

RESOLUTION NO. R-2019-27

A RESOLUTION OF THE CITY OF BASTROP, TEXAS, ("CITY") APPROVING SPECIFIC EXCEPTIONS OR EXEMPTIONS UNDER EMERGENCY ORDINANCE 2018-1, THE TEMPORARY MORATORIUM STAYING THE ACCEPTANCE AND PROCESSING OF CERTAIN PERMITS IN THE CITY LIMITS AND EXTRATERRITORIAL JURISDICTION; AND/OR EMERGENCY ORDINANCE 2018-2 ENACTING CERTAIN DRAINAGE AND FLOODING PERMIT APPLICATION REQUIREMENTS

WHEREAS, the Bastrop City Council ("City Council"), as a duly-elected legislative body, finds that it is facing significant historic and contemporary land use challenges that existing regulations were not designed to address; and

WHEREAS, on August 14, the City Council conducted a public hearing and voted to approve an Emergency Ordinance 2018-1, a Temporary Moratorium providing for a limited stay of processing certain permits, authorizations and approvals (among other actions); and

WHEREAS, on November 13, the City Council conducted a public hearing and on November 15 voted to approve an extension of the Temporary Moratorium with Emergency Ordinance 2018-1-A; and

WHEREAS, the City Council finds that the projects listed below in *Exhibit "A"* qualify as Exceptions or Exemptions under Emergency Ordinance 2018-1, and/or Emergency Ordinance 2018-2, and have met the standards necessary to proceed through the City's permitting process during the Temporary Moratorium; and

WHEREAS, the City Council finds that the enactment of this Resolution is reasonable, necessary, and directly related to the immediate preservation of the public peace, health or safety to approve certain exceptions under the Temporary Moratorium.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF BASTROP, TEXAS, AS FOLLOWS:

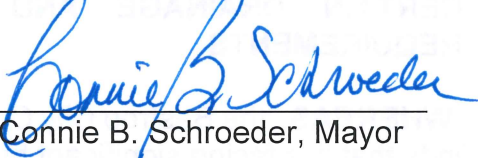
SECTION 1. STAFF REVIEW: The projects attached to this resolution as *Exhibit "A"* are hereby found to have been subject to careful review by City staff in accordance with the Temporary Moratorium, Emergency Ordinance 2018-1, *as may be amended*, Section 8.A; and/or Emergency Ordinance 2018-2, *as may be amended*, Section 6.

SECTION 2. EXCEPTIONS AND EXEMPTIONS RECOGNIZED: The projects listed in *Exhibit "A"* and attached to this resolution are hereby determined to qualify as Exceptions or Exemptions under the Temporary Moratorium, Emergency Ordinance 2018-1, *as may be amended*, Section 8.A; and/or Emergency Ordinance 2018-2, *as may be amended*, Section 6.

SECTION 3. PROCESS DIRECTIVE: The City's staff is directed to process the permit applications for those projects listed in *Exhibit "A"* in accordance with the rules codified under the applicable Code of Ordinances.

RESOLVED on this, the 26th day of February 2019.

APPROVED:




Connie B. Schroeder, Mayor

ATTEST:



Traci Chavez, Deputy City Secretary

APPROVED AS TO FORM:



Alan Bojorquez, City Attorney

Exhibit "A"

Description of Project Qualifying as Exemptions

Waivers

Engineer has provided certification that the project will provide negligible impact and do not require additional drainage infrastructure.

- **3.55 Acres of the Stephen F. Austin Survey
BJ Mayes Road**

Attachments

- Application
- Engineer Certification Letter
- Drainage Map

Alternative Design Standards

Engineer has provided preliminary plans and study that show post-development drainage will not exceed pre-development using increase rainfall estimates from the Atlas 14 study.

- **202 W. State Highway 71
2.29 Acres of the Nancy Blakey Survey**

Attachments

- Application
- Engineer Certification Letter
- Drainage Study

(see attachments that follow)



Exemption Application

Process Overview

1. Request a Pre-Submission Meeting with the Directors (or their designees) of Planning, Engineering, and Public Works using the Pre-Submission Meeting Request Form
 2. Meet with Staff at the scheduled time
 3. Complete Submittal Package*, which includes: Application and associated Checklist Items
 - a. Package might require execution of negotiated agreements or enactment of additional ordinances
 4. Staff review, with comments issued as needed
 5. City Council meeting and approval by Resolution or Ordinance
 - a. If approved, submit appropriate permit application for project
 - b. If denied, City Council will provide direction and the applicant may resubmit
- *Incomplete submittals will not be accepted

