

CITY OF WESLACO
A REGULAR MEETING OF THE
PLANNING & ZONING
COMMISSION
SEPTEMBER 1, 2021, 5:30 P.M.
PCE CONFERENCE ROOM
255 S. KANSAS AVENUE

David Hernandez, Chairman
Lonnie Berry, Vice-Chairman
Miles Bullion, PZ Commissioner
Randy Summers, PZ Commissioner
Adrian Torres, PZ Commissioner
Jose Treviño, PZ Commissioner
Jim Forward, PZ Commissioner

**CITY OF WESLACO
PLANNING & ZONING COMMISSION
REGULAR MEETING
AUGUST 11, 2021**

On Wednesday, August 11, 2021, at 5:30 pm., the Planning and Zoning Commission of the City of Weslaco, Texas, convened in regular session in person

The following commissioners were present:

David Hernandez	Chairman
Lonnie Berry	Vice-Chairman
Jose Treviño	Commissioner
Miles Bullion	Commissioner
Randy Summers	Commissioner
Jim Forward	Commissioner
Adrian Torres	Commissioner
Jose Pedraza	Asst. Planning Director
Kayla Arevalo	Secretary

Also, present were Jessie Valderas, Fire Inspector; Rolando Gonzalez, Chief Building Official; and citizens.

I. CALL TO ORDER:

Chairman Hernandez called the meeting to order and welcomed everyone in the audience.

A. Roll Call/Establish a Quorum

Mr. Pedraza called the roll call noting that, Commissioner Torres was absent at time of roll call, a quorum was established.

II. PUBLIC COMMENTS

There were no comments received.

III. APPROVAL OF MINUTES

A. July 7, 2021 Regular Meeting

Commissioner Summers made a motion to approve the minutes of July 7, 2021, with the noted change seconded by Commissioner Berry. Motion carried.

IV. PUBLIC HEARING

A. Discussion and consideration to rezone 2526 N International Blvd. Also being an 8.9-acre tract of land out of farm tract 1056, Block 116, West and Adams Tract Subdivision, Weslaco, Hidalgo County, and Texas R-1 One family Dwelling district to B-2 secondary and highway business district.

Mr. Pedraza stated that notice appeared in The Monitor on July 26, 2021, there were three (3) property owners notified within the 200-foot radius, no letters for or against the item were received. Staff recommended approval based on 2040 land use map.

Commissioner Forward made a motion to close the Public Hearing, seconded by Commissioner Berry. Motion carried.

Commissioner Forward made a motion to approve the rezone request, seconded by Commissioner Summers. Motion carried.

B. Discussion and consideration to approve rezone approve rezone 3700 E Sugarcane. Also being a 137-acre tract of land out of farm tract 1056, 1057 and 1058, Block 116, West and Adams Tract Subdivision, Weslaco, Hidalgo County, and Texas R-1 One family Dwelling district to I Industrial district

Mr. Pedraza stated that notice appeared in The Monitor on July 26, 2021, there were sixty (60) property owners notified within the 200-foot radius, no letters for or against the item were received. Staff recommended approval of rezone based on 2040 land use map.

Commissioner Berry made a motion to close the Public Hearing, seconded by Commissioner Treviño. Motion carried.

Commissioner Berry made a motion to approve the rezone request, seconded by Commissioner Treviño. Motion carried.

C. Discussion and consideration to approve rezone 1912 Mile 41/2 road west. Also being West Tract E347.24'-W629.50'-S118.93', FT 31, .95 AC GR .88 AC NET, Weslaco, and Texas R-1 One family Dwelling district to B-1 Neighborhood business district.

Mr. Pedraza stated that notice appeared in The Monitor on July 26, 2021, there were five (5) property owners notified within the 200-foot radius, no letters for or against the item were received. Staff recommended approval based on the 2040 land use map.

Commissioner Bullion made a motion to close the Public Hearing, seconded by Commissioner Berry. Motion carried.

Commissioner Summers made a motion to approve the Rezone Request, seconded by Commissioner Bullion. Motion carried.

D. Discussion and consideration to approve Conditional Use Permit to obtain an On-Premises Retail Dealer's Wine and Beer Retailer's permit at 915 E IH 2 suite 100. Also being Lot 1, Lowe's of Weslaco, Weslaco, Hidalgo County, and Texas.

Mr. Pedraza stated that notice appeared in The Monitor on July 26, 2021, there were seven (7) property owners notified within the 200-foot radius, no letters for or against the item were received. Staff recommended approval of the conditional use permit.

Commissioner Forward made a motion to close the Public Hearing, seconded by Commissioner Berry. Motion carried.

Commissioner Berry made a motion to approve the Conditional Use Permit, seconded by Commissioner Treviño. Motion carried.

E. Discussion and consideration to approve Conditional Use Permit to obtain an On-Premises Retail Dealer's Wine and Beer Retailer's permit, and Food and Beverage Certificate at 1605 N. Texas. Also being Lot 10, Frost Proof Heights, Weslaco, Hidalgo County, and Texas.

Commissioner Torres arrived at the dais 5:38pm

Mr. Pedraza stated that notice appeared in The Monitor on July 26, 2021, there were Twenty-seven (27) property owners notified within the 200-foot radius, no letters for or against the item were received. Staff recommended approval of the conditional use permit.

Commissioner Berry made a motion to close the Public Hearing, seconded by Commissioner Bullion. Motion carried.

Commissioner Bullion made a motion to approve the Conditional Use Permit, seconded by Commissioner Summers. Motion carried.

V. DISCUSSION AND CONSIDERATION

A. Discussion and consideration for the Preliminary Plat for Petra Garza Subdivision– being a 1.00-acre tract of land out of Farm Tract 131, Block 162, West Tract Subdivision, Weslaco, Hidalgo County, Texas Located on the NW Corner of the intersection of N Border Ave and Valley Trace Drive. Possible Action.

Mr. Pedraza stated that this item is a two (2) lot subdivision and is located inside the City of Weslaco. This subdivision is being serviced with water by the City of Weslaco through a 12" waterline and sewer by City of Weslaco services through an 8" sewer line. The property is within a Flood Zone "X".

Commissioner Summers made the motion to approve the Preliminary plat, seconded by Commissioner Torres. Motion carried

B. Discussion and consideration for the Preliminary Plat for White Rose Subdivision– being a 4.644-acre tract of land out of Farm Tract 31, West Tract Subdivision, Weslaco, Hidalgo County, Texas Located approximately 2000ft North of Intersection Frontage Road & Bridge Ave. Possible Action.

Mr. Pedraza stated that this item is a two (2) lot subdivision is located inside the City of Weslaco. This subdivision is being serviced with water by the City of Weslaco through an 18" waterline and sewer by City of Weslaco services through an 8" sewer line. The property is within a Flood Zone "B". Staff recommended approval of the Preliminary Plat.

Commissioner Bullion made the motion to deny the Preliminary plat based on pending questions for the Engineering Department, seconded by Commissioner Treviño. Motion carried.

C. Discussion and consideration for the final Plat for South Point Subdivision– being a resubdivision of 12.889 acres being all of lot 2 VBMH Subdivision, and out of Farm Tract 133, West and Adams Tract Subdivision, Weslaco, Hidalgo County, Texas located on between N Westgate Dr. and Border Ave. East Expressway 83

Mr. Pedraza stated that this item is a seven (7) lot subdivision and is located inside the City of Weslaco. This subdivision is being serviced with water by the City of Weslaco through an 8” waterline and sanitary sewer by City of Weslaco services through a 10” sewer line. The property is within a Flood Zone “B”. Applicant has added the plat note regarding outparcel “A”. Staff recommended approval of the Final Plat.

Commissioner Torres made the motion to approve the Final plat, seconded by Commissioner Summers. Motion carried

D. Discussion and consideration for the Final Plat for Pecan Grove No.3 Subdivision– being a 4.73-acre tract out of Farm Tract 1046, West and Adams Tract Subdivision, Weslaco, Hidalgo County, Texas located on East of Pecan Grove No.2.

Mr. Pedraza stated that this item is a seventeen (17) lot subdivision and is located inside the City of Weslaco. This subdivision is being serviced with water by the City of Weslaco through an 8” waterline and sanitary sewer by City of Weslaco services through an 8” sewer line. The property is within a Flood Zone “X”. Applicant is requesting a variance for off-site drainage. Staff has received letters of support for off-site drainage from the irrigation and drainage district. Staff recommended approval of the Final Plat and compliance with the ordinance for the variance request.

Commissioner Berry made the motion to approve the Final Plat and variance request, seconded by Commissioner Bullion. Motion carried

E. Discussion and consideration for a six-month extension of the Final Plat for San Jacinto Estates No. 10 Phase II – being a 42.25-acre tract of land being all of Farm Tract 87 and 2.25 acres out of Farm Tract 94, West and Adams Tract Subdivision, Hidalgo County, Texas. Possible Action.

Mr. Pedraza stated that this item is a proposed forty-eight (48) lot subdivision outside the City of Weslaco city limits. Final Plat approval was set to expire on July 21, 2021. Notice to proceed has been issued for the development and is currently under construction. Staff recommended approval.

Commissioner Bullion made the motion to approve the extension until September 21st, when engineering can provide a status report, seconded by Commissioner Treviño. Motion carried.

F. Discussion and consideration for a six-month extension for the Final Plat for San Pedro Estates Subdivision – being 20-acre tract of land out of Farm Tract 647, West & Adams Tract Subdivision, Hidalgo County, Texas. Approximately 2,964 ft. North of the Intersection of 18th and Milanos Rd. Possible Action

Mr. Pedraza stated that this item is a proposed sixteen (16) lot subdivision outside the City of Weslaco city limits. Final Plat approval is set to expire on September 21, 2021. Notice to proceed has been issued for this development and is currently under construction. Staff recommended approval.

Commissioner Berry made the motion to approve the six-month extension, seconded by Commissioner Forward. Motion carried

VI. ADJOURNMENT

There being no further business to come before the Planning and Zoning Commission, Chairman Hernandez adjourned the meeting at 6:00 p.m.

Planning and Zoning Commission

David Hernandez, Chairman

Lonnie Berry, Vice-Chairman

Randy Summers, Commissioner

Miles Bullion, Commissioner

Jose Treviño, Commissioner

Adrian Torres, Commissioner

Jim Forward, Commissioner

ATTEST:

Kayla A. Arevalo, Planning Secretary



Planning & Zoning Commission Standardized Agenda Request Form

Date of Meeting: September 1, 2021	Agenda Item No. (to be assigned by PCE): IV.A.
From: Rebekah de la Fuente, Planning Director, on behalf of SAMES.	
Subject/Agenda Item: Discussion and consideration for the Preliminary Plat for Weslaco Industrial Park – being a 146.09c.00 acre tract of land out of acre tract of land out of farm tract 1056, 1057 and 1058, Block 116, West Tract Subdivision, Weslaco, Hidalgo County, Texas Located on the Northeast corner of intersection Mile 9 & FM 1015. Possible Action.	
Discussion/Overview: The proposed twenty (20) lot subdivision is located outside the City of Weslaco. This subdivision is being serviced with water by North Alamo Water Supply Company through an 8" waterline and sewer by City of Weslaco services through a 10" sewer line. The property is within a Flood Zone "X".	
If item requires Publication Notice, provide date and periodical of publication; indicate if comments received from letters mailed to property owners: N/A	
Staff recommendation for Commission's Action: Staff recommends approval of Preliminary Plat.	
Additional Action Prompted: ☒ Mayor's Signature ☐ Public Hearing ☐ Budget Amendment ☐ Resolution ☐ Ordinance – First Reading ☐ Ordinance – Final Reading	
Advisory Review, (if any): (name of board/committee, date of action, recommendation): N/A	
If item previously considered, provide date and action by Commission: N/A	
Attachments,(if any): Application for Subdivision platting, Staff's comments, Drainage Report, Subdivision plat and Utility layout.	
Responsibilities upon Commission's Action: Planning staff will advise applicant.	



SUBDIVISION PLATTING APPLICATION

PIAT-000107-2021

The Planning & Zoning Commission meets every 1st Wednesday of each month at 5:30 pm.

The City Commission meets every 1st and 3rd Tuesday of each month at 5:30 pm

FILE NO. _____

This form shall be completed by the Property Owner or Applicant and submitted to the Planning Department along with the required number of copies of the respective plat, review fee and all other required information listed below and in the Subdivision Ordinance. The submittal of an application does not constitute acceptance for processing until the staff reviews and determines the application is complete.

STAFF USE ONLY

☐ Single Lot Variance ☐ Minor Plat ☐ Planned Unit Development ☐ Standard Subdivision

GENERAL INFORMATION

Name of Subdivision: Weslaco Industrial Park

Location: Located on the Northeast corner of intersection Mile 9 & FM 1015

Legal Description: West and Adams Tract Subdivision 146.09 Acre tract of land out of Farm tract 1056, 1057, and 1058 BLK 116

Is subdivision inside city limits? ☐ YES ☒ NO

If subdivision is in the ETJ, indicate? ☒ 3.5 Mile ☐ 5 Mile

If no submit letter of Annexation (Contiguous or Consensual)

Existing Zoning: Agriculture

Existing Land Use: Agriculture Proposed Land Use: Commercial & Industrial

Number of Lots Proposed: 20 Gross Acreage: 146.09

Title Report Submitted: ☒ YES ☐ NO

OWNER INFORMATION

Owner's Name: The Economic Development Corporation of Weslaco Telephone: 956-969-0838

Address: 275 S. Kansas Ave. Suite A

Fax: _____

City: Weslaco State: TX Zip: 78596 E-mail: SValdez@weslacoedc.com

ENGINEER INFORMATION

Name: SAMES, Inc. Telephone: 956-702-8880

Address: 200 S. 10th St. Suite 1500

Fax: _____

City: McAllen State: TX Zip: 78501 E-mail: nlopez@samengineering-surveying.com

UTILITY PROVISIONS

Will proposed subdivision connect to:

- ☒ YES ☐ NO Water Provision: North Alamo Water Supply
- ☒ YES ☐ NO Wastewater Provision: City of Weslaco
- ☒ YES ☐ NO Electric Company: Magic Valley Corporation

☒ YES ☐ NO Phone Utility _____	☒ YES ☐ NO Gas Utility _____	☒ YES ☐ NO Cable Utility _____
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Proposed subdivision is in the following districts:

☒ YES ☐ NO Drainage District <u>HCDD1</u>	☒ YES ☐ NO Irrigation District <u>HCCID9</u>
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Has the property been assessed as flat rate irrigable property: ☒ YES ☐ NO

Have Water Rights been conveyed to City/Water Supplier? ☐ YES ☒ NO

(Attach written proof of such assessment or that it has never been assessed as such a property) If **YES**, attach an estimate from the irrigation district of the proportional water rights for the subdivision as calculated under Texas Water Code § 49.505.

SUBMITTALS REQUIRED FOR MINOR PLAT REVIEW

- _____ **Two (2)** sets of plats **folded and stapled** (24 x 36) and forward a copy in PDF format to mhinojosa@weslacotx.gov & rdelafuente@weslacotx.gov
- _____ **\$355.00** Planning Review fee
- _____ One 11" X 17" reduced copy of plat
- _____ Plat Layout
- _____ Existing & Proposed Easements
- _____ Existing & Proposed ROW
- _____ Existing & Proposed Drainage Easements
- _____ Contours
- _____ Flood Zones
- _____ Adjoiners
- _____ Existing street names
- _____ Drainage plans and calculations with engineer's seal
- _____ Elevations
- _____ Flood directional arrows
- _____ Detention areas
- _____ Street names
- _____ Proof of ownership of the property
- _____ If septic tank system required, submit soil evaluation report
- _____ Water Rights associated with the property
- _____ Tax Receipt for all taxing entities showing that taxes are paid in full

SUBMITTALS REQUIRED FOR PRELIMINARY (P & Z)

- X _____ **Twelve (12)** sets of preliminary plat **folded and stapled** (24 x 36) and forward a copy in PDF format to mhinojosa@weslacotx.gov & rdelafuente@weslacotx.gov
- X _____ **\$350.00** (one time fee for preliminary and final plat)
- X _____ One 11" X 17" reduced copy of plat
- X _____ Plat Layout
- _____ Existing & Proposed Easements
- _____ Existing & Proposed ROW
- _____ Existing & Proposed Drainage Easements

- ☐ Contours
- ☐ Flood Zones
- ☐ Adjoiners
- ☐ Existing & Proposed street names
- X ☐ Utility Layout
- ☐ Existing & Proposed Utilities
- ☐ Proposed Fire Hydrants
- ☐ Adjoiners
- ☐ Street names
- X ☐ Drainage plans and calculations with engineer's seal
- ☐ Elevations
- ☐ Flood directional arrows
- ☐ Detention areas
- ☐ Street names
- X ☐ Proof of ownership of the property
- N/A ☐ If septic tank system required, submit soil evaluation report
- ☐ Water Rights associated with the property
- X ☐ Tax Receipt for all taxing entities showing that taxes are paid in full
- X ☐ Number of fire hydrants proposed for subdivision
- X ☐ Trip Generation Worksheet

SUBMITTALS REQUIRED FOR FINAL (P & Z) **Will not apply to Single Lot Variance**

- ☐ Twelve (12) sets of plans **FOLDED & STAPLED** (24 x 36) & PDF copy with all corrections
- ☐ Plats to be sealed by Professional Engineer
- ☐ Approved Drainage Report
- ☐ Traffic Impact Analysis (If required)

SUBMITTALS REQUIRED FOR FINAL (City Commission)

- ☐ One set of 8 1/2 x 11 of plat and utilities with all corrections done

SUBMITTALS REQUIRED FOR PRE-CONSTRUCTION MEETING

- ☐ Seven (7) full sets of construction plans 24 x 36 and one (1) 11 x 17 with plan & profile.
- ☐ Engineering cost estimates for 3% geotechnical testing fees and 2% inspection fees
- ☐ Notice of Intent
- ☐ SW3P

SUBMITTALS REQUIRED FOR RECORDING OR HIDALGO COUNTY PLANNING

- ☐ Electronic file of final plat and as-builds
- ☐ Reproducible plat to be recorded with all required signatures
- ☐ 3% geotechnical testing fees or negotiated Material Testing fee by City, whichever is higher
- ☐ 2% inspection fee
- ☐ Park Fees
- ☐ Checks or Receipts: HCCID #9; HCDD #1; County Clerk
- ☐ Tax certificates
- ☐ Memo from engineering inspector releasing subdivision
- ☐ Water Rights associated with the property dedicated and assigned to City of Weslaco or payment of fees sufficient to meet the needs necessitated and attributable to development
- ☐ 30 Year Water and 30 Year Sewer Service Agreements
- ☐ Park dedication/Fees in lieu of

SUBMITTALS REQUIRED FOR RECORDING BY SECURITY

- ☐ Sealed engineering cost estimates
- ☐ Letter of Credit/Performance Bond/Escrow

** Any revisions requested would require resubmission of plats and reduced copy reflecting changes.

AUTHORIZATION AND ACKNOWLEDGEMENTS

I certify that I am the actual owner of the property described above and this application is being submitted with my consent (include corporate name if applicable); and the following person listed below is my authorized agent to act on my behalf.

I certify that the above information is correct and complete to the best of my knowledge. I understand that I must comply with all applicable local, state, and federal regulations.

Owner Printed Name: _____

Owner Signature: _____ Date: _____

_____ is the authorized agent

Authorized Agent Signature: Ally Mendez Date: 8/9/21

Authorized Agent Printed Name: Ally Mendez

THIS PAGE FOR STAFF USE ONLY

Date Received: _____ Received By: _____ Date Paid: _____

P & Z Commission Approval on Preliminary Plat: _____

P & Z Commission Approval on Final Plat: _____

City Commission Approval on Final Plat: _____

Preconstruction Meeting Date: _____

Date Recorded: _____ Instrument No. _____

General Comments: _____

PROPOSED MID-VALLEY INTERNATIONAL INDUSTRIAL PARK SUBDIVISION

Weslaco, Texas

DRAINAGE REPORT

Prepared For:

**Hidalgo County Drainage District #1
902 N. Doolittle
Edinburg, Texas 78541**

Prepared By:



Jemaldm
08/09/21

Reg. No. F-10602

**SAM Engineering & Surveying
200 S. 10St, Ste. 1500
McAllen, TX 78501
Tel 956.702.8880; Fax 956.702.8883**

August 2021

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SAM Engineering and Surveying



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Phone: (956) 702-8880 Fax: (956) 702-8883

DRAINAGE REPORT

Mid-Valley International Industrial Park Subdivision Weslaco, Texas

1. PROJECT DESCRIPTION

A. Site Summary

The proposed Weslaco Industrial Park Subdivision is a 146.1 gross acre industrial subdivision out of Farm Tract 1056, Farm Tract 1057, and Farm Tract 1058, Adams Tract Subdivision, an addition to Hidalgo County, Texas, as per map or plat thereof recorded in Volume 2, Page 34-37, Map Records of Hidalgo County, Texas. The proposed subdivision is located at the Northeast corner of F.M. 1015 and Mile 9 Rd N and will be voluntarily annexed to be within the City Limits of Weslaco, Texas.

B. Flood plain

The subject property is located in Flood Zone "X" (Unshaded), defined as Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood according to FEMA's Flood Rate Insurance Rate Map, Community-Panel Number 480334 0450 C, map revised June 6, 2000. See attached FEMA FIRM map with project location and community panel for reference.

