Rick Schroder

From: Odalys Johnson [redacted]
Sent: Wednesday, May 4, 2022 9:39 AM
To: Rick Schroder
Cc: Kent O'Brien
Subject: RE: Historic Jail Site drainage study

Hi Rick,
Based on the information in the report and plans, the proposed impervious cover will be decreased and no significant changes to drainage patters are expected, therefore increases in runoff are not expected and detention should not be necessary.
However, if there are existing drainage issues along the north parking lot in front and downstream of the site, it might be good to check the conveyance capacity of the existing ditch and structures to determine if they have enough capacity for Atlas 14 runoff.

Let me know if you have any questions.

Odalys Johnson, P.E., C.F.M.
Senior Project Engineer
[redacted]

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From: Rick Schroder <rschroder@johnsoncitytx.org>
Sent: Thursday, April 21, 2022 2:54 PM
To: Odalys Johnson <OJohnson@jonescarter.com>
Cc: Kent O'Brien <kobrien@quiddity.com>
Subject: FW: Historic Jail Site drainage study

Odalys –

The County is demolishing an existing building and constructing a new one in its place adjacent to a historic jail facility. Please see attached preliminary plan set dated 3/30/22.

I informed the County of the City's stormwater / drainage code, and advised that they have an engineer submit a document addressing the proposed construction and how it will impact the current stormwater / drainage. Please see attachment.

ARTICLE 10.03 STORMWATER DETENTION AND DRAINAGE

Sec. 10.03.001 Purpose

The purpose of this article is to provide adequate measures for the detention and distribution of stormwater in a manner that minimizes the possibility of stormwater flooding or the adverse impact to water quality during and after subdivision development.

Sec. 10.03.002 Scope

(a) Applicability. This article shall apply to any application for the approval of a subdivision plat, a subdivision replat, a master development plan, a building permit, a change in zoning, a zoning variance, or the redevelopment of property within the city's corporate limits or extraterritorial jurisdiction.

(b) Exceptions. Lots individually platted and developed for single family use shall be exempt from the requirements of this article.

Sec. 10.03.003 Drainage facilities

(a) New development. Peak stormwater runoff rates for all new development shall be less than or equal to the peak runoff rates from the site's pre-development conditions for the 5-, 25-, and 100-year design storm events.

(b) Redevelopment. Peak stormwater runoff rates from an area of redevelopment shall be less than or equal to the peak runoff rates produced by existing development conditions for the 5-, 25-, and 100-year design storm events.

(c) Stormwater detention. Stormwater detention shall be required for all new developments or redevelopment of individual parcels of property to mitigate peak flow rates to pre-development or existing development conditions as stated in subsections (a) and (b) above. The maximum allowable out-flow rate from the detention facility must be restricted to the flow rate for the undeveloped or existing development tract for the 5-, 25-, and 100-year frequency.

Sec. 10.03.004 Design standards and regulations

(a) Design. Stormwater runoff may be determined by using the Austin standard method, the rational method, or similar method acceptable to the city engineer. Calculations and plans of the drainage area in pre-development, existing development, or ultimate development shall be submitted, for review and approval by the city engineer, as required in section 10.03.003. The difference in runoff quantities and the flow rates shall be managed by an onsite storm detention system. The detention system shall be designed to release stormwater at a rate not to exceed that of the pre-development or existing development rate. The design of the detention "reservoir" shall preclude any pooling of water or result in additional identifiable adverse flooding within the subdivision or to other properties.

(b) Approval. The detention system design must be reviewed for acceptability and approved by the city engineer, who then shall make a recommendation to the city council, and it shall be approved by the city council before any improvements may be made within the proposed subdivision.

(c) Maintenance. The detention system must be maintained in a safe and sanitary manner in accordance with its approved design.

Sec. 10.03.005 Definitions

For the purposes of this article, a "person" is an individual, association, firm, corporation, governmental agency, political subdivision, or legal entity of any kind, including commercial or residential subdivision development.

Sec. 10.03.006 Fee in lieu of detention

(a) Fee in lieu. The city may, at its sole discretion, accept a fee in lieu of detention. Fees in lieu of detention are established by the master fee schedule, as amended.