Select your Exemption

- Planned Development District
 Alternative Design Standard
 ETJ Development Agreement
 Waiver

See Associated Checklists for Additional Submittal Requirements

Property Owner

Name: Mirna Vargas
Address: 1700 St. Therese Road
City, State Zip: Manor, TX 78653
Phone Number: 956-239-0265 E-mail Address: msvargas79@gmail.com

Applicant

Name: Rachel Hartzler, PE Role (i.e. developer, agent, etc.): Agent
Company Name: James E. Garon & Associates, Inc.
Address: 185 McAllister Road, Bastrop, TX 78602
Phone Number: 512-303-4185 E-mail Address: StaffEngineer@austin.rr.com

Project Information

Project Name: Vargas Estates
Property Address: B J Mayes Road, Bastrop, Texas 78602 BCAD Property ID: R64288
Legal Description: 3.550 Acres out of the Stephen F. Austin Survey, Abstract No. 3



Exemption Application

Current Uses: Single family residential

Nature of the Project: Final Minor Plat

Existing Zoning District: N/A

Total Acreage: 3.550 acres Total Lots: 3

Describe how the Project has addressed drainage: *Include the standards and assumptions used, impact to this property and adjacent properties, stormwater flows from the Project, etc.*

The owner is proposing to divide the existing tract into three lots for single-family residential use. Assuming 7,000 sf of impervious cover per lot in the fully developed condition, stormwater runoff calculations using the Rational Method indicate this will increase the stormwater runoff from the site by up to 2.47 cfs in the 100-year storm. This increase is considered to be negligible. The proposed improvements will not cause any adverse flooding impacts for storms of magnitude up through the one-hundred (100) year event.

Applicant Certification

The applicant certifies that the facts stated herein and exhibits attached hereto are true, correct, and complete. Signature below also authorizes the City of Bastrop and its agents to visit and inspect the property for which this application is being submitted.

Rachel D. Hartzel Agent 03/11/2019
Signature and Title Date



Owner's Agent Authorization

Property Owner's Information

Owner's Name(s): Mirna Vargas

Property Address(s): B J Mayes Road, Bastrop, Texas 78602

Owner's Email Address: msvargas79@gmail.com

Owner's Phone Number: () 956-239-0265

The individuals listed below are hereby authorized to apply for, sign for, and conduct business for permits, plan, and/or other legal documents with the City of Bastrop Planning and Development Department on behalf of the above identified property owner(s).

The City of Bastrop Planning and Development Department may retain a copy of this form for our records and maintain a file as a courtesy. The form with the most recent date shall supersede all previous authorizations on file and **remain in effect for one (1) year, or until a new form is filed by the property owners, whichever is shorter.**

All signatories understand that it is the property owner's responsibility to provide a copy of this form every time they would like to add or remove authorized agents, and that this form expires one (1) year after it is signed. The property owner's signature designates the agent as the official contact person for projects and the single point of contact. All correspondence and communication will be conducted with the agent.

Print full name(s) and title(s) of authorized agent(s):

1. Glenn T. Dial, R.P.L.S.
2. Rachel D. Hartzler, P.E.

Signature(s) of Property Owner(s)

2/11/19

Date

Signature(s) of Property Owner(s)

Date

Signature(s) of Agent(s)

Date

02/11/2019

Signature(s) of Agent(s)

Date



James E. Garon & Associates, Inc.
CIVIL ENGINEERING CONSULTANTS
FIRM REGISTRATION # F-20368
P.O. Box 1917
Bastrop, Texas 78602
(512) 303-4185
FAX (512) 321-2107

DRAINAGE EXHIBIT
NOT TO SCALE

.....

P.O. Box 1917
Bastrop, Texas 78602
512-303-4185
Firm Reg. #F-20368
jgaron@austin.rr.com

James E. Garon & Associates, Inc.

March 11, 2019

City of Bastrop
Planning & Development
1311 Chestnut Street
Bastrop, TX 78602

Re: Vargas Subdivision - BJ Mayes Road, Bastrop, TX - Project Description Letter

Dear Mr. Jones,

This letter is to accompany the final minor plat application for the property located on BJ Mayes Road in Bastrop with BCAD Property ID R64288. This letter is included as a Project Description Letter.