C. Soil Conditions

According to the Soil Survey Report prepared for Hidalgo County by the U.S.D.A Soil Conservation Services, the site consists of mostly (28) Hidalgo sandy clay loam, 0-1 percent slopes (approximately 57.7% of site), (25) Hidalgo fine sandy loam, 0-1 percent slopes (approximately 19.5% of site), and (52) Raymondville clay loam, 0-1 percent (approximately 22.9% of site). Soil map units (28) Hidalgo sandy clay loam and (25) Hidalgo fine sandy loam are classified as part of Hydrologic Group 'B', while soil map unit (52) Raymondville clay loam is classified as being part of Hydrologic Group 'C'.

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2. SITE HYDROLOGY ANALYSIS

A. Calculation Methods

Hydrology analysis was conducted using Hydrologic Engineering Center software, HEC-HMS. This software will simulate the overall hydrologic process over the project watershed area and produce and anticipated watershed volume for a 10, 50, and 100-year frequency storm event. Various design parameters control the software output and include such information such as watershed characteristics and soil type properties, and frequency storm data. The characteristics of the project sub-basins identified to contribute a total watershed of approximately 146-acres were inputted into the HEC-HMS model and are more specifically detailed as follows:

The Soil Conservation Service (SCS) Curve Number method was selected and utilized to calculate incremental precipitation losses during a storm event. A composite curve number (CN) was determined for each sub-basin representative of its contributing soil groups. The CN is based on soil type, land use, and vegetation cover of the watershed. The CN values determined may also be adjusted for antecedent moisture conditions: dry conditions, CN(I); average conditions/calculated, CN(II); and wet conditions CN (III). In consideration of the project area and in accordance with the TxDOT Hydraulic Design Manual, CN values were adjusted for dry antecedent moisture conditions with the following equation:

$$CN(I) = \frac{4.2CN(II)}{10 - 0.058CN(II)}$$

The calculation of initial abstraction accounts for the interception of rainfall by vegetation, infiltration during storm and surface storage. Initial abstraction was estimated with the following formula:

$$Ia = 0.2S$$

$$\text{Where } S \text{ is determined by } S = z\left(\frac{100}{CN} - 1\right)$$

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Determination of the percentage of impervious coverage for each sub-basin was considered separately as required by the software inputs and was determined by evaluation of existing land use designation. Input specifics established for each sub-basin can be found in Table 1 below:

Table 1: Loss Method Table

LOSS METHOD TABLE				
	Existing		Proposed	
Subbasin Identification	Curve Number	Impervious Cover (%)	Curve Number	Impervious Cover (%)
Subbasin 5A	76	3	88	72
Subbasin 6A	75	0	88	72

The determination of the watershed runoff of each sub-basin is calculated within the software by the selection of transform method, specifically a unit hydrograph method – the SCS Unit Hydrograph Transform method.

The watershed was modeled in HEC-HMS with a unit hydrograph PRF value of 484 (Standard) for all sub-basins, however for each sub-basin the corresponding Lag Time was calculated using the below formula:

$$T_{lag} = \frac{L^{0.8}(S + 1)^{0.7}}{1900(\%Slope)^{0.5}}$$

Where:

T_{lag} = Lag Time (hr)

L = Length of longest drainage path (ft)

S = (1000/CN)-10

CN = Curve Number

% Slope = Average Watershed Slope (%)

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The meteorological method utilized was the Precipitation – Frequency Storm method which models synthetic storm events from input variables such as intensity and duration for specific exceedance probability storms. As required by HCDD1, NOAA Atlas 14 was utilized for the most updated storm precipitation frequency estimates. See Table 2 below for precipitation frequency estimates obtained for a 10 and 50-year storm events. This information was input into the meteorological model, stated in inches to represent anticipated rainfall depth at various time intervals during a storm duration.

Table 2: Rainfall Depth Estimates (Inches)

RAINFALL DEPTH ESTIMATES			
YEAR STORM			
Duration	10 YR	50 YR	100 YR
15 min	1.59	2.17	2.42
60 min	2.95	4.03	4.51
2 hr	3.63	5.14	5.85
3 hr	4.03	5.84	6.72
6 hr	4.73	7.05	8.22
12 hr	5.47	8.25	9.68
24 hr	6.24	9.48	11.1

The combination of meteorological characteristics and watershed land surface conditions simulated in HEC-HMS, provided numerical results to quantify expected watershed runoff. According to the HEC-HMS output tables and the quality control reviews completed during the development of this report, SAM Engineering and Surveying determines the watershed for the project will produce peak flows as shown below in Table 3.

SAM Engineering and Surveying



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Table 3: Storm Event Peak Flow

STORM EVENT PEAK FLOW						
	Existing			Proposed		
	10 YR (cfs)	50 YR (cfs)	100 YR (cfs)	10 YR (cfs)	50 YR (cfs)	100 YR (cfs)
Subbasin 5A	70.9	122.2	147.2	349.7	486.1	545.9
Subbasin 6A	54.6	94.8	114.2	264.3	366.6	411.1

B. Existing Conditions

The subject project site is currently vacant and developed for agricultural use. Existing runoff is by overland flow and shallow concentrated flow in the easterly direction at a slope of approximately 0.25% to an existing drainage ditch #17, segment 0346 owned by Hidalgo and Cameron Counties Irrigation District #9 and maintained by Hidalgo County Drainage District #1. In accordance with City of Weslaco and H.C.D.D. No. 1 drainage policies, the existing 10-year pre-development storm water runoff was determined using the above-mentioned methodology. The total contributing 10-year pre-developed storm water runoff from this site is approximately 125.5 cfs (43.2 ac-ft).

C. Proposed Conditions

The proposed development will include 2 commercial (B-2) lots, 10 industrial (I) lots, and internal public access roadways. A summary of pre-developed and post-developed hydrologic conditions utilizing the HEC-HMS software is included in this report. Improvements in the form of roofs and impervious will increase the curve number from 75-76 to 88. A storm sewer system comprised of curb and gutter, storm drain inlets, and storm sewer piping will capture and convey post-development storm water runoff to a system of proposed regional linear detention areas. Ultimately, storm water runoff will discharge to drainage ditch #17, segment 0346 (owned by H.C.C.I.D. No. 9 and maintained by H.C.D.D. No. 1) located within the property at a rate not to exceed the existing pre-development 10-year storm runoff rate.

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200 South 10th Street, Suite 1500, McAllen, Texas 78501
Phone: (956) 702-8880 Fax: (956) 702-8883

In accordance with the City of Weslaco and H.C.D.D. No.1, the 50-year frequency storm event was utilized to determine the peak rate of post-development runoff for this site. As per the attached calculations, the anticipated post-development peak runoff rate is **852.7 cfs (109.1 ac-ft)**, for an increase of **727.2 cfs (65.9 ac-ft)**.

Therefore, it has been determined that a total of **2,870,600 cubic-feet (65.9 Ac.-ft.)** of storm water runoff will be required to be detained for the proposed development. To accomplish this, a portion, approximately **1,912,937 cubic-feet (43.92 ac-ft)**, of the total required volume will be detained within multiple linear detention ditches and one (1) detention pond within the proposed development. In addition to providing on-site detention areas, the increased peak storm water runoff rate will be mitigated by excavating approximately **909,097 cubic-feet (20.87 ac.-ft.)** of the existing drainage ditch #17, segment 0346 from an existing ditch cross section of 65 ft. to 150 ft. (refer to Drainage Layout, Section C, F & G).

3. CONCLUSION

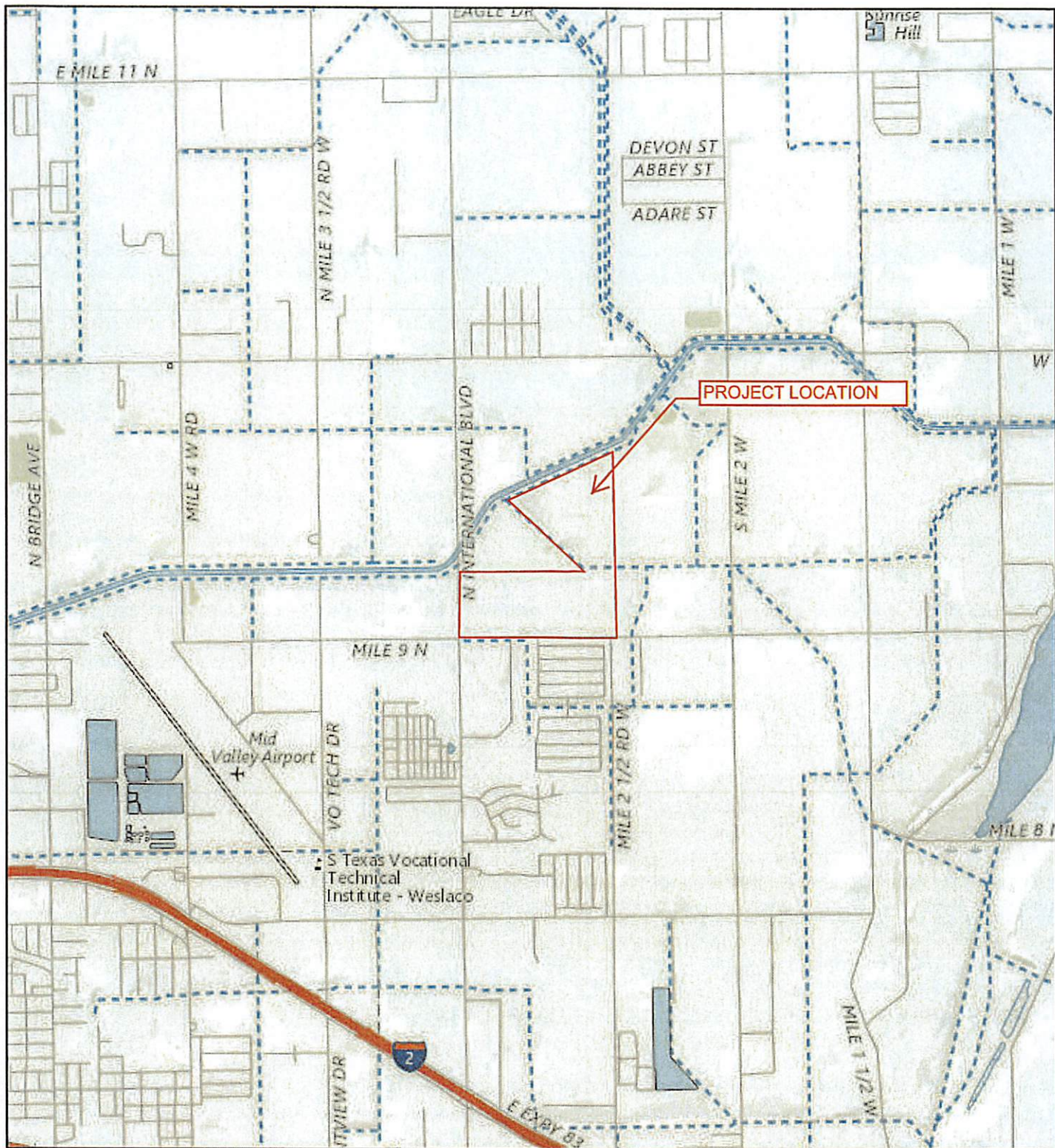
Adverse impacts were reviewed per the City of Weslaco and County of Hidalgo drainage policies. The proposed on-site detention facility will help detain flows on site to existing conditions; therefore, there will be no adverse drainage impact on the watershed downstream.

Jessica M. Maldonado, PE, PMP
SAMES, Inc.

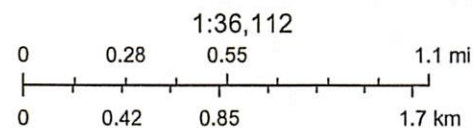


Maps

Weslaco Industrial Park - Location Map



5/25/2021, 3:21:14 PM



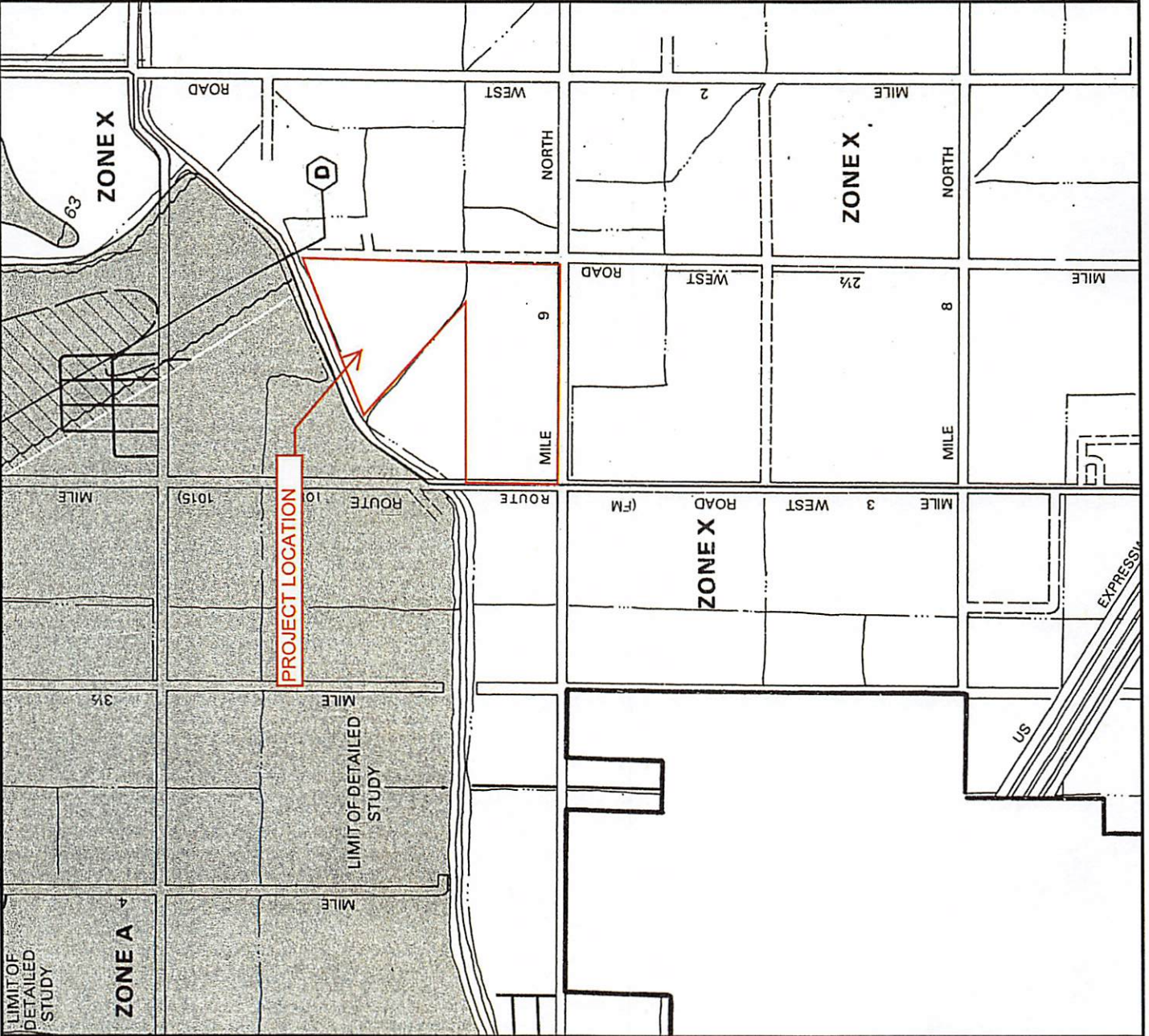
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census

USGS
2021 USGS

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620



APPROXIMATE SCALE



NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP

HIDALGO COUNTY,
TEXAS
(UNINCORPORATED AREAS)

(SEE MAP INDEX FOR PANELS NOT PRINTED)

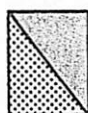
COMMUNITY-PANEL NUMBER
480334 0450 C
MAP REVISED:
JUNE 6, 2000



Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the NSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <https://msc.fema.gov>.

LEGEND



SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding; velocities also determined.

ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE



OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.



OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERST



Identified
1983



Identified
1990



Otherwise
Protected Areas

†Coastal barrier areas are normally located within or adjacent to special flood hazard areas.



Floodplain Boundary



Floodway Boundary



Zone D Boundary



Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.



Base Flood Elevation Line; Elevation in Feet*

513

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620



APPROXIMATE SCALE



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

HIDALGO COUNTY,
TEXAS
(UNINCORPORATED AREAS)

(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER

480334 0450 C

MAP REVISED:

JUNE 6, 2000



Federal Emergency Management Agency

This is an official FIRMMap showing a portion of the above-referenced flood map created from the MSF FIRMMap Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <http://msc.fema.gov>.

Drainage Calculations

Project: MV INT. INDUSTRIAL PARK Simulation Run: EXIST 10YR
Subbasin: Subbasin-5A (Phase I)

Start of Run: 29Jun2021, 00:00 Basin Model: EXIST CONDITIONS
End of Run: 02Jul2021, 00:00 Meteorologic Model: 10YR
Compute Time: 09Aug2021, 15:13:12 Control Specifications: Control 1

Volume Units: ☐ IN ☒ ACRE-FT

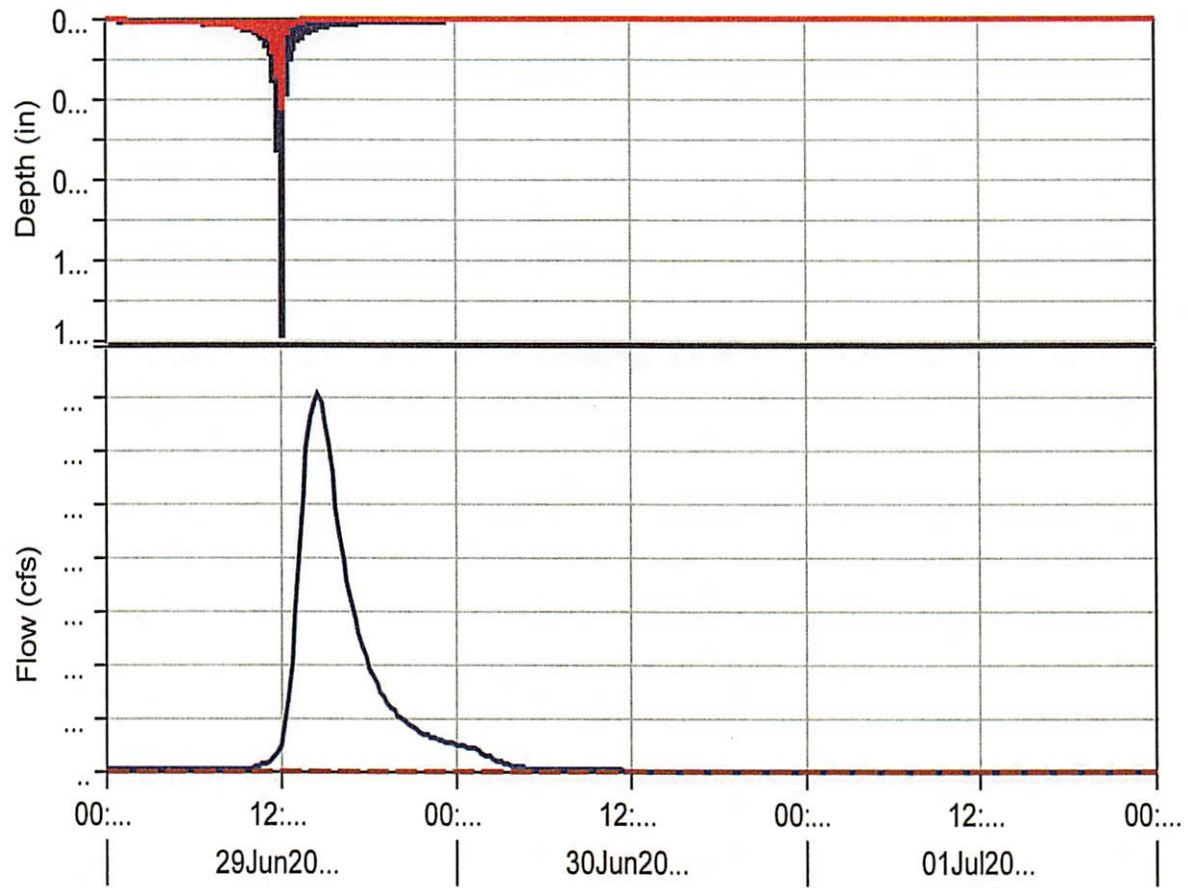
Computed Results

Peak Discharge:	70.9 (CFS)	Date/Time of Peak Discharge:	29Jun2021, 14:30
Precipitation Volume:	45.5 (ACRE-FT)	Direct Runoff Volume:	26.7 (ACRE-FT)
Loss Volume:	18.8 (ACRE-FT)	Baseflow Volume:	0.0 (ACRE-FT)
Excess Volume:	26.7 (ACRE-FT)	Discharge Volume:	26.7 (ACRE-FT)



Jessica M
08/09/21

Subbasin "Subbasin-5A (Phase I)" Results for Run "EXIST 10...