(b) Permit application and fee.

(1) A person shall submit to the city an application requesting a fee in lieu of detention.

(2) The application shall be accompanied by payment of a nonrefundable fee set by the master fee schedule.

(3) All fees in lieu of detention collected will be used for regional detention basins or drainage

improvements within the city.

Sec. 10.03.007 Violation and enforcement

(a) Violation declared. It shall be unlawful for any person to violate any term or provision of this article. The city shall have the power to administer and enforce the provisions of this article.

(b) Criminal offense.

(1) A person who violates a provision of this article commits a misdemeanor.

(2) A fine for a violation may not exceed $500.00.

(3) Each day of the violation shall constitute a separate offense.

(4) The penalties in this section shall be cumulative and are not exclusive of any other rights or remedies the city may have or pursue.

(c) Civil action.

(1) Any condition caused or permitted to exist in violation of any provision of this article constitutes a public nuisance.

(2) A person who violates a provision of this article is subject to a civil fine or injunction.

(3) The city may file suit in district court to enjoin the violation or threatened violation of this article by a person.

(4) Prior to taking civil action, the city shall notify the violator of the provisions of the article that are being or have been violated.

(5) The city may seek to recover damages from the violator in an amount adequate for the city to undertake activity necessary to bring compliance with this article.

(6) A person who violates a provision of this article is subject to a civil penalty up to $1,000.00 and not less than $250.00 per day per violation.

(7) The remedies in this section shall be in addition to the penalties described above.

(d) Administrative enforcement.

(1) The CAO or designee may issue a stop work order to immediately halt work on a property at which a violation is occurring or has occurred.

(2) The CAO or designee may withhold or revoke site plan approval, building permits, occupancy permits, or any other appropriate approvals necessary to continue development on a property at which a violation is occurring or has occurred.

(3) An applicant may appeal an order to the city council who shall issue a decision without unreasonable or unnecessary delay. The decision of the city council shall be final.

(e) Right of entry. The CAO or designee shall have the authority to enter upon the property premises of an applicant within the city or its ETJ for the purpose of enforcing the provisions of this article.

(f) Legal fees and costs. In any civil or criminal action, the city shall be entitled to recover from the defendant reasonable attorney's fees, costs of suit, and any other costs of enforcement.

(Ordinance 22-0102 adopted 1/4/22)

MGP Engineering

HYDROLOGY STUDY

for

106 E. Pecan Drive, Johnson City, Texas

Prepared for: *SLS Partnership, Inc*

April 21, 2022

Prepared by: Michael Pantell, PE, CFM

Introduction

The following report describes the methods used to determine the impact of the proposed development at 106 E. Pecan Drive in Johnson City, Texas. The proposed development will remove an existing building adjacent to the historic county jail and construct a new building with a nearly identical footprint and roof area. The site is a 0.104-acre lot with approximately 800 square feet of existing concrete surface that will be removed and replaced by approximately 400 square feet of concrete surface. This report will analyze the impacts of the proposed development on the hydrologic conditions of the site for the 5-, 10-, 25-, and 100-year rainfall events.

Hydrology

The existing and proposed hydrology were computed using the rational method. The longest flow path for the site was determined to be the 97 feet along the west side of the property that flows directly into the street. The area considered a regional commercial area with a flat lot with a slope of approximately 1%. Based on this, a runoff coefficient of 0.94 was chosen for this site. Because the existing and proposed conditions are nearly identical, the same time of concentration calculation was used for both and is provided in Table 1. In both scenarios, the time of concentration was computed to be 2.84 minutes. For the purposes of this analysis, this was rounded up to 10 minutes which is the minimum time of concentration allowed for a commercial area.