The owner is proposing to subdivide this property into three lots. The existing tract was not previously platted and had frontage on both BJ Mayes Road and State Highway (SH) 95. The owner is proposing a layout with two lots that have frontage on BJ Mayes Road and one lot with frontage on SH 95. We have applied for a residential driveway permit from TxDOT for the proposed lot on SH 95 and were granted the permit on Friday, March 8th, 2019. Each of these lots are for single-family residential use.

There are no proposed improvements involved with this plat application. Future scope of work will be submitted with building permit applications. The owner has submitted an Exemption Application with Waiver checklist with the plat application.

Please do not hesitate to contact us immediately with any other requests regarding this project.

Sincerely,



Rachel D. Hartzler, PE
512-303-4185

.....

P.O. Box 1917
Bastrop, Texas 78602
512-303-4185
Firm Reg. #F-20368
jgaron@austin.rr.com

James E. Garon & Associates, Inc.

March 11, 2019

City of Bastrop
Planning & Development
1311 Chestnut Street
Bastrop, TX 78602

Re: Vargas Subdivision - BJ Mayes Road, Bastrop, TX - Registered Engineer's
Drainage Letter

Dear Mr. Palady,

This letter is to accompany the final minor plat application for the property located on BJ Mayes Road in Bastrop with BCAD Property ID R64288. We have reviewed the topography of the site and have completed a field investigation on February 8, 2019.

The project site is located directly in the Colorado River watershed. There is a high point on the property with stormwater runoff draining from the high point to the west and to the east. To the west, stormwater runoff drains across BJ Mayes Road and enters an existing stream that is conveyed under Sayers Road in a 36-inch corrugated metal pipe. To the east, stormwater runoff drains toward a drainage ditch that runs along the State Highway 95 right-of-way. Both of these drainage courses eventually drain to Piney Creek on the north side of Bastrop.

The owner is proposing to divide the existing tract into three lots for single-family residential use. Assuming 7,000 square feet of impervious cover per lot in the fully developed condition, stormwater runoff calculations using the Rational Method indicate this will increase the stormwater runoff from the site by up to 2.47 cfs in the 100-year storm. This increase is considered to be negligible. The proposed improvements will not cause any adverse flooding impacts for storms of magnitude up through the one-hundred (100) year event.

Please do not hesitate to contact us immediately with any other requests regarding this project.

Sincerely,

Rachel D. Hartzler, PE



Civil Engineering Consultants



Exemption Application

Process Overview

1. Request a Pre-Submission Meeting with the Directors (or their designees) of Planning, Engineering, and Public Works using the Pre-Submission Meeting Request Form
2. Meet with Staff at the scheduled time
3. Complete Submittal Package*, which includes: Application and associated Checklist Items
 - a. Package might require execution of negotiated agreements or enactment of additional ordinances
4. Staff review, with comments issued as needed
5. City Council meeting and approval by Resolution or Ordinance
 - a. If approved, submit appropriate permit application for project
 - b. If denied, City Council will provide direction and the applicant may resubmit

*Incomplete submittals will not be accepted

Select your Exemption

- Planned Development District
- Alternative Design Standard
- ETJ Development Agreement
- Waiver

See Associated Checklists for Additional Submittal Requirements

Property Owner

Name: Good Shepherd Lutheran Church (c/o John Creamer)

Address: P.O. Box 750

City, State Zip: Bastrop, Texas 78602

Phone Number: 512-922-2933 E-mail Address sidneyland@sbcglobal.net

Applicant

Name: Joseph Willrich, P.E. Role (i.e. developer, agent, etc.): Agent\Engineer

Company Name: BEFCO Engineering, Inc.

Address: P.O. Box 615, La Grange, Texas 78945

Phone Number: 979-968-6474 E-mail Address joseph@befcoengineering.com

Project Information

Project Name: Good Shepherd Lutheran Church Modular Classroom Addition

Property Address: 202 W. SH 71, Bastrop, Texas BCAD Property ID: 63089

Legal Description: 1.949 Acres, Residual of 2.295 Acre Deed, Vol. 174, Pg. 784 B.C.D.R.



Exemption Application

Current Uses: Existing Church and Learning Center

Nature of the Project: New K-2 1,662 SF Modular Classroom Building

Existing Zoning District: C-2

Total Acreage: 1.949 Acres Total Lots: 1

Describe how the Project has addressed drainage: *Include the standards and assumptions used, impact to this property and adjacent properties, stormwater flows from the Project, etc.*

See attached drainage summary letter and drainage calculations sheet. In summary, an existing detention pond was constructed in 2010/2011 which was sized for a future parking lot expansion. The proposed classroom addition is proposing 0.06 acres of impervious cover which is within the impervious cover limits of the original pond design. BEFCO re-calculated and remodeled the detention pond and found it was adequately sized for the proposed classroom addition and there will be no increase in flows with this project.