- Run:EXIST 10YR Element:Subbasin-5A (Phase I) Result:Precipitation
- Run:EXIST 10YR Element:Subbasin-5A (Phase I) Result:Precipitation Loss
- Run:EXIST 10YR Element:Subbasin-5A (Phase I) Result:Outflow
- Run:EXIST 10YR Element:Subbasin-5A (Phase I) Result:Baseflow

Project: MV INT. INDUSTRIAL PARK Simulation Run: EXIST 10YR
Subbasin: Subbasin-6A (PHASE II)

Start of Run: 29Jun2021, 00:00 Basin Model: EXIST CONDITIONS
End of Run: 02Jul2021, 00:00 Meteorologic Model: 10YR
Compute Time: 09Aug2021, 15:13:12 Control Specifications: Control 1

Volume Units: ☐ IN ☒ ACRE-FT

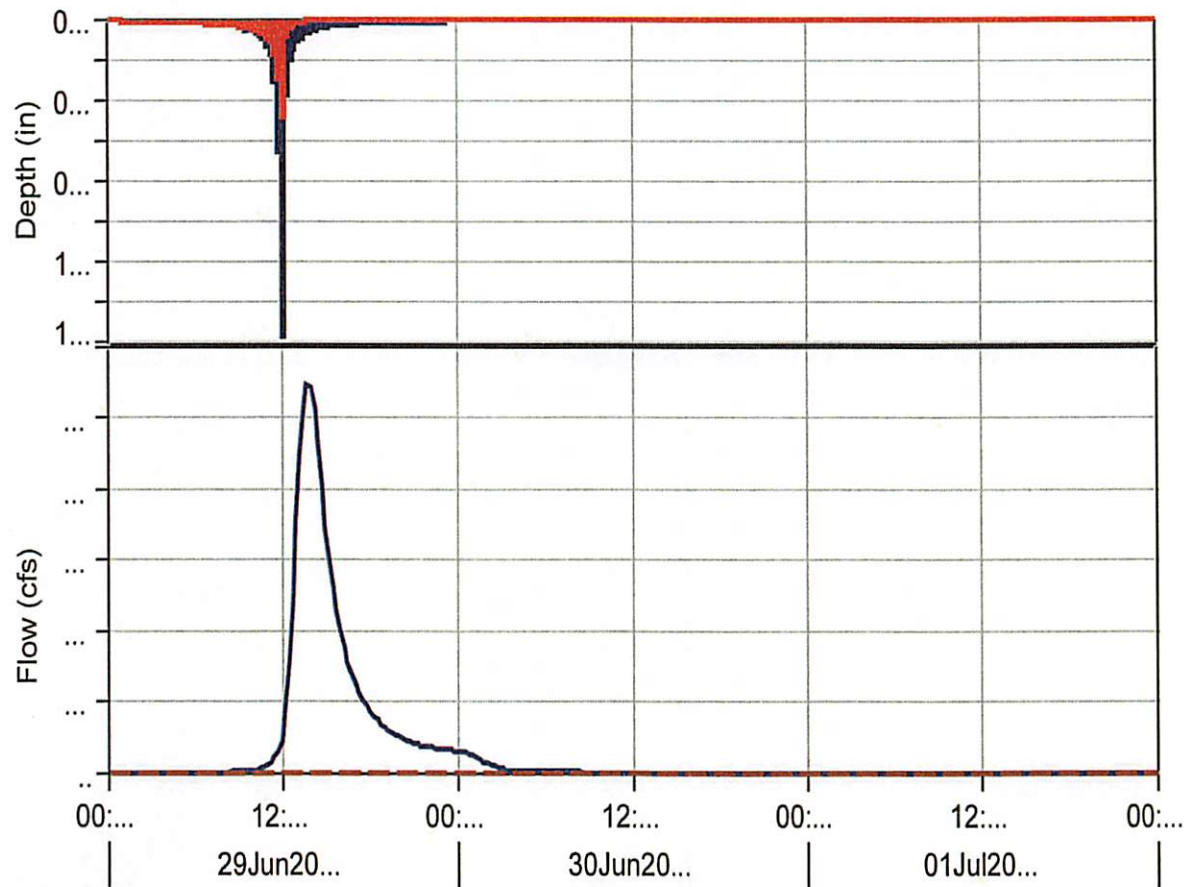
Computed Results

Peak Discharge:	54.6 (CFS)	Date/Time of Peak Discharge:	29Jun2021, 13:45
Precipitation Volume:	29.6 (ACRE-FT)	Direct Runoff Volume:	16.5 (ACRE-FT)
Loss Volume:	13.1 (ACRE-FT)	Baseflow Volume:	0.0 (ACRE-FT)
Excess Volume:	16.5 (ACRE-FT)	Discharge Volume:	16.5 (ACRE-FT)



Jeniam
08/09/21

Subbasin "Subbasin-6A (PHASE II)" Results for Run "EXIST 10Y...



- Run:EXIST10YRElement:Subbasin-6A(PHASEII)Result:Precipitation
- Run:EXIST10YRElement:Subbasin-6A(PHASEII)Result:Precipitation Loss
- Run:EXIST10YRElement:Subbasin-6A(PHASEII)Result:Outflow
- Run:EXIST10YRElement:Subbasin-6A(PHASEII)Result:Baseflow

Project: MV INT. INDUSTRIAL PARK Simulation Run: PROP 50YR
Subbasin: Subbasin-5A (PHASE I)

Start of Run: 29Jun2021, 00:00 Basin Model: PROPOSED CONDITIONS
End of Run: 02Jul2021, 00:00 Meteorologic Model: 50YR
Compute Time: 09Aug2021, 15:13:30 Control Specifications: Control 1

Volume Units: ☐ IN ☒ ACRE-FT

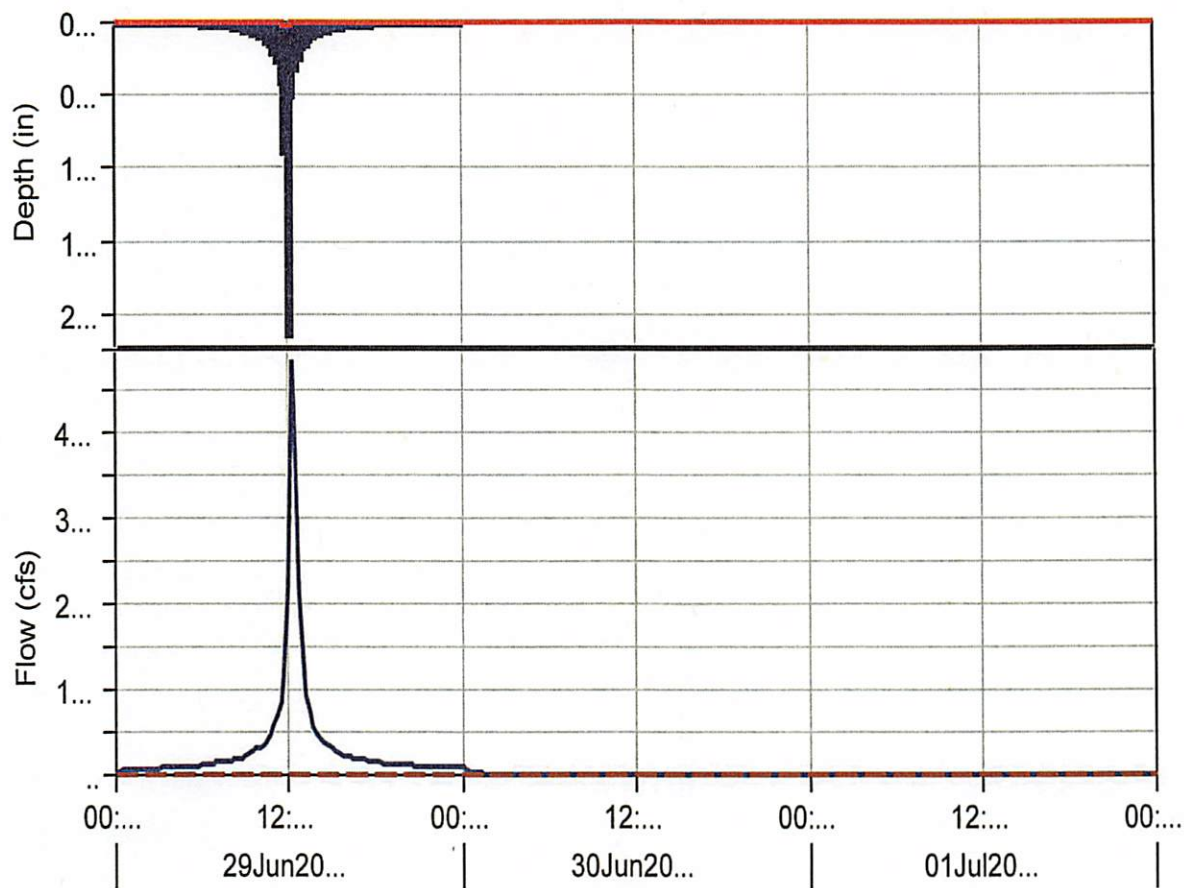
Computed Results

Peak Discharge:	486.1 (CFS)	Date/Time of Peak Discharge:	29Jun2021, 12:15
Precipitation Volume:	69.1 (ACRE-FT)	Direct Runoff Volume:	66.1 (ACRE-FT)
Loss Volume:	3.0 (ACRE-FT)	Baseflow Volume:	0.0 (ACRE-FT)
Excess Volume:	66.1 (ACRE-FT)	Discharge Volume:	66.1 (ACRE-FT)



J. Maldonado
08/09/21

Subbasin "Subbasin-5A (PHASE I)" Results for Run "PROP 50...



- Run:PROP50YRElement:Subbasin-5A(PHASE I)Result:Precipitation
- Run:PROP50YRElement:Subbasin-5A(PHASE I)Result:Precipitation Loss
- Run:PROP50YRElement:Subbasin-5A(PHASE I)Result:Outflow
- Run:PROP50YRElement:Subbasin-5A(PHASE I)Result:Baseflow

Project: MW INT. INDUSTRIAL PARK Simulation Run: PROP 50YR
Subbasin: Subbasin-6A (PHASE II)

Start of Run: 29Jun2021, 00:00 Basin Model: PROPOSED CONDITIONS
End of Run: 02Jul2021, 00:00 Meteorologic Model: 50YR
Compute Time: 09Aug2021, 15:13:30 Control Specifications: Control 1

Volume Units: ☐ IN ☒ ACRE-FT

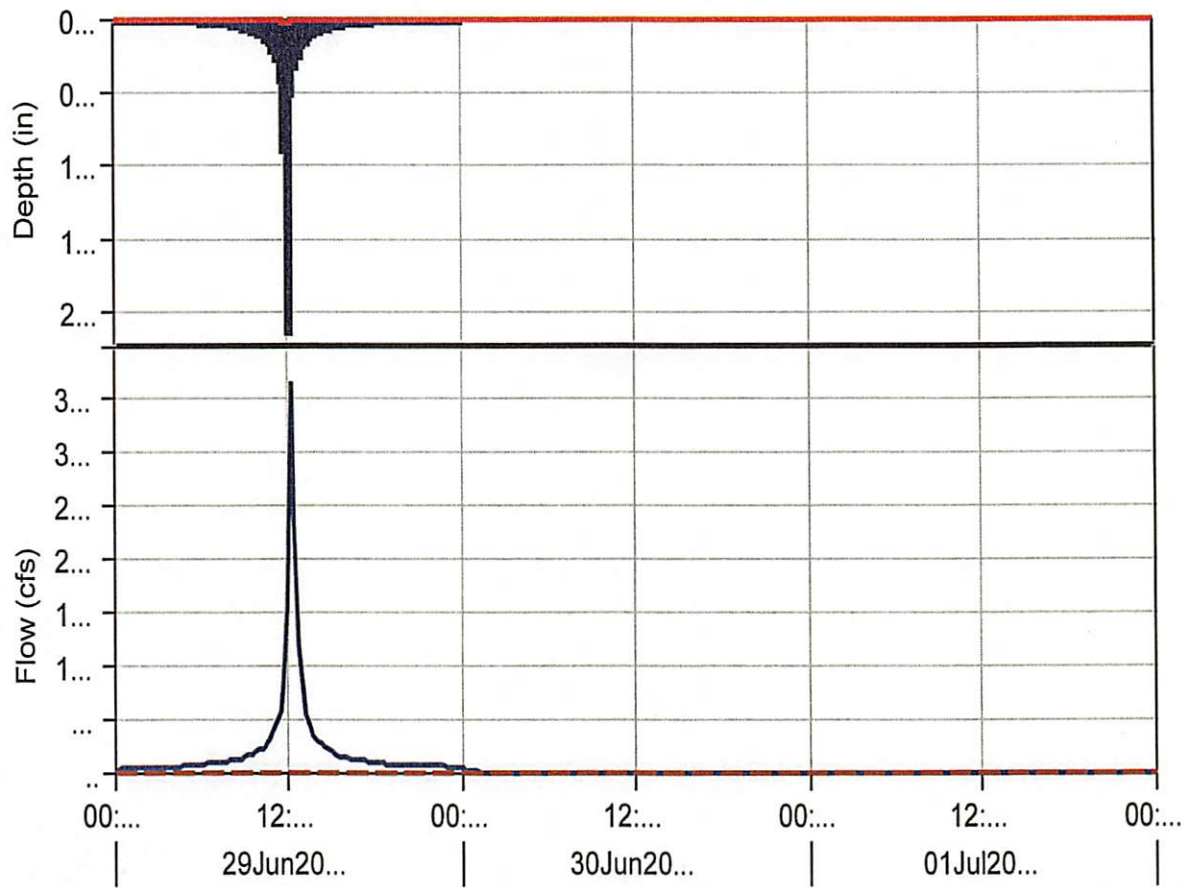
Computed Results

Peak Discharge:	366.6 (CFS)	Date/Time of Peak Discharge:	29Jun2021, 12:15
Precipitation Volume:	44.9 (ACRE-FT)	Direct Runoff Volume:	43.0 (ACRE-FT)
Loss Volume:	1.9 (ACRE-FT)	Baseflow Volume:	0.0 (ACRE-FT)
Excess Volume:	43.0 (ACRE-FT)	Discharge Volume:	43.0 (ACRE-FT)



Jemiam
08/09/21

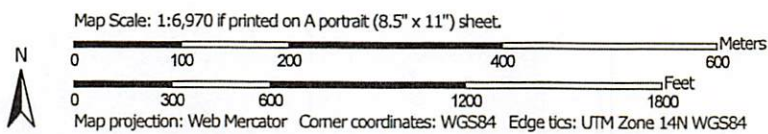
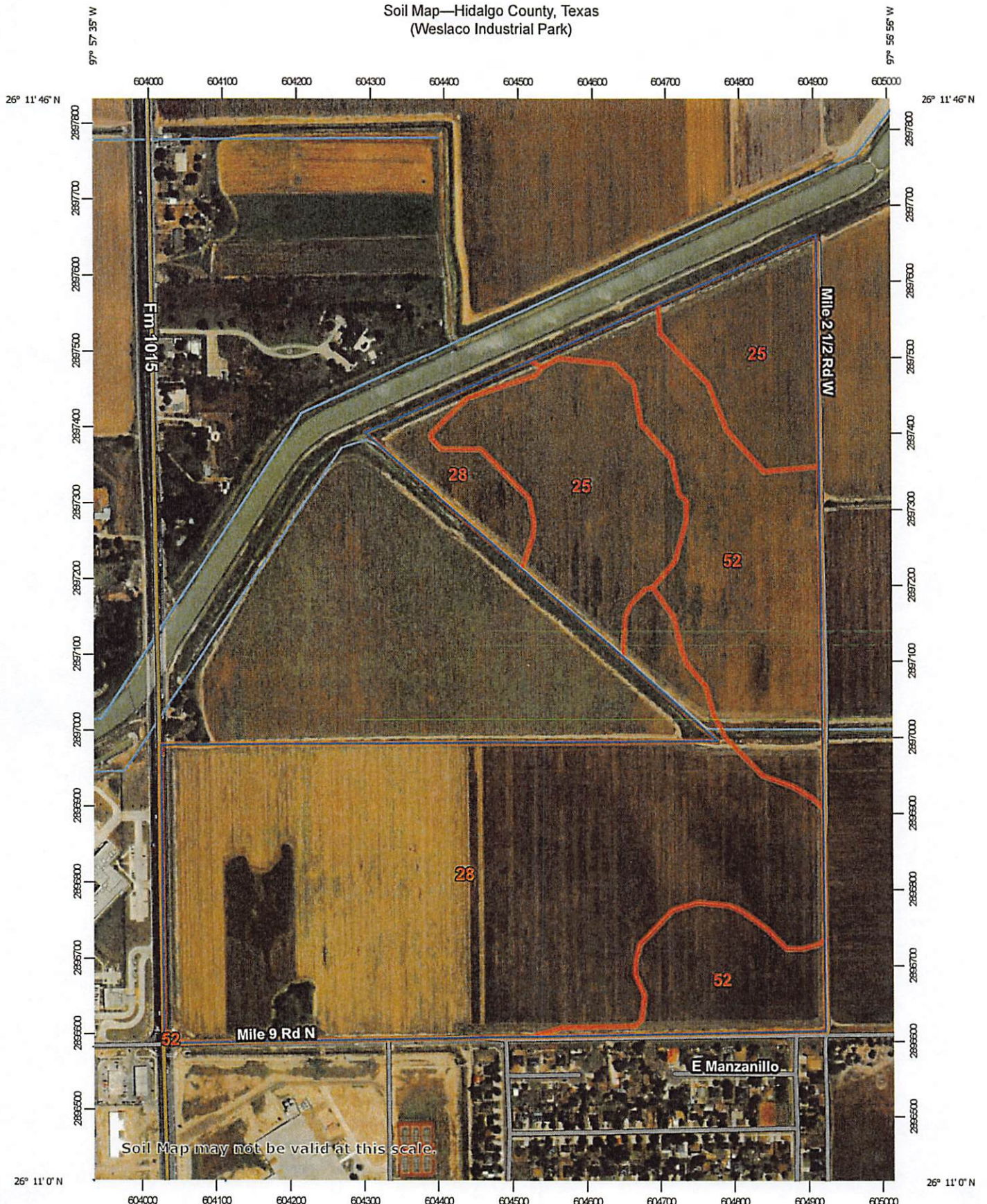
Subbasin "Subbasin-6A (PHASE II)" Results for Run "PROP 50..."



- Run:PROP50YRElement:Subbasin-6A(PHASEII)Result:Precipitation
- Run:PROP50YRElement:Subbasin-6A(PHASEII)Result:Precipitation Loss
- Run:PROP50YRElement:Subbasin-6A(PHASEII)Result:Outflow
- Run:PROP50YRElement:Subbasin-6A(PHASEII)Result:Baseflow

Soil Properties

Soil Map—Hidalgo County, Texas
(Weslaco Industrial Park)



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

5/25/2021
Page 1 of 3

MAP LEGEND

	Area of Interest (AOI)		Area of Interest (AOI)
	Soil Map Unit Polygons		Soil Map Unit Polygons
	Soil Map Unit Lines		Soil Map Unit Lines
	Soil Map Unit Points		Soil Map Unit Points
	Special Point Features		Special Line Features
	Blowout		Streams and Canals
	Borrow Pit		Transportation
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow		Background
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Hidalgo County, Texas
Survey Area Data: Version 19, Jun 11, 2020

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

Date(s) aerial images were photographed: Sep 20, 2015—Nov 5, 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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
25	Hidalgo fine sandy loam, 0 to 1 percent slopes	28.0	19.5%
28	Hidalgo sandy clay loam, 0 to 1 percent slopes	83.1	57.7%
52	Raymondville clay loam, 0 to 1 percent slopes	32.9	22.9%
Totals for Area of Interest		144.0	100.0%

Component Text Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the selected area. The component descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit. A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the associated soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas (components) for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The "Map Unit Component Nontechnical Descriptions" report gives a brief, general description of the soil components that occur in a map unit. Descriptions of nonsoil (miscellaneous areas) and minor map unit components may or may not be included. This description is written by the local soil scientists responsible for the respective soil survey area data. A more detailed description can be generated by the "Map Unit Description" report.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Component Text Descriptions

Hidalgo County, Texas

Map Unit: 25—Hidalgo fine sandy loam, 0 to 1 percent slopes

Description Category: ES

Hidalgo: 85 percent

Gray Sandy Loam 25-35" PZ - Deep, calcareous fine sandy loam or sandy clay loam. Originally a grassland of trichloris, cottontop, sprangletop, windmillgrass, vine-mesquite, and bristleglass; with scattered shrubs like guajillo, spiny hackberry, ephedra, texas ebony, and yaupon. Forbs include legumes and orange zexmenia.

Description Category: GENSOIL

Hidalgo: 85 percent

The Hidalgo component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on terraces on relict delta plains. The parent material consists of calcareous loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R083DY019TX Gray Sandy Loam ecological site. Nonirrigated land capability classification is 2s. Irrigated land capability classification is 2s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 4 within 30 inches of the soil surface.

Description Category: PHG

Hidalgo: 85 percent

8C - LOAMY UPLAND - Moderately deep to very deep uplands with loamy surfaces and friable loamy subsoils; slopes 0 to 8 percent; medium natural fertility; medium to high water holding capacity with good plant-soil-moisture relationship; medium to high production potential.

Description Category: GENSOIL

Willacy: 10 percent

Generated brief soil descriptions are created for major soil components. The Willacy soil is a minor component.

Description Category: GENSOIL

Brennan: 5 percent

Generated brief soil descriptions are created for major soil components. The Brennan soil is a minor component.

Map Unit: 28—Hidalgo sandy clay loam, 0 to 1 percent slopes

Description Category: ES

Hidalgo: 85 percent

Gray Sandy Loam 20-25" PZ - Deep, calcareous fine sandy loam or sandy clay loam. Originally a grassland of trichloris, cottontop, sprangletop, windmillgrass, vine-mesquite, and bristlegrass; with scattered shrubs like guajillo, spiny hackberry, ephedra, texas ebony, and yaupon. Forbs include legumes and orange zexmenia.

Description Category: GENSOIL

Hidalgo: 85 percent

The Hidalgo component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on terraces on relict delta plains. The parent material consists of calcareous loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R083DY019TX Gray Sandy Loam ecological site. Nonirrigated land capability classification is 2c. Irrigated land capability classification is 1 This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 4 within 30 inches of the soil surface.

Description Category: PHG

Hidalgo: 85 percent

8C - LOAMY UPLAND - Moderately deep to very deep uplands with loamy surfaces and friable loamy subsoils; slopes 0 to 8 percent; medium natural fertility; medium to high water holding capacity with good plant-soil-moisture relationship; medium to high production potential.