Table 1 Time of Concentration Calculation for Existing and Proposed Conditions

Length (ft)	Land Use/ Surface Description	Runoff Coefficient (C)	Slope (%)	Tc Overland (min)
97	Regional Commercial, Flat	0.94	1%	2.84

Rainfall data was obtained from NOAA Atlas 14 provided in Appendix B. This rainfall data is provided by NOAA as rainfall depths in inches for a range of storm durations. The rainfall intensity was calculated by dividing the rainfall depth by the storm duration. The storm duration used for this analysis was 10 minutes based on the time of concentration. The runoff coefficient, C, was determined to be 0.90 based on a commercial land use. Table 2 shows the existing and proposed peak flows for each return period analyzed.

Table 2 Existing and Proposed Conditions Peak Flow

Return Period	Land Use	Runoff Coefficient (C)	Area (A), acres	Rainfall Intensity (i), in/hr	Existing Peak Flow (Q), cfs	Proposed Peak Flow (Q), cfs
5-Year	Commercial	0.9	0.104	6.18	0.6	0.6
10-year				7.32	0.7	0.7
25-Year				9.00	0.8	0.8
100-Year				11.7	1.1	1.1

Conclusion

The hydrologic results provided in Table 2 show that there will be no negative impact on the peak flows due the project. Both the existing and proposed conditions have similar building footprints resulting in insignificant changes due to the building construction. Additionally, this assessment is conservative because it does not account for the decrease in concrete surface area in the post project conditions. This decrease in concrete will allow for more infiltration which will result in slightly lower post project peak flows.

This analysis only considers the impact on the peak flow leaving the property due to the proposed project conditions. This analysis does not address changes to internal property drainage paths. To mitigate localized ponding or drainage issues on the property a drainage plan should be developed. It is anticipated that any changes to the internal property drainage (e.g. PVC drain or ditch) will only decrease the time of concentration. Since the minimum time of concentration of 10 minutes was used, it is expected that these changes will not affect the results of this study.

MGP Engineering

Appendix A

NOAA Atlas 14 Data

NOAA Atlas 14, Volume 11, Version 2
Location name: Johnson City, Texas, USA*
Latitude: 30.2776°, Longitude: -98.4119°
Elevation: 1194.62 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_&_aerials