Applicant Certification

The applicant certifies that the facts stated herein and exhibits attached hereto are true, correct, and complete. Signature below also authorizes the City of Bastrop and its agents to visit and inspect the property for which this application is being submitted.

John M. Kelly w/ BEFCO Engineering, Inc. 3-11-19
Signature and Title Authorized Agent Date

Process Overview

1. Pre-Application Meeting
 - a. Discuss your project with staff prior to submitting an application. Staff can help identify opportunities and constraints on the proposed project, as well as provide more information on the process and code requirements.
 2. Complete Submittal Package*, which includes: Application and all Checklist Items
 3. Staff review, with comments issued as needed
 4. City Council meeting for approval by Resolution or Ordinance
- *Incomplete submittals will not be accepted

Submittal Package Checklist Items

Staff	Applicant	Item
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Completed and signed Application
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Agent Authorization Form
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Project Description Letter listing the following: <ul style="list-style-type: none"> • Type of improvements proposed • Scope of improvements • How the project will affect areas within the scope of work
<input type="checkbox"/>	<input checked="" type="checkbox"/>	A signed, sealed and dated letter from a registered engineer certifying that they have personally reviewed the topography and completed a field investigation of the existing and proposed flow patterns for stormwater runoff from the subject development to the main stem of all creeks that may impact the project, and build-out conditions allowable by zoning, restrictive covenant or plat note, that the stormwater flows from the subject development will not cause any additional adverse flooding impacts for storms of magnitude up through the one-hundred (100) year event.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Map of Affected Area and/or Concept Plan as requested by Staff (See Site Plan Exhibit)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Detailed plans of proposed drainage improvements signed, sealed, and dated by a registered engineer (See Drainage Area Maps and Calculations)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Digital Submittal – Provide pdf copies of all documents listed above via email, CD, or flash drive



Owner's Agent Authorization

Property Owner's Information

Owner's Name(s): Good Shepherd Lutheran Church (c/o John Creamer)
Property Address(s): 202 W. SH 71, Bastrop, Texas
Owner's Email Address: sidneyland@sbcglobal.net
Owner's Phone Number: () 512-922-2933

The individuals listed below are hereby authorized to apply for, sign for, and conduct business for permits, plan, and/or other legal documents with the City of Bastrop Planning and Development Department on behalf of the above identified property owner(s).

The City of Bastrop Planning and Development Department may retain a copy of this form for our records and maintain a file as a courtesy. The form with the most recent date shall supersede all previous authorizations on file and remain in effect for one (1) year, or until a new form is filed by the property owners, whichever is shorter.

All signatories understand that it is the property owner's responsibility to provide a copy of this form every time they would like to add or remove authorized agents, and that this form expires one (1) year after it is signed. The property owner's signature designates the agent as the official contact person for projects and the single point of contact. All correspondence and communication will be conducted with the agent.

Print full name(s) and title(s) of authorized agent(s):

1. Joseph Willrich with BEFCO Engineering, Inc.
2. _____

John A. Creamer / Asst. Pastor / Pastor 3/4/19
Signature(s) of Property Owner(s) Date

Signature(s) of Property Owner(s) Date
Joseph Willrich 3/4/19
Signature(s) of Agent(s) Date

Signature(s) of Agent(s) Date



BEFCO ENGINEERING, INC.
Consulting Engineering/Land Surveying
P.O. BOX 615 485 NORTH JEFFERSON
LA GRANGE, TEXAS 78945-0615
979 / 968-6474 FAX 979 / 968-3056
www.befcoengineering.com E-mail: office@befcoengineering.com
Texas Registered Engineering Firm F-2011 Texas Licensed Surveying Firm #10001700

March 11, 2019

City of Bastrop
Ms. Jennifer Bills
Assistant Planning Director
1311 Chestnut Street
Bastrop, Texas 78602

RE: Exemption Application
Description Letter and Section 5B Certification
Good Shepherd Lutheran Church
Modular Classroom Addition

Ms. Bills:

Good Shepherd Lutheran Church is an existing operational Church and Learning Center on 1.949 acres located at 202 W. SH 71 in Bastrop, Texas. Good Shepherd is proposing a new modular classroom building addition as well as sidewalk and fence improvements associated with the addition. The improvements will add 0.06 acres of impervious cover to the existing property.