Description Category: GENSOIL

Raymondville: 7 percent

Generated brief soil descriptions are created for major soil components. The Raymondville soil is a minor component.

Description Category: GENSOIL

Racombes: 6 percent

Generated brief soil descriptions are created for major soil components. The Racombes soil is a minor component.

Description Category: GENSOIL

Willacy: 2 percent

Generated brief soil descriptions are created for major soil components. The Willacy soil is a minor component.

Map Unit: 52—Raymondville clay loam, 0 to 1 percent slopes

Description Category: GENSOIL

Raymondville: 85 percent

The Raymondville component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on delta plains on relict delta plains. The parent material consists of calcareous clayey alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R083DY025TX Clay Loam ecological site. Nonirrigated land capability classification is 2s. Irrigated land capability classification is 2s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Description Category: GENSOIL

Unnamed: 15 percent

Generated brief soil descriptions are created for major soil components. The Unnamed soil is a minor component.

Data Source Information

Soil Survey Area: Hidalgo County, Texas
Survey Area Data: Version 19, Jun 11, 2020

Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (<http://soils.usda.gov>)

Report—Physical Soil Properties

Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Physical Soil Properties—Hidalgo County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/in	Pct	Pct					
25—Hidalgo fine sandy loam, 0 to 1 percent slopes														
Hidalgo	0-17	53-63- 75	5-19- 35	5-18- 20	1.35-1.45 -1.65	14.00-28.00-42.00	0.10-0.13-0.15	0.3- 1.4- 1.7	0.5- 1.0- 1.5	.24	.24	5	3	86
	17-28	25-48- 70	10-25- 50	23-27- 35	1.20-1.40 -1.50	4.00-9.00-14.00	0.10-0.13-0.18	1.2- 2.1- 5.0	0.3- 0.6- 1.0	.28	.28			
	28-38	25-35- 70	10-35- 50	23-30- 35	1.20-1.40 -1.60	4.00-9.00-14.00	0.10-0.13-0.18	1.2- 2.3- 5.9	0.1- 0.3- 0.5	.32	.32			
	38-80	25-30- 70	10-40- 50	23-30- 35	1.40-1.50 -1.80	4.00-9.00-14.00	0.10-0.13-0.18	1.0- 2.2- 5.0	0.1- 0.2- 0.3	.32	.32			
Willacy	—	—	—	—	—	—	—	—	—					
Brennan	—	—	—	—	—	—	—	—	—					

Physical Soil Properties—Hidalgo County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/in	Pct	Pct					
28—Hidalgo sandy clay loam, 0 to 1 percent slopes														
Hidalgo	0-17	45-55- 70	5-18- 28	20-27- 30	1.35-1.50 -1.65	4.00-9.00-14.00	0.10-0.13-0.18	1.5- 2.7- 5.0	1.0- 1.5- 2.0	.17	.17	5	5	56
	17-28	25-48- 70	10-25- 50	23-27- 35	1.20-1.40 -1.50	4.00-9.00-14.00	0.10-0.13-0.18	1.2- 2.1- 5.0	0.3- 0.6- 1.0	.28	.28			
	28-38	25-35- 70	10-35- 50	23-30- 35	1.20-1.40 -1.60	4.00-9.00-14.00	0.10-0.13-0.18	1.2- 2.3- 5.9	0.1- 0.3- 0.5	.32	.32			
	38-80	25-30- 70	10-40- 50	23-30- 35	1.40-1.50 -1.80	4.00-9.00-14.00	0.10-0.13-0.18	1.0- 2.2- 5.0	0.1- 0.2- 0.3	.32	.32			
Raymondville	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Racombes	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Willacy	—	—	—	—	—	—	—	—	—	—	—	—	—	—
52—Raymondville clay loam, 0 to 1 percent slopes														
Raymondville	0-15	-31-	-33-	32-37- 42	1.20-1.33 -1.45	1.40-2.70-4.00	0.12-0.15-0.18	6.0- 7.5- 8.9	1.0- 2.0- 3.0	.28	.28	5	4	86
	15-43	-30-	-32-	35-38- 50	1.25-1.35 -1.45	0.42-1.00-1.40	0.12-0.15-0.18	6.0- 7.5- 8.9	0.5- 0.8- 1.0	.28	.28			
	43-65	-30-	-30-	35-40- 45	1.25-1.35 -1.45	0.42-1.00-1.40	0.12-0.15-0.18	6.0- 7.5- 8.9	0.1- 0.3- 0.5	.28	.28			
Unnamed	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Data Source Information

Soil Survey Area: Hidalgo County, Texas
Survey Area Data: Version 19, Jun 11, 2020

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007 (<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

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.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007 (<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties—Hidalgo County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				L-R-H	L-R-H	L-R-H	L-R-H	L-R-H	L-R-H	L-R-H	L-R-H
25—Hidalgo fine sandy loam, 0 to 1 percent slopes														
Hidalgo	85	B	0-17	Fine sandy loam	CL, SM, SC-SM, SC	A-4, A-2-4	0-0-0	0-0-0	100-100-100	94-96-100	84-94-100	35-47-56	15-23-25	1-7-8
			17-28	Sandy clay loam, clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	100-100-100	94-98-100	85-96-100	50-60-75	30-35-44	11-17-22
			28-38	Clay loam, sandy clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	95-97-100	91-94-100	81-93-100	54-68-81	30-38-44	11-17-22
			38-80	Clay loam, sandy clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	96-97-100	91-95-100	82-94-100	57-72-84	30-38-44	11-17-22
28—Hidalgo sandy clay loam, 0 to 1 percent slopes														
Hidalgo	85	B	0-17	Sandy clay loam	CL, SC	A-6	0-0-0	0-0-0	100-100-100	95-98-100	86-96-100	44-54-63	25-30-39	11-15-18
			17-28	Sandy clay loam, clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	100-100-100	94-98-100	85-96-100	50-60-75	30-35-44	11-17-22
			28-38	Clay loam, sandy clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	95-97-100	91-94-100	81-93-100	54-68-81	30-38-44	11-17-22
			38-80	Sandy clay loam, clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	96-97-100	91-95-100	82-94-100	57-72-84	30-38-44	11-17-22

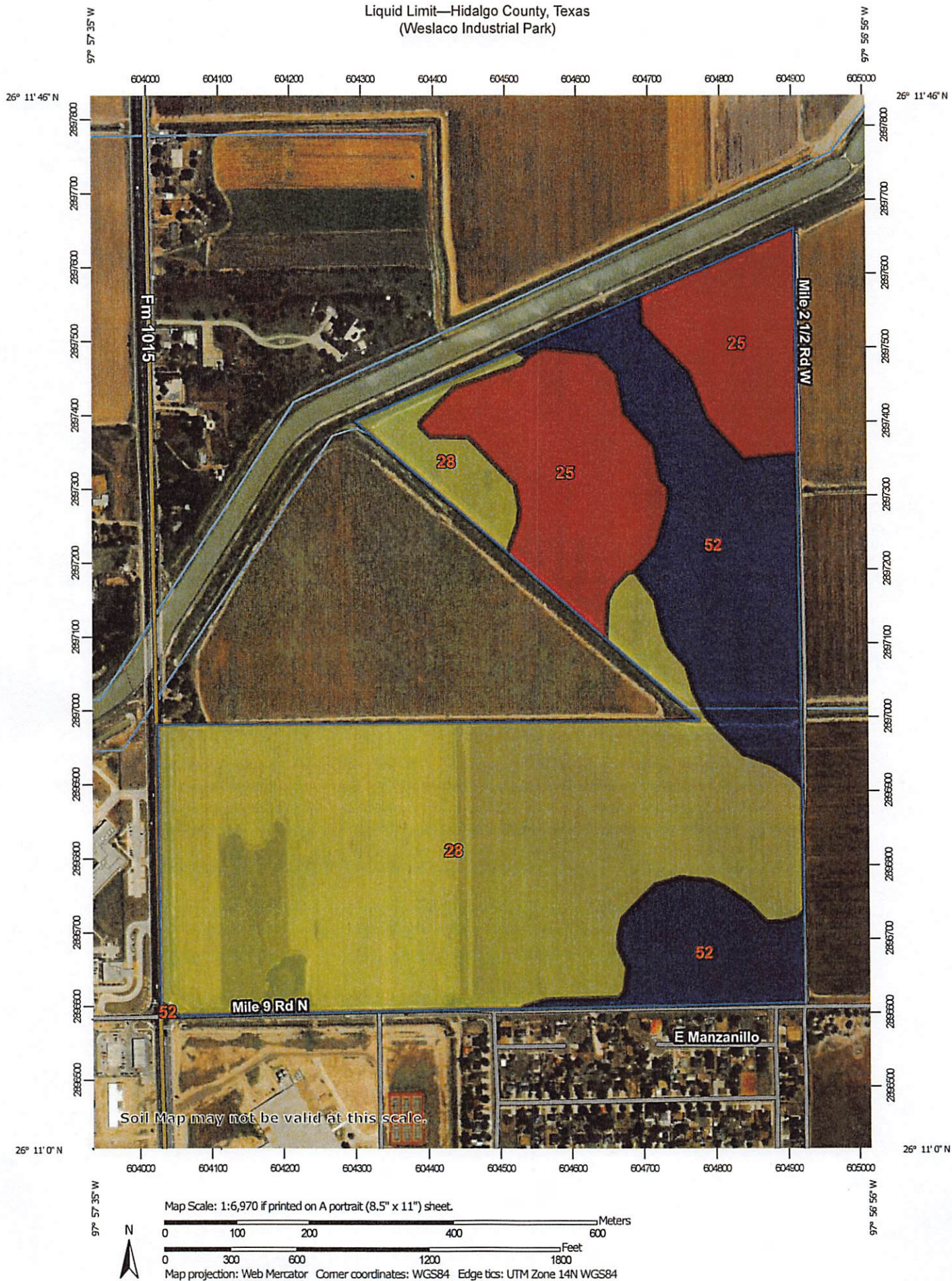
Engineering Properties—Hidalgo County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
52—Raymondville clay loam, 0 to 1 percent slopes														
Raymondville	85	C	0-15	Clay loam	CL	A-6, A-7-6	0-0-0	0-0-0	100-100-100	100-100-100	95-98-100	51-68-85	37-44-50	18-24-30
			15-43	Clay, clay loam	CH, CL	A-6, A-7-6	0-0-0	0-0-0	100-100-100	95-98-100	95-98-100	75-85-95	38-47-55	19-27-35
			43-65	Clay, clay loam	CH, CL	A-7-6	0-0-0	0-0-0	100-100-100	85-93-100	80-90-100	75-85-95	40-47-53	20-25-30

Data Source Information

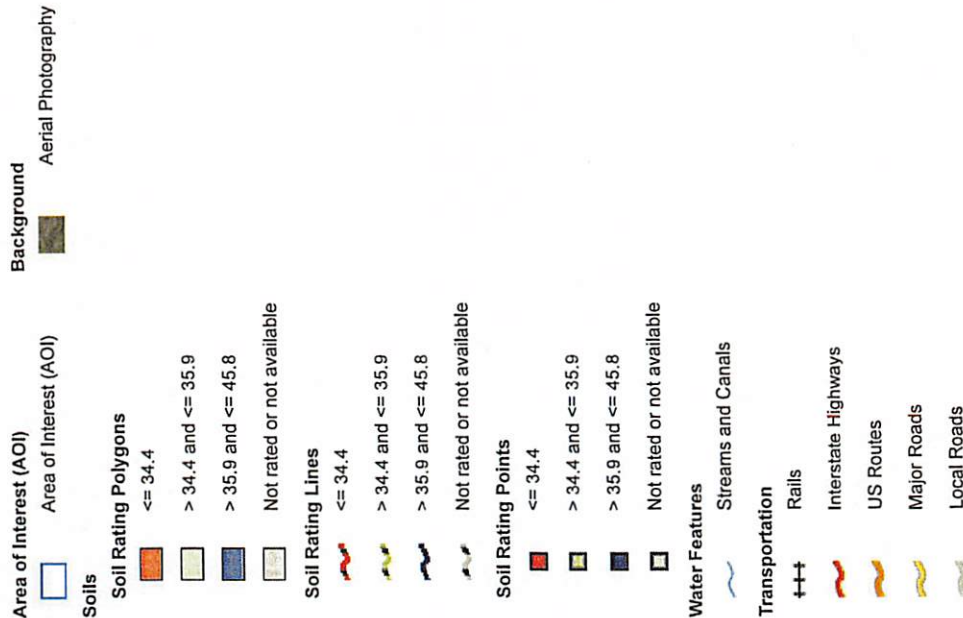
Soil Survey Area: Hidalgo County, Texas
 Survey Area Data: Version 19, Jun 11, 2020



Liquid Limit—Hidalgo County, Texas
(Weslaco Industrial Park)



MAP LEGEND



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Hidalgo County, Texas

Survey Area Data: Version 19, Jun 11, 2020

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

Date(s) aerial images were photographed: Sep 20, 2015—Nov 5, 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.

Liquid Limit

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
25	Hidalgo fine sandy loam, 0 to 1 percent slopes	34.4	28.0	19.5%
28	Hidalgo sandy clay loam, 0 to 1 percent slopes	35.9	83.1	57.7%
52	Raymondville clay loam, 0 to 1 percent slopes	45.8	32.9	22.9%
Totals for Area of Interest			144.0	100.0%

Description

Liquid limit (LL) is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state. Generally, the amount of clay- and silt-size particles, the organic matter content, and the type of minerals determine the liquid limit. Soils that have a high liquid limit have the capacity to hold a lot of water while maintaining a plastic or semisolid state.

Liquid limit is used in classifying soils in the Unified and AASHTO classification systems.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: percent

Aggregation Method: Dominant Component

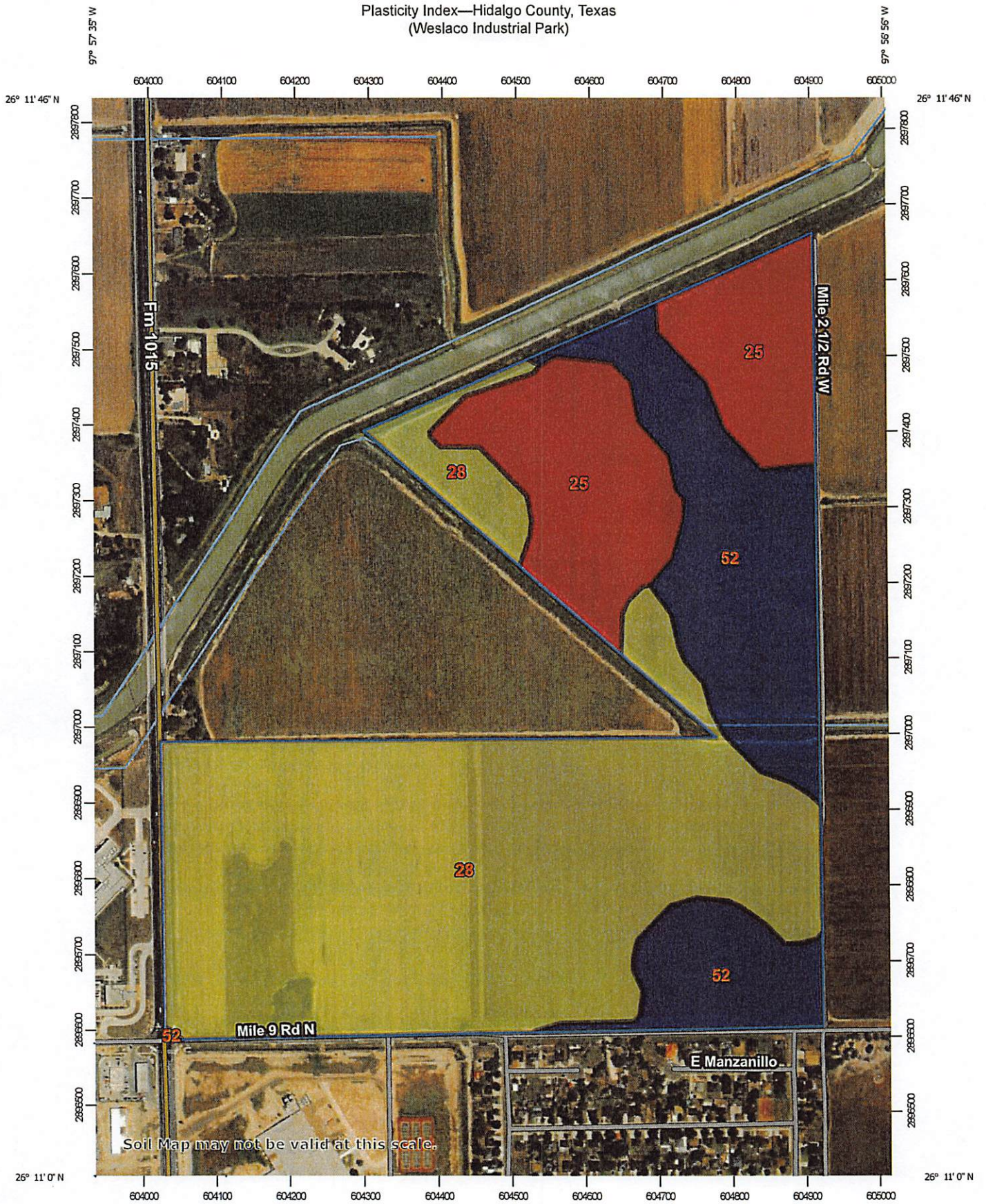
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

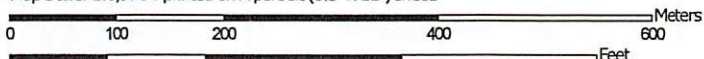
Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Plasticity Index—Hidalgo County, Texas
(Weslaco Industrial Park)



Map Scale: 1:6,970 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

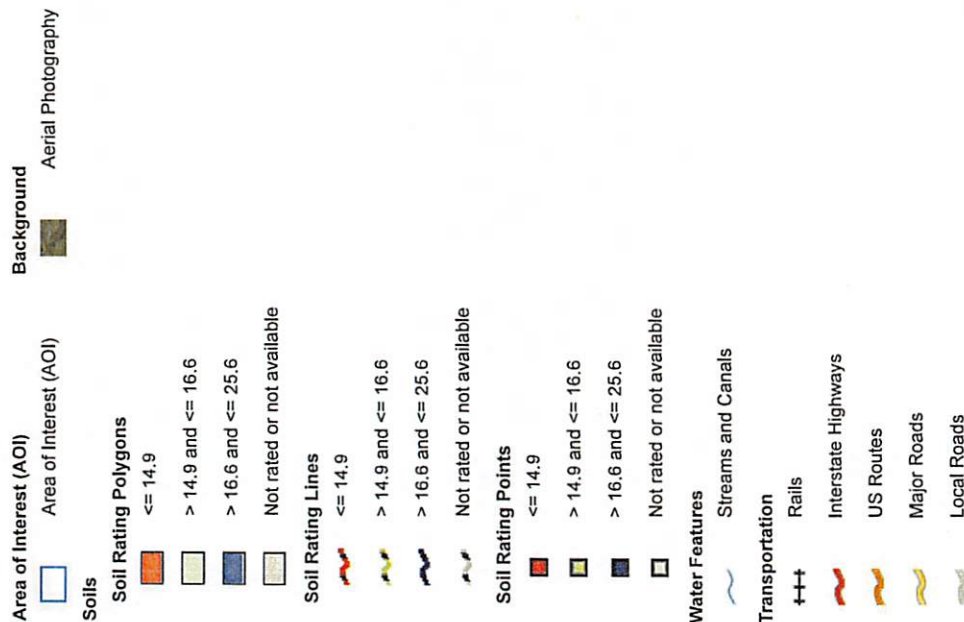


Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

5/25/2021
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MAP LEGEND



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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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: Hidalgo County, Texas
 Survey Area Data: Version 19, Jun 11, 2020

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

Date(s) aerial images were photographed: Sep 20, 2015—Nov 5, 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.

Plasticity Index

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
25	Hidalgo fine sandy loam, 0 to 1 percent slopes	14.9	28.0	19.5%
28	Hidalgo sandy clay loam, 0 to 1 percent slopes	16.6	83.1	57.7%
52	Raymondville clay loam, 0 to 1 percent slopes	25.6	32.9	22.9%
Totals for Area of Interest			144.0	100.0%

Description

Plasticity index (PI) is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is defined as the numerical difference between the liquid limit and plastic limit of the soil. It is the range of water content in which a soil exhibits the characteristics of a plastic solid.

The plastic limit is the water content that corresponds to an arbitrary limit between the plastic and semisolid states of a soil. The liquid limit is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state.

