Griffin, J. Hal Davis, "Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: chemical and microbiological indicators." *Science of the Total Environment,* 407, 2872-2886, 2009.

In the context of the thin soils, numerous springs, and delicately sensitive Texas Hill Country streams, rivers, and aquifers, any wastewater effluent system represents the threat of permanent and significant degradation. Only with soundly based and strictly enforced regulations can we balance provision of wastewater infrastructure to suburban residences with protection of the natural streams and springs that draw people to these areas.

Appendix A. TLAPs in the San Antonio and Barton Springs Edwards Contributing Zones

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
Barton Springs													
	11319-001	CITY OF AUSTIN, LOST CREEK	Barton Creek	0.52	308.42	1.89	43.36	activated sludge	35	10	15	-1	-1
	12786-001	BARTON CREEK WEST WSC	Barton Creek	0.13	53.30	2.65	162.15	activated sludge	35	10	15	-1	-1
	13206-001	TRAVIS COUNTY MUD 4	Barton Creek	0.72	298.70	2.70	75.13	activated sludge	30	5	5	2	-1
	13238-001	SENNA HILLS MUD & SENNA HILLS LTD	Barton Creek	0.16	70.30	2.50	112.08	activated sludge	30	5	5	2	-1
	13594-001	LOWER COLORADO RIVER AUTHORITY Lake	Barton Creek	1.00	350.00	3.20	32.59	activated sludge	35	5	5	2	-1
	13748-001	DRIPPING SPRINGS ISD	Onion Creek	0.02	3.44	4.88	0.00	septic tank	100	-1	-1	-1	-1
	13748-002	Dripping Springs ISD	Onion Creek	0.03	3.83	7.31	0.00	activated sludge	65	-1	-1	-1	-1
	13860-001	GRANITE STONEBRIDGE HEALTH CENTER LLC	Onion Creek	0.01	1.59	7.03	0.00	septic tank	100	30	30	-1	-1
	14077-001	PRENTISS PROPERTIES ACQUISITION LP	Barton Creek	0.00	0.00		70.45	Cycle-let	30	5	-1	-1	-1
	14146-001	DRIPPING SPRINGS APARTMENTS LP	Onion Creek	0.01	3.57	4.39	58.19	activated sludge	65	20	20	-1	-1
	14208-001	HAYS COUNTY DEVELOPMENT DIST NO 1	Onion Creek	0.30	120.00	2.80	72.31	activated sludge	30	5	5	-1	-1
	14235-001	DRIFTWOOD EQUITIES LTD Salt Lick	Onion Creek	0.01	2.30	4.87	2.53	activated sludge	35	10	15	-1	-1
	14293-001	HAYS COUNTY WCID 1 Beltera	Onion Creek	0.15	35.00	4.80	2.20	not specified	65	20	20	-1	-1

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
Barton Springs													
	14309-001	HAYS COUNTY MUNICIPAL UTILITY	Barton Creek	0.15	34.44	4.88	2.22	single stage nitrification	65	20	20	-1	-1
	14358-001	HAYS COUNTY MUD 5 Highpointe	Onion Creek	0.30	68.87	4.88	2.22	activated sludge	65	20	20	-1	-1
	14430-001	TRAVIS COUNTY MUD NO 4	Barton Creek	0.60	220.00	3.06	76.03	single stage nitrification	30	5	5	2	-1
	14435-001	STONEWALL RIDGE UTILITIES LLC	Barton Creek	0.01	1.15	4.87	0.00	activated sludge	65	20	20	-1	-1
	14480-001	DRIFTWOOD UTILITY COMPANY LLC Reunion	Onion Creek	0.05	11.50	4.87	3.98	activated sludge	65	20	20	-1	-1
	14480-002	DRIFTWOOD UTILITY COMPANY LLC Reunion	Onion Creek	0.10	22.10	4.88	4.88	activated sludge	65	20	20	-1	-1
	14488-001	CITY OF DRIPPING SPRINGS South Regional	Onion Creek	0.16	37.43	4.86	2.05	activated sludge	65	20	20	-1	-1
	14488-002	CITY OF DRIPPING SPRINGS Scenic Greens	Onion Creek	0.25	57.39	4.88	3.00	activated sludge	65	20	20	-1	-1
	14587-001	Austin Highway 290 (Headwaters	Barton Creek	0.33	76.00	4.79	7.00	activated sludge	30	5	5	2	1
	14629-001	SWEETWATER AND LAZY NINE MUD	Barton Creek	0.49	199.50	2.75	60.05	activated sludge	35	10	15	-1	-1
	14664-001	ROCKY CREEK WASTEWATER UTILITY LP	Barton Creek	0.13	50.00	2.81	61.67	activated sludge	30	5	5	2	-1
	14824-001	FORESTAR Arrowhead Ranch	Onion Creek	0.13	29.00	4.83	3.00	activated sludge	35	10	15	-1	-1
	14866-001	BELLA VISTA DRIPPING, LP	Barton Creek	0.02	5.28	4.88	3.00	activated sludge	35	10	10	-1	-1
San Antonio Edwards													

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
San Antonio Edwards													
	04237-000	EQUITECH BIO INC	Guadalupe above	0.00	0.16	3.57	0.00	not specified	-1	-1	-1	-1	-1
	11291-001	FLYING L PUD	Medina River above	0.11	178.00	0.71	0.00	activated sludge	65	20	20	-1	-1
	11683-001	ALTO FRIO BAPTIST ENCAMPMENT	Upper Frio River	0.02	2.00	11.20	0.00	aerated lagoon	100	-1	-1	-1	-1
	11867-001	City of Fair Oaks Ranch	Upper Cibolo Creek	0.50	280.00	2.00	103.11	activated sludge	-1	-1	-1	-1	-1
	11976-001	Texas Lehigh Cement Company LP	Plum Creek	0.00	3.00	1.01	0.00	activated sludge	100	30	-1	-1	-1
	12014-001	TEXAS PARKS & WILDLIFE DEPT Guadalupe River	Guadalupe above	0.02	6.10	2.94	28.51	activated sludge	100	-1	-1	-1	-1
	12080-001	US DEPT OF THE ARMY Camp Bullis Miltary	Salado Creek	0.69	189.75	4.07	65.64	activated sludge	65	20	-1	-1	-1
	12334-001	CITY OF CAMP WOOD	Nueces River above	0.10	14.00	8.08	19.03	facultative lagoon	100	-1	-1	-1	-1
	12404-001	Kendall City UC	Upper Cibolo Creek	0.15	40.00	4.20	173.79	activated sludge	65	20	20	-1	-1
	13321-001	VILLAGE OF WIMBERLEY & GBRA	Upper Blanco River	0.05	19.00	2.95	142.07	activated sludge	35	-1	-1	-1	-1
	13449-001	CAMP RECOVERY CENTERS LP	Guadalupe above	0.02	4.00	4.76	12.27	activated sludge	65	-1	-1	-1	-1
	13449-001	CAMP RECOVERY CENTERS LP	Guadalupe above	0.02	0.34	55.30	12.27	activated sludge	65	-1	-1	-1	-1
	13755-001	RIVER INN ASSN OF UNIT OWNERS INC	S. Fork Guadalupe	0.01	0.92	8.30	0.00	activated sludge	65	20	-1	-1	-1

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
San Antonio Edwards													
	13783-001	BANDERA ISD Hill Country Elementary	Medina River	0.01	1.10	12.20	0.08	activated sludge	65	20	-1	-1	-1
	13812-002	COMAL ISD Arlon Seay Intermediate School	Upper Cibolo Creek	0.01	1.65	4.62	0.00	septic tank	100	-1	-1	-1	-1
	13812-003	COMAL ISD Spring Branch Middle School	Upper Cibolo Creek	0.01	2.98	4.88	0.00	activated sludge	65	20	20	-1	-1
	13812-004	COMAL ISD Smithson Valley Middle School	Guadalupe above	0.01	2.98	4.88	0.00	activated sludge	65	20	20	-1	-1
	13989-001	AQUA UTILITIES INC	Cypress Creek	0.38	175.00	2.40	83.40	activated sludge	65	20	20	-1	-1
	14157-001	BOY SCOUTS OF AMERICA ALAMO AREA	N. Fork Guadalupe	0.00	4.30	0.98	17.38	activated sludge	65	20	20	-1	-1
	14167-001	MONARCH UTILITIES 1 LP	Medina Lake	0.03	10.00	2.80	91.89	activated sludge	-1	-1	-1	-1	-1
	14280-001	THOUSAND TRAILS INC	Medina Lake	0.02	2.18	9.76	0.00	activated sludge	35	10	15	-1	-1
	14295-001	COMAL ISD Smithson Valley High School	Upper Cibolo Creek	0.03	6.20	4.88	0.00	septic tank	65	20	20	-1	-1
	14385-001	GUADALUPE BLANCO RIVER AUTHORITY	Guadalupe River above	0.19	102.00	2.11	0.00	membrane bioreactor	30	5	5	2	-1
	14485-001	BRUCE ROBERT HAROLD Boerne Stage Field	Lower Leon Creek	0.00	0.54	3.11	52.14	aerobic treatment	100	-1	-1	-1	-1
	14533-001	COMAL ISD Canyon Lake High School	Upper Blanco River	0.04	9.20	4.87	3.00	aeration basin	65	20	20	-1	-1
	14541-001	CHERRY SPRINGS INVESTMENT INC La	N. Fork Guadalupe	0.02	4.48	4.88	3.08	activated sludge	100	-1	-1	-1	-1

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
San Antonio Edwards													
	14603-001	PRESBYTERIAN MO RANCH ASSEMBLY	N. Fork Guadalupe	0.05	15.00	3.73	0.00	activated sludge	30	5	10	-1	-1
	14615-001	RANCHO DEL LAGO INC Rockin' J Ranch	Upper Blanco River	0.15	37.80	4.45	112.00	activated sludge	30	5	5	3	3
	14637-001	RIVER CROSSING CARRIAGE HOUSES LTD	Guadalupe River above	0.02	225.60	0.08	308.08	activated sludge	65	20	20	-1	-1
	14670-001	TIMBERWOOD DEVELOPMENT CO LP	Salado Creek	0.02	0.00		3.00	septic tank	65	-1	-1	-1	-1
	14760-001	HILL COUNTRY UTILITIES LLC	Medina River above	0.03	8.00	4.20	58.65	activated sludge	35	10	15	-1	-1
	14806-001	Whitewater Land, Heiser Hollow Water	Guadalupe below	0.20	46.00	4.87	0.00	septic and textile filter	65	20	20	-1	-1
	14839-001	BANDERA COUNTY Jail and Justice Center	Medina River above	0.01	2.63	4.88	3.00	disk filtration	100	-1	-1	-1	-1
	14959-001	Two Seventy Seven, GBRA, Park Village	Upper Cibolo Creek	0.20	49.24	4.44	3.00	membrane bioreactor	65	5	5	2	1
	14975-001	DH/JB Partnership, Johnson Ranch	Upper Cibolo Creek	0.08	17.22	4.88	0.00	activated sludge	65	20	20	-1	-1

Appendix B. TLAPs for which No Permits Were Located

The following permits were identified on a TCEQ-supplied Geographical Information System shape file. No corresponding permits were located, however, in TCEQ Central Records.

Permit Number	PERMITTEE	STATUS	Aquifer
11962-001	TEXAS PARKS & WILDLIFE DEPT	Current	San Antonio Edwards
14131-001	BEXAR METROPOLITAN WD	Current	San Antonio Edwards
14333-001	STEVENS, HOMER THRALL	Current	San Antonio Edwards
14397-001	ANDERSON RAY	Current	San Antonio Edwards
14733-001	DH JB PARTNERSHIP LTD	Current	San Antonio Edwards
14741-001	BULVERDE/46 PARTNERS LTD	Current	San Antonio Edwards

Laurie Gharis

From: eFax Corporate <message@inbound.efax.com>
Sent: Monday, July 28, 2025 6:24 PM
To: Fax3311
Subject: Corporate eFax message from "Spencer Fane" - 3 page(s)
Attachments: FAX_20250728_1753745019_720.pdf

Reviewed By DS
AUG 06 2025 H
RFR

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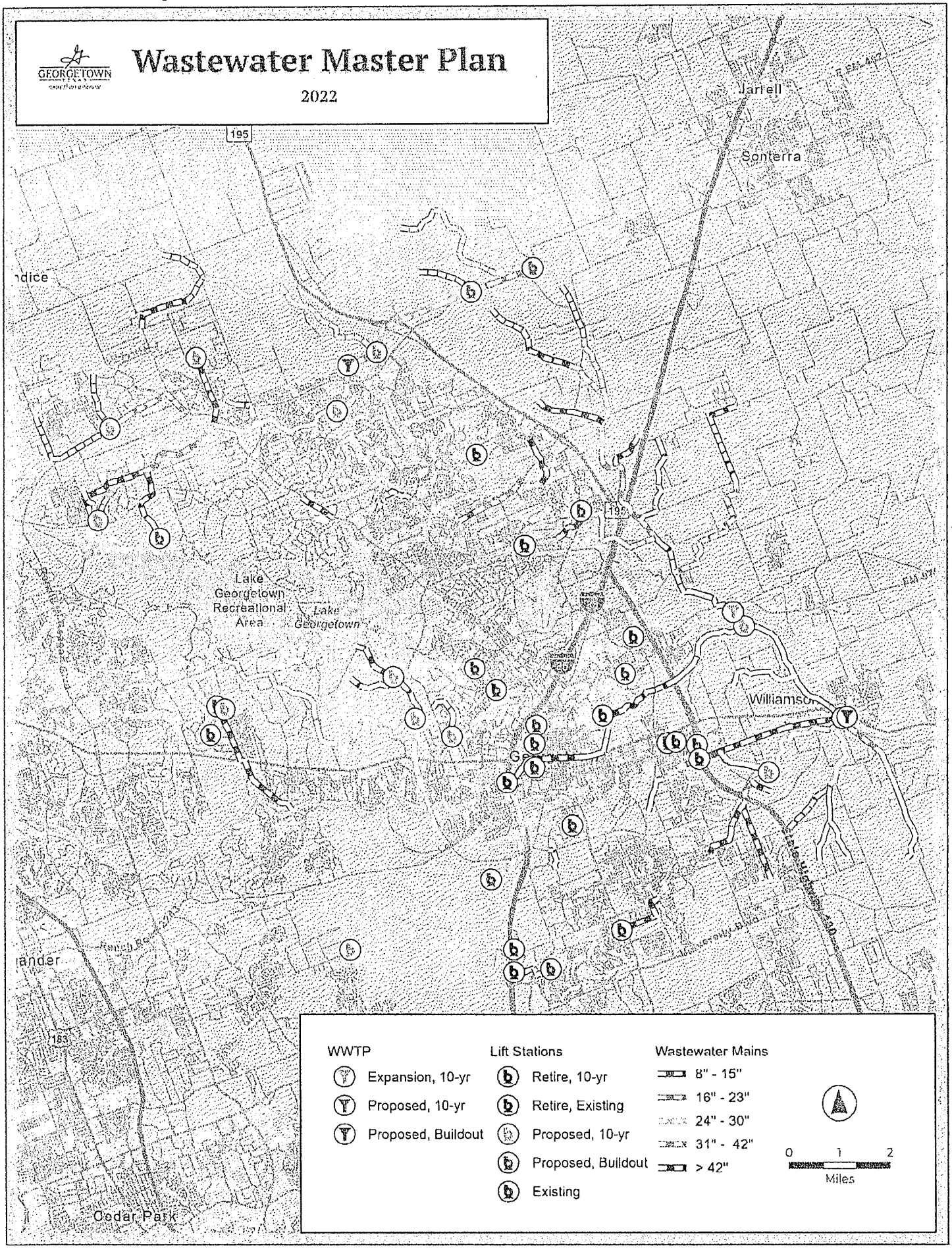
FROM:	Taryn Lovett	DATE: 7/28/2025	July 28, 2025
PHONE:	(512) 840-4556	CLIENT-MATTER:	5505176.0001
RE:	City of Georgetown, Texas' Request for Contested Case Hearing		

MESSAGE

Please see attached City of Georgetown, Texas' Contested Case Hearing Request


Wastewater Master Plan
2022
GEORGETOWN
Jarrell
Sonterra
195
Lake Georgetown Recreational Area
Lake Georgetown
Williamson
Cedar Park
183
WWTP
Expansion, 10-yr
Proposed, 10-yr
Proposed, Buildout
Lift Stations
Retire, 10-yr
Retire, Existing
Proposed, 10-yr
Proposed, Buildout
Existing
Wastewater Mains
8" - 15"
16" - 23"
24" - 30"
31" - 42"
> 42"
0 1 2
Miles

ATTACHMENT 3

December 10, 2024

Via e-File to: www.tceq.texas.gov/agency/decisions/cc/comments.html
Ms. Laurie Gharis, Chief Clerk (MC 105)
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Re: **The City of Georgetown, Texas's Request for Contested Case Hearing**
Applicant Name: Vista Townhomes Austin LLC (CN606154276)
Regulated Entity Name: Vista Townhomes Wastewater Treatment Facility (RN111757381)
Application: TPDES Permit No. WQ0016355002
Location: Williamson County, Texas

Dear Ms. Gharis:

On behalf of the City of Georgetown (the "**City**"), please accept these public comments and request for a contested case hearing on the application by Vista Townhomes Austin, LLC (the "**Applicant**") for proposed new Texas Land Application Permit ("**TLAP**"), Permit No. WQ0016355002, to authorize a domestic wastewater treatment facility in Williamson County, Texas (the "**Application**"). The City's contact persons for this matter are below:

Cody Faulk, Partner
Carlota Hopinks-Baul, Attorney
Spencer Fane LLP
816 Congress Avenue, Suite 1200
Austin, TX 78701
(512) 840-4550
cfaulk@spencerfane.com
chbaul@spencerfane.com

Reviewed By GCW
DEC 11 2024 11

I. INTRODUCTION

The Application was received by the Texas Commission on Environmental Quality (the "**TCEQ**") on February 26, 2024 and declared administratively complete by the Executive Director ("**ED**") on March 22, 2024. The ED completed its technical review and prepared a draft permit. The Notice of Application and Preliminary Decision was issued on November 1, 2024 and published on November 10, 2024. The public comment period on the Application ends on December 10, 2024. These public comments and request for a contested case hearing are timely and properly filed under 30 Tex. Admin. Code Ann. ("**TAC**") 55.201(c) and (d).

If approved, the draft permit would authorize the disposal of effluent from a package plant (the "**Proposed Package Plant**") at a daily average flow not to exceed 0.024 million gallons per day ("**MGD**"). The effluent will be land applied via surface irrigation of 6.5 acres of public access land. The Proposed Package Plant and disposal site would be located approximately 0.4 miles north of the intersection of Vista Heights Drive and State Highway 29 West, in Williamson County, Texas 78628, immediately adjacent to the City's corporate limits.

II. REQUEST FOR A CONTESTED CASE HEARING

A. Affected Person Analysis / Standing

(1) Applicable Rules

In determining who is an "affected person," the TCEQ rule provides as follows:

RULE § 55.203 Determination of Affected Person

(a) For any application, an affected person is one who has a personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the application. An interest common to members of the general public does not qualify as a personal justiciable interest.

(b) Except as provided by § 55.103 of this title (relating to Definitions)[1], governmental entities, including local governments and public agencies, with authority under state law over issues raised by the application may be considered affected persons.

(c) *In determining whether a person is an affected person, all factors shall be considered, including, but not limited to, the following:*

(1) *whether the interest claimed is one protected by the law under which the application will be considered;*

(2) *distance restrictions or other limitations imposed by law on the affected interest;*

(3) *whether a reasonable relationship exists between the interest claimed and the activity regulated;*

(4) *likely impact of the regulated activity on the health and safety of the person, and on the use of property of the person;*

(5) *likely impact of the regulated activity on use of the impacted natural resource by the person;*

[1] Barring participation by non-river authority state agencies in contested case hearings unless the state agency is the applicant. *See* 30 TAC § 55.103.

(6) for a hearing request on an application filed on or after September 1, 2015, whether the requestor timely submitted comments on the application that were not withdrawn; and
(7) *for governmental entities, their statutory authority over or interest in the issues relevant to the application.*

(d) In determining whether a person is an affected person for the purpose of granting a hearing request for an application filed on or after September 1, 2015, *the commission may also consider the following:*
(1) *the merits of the underlying application and supporting documentation in the commission's administrative record, including whether the application meets the requirements for permit issuance;*
(2) *the analysis and opinions of the executive director; and*
(3) *any other expert reports, affidavits, opinions, or data submitted by the executive director, the applicant, or hearing requestor.*

(e) *In determining whether a person is an affected person for the purpose of granting a hearing request for an application filed before September 1, 2015, the commission may also consider the factors in subsection (d) of this section to the extent consistent with case law.*[2]

The City is an "affected person" entitled to a contested case hearing on issues raised in its hearing request because the City has interests related to legal rights, duties, privileges, powers, or economic interests affected by the Application that are not common to the general public and is an affected person under 30 TAC § 55.203(a). In addition, the City has "statutory authority over" and "interest in the issues relevant to the Application within the meaning of 30 TAC § 55.203(b). The City is also providing additional information to the Commission in this letter, per 30 TAC § 55.203(d)(1), (d)(3) and (e). For example, as discussed more fully below, the City provides wastewater treatment services to areas both inside and outside of its corporate limits, the City has authority over or an interest in the effects on the environment and on public health, safety, and welfare from the Proposed Package Plant and the Proposed Package Plant's wastewater disposal onto land immediately adjacent to a residential neighborhood within the City corporate limits as well as City's ETJ, and the City has an interest in eliminating new potential sources of pollution and protecting the Edwards Aquifer, a significant source of the City's drinking water.

(2) The City's Wastewater Treatment System

According to the Application, the Proposed Package Plant would service 60 townhomes and 95 apartment units (the "**Proposed Service Area**"), with each townhome producing 171.5 gallons per day of wastewater and each apartment producing 122.5 gallons per day of wastewater.[3] The Proposed Package Plant, proposed disposal area, and Proposed Service Area are

[2] 30 TAC § 55.203 (emphasis added).

[3] In a previously filed TPDES permit application for a package plant to serve the same Proposed Service Area, the Applicant based its wastewater flows on an estimated 250 gallons per day per residential connection, consistent with the requirements in 30 TAC § 217.32(a)(3) and the typical number of occupants for residential units in this area (derived from typical single family residence information in the US Census Bureau for the City of Georgetown). The Applicant's use of significantly lower wastewater estimates in the subject TLAP application (e.g., reducing the wastewater estimate for apartment units by more than 50%) is not consistent with the aforementioned TCEQ regulation and typical residential occupancy values for this area. These reduced values result in an underestimate of the volume of treated wastewater produced by the Proposed Package Plant and of the land application area required to dispose of the same.

all immediately adjacent to a residential neighborhood within the City's corporate limits (i.e., the Cole Estates subdivision), immediately adjacent to another residential subdivision in the City's ETJ (i.e., the Sage Creek subdivision), and in close proximity to (and within 5,000 feet of) other neighborhoods within the City's ETJ (e.g., Cimarron Hills, Oaks at San Gabriel, Cedar Hollow Crossing, Lost River Ranch, Middle Gabriel Estates, Estancia, and Crescent Bluff subdivisions).

The City has an interest, consistent with the State's regionalization policy, in reducing or eliminating the number of wastewater package plants so as to reduce or eliminate additional sources of pollution, and protect water quality and public health and safety. To that end, the City owns and operates an extensive wastewater system that eliminates the regional need for package plants such as one described in the Application. The City owns and operates five existing wastewater treatment plants and has a permit for a sixth to be constructed in the near future.[4] The City employs approximately 15 licensed wastewater treatment plant operators and 38 licensed wastewater collection system operators. The City currently provides wastewater service to approximately 39,756 customers. One of the City's wastewater treatment plants, the Cimarron Hills wastewater treatment plant ("**WWTP**"), is within approximately one mile of the Proposed Package Plant (see **Attachment 1**) and has sufficient capacity to accept wastewater flows from the Proposed Service Area.[5] In addition, the City is currently in the design phase of a lift station and major interceptor line that will divert flows from the Cimarron Hills WWTP to the City's South Forks interceptor, which conveys wastewater eastwards to the City's three interconnected WWTPs – Dove Springs WWTP, Pecan Branch WWTP, and San Gabriel WWTP. Together, the three, large, connected plants can currently treat 8.0 MGD, which is the equivalent of 80,000 people (at 100 gpd/ person).[6] The two other plants—the aforementioned Cimarron Hills Plant and the Berry Creek Plant—can treat 0.24 MGD and 0.3 MGD, respectively—which is the combined equivalent of 5,000 people (at 100 gpd/person). Based on information from the US Census Bureau available online at https://www.census.gov/quickfacts/fact/table/georgetowncitytexas#, the City population as of the April 1, 2020 census was 67,176. Thus, the City has more than enough capacity to provide wastewater treatment service to its customers within its corporate limits, its ETJ, and the Proposed Service Area.

The City also has existing wastewater collection systems located well within one mile of the Proposed Service Area. The existing collection system is located approximately 1,200 to the west of the Proposed Service Area and conveys wastewater to the aforementioned Cimarron Hills WWTP. In addition, as noted above, the City anticipates the construction of a lift station and major interceptor that will divert wastewater flows to the South Fork Interceptor, and thence to the City's

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[4] The City owns and operates the following wastewater treatment facilities: Cimarron Hills WWTP (WQ0014232001); San Gabriel WWTP (WQ0010489002); Dove Springs WWTP (WQ0010489003); Pecan Branch WWTP (WQ0010489005); and Berry Creek WWTP (WQ0010489006). In addition, the City holds TPDES Permit No. WQ0010489007 for the Northlands WWTP, which is not yet under construction.

[5] The Cimarron Hills WWTP has an interim capacity of 0.24 MGD and a final capacity limit of 0.46 MGD.

[6] The City is working on increasing its treatment capacity by expanding the capacity of its Dove Springs WWTP by an additional 1.0 MGD in March 2025, an additional 2.0 MGD at its Pecan Branch WWTP in the next two years, and adding two new WWTPs in the next five to six years (i.e., the 10 MGD Three Forks WWTP and 3.0 MGD Northlands WWPT, which will serve the west side of Georgetown).

three interconnected WWTPs, in the next two years. Thus, the City's wastewater collection system has sufficient capacity to serve the Proposed Service Area even as the City continues to grow over the next few years.

(3) The City's Interests in the Application

The City is a home-rule municipality, having the full powers of self-governance, and is authorized to exercise all authority incident to local self-government.[7] In addition to having the powers granted to it as a home-rule city via the Texas Constitution, the Legislature has also expressly granted home-rule cities regulatory authority within the ETJ over issues raised by or relevant to the Application. The Legislature created municipal extraterritorial jurisdiction areas for all cities for the following purposes: "to promote and protect the general health, safety, and welfare of persons residing in and adjacent to the municipalities."[8] Thus, the City has a Legislatively mandated interest in promoting and protecting the general health, safety, and welfare of persons residing inside its city limits and ETJ. In addition, the City "may define and prohibit any nuisance within the limits of the municipality and within 5,000 feet outside the limits" and "enforce all ordinances necessary to prevent and summarily abate and remove a nuisance."[9] In the context of the Application, the City's interests are to promote and protect the general health, safety, and welfare of persons residing in the City's corporate limits and ETJ from deleterious effects caused by the Proposed Package Plant in an area immediately adjacent to both the City's corporate limits and its ETJ.

The Legislature has also granted cities statutory authority over or interest in issues relative to the Application via specific statutes. For example:

- Tex. Water Code Ann. ("**TWC**") Ch. 26, Subchapter E (relating to disposal system rules and water pollution control duties of cities);[10]

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[7] See Tex. Const. art. XI, § 5; Tex. Loc. Gov't Code Ann. § 51.072(a) and (b) ("(a) The [home-rule] municipality has full power of local self-government. (b) The grant of powers to the municipality by this code does not prevent, by implication or otherwise, the municipality from exercising the authority incident to local self-government."); *Lower Colo. Riv. Auth. v. City of San Marcos*, 523 S.W.2d 641, 643 (Tex. 1975); *Quick v. City of Austin*, 7 S.W.3d 109, 122 (Tex. 1999); *Dallas Merch. &Concessionaires Ass'n v. City of Dallas*, 852 S.W.2d 489, 490-91 (Tex. 1993) (Homerule cities do not depend on the Legislature for specific grants of authority but, instead, have a constitutional right of self-government and, look to the Legislature only for specific limitations on their power). *See also, In re Sanchez*, 81 S.W.3d 794, 796 (Tex. 2002); *Proctor v. Andrews*, 972 S.W.2d 729, 733 (Tex. 1998) (For the Legislature to divest home-rule cities of their Constitutional authority, the Legislature's intent to do so must be expressed with "unmistakable clarity.")

[8] Tex. Loc. Gov't Code Ann. § 42.001 ("Purpose of Extraterritorial Jurisdiction. The legislature declares it the policy of the state to designate certain areas as the extraterritorial jurisdiction of municipalities to promote and protect the general health, safety, and welfare of persons residing in and adjacent to the municipalities.").

[9] Tex. Loc. Gov't Code Ann. § 217.042.