In 2009, Good Shepherd Lutheran Church permitted through the City of Bastrop a building expansion project that included a learning center, parking lot expansion, accommodations for a future parking lot and detention pond for the proposed and future increase in impervious cover. These improvements were constructed in 2010\2011. A drainage study was prepared by others in 2009 which provided the design for the detention pond for the proposed and future increase in impervious cover. Good Shepherd is now proposing a new classroom building in lieu of a future parking lot expansion. BEFCO Engineering, Inc. has reviewed the previous drainage study and existing pond improvements including outfall structure (BEFCO surveyed the existing pond improvements). The original drainage study assumed 0.72 acres of impervious cover to the detention pond. BEFCO has calculated the existing impervious cover plus the 0.06 acres of impervious cover that will be increased by the proposed classroom addition and found that the total impervious cover to the pond is 0.64 acres. Proposed impervious cover is less than what was planned for in the original drainage study. BEFCO has taken the additional step of re-calculating existing drainage areas\flows prior to the 2010 improvements, calculating proposed conditions flows with the proposed classroom addition, and modeling the existing detention pond\outfall structure in HEC-HMS in an effort to replicate the drainage study prepared in 2009. Based on BEFCO's review of the existing pond grading, it was observed that a small portion of the east side pond bank is a few inches lower than elevation 358.00. 358.00 is the design bank elevation from the original pond design\drainage study. Good Shepherd will need to adjust this portion of the bank to elevation 358.00 at the time they construct the site improvements associated with the classroom addition. Based on BEFCO's calculations and review of the original drainage study, the detention pond and associated outfall structure are adequately sized for the proposed classroom addition and there will be no increase in flow and no additional adverse impact caused by this project in the 2-year, 5-year, 10-year, 25-year, 50-year and 100-year storm events. Please reference the attached drainage area maps and calculations as well as additional information provided below.

FEMA Floodplain

According to FEMA FIRM Community Panel 48021C0355E dated January 19, 2006, the site is located in shaded Zone X which are areas within the 0.2% annual chance flood hazard, areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile.

Soil Conditions\Classification

According to USDA NRCS soil maps, the property consists of existing impervious cover and pervious areas consisting of Type B soils. Group B soils are described as having a moderate infiltration rate when thoroughly wet. Reference curve number calculations on the calculations sheet for existing impervious cover by drainage area.

"Proficient, practical engineering and land surveying services with a sense of small-town values and care"

Existing and Proposed Drainage Conditions

Please reference the Existing Drainage Area Map, Proposed Drainage Area Map and Drainage Calculations sheets. These sheets depict flow patterns and associated drainage calculations. As previously described in this letter, a drainage study was prepared in 2009 and a detention pond was constructed in 2010/2011 for a proposed building expansion and future parking lot improvements. The detention pond design assumed 0.72 acres of impervious cover to the pond. Based on BEFCO's calculations, existing impervious cover and the proposed 0.06 acres of impervious cover that will be added with the classroom addition will total 0.64 acres to the pond. Proposed impervious cover is less than what was planned for in the original drainage study. BEFCO has taken the additional step of re-calculating existing drainage areas/flows prior to the 2010 improvements, calculating proposed conditions flows with the proposed classroom addition, and modeling the existing detention pond/outfall structure in HEC-HMS in an effort to replicate the drainage study prepared in 2009.

The Existing Drainage Area Map depicts flow patterns and drainage areas prior to the 2010/2011 building improvements. Area E1 is 0.50 acres and discharges to TxDOT right-of-way. Drainage patterns and impervious cover will remain unchanged in proposed conditions (P1). Area E2 is 1.45 acres and discharges to an existing area inlet at the northwest corner of Eskew and Hasler and is noted as Analysis Point 1E. Area E2 has 0.27 acres of impervious cover. The Proposed Drainage Area Map depicts flow patterns and drainage areas of current conditions and includes the proposed classroom addition. Area P1 is 0.50 acres and is identical to area E1 in existing conditions; therefore, there will be no increase in flows from this portion of the property. Area P2 is 0.13 acres and discharges directly to the Eskew right-of-way and has 0.10 acres of impervious cover. Area P3 is 1.32 acres and discharges to an existing detention pond at the southeast corner of the property. Area P3 has a total of 0.64 acres of impervious cover which consists of 0.58 acres of existing impervious cover plus 0.06 acres of impervious cover for the proposed classroom addition. The discharge from the detention pond and direct discharge from area P2 to the existing area inlet at the northwest corner of Eskew and Hasler is noted as Analysis Point 1P.