Soils that have a high plasticity index have a wide range of moisture content in which the soil performs as a plastic material. Highly and moderately plastic clays have large PI values. Plasticity index is used in classifying soils in the Unified and AASHTO classification systems.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: percent

Aggregation Method: Dominant Component

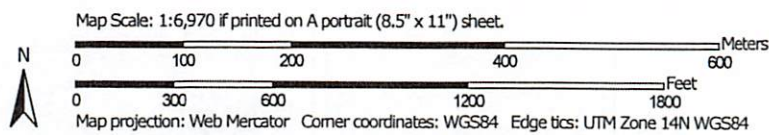
Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

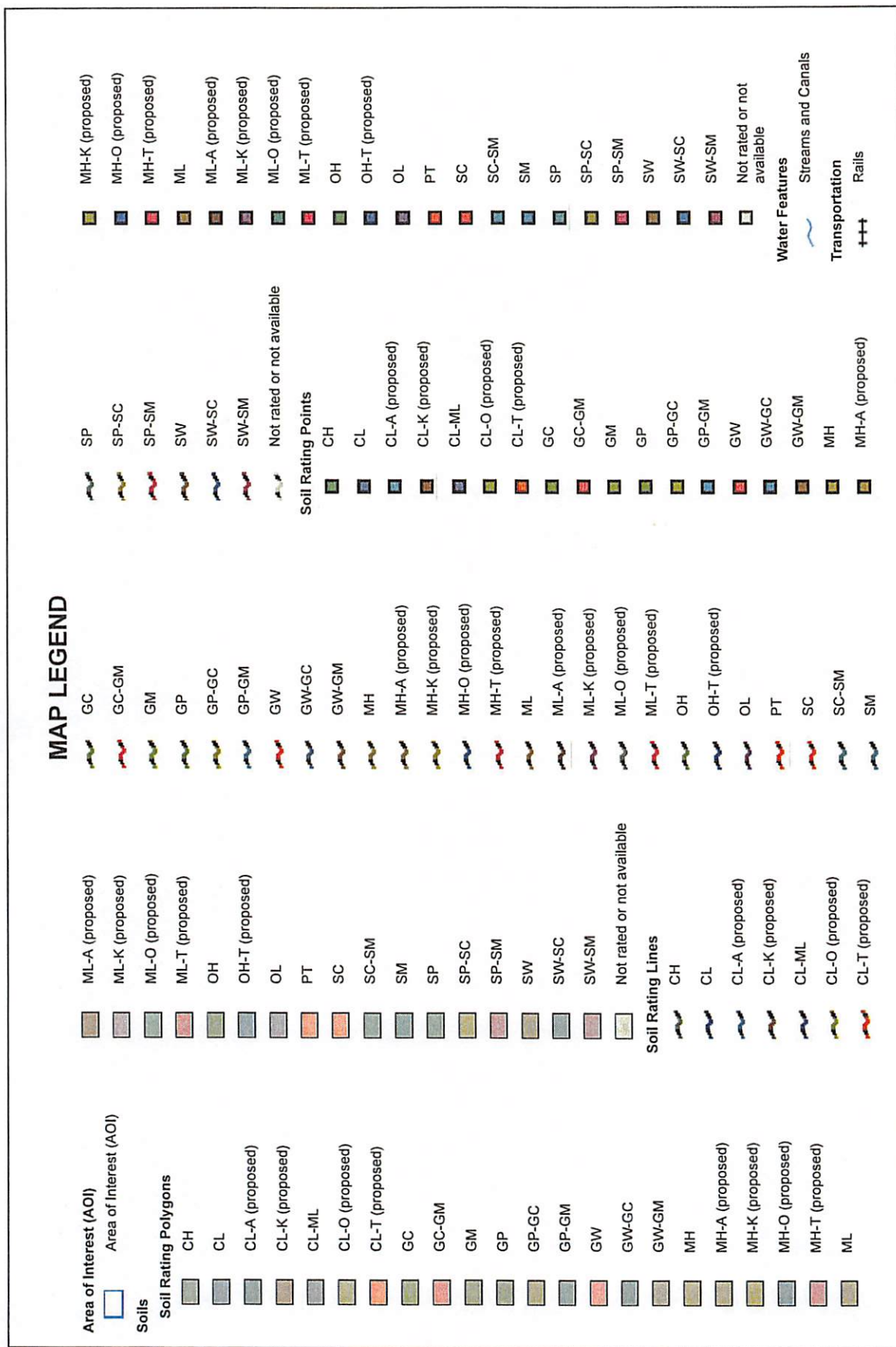
Unified Soil Classification (Surface)—Hidalgo County, Texas
(Weslaco Industrial Park - Unified Soil Classification (Surface))



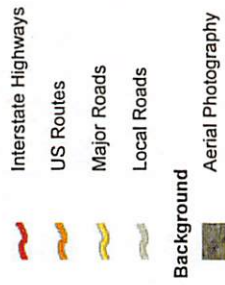
Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

5/25/2021
Page 1 of 4



MAP INFORMATION



The soil surveys that comprise your AOI were mapped at 1:20,000.

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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: Hidalgo County, Texas

Survey Area Data: Version 19, Jun 11, 2020

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

Date(s) aerial images were photographed: Sep 20, 2015—Nov 5, 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.

Unified Soil Classification (Surface)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
25	Hidalgo fine sandy loam, 0 to 1 percent slopes	SC-SM	28.0	19.5%
28	Hidalgo sandy clay loam, 0 to 1 percent slopes	CL	83.1	57.7%
52	Raymondville clay loam, 0 to 1 percent slopes	CL	32.9	22.9%
Totals for Area of Interest			144.0	100.0%

Description

The Unified soil classification system classifies mineral and organic mineral soils for engineering purposes on the basis of particle-size characteristics, liquid limit, and plasticity index. It identifies three major soil divisions: (i) coarse-grained soils having less than 50 percent, by weight, particles smaller than 0.074 mm in diameter; (ii) fine-grained soils having 50 percent or more, by weight, particles smaller than 0.074 mm in diameter; and (iii) highly organic soils that demonstrate certain organic characteristics. These divisions are further subdivided into a total of 15 basic soil groups. The major soil divisions and basic soil groups are determined on the basis of estimated or measured values for grain-size distribution and Atterberg limits. ASTM D 2487 shows the criteria chart used for classifying soil in the Unified system and the 15 basic soil groups of the system and the plasticity chart for the Unified system.

The various groupings of this classification correlate in a general way with the engineering behavior of soils. This correlation provides a useful first step in any field or laboratory investigation for engineering purposes. It can serve to make some general interpretations relating to probable performance of the soil for engineering uses.

For each soil horizon in the database one or more Unified soil classifications may be listed. One is marked as the representative or most commonly occurring. The representative classification is shown here for the surface layer of the soil.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Exhibits

THE MICHAEL LEBRON DEVELOPMENT CORPORATION, THE UNDERSIGNED, OWNERS OF THE LAND SHOWN ON THIS PLAT AND DESIGNATED AS THE MICHAEL LEBRON INDUSTRIAL PARK IN THE CITY OF MOJAVE, TEXAS AND WHOSE PLAT IS SUBMITTED HEREIN, HEREBY REQUEST TO THE USE OF THE PUBLIC ALLEY, PARCELS, MANHOLES, DRAINS, CASADUPO, WATER LINES, SEWER LINES, STORM DRAINS, FURNISHING AND PROVIDING THE SAME TO BE COMPLETED ON THE PLAT HEREON ON THE SUBMISSION APPROVAL PROCESS OF THE CITY OF MOJAVE, ALL OF WHICH TO BE COMPLETED ON THE PLAT HEREON ON THE OFFICIAL MINUTES OF THE APPLICABLE AUTHORITIES OF THE CITY OF MOJAVE.

COUNTY OF MADISON

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED _____, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and considerations therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, THIS THE _____ DAY OF _____ 20__.

44-38861-1A N. LOPEZ, PC

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DATE

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ACTS	CITY & ST	PHON	FAX
273 S. LAUREL AVE	363 ACD. 370-63 7200	(857) 988-5518	
200 S. 10TH ST. STE. 1300	MOBILE, AL 36601	(661) 752-0000	(661)
200 S. 10TH ST. STE. 1300	MOBILE, AL 36601	(661) 752-0000	(661)

NOTARY PUBLIC, STATE OF TEXAS
MY COMMISSION EXPIRES _____

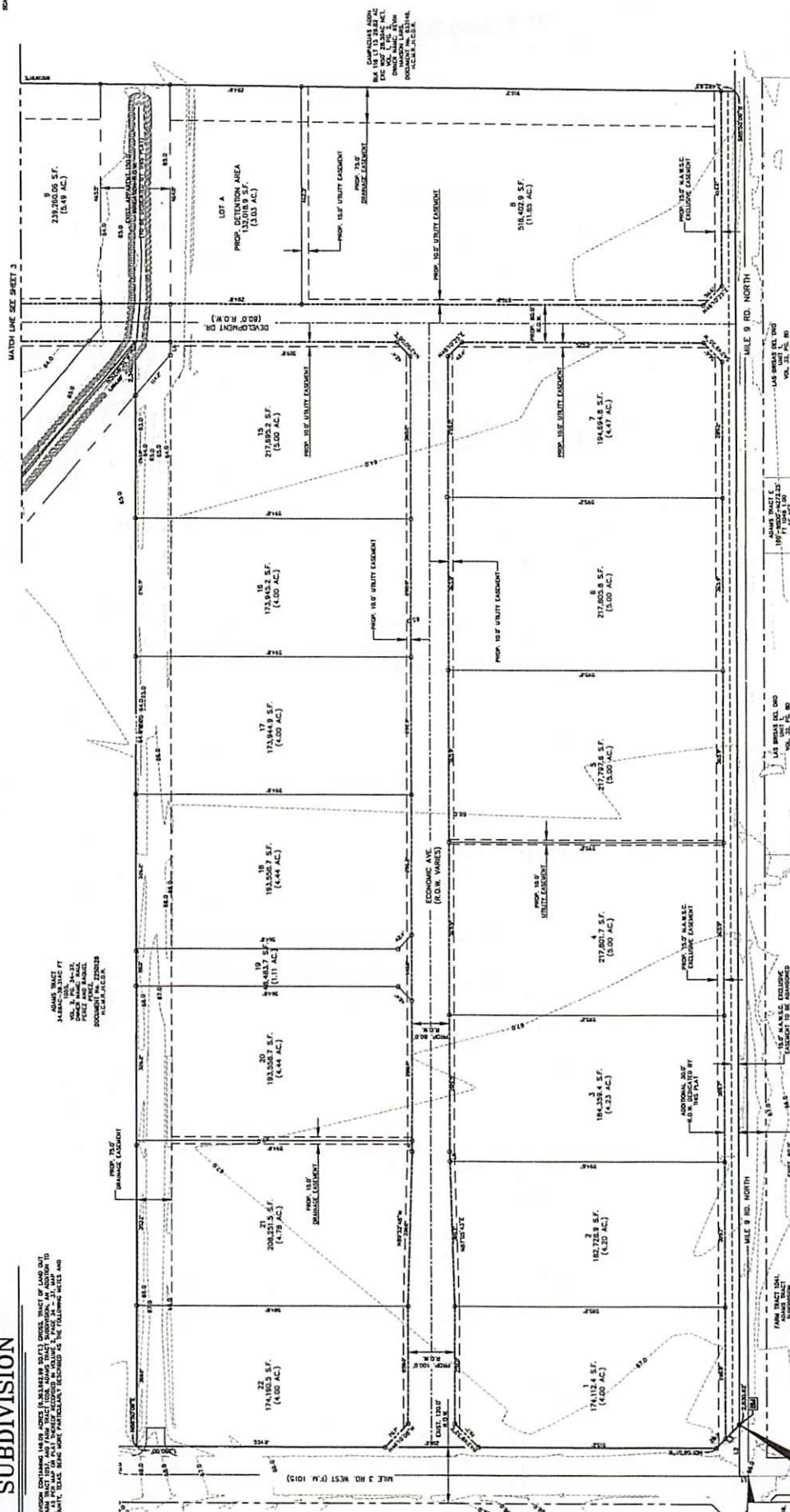
CHUCK UNDER MY HAND AND SEAL OF OFFICE THIS _____ DAY OF _____ 20____

CHUCKER
DOUGHER

WATER DISTRIBUTION AND SANITARY SEWER MAP; TYPICAL, WATER SERVICE CONNECTION; REVISION NOTED: DRAINAGE REPORT (ENGLISH AND SPANISH VERSIONS), INCLUDING DESCRIPTION OF WATER AND WASTEWATER AND CANNERS' CERTIFICATION (ENGLISH AND SPANISH VERSIONS); OWNER'S DECLARATION, CERTIFICATION, AND ATTESTATION WATER DISTRIBUTION AND SANITARY SEWER MAP; TYPICAL, WATER SERVICE CONNECTION.	3
WATERMAP REPORT INCLUDING DESCRIPTION OF WIRING AND HOW IT WILL SERVE THE DEVELOPMENT; MAP OF TOPOGRAPHY, ELEVATIONS, AND CANNERS' CERTIFICATION (ENGLISH AND SPANISH VERSIONS); OWNER'S DECLARATION, CERTIFICATION, AND ATTESTATION.	3

WATER DISTRIBUTION REVISION NOTES: CON- OF WATER AND WAS- OWNER'S DESIGNER	SHEET 4 - 3
DRAINAGE REPORT DEVELOPMENT; MAP	SHEET 5 - 7

BEING A 22 - LOT SUBDIVISION CONTAINING 146.09 ACRES (6,361,822.99 SQ.FT.) CROSS TRACT OF LAND OUT OF FARM TRACT 1026, FARM TRACT 1027, AND FARM TRACT 1028, ADAMS TRACT SUBDIVISION, AN ADDITION TO HEDGECOCK COUNTY, TEXAS, AS PER MAP ON PLAT THEREOF RECORDED IN VOLUME 2, PAGE 24 - 27, MAP RECORDS OF HEDGECOCK COUNTY, TEXAS, BEING MORE PARTICULARLY DESCRIBED AS THE FOLLOWING METES AND BOUNDS:



LINE DATA TABLE		
LINE	LENGTH	DIRECTION
L1	20.00	N01°09'51"V
L2	110.00	S08°50'09"V
L3	70.71	N46°09'51"V
L4	23.09	N08°45'51"V
L5	20.26	N07°05'43"V
L6	30.00	N08°45'39"E

CURVE	LENGTH	RADIUS
C1	18.35	20
C2	157.21	80
C3	242.48	80
C4	18.54	20

LEGEND

- - FNL 1/2" IRON ROD
- - SET 1/2" IRON ROD W/CP
- - STAMPED PLATES
- △ - PORT 1/2" IRON ROD
- ◇ - ON-SITE EXCHANGE
- ▽ - SET CONCRETE ANCHORS
- ◇ - CONCRETE
- RECOR - RECALLED COUNTY MAP RECORDS
- RECOR - RECALLED COUNTY OFFICIAL RECORDS
- PUB - PUBLIC UTILITY CATALOG
- PLAN - PORT 1/2" IRON ROD
- PROF - PROPOSED
- ELEV - ELEVATION
- WHT - WHITE
- FIN - FINISH

PRELIMINARY
SUBMITTAL FOR POWER
ONLY

STATE OF OREGON AUGUST 20TH

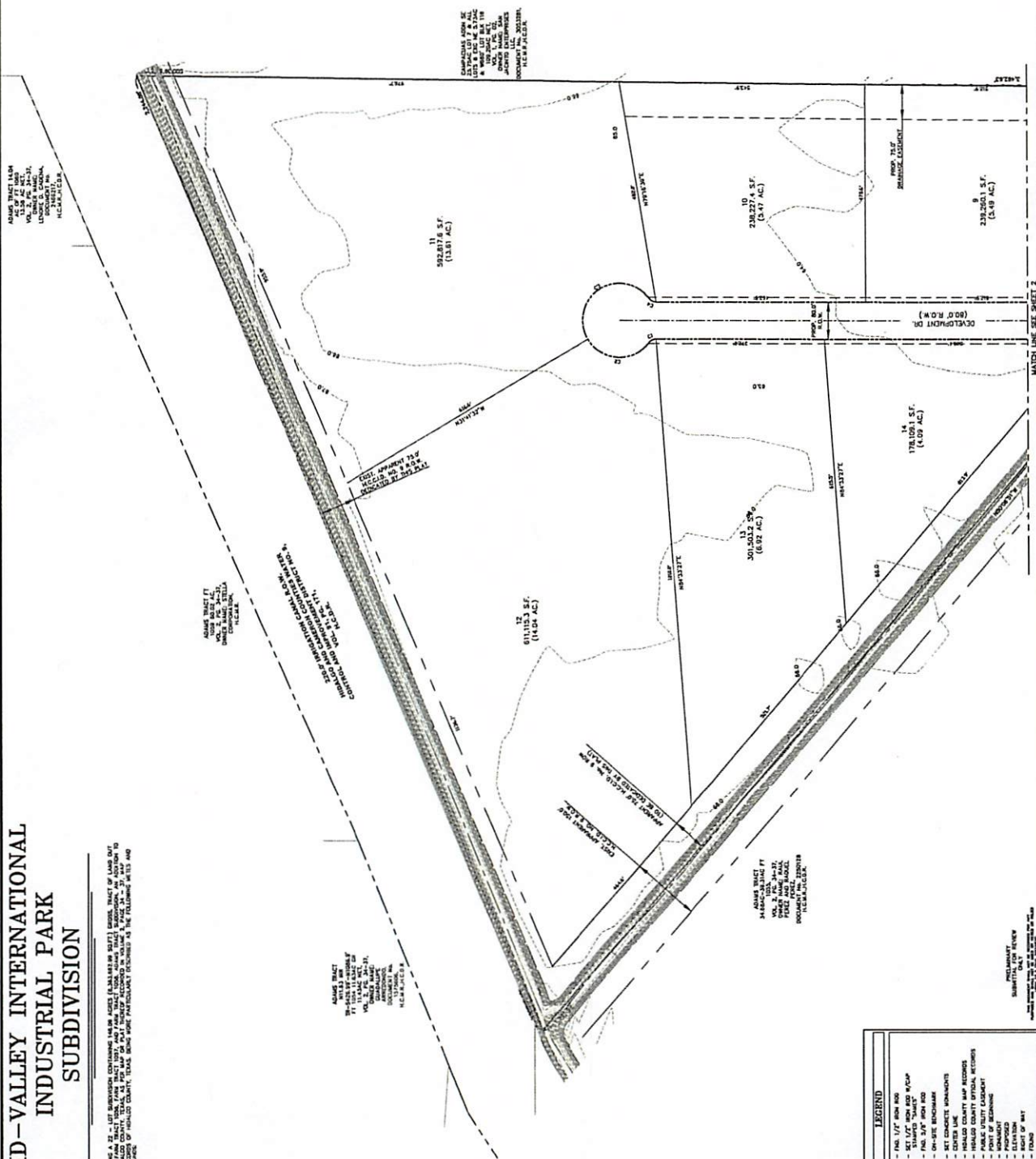
9-ET 2 OF 7

REGISTRATION # F-10602

SAMES SAM Engineering & Surveying
200 S. 10th St., Ste. 1500
McAllen, TEXAS 78501
TEL: (956) 702-8880
FAX: (956) 702-8883

DAMS TRACT 14.04
AC OF FT 1083
13.26 AC NET.
VOL. 2, PG. 34-37,
OWNER NAME
ENRIQUE D. CADONA,
DOCUMENT No.
2466217,
N.C.M.R.H.C.B.R.

BEING A 22 - LOT SUBDIVISION CONTAINING 146.06 ACRES (6,341,881.99 SQ.FT.) GRASS, TRACT OF LAND OUT
OF FARM TRACT 102A, FARM TRACT 107, AND FARM TRACT 108A, ADJACENT
HALLADO COUNTY, TEXAS, AS PER MAP OF PLAT THEREOF RECORDED IN VOLUME 3, PAGE 34 - 37,
RECORDS OF HALLADO COUNTY, TEXAS, BEING MORE PARTICULARLY DESCRIBED AS THE FOLLOWING: WELLS AND
WELLS.