[10] *See e.g.*, TWC § 26.177(a)&(b) ("A city may establish a water pollution control and abatement program for the city," which "shall encompass the entire city and . . . may include areas within its [ETJ] which in the judgment of the city should be included to enable the city to achieve the objectives of the city for the area within its territorial

- TWC Ch. 7, Subchapter H (relating to water quality enforcement);[11]
- Tex. Health & Safety Code Ann.§ 121.003(a) ("The governing body of a municipality . . . may enforce any law that is reasonably necessary to protect the public health.");
- Tex. Loc. Gov't Code Ann. § 551.002 ("A home-rule municipality may prohibit the pollution or degradation of and may police a stream, drain, recharge feature, recharge area, or tributary that may constitute or recharge the source of water supply of any municipality" and "may provide for the protection of and may police any watersheds . . . inside the municipality's boundaries or inside the municipality's [ETJ].");
- Tex. Loc. Gov't Code Ann. § 212.003(a) (relating to the ability of a municipality to adopt rules governing plats and subdivisions of land within its corporate boundaries and ETJ, including rules related to the provision of water and sewer service to platted areas, in order to promote the healthful development of the city and public health, safety, and general welfare);[12]
- Tex. Loc. Gov't Code Ann. § 217.042 (A home-rule municipality, like the City, "may define and prohibit any nuisance within the limits of the municipality and within 5,000 feet outside the limits" and "enforce all ordinances necessary to prevent and summarily abate and remove a nuisance.");
- Tex. Loc. Gov't Code Ann. § 552.001 ("A municipality may [(1)]purchase, construct, or operate a utility system," including a sewer system, "inside or outside the municipal boundaries;" (2) "regulate the system in a manner that protects the interests of the municipality;" (3) "extend the lines of its utility systems outside the municipal boundaries;" (4) "sell water [or] sewer . . . service to any person outside its boundaries;" (5) "prescribe the kind of water . . . mains [and] sewer pipes . . . that may be used inside or outside the municipality;" and (6) "inspect those facilities and appliances, require that they be kept in good condition at all times, and prescribe the necessary rules, which may include penalties, concerning them.);
- Tex. Loc. Gov't Code Ann. Ch. 552, Subchapter C (relating to municipal drainage systems); and
- Tex. Loc. Gov't Code Ann. Ch. 551.002 ("A home-rule municipality may buy, own, construct inside or outside the municipal limits, and maintain and operate a . . . sewage plant.").

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jurisdiction. The city shall include in the program the services and functions which, in the judgment of the city . . . will provide effective water pollution control and abatement for the city.").

[11] The enforcement authority and rights granted to cities via TWC § 7.351(a) are different from those of the general public and, having been granted special statutory enforcement rights over water quality matters, the City has authority under state law over issues raised by the Application and Draft Permit. TWC § 7.351(a) authorizes "local government[s]" to bring an action against a person for a violation or threatened violation of Chapter 26 of the TWC occurring in the jurisdiction of that local government in the same manner as the TCEQ may do so—that is, for injunctive relief, a civil penalty, or both.

[12] *Accord* Tex. Loc. Gov't Code § 214.013(a)(2) ("A municipality may . . . require property owners to connect to [its] sewer system.").

In addition, regionalization and need in wastewater permitting cases are issues on which cities that operate wastewater collection and treatment systems, like the City, are uniquely poised to offer evidence. TWC § 26.003 provides that:

> It is the policy of this state and the purpose of this subchapter to . . . encourage and promote the development and use of regional and areawide waste collection, treatment, and disposal systems to serve the waste disposal needs of the citizens of this state; and to require the use of all reasonable methods to implement this policy.

This guiding principle of regionalization and need is enshrined in the introductory provisions of Chapter 26, listed second only to the recognition of private ownership rights of groundwater. Two other pieces of legislation were adopted to underscore this policy—TWC §§ 26.081[13] and 26.0282[14]—relating to the consideration of the regionalization policy, need, and the availability of existing or proposed areawide or regional wastewater collection, treatment, and disposal systems.

The state regionalization policy articulated three times in the Texas Water Code is entirely consistent with the Legislature's creation of ETJs via the Tex. Loc. Gov't Code. The issues of wastewater treatment regionalization and need cannot be evaluated or implemented without the ability to look "regionally" and "areawide"—beyond a city's corporate boundaries. The Legislature has adopted statutes that underscore a city's status as an affected person in cases such as the one at hand by creating ETJs, acknowledging cities' interest in the environment, and issues affecting the health, safety, and welfare in those areas, granting cities authority over issues such as those raised in wastewater permitting applications, and adopting policies relating to regionalization and need in wastewater permitting cases. It is consistent with state law to allow a city's participation in wastewater permitting cases when the facility, outfall, and discharge route are within a city's ETJ. Therefore, the City has authority under state law over issues raised in the application as required for governmental entities under 30 TAC §§ 55.203(b) and 55.203(c)(7).

In summary, the City has interests in issues relevant to the Application because the City has an interest in preventing and abating nuisance conditions within 5,000 feet outside its corporate limits and the Proposed Package Plant and disposal area are both *immediately* adjacent to the City's corporate limits as well as its ETJ'. In addition, the City owns and operates a wastewater treatment plant that can serve the Proposed Service Area. As is detailed more fully below, the City should be granted a contested case hearing to represent the City's interests in regionalization and need, environmental effect, and public health, safety and welfare including pursuing a reduction of

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[13] TWC § 26.081(a) ("The legislature finds and declares that it is necessary to the health, safety, and welfare of the people of this state to implement the state policy to encourage and promote the development and use of regional and area-wide waste collection, treatment, and disposal systems to serve the waste disposal needs of the citizens of the state and to prevent pollution and maintain and enhance the quality of the water in the state.").

[14] TWC § 26.0282 ("In considering the issuance, amendment, or renewal of a permit to discharge waste, the commission may deny or alter the terms and conditions of the proposed permit, amendment, or renewal based on consideration of need, including the expected volume and quality of the influent and the availability of existing or proposed areawide or regional waste collection, treatment, and disposal systems not designated as such by commission order pursuant to provisions of this subchapter. This section is expressly directed to the control and treatment of conventional pollutants normally found in domestic wastewater.").

package plants and eliminating risk of water quality degradation (including in the Edwards Aquifer, which is an important drinking water supply source for the City, and interconnected surface water bodies that flow through the City's ETJ and corporate limits) and nuisance odors and upsets from such plants, to ensure that the health, safety, and welfare of residents in the City limits and in its ETJ will be maintained, and that the plant operator has the technical, managerial, and to ensure that the Applicant and/or plant owner/operator has a good compliance history and the financial capability to construct, operate and maintain the plant. There is a reasonable relationship between the City's stated concerns and the proposed activities to be regulated under the draft permit.

B. Request for Contested Case Hearing

The Proposed Package Plant, disposal area, and Proposed Service Area are *immediately* adjacent to the City's corporate limits and ETJ. The City has a legislatively mandated interest in promoting and protecting the general health, safety, and welfare of persons residing inside its city limits and ETJ (including, but not limited to, by the prohibition of nuisance conditions within 5,000 feet of its corporate limits). Local governments, such as the City, with authority under state law over issues contemplated by an application, are considered affected persons under 30 TAC § 55.203. For the reasons articulated above, the City has justiciable interests that will be adversely affected by this Application.

The City requests that it be granted party status. The City also requests a contested case hearing.

III. COMMENTS ON THE APPLICATION

A. The City has existing permitted wastewater treatment capacity that could meet the need expressed by the Applicant, and the Applicant fails to demonstrate the need for the facility in the context of Regionalization

The City owns and operates an extensive wastewater system that eliminates the need for package plants such as one described in the Application. The City owns and operates five existing wastewater treatment plants, has a permit for a sixth to be constructed in the near future.[15] The City employs approximately 15 licensed wastewater treatment plant operators and 38 licensed wastewater collection system operators. The City currently provides sewer service to approximately 39,756 wastewater customers.

As noted above, one of the City's wastewater treatment plants, the Cimarron Hills WWTP, is within one mile of the Proposed Package Plant (see Attachment 1). In addition, the Proposed Service Area is within 1,200 feet of a wastewater collection system that conveys wastewater to the City's three interconnected WWTPs—i.e., Dove Springs WWTP, the Pecan Branch WWTP, and the San Gabriel WWTP. Together, just these three large, connected plants can treat 8.0 MGD,

[15] *See* n.4, supra.

which is the equivalent of 80,000 people (at 100 gpd/ person). The two other plants—the aforementioned Cimarron Hills Plant and the Berry Creek Plant—can treat 0.24 MGD and 0.3 MGD, respectively—which is the combined equivalent of 5,000 people (at 100 gpd/person). Based on information from the US Census Bureau available online at: https://www.census.gov/quickfacts/fact/table/georgetowncitytexas#, the City population as of the April 1, 2020 census was 67,176. Therefore, the City has more than enough capacity to provide wastewater treatment service to the 60 townhomes and 95 apartment units proposed to be constructed in the Proposed Service Area at the Applicant's requested levels.

The City also has an existing wastewater collection system located well within one mile of the Proposed Service Area. The existing collection system is located approximately 1,200 to the west of the Proposed Service Area and conveys wastewater to the aforementioned Cimarron Hills WWTP. In addition, as noted above, the City anticipates the construction of a lift station and major interceptor that will divert wastewater flows to the South Fork Interceptor, and thence to the City's three interconnected WWTPs, in the next two years. Thus, the City's wastewater collection system has sufficient capacity to serve the Proposed Service Area even as the City continues to grow over the next few years.

The City has planned and constructed its wastewater treatment and collection system to eliminate the need for small package plants serving single subdivisions such as the Proposed Package Plant, consistent with the State's regionalization policy. Because the City's current wastewater treatment and wastewater collection system have sufficient capacity in the area of the Proposed Package Plant to serve the Proposed Service Area, the Applicant has failed to demonstrate the need for the proposed facilities; therefore, consistent with the State's regionalization policy, the TLAP should be denied.

B. The Application fails to demonstrate that the Applicant's proposed facilities satisfy TCEQ's requirements for unsuitable site characteristics

TCEQ regulations do not allow wastewater treatment facilities to be located within a 100-year floodplain. 30 TAC §309.13(a). The Applicant represented that its proposed land application site would not fall within the 100-year floodplain of the Middle Fork San Gabriel River. To support this assertion, the Applicant relied on FEMA FIRM Panel 48491C0275E. (the "**FEMA Map**"). That reliance was misplaced.

The absence of a floodplain on the FEMA Map in the area of the proposed discharge and related facilities does not mean that the Proposed Package Plant is not in a 100-year floodplain. The FEMA floodplain maps typically only show watersheds that are one square mile or more in size. Thus, the fact that no floodplain is shown for the small area in question does not mean that there is not 100-year floodplain present. More thorough analysis of the floodplain extent and water surface elevation is required to accurately assess whether the site of the Proposed Package Plant and disposal area is suitable—especially in light of the existence of a tributary running through northwestern extent of the Applicant's Proposed Service Area (identified as Middle Fork San Gabriel Tributary 13 in Williamson County's floodplain studies mapping system, available online at: https://wilcomaps.wilco.org/vertigisstudio/web/?app=d5a5b30e7e51447e8bd674eef03ee642).

Placement of the Proposed Package Plant and/or disposal area within a 100-year floodplain would pose a significant threat to the surface water and groundwater quality in the receiving stream and in the Edwards Aquifers, which is recharged by hydrologically connected surface waters (e.g., the Middle Fork San Gabriel Tributary 13, as well as the Middle Fork and South Fork of the San Gabriel River).

The site of the Proposed Package Plant is also unsuitable because the treated effluent storage lagoon would be located over the Edwards Aquifer, which violates TCEQ's prohibition on siting of wastewater facilities over a recharge zone of major or minor aquifers "unless the aquifer is separated from the base of the containment structure by a minimum of *three feet* of material with a hydraulic conductivity toward the aquifer not greater than 10-7 cm/sec [,] a *thicker interval* of more permeable material which provides *equivalent or greater retardation of pollutant migration*," or a synthetic membrane liner "with a minimum of 40 mils thickness and an underground leak detection system with appropriate sampling points." 30 TAC § 309.13(d) (emphasis added). Here, the Applicant has stated that it does not intend to install monitoring wells, suggesting it will not be installing a synthetic membrane liner. *See* Applicant's Domestic Worksheet 3.0, Section 7. However, the soil information provided by the Applicant does not show that the separation criteria have been met as there are only an 11" layer of clay soils and, thereunder, bedrock with a hydraulic conductivity of 1.41 x 10-4 cm/sec in the area of the proposed storage lagoon. *See* pp. 22, 23, and 27 of Attachment O to Applicant's Permit Application. Given the absence of sufficient soil depth for the installation of monitoring wells as part of an effective underground leak detection system and fact that the limestone bedrock in this area of the Edwards Aquifer allows for significant recharge to both surface and groundwater along circuitous pathways, construction and operation of the proposed treated effluent lagoon would pose an unnecessary risk of pollution to the Edwards Aquifer and hydrologically connected surface waters (e.g., the nearby Middle Fork San Gabriel Tributary 13, as well as the Middle Fork and South Fork of the San Gabriel River). Therefore, the permit should be denied.

In addition, the information provided in the Application indicates the proposed land application site is not a suitable location as soils present at the site (EeB and ErB soil groups) are not conducive to growing crops—the soil layer is less than 12" of stony clay, cobbly clay, or other clay soils on top of bedrock (11" below ground surface). While some crops may be able to grow in clay soils, root growth in such a shallow soil profile would tend to create pathways for rapid infiltration into the underlying, and highly transmissive, limestone bedrock. Thus, the permit should also be denied on the basis that the proposed land application area would also not be suitable.

Finally, because the limestone bedrock deposits in this area are known to provide suitable environments for karst-dwelling species, including endangered karst-dwelling species, siting either a treated effluent lagoon or a treated effluent land application site is concerning from the prospective of protecting wildlife and endangered species. Given the difficulty of identifying karst features and karst-dwelling species in the subsurface and the risk of harm posed by permitting the proposed Package Plant and associated disposal area, TCEQ should not issue this permit.

C. Granting the draft permit is not consistent with the Legislature's policy directive to encourage and promote the development and use of regional and areawide waste collection, treatment, and disposal systems per TWC §§ 26.003, 26.081(a), and 26.0282, and the TCEQ's Regionalization Policy for Wastewater Treatment

(1) The City owns and operates a wastewater treatment facility or collection system located within one mile of the Proposed Package Plant and can provide wastewater treatment services to the Applicant at the levels requested

The City owns and operates a wastewater treatment plant and wastewater collection system located with three miles of the Proposed Package Plant. As detailed in above, the City actually currently owns and operates five wastewater treatment plants (one of which is within one mile of the Proposed Package Plant). The City also has a permit to construct a sixth wastewater treatment plant, and owns land on which it plans to seek authorization to construct a seventh wastewater treatment plant. The City's existing wastewater treatment plants together provide 8.5 MGD in treatment capacity—sufficient to provide wastewater service to 85,000 people. The City currently provides sewer service to approximately 39,756 wastewater customers. Thus, the City clearly has more than enough capacity to provide wastewater treatment service to the 60 townhomes and 95 apartment units proposed to be constructed in the Proposed Service Area at the Applicant's requested levels of 0.024 MGD. As detailed elsewhere in this letter, the City also has existing wastewater collection systems for all of its plants, and such a system is currently located within approximately 1,200 feet of the Proposed Service Area. In addition, City is currently designing a lift station and major interceptor to divert wastewater from the nearby Cimarron Hills WWTP to the South Fork interceptor, which conveys wastewater eastward to the City's interconnected wastewater treatment system. Finally, the City employs approximately 15 licensed wastewater treatment plant operators and 38 licensed wastewater collection system operators who are fully trained and capable of operating the City's extensive wastewater treatment and collection system.

(2) The proposed service area is located within the City's updated wastewater master plan, which generally describes how wastewater service will be provided to the studied region

The City updated its 2018 Wastewater Master Plan in 2022 and the Proposed Service Area is located in close proximity to areas included in the Updated Wastewater Master Plan (see **Attachment 2**). As with all municipal master plans, the Updated Wastewater Master Plan provides a general outline for accomplishing the City's and community's mutual goals—in this case the goal of providing wastewater services to the west side of the City, including the Proposed Service Area.

With regards to the City's provision of wastewater service to the Proposed Service Area, the Applicant did not make a written request for service, which would have allowed the City to make a comprehensive evaluation of all potential points for connecting to the City's wastewater collection system. In addition, the Applicant did not provide information pertaining to the type and cost of connecting infrastructure. The City's preliminary oral response to the Applicant assumed that there would be no other development in the area and no cost-sharing or economies

of scale that would mitigate the cost to the Applicant or relieve it of the burden of bearing the entire cost of new regional infrastructure. However, there is other development occurring in the area and there may be alternatives to connecting infrastructure described in the City's Updated Wastewater Master Plan that could be considered and approved by the City Council.

(3) Other faster and less costly alternatives for connecting to the city's wastewater exist

The Updated Wastewater Master Plan covers the Proposed Service Area, so it is a given that some portions will develop faster or differently than planned. Therefore, the City has several processes or mechanisms to provide more nimble and nuanced evaluations of how wastewater service might be provided in a specific instance. Those alternatives have not been discussed by the City and the Applicant since the Applicant did not submit a written request for service from the City. In addition, the Application does not include information about the construction time and costs for the Proposed Package Plant and land application area. Nevertheless, the City anticipates that connecting the Proposed Service Area to the City's nearby, existing wastewater collection system (~1,200 feet west of the Proposed Service Area) would proceed more quickly and be less costly than building the Package Plant and associated land application area.

There are other residential developments in the area as well as wastewater collection and treatment system improvements that may align with the Applicant's schedule. Some of this new infrastructure may be able to be utilized by the Applicant either as is, or with some upsizing, and may significantly reduce Applicant's cost to connect to the City's wastewater system compared to the costs of the regional infrastructure described in the Updated Wastewater Master Plan. In other words, there may be service alternatives available to the Applicant that are not presented in the Application that make connection to the City's wastewater system both timely and cost-effective. On approval by the City Council, those alternatives would be available to the Applicant.

D. The Application is not substantially complete and accurate

The Application is materially incomplete in that it fails to provide relevant information that is necessary for the TCEQ to conduct a full analysis of the possible effects of the Proposed Package Plant and land application area on water quality, karst features and karst-dwelling species, surrounding existing uses (e.g., livestock and crop production), and the need / justification for their construction. The missing information includes, but is not limited to, the following:

- the Applicant's failure to provide correspondence with the City, demonstrating that a request for service was made by the Applicant and denied by the City;
- cost information to allow for a comparison of the cost to build the Proposed Package Plant versus the cost to connect to the City's existing, nearby wastewater collection system;
- the absence of information regarding surrounding land uses;
- a geological assessment and information about karst features within the Proposed Service Area and in close proximity thereto;

- information about potential karst-dwelling species within the Proposed Service Area or in close proximity thereto.

In addition, the Application includes the following inaccurate information: wastewater flows for the residential connections in the Proposed Service Area are based on arbitrary values (171.5 gallons/day per townhome and 122.5 gallons/day per apartment) rather than the values set forth in 30 TAC § 217.32(a)(3) and the engineering conventions for such residential connections (assuming 2.5 people and 100 gallons per person per day for townhomes and 1.9 persons and 100 gallons per person per day for apartments); the concentration of nitrogen in treated effluent is underestimated (assumed to be 20 mg/L rather than a more conservative 30 mg/L); and no phosphorus estimate is provided for the treated effluent. Taken together, these incorrect estimates yield an incomplete and unrealistic picture of the volume of treated water, nutrient concentration therein, and the land application rate and area required to ensure protection of water quality in groundwater and hydrologically connected surface waters, beneficial uses of the same (including crop production and other agricultural uses), and environmental receptors (including livestock, wildlife, karst-dwelling species, and other aquatic life).

In the absence of accurate and complete information, the TCEQ cannot conclude that the Proposed Package Plant is needed, justified, and can be built and operated without adverse impacts to, inter alia, groundwater and surface water quality, karst features, and karst-dwelling species (including endangered species). Thus, because the state's regionalization policy cannot be shown to be implemented or that an exception is therefrom is justified, the permit should be denied.

E. The draft permit is not protective of groundwater quality and hydrologically connected surface waters, or of existing uses of such surface waters in accordance with Texas Surface Water Quality Standards, including protection of public health and enjoyment of waters in the state and aquatic and terrestrial life

Given that the slightest plant upset would adversely affect the water quality in the treated effluent pond and groundwater and surface waters to which the treated effluent may flow, the City is concerned that the proposed discharge poses risks to water quality in the Edwards Aquifer and hydrologically connected surface waters, and may create unsanitary or unsafe water quality conditions, which may affect the health and safety of its citizens, their enjoyment of such waters as they pass through the City's corporate and ETJ limits, and other non-human receptors (including karst-dwelling species).

As noted above, the concentration of nitrogen appears to be underestimated in the Application and no information is provided regarding other pollutants (e.g., phosphorus, bacteria, per- and polyfluoroalkyl substances or "**PFAS**") in the treated effluent. At the proposed irrigation rate over the relatively small land application area, there is an unacceptable risk that nitrogen and other pollutants may "break through" and affect water quality in the Edwards Aquifer and hydrologically connected surface waters in the absence of permit limits to safeguard water quality for drinking water and other beneficial uses (including aquatic life protection for endangered karst-dwelling species).

A study prepared by Glenrose Engineering in November 2011 for the Greater Edwards Aquifer Alliance regarding the impact of land-applied wastewater effluent on the Edwards Aquifer identified significant increases of nitrogen concentrations in surface water bodies in proximity to the land application sites, with resulting adverse changes to the aesthetic, chemical, and biological condition of those water bodies (algal blooms, low dissolved oxygen ("**DO**") conditions, cloudy/murky conditions, etc.). *See* **Attachment 3** at 11–19. Given the interconnection of shallow surface water and surface water in the recharge zone of the Edwards Aquifer, the City is concerned that the proposed discharge of treated effluent will have similar adverse effects on water quality in the Middle Fork San Gabriel Tributary 13, the Middle Fork or South Fork San Gabriel river stems, and the City's Blue Hole park, which is just downstream of the proposed Package Plant and effluent disposal area. Adverse changes to the water quality of these streams may result in the impairment of the beneficial uses of these water bodies—e.g., aquatic and wildlife uses, recreational uses, etc.—may affect the health of City residents and persons recreating in Blue Hole and the Middle Fork and South Fork San Gabriel River stems, and may have significant adverse economic impacts on river-front businesses in the City and other nearby businesses that are rely on Blue Hole park goers, river recreational users, and other tourist traffic spurred by the community's investment in river related recreational opportunities and waterfront businesses.

Because the draft permit does not contain limits and conditions to safeguard groundwater quality, the quality of hydrologically connected surface waters, beneficial uses, and human and non-human receptors, the draft permit is inconsistent with Texas' antidegradation and regionalization policies, the latter of which includes the promotion of use of existing area-wide waste collection, treatment, and disposal systems to prevent pollution. In light of the foregoing, the permit should be denied.

F. The Draft Permit is not protective of the public health and safety of nearby residents

The City is also concerned about the public health risk posed by the Proposed Package Plant to nearby City residents. The City is concerned that the very close distance of the Proposed Package Plant, treated effluent storage pond, and land application area to adjacent residences poses the potential for nuisance odors and health risks, including the contamination of groundwater wells (due to over-irrigation), and the potential exposure of residents to harmful pathogens via vectors (e.g., flies), aerosols (e.g., bacteria containing mists), and the receiving water (e.g., bacteria and viruses in the treated wastewater). Because the treated effluent will be used in the middle of a residential neighborhood to irrigate hay for livestock feed, the permit should require the Applicant's treated effluent to comply with the requirements for Type 1 reclaimed water (e.g., bacteriological testing; and *biweekly* sampling), the maintaining of a chlorine residual in the treated effluent pond to prevent noxious bacterial growth and attendant nuisance odors, as well as nitrogen and phosphorus limits that ensure protection against pollution of groundwater and interconnected surface water and the creation of nuisance conditions in such surface waters. In the absence of such conditions, the draft permit is not protective of public health and the safety of nearby residents; for this reason, the permit should be denied.

G. The Draft Permit does not protect 'the habitat of karst-dwelling species, including endangered species

The Proposed Package Plant and land application area are proposed to be sited in a Karst Zone 1 area—that is, an area "known to contain endangered karst invertebrate species." *See* TCEQ Chief Engineer's Office, Water Programs, "Optional Enhanced Measures for the Protection of Water Quality in the Edwards Aquifer and Related Karst Features that May be Habitat for Karst Dwelling Invertebrates," RG-348B at 5, 7 (Sept. 2007), available online at: https://www.tceq.texas.gov/downloads/publications/rg/appendix-b-to-rg-348.pdf In addition, the City is aware that at least four karst features have been mapped in the Sage Creek subdivision and that the Georgetown salamander, an endangered karst-dwelling species, has been identified in upstream and downstream segments of the Middle Fork San Gabriel River. *See* Williamson County, Known Locations of Salamander Springs (Nov. 2011), available online at: https://www.wilcotx.gov/DocumentCenter/View/1355/Map-of-the-Approximate-Locations-of-the-Salamander-Species-PDF.

However, the draft permit does not include permit limits or other conditions to ensure protection of water quality protective of the Georgetown salamander, such as requiring a 100-foot setback or buffer from the centerline of streams as is required under the City's ordinance relating to "Water Quality Regulations for Property Located Over the Edwards Aquifer Recharge Zone." City's Unified Development Code § 11.07.030, available online at: https://library.municode.com/tx/georgetown/codes/unified_development_code?nodeId=UNDECO_CH11ENPR_S11.07WAQUREPRLOOVEDAQREZO_S11.07.030SPBUSTBUP. This, despite the fact that "the primary threat to both [the Georgetown and Salado salamanders] is habitat modification in the form of degraded water quality and quantity"; that these species "depend on high-quality water in sufficient quantities for survival, growth, and reproduction"; that "[t]he Georgetown salamander is thought occur exclusively in springs along two tributaries of the San Gabriel River drainage in the vicinity of Georgetown in Williamson County" (and in proximity to the Proposed Service Area); and that "substrate modification [also poses] a threat to both of these species since interstitial spaces are a critical component of their surface habitat." *See* Industrial Economics, Incorporated Memorandum to the U.S. Fish and Wildlife Service, "Screening Analysis of the Likely Economic Impacts of Critical Habitat Designation for the Georgetown and Salado Salamanders" at 3 (Apr. 13, 2021), available online at: https://downloads.regulations.gov/FWS-R2-ES-2020-0048-0032/content.pdf.

In the absence of permit provisions requiring a robust groundwater monitoring system to ensure the Proposed Package Plant and associated land application area do not degrade groundwater quality and water quality in hydrologically connected surface waters, to prevent the filling of interstitial spaces, and to provide such other protections as may be necessary to ensure the protection of the Georgetown salamander and other karst-dwelling species (such as limiting irrigation rates to prevent contamination of the Edwards Aquifer), the permit should be denied.

H. The draft permit does not contain sufficient operational requirements to ensure that water quality is protected

(1) The draft permit does not contain irrigation-related limits to safeguard water quality in both groundwater and hydrologically connected surface waters

As noted above, the draft permit does not contain permit limits or conditions that limit the amount of nitrogen applied to the land application area, the rate of application, limits for other drinking water pollutants (e.g., PFAS constituents), or that require the installation of a robust subsurface leak detection system for the treated effluent pond. In the absence of such conditions, there is an unacceptable risk that the use of treated effluent for irrigation of hay at the Proposed Service Area will pollute, degrade, or otherwise adversely affect groundwater (i.e., the Edwards Aquifer) and/ or hydrologically connected surface waters. Therefore, the permit should be denied.

(2) The draft permit does not require adequate sampling and monitoring

The Proposed Package Plant would operate 24/7, but only be monitored by grab sample once per month for biochemical oxygen demand ("**BOD**") and total suspended solids ("**TSS**"). This means that that less than 15 minutes of the facility's operations over a three-month period must be monitored. And because grab samples in two consecutive months could be taken as much as 59 days apart, treated effluent could violate water quality standards for some or all of that time without any means of detection or notice. This sampling frequency and testing regime does not provide adequate assurances to the City or the public that the treated effluent will not introduce other pollutants to the Edwards Aquifer or that the plant is producing an effluent meeting the requirements of the draft permit during the long periods of time that the plant is unmonitored. Because the proposed land application area lies over the Edwards Aquifer, a significant source of drinking water supply for the City, sampling for only BOD and TSS—and only on a monthly basis—is not sufficient protect the Edwards Aquifer.

More frequent monitoring of BOD, TSS, and other pollution indicators should also be required given the porosity of limestone bedrock in this area and attendant high potential for interconnection with shallow surface water bodies (including the Middle Fork San Gabriel Tributary 13, which flows through the northwest extent of the Applicant's Proposed Service Area; Middle Fork San Gabriel river; and South Fork San Gabriel river), which flows through the City's ETJ and corporate limits and affect water quality in Blue Hole, a scenic pond on the South San Gabriel River that provides water recreation for residents and tourists and draws a significant amount of tourist traffic to nearby restaurants and other businesses.

Finally, with regard to the type of sampling, a grab sample only reflects performance at the single, short point in time when the sample was collected, and then only if the sample is properly collected. The results can change depending on time of day or whether the plant is operating near its average daily flow rate. More than likely, these samples will be taken during daylight hours when flows are at their lowest part of the diurnal curve, so plant performance will be at its best.