BEFCO performed a hydrologic modeling of the watershed using HEC-HMS modeling software. The hydrologic analysis utilized (Soil Conservation Service) SCS Curve Number (CN) and the SCS Unit Hydrograph to reflect runoff patterns for the project. CN factors, rainfall depths, Manning's "n" factors, and time of concentration calculations used in the hydrologic analysis modeling were based on guidelines in the United States Department of Agriculture's Technical Release 55 (TR-55). An SCS Type III 24-Hour Storm was used with rainfall depths from the 2-year, 5-year, 10-year, 25-year, 50-year and 100-year storms as provided by Atlas 14 24-hour duration depths for the City of Bastrop.

Atlas 14

Rainfall Depths (Type III Storm)

	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
24 Hour Depth (in.)	4.17	5.51	6.81	8.81	10.50	12.60

The existing detention pond has a top of bank of 358.00 and an existing outfall structure that consists of 6 orifices. Based on BEFCO's review of the existing pond grading, it was observed that a small portion of the east side pond bank is a few inches lower than elevation 358.00. 358.00 is the design bank elevation from the original pond design\drainage study. Good Shepherd will need to adjust this portion of the bank to elevation 358.00 at the time they construct the site improvements associated with the classroom addition. BEFCO modeled the existing detention pond (with the minor grading Good Shepherd will perform noted above) and outfall structure in HEC-HMS and determined that the existing detention pond and outfall structure is adequate for the 0.06 acres of additional impervious cover proposed with the classroom addition. A peak flow comparison of existing and proposed conditions flow at Analysis Point 1E\1P shows proposed conditions flows are less than existing conditions.

ANALYSIS POINT 1

FLOW COMPARISON	2-YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR
ANALYSIS POINT 1E	1.6	2.9	4.3	6.5	8.5	10.9
ANALYSIS POINT 1P	0.6	0.8	1.0	1.5	2.2	3.0

Reference the Drainage Calculations sheet for all drainage calculations, existing detention pond stage\storage and outfall structure analysis.

Emergency Ordinance No. 2018-2 Section 5B Certification

All proposed improvements for the classroom addition will discharge to the existing detention pond. Fence improvements are intended to create a secured perimeter for the learning center and its location will not obstruct flow. Further, the fence will be a black vinyl coated chain link fence with open webbing with bottom of the fence a couple inches above grade allowing drainage flows to pass as required. Good Shepherd will perform the minor grading on the east side bank of the detention pond to re-establish elevation 358.00 at time of site improvements for the classroom addition. Based on the proposed improvements and the drainage analysis performed, there will be no increase in flows and no additional adverse impact created by this project and the following certification is provided from Section 5B of the Emergency Ordinance No. 2018-2:

I, Joseph Willrich, P.E. with BEFCO Engineering, Inc., have reviewed the topography and completed a field investigation of the existing and proposed flow patterns for stormwater runoff from the subject development to the main stem of all creeks that may impact the project, and build out conditions allowable by zoning, restrictive covenant or plat note, and that the stormwater flows from the subject development will not cause any additional adverse flooding impacts for storms of magnitude up through the one-hundred (100) year event.

Sincerely,

BEFCO Engineering, Inc. (F-2011)



 Joseph G. Willrich, P.E.



3-11-19

- Attachments:
- Soil Map
 - FEMA Floodplain Map
 - Existing Drainage Area Map
 - Proposed Drainage Area Map
 - Drainage Calculations

- Atlas 14 Chart
- Site Plan Exhibit

National Flood Hazard Layer FIRMette



30°6'27.74"N



USGS The National Map: Orthoimagery. Data refreshed October, 2017.

30°5'56.61"N

97°19'21.17"W

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

<p>SPECIAL FLOOD HAZARD AREAS</p> <ul style="list-style-type: none"> Without Base Flood Elevation (BFE) Zone A, V, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway 	<p>OTHER AREAS OF FLOOD HAZARD</p> <ul style="list-style-type: none"> 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee, See Notes, Zone X Area with Flood Risk due to Levee Zone D
<p>OTHER AREAS</p> <ul style="list-style-type: none"> Area of Minimal Flood Hazard Zone X Effective LOMRS Area of Undetermined Flood Hazard Zone D 	<p>GENERAL STRUCTURES</p> <ul style="list-style-type: none"> Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall
<p>OTHER FEATURES</p> <ul style="list-style-type: none"> Cross Sections with 1% Annual Chance Water Surface Elevation Coastal Transect Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary Coastal Transect Baseline Profile Baseline Hydrographic Feature 	<p>MAP PANELS</p> <ul style="list-style-type: none"> Digital Data Available No Digital Data Available Unmapped