CURVE DATA TABLE		
CURVE	LENGTH	RADIUS
C1	18.55	20
C2	137.21	80
C3	242.48	80
C4	18.55	20

LINE DATA TABLE		
LINE	LENGTH	DIRECTION
L1	20.00	N01°09'51"W
L2	110.00	S08°56'09"W
L3	70.71	N46°09'51"W
L4	23.09	N08°45'51"W
L5	20.86	N37°05'43"E
L6	30.08	N08°45'39"E

DATE OF REGISTRATION: AUGUST 2021

REGISTRATION # F-10602

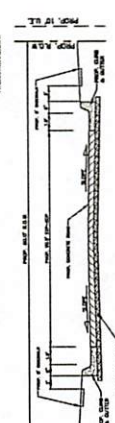
SHEET 3 OF 7

SAMES SAM Engineering & Surveying

1000 S. 10th St., Ste. 1500
McAllen, TEXAS 78501

TEL. (956) 702-8880
FAX: (956) 702-8883

PRELIMINARY
SUBMITTAL FOR REVIEW
ONLY



CAMPAGNUS ADDN
LA 118 LT 13 29.82 AC
JC WOF 28.30AC NET.
VOL. 1, PG. 2
OWNER NAME: KEVIN
HANSON LAURE
DOCUMENT No. 813146

PAGE 6 OF 7

DATE OF PREPARATION: AUGUST 2021

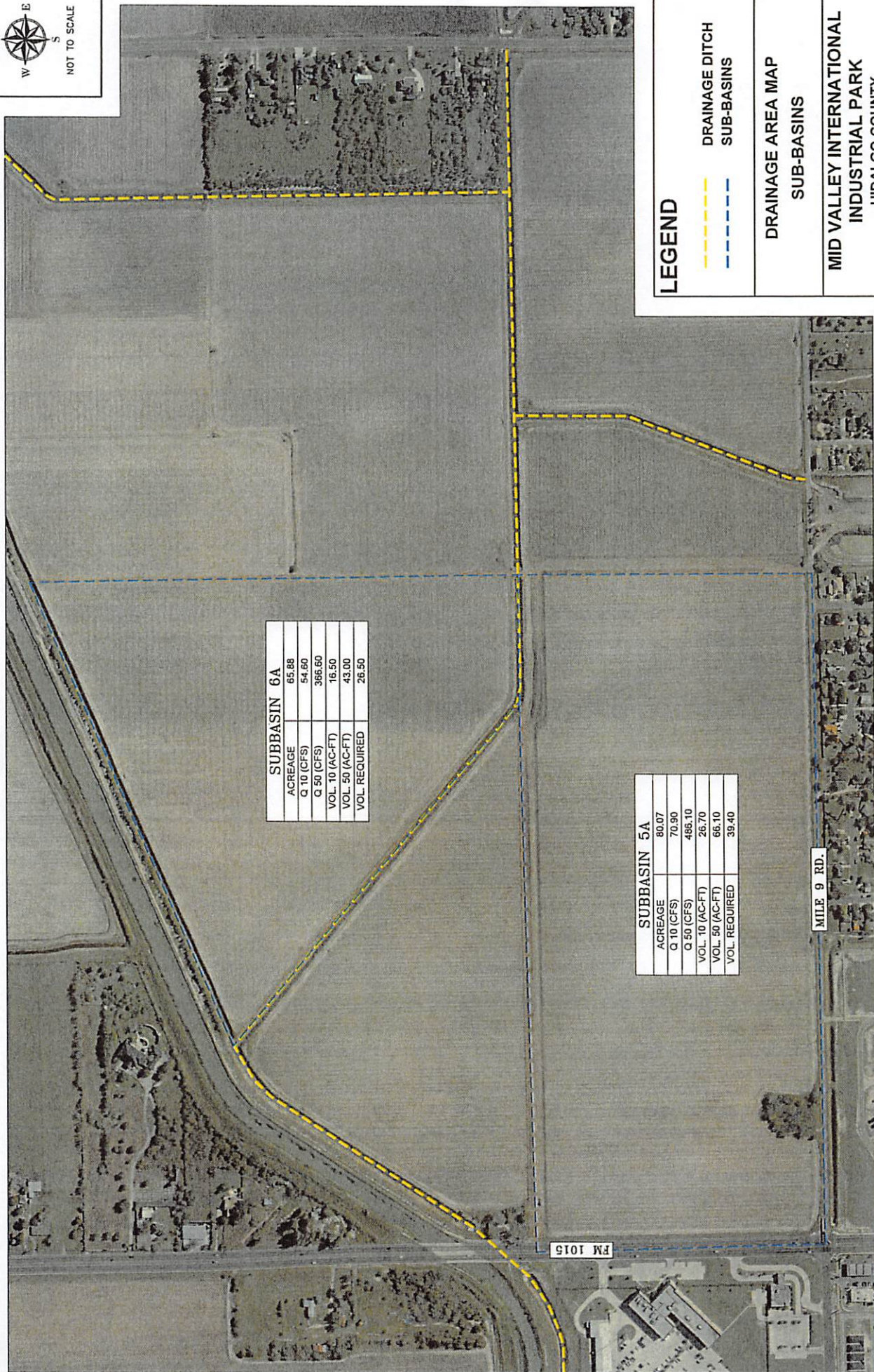
SAMES SAM Engineering & Surveying

TEL. (956) 702-8880
FAX: (956) 702-8683

PRINCIPAL CONTACTS:			
NAME	ADDRESS	CITY & ZIP	PHONE FAX
POWER	272 S. JANSSEN AVE.	WESLACO, TX 75795	(561) 588-0838 NONE
DOONER	200 S. 10TH ST., SUITE 1500	MAILLIN, TX 75851	(561) 732-8990 (561) 732-8663
	200 S. 10TH ST., SUITE 1500	MAILLIN, TX 75851	(561) 732-8990 (561) 732-8660

NO.	SHEET	REVISION	DATE	APPROVED

SHEET 3	SHEET 4	SHEET 5	SHEET 6	SHEET 7	SHEET 8	SHEET 9	SHEET 10	SHEET 11	SHEET 12	SHEET 13	SHEET 14	SHEET 15	SHEET 16	SHEET 17	SHEET 18	SHEET 19	SHEET 20	SHEET 21	SHEET 22	SHEET 23	SHEET 24	SHEET 25	SHEET 26	SHEET 27	SHEET 28	SHEET 29	SHEET 30	SHEET 31	SHEET 32	SHEET 33	SHEET 34	SHEET 35	SHEET 36	SHEET 37	SHEET 38	SHEET 39	SHEET 40	SHEET 41	SHEET 42	SHEET 43	SHEET 44	SHEET 45	SHEET 46	SHEET 47	SHEET 48	SHEET 49	SHEET 50	SHEET 51	SHEET 52	SHEET 53	SHEET 54	SHEET 55	SHEET 56	SHEET 57	SHEET 58	SHEET 59	SHEET 60	SHEET 61	SHEET 62	SHEET 63	SHEET 64	SHEET 65	SHEET 66	SHEET 67	SHEET 68	SHEET 69	SHEET 70	SHEET 71	SHEET 72	SHEET 73	SHEET 74	SHEET 75	SHEET 76	SHEET 77	SHEET 78	SHEET 79	SHEET 80	SHEET 81	SHEET 82	SHEET 83	SHEET 84	SHEET 85	SHEET 86	SHEET 87	SHEET 88	SHEET 89	SHEET 90	SHEET 91	SHEET 92	SHEET 93	SHEET 94	SHEET 95	SHEET 96	SHEET 97	SHEET 98	SHEET 99	SHEET 100	SHEET 101	SHEET 102	SHEET 103	SHEET 104	SHEET 105	SHEET 106	SHEET 107	SHEET 108	SHEET 109	SHEET 110	SHEET 111	SHEET 112	SHEET 113	SHEET 114	SHEET 115	SHEET 116	SHEET 117	SHEET 118	SHEET 119	SHEET 120	SHEET 121	SHEET 122	SHEET 123	SHEET 124	SHEET 1
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SUBBASIN 6A	
ACREAGE	65.88
Q 10 (CFS)	54.60
Q 50 (CFS)	366.60
VOL 10 (AC-FT)	16.50
VOL 50 (AC-FT)	43.00
VOL REQUIRED	26.50

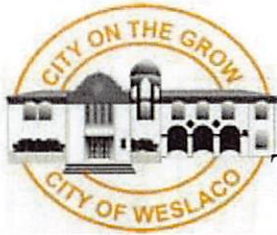
SUBBASIN 5A	
ACREAGE	80.07
Q 10 (CFS)	70.90
Q 50 (CFS)	486.10
VOL 10 (AC-FT)	26.70
VOL 50 (AC-FT)	66.10
VOL REQUIRED	39.40

LEGEND

- DRAINAGE DITCH
- SUB-BASINS

DRAINAGE AREA MAP
SUB-BASINS

MID VALLEY INTERNATIONAL PARK
INDUSTRIAL PARK
HIDALGO COUNTY



**City of Weslaco
Engineering Division**

255 S. Kansas ♦ Weslaco, TX 78570 ♦ (956)

TRIP GENERATION WORKSHEET

Complete parts A and B as an aid to determine if your project requires a Traffic Impact Analysis (TIA).

A. Subdivision Information

Subdivision Name: Weslaco Industrial Park Subdivision
Location: MILE 3 RD. WEST (F.M. 1015)
Applicant: SAM Engineering & Surveying ☐ Owner ☒ Agent
Address: 200 S. 10th Street, Ste 1500, McAllen, TX Phone Number: (956) 702-8880

B. Trip Generation Calculation

The texts needed to complete this table are available at the Planning Department. See back of sheet for more information.

ITE Code	Anticipated Land Use	Project Size			AM Peak Hour Trips	PM Peak Hour Trips	Weekday Trips
		Acres	GFA	# of Units			
Various	Industrial & Various	-	-	-	665	707	7,202

Comments: See Attached

Prepared by: _____ Date: _____

Address: _____ Phone Number: _____

(For Official Use Only, Do Not Write In This Box)

_____ A traffic impact analysis is required. The agent preparing the study must meet with City staff to discuss the scope and requirements of the study before beginning the study.

_____ A traffic impact analysis is not required. The traffic generated by the proposed development does not exceed the threshold requirements.

Comments: _____

Reviewed by: _____ Date: _____ STID#: _____

Weslaco Industrial Park Subdivision

Trip Generation Calculation

Lot	Land Use:	AM Peak	Average Rate: PM Peak	Weekday	Est. GFA (1000 SF)	AM	Trips PM	Weekday
1	Mixed Use ¹	-	-	-	-	224	243	3,157
2	130 Industrial Park	0.40	0.40	3.37	41.95	17	17	141
3	130 Industrial Park	0.40	0.40	3.37	42.32	17	17	143
4	130 Industrial Park	0.40	0.40	3.37	50.00	20	20	169
5	130 Industrial Park	0.40	0.40	3.37	50.00	20	20	168
6	130 Industrial Park	0.40	0.40	3.37	50.00	20	20	169
7	130 Industrial Park	0.40	0.40	3.37	50.00	20	20	168
8	130 Industrial Park	0.40	0.40	3.37	60.00	24	24	202
9	130 Industrial Park	0.40	0.40	3.37	30.31	12	12	102
10	130 Industrial Park	0.40	0.40	3.37	54.93	22	22	185
11	130 Industrial Park	0.40	0.40	3.37	58.61	23	23	198
12	130 Industrial Park	0.40	0.40	3.37	80.45	32	32	271
13	130 Industrial Park	0.40	0.40	3.37	149.18	60	60	503
14	130 Industrial Park	0.40	0.40	3.37	49.98	20	20	168
15	130 Industrial Park	0.40	0.40	3.37	39.93	16	16	135
16	130 Industrial Park	0.40	0.40	3.37	39.93	16	16	135
17	130 Industrial Park	0.40	0.40	3.37	50.00	20	20	168
18	130 Industrial Park	0.40	0.40	3.37	50.00	20	20	168
19	130 Industrial Park	0.40	0.40	3.37	47.81	19	19	161
20	Mixed Use ²	-	-	-	-	43	66	691
Total					995.39	665	707	7,202

Lot	Land Use:	AM Peak	Average Rate: PM Peak	Weekday	Est. GFA (1000 SF)	AM	Trips PM	Weekday
1a	934 Fast-Food Restaurant with Drive-Through Window	40.19	32.67	470.95	5.10	205	167	2,402
1b	820 Shopping Center	0.94	3.81	37.75	20.00	19	76	755
Total						224	243	3,157

Mixed Use¹

Lot	Land Use:	AM Peak	Average Rate: PM Peak	Weekday	Est. GFA (1000 SF)	AM	Trips PM	Weekday
2a	843 Automobile Parts Sales	2.59	4.91	55.34	9.85	26	48	545
2b	710 General Office Building	1.16	1.15	9.74	15.00	17	17	146
Total						43	66	691

Mixed Use²

Land Use: 130

Industrial Park

Description

An industrial park contains a number of industrial or related facilities. It is characterized by a mix of manufacturing, service, and warehouse facilities with a wide variation in the proportion of each type of use from one location to another. Many industrial parks contain highly diversified facilities—some with a large number of small businesses and others with one or two dominant industries. General light industrial (Land Use 110) and manufacturing (Land Use 140) are related uses.

Additional Data

The sites were surveyed in the 1980s, the 2000s, and the 2010s in California, Georgia, New Jersey, New York, Ontario (CAN), and Pennsylvania.

Source Numbers

106, 162, 184, 251, 277, 422, 706, 747, 753, 937

Industrial Park (130)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 31

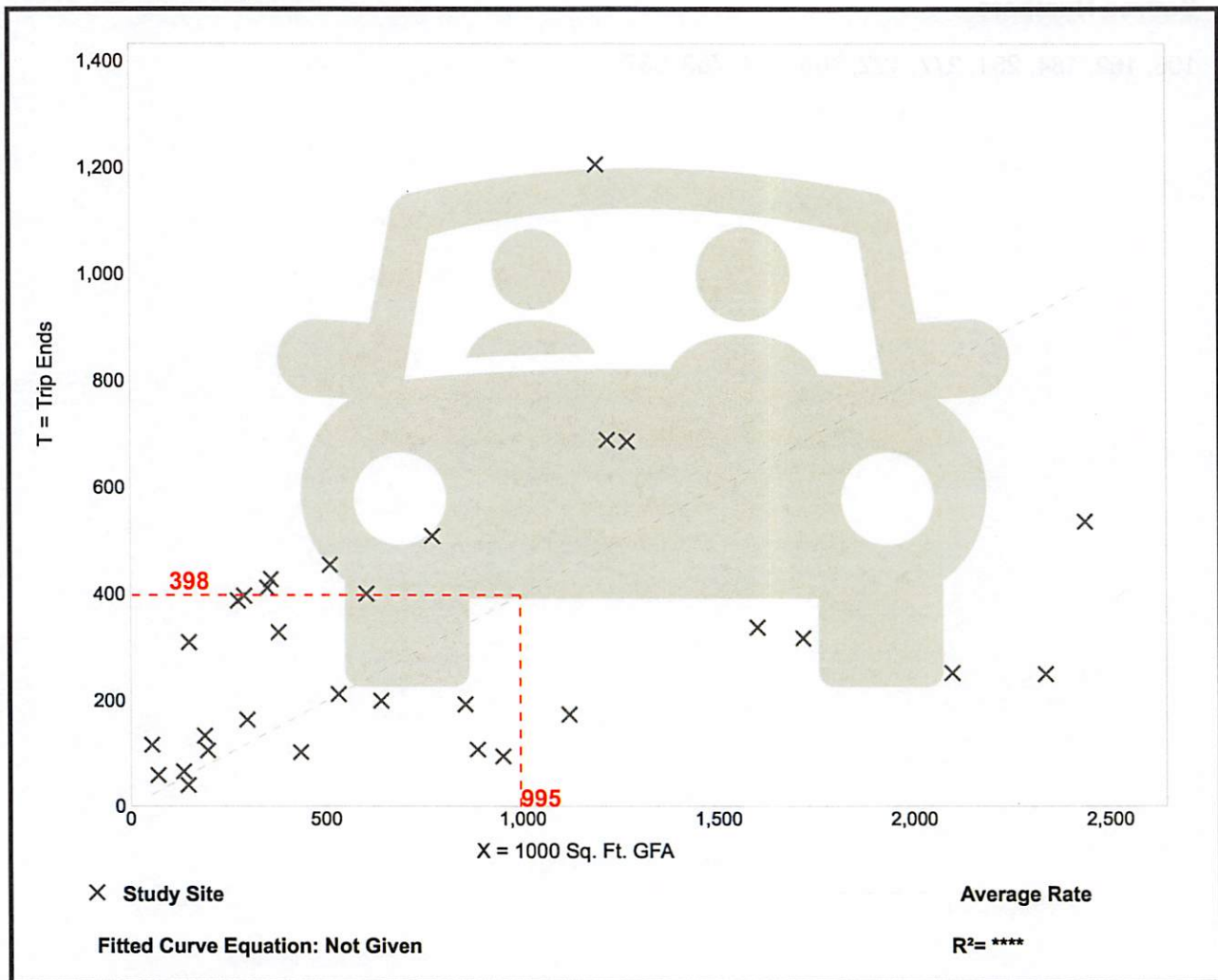
Avg. 1000 Sq. Ft. GFA: 776

Directional Distribution: 81% entering, 19% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.40	0.10 - 2.13	0.37

Data Plot and Equation



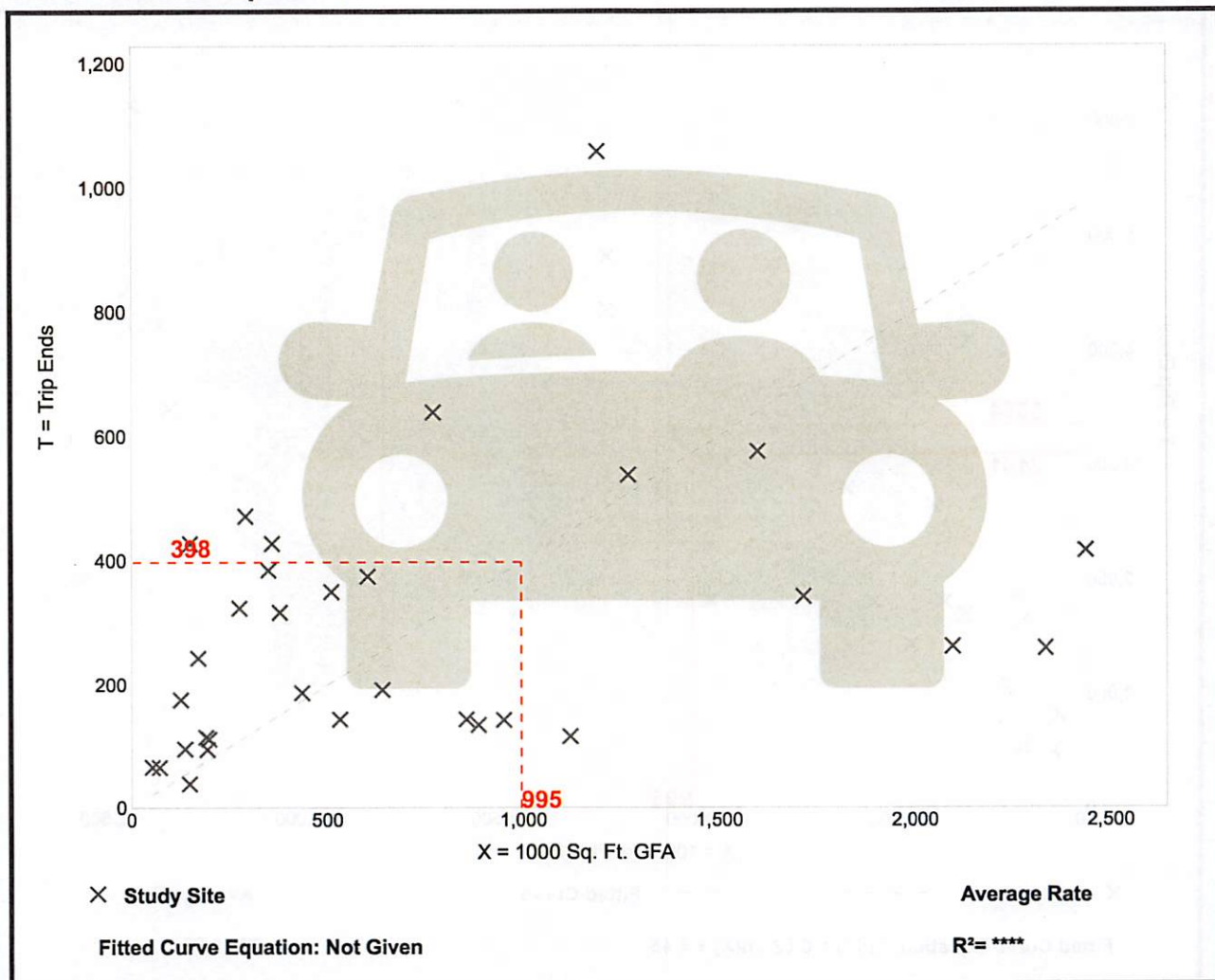
Industrial Park (130)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 32
 Avg. 1000 Sq. Ft. GFA: 720
 Directional Distribution: 21% entering, 79% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.40	0.10 - 2.85	0.41

Data Plot and Equation



Industrial Park (130)

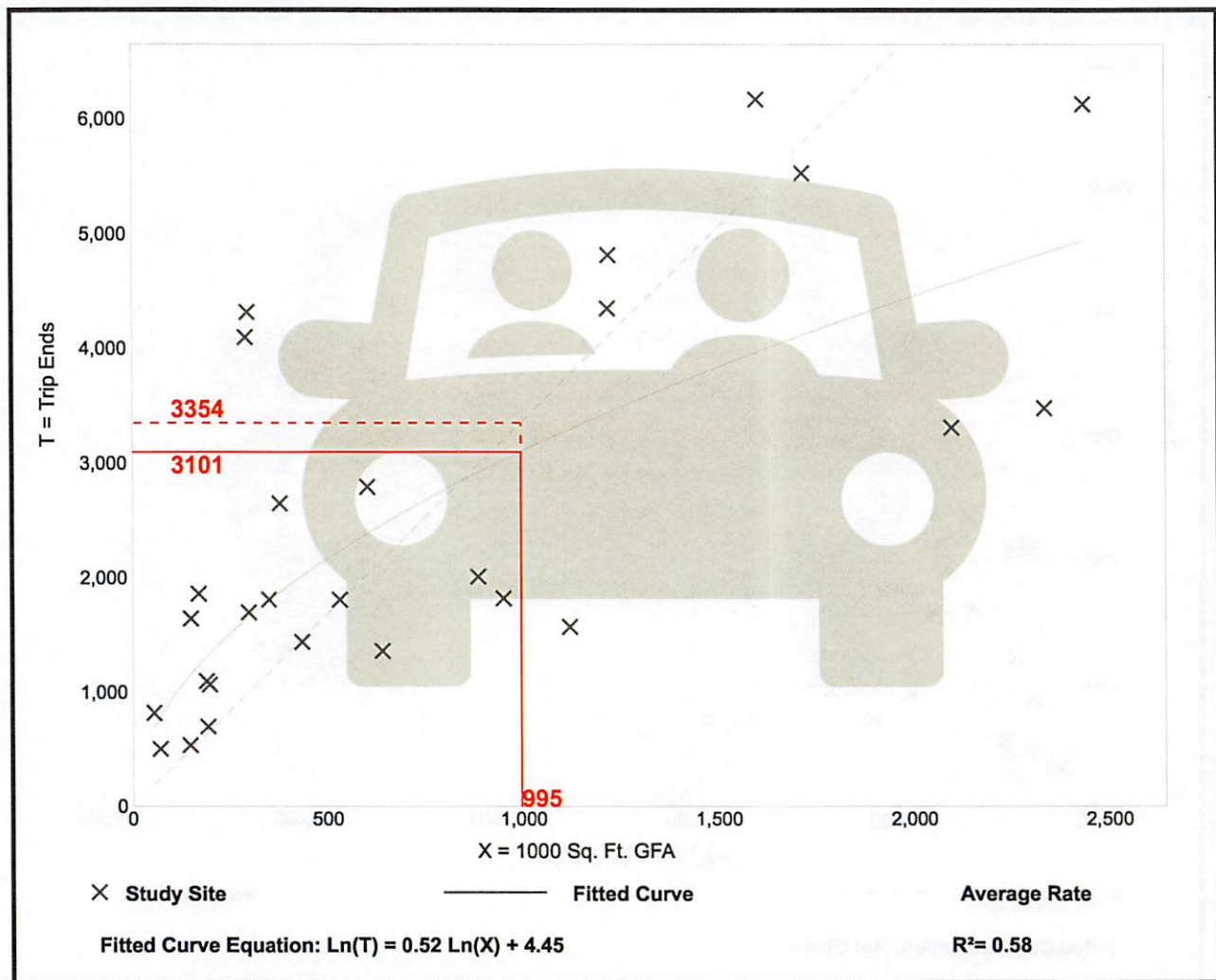
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 27
Avg. 1000 Sq. Ft. GFA: 762
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.37	1.41 - 14.98	2.60

Data Plot and Equation



Land Use: 710

General Office Building

Description

A general office building houses multiple tenants; it is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building or buildings may contain a mixture of tenants including professional services, insurance companies, investment brokers, and tenant services, such as a bank or savings and loan institution, a restaurant, or cafeteria and service retail facilities. A general office building with a gross floor area of 5,000 square feet or less is classified as a small office building (Land Use 712). Corporate headquarters building (Land Use 714), single tenant office building (Land Use 715), office park (Land Use 750), research and development center (Land Use 760), and business park (Land Use 770) are additional related uses.