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	0.424 (0.321-0.560)	0.511 (0.387-0.661)	0.647 (0.492-0.848)	0.766 (0.575-1.02)	0.936 (0.681-1.29)	1.07 (0.760-1.52)	1.22 (0.840-1.77)	1.38 (0.925-2.05)	1.60 (1.04-2.47)	1.78 (1.13-2.81)
10-min	0.675 (0.511-0.892)	0.815 (0.617-1.05)	1.03 (0.785-1.35)	1.22 (0.919-1.63)	1.50 (1.09-2.06)	1.72 (1.22-2.43)	1.95 (1.35-2.83)	2.20 (1.48-3.27)	2.53 (1.65-3.90)	2.80 (1.77-4.42)
15-min	0.851 (0.644-1.12)	1.02 (0.776-1.33)	1.29 (0.984-1.70)	1.53 (1.15-2.04)	1.86 (1.36-2.56)	2.13 (1.51-3.01)	2.42 (1.67-3.51)	2.73 (1.83-4.06)	3.17 (2.06-4.88)	3.52 (2.23-5.56)
30-min	1.20 (0.910-1.59)	1.44 (1.09-1.87)	1.81 (1.38-2.38)	2.14 (1.60-2.85)	2.60 (1.89-3.56)	2.96 (2.10-4.18)	3.35 (2.31-4.86)	3.79 (2.55-5.64)	4.42 (2.87-6.82)	4.94 (3.12-7.80)
60-min	1.56 (1.18-2.06)	1.88 (1.43-2.44)	2.38 (1.81-3.13)	2.82 (2.12-3.76)	3.45 (2.50-4.73)	3.95 (2.79-5.57)	4.49 (3.10-6.51)	5.11 (3.43-7.60)	6.02 (3.91-9.28)	6.77 (4.29-10.7)
2-hr	1.88 (1.43-2.48)	2.33 (1.75-2.96)	2.99 (2.28-3.89)	3.59 (2.71-4.76)	4.48 (3.28-6.12)	5.22 (3.71-7.34)	6.05 (4.19-8.71)	7.01 (4.72-10.3)	8.43 (5.49-12.9)	9.63 (6.12-15.1)
3-hr	2.06 (1.57-2.70)	2.59 (1.94-3.26)	3.36 (2.56-4.35)	4.07 (3.08-5.39)	5.16 (3.78-7.03)	6.07 (4.34-8.52)	7.12 (4.94-10.2)	8.34 (5.63-12.3)	10.2 (6.63-15.5)	11.7 (7.45-18.3)
6-hr	2.37 (1.82-3.10)	3.04 (2.28-3.78)	3.99 (3.06-5.14)	4.91 (3.73-6.46)	6.31 (4.66-8.58)	7.53 (5.41-10.5)	8.95 (6.23-12.7)	10.6 (7.17-15.4)	13.1 (8.56-19.8)	15.2 (9.71-23.5)
12-hr	2.69 (2.07-3.49)	3.50 (2.62-4.31)	4.63 (3.56-5.93)	5.73 (4.37-7.51)	7.43 (5.51-10.0)	8.91 (6.42-12.4)	10.6 (7.44-15.1)	12.7 (8.61-18.3)	15.8 (10.4-23.6)	18.4 (11.8-28.3)
24-hr	3.03 (2.34-3.92)	3.97 (2.99-4.87)	5.30 (4.09-6.76)	6.59 (5.05-8.59)	8.56 (6.37-11.5)	10.3 (7.44-14.2)	12.3 (8.63-17.3)	14.7 (10.0-21.1)	18.3 (12.1-27.2)	21.4 (13.8-32.5)
2-day	3.44 (2.67-4.43)	4.51 (3.42-5.52)	6.03 (4.68-7.66)	7.48 (5.76-9.71)	9.71 (7.25-13.0)	11.6 (8.45-15.9)	13.9 (9.77-19.3)	16.5 (11.3-23.5)	20.5 (13.5-30.2)	23.9 (15.4-35.9)
3-day	3.70 (2.88-4.75)	4.85 (3.70-5.94)	6.50 (5.06-8.24)	8.06 (6.22-10.4)	10.4 (7.81-13.9)	12.5 (9.08-17.0)	14.8 (10.5-20.6)	17.5 (12.0-24.9)	21.6 (14.3-31.7)	25.1 (16.2-37.6)
4-day	3.94 (3.08-5.06)	5.15 (3.94-6.31)	6.88 (5.37-8.71)	8.52 (6.58-11.0)	11.0 (8.24-14.6)	13.1 (9.56-17.8)	15.5 (11.0-21.5)	18.3 (12.6-25.9)	22.4 (14.9-32.7)	25.8 (16.8-38.6)
7-day	4.54 (3.55-5.79)	5.84 (4.50-7.17)	7.74 (6.07-9.78)	9.51 (7.38-12.2)	12.2 (9.17-16.1)	14.4 (10.6-19.5)	16.9 (12.0-23.4)	19.7 (13.6-27.8)	23.8 (15.9-34.5)	27.1 (17.6-40.2)
10-day	5.03 (3.95-6.41)	6.40 (4.97-7.88)	8.44 (6.63-10.6)	10.3 (8.00-13.2)	13.1 (9.86-17.2)	15.4 (11.3-20.8)	17.9 (12.8-24.6)	20.7 (14.4-29.1)	24.7 (16.5-35.7)	28.0 (18.2-41.3)
20-day	6.55 (5.17-8.31)	8.03 (6.35-10.0)	10.4 (8.20-13.0)	12.4 (9.66-15.8)	15.2 (11.5-19.9)	17.5 (12.9-23.4)	20.0 (14.3-27.3)	22.7 (15.8-31.6)	26.6 (17.9-38.1)	29.8 (19.5-43.6)
30-day	7.80 (6.17-9.86)	9.36 (7.47-11.7)	11.9 (9.47-15.0)	14.0 (11.0-17.9)	17.0 (12.8-22.0)	19.2 (14.1-25.5)	21.6 (15.5-29.3)	24.2 (16.9-33.6)	28.0 (18.9-40.0)	31.2 (20.4-45.3)
45-day	9.52 (7.55-12.0)	11.2 (9.02-14.1)	14.1 (11.2-17.7)	16.4 (12.9-20.8)	19.5 (14.8-25.3)	21.9 (16.1-28.9)	24.2 (17.4-32.8)	26.8 (18.8-37.0)	30.3 (20.5-43.1)	33.1 (21.8-47.9)
60-day	11.0 (8.77-13.9)	12.9 (10.4-16.2)	16.0 (12.8-20.1)	18.5 (14.5-23.4)	21.8 (16.6-28.2)	24.3 (18.0-32.1)	26.7 (19.2-36.1)	29.2 (20.5-40.2)	32.5 (22.0-45.9)	34.9 (23.0-50.3)