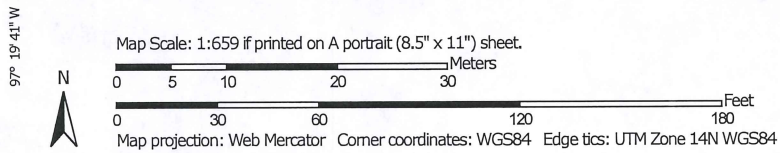
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.









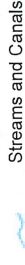




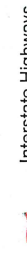

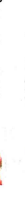

















The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/20/2019 at 3:16:11 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Hydrologic Soil Group—Bastrop County, Texas
(SOIL MAP)



MAP LEGEND

 Area of Interest (AOI)	 C
 Area of Interest (AOI)	 C/D
Soils	 D
Soil Rating Polygons	 Not rated or not available
 A	Water Features
 A/D	 Streams and Canals
 B	Transportation
 B/D	 Rails
 C	 Interstate Highways
 C/D	 US Routes
 D	 Major Roads
 Not rated or not available	 Local Roads
Soil Rating Lines	Background
 A	 Aerial Photography
 A/D	
 B	
 B/D	
 C	
 C/D	
 D	
 Not rated or not available	
Soil Rating Points	
 A	
 A/D	
 B	
 B/D	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bastrop County, Texas
Survey Area Data: Version 16, Sep 14, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 11, 2016—Nov 30, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Bo	Bosque loam, 0 to 1 percent slopes, occasionally flooded	B	0.1	6.6%
Sm	Smithville fine sandy loam, 0 to 1 percent slopes	B	1.9	93.4%
Totals for Area of Interest			2.0	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.