If information is known about individual buildings, it is suggested that the general office building category be used rather than office parks when estimating trip generation for one or more office buildings in a single development. The office park category is more general and should be used when a breakdown of individual or different uses is not known. If the general office building category is used and if additional buildings, such as banks, restaurants, or retail stores are included in the development, the development should be treated as a multiuse project. On the other hand, if the office park category is used, internal trips are already reflected in the data and do not need to be considered.

When the buildings are interrelated (defined by shared parking facilities or the ability to easily walk between buildings) or house one tenant, it is suggested that the total area or employment of all the buildings be used for calculating the trip generation. When the individual buildings are isolated and not related to one another, it is suggested that trip generation be calculated for each building separately and then summed.

Additional Data

The average building occupancy varied considerably within the studies for which occupancy data were provided. The reported occupied gross floor area was 88 for general urban/suburban sites and 96 percent for the center city core and dense multi-use urban sites.

Time-of-day distribution data for this land use for a weekday, Saturday, and Sunday are presented in Appendix A. For the 16 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:30 and 8:30 a.m. and 4:30 and 5:30 p.m., respectively.

For the three general urban/suburban sites with person trip data, the overall highest volumes during the AM and PM on a weekday were counted between 8:45 and 9:45 a.m. and 12:45 and 1:45 p.m., respectively. For the three dense multi-use urban sites with person trip data, the overall highest volumes during the AM and PM on a weekday were counted between 8:30 and 9:30 a.m. and 4:45 and 5:45 p.m., respectively. For the four center city core sites with person trip data, the overall highest volumes during the AM and PM on a weekday were counted between 9:00 and 10:00 a.m. and 12:45 and 1:45 p.m., respectively.

The average numbers of person trips per vehicle trip at the eight center city core sites at which both person trip and vehicle trip data were collected were as follows:

- 2.76 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 2.90 during Weekday, AM Peak Hour of Generator
- 2.91 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 3.02 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 18 dense multi-use urban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.47 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.47 during Weekday, AM Peak Hour of Generator
- 1.46 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.53 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 23 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.30 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.34 during Weekday, AM Peak Hour of Generator
- 1.32 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.41 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Colorado, Connecticut, Georgia, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Michigan, Minnesota, Missouri, Montana, New Hampshire, New Jersey, New York, Pennsylvania, Texas, Utah, Virginia, and Washington.

Source Numbers

161, 175, 183, 184, 185, 207, 212, 217, 247, 253, 257, 260, 262, 273, 279, 297, 298, 300, 301, 302, 303, 304, 321, 322, 323, 324, 327, 404, 407, 408, 418, 419, 423, 562, 734, 850, 859, 862, 867, 869, 883, 884, 890, 891, 904, 940, 944, 946, 964, 965, 972

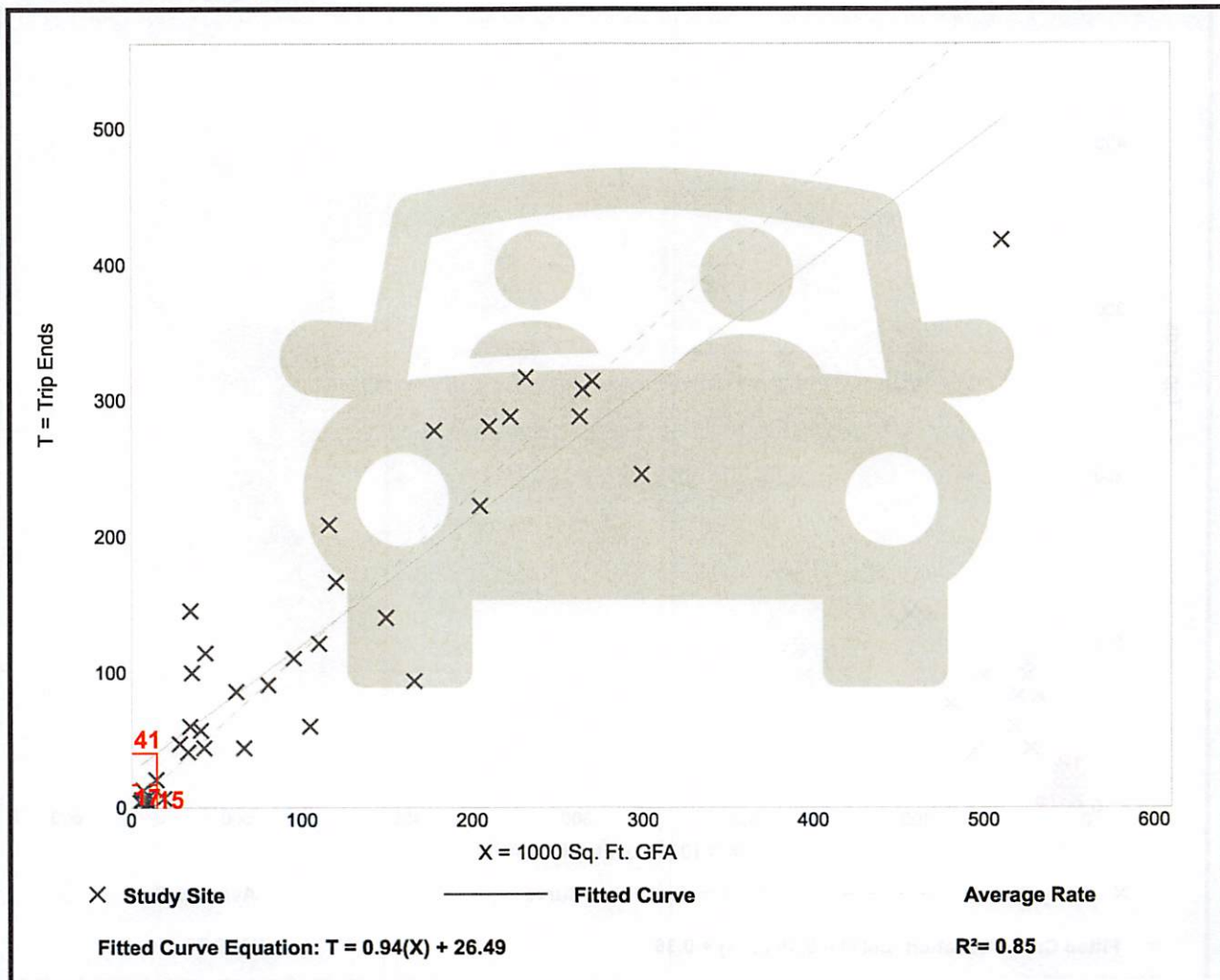
General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 35
 Avg. 1000 Sq. Ft. GFA: 117
 Directional Distribution: 86% entering, 14% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.16	0.37 - 4.23	0.47

Data Plot and Equation



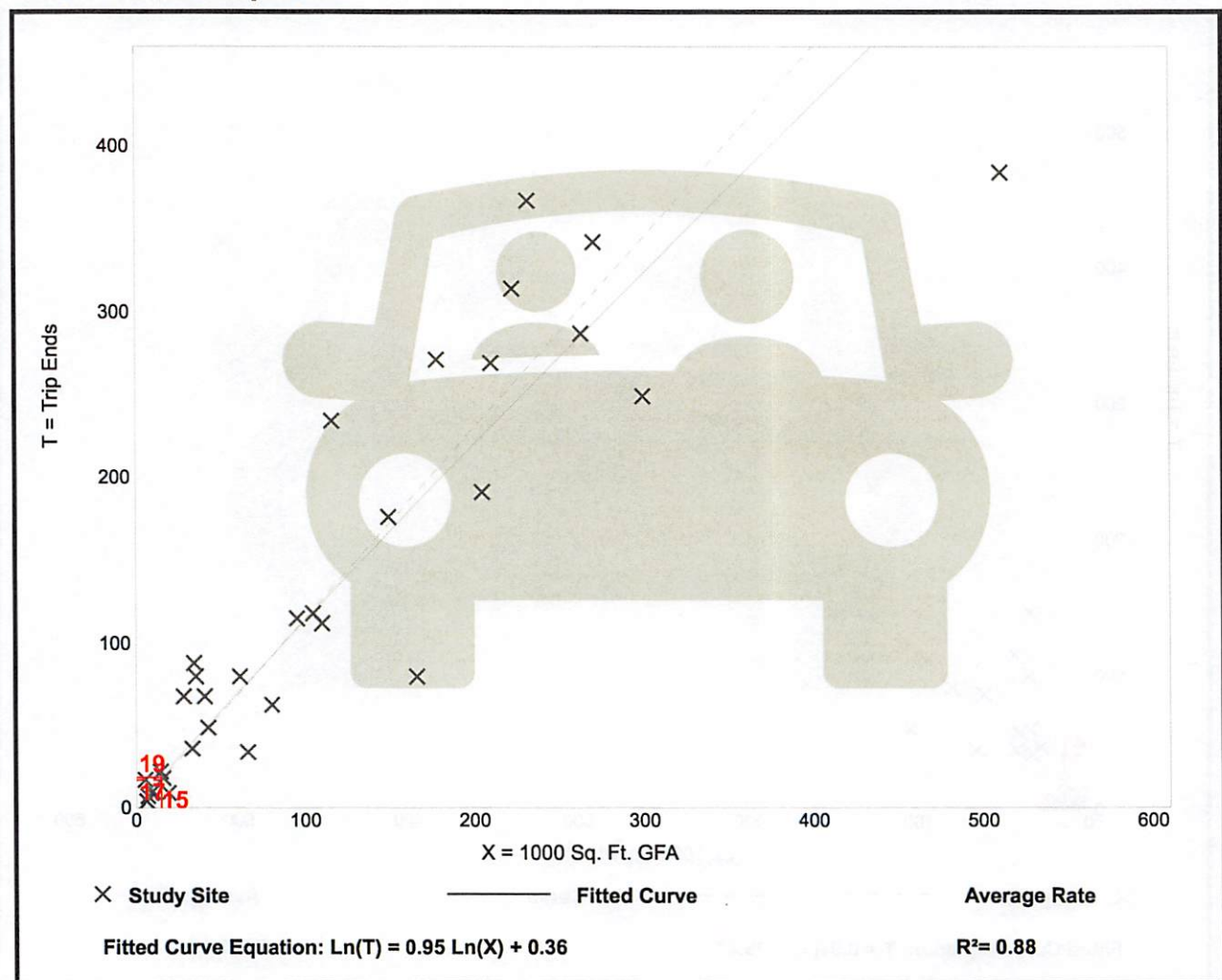
General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 32
 Avg. 1000 Sq. Ft. GFA: 114
 Directional Distribution: 16% entering, 84% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.15	0.47 - 3.23	0.42

Data Plot and Equation



General Office Building (710)

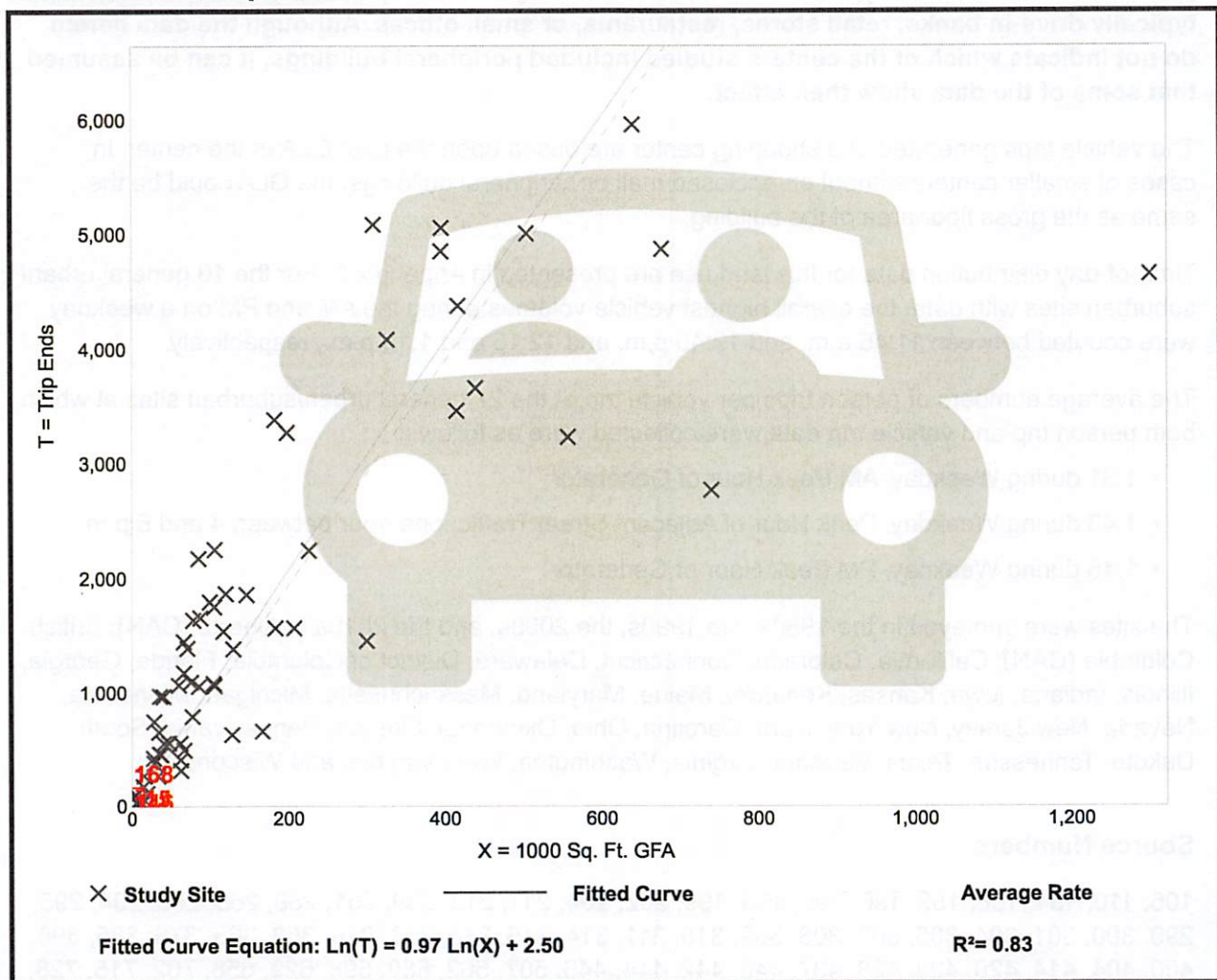
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 66
Avg. 1000 Sq. Ft. GFA: 171
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.74	2.71 - 27.56	5.15

Data Plot and Equation



Land Use: 820

Shopping Center

Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands. Factory outlet center (Land Use 823) is a related use.

Additional Data

Shopping centers, including neighborhood centers, community centers, regional centers, and super regional centers, were surveyed for this land use. Some of these centers contained non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, health clubs, and recreational facilities (for example, ice skating rinks or indoor miniature golf courses).

Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied included peripheral buildings, it can be assumed that some of the data show their effect.

The vehicle trips generated at a shopping center are based upon the total GLA of the center. In cases of smaller centers without an enclosed mall or peripheral buildings, the GLA could be the same as the gross floor area of the building.

Time-of-day distribution data for this land use are presented in Appendix A. For the 10 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:15 and 1:15 p.m., respectively.

The average numbers of person trips per vehicle trip at the 27 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.31 during Weekday, AM Peak Hour of Generator
- 1.43 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.46 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

Source Numbers

105, 110, 154, 156, 159, 186, 190, 198, 199, 202, 204, 211, 213, 239, 251, 259, 260, 269, 294, 295, 299, 300, 301, 304, 305, 307, 308, 309, 310, 311, 314, 315, 316, 317, 319, 358, 365, 376, 385, 390, 400, 404, 414, 420, 423, 428, 437, 440, 442, 444, 446, 507, 562, 580, 598, 629, 658, 702, 715, 728, 868, 870, 871, 880, 899, 908, 912, 915, 926, 936, 944, 946, 960, 961, 962, 973, 974, 978

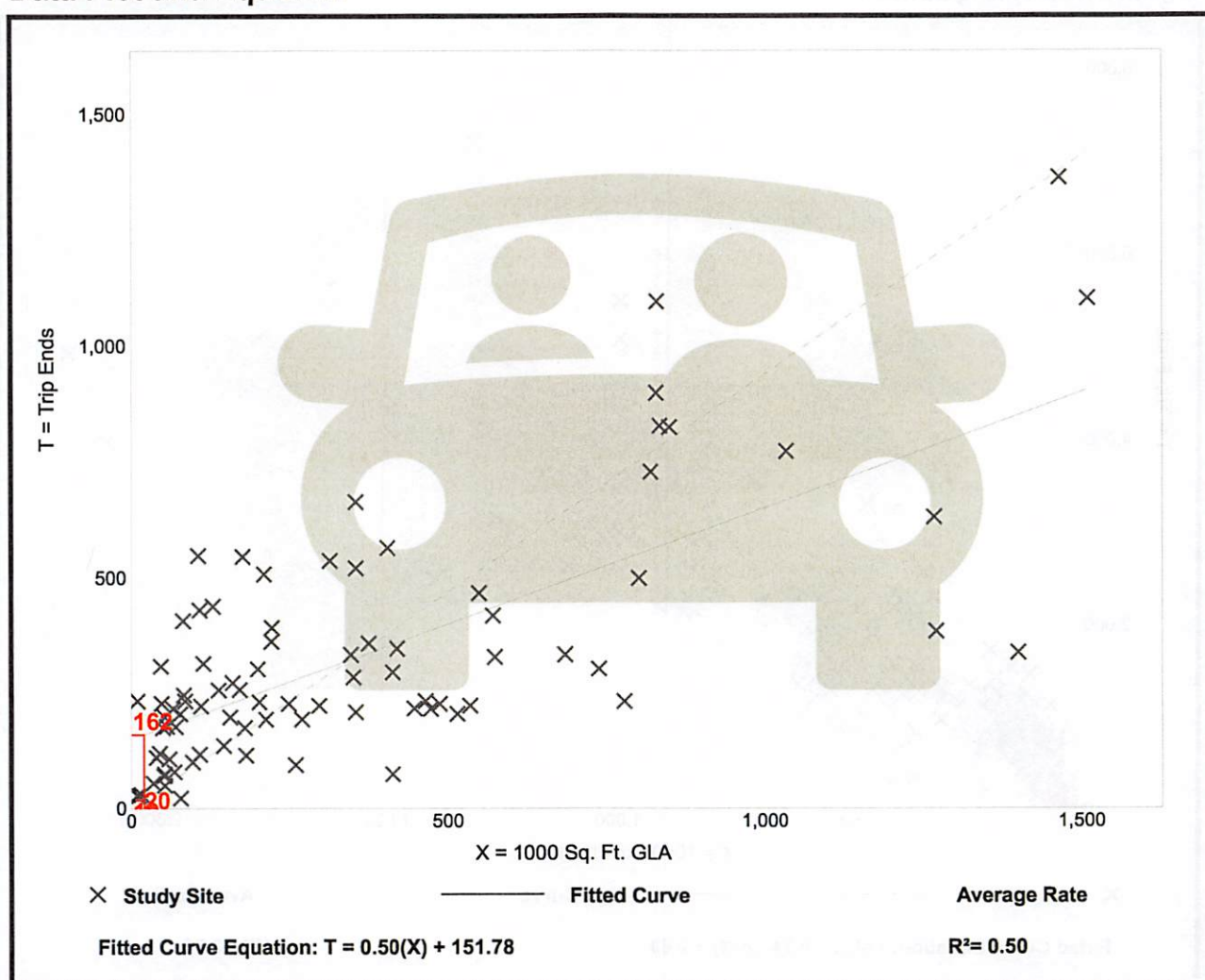
Shopping Center (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 84
 Avg. 1000 Sq. Ft. GLA: 351
 Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