Composite sampling[16] techniques are more representative of the characteristics of the effluent over a longer period of time and more accurately reflect how the treatment plant is performing at all points along the diurnal curve. Although grab sampling may be fine for pH, DO, or total residual chlorine, which can change quickly in water once the sample is taken, composite sampling would be more appropriate for other parameters like BOD, TSS, ammonia nitrogen, total phosphorous, and E. coli. Also, if a single grab sample does not meet permit conditions, adjustments to the plant can be made and additional grab samples taken to get the average back in compliance with the permit parameter.[17]

Respectfully submitted,

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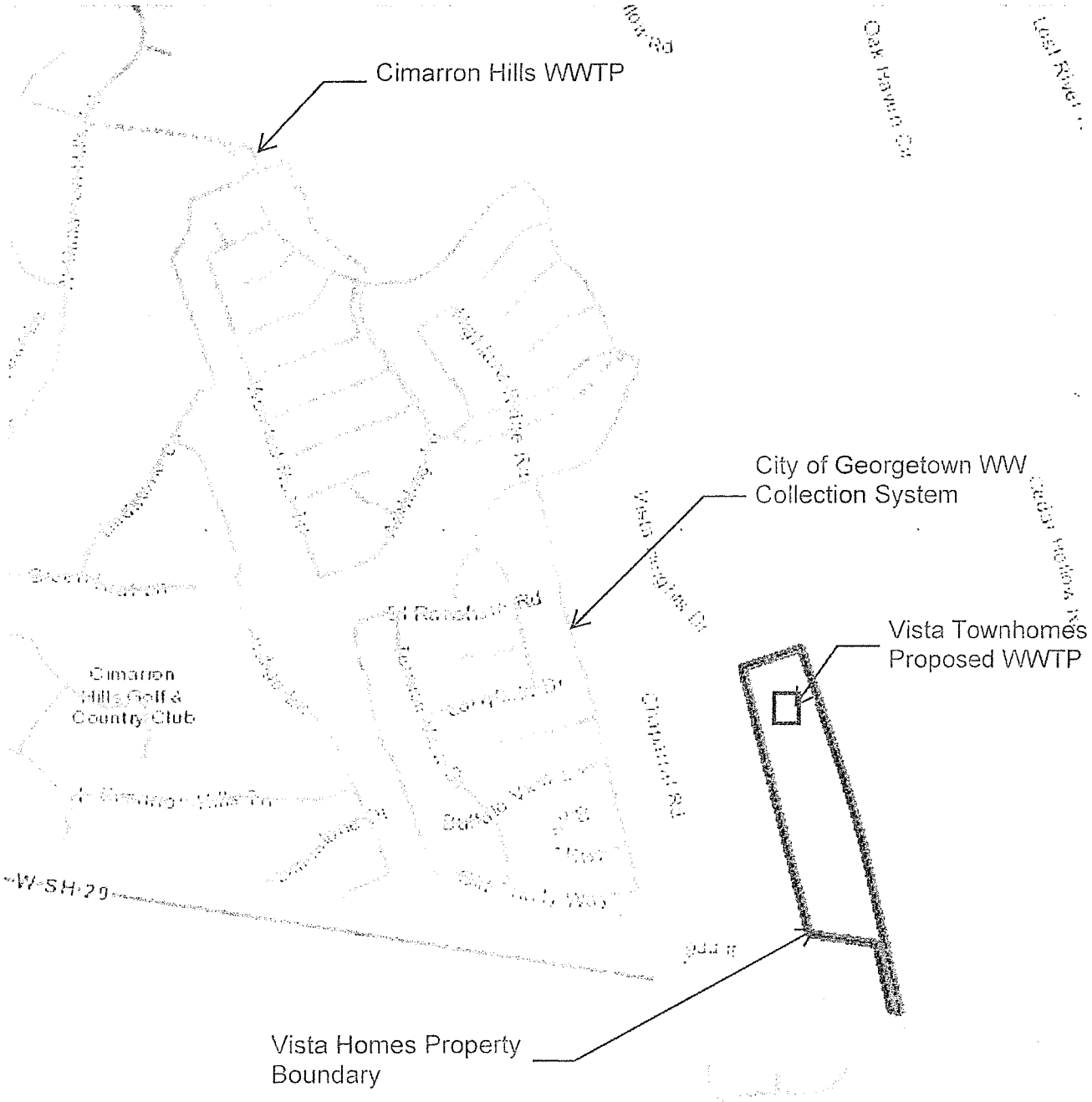
ATTORNEYS FOR CITY OF GEORGETOWN

[16] Composite sampling consists of a collection of numerous individual discrete samples taken at regular intervals over a period of time, like 24 hours, or continuous sampling.

[17] While unscrupulous, such a practice would still meet the permit's sampling requirements. This is a widely known problem in the industry and should not be exacerbated by issuing permits with lax sampling requirements.

ATTACHMENT 1

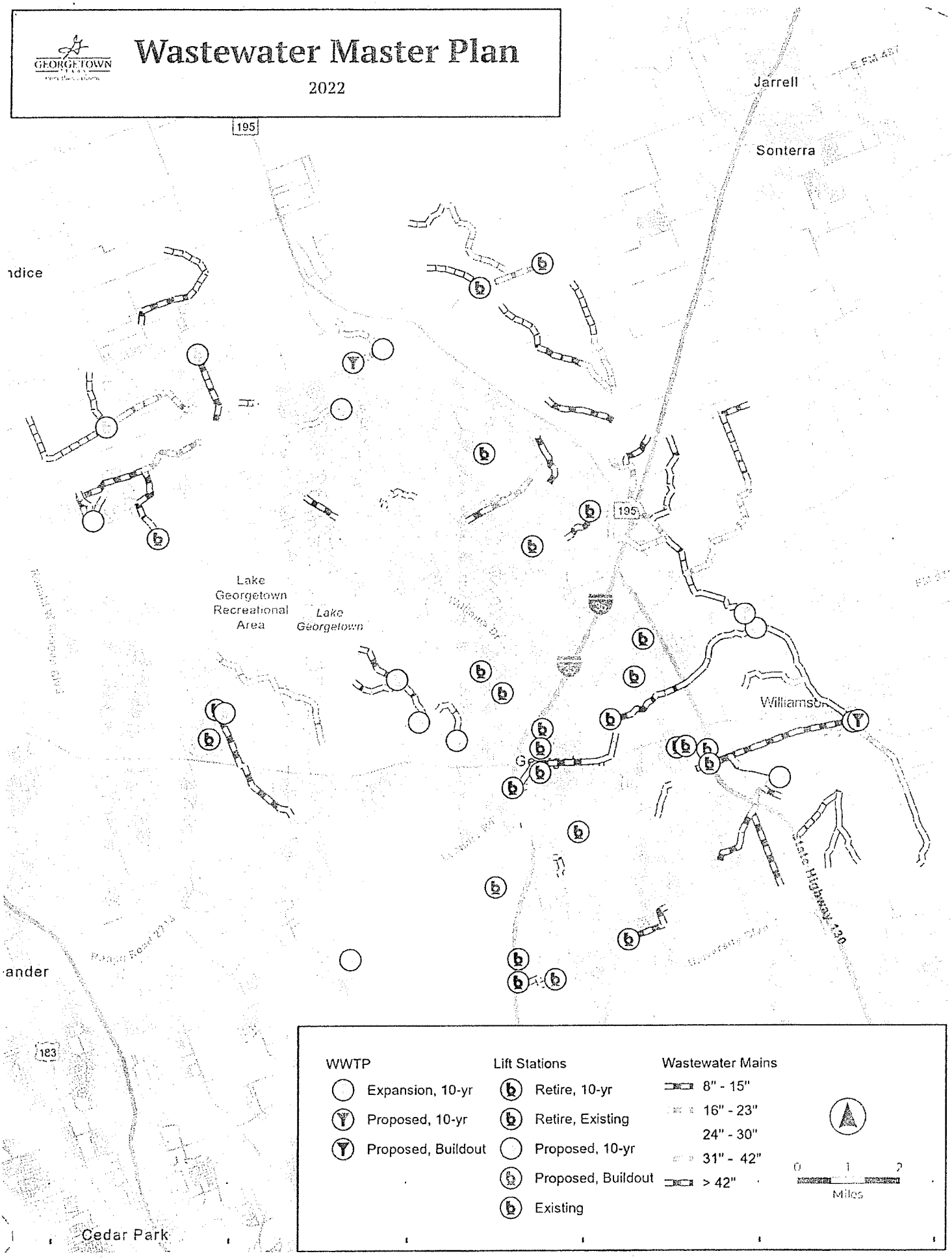
City of Georgetown, Tex. Wastewater Facilities
in Vicinity of Proposed Service Area for Vista Townhomes WWTP



ATTACHMENT 2

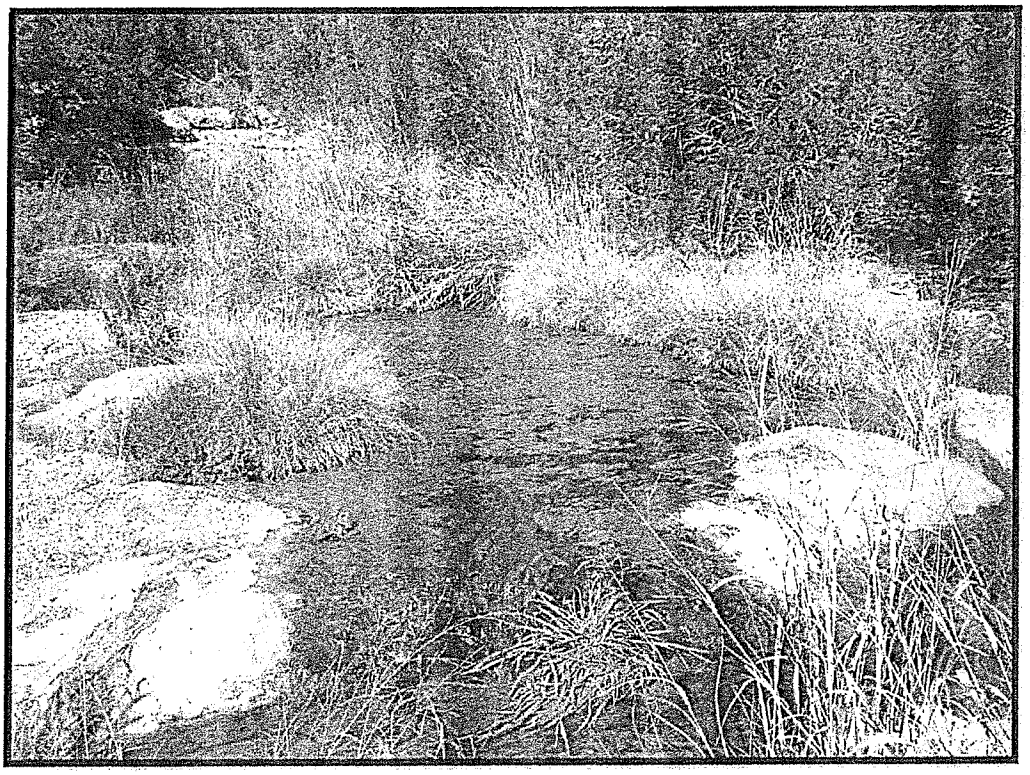
Wastewater Master Plan

2022



ATTACHMENT 3

Land-Applied Wastewater Effluent Impacts on the Edwards Aquifer



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and

Save Our Springs Alliance

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4 November 2011

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Contents

Tables

Figures

Acknowledgements

This work draws upon many years of research regarding the vulnerability of and threats to the Edwards Aquifer conducted by the Edwards Aquifer Authority, the Barton Springs/ Edwards Aquifer Conservation District, the United States Geological Survey, and the City of Austin. I would like to recognize the contributions of Barbara Mahler, Raymond Slade, George Veni, George Rice, Geary Schindel, Martha Turner, Chris Herrington, Mateo Scoggins, Ed Peacock, Scott Hiers, David Johns, Nico Hauwert, Sylvia Pope, Joan Balogh, and Nancy McClintock for decades of faithful effort to understand and protect the Edwards Aquifer.

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Executive Summary

This report examines existing evidence that wastewater effluent discharged in the Barton Springs and San Antonio Edwards Aquifer contributing zones under Texas Land Application Permits (TLAPs), issued by the Texas Commission on Environmental Quality, have failed to protect springs, creeks, rivers, and groundwater. Significant findings of the study include:

- The total TLAP-permitted daily flow in the Barton Springs Edwards Aquifer contributing zone is 5.75 million gallons per day, compared with only 3.18 million gallons per day in the San Antonio Edwards contributing zone. On a per acre basis, the permitted effluent in the Barton Springs Edwards Aquifer contributing zone is 24 times the amount in the San Antonio Edwards Aquifer contributing zone.
- Across the Barton Springs and San Antonio Edwards Aquifer recharge zones from Austin to Brackettville, there are currently no TLAPs. A recently proposed TLAP system over the Barton Springs Edwards Aquifer recharge zone presents a significant new threat to aquifer water quality.
- TLAPs are wildly inconsistent in terms of requirements for wastewater treatment, offline effluent storage volume, irrigation area size, or downgradient monitoring. The result of these inconsistencies is widely different levels of protection for downgradient springs, streams, rivers, and wells.
- Sparsely available monitoring data from streams and/or springs downstream from TLAPs indicate significant degradation of the high quality water that would naturally occur at those locations.
- Regulations governing TLAPs should be overhauled to provide a consistent and high level of water quality protection across the Edwards Aquifer.

In the context of the thin soils, numerous springs, and delicately sensitive Texas Hill Country streams, rivers, and aquifers, any wastewater effluent system represents the threat of permanent and significant degradation. Only by soundly based and strictly enforced regulations can we balance provision of wastewater infrastructure to suburban residences with protection of the natural streams and springs that draw people to these areas.

Introduction

In the drought-prone, arid area of the Texas Hill Country, springs, creeks, rivers, and groundwater are valued for their clarity and purity. These pristine water characteristics arise out of a unique natural setting of geology, soils, and vegetation. Partly ***because*** of their limited water supply, watersheds that sustain Texas Hill Country streams and aquifers have remained primarily rural ranch land.

With the combined pressures of increasing population and water importation, however, rural ranch land is rapidly being converted to suburban development. Along with more people and more water comes more wastewater. Because of their unique sensitivity to pollution, the Texas Commission on Environmental Quality (TCEQ) and its predecessor agencies have traditionally refused to grant wastewater effluent discharge permits within the San Antonio Edwards and Barton Springs recharge and contributing zones. An alternative permit, the Texas Land Application Permit (TLAP), has been granted instead. A TLAP requires that all wastewater effluent be irrigated onto fields or wooded areas, rather than being piped directly into a river or stream.

Until recently the number of TLAPs within the Texas Hill Country watersheds has been small. In 2003, for example, the volume of effluent disposal through TLAP permitted systems for the Barton Springs contributing zone was 1.7 million gallons per day.[1] As more people choose to live outside of the central urban areas, however, the volume of wastewater effluent being disposed of through TLAPs is burgeoning. By 2010, 7.2 million gallons per day of effluent irrigation had been permitted in the Barton Springs Edwards Aquifer contributing zone.

This report examines available evidence that current TLAP standards have failed to protect springs, creeks, rivers, and groundwater. It identifies significant permit inconsistencies; and short-comings of the current regulations governing TLAP permits terms. It recommends necessary regulatory changes to protect the character and quality of pristine Texas Hill Country streams and springs against an onslaught of expanding development and larger wastewater effluent volumes that come with increased human habitation.

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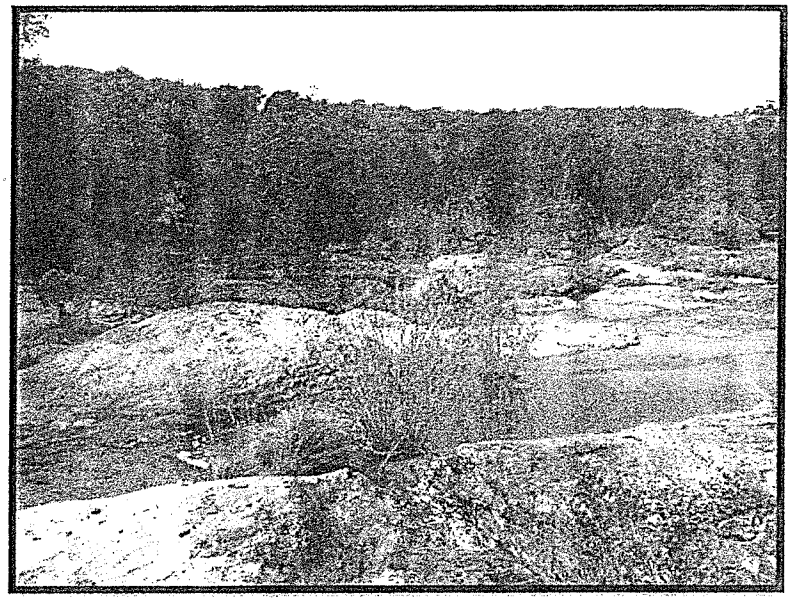
[1] Herrington, Chris, Matthew Menchaca and Matthew Westbrook, *Wastewater Disposal Practices and Change in Development in the Barton Springs Edwards Aquifer Recharge Zone,* City of Austin Watershed Protection Department, 2010, and personal communication.

Setting

This study addresses effects of wastewater effluent disposal in the San Antonio and Barton Springs Edwards Aquifer contributing zones shown in Figure 1. This study region was selected because of its uniquely beautiful landscape; the importance of springs and stream flow in an otherwise water-short setting; and because the characteristics of these springs and streams make them naturally vulnerable to degradation from wastewater effluent. The following sections provide additional information on the streams and aquifers in the study region.

Natural Stream Conditions

There are ten major streams or rivers that originate in the contributing or recharge zones and carry water across the recharging limestone to sustain flow in the Edwards Aquifer. From west to east, these are the West Nueces, the Nueces, the Frio, the Sabinal, Hondo Creek, the Medina, the Guadalupe, the Blanco Rivers, Onion Creek and Barton Creek. In addition to these major rivers and creeks, there are numerous smaller creeks with unique biological habitat and beauty that contribute flow to the aquifer and springs. The pristine conditions of these creeks are also shared by other creeks and rivers near to, but outside of the Edwards Aquifer area, like the Pedernales River and its tributary Lick Creek.



Photograph 1. East Lick Creek in Travis County, Prior to Effluent Irrigation Impacts

Flow in these streams and rivers are characterized by two distinct regimes: a high flow regime shortly following storm rainfall; and a long duration low or baseflow regime. The long duration of the low-flow baseflow regime provides little to no dilution of any pollutants from wastewater effluent.

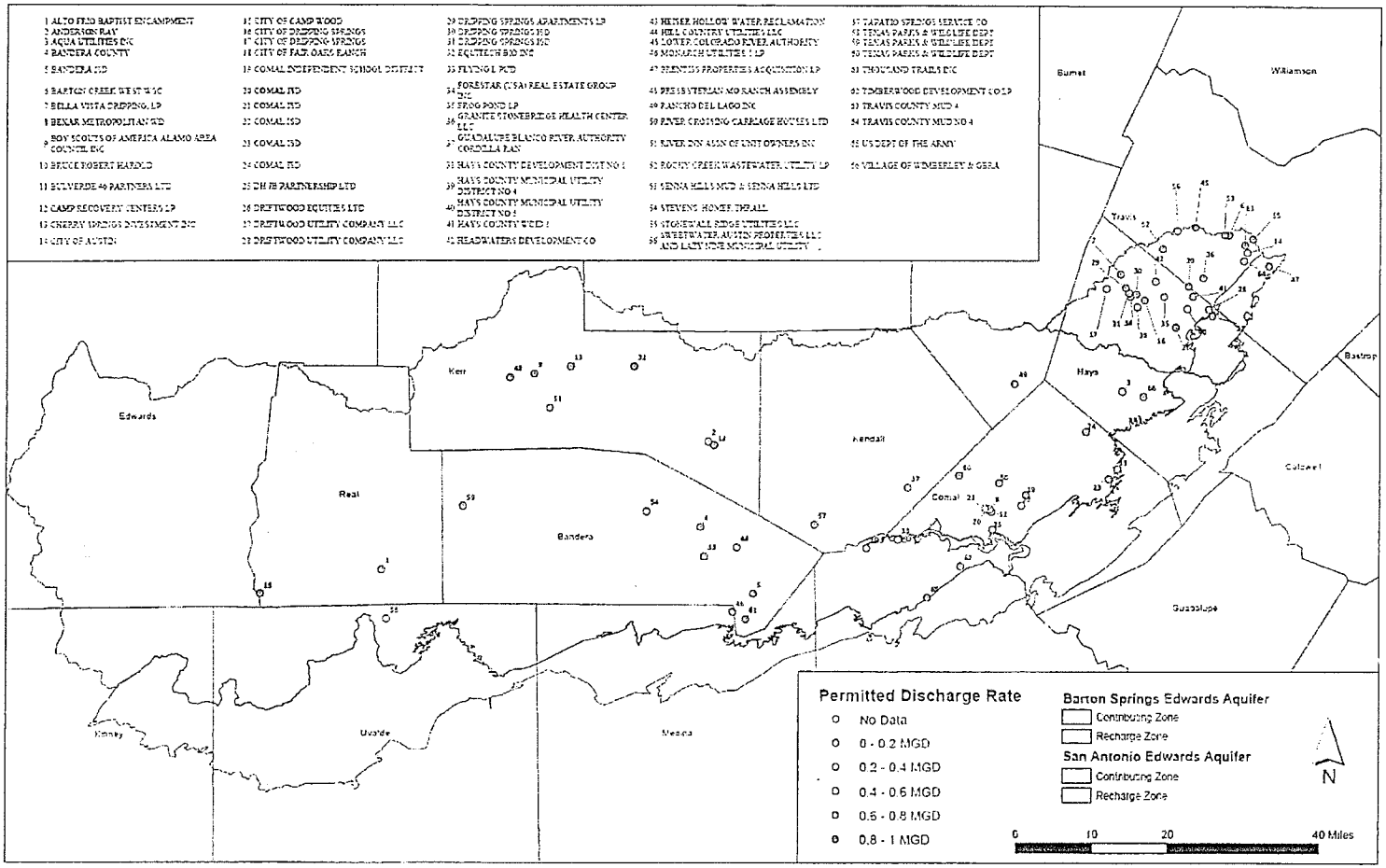


Figure 1. TLAPs Permitted within the San Antonio and Barton Springs Recharge and Contributing Zones

These Hill Country streams are also characterized by very low nutrient concentrations. Typical total phosphorous concentrations during baseflow conditions in a pristine Hill Country stream range from about 0.003 to 0.010 milligrams per liter and total nitrogen ranges from about 0.1 to 0.7 milligrams per liter.[2] Streams with these nutrient concentrations are classified as "oligotrophic." Oligotrophic waters are clear, with little algae. They have consistently high dissolved oxygen levels that support fish and other aquatic life.

Edwards Aquifer

Both the San Antonio and the Barton Springs Edwards Aquifers are karst systems. Groundwater flows through voids dissolved from the limestone. These voids range in size from pencil-width or smaller, to "big enough to drive a truck through." Water can move through a karst aquifer from recharge to discharge points in a matter of hours. The large passageways and rapid movement offer little opportunity for filtration or natural attenuation. Pollution that enters this aquifer shows up quickly in springs or wells. Karst aquifers are uniquely vulnerable to damage from pollution, including wastewater effluent.

Photograph 2. Underground Flow of Water in Blowing Sink Cave, Travis County, Texas

Pollution enters the Edwards Aquifer with the flow of recharging water. Understanding the source of water into the Edwards, both under natural conditions and in the presence of effluent irrigation conditions, is important to protecting the aquifer from pollution. Water can enter the Edwards Aquifer from four sources:

1. from upstream watersheds through recharge

[2] Herrington, Chris, *Impacts of the Proposed HCWCID 1 Wastewater Discharge to Bear Creek on Nutrient and DO Concentrations at Barton Springs,* City of Austin Watershed Protection Department, 2008; and Mabe, J.A., "Nutrient and biological conditions of selected small streams in the Edwards Plateau, Central Texas, 2005–06, and implications for development of nutrient criteria." *U.S. Geological Survey Scientific Investigations Report 2007–5195*, 2007.

features in creek channels;

2. through soil and fractured rock;
3. through internal drainage into sinkholes; and
4. from overlying or adjacent aquifers.

A recent study by Hauwert[3] estimated that 27% to 36% of the Barton Springs discharge might be sourced from upland areas rather than from stream bottoms. That study also determined that the proportion of rainfall recharging through soil-covered areas increased from 3% of rainfall during average rainfall conditions to 26% of rainfall during wet conditions.

This experimental finding is significant in two ways for understanding the potential effect of TLAPs on Edwards Aquifer water quality. First, the findings indicate direct connection between upland areas, where effluent irrigation occurs, and the underlying aquifer. There is no requirement that effluent first migrate to a channel bottom for aquifer degradation to occur. Second, aquifer recharge through soils regularly irrigated with effluent will be significantly higher than through soils saturated only by rainfall.

Wastewater treatment plants built for Shady Hollow and Travis Country residential developments in the 1980s irrigated wastewater effluent onto the recharge zone. Both plants were closed in the early 1990s to protect the Barton Springs Edwards Aquifer water quality. Currently there are no TLAPs for either the San Antonio or Barton Springs Edwards Aquifer recharge zones. There is, however, currently a permit application before the Texas Commission on Environmental Quality for such a system.[4]

A significant portion of the Edwards groundwater enters the aquifer through openings in the bottom of streams. Water to these stream bottoms is provided from their entire watersheds, which may stretch as far as 50 miles beyond the recharge zone boundary. These relatively large contributing watersheds gather rainfall runoff and then funnel it across stream bottom recharge features where the Edwards Limestone crops out. Wastewater effluent disposal within both the recharge and contributing areas would potentially affect the aquifer water quality.

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[3] Hauwert, Nico. *Groundwater Flow and Recharge within the Barton Springs Segment of the Edwards Aquifer, Southern Travis and Northern Hays Counties, Texas.* Dissertation, University of Texas at Austin, 2009, page 213.
[4] Jeremiah Venture, L.P., February 1, 2007.

Wastewater Effluent

Of the wastewater generated and disposed of within the study area, the majority is municipal or domestic wastewater. Domestic wastewater is a mix of human urine and feces, soaps, detergents, cleaning products, body care products, and pharmaceuticals. The Federal Clean Water Act, originally passed in 1972 and subsequently amended, requires communities to treat wastewater before releasing it into streams or rivers.

Wastewater treatment however, usually addresses only a couple of wastewater characteristics. Oxygen demand is treated by inoculating wastewater with a concentrated liquor of biological microorganisms; and then supporting their growth by bubbling air into the mixture. After a certain amount of time, this mixture is transferred to a clarifying basin where suspended solids settle to the bottom of the basin. The clearer water flows over the top edge of the basin into the next basin. Chlorine is added to sterilize pathogens, and the wastewater effluent is then discharged to streams or rivers.

Wastewater effluent permits do ***not*** require treatment to remove metals, pharmaceutical chemicals, or the wide range of chemicals found in body care products, soaps, detergents, pesticides, or other cleaning products. These chemicals remaining in treated effluent are undesirable additions to pristine streams or aquifers. They reduce oxygen levels, kill fish, and stimulate algae blooms. These chemicals contribute to the occurrence of cancer, birth defects and impaired health. Even at very low concentrations, nutrients, toxic metals, pesticides, and pharmaceuticals disrupt aquatic life. Some of these chemicals may accumulate in fatty tissue, impair ability to reproduce, escape predation, maintain proper metabolism, and/or lead to premature death.

Municipal wastewater typically contains 20 to 85 milligrams per liter of total nitrogen. Approximately 60% of the nitrogen will be in the form of ammonia; and 40% bound up in plant and animal tissue. Activated sludge and similar treatment processes typically reduce effluent total nitrogen concentrations to 15 to 35 milligrams per liter. Advanced biological nitrification/denitrification processes can achieve total nitrogen concentrations of 2 to 10 milligrams per liter.[5]

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[5] Solomon, Clement, et al. *Trickling Filters: Achieving Nitrification*. National Small Flows Clearinghouse. http://www.nesc.wvu.edu/pdf/WW/publications/eti/TF_tech.pdf, September 25, 2011.

Elevated nutrients in drinking water can also significantly affect human health. Elevated nitrate concentrations have been linked to methemoglobinemia (blue baby syndrome), bladder and ovarian cancers in older women, and brain cancer in children of women using private well water during pregnancy. When combined with factors like low vitamin C or high meat intake, more than 10 years of exposure to water with more than 5 milligrams per liter of nitrate has been associated with a significant increase in the risk of colon cancer. Studies have also found positive associations between higher levels of nitrate intake during pregnancy and infant neural tube and congenital heart defects.[6]

Although nutrients are essential for a healthy ecosystem, natural ecosystems are precisely tuned to historical nutrient timing and concentrations. Nutrients higher than historical levels disrupt habitat. Increased plant growth pulls more oxygen out of the water when the dead plant matter decomposes. Excessive plant material also reduces stream velocities and increases sediment bottom deposition.