NOAA Atlas 14, Volume 11, Version 2
Location name: Bastrop, Texas, USA*
Latitude: 30.1105°, Longitude: -97.3194°
Elevation: 370.88 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.458 (0.346-0.604)	0.538 (0.411-0.704)	0.670 (0.510-0.880)	0.779 (0.584-1.04)	0.927 (0.674-1.27)	1.04 (0.736-1.47)	1.16 (0.796-1.67)	1.27 (0.856-1.90)	1.43 (0.932-2.21)	1.56 (0.987-2.46)
10-min	0.727 (0.550-0.960)	0.856 (0.654-1.12)	1.07 (0.813-1.40)	1.24 (0.932-1.66)	1.48 (1.08-2.04)	1.67 (1.18-2.35)	1.85 (1.27-2.68)	2.03 (1.36-3.02)	2.27 (1.47-3.49)	2.44 (1.55-3.86)
15-min	0.921 (0.698-1.22)	1.08 (0.826-1.42)	1.34 (1.02-1.76)	1.56 (1.17-2.07)	1.85 (1.34-2.54)	2.07 (1.47-2.92)	2.30 (1.58-3.33)	2.53 (1.70-3.76)	2.84 (1.85-4.38)	3.08 (1.95-4.87)
30-min	1.31 (0.992-1.73)	1.53 (1.17-2.01)	1.89 (1.44-2.49)	2.19 (1.64-2.92)	2.59 (1.88-3.55)	2.89 (2.04-4.07)	3.20 (2.20-4.63)	3.52 (2.37-5.25)	3.98 (2.59-6.14)	4.34 (2.75-6.86)
60-min	1.71 (1.29-2.25)	2.00 (1.53-2.62)	2.50 (1.90-3.28)	2.90 (2.18-3.87)	3.46 (2.50-4.73)	3.87 (2.73-5.45)	4.30 (2.97-6.24)	4.78 (3.22-7.12)	5.46 (3.55-8.42)	6.01 (3.80-9.49)
2-hr	2.05 (1.56-2.69)	2.47 (1.89-3.19)	3.14 (2.40-4.10)	3.71 (2.80-4.93)	4.52 (3.29-6.17)	5.15 (3.66-7.24)	5.83 (4.04-8.43)	6.60 (4.46-9.80)	7.72 (5.04-11.9)	8.65 (5.49-13.6)
3-hr	2.23 (1.70-2.93)	2.74 (2.09-3.52)	3.53 (2.70-4.59)	4.22 (3.19-5.59)	5.22 (3.82-7.12)	6.03 (4.29-8.45)	6.90 (4.79-9.95)	7.91 (5.35-11.7)	9.38 (6.13-14.4)	10.6 (6.76-16.7)
6-hr	2.55 (1.95-3.34)	3.22 (2.44-4.06)	4.20 (3.22-5.43)	5.10 (3.87-6.73)	6.43 (4.73-8.75)	7.54 (5.40-10.6)	8.78 (6.12-12.6)	10.2 (6.92-15.0)	12.3 (8.09-18.9)	14.1 (9.03-22.1)
12-hr	2.87 (2.21-3.74)	3.68 (2.77-4.58)	4.84 (3.72-6.22)	5.94 (4.52-7.80)	7.60 (5.62-10.3)	9.02 (6.49-12.6)	10.6 (7.44-15.2)	12.5 (8.53-18.4)	15.4 (10.1-23.5)	17.9 (11.5-27.9)
24-hr	3.21 (2.48-4.17)	4.17 (3.14-5.13)	5.51 (4.25-7.05)	6.81 (5.21-8.91)	8.81 (6.55-11.9)	10.5 (7.63-14.7)	12.6 (8.82-17.9)	14.9 (10.2-21.8)	18.5 (12.2-28.0)	21.5 (13.9-33.5)
2-day	3.60 (2.79-4.65)	4.71 (3.55-5.75)	6.26 (4.84-7.96)	7.77 (5.97-10.1)	10.1 (7.56-13.7)	12.2 (8.85-16.9)	14.6 (10.3-20.7)	17.3 (11.8-25.1)	21.3 (14.1-32.2)	24.8 (16.0-38.3)
3-day	3.89 (3.02-5.01)	5.09 (3.85-6.20)	6.76 (5.25-8.59)	8.39 (6.46-10.9)	10.9 (8.17-14.7)	13.1 (9.55-18.2)	15.6 (11.0-22.1)	18.5 (12.7-26.8)	22.6 (15.0-34.1)	26.1 (16.9-40.4)
4-day	4.15 (3.23-5.34)	5.39 (4.10-6.59)	7.15 (5.56-9.07)	8.84 (6.81-11.5)	11.4 (8.57-15.4)	13.7 (9.98-18.9)	16.2 (11.5-22.9)	19.1 (13.1-27.7)	23.3 (15.5-35.0)	26.8 (17.4-41.3)
7-day	4.79 (3.74-6.14)	6.10 (4.69-7.50)	8.00 (6.25-10.1)	9.78 (7.56-12.7)	12.4 (9.36-16.7)	14.7 (10.8-20.3)	17.3 (12.3-24.3)	20.1 (13.9-29.1)	24.2 (16.2-36.4)	27.7 (18.0-42.5)
10-day	5.33 (4.16-6.81)	6.68 (5.17-8.26)	8.70 (6.82-11.0)	10.5 (8.17-13.6)	13.3 (9.98-17.7)	15.5 (11.4-21.3)	18.1 (12.8-25.4)	20.9 (14.4-30.1)	24.9 (16.7-37.3)	28.3 (18.4-43.4)
20-day	6.93 (5.44-8.82)	8.40 (6.62-10.5)	10.7 (8.47-13.6)	12.7 (9.91-16.4)	15.6 (11.7-20.7)	17.9 (13.1-24.4)	20.3 (14.5-28.4)	22.9 (15.9-32.9)	26.6 (17.8-39.6)	29.5 (19.3-45.1)
30-day	8.26 (6.50-10.5)	9.84 (7.82-12.4)	12.4 (9.83-15.7)	14.6 (11.4-18.7)	17.5 (13.2-23.1)	19.7 (14.5-26.8)	22.1 (15.8-30.8)	24.5 (17.1-35.2)	27.9 (18.8-41.5)	30.6 (20.0-46.6)
45-day	10.2 (8.03-12.9)	11.9 (9.54-15.0)	14.8 (11.8-18.7)	17.2 (13.4-22.0)	20.3 (15.3-26.7)	22.6 (16.6-30.6)	24.9 (17.8-34.7)	27.2 (19.0-39.0)	30.3 (20.5-45.0)	32.7 (21.5-49.8)
60-day	11.9 (9.41-15.1)	13.8 (11.1-17.4)	17.0 (13.6-21.4)	19.5 (15.3-24.9)	22.8 (17.3-30.0)	25.2 (18.6-34.1)	27.5 (19.7-38.3)	29.7 (20.8-42.6)	32.7 (22.1-48.4)	34.8 (22.9-52.9)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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