[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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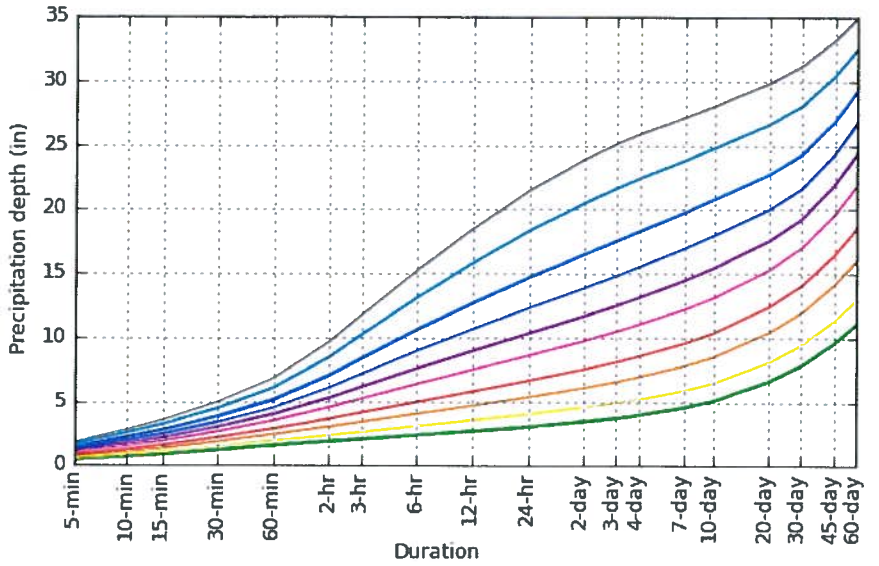
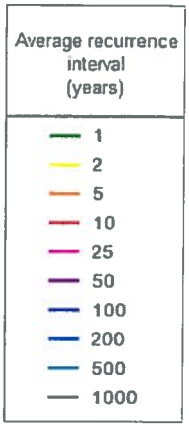
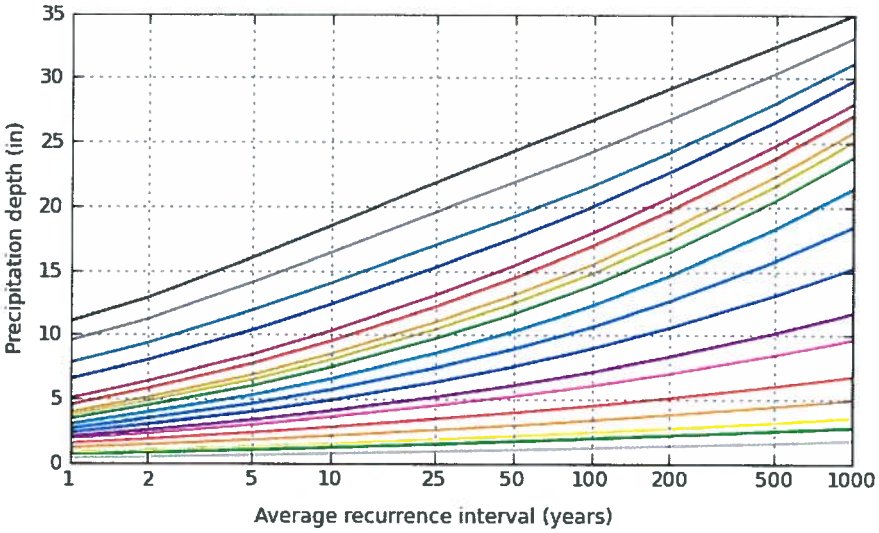
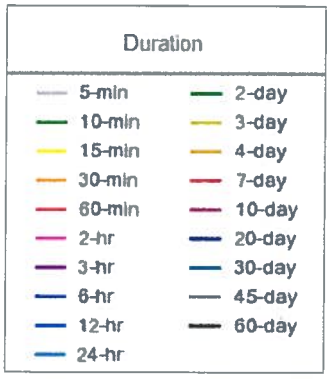
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 30.2776°, Longitude: -98.4119°