Current Texas Land Application Permits (TLAPs) in the Barton Springs and San Antonio Edwards Contributing Zones

Texas has historically recognized the sensitivity of the Edwards Aquifer by refusing to permit wastewater effluent discharges directly into creek and rivers within the San Antonio and Barton Springs Edwards Aquifer recharge and contributing zones. Wastewater treatment systems within these areas have been required to obtain a Texas Land Application Permit (TLAP), rather than a Texas Pollution Discharge Elimination System (TPDES) permits. In February 2009 TCEQ granted a direct discharge permit to Hays County Municipal Utility District No.1 (Belterra Subdivision), overturning decades of precedent requiring a more protective permit standard. To date there have been no TLAPs issued for either the San Antonio or Barton Spring Edwards Aquifer recharge zones.

[6] Mary H. Ward, Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health, Department of Health and Human Services, Bethesda, MD, Jean D. Brender, Department of Epidemiology and Biostatistics, Texas A&M Health Science Center, School of Rural Public Health, College Station, TX, Nitrate in Drinking Water: Potential Health Effects in Dubrovsky, N.M., Burow, K.R., Clark, G.M., Gronberg, J.M., Hamilton P.A., Hitt, K.J., Mueller, D.K., Munn, M.D., Nolan, B.T., Puckett, L.J., Rupert, M.G., Short, T.M., Spahr, N.E., Sprague, L.A., and Wilber, W.G., 2010, The quality of our Nation's waters—Nutrients in the Nation's streams and groundwater, 1992–2004: U.S. Geological Survey Circular 1350, 174 p. http://water.usgs.gov/nawqa/nutrients/pubs/circ1350.

Effluent disposal under TLAP is generally more protective of creeks, rivers, springs, and the aquifer, compared with a TPDES disposal permit. Effluent receives additional treatment within plant roots and soil in several ways. Water is removed by plant roots and evapotranspiration, reducing the hydraulic pressure to carry contaminants beyond the disposal field. Soil organisms and plants convert nutrients into living cells. Toxic chemicals are transformed into safer substances. Chemicals are bound to organic matter and clay. Metals precipitate and are bound into the soil by iron and clay.

Whether or not these processes work effectively, however, depend on several aspects of the TLAP system:

- the chemical quality of treated effluent;
- the effluent application rate;
- soil depth;
- offline effluent storage capacity, used when the soil is saturated or frozen;
- excess vegetation removal; and
- monitoring and adjusting effluent irrigation in response to weather and rain.

Permit copies were obtained for this report from the TCEQ for 64 out of a total of 70 TLAPs issued for systems operating within the contributing zones of the San Antonio and Barton Springs Edwards Aquifer. Basic characteristics regarding the permitted flow, effluent quality, application rates, and storage volume were extracted from the TLAPs and are presented in Appendix A.[7]

The degree to which TLAPs degrade rivers, streams, and springs depends partly on the volume of wastewater that is treated and disposed of within a given area. Figure 1 illustrates the high density of TLAP systems in the Barton Springs Edwards Aquifer contributing zone compared with the San Antonio Edwards Aquifer contributing zone. An analysis of the data supports the visual impression. Table 1 compares TLAPs in the San Antonio and Barton Springs Edwards contributing zones. The permitted effluent volume in the Barton Springs Edwards Aquifer contributing zone is almost twice the volume permitted in the San Antonio contributing zones, even though the San Antonio contributing area is 17 times larger. On a per-area basis, there is 24 times as much wastewater effluent permitted for

[7] Permits for six systems in the San Antonio Edwards contributing zone were not located. These permits are listed in Appendix B.

irrigation in the Barton Springs Edwards Aquifer contributing zone compared with the San Antonio Edwards.

Table 1. Permitted TLAP Effluent in the Barton Springs Edwards Aquifer Contributing Zone Compared with the San Antonio Edwards

Aquifer	Total Flow (MGD)	Total Irrigated Area (acres)	Zone Area (acres)	GPD per Acre
Barton Springs	5.75	2,063	238,557	24
San Antonio Edwards	3.18	1,461	4,177,172	1

River, stream, well and spring degradation also depends on the degree of effluent treatment before it is irrigated onto the soil. There is a wide variety of effluent treatment methods, effluent quality standards, effluent storage capacity, and irrigation area size requirements in TLAPs issued within the study area. Table 2 lists the different types of treatment technologies and the number of permits associated with each. Of the 64 TLAPS, 44 use the activated sludge treatment method described above. Twelve of the TLAPs either fail to specify any required treatment method, or specify a treatment method less effective than activated sludge.

Table 2. Treatment Technologies for TLAPs in the Study Area

Treatment Methods	
Treatment Method	Number of TLAPs
activated sludge	44
septic tank	6
single stage nitrification	2
not specified	2
membrane bioreactor	2
septic and textile filter	1
S&L Fast K 1086 T	1
facultative lagoon	1
disk filtration	1
Cycle-let	1
aerobic treatment	1
aeration basin	1

Out of the 64 TLAPs, only 10 specify limits on nutrient discharges. Of these 10 that specify nutrient limits, eight limit only ammonia nitrogen. An ammonia limitation does ***not***, however, reduce available nitrogen in the discharge. In the activated sludge system used in each of these eight systems ammonia nitrogen is converted to nitrate nitrogen.[8] Nutrient nitrogen is not removed; it is simply converted to a different form.

In addition to differences in treatment methods and nutrient standards, TLAPs in the San Antonio Edwards and Barton Springs contributing zones differ widely in terms of the allowed application rates and the required effluent storage volume. An examination of the information in Appendix A indicates that the permit-allowed application rates range from 0.08 to 12.20 acre-feet per acre per year. The most common application rate is 4.88 acre-feet per acre per year, equivalent to the subsurface drip irrigation rate of 0.1 gallons per day per square foot. Twenty seven of the 64 current permits specify this application rate. Note, however, that the next section describes three systems with this application rate that exhibit indications of downstream degradation.

Out of 64 TLAPs, only 43 specify an effluent storage volume requirement. Twenty-one TLAPs have no effluent storage requirements. All permit-required volumes have been converted to "days of storage." See Appendix A. This measure is the number of days for which the entire permitted flow could be contained in the storage volume. Since the value of effluent storage is the ability to postpone irrigation during saturated or frozen soil conditions, this measure in days is comparable between facilities across the range of permitted flows.

Of those that require effluent storage, required volumes range across five orders of magnitude, from 0.08 to 308 days. Effluent storage required for subsurface irrigation systems ranges from 0.08 to 70 days; and the average is 5.8 days. For surface irrigation systems the range is 12 to 308 days and the average is 70 days. The wide difference in average storage reflects differences in TCEQ regulations for subsurface and surface irrigation TLAPs. This wide difference in average storage requirements does not, however, reflect any difference in the sorptive capacity of the soils. In general, systems with less storage will be less protective of rivers, streams, wells, and springs than those with more storage. For

[8] Solomon, Clement, et al., *Trickling Filters: Achieving Nitrification*; National Small Flows Clearinghouse, http://www.nesc.wvu.edu/pdf/WW/publications/eti/TF_tech.pdf, September 25, 2011.

this and other reasons, subsurface irrigation systems represent a greater risk of degradation compared to surface irrigation.

Evidence of Degradation from TLAP Wastewater Systems

Monitoring to determine whether TLAPs have damaged streams, creeks, springs, and wells is not required by Texas environmental regulations; nor is it a requirement of most permits. Nevertheless, water monitoring programs by other agencies indicate stream and aquifer degradation in streams and springs associated with TLAPs. This section summarizes some of the available water quality measurements indicating TLAP systems have resulted in degraded water quality.

Hays County Water Control Improvement District No. 1

Hays County Water Control Improvement District No. 1, for the Belterra Subdivision, holds a subsurface irrigation permit for 150,000 gallons per day. The irrigation area is 35 acres in the Bear Creek watershed, tributary to Onion Creek, and located about seven stream miles upstream of the Barton Springs Edwards Aquifer recharge zone. The authorized application rate for this drip irrigation system is 4.88 acre-feet per acre per year. The system has 2.2 days of effluent storage, and the treatment limits, on a daily average, are 20 milligrams per liter biochemical oxygen demand and 20 milligrams per liter total suspended solids. There are no nitrogen or phosphorous effluent limits.

The City of Austin collected water quality samples from Bear Creek at seven locations to determine whether wastewater effluent irrigation associated with the Belterra Subdivision may have caused creek degradation.[9] The City's program includes monitoring from a spring at Aspen Drive upstream of possible TLAP irrigation field influences, downstream to a riffle at Bear Creek Pass. The City has also monitored four tributary locations to assess the impact of their inflows on Bear Creek water quality.

[9] Turner, Martha, *Bear Creek Receiving Water Assessment – January 2009 – March 2010,* City of Austin Watershed Protection Department, SR-10-10, September 2010.

The City's monitoring and data analysis found higher nitrate concentrations at sites immediately below the Belterra TLAP irrigation fields compared with nitrate in the spring above the irrigation fields.[10] The average nitrate concentration increased from 0.47 milligrams per liter upstream, to 1.31 milligrams per liter downstream of the TLAP irrigation area. See Figure 2. This nitrogen concentration increase shifts Bear Creek across the classification boundary between an oligotrophic and a mesotrophic stream at 0.7 milligrams per liter.

Chlorophyll-a concentrations, a measure of algae, were also higher in the Davis Pond immediately downstream from the irrigation fields, compared with the pond at Bear Creek Pass. Similarly, there are significantly higher occurrences of plants and algae above the Davis Pond, compared with the sampling site at Bear Creek Pass.[11]

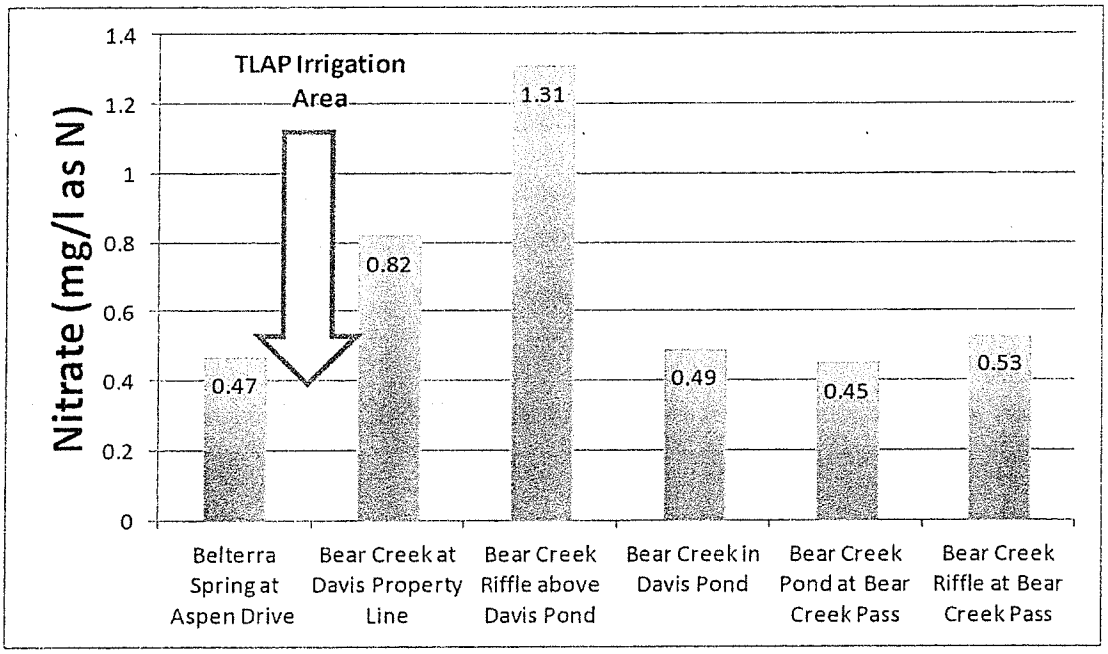


Figure 2. Increased Average Nitrate Concentration Downstream from Belterra TLAP Irrigation Area

[10] Turner, Martha, *Bear Creek Receiving Water Assessment – January 2009 – March 2010,* City of Austin Watershed Protection Department, SR-10-10, September 2010, page 10.
[11] Turner, Martha, *Bear Creek Receiving Water Assessment – January 2009 – March 2010,* City of Austin Watershed Protection Department, SR-10-10, September 2010.

Sources other than effluent irrigation could produce higher nitrate concentrations and algae indicators downstream from the TLAP irrigation fields. These sources include subdivision fertilization, cattle ranching, and suburban stormwater runoff. There are several factors, however, that suggest that the observed water quality degradation is associated with the TLAP system, rather than any of these alternative sources:

- Nitrate concentrations are similar in Bear Creek at the Davis property line and in the Davis Pond. The property line site is above the influence of any cattle on the Davis property.
- Nitrate concentrations are highest during low flow situations. If the source were storm runoff, high concentrations would be observed during high flow, storm runoff conditions.
- Nitrate concentrations are highest during winter months. This pattern is consistent with TLAP effluent application when plant uptake is reduced.
- Algae occurrence increased during baseflow following heavy rains, suggesting that nutrients in the irrigation field may be flushed during these events.

In addition to sampling in the main stem of Bear Creek, the City of Austin also sampled two tributaries. One tributary north of the pond has relatively better quality than Bear Creek. Contributions from this tributary dilute nutrients and improve Bear Creek water quality.

Measurements on samples collected by the City of Austin from the western tributary to Bear Creek are similar to those of the main stem below the Belterra irrigation fields. This western tributary is downstream from the Highpointe subdivision, which is located on its headwaters. Like Belterra, Highpointe is served by a TLAP effluent irrigation system. This system is permitted for 300,000 gallons per day, subsurface irrigated on 68.87 acres. The application rate, 4.88 acre-feet per acre per year, is the same as Belterra's. Effluent treatment standards for Highpointe are the same as for Belterra.

Similarly to the situation in Bear Creek above and below the Belterra effluent irrigation fields, nitrates were relatively low (less than 0.004 milligrams per liter) in the western tributary above the Highpointe TLAP fields; and increase below the TLAPS irrigation fields to about 0.64 milligrams per liter.[12]

[12] Turner, Martha, *Bear Creek Receiving Water Assessment – January 2009 – March 2010,* City of Austin Watershed Protection Department, SR-10-10. September 2010, Figure 11.

Barton Creek West

Barton Creek West is a residential subdivision in the Barton Creek watershed. The subdivision is located about 8 miles west of downtown Austin on Bee Caves Road. The Barton Creek West Homeowners Association, Inc. was registered in April 1985; and the subdivision currently consists of 398 homes.[13] The TLAP authorizes treatment and surface irrigation of 126,000 gallons of effluent per day on 53.3 acres of native grass. The allowed application rate is 2.7 acre-feet per acre per year. The system includes 62.7 acre-feet of storage to store 162 days of effluent. Treatment limits, on a daily average, are 10 milligrams per liter biochemical oxygen demand and 15 milligrams per liter total suspended solids. The permit does not restrict nitrogen or phosphorous in the treated effluent.

The City of Austin has monitored water quality in Scenic Bluff Spring, downstream of the irrigation fields since 1997. Average nitrate concentrations in this pool are 1.3 milligrams per liter[14]; and the maximum observed concentration is 5.9 milligrams per liter. Nitrate concentrations in uncontaminated wells and springs from the Glen Rose formation, from which this spring emerges, are about 10 to 50 times lower than these concentrations; on the order of 0.1 milligrams per liter.

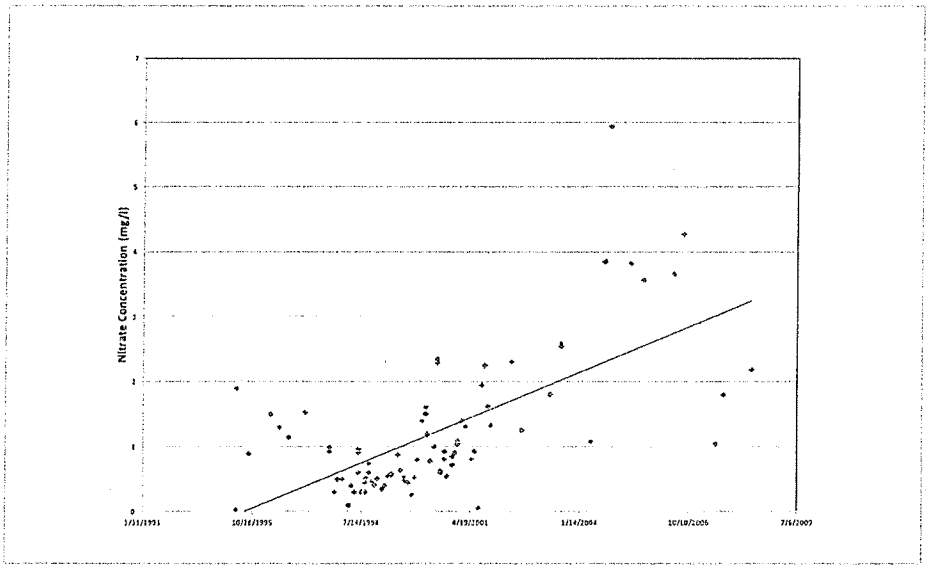
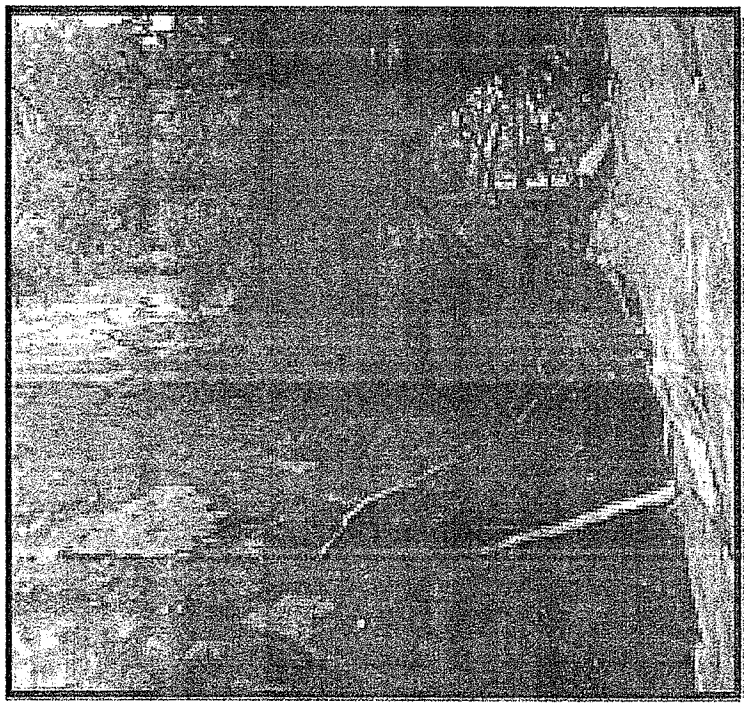


Figure 3. Increasing Nitrate Concentrations in Scenic Bluff Springs Over Time

[13] Barton Creek West HOA. https://community.associawebsites.com/sites/BartonCreekWestHOA/Pages/AcwDefault.aspx, September 25, 2011.
[14] Nitrate concentration as nitrogen.

Figure 3 is a graph of nitrate concentrations in Scenic Bluff Spring as a function of time. The graph shows a clear trend of increasing concentrations. Grotto Spring, also apparently downgradient from the irrigation fields shows a similar trend of increasing nitrate concentrations with time.

Hebbingston Hollow, downstream from Bluff Springs, has been dammed to form a small pond. The presence of a thick algae layer across the entire surface of the pool on June 11, 2009 demonstrates the consequences of the high nitrate concentrations measured in the spring.



Photograph 3. Algae-Covered Pool Downstream from Barton Creek West Irrigation Fields

Residential lawn fertilization may be another source for the observed nitrate concentration increases over time in the two springs downstream from the Barton Creek West effluent irrigation fields. Monitoring by the City of Austin, however, suggests that stream nitrogen concentrations downstream from suburban residential areas on septic systems are relatively low compared with similar areas irrigated with effluent. See Figure 4. This difference suggests that irrigated effluent is at least partly the source of the elevated nitrate concentrations observed in Bluff Springs.

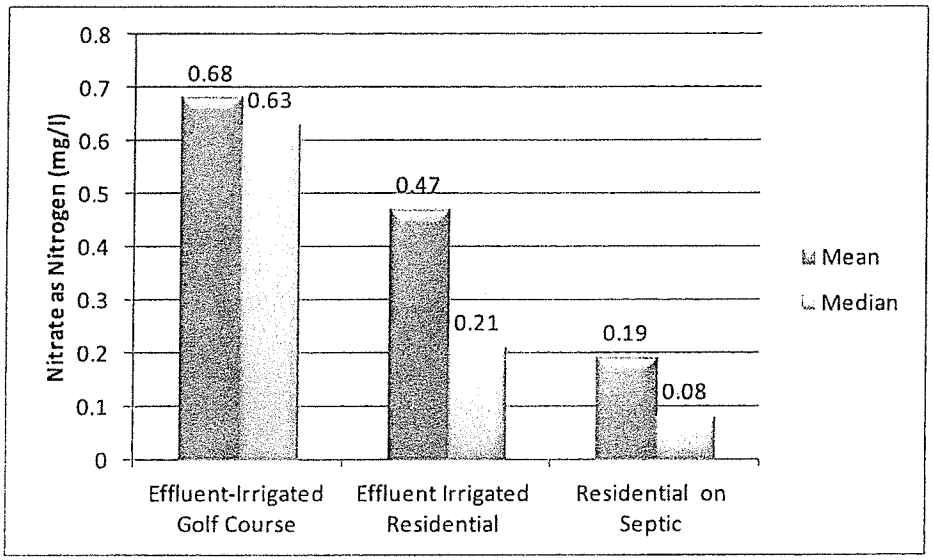


Figure 4. Nitrate Concentration in Barton Creek Canyons Baseflow

West Cypress Hills

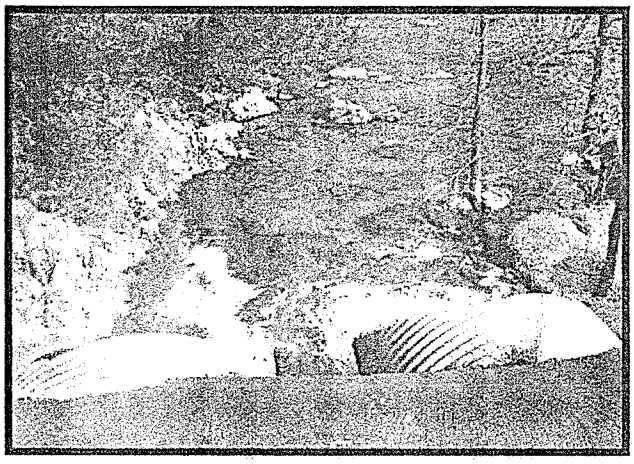
West Cypress Hills is a residential subdivision located about 16 miles west of central Austin. Although the system is located just outside of the contributing zone to the Barton Springs Edwards Aquifer, it is included here because soils, geology, climate, and regulatory requirements for wastewater effluent are similar to many of the systems within the subject area of this study. This is another TLAP system for which water quality measurements in East Lick Creek above and below the TLAP irrigation fields are available. There is also another branch of Lick Creek, West Lick Creek without wastewater effluent irrigation, for which water quality measurements provide a comparable reference.

West Cypress Hills is proposed to be constructed in three phases. The first phase, begun in 2003, encompassed construction of 88 residences.[15] The second and third phases of the development contemplate construction of an additional 244 and 895 residences, respectively. The final phase of this permit would allow 31,000 gallons per day to be applied through a subsurface drip irrigation system to 72.08 acres. Allowed application rates are 4.88 acre-feet per acre per year. At least three days of effluent storage are required. Effluent permit limits are 20 milligrams per liter biochemical oxygen

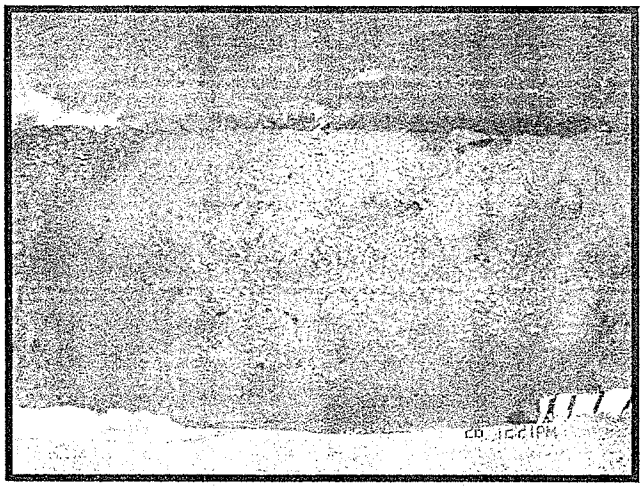
[15] The Moore Group, *Cypress Ranch Phase One*, Section One. Engineer's Report. April 6, 2003.

demand and 20 milligrams per liter total suspended solids, on a daily average basis. There are no nutrient limit requirements.

The owner's representative collected water quality samples from springs and streams upstream and downstream from the West Cypress Hills TLAP irrigation area in June and September 2007. Nitrate concentrations in these data, presented in Figure 5 show a pattern similar to the one observed downstream from the TLAP irrigation areas for Belterra and Barton Creek West.



Photograph 4. West Lick Creek Downstream from Pedernales Canyon Trail



Photograph 5. Algae in East Lick Creek Downstream from Pedernales Canyon Trail

Nitrate concentrations are low upstream from the irrigation fields. These concentrations rise sharply just downstream from the irrigation fields. Further downstream concentrations are once again lower. More extensive algae coverage of the creek, and the presence of algae types like *Cladophora,* however, indicate that the trophic state of the stream has been altered even where nutrient measurements in the water column are relatively low. Photograph 4 and Photograph 5 depict the difference in algae coverage in East Lick Creek downstream for the currently irrigated areas, compared with clear flow in West Lick Creek, where there are currently no effluent-irrigated fields in the watershed.

As with any suburban development, there are other potential nutrient sources. The West Cypress Hills developer originally believed that the source of the nitrogen might be a commercial plant nursery, a horse barn, or storm runoff from Highway 71. Nitrate concentrations from stream locations downgradient from these sites, however, are lower than at sites below the effluent irrigation areas.

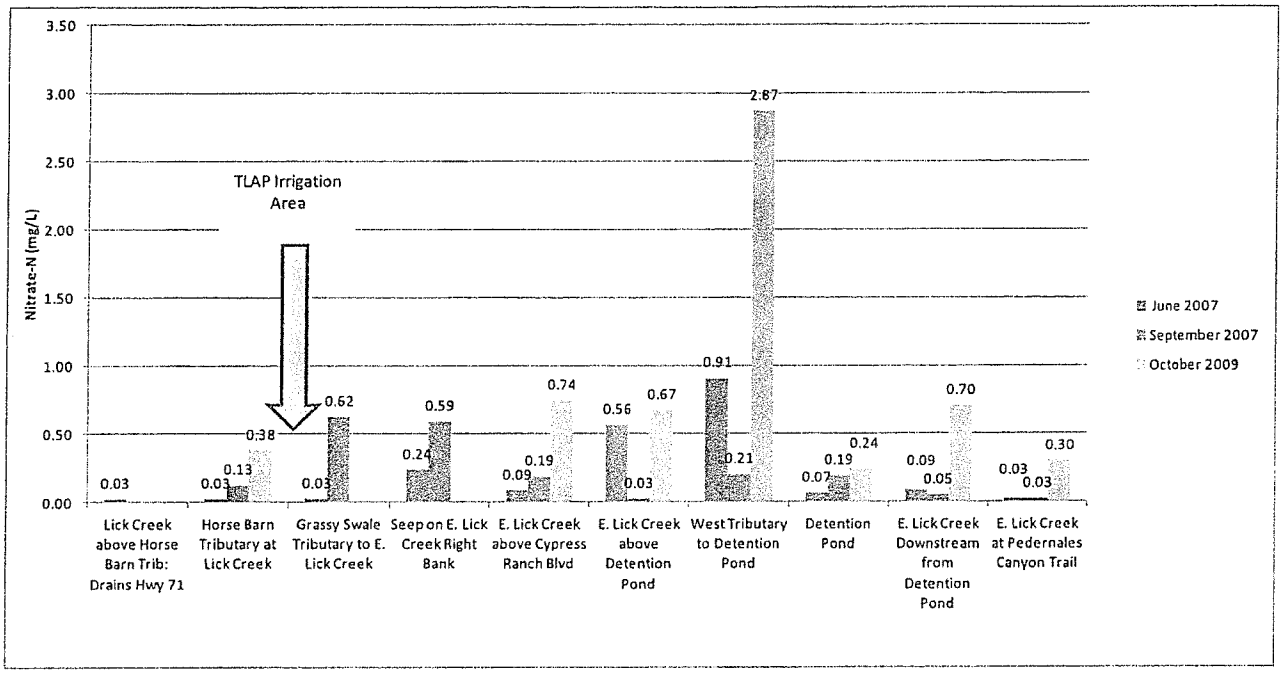


Figure 5. Nitrate Concentrations Above and Below West Cypress Hills TLAP Irrigation Fields

Other possible sources are residential lawn fertilization and compost used to revegetate the construction site.

Effluent Land Application in Other Areas

The soils, climate, and geology of the Edwards Aquifer are unique. There is evidence from other locations, however, that corroborate groundwater degradation from the land application of effluent in similar systems. A study of well and spring water quality in the karstic Wakulla Spring in northern Florida found nitrate-nitrogen concentrations increased from about 0.2 to 1.1 milligrams per liter downstream from a 17 million gallon per day wastewater spray field farming operation on 313 acres. The largest contribution to the nitrogen load, 55%, was attributed to municipal wastewater. Nitrate isotope signatures ($\delta^{15}N$ and $\delta^{18}O$) in groundwater match those of the effluent.

Boron and chloride concentrations were elevated. One pharmaceutical compound, carbamazepine (an anti-convulsant drug) was also detected in the groundwater. Spring-fed streams in Florida have experienced a proliferation of nuisance aquatic vegetation and algal growth.[16]

TLAP Noncompliance with Regulation Requirements

The following section discusses recommended improvements to current TLAP regulatory requirements. Before recommending regulatory improvements, however, it seems important to identify inadequate implementation of existing regulations.

Required Soil Monitoring

TCEQ regulations do not require stream, river, well, or spring monitoring downstream from effluent irrigation areas. 30 TAC §309.20 (b)(4) does, however, require pre-operational and annual soil testing of pH, total nitrogen, potassium, phosphorus, and conductivity. This requirement is included as part of each TLAP in Special Provision 10: "*The permittee shall submit the results of the soil sample analyses to the TCEQ Regional Office and Water Quality Compliance Monitoring Team of the Enforcement Division during September of each year.*"

A search of TCEQ records, however, indicates reported soil monitoring results for only two of the 64 TLAPs within the study area. Even for these limited reported data, only 2 out of the 18 include the required nitrogen measurements. Given indications of nutrient migration from the effluent irrigation fields resulting in significant water degradation, the failure by TCEQ to regulate and enforce what is clearly intended to be an early warning system on nutrient accumulation in the soil disposal zone is troubling.

Failure to Properly Review TLAP Applications

Numerous parties, including the City of Austin, Barton Springs Edwards Conservation District, the Lower Colorado River Authority, Hays County, and Save Our Springs Alliance are currently contesting a TLAP for Jeremiah Venture to treat and irrigate 330,000 gallons per day of wastewater effluent over

[16] Katz, Brian, Dale Griffin, J. Hal Davis, "Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: chemical and microbiological indicators." *Science of the Total Environment,* 407, 2872-2886, 2009.

the recharge area of the Barton Springs Edwards Aquifer. There are currently no surface or subsurface TLAP systems permitted within the San Antonio or Barton Springs Edwards Aquifer recharge zones.

Given the potential significance of this precedent-setting permit, and using the legal authority and resources of the contested hearing process, the City of Austin, Save Our Springs Alliance and Save Barton Creek Association undertook an in-depth review of the Jeremiah Venture TLAP application. The results of the review indicated that the TLAP application failed to represent the potential for significant degradation in the following ways:

- Effluent irrigation was proposed for areas where the soils were determined to be unsuitable for effluent irrigation because they were too rocky, thin, and clayey, and/or had more than 50% bedrock outcrop. Other irrigation areas were determined to be unsuitable because they were on gradients approaching 15% and soil water holding capacities were less than 2 inches.[17]
- The applicant's assessment identified four sinkholes, no caves, four solution cavities, and 14 closed non-karstic depressions. By comparison, a geologic assessment by the City of Austin,[18] conducted over eight days, identified nine cave features, 35 sinkholes, 27 karst depressions, 24 non-karst closed depressions, 23 solution enlarged fractures, 39 solution cavities, and 3 swallow holes. The applicant's assessment failed to characterize the potential for wastewater effluent migration through a sensitive karst region into the underlying Barton Springs Edwards Aquifer.
- Irrigation field sizing is based on a water balance of effluent irrigation, rainfall, runoff, evapotranspiration, and deep percolation. This water balance is particularly sensitive to the evapotranspiration estimates. The applicant's water balance was based on estimated evapotranspiration rates for dryer conditions west of the proposed Hays County location. The significance of this difference was that the applicant overestimated the volume of water that could be applied to the proposed irrigation area by 29%; and underestimated the required effluent storage volume by almost half.[19]

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[17] SOAH Docket No. 582-09-1617; TCEQ Docket No. 2008-1858-MWD. *Application of Jeremiah Venture, L.P. for a New TLAP, Permit No. WQ0014785001*, Direct Testimony of Dr. Lawrence (Larry) P. Wilding. July 31, 2009, pages 50-51.
[18] Hauwert, Nico, *Preliminary Phase I Assessment of the Jeremiah Ventures Site,* for the City of Austin, September 25, 2009.
[19] Ross, Lauren, *Engineering Analysis of Jeremiah Ventures L.P. Proposed Wastewater Irrigation Areas; Draft,* December 2009.

- As required by TCEQ regulations, the applicant provided a water balance for the wettest year of record: 2004. The wettest year of record does not, however, necessarily capture critical rainfall and evapotranspiration conditions. Weather conditions during 2007, a year with a lower rainfall total than 2004, are more restrictive in terms of both effluent irrigation area and storage volume. Nevertheless, the applicant was allowed to size these facilities based on a model using 2004 data.

The applicant proposed to provide wastewater service to 1450 residences. The number of residences that could be served using a water balance based on the appropriate evapotranspiration rates and providing buffers to the City of Austin-identified recharge features is 800. This significant financial incentive to the applicant to misrepresent actual site conditions can only be addressed by consistent and careful review by the authorizing agency, the Texas Commission on Environmental Quality.

Recommendations

Given the number of currently permitted TLAP systems, particularly in the Barton Springs Edwards Aquifer contributing zone, and existing evidence of degraded streams and springs, several changes to TLAP regulations are warranted. These changes include:

- Given that karst features beneath irrigation areas cannot be completely identified, mapped or defined, spray effluent irrigation, as well as subsurface effluent irrigation, over recharge areas should be prohibited.
- Consistent effluent standards to limit concentrations of total nitrogen and phosphorous should be established. Any limitation based upon ammonia nitrogen alone provides no additional protection. Advanced wastewater treatment methods can consistently reduce total phosphorous concentrations to near or below 0.01 milligrams per liter.[20] Combined total nitrogen and total

[20] EPA Region 10, *Advanced Treatment to Achieve Low Concentration of Phosphorus,* April 2007, http://yosemite.epa.gov/r10/water.nsf/Water+Quality+Standards/AWT-Phosphorus/$FILE/AWT+Report.pdf, September 26, 2011.

phosphorous removal systems can achieve annual average concentrations less than 3 milligrams per liter and 0.1 milligrams per liter, respectively.[21]

- Subsurface effluent application does not increase soil storage or treatment capacity. In fact, because the potential evapotranspiration from the surface of tree and plant leaves is lost, the effluent storage and treatment capacity for subsurface effluent application is actually less than for surface applications. Furthermore, subsurface application bypasses the surface soil barrier to chemical and microbial migration.[22] Current rules should be changed to require the same effluent storage capacity for subsurface as for surface application systems.
- The same engineering basis should be used to determine effluent application rates and storage volume requirements for both surface and subsurface systems. That basis should be a daily time-step water balance using historic rainfall rates and evapotranspiration rates from representative weather stations within 25 miles of the proposed facility. The water balance modeling period should be the period of record.
- The leaching allowance in the current TLAP regulations is, essentially, an amount of effluent allowed to deep percolate into underlying aquifers. The leaching allowance should be eliminated.
- TLAPs should require downgradient monitoring, including nitrate, boron, chloride concentrations, nitrogen and oxygen isotope signatures and measures of the occurrence of algae, to identify any wastewater effluent contamination of springs, streams, and wells.[23]
- In addition to the current general prohibition, TLAPs should require soil monitoring to measure saturated or frozen conditions and prevent effluent application.
- Existing regulations requiring regular soil monitoring should be expanded to include a process for identifying soil monitoring results that would trigger a re-examination of the permit terms to prevent wastewater effluent chemical migration to streams, springs, and wells.

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[21] Kang, Shin, Kevin Olmstead, Krista Takacs, James Collins, *Municipal Nutrient Removal Technologies Reference Document,* EPA 832-R-08-006, September 2008, http://water.epa.gov/scitech/wastetech/upload/mnrt-volume1.pdf, September 26, 2011.

[22] Katz, Brian, Dale Griffin, J. Hal Davis, "Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: chemical and microbiological indicators." *Science of the Total Environment,* 407, page 2884, 2009.

[23] Katz, Brian, Dale Griffin, J. Hal Davis, "Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: chemical and microbiological indicators." *Science of the Total Environment,* 407, 2872-2886, 2009.

In the context of the thin soils, numerous springs, and delicately sensitive Texas Hill Country streams, rivers, and aquifers, any wastewater effluent system represents the threat of permanent and significant degradation. Only with soundly based and strictly enforced regulations can we balance provision of wastewater infrastructure to suburban residences with protection of the natural streams and springs that draw people to these areas.

Appendix A. TLAPs in the San Antonio and Barton Springs Edwards Contributing Zones

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
Barton Springs													
	11319-001	CITY OF AUSTIN, LOST CREEK	Barton Creek	0.52	308.42	1.89	43.36	activated sludge	35	10	15	-1	-1
	12786-001	BARTON CREEK WEST WSC	Barton Creek	0.13	53.30	2.65	162.15	activated sludge	35	10	15	-1	-1
	13206-001	TRAVIS COUNTY MUD 4	Barton Creek	0.72	298.70	2.70	75.13	activated sludge	30	5	5	2	-1
	13238-001	SENNA HILLS MUD & SENNA HILLS LTD	Barton Creek	0.16	70.30	2.50	112.08	activated sludge	30	5	5	2	-1
	13594-001	LOWER COLORADO RIVER AUTHORITY Lake	Barton Creek	1.00	350.00	3.20	32.59	activated sludge	35	5	5	2	-1
	13748-001	DRIPPING SPRINGS ISD	Onion Creek	0.02	3.44	4.88	0.00	septic tank	100	-1	-1	-1	-1
	13748-002	Dripping Springs ISD	Onion Creek	0.03	3.83	7.31	0.00	activated sludge	65	-1	-1	-1	-1
	13860-001	GRANITE STONEBRIDGE HEALTH CENTER LLC	Onion Creek	0.01	1.59	7.03	0.00	septic tank	100	30	30	-1	-1
	14077-001	PRENTISS PROPERTIES ACQUISITION LP	Barton Creek	0.00	0.00		70.45	Cycle-let	30	5	-1	-1	-1
	14146-001	DRIPPING SPRINGS APARTMENTS LP	Onion Creek	0.01	3.57	4.39	58.19	activated sludge	65	20	20	-1	-1
	14208-001	HAYS COUNTY DEVELOPMENT DIST NO 1	Onion Creek	0.30	120.00	2.80	72.31	activated sludge	30	5	5	-1	-1
	14235-001	DRIFTWOOD EQUITIES LTD Salt Lick	Onion Creek	0.01	2.30	4.87	2.53	activated sludge	35	10	15	-1	-1
	14293-001	HAYS COUNTY WCID 1 Beltera	Onion Creek	0.15	35.00	4.80	2.20	not specified	65	20	20	-1	-1

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
Barton Springs													
	14309-001	HAYS COUNTY MUNICIPAL UTILITY	Barton Creek	0.15	34.44	4.88	2.22	single stage nitrification	65	20	20	-1	-1
	14358-001	HAYS COUNTY MUD 5 Highpointe	Onion Creek	0.30	68.87	4.88	2.22	activated sludge	65	20	20	-1	-1
	14430-001	TRAVIS COUNTY MUD NO 4	Barton Creek	0.60	220.00	3.06	76.03	single stage nitrification	30	5	5	2	-1
	14435-001	STONEWALL RIDGE UTILITIES LLC	Barton Creek	0.01	1.15	4.87	0.00	activated sludge	65	20	20	-1	-1
	14480-001	DRIFTWOOD UTILITY COMPANY LLC Reunion	Onion Creek	0.05	11.50	4.87	3.98	activated sludge	65	20	20	-1	-1
	14480-002	DRIFTWOOD UTILITY COMPANY LLC Reunion	Onion Creek	0.10	22.10	4.88	4.88	activated sludge	65	20	20	-1	-1
	14488-001	CITY OF DRIPPING SPRINGS South Regional	Onion Creek	0.16	37.43	4.86	2.05	activated sludge	65	20	20	-1	-1
	14488-002	CITY OF DRIPPING SPRINGS Scenic Greens	Onion Creek	0.25	57.39	4.88	3.00	activated sludge	65	20	20	-1	-1
	14587-001	Austin Highway 290 (Headwaters	Barton Creek	0.33	76.00	4.79	7.00	activated sludge	30	5	5	2	1
	14629-001	SWEETWATER AND LAZY NINE MUD	Barton Creek	0.49	199.50	2.75	60.05	activated sludge	35	10	15	-1	-1
	14664-001	ROCKY CREEK WASTEWATER UTILITY LP	Barton Creek	0.13	50.00	2.81	61.67	activated sludge	30	5	5	2	-1
	14824-001	FORESTAR Arrowhead Ranch	Onion Creek	0.13	29.00	4.83	3.00	activated sludge	35	10	15	-1	-1
	14866-001	BELLA VISTA DRIPPING, LP	Barton Creek	0.02	5.28	4.88	3.00	activated sludge	35	10	10	-1	-1
San Antonio Edwards													

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
San Antonio Edwards													
	04237-000	EQUITECH BIO INC	Guadalupe above	0.00	0.16	3.57	0.00	not specified	-1	-1	-1	-1	-1
	11291-001	FLYING L PUD	Medina River above	0.11	178.00	0.71	0.00	activated sludge	65	20	20	-1	-1
	11683-001	ALTO FRIO BAPTIST ENCAMPMENT	Upper Frio River	0.02	2.00	11.20	0.00	aerated lagoon	100	-1	-1	-1	-1
	11867-001	City of Fair Oaks Ranch	Upper Cibolo Creek	0.50	280.00	2.00	103.11	activated sludge	-1	-1	-1	-1	-1
	11976-001	Texas Lehigh Cement Company LP	Plum Creek	0.00	3.00	1.01	0.00	activated sludge	100	30	-1	-1	-1
	12014-001	TEXAS PARKS & WILDLIFE DEPT Guadalupe River	Guadalupe above	0.02	6.10	2.94	28.51	activated sludge	100	-1	-1	-1	-1
	12080-001	US DEPT OF THE ARMY Camp Bullis Miltary	Salado Creek	0.69	189.75	4.07	65.64	activated sludge	65	20	-1	-1	-1
	12334-001	CITY OF CAMP WOOD	Nueces River above	0.10	14.00	8.08	19.03	facultative lagoon	100	-1	-1	-1	-1
	12404-001	Kendall City UC	Upper Cibolo Creek	0.15	40.00	4.20	173.79	activated sludge	65	20	20	-1	-1
	13321-001	VILLAGE OF WIMBERLEY & GBRA	Upper Blanco River	0.05	19.00	2.95	142.07	activated sludge	35	-1	-1	-1	-1
	13449-001	CAMP RECOVERY CENTERS LP	Guadalupe above	0.02	4.00	4.76	12.27	activated sludge	65	-1	-1	-1	-1
	13449-001	CAMP RECOVERY CENTERS LP	Guadalupe above	0.02	0.34	55.30	12.27	activated sludge	65	-1	-1	-1	-1
	13755-001	RIVER INN ASSN OF UNIT OWNERS INC	S. Fork Guadalupe	0.01	0.92	8.30	0.00	activated sludge	65	20	-1	-1	-1

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
San Antonio Edwards													
	13783-001	BANDERA ISD Hill Country Elementary	Medina River	0.01	1.10	12.20	0.08	activated sludge	65	20	-1	-1	-1
	13812-002	COMAL ISD Arlon Seay Intermediate School	Upper Cibolo Creek	0.01	1.65	4.62	0.00	septic tank	100	-1	-1	-1	-1
	13812-003	COMAL ISD Spring Branch Middle School	Upper Cibolo Creek	0.01	2.98	4.88	0.00	activated sludge	65	20	20	-1	-1
	13812-004	COMAL ISD Smithson Valley Middle School	Guadalupe above	0.01	2.98	4.88	0.00	activated sludge	65	20	20	-1	-1
	13989-001	AQUA UTILITIES INC	Cypress Creek	0.38	175.00	2.40	83.40	activated sludge	65	20	20	-1	-1
	14157-001	BOY SCOUTS OF AMERICA ALAMO AREA	N. Fork Guadalupe	0.00	4.30	0.98	17.38	activated sludge	65	20	20	-1	-1
	14167-001	MONARCH UTILITIES 1 LP	Medina Lake	0.03	10.00	2.80	91.89	activated sludge	-1	-1	-1	-1	-1
	14280-001	THOUSAND TRAILS INC	Medina Lake	0.02	2.18	9.76	0.00	activated sludge	35	10	15	-1	-1
	14295-001	COMAL ISD Smithson Valley High School	Upper Cibolo Creek	0.03	6.20	4.88	0.00	septic tank	65	20	20	-1	-1
	14385-001	GUADALUPE BLANCO RIVER AUTHORITY	Guadalupe River above	0.19	102.00	2.11	0.00	membrane bioreactor	30	5	5	2	-1
	14485-001	BRUCE ROBERT HAROLD Boerne Stage Field	Lower Leon Creek	0.00	0.54	3.11	52.14	aerobic treatment	100	-1	-1	-1	-1
	14533-001	COMAL ISD Canyon Lake High School	Upper Blanco River	0.04	9.20	4.87	3.00	aeration basin	65	20	20	-1	-1
	14541-001	CHERRY SPRINGS INVESTMENT INC La	N. Fork Guadalupe	0.02	4.48	4.88	3.08	activated sludge	100	-1	-1	-1	-1

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
San Antonio Edwards													
	14603-001	PRESBYTERIAN MO RANCH ASSEMBLY	N. Fork Guadalupe	0.05	15.00	3.73	0.00	activated sludge	30	5	10	-1	-1
	14615-001	RANCHO DEL LAGO INC Rockin' J Ranch	Upper Blanco River	0.15	37.80	4.45	112.00	activated sludge	30	5	5	3	3
	14637-001	RIVER CROSSING CARRIAGE HOUSES LTD	Guadalupe River above	0.02	225.60	0.08	308.08	activated sludge	65	20	20	-1	-1
	14670-001	TIMBERWOOD DEVELOPMENT CO LP	Salado Creek	0.02	0.00		3.00	septic tank	65	-1	-1	-1	-1
	14760-001	HILL COUNTRY UTILITIES LLC	Medina River above	0.03	8.00	4.20	58.65	activated sludge	35	10	15	-1	-1
	14806-001	Whitewater Land, Heiser Hollow Water	Guadalupe below	0.20	46.00	4.87	0.00	septic and textile filter	65	20	20	-1	-1
	14839-001	BANDERA COUNTY Jail and Justice Center	Medina River above	0.01	2.63	4.88	3.00	disk filtration	100	-1	-1	-1	-1
	14959-001	Two Seventy Seven, GBRA, Park Village	Upper Cibolo Creek	0.20	49.24	4.44	3.00	membrane bioreactor	65	5	5	2	1
	14975-001	DH/JB Partnership, Johnson Ranch	Upper Cibolo Creek	0.08	17.22	4.88	0.00	activated sludge	65	20	20	-1	-1

Appendix B. TLAPs for which No Permits Were Located

The following permits were identified on a TCEQ-supplied Geographical Information System shape file. No corresponding permits were located, however, in TCEQ Central Records.

Permit Number	PERMITTEE	STATUS	Aquifer
11962-001	TEXAS PARKS & WILDLIFE DEPT	Current	San Antonio Edwards
14131-001	BEXAR METROPOLITAN WD	Current	San Antonio Edwards
14333-001	STEVENS, HOMER THRALL	Current	San Antonio Edwards
14397-001	ANDERSON RAY	Current	San Antonio Edwards
14733-001	DH JB PARTNERSHIP LTD	Current	San Antonio Edwards
14741-001	BULVERDE/46 PARTNERS LTD	Current	San Antonio Edwards

Laurie Gharis

From:	Campbell, Hanna <hcampbell@spencerfane.com>
Sent:	Tuesday, December 10, 2024 5:00 PM
To:	Laurie Gharis
Cc:	Faulk, Cody; Hopinks-Baul, Carlota
Subject:	Vista Townhomes Austin, LLC TLAP/Permit No. WQ0016355002 - Comments and Request for Contested Case Hearing
Attachments:	2024.12.10 Vista Townhomes TLAP - City of Georgetown CCH Request.pdf

On behalf of the City of Georgetown, please accept these public comments and request for a contested case hearing on the application by Vista Townhomes Austin, LLC for proposed new Texas Land Application Permit, Permit No. WQ0016355002, to authorize a domestic wastewater treatment facility in Williamson County, Texas.

We have faxed this due to the file size exceeding the eComment site's limit, but wanted to make sure it was received before 5:00pm. We will also be forwarding a copy via First Class Mail, as required.

Thank you,

Hanna Campbell Paralegal
Spencer Fane LLP

816 Congress Avenue, Suite 1200 | Austin, TX 78701
O 512.840.4557
hcampbell@spencerfane.com | spencerfane.com

December 10, 2024

Via e-File to: www.tceq.texas.gov/agency/decisions/cc/comments.html

I. INTRODUCTION

The Application was received by the Texas Commission on Environmental Quality (the "TCEQ") on February 26, 2024 and declared administratively complete by the Executive Director ("ED") on March 22, 2024. The ED completed its technical review and prepared a draft permit. The Notice of Application and Preliminary Decision was issued on November 1, 2024 and published on November 10, 2024. The public comment period on the Application ends on December 10, 2024. These public comments and request for a contested case hearing are timely and properly filed under 30 Tex. Admin. Code Ann. ("TAC") 55.201(c) and (d).

If approved, the draft permit would authorize the disposal of effluent from a package plant (the "Proposed Package Plant") at a daily average flow not to exceed 0.024 million gallons per day ("MGD"). The effluent will be land applied via surface irrigation of 6.3 acres of public access land. The Proposed Package Plant and disposal site would be located approximately 0.6 miles north of the intersection of Vista Heights Drive and State Highway 29 West, in Williamson County, Texas 78628, immediately adjacent to the City's corporate limits.

II. REQUEST FOR A CONTESTED CASE HEARING

A. Affected Person Analysis / Standing

(1) Applicable Rules

In determining who is an "affected person," the TCEQ rule provides as follows:

<u>§55.203. Determination of Affected Person.</u>

(a) *For any application, an affected person is one who has a personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the application. An interest common to members of the general public does not qualify as a personal justiciable interest.*

(b) Except as provided by § 55.103 of this title (relating to Definitions)[1], governmental entities, including local governments and public agencies, with authority under state law over issues raised by the application may be considered affected persons.

(c) *In determining whether a person is an affected person, all factors shall be considered, including, but not limited to, the following:*

(1) *whether the interest claimed is one protected by the law under which the application will be considered;*

(2) *distance restrictions or other limitations imposed by law on the affected interest;*

(3) *whether a reasonable relationship exists between the interest claimed and the activity regulated;*

(4) *likely impact of the regulated activity on the health and safety of the person, and on the use of property of the person;*

(5) *likely impact of the regulated activity on use of the impacted natural resource by the person;*

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[1] [illegible] See 30 TAC § 55.203.

> (6) *for a hearing request on an application filed on or after September 1, 2015, whether the requestor timely submitted comments on the application that were not withdrawn; and*
> (7) *for governmental entities, their statutory authority over or interest in the issues relevant to the application.*
>
> (d) *In determining whether a person is an affected person for the purpose of granting a hearing request for an application filed on or after September 1, 2015, the commission may also consider the following:*
> (1) *the merits of the underlying application and supporting documentation in the commission's administrative record, including whether the application meets the requirements for permit issuance;*
> (2) *the analysis and opinions of the executive director; and*
> (3) *any other expert reports, affidavits, opinions, or data submitted by the executive director, the applicant, or hearing requestor.*
>
> (e) *In determining whether a person is an affected person for the purpose of granting a hearing request for an application filed before September 1, 2015, the commission may also consider the factors in subsection (d) of this section to the extent consistent with case law.*[1]

The City is an "affected person" entitled to a contested case hearing on issues raised in its hearing request because the City has interests related to legal rights, duties, privileges, powers, or economic interests affected by the Application that are not common to the general public and is an affected person under 30 TAC § 55.203(a). In addition, the City has "statutory authority over" and "interest in the issues relevant to the Application within the meaning of 30 TAC § 55.203(b). The City is also providing additional information to the Commission in this letter, per 30 TAC § 55.203(d)(1), (d)(3) and (e). For example, as discussed more fully below, the City provides wastewater treatment services to areas both inside and outside of its corporate limits, the City has authority over or an interest in the effects on the environment and on public health, safety, and welfare from the Proposed Package Plant and the Proposed Package Plant's wastewater disposal onto land immediately adjacent to a residential neighborhood within the City corporate limits as well as City's ETJ, and the City has an interest in eliminating new potential sources of pollution and protecting the Edwards Aquifer, a significant source of the City's drinking water.

(1) The City's Wastewater Treatment System

According to the Application, the Proposed Package Plant would service 60 townhomes and 55 apartment units (the "Proposed Service Area"), with each townhome producing 171.5 gallons per day of wastewater and each apartment producing 122.5 gallons per day of wastewater.[2] The Proposed Package Plant, proposed disposal area, and Proposed Service Area are

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[1] 30 TAC § 55.203 (emphasis added).

[2] In a previously filed TPDES permit application for a package plant to serve the same Proposed Service Area, the Applicant based its wastewater flows on an estimated 250 gallons per day per residential connection, consistent with the requirements in 30 TAC § 217.32(a)(3) and the typical number of occupants for residential units in this area (derived from typical single family residence information in the US Census Bureau for the City of Georgetown). The Applicant's use of significantly lower wastewater estimates in the subject TLAP application (e.g., reducing the wastewater estimate for apartment units by more than 50%) is not consistent with the aforementioned TCEQ regulations and typical residential occupancy values for this area. These reduced values result in an underestimation of the volume of treated wastewater produced by the Proposed Package Plant and of the land application area required to dispose of the same.

all immediately adjacent to a residential neighborhood within the City's corporate limits (i.e., the Cole Estates subdivision), immediately adjacent to another residential subdivision in the City's ETJ (i.e., the Sage Creek subdivision), and in close proximity to (and within 3,000 feet of) other neighborhoods within the City's ETJ (e.g., Cimarron Hills, Oaks at San Gabriel, Cedar Hollow Crossing, Lost River Ranch, Middle Gabriel Estates, Estates, and Crescent Bluff subdivisions).

The City has an interest, consistent with the State's regionalization policy, in reducing or eliminating the number of wastewater package plants so as to reduce or eliminate additional sources of pollution, and protect water quality and public health and safety. To that end, the City owns and operates an extensive wastewater system that eliminates the regional need for package plants such as one described in the Application. The City owns and operates five existing wastewater treatment plants and has a permit for a sixth to be constructed in the near future.[1] The City employs approximately 13 licensed wastewater treatment plant operators and 30 licensed wastewater collection system operators. The City currently provides wastewater service to approximately 19,236 customers. One of the City's wastewater treatment plants, the Cimarron Hills wastewater treatment plant ("WWTP"), is within approximately one mile of the Proposed Package Plant (see Attachment 1) and has sufficient capacity to accept wastewater flows from the Proposed Service Area.[2] In addition, the City is currently in the design phase of a lift station and major interceptor line that will divert flows from the Cimarron Hills WWTP to the City's South Fork interceptor, which conveys wastewater eastwards to the City's three interconnected WWTPs – Dove Springs WWTP, Pecan Branch WWTP, and San Gabriel WWTP. Together, the three, large, connected plants can currently treat 8.0 MGD, which is the equivalent of 80,000 people (at 100 gpd/person).[3] The two other plants – the aforementioned Cimarron Hills Plant and the Berry Creek Plant – can treat 0.24 MGD and 0.1 MGD, respectively – which is the combined equivalent of 3,000 people (at 100 gpd/person). Based on information from the US Census Bureau available online at [illegible], the City population as of the April 1, 2020 census was 67,176. Thus, the City has more than enough capacity to provide wastewater treatment service to its customers within its corporate limits, its ETJ, and the Proposed Service Area.

The City also has existing wastewater collection systems located well within one mile of the Proposed Service Area. The existing collection system is located approximately 1,200 feet to the west of the Proposed Service Area and conveys wastewater to the aforementioned Cimarron Hills WWTP. In addition, as noted above, the City anticipates the construction of a lift station and major interceptor that will divert wastewater flows to the South Fork Interceptor, and thence to the City's

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[1] The City owns and operates the following wastewater treatment facilities: Cimarron Hills WWTP (WQ0011232001), San Gabriel WWTP (WQ0010489002), Dove Springs WWTP (WQ0010489005), Pecan Branch WWTP (WQ0010489004), and Berry Creek WWTP (WQ0013[illegible]). In addition, the City holds TPDES Permit No. WQ0010489007 for the [illegible] WWTP, which is not yet under construction.

[2] The Cimarron Hills WWTP has a current capacity of 0.24 MGD and a final capacity limit of 0.48 MGD.

[3] The City is working on increasing its treatment capacity by expanding the capacity of its Dove Springs WWTP by an additional 1.0 MGD in March 2023, an additional 2.0 MGD at its Pecan Branch WWTP in the next two years, and adding two new WWTPs in the next five to six years (i.e., the 10 MGD Three Forks WWTP and 1.0 MGD [illegible] WWTP), which will serve the west side of Georgetown.

these interconnected WWTFs, in the next ten years. Thus, the City's wastewater collection system has sufficient capacity to serve the Proposed Service Area even as the City continues to grow over the next few years.