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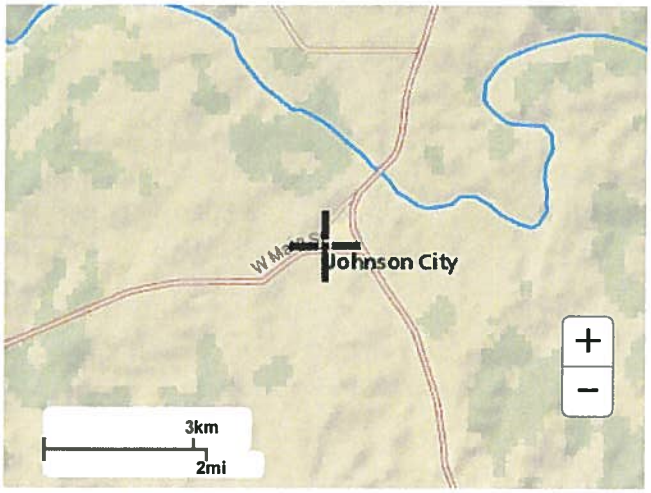
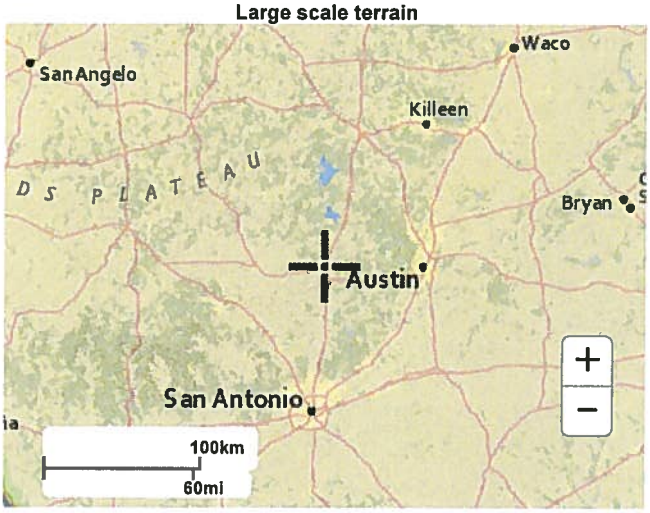
Maps & aerials

Small scale terrain

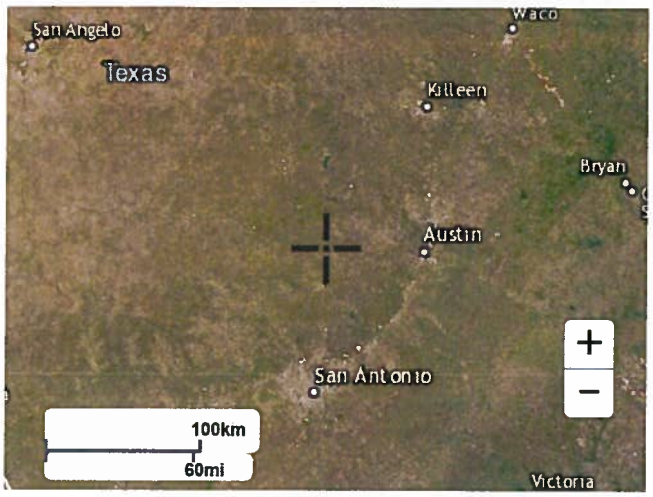


Large scale terrain



Large scale map

Large scale aerial



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