(3) The City's Interests in the Application

The City is a home-rule municipality, having the full powers of self-government, and is authorized to exercise all authority incident to local self-government.[7] In addition to having the powers granted to it as a home-rule city via the Texas Constitution, the Legislature has also expressly granted home-rule cities regulatory authority within the ETJ over issues raised by or relevant to the Application. The Legislature created municipal extraterritorial jurisdiction areas for all cities for the following purpose: "to promote and protect the general health, safety, and welfare of persons residing in and adjacent to the municipalities."[8] Thus, the City has a Legislatively mandated interest in promoting and protecting the general health, safety, and welfare of persons residing inside its city limits and ETJ. In addition, the City "may define and prohibit any nuisance within the limits of the municipality and within 5,000 feet outside the limits" and "enforce all ordinances necessary to prevent and summarily abate and remove a nuisance."[9] In the context of the Application, the City's interests are to promote and protect the general health, safety, and welfare of persons residing in the City's corporate limits and ETJ from deleterious effects created by the Proposed Package Plant in an area immediately adjacent to both the City's corporate limits and its ETJ.

The Legislature has also granted cities statutory authority over or interest in issues relative to the Application via specific statutes. For example:

- Tex. Water Code Ann. ("TWC") Ch. 26, Subchapter E (relating to disposal system rules and water pollution control duties of cities).[10]

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[7] See Tex. Const. art. XI, § 5; Tex. Loc. Gov't Code Ann. § 51.072(a) and (b) [illegible] The [home-rule] municipality has full power of local self-government. (b) The grant of powers to the municipality by this code does not prevent, by implication or otherwise, the municipality from exercising the authority incident to local self-government."); [illegible]

[8] Tex. Loc. Gov't Code Ann. § 42.001 ("Purpose of Extraterritorial Jurisdiction. The legislature declares it the policy of the state to designate certain areas as the extraterritorial jurisdiction of municipalities to promote and protect the general health, safety, and welfare of persons residing in and adjacent to the municipalities.").

[9] Tex. Loc. Gov't Code Ann. § 217.042.

[10] See, e.g., TWC § 26.177[illegible] ("A city may establish a water pollution control and abatement program for the city," which "shall encompass the entire city and ... may include areas within its [ETJ] which in the judgment of the city should be included to enable the city to achieve the objectives of the city for the area within its territorial [illegible]

- TWC Ch. 7, Subchapter H (relating to water quality enforcement);[11]
- Tex. Health & Safety Code Ann. § 121.003(a) ("The governing body of a municipality . . . may enforce any law that is reasonably necessary to protect the public health.");
- Tex. Loc. Gov't Code Ann. § 551.002 ("A home-rule municipality may prohibit the pollution or degradation of and may police a stream, drain, recharge feature, recharge area, or tributary that may constitute or recharge the source of water supply of any municipality" and "may provide for the protection of and may police any watersheds . . . inside the municipality's boundaries or inside the municipality's [ETJ].");
- Tex. Loc. Gov't Code Ann. § 212.003(a) (relating to the ability of a municipality to adopt rules governing plats and subdivisions of land within its corporate boundaries and ETJ, including rules related to the provision of water and sewer service to platted areas, in order to promote the healthful development of the city and public health, safety, and general welfare);[12]
- Tex. Loc. Gov't Code Ann. § 217.042 (A home-rule municipality, like the City, "may define and prohibit any nuisance within the limits of the municipality and within 5,000 feet outside the limits" and "enforce all ordinances necessary to prevent and summarily abate and remove a nuisance.");
- Tex. Loc. Gov't Code Ann. § 552.001 ("A municipality may: [(1)] purchase, construct, or operate a utility system," including a sewer system, "inside or outside the municipal boundaries;" (2) "regulate the system in a manner that protects the interests of the municipality;" (3) "extend the lines of its utility systems outside the municipal boundaries;" (4) "sell water [or] sewer . . . service to any person outside its boundaries;" (5) "prescribe the kind of water . . . mains [and] sewer pipes . . . that may be used inside or outside the municipality;" and (6) "inspect those facilities and appliances, require that they be kept in good condition at all times, and prescribe the necessary rules, which may include penalties, concerning them.");
- Tex. Loc. Gov't Code Ann. Ch. 552, Subchapter C (relating to municipal drainage systems); and
- Tex. Loc. Gov't Code Ann. Ch. 551.002 ("A home-rule municipality may buy, own, construct inside or outside the municipal limits, and maintain and operate a . . . sewage plant.").

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jurisdiction. The city shall include in the program the services and functions which, in the judgment of the city [illegible] will provide effective water pollution control and abatement for the city.")

[11] The enforcement authority and rights granted to cities in TWC § 7.351(a) are different from those of the general public and, having been granted special statutory enforcement rights over water quality matters, the City has authority [illegible] by the Applicant and Draft Permit. TWC § 7.351(a) authorizes "local government[s]" to bring an action against a person for a violation or threatened violation of Chapter 26 of the TWC occurring in the jurisdiction of that local government in the same manner as the TCEQ may do so – that is, for injunctive relief, a civil penalty, or both.

[12] Accord Tex. Loc. Gov't Code § 212.013(b)(1) ("A municipality may . . . [illegible] sewer system.").

In addition, regionalization and need in wastewater permitting cases are issues on which cities that operate wastewater collection and treatment systems, like the City, are uniquely poised to offer evidence. TWC § 26.003 provides that:

> It is the policy of this state and the purpose of this subchapter to . . . encourage and promote the development and use of regional and areawide waste collection, treatment, and disposal systems to serve the waste disposal needs of the citizens of this state; and to require the use of all reasonable methods to implement this policy.

This guiding principle of regionalization and need is enshrined in the introductory provisions of Chapter 26, listed second only to the recognition of private ownership rights of groundwater. Two other pieces of legislation were adopted to underscore this policy: TWC §§ 26.081[11] and 26.0282[12]—relating to the consideration of the regionalization policy, need, and the availability of existing or proposed areawide or regional wastewater collection, treatment, and disposal systems.

The state regionalization policy articulated three times in the Texas Water Code is entirely consistent with the Legislature's creation of ETJs via the Tex. Loc. Gov't Code. The issues of wastewater treatment regionalization and need cannot be evaluated or implemented without the ability to look "regionally" and "areawide"—beyond a city's corporate boundaries. The Legislature has adopted statutes that underscore a city's status as an affected person in cases such as the one at hand by creating ETJs, acknowledging cities' interest in the environment, and issues affecting the health, safety, and welfare in those areas, granting cities authority over issues such as those raised in wastewater permitting applications, and adopting policies relating to regionalization and need in wastewater permitting cases. It is consistent with state law to allow a city's participation in wastewater permitting cases when the facility, outfall, and discharge route are within a city's ETJ. Therefore, the City has authority under state law over issues raised in the application as required for governmental entities under 30 TAC §§ 55.203(b) and 55.203(c)(3).

In summary, the City has interests in issues relevant to the Application because the City has an interest in preventing and abating nuisance conditions within 5,000 feet outside its corporate limits and the Proposed Package Plant and disposal area are both immediately adjacent to the City's corporate limits as well as its ETJ. In addition, the City owns and operates a wastewater treatment plant that can serve the Proposed Service Area. As is detailed more fully below, the City should be granted a contested case hearing to represent the City's interests in regionalization and need, environmental effects, and public health, safety and welfare including pursuing a reduction of

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[11] TWC § 26.081(a) ("The legislature finds and declares that it is necessary to the health, safety, and welfare of the people of this state to implement the state policy to encourage and promote the development and use of regional and areawide waste collection, treatment, and disposal systems to serve the waste disposal needs of the citizens of the state and to prevent pollution and maintain and enhance the quality of the water in the state.")

[12] TWC § 26.0282 ("In considering the issuance, amendment, or renewal of a permit to discharge waste, the [illegible]")

package plants and eliminating risk of water quality degradation (including to the Edwards Aquifer, which is an important drinking water supply source for the City, and interconnected surface water bodies that flow through the City's ETJ and corporate limits) and nuisance odors and upsets from such plants, to ensure that the health, safety, and welfare of residents in the City limits and in its ETJ will be maintained, and that the plant operator has the technical, managerial, and to ensure that the Applicant and/or plant owner/operator has a good compliance history and the financial capability to construct, operate and maintain the plant. There is a reasonable relationship between the City's stated concerns and the proposed activities to be regulated under the draft permit.

B. Request for Contested Case Hearing

The Proposed Package Plant, disposal area, and Proposed Service Area are *immediately* adjacent to the City's corporate limits and ETJ. The City has a legislatively mandated interest in promoting and protecting the general health, safety, and welfare of persons residing inside its city limits and ETJ (including, but not limited to, by the prohibition of nuisance conditions within 5,000 feet of its corporate limits). Local governments, such as the City, with authority under state law over issues contemplated by an application, are considered affected persons under 30 TAC § 55.203. For the reasons articulated above, the City has justiciable interests that will be adversely affected by this Application.

The City requests that it be granted party status. The City also requests a contested case hearing.

III. COMMENTS ON THE APPLICATION

A. The City has existing permitted wastewater treatment capacity that could meet the need expressed by the Applicant, and the Applicant fails to demonstrate the need for the facility in the context of Regionalization.

The City owns and operates an extensive wastewater system that eliminates the need for package plants such as one described in the Application. The City owns and operates five existing wastewater treatment plants, has a permit for a sixth to be constructed in the near future.[13] The City employs approximately 13 licensed wastewater treatment plant operators and 38 licensed wastewater collection system operators. The City currently provides sewer service to approximately 37,756 wastewater customers.

As noted above, one of the City's wastewater treatment plants, the Cimarron Hills WWTP, is within one mile of the Proposed Package Plant (see Attachment 1). In addition, the Proposed Service Area is within 1,500 feet of a wastewater collection system that conveys wastewater to the City's three interconnected WWTPs—i.e., Dove Springs WWTP, the Pecan Branch WWTP, and the San Gabriel WWTP. Together, just these three large, connected plants can treat 8.0 MGD,

[13] See id., supra.

Ms. Laurie Gharis, Chief Clerk
Re: TPDES Permit No. WQ00[illegible]
December 13, 2024
Page 9

which is the equivalent of 30,000 people (at 100 gpd/ person). The two other plants—the aforementioned Cimarron Hills Plant and the Berry Creek Plant—can treat 0.24 MGD and 0.3 MGD, respectively—which is the combined equivalent of 5,000 people (at 100 gpd/person). Based on information from the US Census Bureau available online at [illegible], the City population as of the April 1, 2020 census was 67,176. Therefore, the City has more than enough capacity to provide wastewater treatment service to the 60 townhomes and 95 apartment units proposed to be constructed in the Proposed Service Area at the Applicant's requested levels.

The City also has an existing wastewater collection system located well within one mile of the Proposed Service Area. The existing collection system is located approximately 1,200 ft to the west of the Proposed Service Area and conveys wastewater to the aforementioned Cimarron Hills WWTP. In addition, as noted above, the City anticipates the construction of a lift station and major interceptor that will direct wastewater flows to the South Fork Interceptor, and thence to the City's three interconnected WWTPs, in the next two years. Thus, the City's wastewater collection system has sufficient capacity to serve the Proposed Service Area even as the City continues to grow over the next few years.

The City has planned and constructed its wastewater treatment and collection systems to eliminate the need for small package plants serving single subdivisions such as the Proposed Package Plant, consistent with the State's regionalization policy. Because the City's current wastewater treatment and wastewater collection system have sufficient capacity in the area of the Proposed Package Plant to serve the Proposed Service Area, the Applicant has failed to demonstrate the need for the proposed facilities; therefore, consistent with the State's regionalization policy, the TLAP should be denied.

II. The Application fails to demonstrate that the Applicant's proposed facilities satisfy TCEQ's requirements for unsuitable site characteristics.

TCEQ regulations do not allow wastewater treatment facilities to be located within a 100-year floodplain. 30 TAC § 309.13(a). The Applicant represented that its proposed land application site would not fall within the 100-year floodplain of the Middle Fork San Gabriel River. To support this assertion, the Applicant relied on FEMA FIRM Panel 48491C0275E (the "FEMA Map"). That reliance was misplaced.

The absence of a floodplain on the FEMA Map in the area of the proposed discharge and related facilities does not mean that the Proposed Package Plant is not in a 100-year floodplain. The FEMA floodplain maps typically only show watersheds that are one square mile or more in size. Thus, the fact that no floodplain is shown for the small area in question does not mean that there is not 100-year floodplain present. More thorough analysis of the floodplain extent and water surface elevation is required to accurately assess whether the site of the Proposed Package Plant and disposal area is suitable—especially in light of the existence of a tributary running through northwestern extent of the Applicant's Proposed Service Area (identified as Middle Fork San Gabriel Tributary 13 on Williamson County's floodplain studies mapping system, available online at [illegible]

Placement of the Proposed Package Plant and/or disposal area within a 100 year floodplain would pose a significant threat to the surface water and groundwater quality in the receiving stream and in the Edwards Aquifer, which is recharged by hydrologically connected surface waters (e.g., the Middle Fork San Gabriel Tributary 13, as well as the Middle Fork and South Fork of the San Gabriel River).

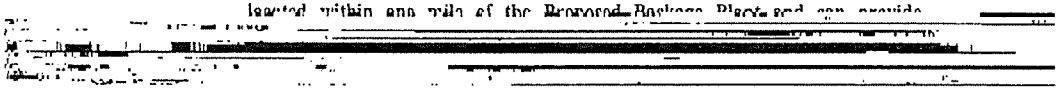
The site of the Proposed Package Plant is also unsuitable because the treated effluent storage lagoon would be located over the Edwards Aquifer, which violates TCEQ's prohibition on siting of wastewater facilities over a recharge zone of major or minor aquifers "unless the aquifer is separated from the base of the containment structure by a minimum of *three feet* of material with a hydraulic conductivity toward the aquifer not greater than 10-7 cm/sec [,] a *thicker interval of* more permeable material which provides *equivalent or greater retardation of pollutant migration*," or a synthetic membrane liner "with a minimum of 40 mils thickness and an underground leak detection system with appropriate sampling points." 30 TAC § 309.13(d) (emphasis added). Here, the Applicant has stated that it does not intend to install monitoring wells, suggesting it will not be installing a synthetic membrane liner. *See* Applicant's Domestic Worksheet 1.0, Section 7. However, the soil information provided by the Applicant does not show that the separation criteria have been met as there are only an 11" layer of clay soils and, thereunder, bedrock with a hydraulic conductivity of 1.41 x 10-4 cm/sec in the area of the proposed storage lagoon. *See* pp. 22, 23, and 27 of Attachment [illegible] to Applicant's Permit Application. Given the absence of sufficient soil depth for the installation of monitoring wells as part of an effective underground leak detection system and that the limestone bedrock in this area of the Edwards Aquifer allows for significant recharge to both surface and groundwater along circuitous pathways, construction and operation of the proposed treated effluent lagoon would pose an unnecessary risk of pollution to the Edwards Aquifer and hydrologically connected surface waters (e.g., the nearby Middle Fork San Gabriel Tributary 13, as well as the Middle Fork and South Fork of the San Gabriel River). Therefore, the permit should be denied.

In addition, the information provided in the Application indicates the proposed land application site is not a suitable location as soils present at the site (EeB and EdB soil groups) are not conducive to growing crops - the soil layer is less than 12" of stony clay, cobbly clay, or other clay soils on top of bedrock (11" below ground surface). While some crops may be able to grow in clay soils, root growth in such a shallow soil profile would tend to create pathways for rapid infiltration into the underlying, and highly transmissive, limestone bedrock. Thus, the permit should also be denied on the basis that the proposed land application area would also not be suitable.

Finally, because the limestone bedrock deposits in this area are known to provide suitable environments for karst-dwelling species, including endangered karst-dwelling species, siting either a treated effluent lagoon or a treated effluent land application site is concerning from the perspective of protecting wildlife and endangered species. Given the difficulty of identifying karst features and karst-dwelling species in the subsurface and the risk of harm posed by permitting the proposed Package Plant and associated disposal area, TCEQ should not issue this permit.

C. Granting the draft permit is not consistent with the Legislature's policy directive to encourage and promote the development and use of regional and areawide waste collection, treatment, and disposal systems per TWC §§ 26.003, 26.081(a), and 26.0282, and the TCEQ's Regionalization Policy for Wastewater Treatment

(1) The City owns and operates a wastewater treatment facility or collection system located within one mile of the Proposed Bastrop Plant and can provide



of scale that would mitigate the cost to the Applicant or relieve it of the burden of bearing the entire cost of new regional infrastructure. However, there is other development occurring in the area and there may be alternatives to connecting infrastructure described in the City's Updated Wastewater Master Plan that could be considered and approved by the City Council.

(3) Other faster and less costly alternatives for connecting to the city's wastewater exist

The Updated Wastewater Master Plan covers the Proposed Service Area, so it is a given that some portions will develop faster or differently than planned. Therefore, the City has several processes or mechanisms to provide more nimble and nuanced evaluations of how wastewater service might be provided in a specific instance. These alternatives have not been discussed by the City and the Applicant since the Applicant did not submit a written request for service from the City. In addition, the Application does not include information about the construction time and costs for the Proposed Package Plant and land application area. Nevertheless, the City anticipates that connecting the Proposed Service Area to the City's nearby, existing wastewater collection system (~1,200 feet west of the Proposed Service Area) would proceed more quickly and be less costly than building the Package Plant and associated land application area.

There are other residential developments in the area as well as wastewater collection and treatment system improvements that may align with the Applicant's schedule. Some of this new infrastructure may be able to be utilized by the Applicant either as is, or with some upsizing, and may significantly reduce Applicant's cost to connect to the City's wastewater system compared to the costs of the regional infrastructure described in the Updated Wastewater Master Plan. In other words, there may be service alternatives available to the Applicant that are not presented in the Application that make connection to the City's wastewater system both timely and cost effective. On approval by the City Council, these alternatives would be available to the Applicant.

D. The Application is not substantially complete and accurate

The Application is materially incomplete in that it fails to provide relevant information that is necessary for the TCEQ to conduct a full analysis of the possible effects of the Proposed Package Plant and land application area on water quality, karst features and karst-dwelling species, surrounding existing uses (e.g., livestock and crop production), and the need / justification for their construction. The missing information includes, but is not limited to, the following:

- the Applicant's failure to provide correspondence with the City, demonstrating that a request for service was made by the Applicant and denied by the City;
- cost information to allow for a comparison of the cost to build the Proposed Package Plant versus the cost to connect to the City's existing, nearby wastewater collection system;
- the absence of information regarding surrounding land uses;
- a geological assessment and information about karst features within the Proposed Service Area and in close proximity thereto;

- information about potential karst-dwelling species within the Proposed Service Area or in close proximity thereto.

In addition, the Application includes the following inaccurate information: wastewater flows for the residential connections in the Proposed Service Area are based on arbitrary values (171.5 gallons/day per townhome and 122.5 gallons/day per apartment) rather than the values set forth in 30 TAC § 217.32(a)(3) and the engineering conventions for such residential connections (assuming 2.5 people and 100 gallons per person per day for townhomes and 1.9 persons and 100 gallons per person per day for apartments); the concentration of nitrogen in treated effluent is underestimated (assumed to be 20 mg/L rather than a more conservative 30 mg/L); and no phosphorus estimate is provided for the treated effluent. Taken together, these incorrect estimates yield an incomplete and unrealistic picture of the volume of treated water, nutrient concentrations therein, and the land application rate and area required to ensure protection of water quality in groundwater and hydrologically connected surface waters, beneficial uses of the same (including crop production and other agricultural uses), and environmental receptors (including livestock, wildlife, karst-dwelling species, and other aquatic life).

In the absence of accurate and complete information, the TCEQ cannot conclude that the Proposed Package Plant is needed, justified, and can be built and operated without adverse impacts to, inter alia, groundwater and surface water quality, karst features, and karst-dwelling species (including endangered species). Thus, because the TCEQ's regionalization policy cannot be shown to be implemented or that an exception is therefrom is justified, the permit should be denied.

C. The draft permit is not protective of groundwater quality and hydrologically connected surface waters, or of existing uses of such surface waters in accordance with Texas Surface Water Quality Standards, including protection of public health and enjoyment of waters in the state and aquatic and terrestrial life.

Given that the slightest plant upset would adversely affect the water quality in the treated effluent pond and groundwater and surface waters to which the treated effluent may flow, the City is concerned that the proposed discharge poses risks to water quality in the Edwards Aquifer and hydrologically connected surface waters, and may create unsanitary or unsafe water quality conditions, which may affect the health and safety of its citizens, their enjoyment of such waters as they pass through the City's corporate and ETJ limits, and other non-human receptors (including karst-dwelling species).

As noted above, the concentration of nitrogen appears to be underestimated in the Application and no information is provided regarding other pollutants (e.g., phosphorus, bacteria, per- and polyfluoroalkyl substances or "PFAS") in the treated effluent. At the proposed irrigation rate over the relatively small land application area, there is an unacceptable risk that nitrogen and other pollutants may "break through" and affect water quality in the Edwards Aquifer and hydrologically connected surface waters in the absence of permit limits to safeguard water quality for drinking water and other beneficial uses (including aquatic life protection for endangered karst-dwelling species).

A study prepared by Glenrose Engineering in November 2011 for the Greater Edwards Aquifer Alliance regarding the impact of land-applied wastewater effluent on the Edwards Aquifer identified significant increases of nitrogen concentrations in surface water bodies in proximity to the land application sites, with resulting adverse changes to the aesthetic, chemical, and biological condition of those water bodies (algal blooms, low dissolved oxygen ("DO") conditions, cloudy/murky conditions, etc.). *See* Attachment 3 at 11, 19. Given the interconnection of shallow surface water and surface water in the recharge zone of the Edwards Aquifer, the City is concerned that the proposed discharge of treated effluent will have similar adverse effects on water quality in the Middle Fork San Gabriel Tributary 13, the Middle Fork or South Fork San Gabriel river stems, and the City's Blue Hole park, which is just downstream of the proposed Package Plant and effluent disposal area. Adverse changes to the water quality of these streams may result in the impairment of the beneficial uses of these water bodies (e.g., aquatic and wildlife uses, recreational uses, etc.)—may affect the health of City residents and persons recreating in Blue Hole and the Middle Fork and South Fork San Gabriel River stems, and may have significant adverse economic impacts on river-front businesses in the City and other nearby businesses that that rely on Blue Hole park goers, river recreational users, and other tourist traffic spurred by the community's investment in river related recreational opportunities and waterfront businesses.

Because the draft permit does not contain limits and conditions to safeguard groundwater quality, the quality of hydrologically connected surface waters, beneficial uses, and human and non-human receptors, the draft permit is inconsistent with Texas' antidegradation and regionalization policies, the latter of which includes the promotion of use of existing area-wide waste collection, treatment, and disposal systems to prevent pollution. In light of the foregoing, the permit should be denied.

F. The Draft Permit is not protective of the public health and safety of nearby residents

The City is also concerned about the public health risk posed by the Proposed Package Plant to nearby City residents. The City is concerned that the very close distance of the Proposed Package Plant, treated effluent storage pond, and land application area to adjacent residences poses the potential for nuisance odors and health risks, including the contamination of groundwater wells (due to over irrigation), and the potential exposure of residents to harmful pathogens via vectors (e.g., flies), aerosols (e.g., bacteria containing mists), and the receiving water (e.g., bacteria and viruses in the treated wastewater). Because the treated effluent will be used in the middle of a residential neighborhood to irrigate hay for livestock feed, the permit should require the Applicant's treated effluent to comply with the requirements for Type I reclaimed water (e.g., bacteriological testing, and biweekly sampling), the maintaining of a chlorine residual in the treated effluent pond to prevent noxious bacterial growth and attendant nuisance odors, as well as nitrogen and phosphorus limits that ensure protection against pollution of groundwater and interconnected surface water and the creation of nuisance conditions in such surface waters. In the absence of such conditions, the draft permit is not protective of public health and the safety of nearby residents; for this reason, the permit should be denied.

G. The Draft Permit does not protect "the habitat of karst-dwelling species, including endangered species

The Proposed Package Plant and land application area are proposed to be sited in a Karst Zone I area—that is, an area "known to contain endangered karst invertebrate species." *See* TCEQ Chief Engineer's Office, Water Programs, "Optional Enhanced Measures for the Protection of Water Quality in the Edwards Aquifer and Related Karst Features that May be Habitat for Karst Dwelling Invertebrates," RG-348B at 3 [illegible] (Sept. 2007), available online at: [illegible]. In addition, the City is aware that at least four karst features have been mapped in the Sage Creek subdivision and that the Georgetown salamander, an endangered karst-dwelling species, has been identified in upstream and downstream segments of the Middle Fork San Gabriel River. *See* Williamson County, Known Locations of Salamander Springs (Nov. 2011), available online at: [illegible]-the-Salamander-Species-PDF.

However, the draft permit does not include permit limits or other conditions to ensure protection of water quality protective of the Georgetown salamander, such as requiring a [illegible]-foot setback or buffer from the centerline of streams as is required under the City's ordinance relating to "Water Quality Regulations for Property Located Over the Edwards Aquifer Recharge Zone." City's Unified Development Code § 11.07.030, available online at: [illegible]. This, despite the fact that "the primary threat to both [the Georgetown and Salado salamanders] is habitat modification in the form of degraded water quality and quantity"; that these species "depend on high-quality water in sufficient quantities for survival, growth, and reproduction"; that "[t]he Georgetown salamander is thought to occur exclusively in springs along two tributaries of the San Gabriel River drainage in the vicinity of Georgetown in Williamson County" (and in proximity to the Proposed Service Area); and that "substrate modification [also poses] a threat to both of these species since interstitial spaces are a critical component of their surface habitat." *See* Industrial Economics, Incorporated Memorandum to the U.S. Fish and Wildlife Service "Screening Analysis of the Likely Economic Impacts of Critical Habitat Designation for the Georgetown and Salado Salamanders" at 3 (Apr. 13, 2021), available online at: [illegible]-ES-2020-0016-0037/content.pdf.

In the absence of permit provisions requiring a robust groundwater monitoring system to ensure the Proposed Package Plant and associated land application area do not degrade groundwater quality and water quality in hydrologically connected surface waters, to prevent the filling of interstitial spaces, and to provide such other protections as may be necessary to ensure the protection of the Georgetown salamander and other karst-dwelling species (such as limiting irrigation rates to prevent contamination of the Edwards Aquifer), the permit should be denied.

II. The draft permit does not contain sufficient operational requirements to ensure that water quality is protected

(1) The draft permit does not contain irrigation-related limits to safeguard water quality in both groundwater and hydrologically connected surface waters

As noted above, the draft permit does not contain permit limits or conditions that limit the amount of nitrogen applied to the land application area, the rate of application, limits for other drinking water pollutants (e.g., PFAS compounds), or that require the installation of a robust subsurface leak detection system for the treated effluent pond. In the absence of such conditions, there is an unacceptable risk that the use of treated effluent for irrigation of hay at the Proposed Service Area will pollute, degrade, or otherwise adversely affect groundwater (i.e., the Edwards Aquifer) and/or hydrologically connected surface waters. Therefore, the permit should be denied.

(2) The draft permit does not require adequate sampling and monitoring

The Proposed Package Plant would operate 24/7, but only be monitored by grab sample once per month for biochemical oxygen demand ("BOD") and total suspended solids ("TSS"). This means that that less than 15 minutes of the facility's operations over a three-month period must be monitored. And because grab samples in two consecutive months could be taken as much as 59 days apart, treated effluent could violate water quality standards for some or all of that time without any means of detection or notice. This sampling frequency and testing regime does not provide adequate assurances to the City or the public that the treated effluent will not introduce other pollutants to the Edwards Aquifer or that the plant is producing an effluent meeting the requirements of the draft permit during the long periods of time that the plant is unmonitored. Because the proposed land application area lies over the Edwards Aquifer, a significant source of drinking water supply for the City, sampling for only BOD and TSS—and only on a monthly basis—is not sufficient protect the Edwards Aquifer.

More frequent monitoring of BOD, TSS, and other pollution indicators should also be required given the porosity of limestone bedrock in the area and attendant high potential for interconnection with shallow surface water bodies (including the Middle Fork San Gabriel Tributary [illegible], which flows through the northwest extent of the Applicant's Proposed Service Area; Middle Fork San Gabriel river, and South Fork San Gabriel river, which flows through the City's ETJ and corporate limits and affect water quality in Blue Hole, a scenic pool on the South San Gabriel River that provides water recreation for residents and tourists and draws a significant amount of tourist traffic to nearby restaurants and other businesses.

Finally, with regard to the type of sampling, a grab sample only reflects performance at the single, short point in time when the sample was collected, and then only if the sample is properly collected. The results can change depending on time of day or whether the plant is operating near its average daily flow rate. More than likely, these samples will be taken during daylight hours when flows are at their lowest part of the diurnal curve, so plant performance will be at its best

Composite sampling[13] techniques are more representative of the characteristics of the effluent over a longer period of time and more accurately reflect how the treatment plant is performing at all points along the diurnal curve. Although grab sampling may be fine for pH, DO, or total residual chlorine, which can change quickly in water once the sample is taken, composite sampling would be more appropriate for other parameters like BOD, TSS, ammonia nitrogen, total phosphorous, and E. coli. Also, if a single grab sample does not meet permit conditions, adjustments to the plant can be made and additional grab samples taken to get the average back in compliance with the permit parameters.[14]

Respectfully submitted,

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ATTORNEYS FOR CITY OF GEORGETOWN

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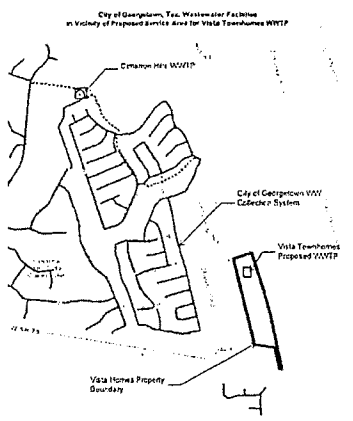
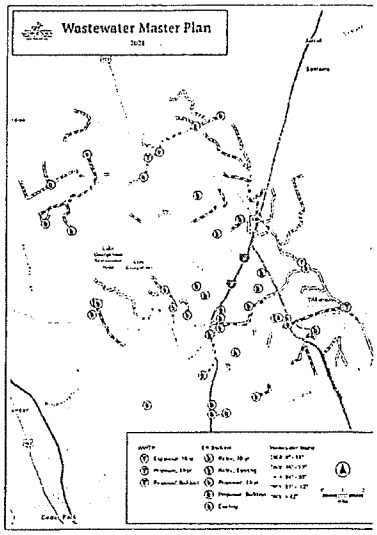
[13] Composite sampling consists of a collection of numerous individual discrete samples taken at regular intervals over a period of time, like 24 hours, or continuous sampling.

[14] While not explicit, such a practice would still meet the permit's sampling requirements. This is a widely known problem in the industry and should not be exacerbated by issuing permits with lax sampling requirements.

ATTACHMENT 1


City of Georgetown, Tex. Wastewater Facilities
in Vicinity of Proposed Service Area for Vista Townhomes WWTP
Cimarron Hills WWTP
City of Georgetown WW
Collection System
Vista Townhomes
Proposed WWTP
Vista Homes Property
Boundary

ATTACHMENT 2


Wastewater Master Plan
2024

ATTACHMENT 3

Land-Applied Wastewater Effluent Impacts on the Edwards Aquifer

Prepared for:
Greater Edwards Aquifer Alliance
and
Save Our Springs Alliance

By:

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November 2011

4 November 2011

Contents

Tables

Figures

Acknowledgements

This work draws upon many years of research regarding the vulnerability of and threats to the Edwards Aquifer conducted by the Edwards Aquifer Authority, the Barton Springs/ Edwards Aquifer Conservation District, the United States Geological Survey, and the City of Austin. I would like to recognize the contributions of Barbara Mahler, Raymond Slade, George Veni, George Rice, Geary Schindel, Martha Turner, Chris Herrington, Mateo Scoggins, Ed Peacock, Scott Hiers, David Johns, Nico Hauwert, Sylvia Pope, Jean Balogh, and Nancy McClintock for decades of faithful efforts to understand and protect the Edwards Aquifer.

This project was funded by a grant to the Greater Edwards Aquifer Alliance from the Cynthia and George Mitchell Foundation.

Executive Summary

This report examines existing evidence that wastewater effluent discharged in the Barton Springs and San Antonio Edwards Aquifer contributing zones under Texas Land Application Permits (TLAPs), issued by the Texas Commission on Environmental Quality, have failed to protect springs, creeks, rivers, and groundwater. Significant findings of the study include:

- The total TLAP-permitted daily flow in the Barton Springs Edwards Aquifer contributing zone is 1.73 million gallons per day, compared with only 3.38 million gallons per day in the San Antonio Edwards contributing zone. On a per acre basis, the permitted effluent in the Barton Springs Edwards Aquifer contributing zone is 24 times the amount in the San Antonio Edwards Aquifer contributing zone.
- Across the Barton Springs and San Antonio Edwards Aquifer recharge zones from Austin to Brackettville, there are currently no TLAPs. A recently proposed TLAP system over the Barton Springs Edwards Aquifer recharge zone presents a significant new threat to aquifer water quality.
- TLAPs are widely inconsistent in terms of requirements for wastewater treatment, effluent and storage volume, irrigation area size, or downgradient monitoring. The result of these inconsistencies is widely different levels of protection for downgradient springs, streams, creeks, and wells.
- Sparsely available monitoring data from streams and/or springs downstream from TLAPs indicate significant degradation of the high quality water that would naturally occur at those locations.
- Regulations governing TLAPs should be overhauled to provide a consistent and high level of water quality protection across the Edwards Aquifer.

In the context of the Jon scale, numerous springs, and delicately sensitive Texas Hill Country streams, rivers, and aquifers, any wastewater effluent system represents the threat of permanent and significant degradation. Only by soundly based and strictly enforced regulations can we balance provision of wastewater infrastructure to subdivision residences with protection of the natural streams and springs that draw people to these areas.

Introduction

In the drought-prone, arid area of the Texas Hill Country, springs, creeks, rivers, and groundwater are valued for their clarity and purity. These pristine water characteristics arise out of a unique natural setting of geology, soils, and vegetation. Partly because of their limited water supply, watersheds that sustain Texas Hill Country streams and aquifers have remained primarily rural ranch land.

With the combined pressures of increasing population and water importation, however, rural ranch land is rapidly being converted to suburban development. Along with more people and more water comes more wastewater. Because of their unique sensitivity to pollution, the Texas Commission on Environmental Quality (TCEQ) and its predecessor agencies have traditionally refused to grant wastewater effluent discharge permits within the San Antonio Edwards and Barton Springs recharge and contributing zones. An alternative permit, the Texas Land Application Permit (TLAP), has been granted instead. A TLAP requires that all wastewater effluent be irrigated onto fields or wooded areas, rather than being piped directly into a river or stream.

Until recently the number of TLAPs within the Texas Hill Country watersheds has been small. In 2001, for example, the volume of effluent disposal through TLAP permitted systems for the Barton Springs contributing zone was 1.7 million gallons per day.[1] As more people choose to live outside of the central urban areas, however, the volume of wastewater effluent being disposed of through TLAPs is burgeoning. By 2010, 7.2 million gallons per day of effluent irrigation had been permitted in the Barton Springs Edwards Aquifer contributing zone.

This report examines available evidence that current TLAP standards have failed to protect springs, creeks, rivers, and groundwater. It identifies significant permit inconsistencies, and shortcomings of the current regulations governing TLAP permit terms. It recommends necessary regulatory changes to protect the character and quality of pristine Texas Hill Country streams and springs against an onslaught of expanding development and larger wastewater effluent volumes that come with increased human habitation.

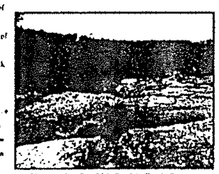
[1] Herrington, Chris, Matthew Menchaca and Matthew Westbrook, *Wastewater Disposal Practices and Change in Development in the Barton Springs Edwards Aquifer Recharge Zone*. City of Austin Watershed Protection Department, [illegible], and personal communication.

Setting

This study addresses effects of wastewater effluent disposal in the San Antonio and Barton Springs Edwards Aquifer contributing zones shown in Figure 1. This study region was selected because of its uniquely beautiful landscape, the importance of springs and stream flow in an otherwise water-short setting, and because the characteristics of these springs and streams make them naturally vulnerable to degradation from wastewater effluent. The following sections provide additional information on the streams and aquifers in the study region.

Natural Stream Conditions

There are ten major streams or rivers that originate in the contributing or recharge zones and carry water across the recharging limestone to sustain flow in the Edwards Aquifer. From west to east, these are the West Nueces, the Nueces, the Frio, the Sabinal, Hondo Creek, the Medina, the Guadalupe, the Blanco River, Onion Creek and Barton Creek. In addition to these major rivers and creeks, there are numerous smaller creeks with unique biological habitat and beauty that contribute flow to the aquifer and springs. The pristine conditions of these creeks are also shared by other creeks and rivers near to, but outside of the Edwards Aquifer area, like the Pedernales River and its tributary Lick Creek.



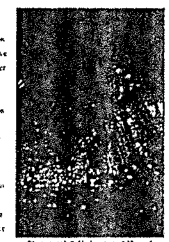
Photograph 1. East Lick Creek in Travis County, Prior to Effluent Irrigation Impacts

Flow in these streams and rivers are characterized by two distinct regimes: a high flow regime shortly following a storm rainfall, and a long duration low or baseflow regime. The long duration of the low-flow baseflow regime provides little to no dilution of any pollutants from wastewater effluent.

These Hill Country streams are also characterized by very low nutrient concentrations. Typical total phosphorous concentrations during baseflow conditions in a pristine Hill Country stream range from about 0.003 to 0.010 milligrams per liter and total nitrogen ranges from about 0.1 to 0.3 milligrams per liter.[1] Streams with these nutrient concentrations are classified as "oligotrophic." Oligotrophic waters are clear, with little algae. They have consistently high dissolved oxygen levels that support fish and other aquatic life.

Edwards Aquifer

Both the San Antonio and the Barton Springs Edwards Aquifers are karst systems. Groundwater flows through voids dissolved from the limestone. These voids range in size from pencil-width or smaller, to "big enough to drive a truck through." Water can move through a karst aquifer from recharge to discharge points in a matter of hours. The large passageways and rapid movement offer little opportunity for filtration or natural attenuation. Pollution that enters this aquifer shows up quickly in springs or wells. Karst aquifers are uniquely vulnerable to damage from pollution, including wastewater effluent.



Photograph 1. Underground Flow of Water in Blowing Sink Cave, Travis County, Texas

Pollution enters the Edwards Aquifer with the flow of recharging water. Understanding the source of water into the Edwards, both under natural conditions and in the presence of effluent irrigation conditions, is important to protecting the aquifer from pollution. Water can enter the Edwards Aquifer from four sources:

1. from upstream watersheds through recharge

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[1] Herrington, Chris, *Impacts of the Proposed [illegible] Wastewater Discharge to Bear Creek on Nutrient and DO Concentrations of Barton Springs*, City of Austin Watershed Protection Department, 2007, and Mabe, J.A., "Nutrient and biological conditions of selected small streams in the Edwards Plateau, Central Texas, 2005-06, and implications for development of nutrient criteria," *U.S. Geological Survey Scientific Investigations Report* [illegible], 2007.

fissures in creek channels;

2. through soil and fractured rock;
3. through internal drainage into sinkholes, and
4. from overlying or adjacent aquifers.

A recent study by Hauwert[3] estimated that 27% to 36% of the Barton Springs discharge might be sourced from upland areas rather than from stream bottoms. That study also determined that the proportion of rainfall recharging through soil-covered areas increased from 3% of rainfall during average rainfall conditions to 26% of rainfall during wet conditions.

This experimental finding is significant in two ways for understanding the potential effect of TLAPs on Edwards Aquifer water quality. First, the findings indicate a direct connection between upland areas, where effluent irrigation occurs, and the underlying aquifer. There is no requirement that effluent first migrate to a channel bottom for aquifer degradation to occur. Second, aquifer recharge through soils regularly irrigated with effluent will be significantly higher than through soils saturated only by rainfall.

Wastewater treatment plants built for Shady Hollow and Travis Country residential developments in the 1970s irrigated wastewater effluent onto the recharge zone. Both plants were closed in the early 1990s to protect the Barton Springs Edwards Aquifer water quality. Currently there are no TLAPs for either the San Antonio or Barton Springs Edwards Aquifer recharge zones. There is, however, currently a permit application before the Texas Commission on Environmental Quality for such a system.[4]

A significant portion of the Edwards groundwater enters the aquifer through openings in the bottom of streams. Water to these stream bottoms is provided from their extensive watersheds, which may stretch as far as 30 miles beyond the recharge zone boundary. These relatively large contributing watersheds gather rainfall runoff and then funnel it across stream bottom recharge features where the Edwards Limestone crops out. Wastewater effluent disposal within both the recharge and contributing areas would potentially affect the aquifer water quality.

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[3] Hauwert, Nico. *Groundwater Flow and Recharge within the Barton Springs Segment of the Edwards Aquifer, Southern Travis and Northern Hays Counties, Texas.* Diss. Austin: University of Texas at Austin, 2009, page 113.
[4] Jeremiah Venture, L.P., February 1, 2007

Wastewater Effluent

Of the wastewater generated and disposed of within the study area, the majority is municipal or domestic wastewater. Domestic wastewater is a mix of human urine and feces, soaps, detergents, cleaning products, body care products, and pharmaceuticals. The federal Clean Water Act, originally passed in 1972 and subsequently amended, requires municipalities to treat wastewater before releasing it into streams or rivers.

Wastewater treatment, however, usually addresses only a couple of wastewater characteristics. Oxygen demand is treated by inoculating wastewater with a concentrated liquid of biological microorganisms, and then supporting their growth by bubbling air into the mixture. After a certain amount of time, this mixture is transferred to a clarifying basin where suspended solids settle to the bottom of the basin. The clearer water flows over the top edge of the basin into the next basin. Chlorine is added to sterilize pathogens, and the wastewater effluent is then discharged to streams or rivers.

Wastewater effluent permits do not require treatment to remove metals, pharmaceutical chemicals, or the wide range of chemicals found in body care products, soaps, detergents, pesticides, or other cleaning products. These chemicals remaining in treated effluent are undesirable additions to pristine streams or aquifers. They reduce oxygen levels, kill fish, and stimulate algae blooms. These chemicals contribute to the occurrence of cancer, birth defects and impaired health. Even at very low concentrations, nutrients, toxic metals, pesticides, and pharmaceuticals disrupt aquatic life. Some of these chemicals may accumulate in fatty tissue, impair ability to reproduce, escape predation, maintain proper metabolism, and/or lead to premature death.

Municipal wastewater typically contains 20 to 85 milligrams per liter of total nitrogen. Approximately 60% of the nitrogen will be in the form of ammonia; and 40% bound up in plant and animal tissue. Activated sludge and similar treatment processes typically reduce effluent total nitrogen concentrations to 15 to 35 milligrams per liter. Advanced biological nitrification/denitrification processes can achieve total nitrogen concentrations of 2 to 10 milligrams per liter.[1]

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[1] [illegible], et al. *[illegible]*. [illegible], September 20, 2011.

Elevated nutrients in drinking water can also significantly affect human health. Elevated nitrate concentrations have been linked to methemoglobinemia (blue baby syndrome), bladder and ovarian cancers in older women, and brain cancer in children of women using private well water during pregnancy. When combined with factors like low vitamin C or high meat intake, more than 10 years of exposure to water with more than 5 milligrams per liter of nitrate has been associated with a significant increase in the risk of colon cancer. Studies have also found positive associations between higher levels of nitrate intake during pregnancy and infant neural tube and congenital heart defects.[illegible]

Although nutrients are essential for a healthy ecosystem, natural ecosystems are precisely tuned to historical nutrient timing and concentrations. Nutrients higher than historical levels disrupt habitat. Increased plant growth pulls more oxygen out of the water when the dead plant matter decomposes. Excessive plant material also reduces stream velocity and increases sediment bottom deposition.

Current Texas Land Application Permits (TLAPs) in the Barton Springs and San Antonio Edwards Contributing Zones

Texas has historically recognized the sensitivity of the Edwards Aquifer by refusing to permit wastewater effluent discharges directly into creeks and rivers within the San Antonio and Barton Springs Edwards Aquifer recharge and contributing zones. Wastewater treatment systems within these areas have been required to obtain a Texas Land Application Permit (TLAP), rather than a Texas Pollution Discharge Elimination System (TPDES) permit. In February 2009 TCEQ granted a direct discharge permit to Hays County Municipal Utility District No.1 (Belterra Subdivision), overturning decades of precedent requiring a more protective permit standard. To date there have been no TLAPs issued for either the San Antonio or Barton Springs Edwards Aquifer recharge zones.

[illegible] Mary H. Ward, Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health, Department of Health and Human Services, Bethesda, MD; Jean D. Brender, Department of Epidemiology and Biostatistics, Texas A&M Health Science Center, School of Rural Public Health, College Station, TX. Nitrate in Drinking Water: Potential Health Effects. Dubrovsky, N.M., Burow, K.R., Clark, G.M., Gronberg, J.M., Hamilton P.A., Hitt, K.J., Mueller, D.K., Munn, M.D., Nolan, B.T., Puckett, L.J., Rupert, M.G., Short, T.M., Spahr, N.E., Sprague, L.A., and Wilber, W.G., 2010, The quality of our Nation's waters—Nutrients in the Nation's streams and groundwater, 1992–2004: U.S. Geological Survey Circular 1350, 174 p. [illegible]

Effluent disposal under TLAP is generally more protective of creeks, rivers, springs, and the aquifer, compared with a TPDES disposal permit. Effluent receives additional treatment within plant roots and soil in several ways. Water is removed by plant roots and evapotranspiration, reducing the hydraulic pressure to carry contaminants beyond the disposal field. Soil organisms and plants convert nutrients into living cells. Toxic chemicals are transformed into safer substances. Chemicals are bound to organic matter and clay. Metals precipitate and are bound into the soil by iron and clay.

Whether or not these processes work effectively, however, depend on several aspects of the TLAP system:

- the chemical quality of treated effluent;
- the effluent application rate;
- soil depth;
- offline effluent storage capacity, used when the soil is saturated or frozen;
- excess vegetation removal; and
- monitoring and adjusting effluent irrigation in response to weather and rain.

Permit copies were obtained for this report from the TCEQ for 64 out of a total of 70 TLAPs issued for systems operating within the contributing zones of the San Antonio and Barton Springs Edwards Aquifer. Basic characteristics regarding the permitted flow, effluent quality, application rates, and storage volume were extracted from the TLAPs and are presented in Appendix A.[2]

The degree to which TLAPs degrade rivers, streams, and springs depends partly on the volume of wastewater that is treated and disposed of within a given area. Figure 1 illustrates the high density of TLAP systems in the Barton Springs Edwards Aquifer contributing zone compared with the San Antonio Edwards Aquifer contributing zone. An analysis of the data supports the visual impression. Table 1 compares TLAPs in the San Antonio and Barton Springs Edwards contributing zones. The permitted effluent volume in the Barton Springs Edwards Aquifer contributing zone is almost twice the volume permitted in the San Antonio contributing zones, even though the San Antonio contributing area is 12 times larger. On a per-area basis, there is 24 times as much wastewater effluent permitted for

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[2] Permits for six systems in the San Antonio Edwards contributing zone were not located. These permits are listed in Appendix B.

irrigation in the Barton Springs Edwards Aquifer contributing zone compared with the San Antonio Edwards.

Table 1. Permitted TLAP Effluent in the Barton Springs Edwards Aquifer Contributing Zone Compared with the San Antonio Edwards

Aquifer	Total Flow (MGD)	Total Irrigated Area (acres)	Zone Area (acres)	GPD per Acre
Barton Springs	5.75	2,063	214,537	23
San Antonio Edwards	3.19	1,461	4,177,172	1

River, stream, well and spring degradation also depends on the degree of effluent treatment before it is irrigated onto the soil. There is a wide variety of effluent treatment methods, effluent quality standards, effluent storage capacity, and irrigation area size requirements in TLAPs issued within the study area. Table 2 lists the different types of treatment technologies and the number of permits associated with each. Of the 64 TLAPS, 44 use the activated sludge treatment method described above. Twelve of the TLAPs either fail to specify any required treatment method, or specify a treatment method less effective than activated sludge.

Table 2. Treatment Technologies for TLAPs in the Study Area

Treatment Methods	
Treatment Method	**Number of TLAPs**
activated sludge	44
septic tank	6
single stage nitrification	2
not specified	2
membrane bioreactor	1
septic and sand filter	1
SBR [illegible]	1
facultative lagoon	1
disk filtration	1
Cycle-Jet	1
aerobic treatment	1
aeration basin	1

Out of the 64 TLAPs, only 10 specify limits on nutrient discharges. Of these 10 that specify nutrient limits, eight limit only ammonia nitrogen. An ammonia limitation does not, however, reduce available nitrogen in the discharge. In the activated sludge system used in each of these eight systems ammonia nitrogen is converted to nitrate nitrogen.[3] Nutrient nitrogen is not removed, it is simply converted to a different form.

In addition to differences in treatment methods and nutrient standards, TLAPs in the San Antonio Edwards and Barton Springs contributing zones differ widely in terms of the allowed application rates and the required effluent storage volume. An examination of the information in Appendix A indicates that the permit allowed application rates range from 0.18 to 17.20 acre-feet per acre per year. The most common application rate is 4.16 acre-feet per acre per year, equivalent to the subsurface drip irrigation rate of 0.1 gallons per day per square foot. Twenty seven of the 64 current permits specify this application rate. Note, however, that the next section describes three systems with this application rate that exhibit indications of downstream degradation.

Out of 64 TLAPs, only 43 specify an effluent storage volume requirement. Twenty-one TLAPs have no effluent storage requirements. All permit-required volumes have been converted to "days of storage." See Appendix A. This measure is the number of days for which the entire permitted flow could be contained in the storage volume. Since the value of effluent storage is the ability to postpone irrigation during saturated or frozen soil conditions, this measure in days is comparable between facilities across the range of permitted flows.

Of those that require effluent storage, required volumes range across five orders of magnitude, from 0.08 to 308 days. Effluent storage required for subsurface irrigation systems ranges from 0.08 to 70 days, and the average is 5.8 days. For surface irrigation systems the range is 12 to 308 days and the average is 70 days. The wide difference in average storage reflects differences in TCEQ regulations for subsurface and surface irrigation TLAPs. This wide difference in average storage requirements does not, however, reflect any difference in the sorptive capacity of the soils. In general, systems with less storage will be less protective of rivers, streams, wells, and springs than those with more storage. For

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[3] [illegible], et al., *[illegible]*, [illegible] Small Flows Clearinghouse, [illegible], September 22, 2011

this and other reasons, subsurface irrigation systems represent a greater risk of degradation compared to surface irrigation.

Evidence of Degradation from TLAP Wastewater Systems

Monitoring to determine whether TLAPs have damaged streams, creeks, springs, and wells is not required by Texas environmental regulations, nor is it a requirement of most permits. Nevertheless, water monitoring programs by other agencies indicate stream and aquifer degradation in streams and springs associated with TLAPs. This section summarizes some of the available water quality measurements indicating TLAP systems have resulted in degraded water quality.

Hays County Water Control Improvement District No. 1

Hays County Water Control Improvement District No. 1, for the Belterra Subdivision, holds a subsurface irrigation permit for 150,000 gallons per day. The irrigation area is 33 acres in the Bear Creek watershed, tributary to Onion Creek, and located about seven stream miles upstream of the Barton Springs Edwards Aquifer recharge zone. The authorized application rate for this drip irrigation system is 4.55 acre-feet per acre per year. The system has 2.2 days of effluent storage, and the treatment limits, on a daily average, are 20 milligrams per liter biochemical oxygen demand and 20 milligrams per liter total suspended solids. There are no nitrogen or phosphorous effluent limits.

The City of Austin collected water quality samples from Bear Creek at seven locations to determine whether wastewater effluent irrigation associated with the Belterra Subdivision may have caused creek degradation.[9] The City's program includes monitoring from a spring at Aspen Drive upstream of possible TLAP irrigation field influences, downstream to a riffle at Bear Creek Pass. The City has also monitored four tributary locations to assess the impact of TLAP inflows on Bear Creek water quality.

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[9] Turner, Martha, *Bear Creek Receiving Water Assessment January 2009 – March 2010*, City of Austin Watershed Protection Department, SR-10-10, September 2010

The City's monitoring and data analysis found higher nitrate concentrations at sites immediately below the Dobbins TLAP irrigation fields compared with nitrate in the spring above the irrigation fields.[9] The average nitrate concentration increased from 0.43 milligrams per liter upstream, to 1.31 milligrams per liter downstream of the TLAP irrigation site. See Figure 2. This nitrogen concentration increase shifts Bear Creek across the classification boundary between an oligotrophic and a mesotrophic stream at 0.7 milligrams per liter.

Chlorophyll-a concentrations, a measure of algae, were also higher in the Davis Pond immediately downstream from the irrigation fields, compared with the pond at Bear Creek Pass. Similarly, there are significantly higher concentrations of plant and algae above the Davis Pond, compared with the sampling site at Bear Creek Pass.[10]

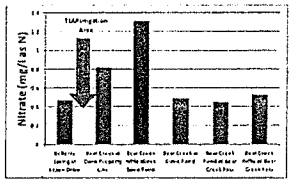

Figure 2. Increased Average Nitrate Concentrations Downstream from Dobbins TLAP Irrigation Area

[9] Turner, Martin. *Bear Creek Watershed Water Assessment - January 2008 - March 2010.* City of Austin Watershed Protection Department, SR-10-10, September 2010, page 18.
[10] Turner, Martin. *Bear Creek Watershed Water Assessment - January 2008 - March 2010.* City of Austin Watershed Protection Department, SR-10-10, September 2010.

Sources other than effluent irrigation could produce higher nitrate concentrations and algae indicators downstream from the TLAP irrigation fields. These sources include subdivision fertilization, cattle ranching, and suburban stormwater runoff. There are several factors, however, that suggest that the observed water quality degradation is associated with the TLAP system, rather than any of these alternative sources:

- Nitrate concentrations are similar in Bear Creek at the Davis property line and in the Davis Pond. The property line site is above the influence of any cattle on the Davis property.
- Nitrate concentrations are highest during low flow situations. If the source were storm runoff, high concentrations would be observed during high flow, storm runoff conditions.
- Nitrate concentrations are highest during winter months. This pattern is consistent with TLAP effluent application when plant uptake is reduced.
- Algae occurrence increased during baseflow following heavy rains, suggesting that nutrients in the irrigation field may be flushed during these events.

In addition to sampling in the main stem of Bear Creek, the City of Austin also sampled two tributaries. One tributary north of the pond has relatively better quality than Bear Creek. Contributions from this tributary dilute nutrients and improve Bear Creek water quality.

Measurements on samples collected by the City of Austin from the western tributary to Bear Creek are similar to those of the main stem below the Belterra irrigation fields. This western tributary is downstream from the Highpointe subdivision, which is located on its headwaters. Like Belterra, Highpointe is served by a TLAP effluent irrigation system. This system is permitted for 300,000 gallons per day, subsurface irrigated on 63.47 acres. The application rate, 4.83 acre-feet per acre per year, is the same as Belterra's. Effluent treatment standards for Highpointe are the same as for Belterra.

Similarly to the situation in Bear Creek above and below the Belterra effluent irrigation fields, nitrates were relatively low (less than 0.004 milligrams per liter) in the western tributary above the Highpointe TLAP fields, and increase below the TLAPS irrigation fields to about 0.64 milligrams per liter.[13]

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[13] Turner, Martha. *Bear Creek Receiving Water Assessment – January 2008 – March 2010*. City of Austin Watershed Protection Department, [illegible] September 2010, Figure 11.

Barton Creek West

Barton Creek West is a residential subdivision in the Barton Creek watershed. The subdivision is located about 8 miles west of downtown Austin on Bee Caves Road. The Barton Creek West Homeowners Association, Inc. was registered in April 1985, and the subdivision currently consists of 393 homes.[13] The TLAP authorizes treatment and surface irrigation of 126,000 gallons of effluent per day on 53.3 acres of native grass. The allowed application rate is 2.3 acre-feet per acre per year. The system includes 62.7 acre-feet of storage to store 162 days of effluent. Treatment limits, on a daily average, are 10 milligrams per liter biochemical oxygen demand and 15 milligrams per liter total suspended solids. The permit does not restrict nitrogen or phosphorus in the treated effluent.

The City of Austin has monitored water quality at Scenic Bluff Spring, downstream of the irrigation fields since 1997. Average nitrate concentrations in this pool are 1.3 milligrams per liter[14] and the maximum observed concentration is 5.9 milligrams per liter. Nitrate concentrations in uncontaminated wells and springs from the Glen Rose formation, from which this spring emerges, are about 10 to 30 times lower than these concentrations, on the order of 0.1 milligrams per liter.

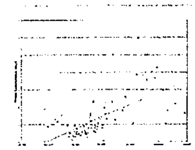

Figure 3. Increasing Nitrate Concentrations In Scenic Bluff Springs Over Time

[13] Barton Creek West HOA, [illegible], September 27, 2011.
[14] Nitrate concentration as nitrogen.

Figure 3 is a graph of nitrate concentrations in Scenic Bluff Spring as a function of time. The graph shows a clear trend of increasing concentrations. Grotto Spring, also apparently downgradient from the irrigation fields shows a similar trend of increasing nitrate concentrations with time.

Hebbington Hollow, downstream from Bluff Springs, has been dammed to form a small pond. The presence of a thick algae layer across the entire surface of the pond on June 11, 2009 demonstrates the consequences of the high nitrate concentrations measured in the spring.

Photograph 3, Algae-Covered Pool Downstream
from Barton Creek West Irrigation Fields

Residential lawn fertilization may be another source for the observed nitrate concentration increases over time in the two springs downstream from the Barton Creek West effluent irrigation fields. Monitoring by the City of Austin, however, suggests that stream nitrogen concentrations downstream from suburban residential areas on septic systems are relatively low compared with similar areas irrigated with effluent. See Figure 4. This difference suggests that irrigated effluent is at least partly the source of the elevated nitrate concentrations observed in Bluff Springs.

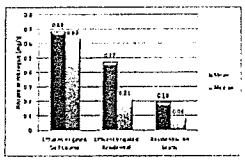

Figure 4. Nitrate Concentration in Barton Creek Canyons Baseflow

West Cypress Hills

West Cypress Hills is a residential subdivision located about 16 miles west of central Austin. Although the system is located just outside of the contributing zone to the Barton Springs/Edwards Aquifer, it is included here because soils, geology, climate, and regulatory requirements for wastewater effluent are similar to many of the systems within the subject area of this study. There is another TLAP system for which water quality monitoring in East Bull Creek above and below the TLAP irrigation fields are available. There is also another branch of Bull Creek, West Bull Creek without wastewater effluent irrigation, for which water quality measurements provide a comparable reference.

West Cypress Hills is proposed to be constructed in three phases. The first phase, begun in 2001, encompassed construction of 85 residences.[1] The second and third phases of the development contemplate construction of an additional 211 and 185 residences, respectively. The final phase of this permit would allow 31,000 gallons per day to be applied through a subsurface drip irrigation system on 72.04 acres. Allowed application rates are 480 acre-feet per acre per year. At least three days of effluent storage are required. Effluent permit limits are 20 milligrams per liter biochemical oxygen

[1] Bull Creek Group, *Cypress Area 1 Phase One, Section One Engineer's Report*, Austin, 2001.

Laurie Gharis

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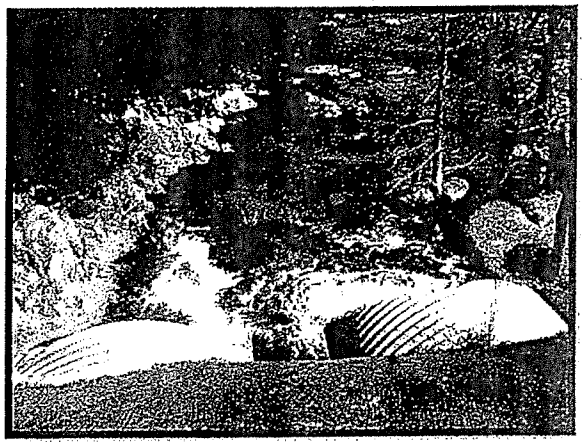
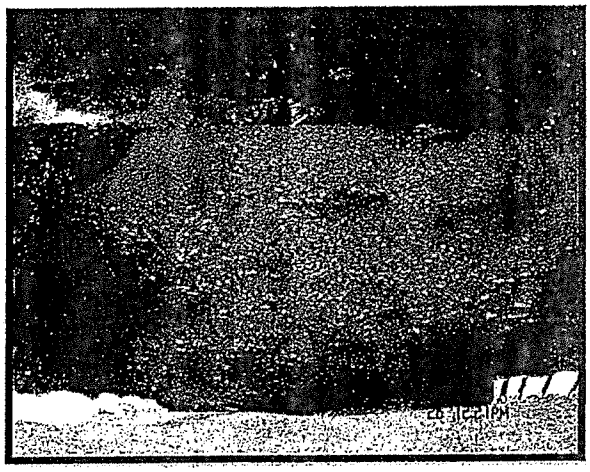
demand and 20 milligrams per liter total suspended solids, on a daily average basis. There are no nutrient limit requirements.

The owner's representative collected water quality samples from springs and streams upstream and downstream from the West Cypress Hills TLAP irrigation area in June and September 2007. Nitrate concentrations in these data, presented in Figure 5 show a pattern similar to the one observed downstream from the TLAP irrigation areas for Belterra and Barton Creek West.



Photograph 4. West Lick Creek Downstream from Pedernales Canyon Trail



Photograph 5. Algae in East Lick Creek Downstream from Pedernales Canyon Trail

Nitrate concentrations are low upstream from the irrigation fields. These concentrations rise sharply just downstream from the irrigation fields. Further downstream concentrations are once again lower. More extensive algae coverage of the creek, and the presence of algae types like *Cladophora,* however, indicate that the trophic state of the stream has been altered even where nutrient measurements in the water column are relatively low. Photograph 4 and Photograph 5 depict the difference in algae coverage in East Lick Creek downstream for the currently irrigated areas, compared with clear flow in West Lick Creek, where there are currently no effluent-irrigated fields in the watershed.

As with any suburban development, there are other potential nutrient sources. The West Cypress Hills developer originally believed that the source of the nitrogen might be a commercial plant nursery, a horse barn, or storm runoff from Highway 71. Nitrate concentrations from stream locations downgradient from these sites, however, are lower than at sites below the effluent irrigation areas.

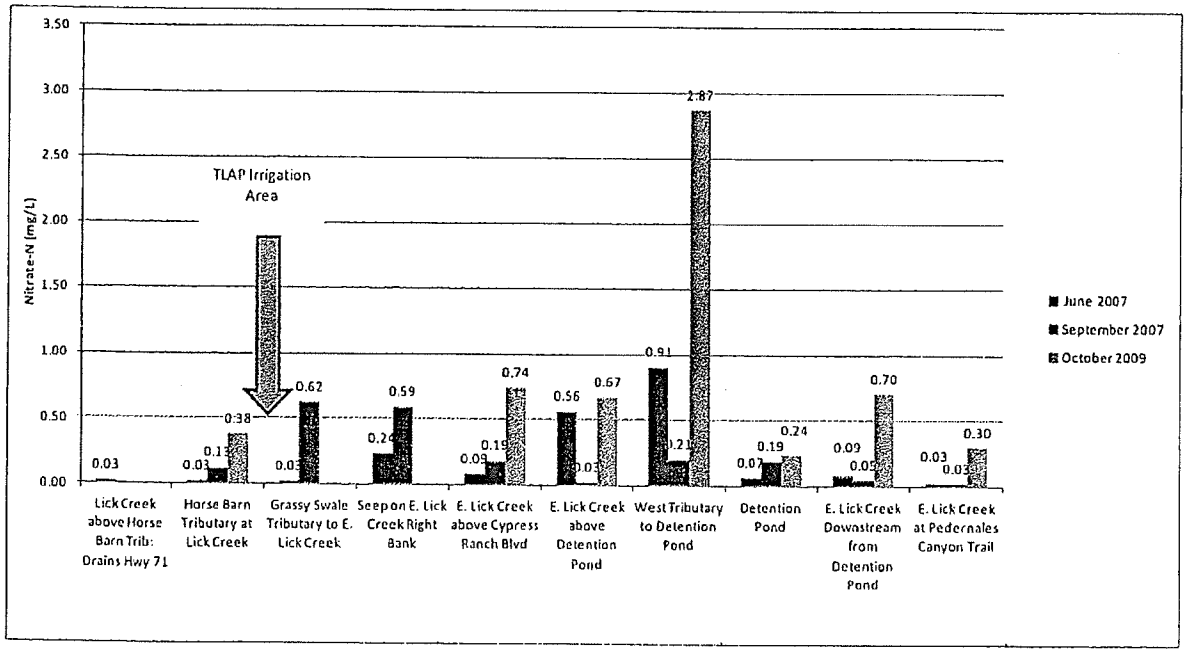


Figure 5. Nitrate Concentrations Above and Below West Cypress Hills TLAP Irrigation Fields

Other possible sources are residential lawn fertilization and compost used to revegetate the construction site.

Effluent Land Application in Other Areas

The soils, climate, and geology of the Edwards Aquifer are unique. There is evidence from other locations, however, that corroborate groundwater degradation from the land application of effluent in similar systems. A study of well and spring water quality in the karstic Wakulla Spring in northern Florida found nitrate-nitrogen concentrations increased from about 0.2 to 1.1 milligrams per liter downstream from a 17 million gallon per day wastewater spray field farming operation on 313 acres. The largest contribution to the nitrogen load, 55%, was attributed to municipal wastewater. Nitrate isotope signatures ($\delta^{15}N$ and $\delta^{18}O$) in groundwater match those of the effluent.

Boron and chloride concentrations were elevated. One pharmaceutical compound, carbamazepine (an anti-convulsant drug) was also detected in the groundwater. Spring-fed streams in Florida have experienced a proliferation of nuisance aquatic vegetation and algal growth.[16]

TLAP Noncompliance with Regulation Requirements

The following section discusses recommended improvements to current TLAP regulatory requirements. Before recommending regulatory improvements, however, it seems important to identify inadequate implementation of existing regulations.

Required Soil Monitoring

TCEQ regulations do not require stream, river, well, or spring monitoring downstream from effluent irrigation areas. 30 TAC §309.20 (b)(4) does, however, require pre-operational and annual soil testing of pH, total nitrogen, potassium, phosphorus, and conductivity. This requirement is included as part of each TLAP in Special Provision 10: "*The permittee shall submit the results of the soil sample analyses to the TCEQ Regional Office and Water Quality Compliance Monitoring Team of the Enforcement Division during September of each year.*"

A search of TCEQ records, however, indicates reported soil monitoring results for only two of the 64 TLAPs within the study area. Even for these limited reported data, only 2 out of the 18 include the required nitrogen measurements. Given indications of nutrient migration from the effluent irrigation fields resulting in significant water degradation, the failure by TCEQ to regulate and enforce what is clearly intended to be an early warning system on nutrient accumulation in the soil disposal zone is troubling.

Failure to Properly Review TLAP Applications

Numerous parties, including the City of Austin, Barton Springs Edwards Conservation District, the Lower Colorado River Authority, Hays County, and Save Our Springs Alliance are currently contesting a TLAP for Jeremiah Venture to treat and irrigate 330,000 gallons per day of wastewater effluent over

[16] Katz, Brian, Dale Griffin, J. Hal Davis, "Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: chemical and microbiological indicators." *Science of the Total Environment*, 407, 2872-2886, 2009.

the recharge area of the Barton Springs Edwards Aquifer. There are currently no surface or subsurface TLAP systems permitted within the San Antonio or Barton Springs Edwards Aquifer recharge zones.

Given the potential significance of this precedent-setting permit, and using the legal authority and resources of the contested hearing process, the City of Austin, Save Our Springs Alliance and Save Barton Creek Association undertook an in-depth review of the Jeremiah Venture TLAP application. The results of the review indicated that the TLAP application failed to represent the potential for significant degradation in the following ways:

- Effluent irrigation was proposed for areas where the soils were determined to be unsuitable for effluent irrigation because they were too rocky, thin, and clayey, and/or had more than 50% bedrock outcrop. Other irrigation areas were determined to be unsuitable because they were on gradients approaching 15% and soil water holding capacities were less than 2 inches.[17]
- The applicant's assessment identified four sinkholes, no caves, four solution cavities, and 14 closed non-karstic depressions. By comparison, a geologic assessment by the City of Austin,[18] conducted over eight days, identified nine cave features, 35 sinkholes, 27 karst depressions, 24 non-karst closed depressions, 23 solution enlarged fractures, 39 solution cavities, and 3 swallow holes. The applicant's assessment failed to characterize the potential for wastewater effluent migration through a sensitive karst region into the underlying Barton Springs Edwards Aquifer.
- Irrigation field sizing is based on a water balance of effluent irrigation, rainfall, runoff, evapotranspiration, and deep percolation. This water balance is particularly sensitive to the evapotranspiration estimates. The applicant's water balance was based on estimated evapotranspiration rates for dryer conditions west of the proposed Hays County location. The significance of this difference was that the applicant overestimated the volume of water that could be applied to the proposed irrigation area by 29%; and underestimated the required effluent storage volume by almost half.[19]

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[17] SOAH Docket No. 582-09-1617; TCEQ Docket No. 2008-1858-MWD. *Application of Jeremiah Venture, L.P. for a New TLAP, Permit No. WQ0014785001*, Direct Testimony of Dr. Lawrence (Larry) P. Wilding. July 31, 2009, pages 50-51.
[18] Hauwert, Nico, *Preliminary Phase I Assessment of the Jeremiah Ventures Site,* for the City of Austin, September 25, 2009.
[19] Ross, Lauren, *Engineering Analysis of Jeremiah Ventures L.P. Proposed Wastewater Irrigation Areas; Draft,* December 2009.

- As required by TCEQ regulations, the applicant provided a water balance for the wettest year of record: 2004. The wettest year of record does not, however, necessarily capture critical rainfall and evapotranspiration conditions. Weather conditions during 2007, a year with a lower rainfall total than 2004, are more restrictive in terms of both effluent irrigation area and storage volume. Nevertheless, the applicant was allowed to size these facilities based on a model using 2004 data.

The applicant proposed to provide wastewater service to 1450 residences. The number of residences that could be served using a water balance based on the appropriate evapotranspiration rates and providing buffers to the City of Austin-identified recharge features is 800. This significant financial incentive to the applicant to misrepresent actual site conditions can only be addressed by consistent and careful review by the authorizing agency, the Texas Commission on Environmental Quality.

Recommendations

Given the number of currently permitted TLAP systems, particularly in the Barton Springs Edwards Aquifer contributing zone, and existing evidence of degraded streams and springs, several changes to TLAP regulations are warranted. These changes include:

- Given that karst features beneath irrigation areas cannot be completely identified, mapped or defined, spray effluent irrigation, as well as subsurface effluent irrigation, over recharge areas should be prohibited.
- Consistent effluent standards to limit concentrations of total nitrogen and phosphorous should be established. Any limitation based upon ammonia nitrogen alone provides no additional protection. Advanced wastewater treatment methods can consistently reduce total phosphorous concentrations to near or below 0.01 milligrams per liter.[20] Combined total nitrogen and total

[20] EPA Region 10, *Advanced Treatment to Achieve Low Concentration of Phosphorus*, April 2007, http://yosemite.epa.gov/r10/water.nsf/Water+Quality+Standards/AWT-Phosphorus/$FILE/AWT+Report.pdf, September 26, 2011.

phosphorous removal systems can achieve annual average concentrations less than 3 milligrams per liter and 0.1 milligrams per liter, respectively.[21]

- Subsurface effluent application does not increase soil storage or treatment capacity. In fact, because the potential evapotranspiration from the surface of tree and plant leaves is lost, the effluent storage and treatment capacity for subsurface effluent application is actually less than for surface applications. Furthermore, subsurface application bypasses the surface soil barrier to chemical and microbial migration.[22] Current rules should be changed to require the same effluent storage capacity for subsurface as for surface application systems.
- The same engineering basis should be used to determine effluent application rates and storage volume requirements for both surface and subsurface systems. That basis should be a daily time-step water balance using historic rainfall rates and evapotranspiration rates from representative weather stations within 25 miles of the proposed facility. The water balance modeling period should be the period of record.
- The leaching allowance in the current TLAP regulations is, essentially, an amount of effluent allowed to deep percolate into underlying aquifers. The leaching allowance should be eliminated.
- TLAPs should require downgradient monitoring, including nitrate, boron, chloride concentrations, nitrogen and oxygen isotope signatures and measures of the occurrence of algae, to identify any wastewater effluent contamination of springs, streams, and wells.[23]
- In addition to the current general prohibition, TLAPs should require soil monitoring to measure saturated or frozen conditions and prevent effluent application.
- Existing regulations requiring regular soil monitoring should be expanded to include a process for identifying soil monitoring results that would trigger a re-examination of the permit terms to prevent wastewater effluent chemical migration to streams, springs, and wells.

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[21] Kang, Shin, Kevin Olmstead, Krista Takacs, James Collins, *Municipal Nutrient Removal Technologies Reference Document,* EPA 832-R-08-006, September 2008, http://water.epa.gov/scitech/wastetech/upload/mnrt-volume1.pdf, September 26, 2011.

[22] Katz, Brian, Dale Griffin, J. Hal Davis, "Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: chemical and microbiological indicators." *Science of the Total Environment,* 407, page 2884, 2009.

[23] Katz, Brian, Dale Griffin, J. Hal Davis, "Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: chemical and microbiological indicators." *Science of the Total Environment,* 407, 2872-2886, 2009.

In the context of the thin soils, numerous springs, and delicately sensitive Texas Hill Country streams, rivers, and aquifers, any wastewater effluent system represents the threat of permanent and significant degradation. Only with soundly based and strictly enforced regulations can we balance provision of wastewater infrastructure to suburban residences with protection of the natural streams and springs that draw people to these areas.

Appendix A. TLAPs in the San Antonio and Barton Springs Edwards Contributing Zones

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
Barton Springs													
	11319-001	CITY OF AUSTIN, LOST CREEK	Barton Creek	0.52	308.42	1.89	43.36	activated sludge	35	10	15	-1	-1
	12786-001	BARTON CREEK WEST WSC	Barton Creek	0.13	53.30	2.65	162.15	activated sludge	35	10	15	-1	-1
	13206-001	TRAVIS COUNTY MUD 4	Barton Creek	0.72	298.70	2.70	75.13	activated sludge	30	5	5	2	-1
	13238-001	SENNA HILLS MUD & SENNA HILLS LTD	Barton Creek	0.16	70.30	2.50	112.08	activated sludge	30	5	5	2	-1
	13594-001	LOWER COLORADO RIVER AUTHORITY Lake	Barton Creek	1.00	350.00	3.20	32.59	activated sludge	35	5	5	2	-1
	13748-001	DRIPPING SPRINGS ISD	Onion Creek	0.02	3.44	4.88	0.00	septic tank	100	-1	-1	-1	-1
	13748-002	Dripping Springs ISD	Onion Creek	0.03	3.83	7.31	0.00	activated sludge	65	-1	-1	-1	-1
	13860-001	GRANITE STONEBRIDGE HEALTH CENTER LLC	Onion Creek	0.01	1.59	7.03	0.00	septic tank	100	30	30	-1	-1
	14077-001	PRENTISS PROPERTIES ACQUISITION LP	Barton Creek	0.00	0.00		70.45	Cycle-let	30	5	-1	-1	-1
	14146-001	DRIPPING SPRINGS APARTMENTS LP	Onion Creek	0.01	3.57	4.39	58.19	activated sludge	65	20	20	-1	-1
	14208-001	HAYS COUNTY DEVELOPMENT DIST NO 1	Onion Creek	0.30	120.00	2.80	72.31	activated sludge	30	5	5	-1	-1
	14235-001	DRIFTWOOD EQUITIES LTD Salt Lick	Onion Creek	0.01	2.30	4.87	2.53	activated sludge	35	10	15	-1	-1
	14293-001	HAYS COUNTY WCID 1 Beltera	Onion Creek	0.15	35.00	4.80	2.20	not specified	65	20	20	-1	-1

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
Barton Springs													
	14309-001	HAYS COUNTY MUNICIPAL UTILITY	Barton Creek	0.15	34.44	4.88	2.22	single stage nitrification	65	20	20	-1	-1
	14358-001	HAYS COUNTY MUD 5 Highpointe	Onion Creek	0.30	68.87	4.88	2.22	activated sludge	65	20	20	-1	-1
	14430-001	TRAVIS COUNTY MUD NO 4	Barton Creek	0.60	220.00	3.06	76.03	single stage nitrification	30	5	5	2	-1
	14435-001	STONEWALL RIDGE UTILITIES LLC	Barton Creek	0.01	1.15	4.87	0.00	activated sludge	65	20	20	-1	-1
	14480-001	DRIFTWOOD UTILITY COMPANY LLC Reunion	Onion Creek	0.05	11.50	4.87	3.98	activated sludge	65	20	20	-1	-1
	14480-002	DRIFTWOOD UTILITY COMPANY LLC Reunion	Onion Creek	0.10	22.10	4.88	4.88	activated sludge	65	20	20	-1	-1
	14488-001	CITY OF DRIPPING SPRINGS South Regional	Onion Creek	0.16	37.43	4.86	2.05	activated sludge	65	20	20	-1	-1
	14488-002	CITY OF DRIPPING SPRINGS Scenic Greens	Onion Creek	0.25	57.39	4.88	3.00	activated sludge	65	20	20	-1	-1
	14587-001	Austin Highway 290 (Headwaters	Barton Creek	0.33	76.00	4.79	7.00	activated sludge	30	5	5	2	1
	14629-001	SWEETWATER AND LAZY NINE MUD	Barton Creek	0.49	199.50	2.75	60.05	activated sludge	35	10	15	-1	-1
	14664-001	ROCKY CREEK WASTEWATER UTILITY LP	Barton Creek	0.13	50.00	2.81	61.67	activated sludge	30	5	5	2	-1
	14824-001	FORESTAR Arrowhead Ranch	Onion Creek	0.13	29.00	4.83	3.00	activated sludge	35	10	15	-1	-1
	14866-001	BELLA VISTA DRIPPING, LP	Barton Creek	0.02	5.28	4.88	3.00	activated sludge	35	10	10	-1	-1
San Antonio Edwards													

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
San Antonio Edwards													
	04237-000	EQUITECH BIO INC	Guadalupe above	0.00	0.16	3.57	0.00	not specified	-1	-1	-1	-1	-1
	11291-001	FLYING L PUD	Medina River above	0.11	178.00	0.71	0.00	activated sludge	65	20	20	-1	-1
	11683-001	ALTO FRIO BAPTIST ENCAMPMENT	Upper Frio River	0.02	2.00	11.20	0.00	aerated lagoon	100	-1	-1	-1	-1
	11867-001	City of Fair Oaks Ranch	Upper Cibolo Creek	0.50	280.00	2.00	103.11	activated sludge	-1	-1	-1	-1	-1
	11976-001	Texas Lehigh Cement Company LP	Plum Creek	0.00	3.00	1.01	0.00	activated sludge	100	30	-1	-1	-1
	12014-001	TEXAS PARKS & WILDLIFE DEPT Guadalupe River	Guadalupe above	0.02	6.10	2.94	28.51	activated sludge	100	-1	-1	-1	-1
	12080-001	US DEPT OF THE ARMY Camp Bullis Miltary	Salado Creek	0.69	189.75	4.07	65.64	activated sludge	65	20	-1	-1	-1
	12334-001	CITY OF CAMP WOOD	Nueces River above	0.10	14.00	8.08	19.03	facultative lagoon	100	-1	-1	-1	-1
	12404-001	Kendall City UC	Upper Cibolo Creek	0.15	40.00	4.20	173.79	activated sludge	65	20	20	-1	-1
	13321-001	VILLAGE OF WIMBERLEY & GBRA	Upper Blanco River	0.05	19.00	2.95	142.07	activated sludge	35	-1	-1	-1	-1
	13449-001	CAMP RECOVERY CENTERS LP	Guadalupe above	0.02	4.00	4.76	12.27	activated sludge	65	-1	-1	-1	-1
	13449-001	CAMP RECOVERY CENTERS LP	Guadalupe above	0.02	0.34	55.30	12.27	activated sludge	65	-1	-1	-1	-1
	13755-001	RIVER INN ASSN OF UNIT OWNERS INC	S. Fork Guadalupe	0.01	0.92	8.30	0.00	activated sludge	65	20	-1	-1	-1

TLAP Permits in the San Antonio and Barton Springs Edwards Contributing Zones

Aquifer	Permit	Permittee	River Segment	Flow (MGD)	Irrig Area (acres)	Appli-cation Rate (ac-ft/ac/yr)	Effluent Storage (days)	Treatment Method	BOD Grab (mg/L)	Daily Average BOD (mg/L)	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P (mg/L)
San Antonio Edwards													
	13783-001	BANDERA ISD Hill Country Elementary	Medina River	0.01	1.10	12.20	0.08	activated sludge	65	20	-1	-1	-1
	13812-002	COMAL ISD Arlon Seay Intermediate School	Upper Cibolo Creek	0.01	1.65	4.62	0.00	septic tank	100	-1	-1	-1	-1
	13812-003	COMAL ISD Spring Branch Middle School	Upper Cibolo Creek	0.01	2.98	4.88	0.00	activated sludge	65	20	20	-1	-1
	13812-004	COMAL ISD Smithson Valley Middle School	Guadalupe above	0.01	2.98	4.88	0.00	activated sludge	65	20	20	-1	-1
	13989-001	AQUA UTILITIES INC	Cypress Creek	0.38	175.00	2.40	83.40	activated sludge	65	20	20	-1	-1
	14157-001	BOY SCOUTS OF AMERICA ALAMO AREA	N. Fork Guadalupe	0.00	4.30	0.98	17.38	activated sludge	65	20	20	-1	-1
	14167-001	MONARCH UTILITIES 1 LP	Medina Lake	0.03	10.00	2.80	91.89	activated sludge	-1	-1	-1	-1	-1
	14280-001	THOUSAND TRAILS INC	Medina Lake	0.02	2.18	9.76	0.00	activated sludge	35	10	15	-1	-1
	14295-001	COMAL ISD Smithson Valley High School	Upper Cibolo Creek	0.03	6.20	4.88	0.00	septic tank	65	20	20	-1	-1
	14385-001	GUADALUPE BLANCO RIVER AUTHORITY	Guadalupe River above	0.19	102.00	2.11	0.00	membrane bioreactor	30	5	5	2	-1
	14485-001	BRUCE ROBERT HAROLD Boerne Stage Field	Lower Leon Creek	0.00	0.54	3.11	52.14	aerobic treatment	100	-1	-1	-1	-1
	14533-001	COMAL ISD Canyon Lake High School	Upper Blanco River	0.04	9.20	4.87	3.00	aeration basin	65	20	20	-1	-1
	14541-001	CHERRY SPRINGS INVESTMENT INC La	N. Fork Guadalupe	0.02	4.48	4.88	3.08	activated sludge	100	-1	-1	-1	-1

	Daily Average TSS (mg/L)	Daily Average NH3 (mg/L)	Daily Average P
	10	-1	-1
	5	3	3
	20	-1	-1
	-1	-1	-1
	15	-1	-1
	20	-1	-1
	-1	-1	-1
	5	2	1
	20	-1	-1

Appendix B. TLAPs for which No Permits Were Located

The following permits were identified on a TCEQ-supplied Geographical Information System shape file. No corresponding permits were located, however, in TCEQ Central Records.

Permit Number	PERMITTEE	STATUS	Aquifer
11962-001	TEXAS PARKS & WILDLIFE DEPT	Current	San Antonio Edwards
14131-001	BEXAR METROPOLITAN WD	Current	San Antonio Edwards
14333-001	STEVENS, HOMER THRALL	Current	San Antonio Edwards
14397-001	ANDERSON RAY	Current	San Antonio Edwards
14733-001	DH JB PARTNERSHIP LTD	Current	San Antonio Edwards
14741-001	BULVERDE/46 PARTNERS LTD	Current	San Antonio Edwards

Laurie Gharis

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Sent: Tuesday, December 10, 2024 7:11 PM
To: Fax3311
Subject: Corporate eFax message from "5128404551" - 14 page(s)
Attachments: FAX_20241211_1733879434_208.pdf

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Kimberly Muth

From: PUBCOMMENT-OCC
Sent: Monday, April 29, 2024 4:40 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016355002

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

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Sent: Sunday, April 28, 2024 8:17 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016355002

REGULATED ENTY NAME VISTA TOWNHOMES WWTF

RN NUMBER: RN111757381

PERMIT NUMBER: WQ0016355002

DOCKET NUMBER:

COUNTY: WILLIAMSON

PRINCIPAL NAME: VISTA TOWNHOMES AUSTIN LLC

CN NUMBER: CN606154276

NAME: Casey Toole

EMAIL: casey@caseytoole.com

COMPANY:

ADDRESS: 10912 VISTA HEIGHTS DR
GEORGETOWN TX 78628-2011

PHONE: 7372752523

FAX:

COMMENTS: Please do not approve this plan. As a nearby resident we are concerned about the environmental impact of the wastewater on our creek which is dry most of the time. It feeds into the San Gabriel River which we are concerned about having more waste water being discharged into a river that is enjoyed downstream. With the amount of discharge it can change the floodplain and shape of the creek that runs through several properties in our neighborhood. The river continues on through a park with a low water crossing running trail. Additionally our neighborhood has many caves which are close to the proposed project. We have not seen any environmental impact studies of this development on the wildlife, creek, and environmentally sensitive caves. Will this wastewater contaminate our drinking water? What about the smell from the holding ponds? Please at least host a public hearing so that we can voice our concerns. &#! xa;

Kimberly Muth

From: PUBCOMMENT-OCC
Sent: Monday, April 29, 2024 4:40 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016355002

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Texas Commission on Environmental Quality
Office Phone: 512-239-3319

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Sent: Saturday, April 27, 2024 7:51 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016355002

REGULATED ENTY NAME VISTA TOWNHOMES WWTF

RN NUMBER: RN111757381

PERMIT NUMBER: WQ0016355002

DOCKET NUMBER:

COUNTY: WILLIAMSON

PRINCIPAL NAME: VISTA TOWNHOMES AUSTIN LLC

CN NUMBER: CN606154276

NAME: Casey Toole

EMAIL: casey@caseytoole.com

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ADDRESS: 10912 VISTA HEIGHTS DR
GEORGETOWN TX 78628-2011

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COMMENTS: Please do not approve this plan. As a nearby resident we are concerned about the environmental impact of the wastewater on our creek which is dry most of the time. It feeds into the San Gabriel River which we are concerned about having more waste water being discharged into a river that is enjoyed downstream. With the amount of discharge it can change the floodplain and shape of the creek that runs through several properties in our neighborhood. The river continues on through a park with a low water crossing running trail. Additionally our neighborhood has many caves which are close to the proposed project. We have not seen any environmental impact studies of this development on the wildlife, creek, and environmentally sensitive caves. Will this wastewater contaminate our drinking water? What about the smell from the holding ponds? Please at least host a public hearing so that we can voice our concerns. &#! xa;