Data Plot and Equation



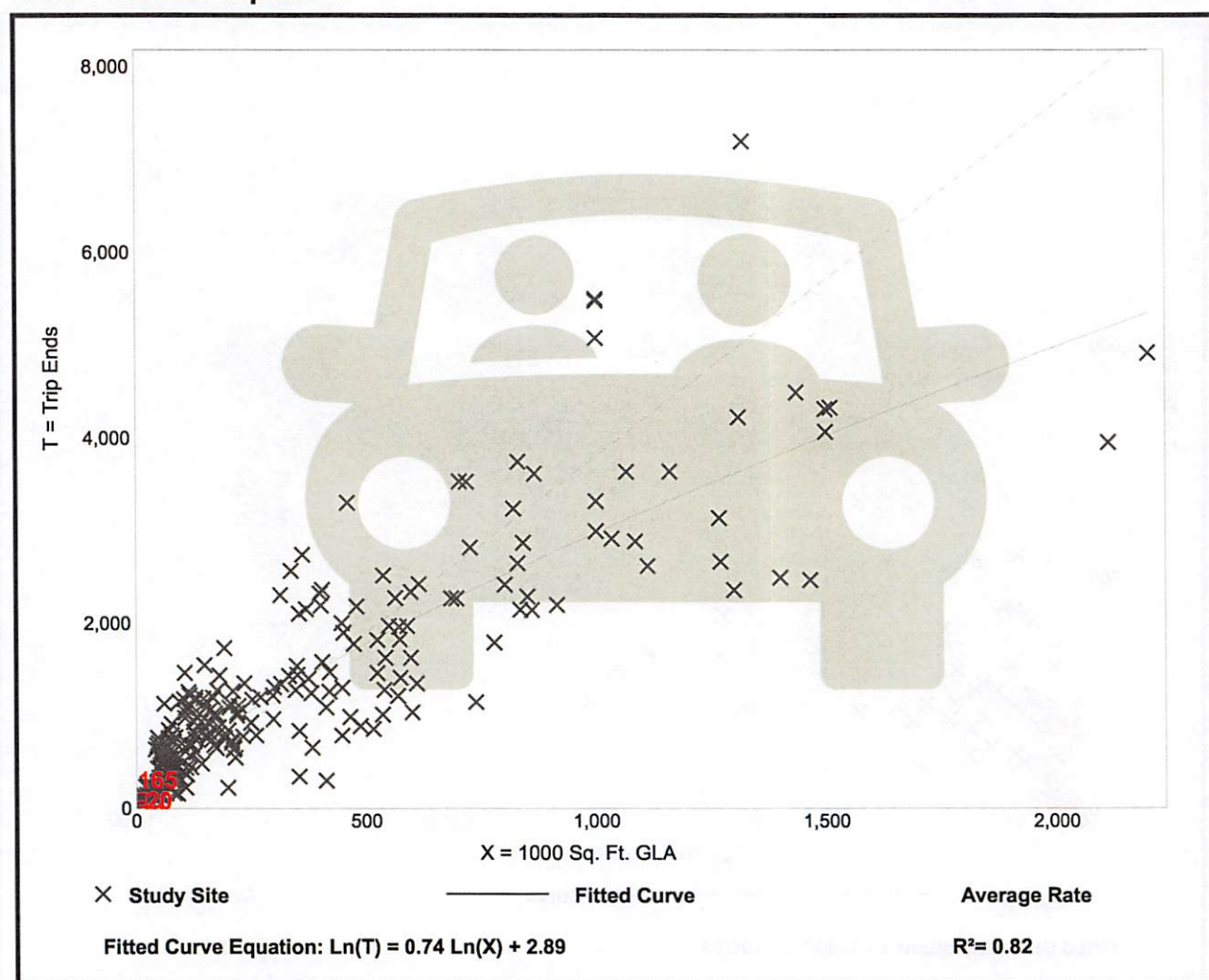
Shopping Center (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 261
 Avg. 1000 Sq. Ft. GLA: 327
 Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

Data Plot and Equation



Shopping Center (820)

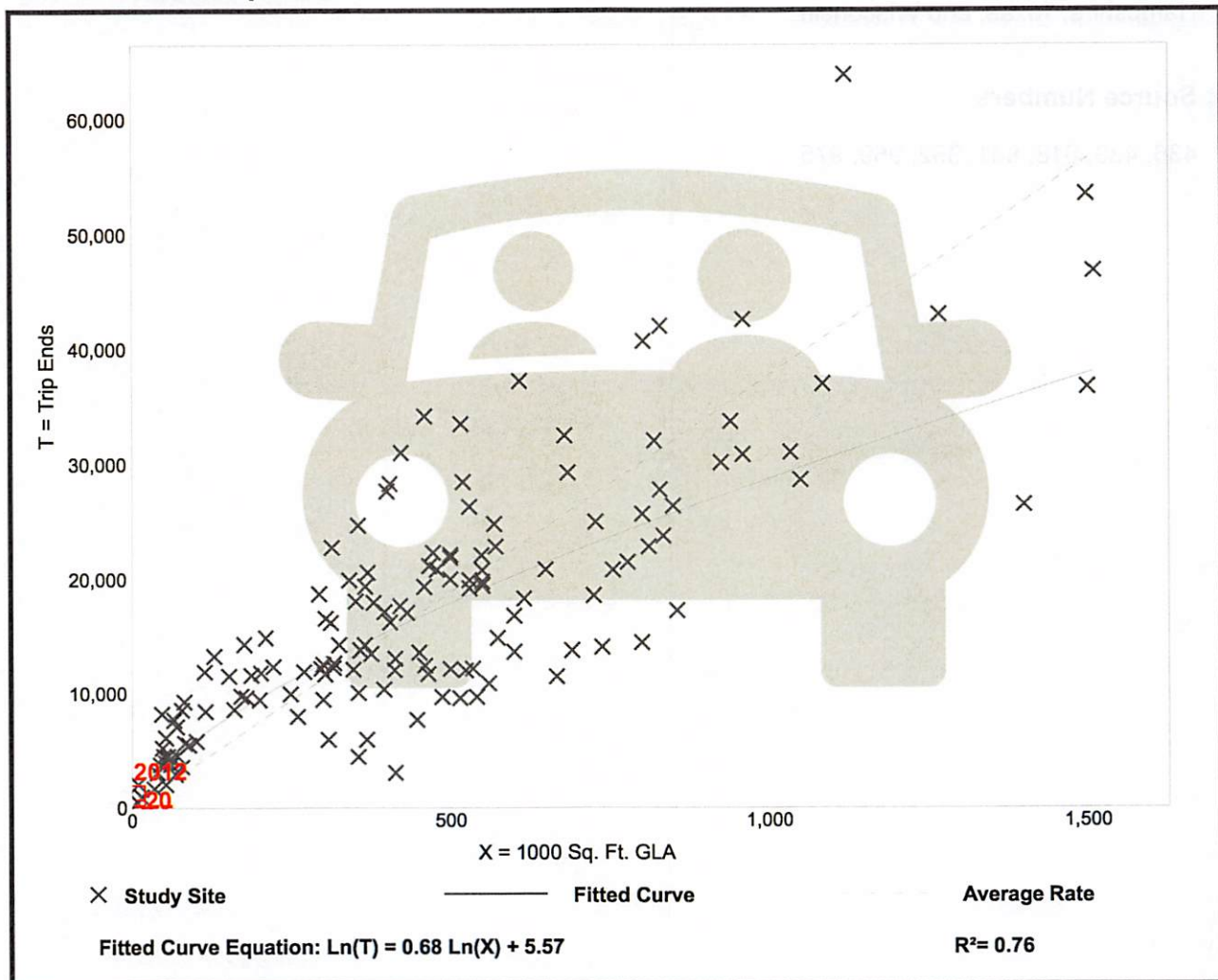
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 147
Avg. 1000 Sq. Ft. GLA: 453
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
37.75	7.42 - 207.98	16.41

Data Plot and Equation



Land Use: 843

Automobile Parts Sales

Description

An automobile parts sales facility specializes in the sale of automobile parts for maintenance and repair. Items sold at these facilities include spark plugs, oil, batteries, and a wide range of automobile parts. These facilities are not equipped for on-site vehicle repair. Tire store (Land Use 848), tire superstore (Land Use 849), and automobile parts and service center (Land Use 943) are related uses.

Additional Data

Time-of-day distribution data for this land use are presented in Appendix A. For the seven general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:15 a.m. and 12:15 p.m. and 12:45 and 1:45 p.m., respectively.

The sites were surveyed in the 1990s, the 2000s, and the 2010s in Alberta (CAN), Florida, New Hampshire, Texas, and Wisconsin.

Source Numbers

436, 439, 618, 881, 882, 959, 975

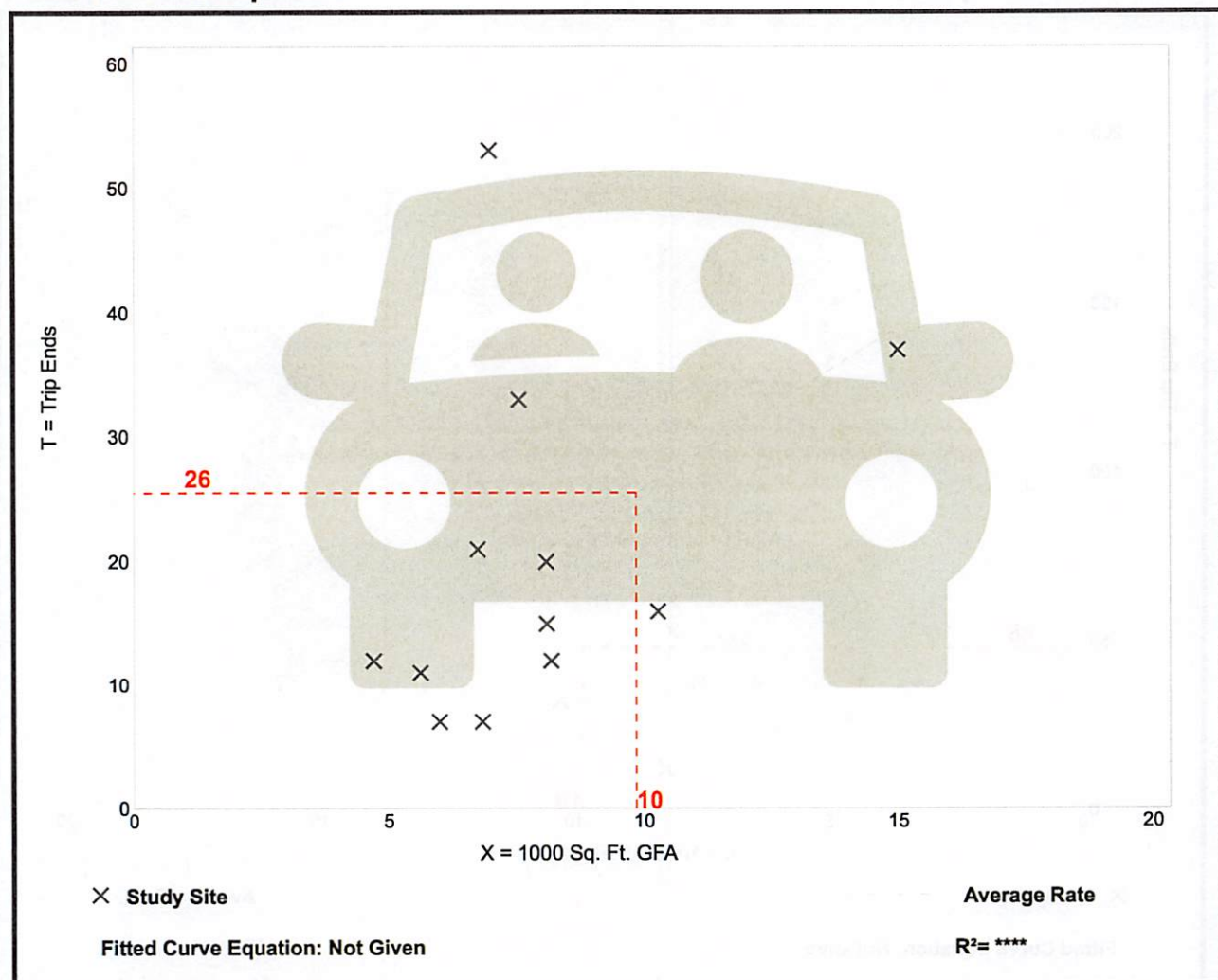
Automobile Parts Sales (843)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 12
 Avg. 1000 Sq. Ft. GFA: 8
 Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.59	1.02 - 7.58	1.73

Data Plot and Equation



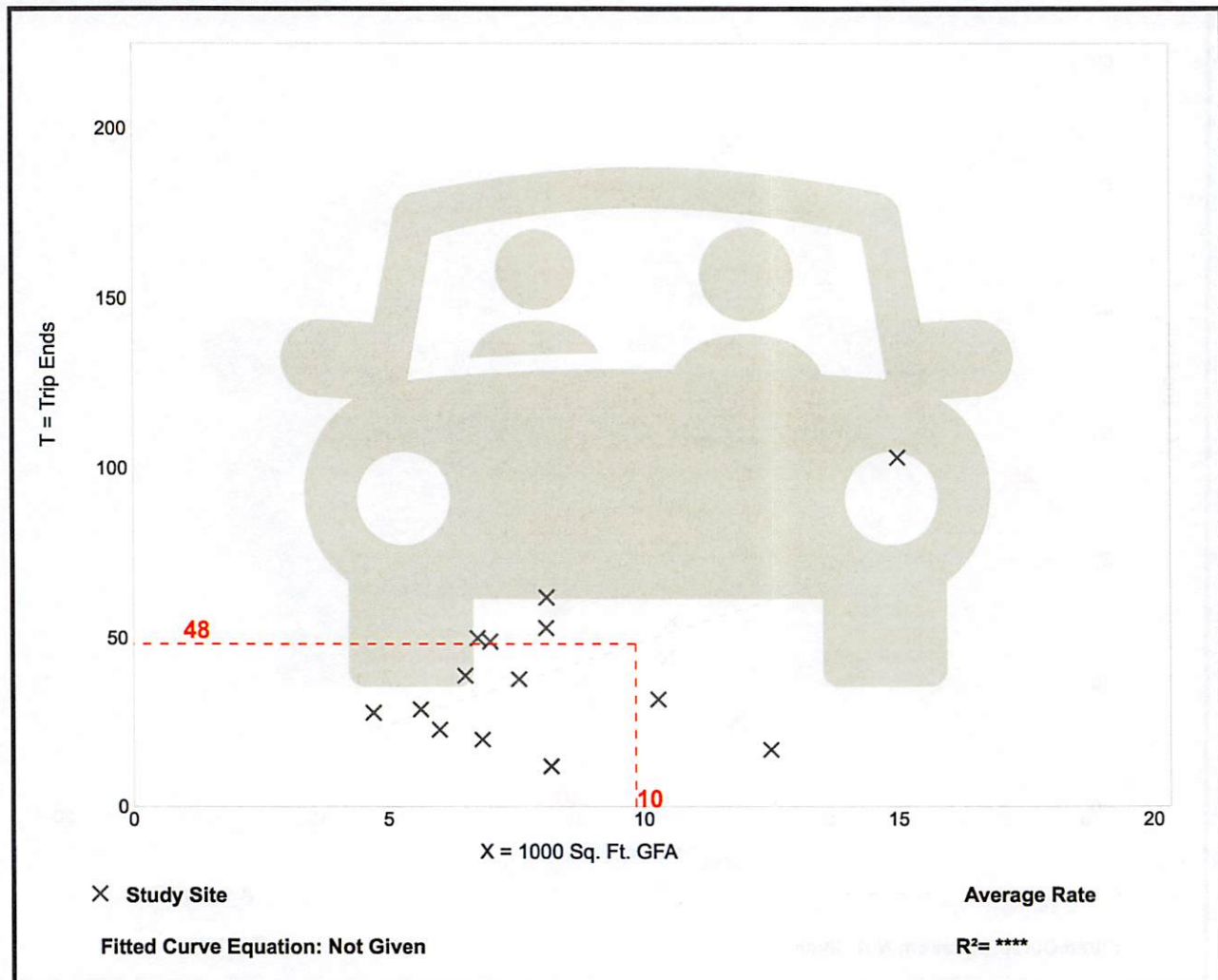
Automobile Parts Sales (843)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 14
 Avg. 1000 Sq. Ft. GFA: 8
 Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
4.91	1.36 - 7.65	2.29

Data Plot and Equation



Automobile Parts Sales (843)

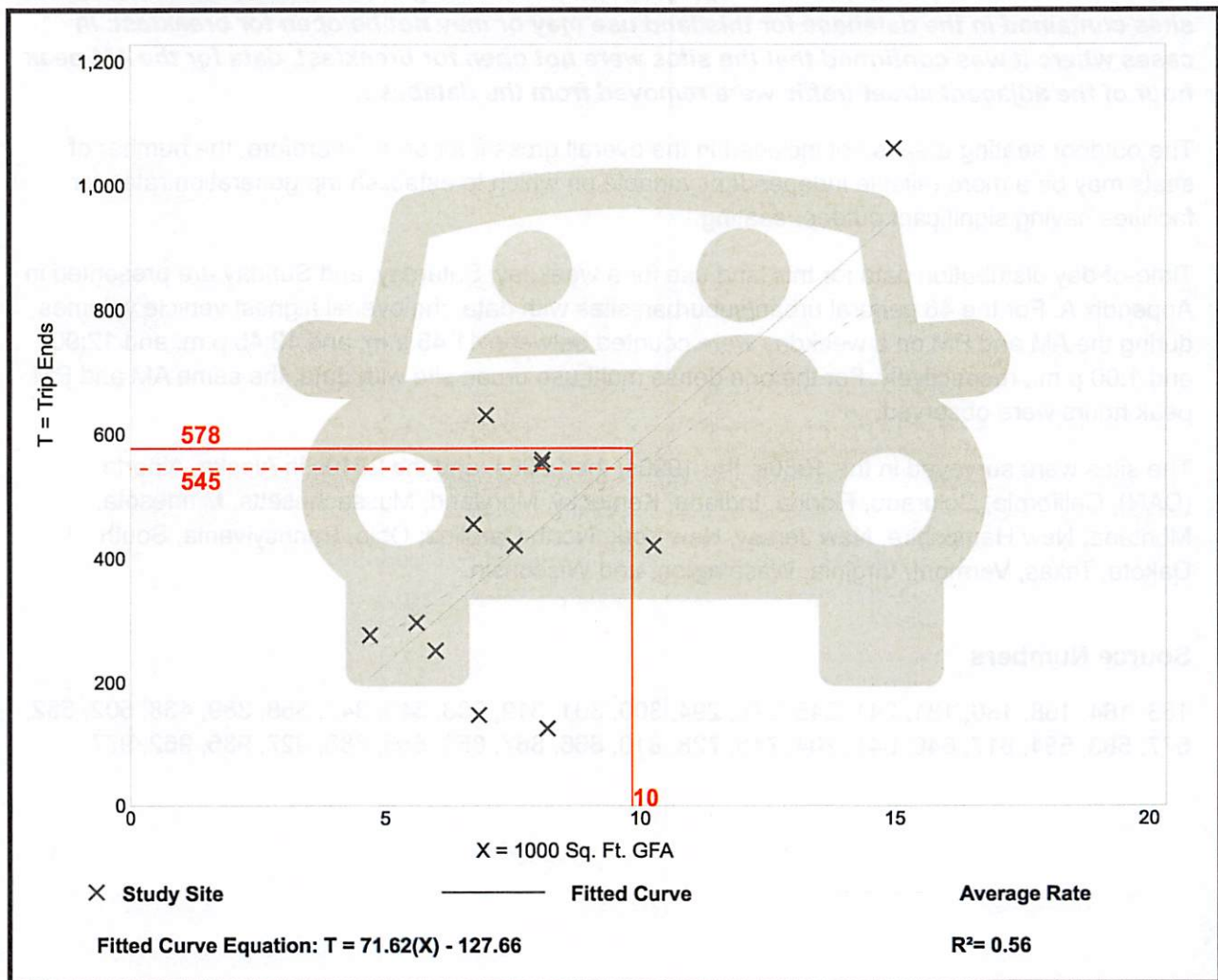
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 12
Avg. 1000 Sq. Ft. GFA: 8
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
55.34	15.38 - 90.41	21.57

Data Plot and Equation



Land Use: 934

Fast-Food Restaurant with Drive-Through Window

Description

This category includes fast-food restaurants with drive-through windows. This type of restaurant is characterized by a large drive-through clientele, long hours of service (some are open for breakfast, all are open for lunch and dinner, some are open late at night or 24 hours a day) and high turnover rates for eat-in customers. These limited-service eating establishments do not provide table service. Non-drive-through patrons generally order at a cash register and pay before they eat. Fast casual restaurant (Land Use 930), high-turnover (sit-down) restaurant (Land Use 932), fast-food restaurant without drive-through window (Land Use 933), and fast-food restaurant with drive-through window and no indoor seating (Land Use 935) are related uses.

Additional Data

Users should exercise caution when applying statistics during the AM peak periods, as the sites contained in the database for this land use may or may not be open for breakfast. In cases where it was confirmed that the sites were not open for breakfast, data for the AM peak hour of the adjacent street traffic were removed from the database.

The outdoor seating area is not included in the overall gross floor area. Therefore, the number of seats may be a more reliable independent variable on which to establish trip generation rates for facilities having significant outdoor seating.

Time-of-day distribution data for this land use for a weekday, Saturday, and Sunday are presented in Appendix A. For the 46 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:00 and 1:00 p.m., respectively. For the one dense multi-use urban site with data, the same AM and PM peak hours were observed.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alaska, Alberta (CAN), California, Colorado, Florida, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Montana, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Dakota, Texas, Vermont, Virginia, Washington, and Wisconsin.

Source Numbers

163, 164, 168, 180, 181, 241, 245, 278, 294, 300, 301, 319, 338, 340, 342, 358, 389, 438, 502, 552, 577, 583, 584, 617, 640, 641, 704, 715, 728, 810, 866, 867, 869, 885, 886, 927, 935, 962, 977

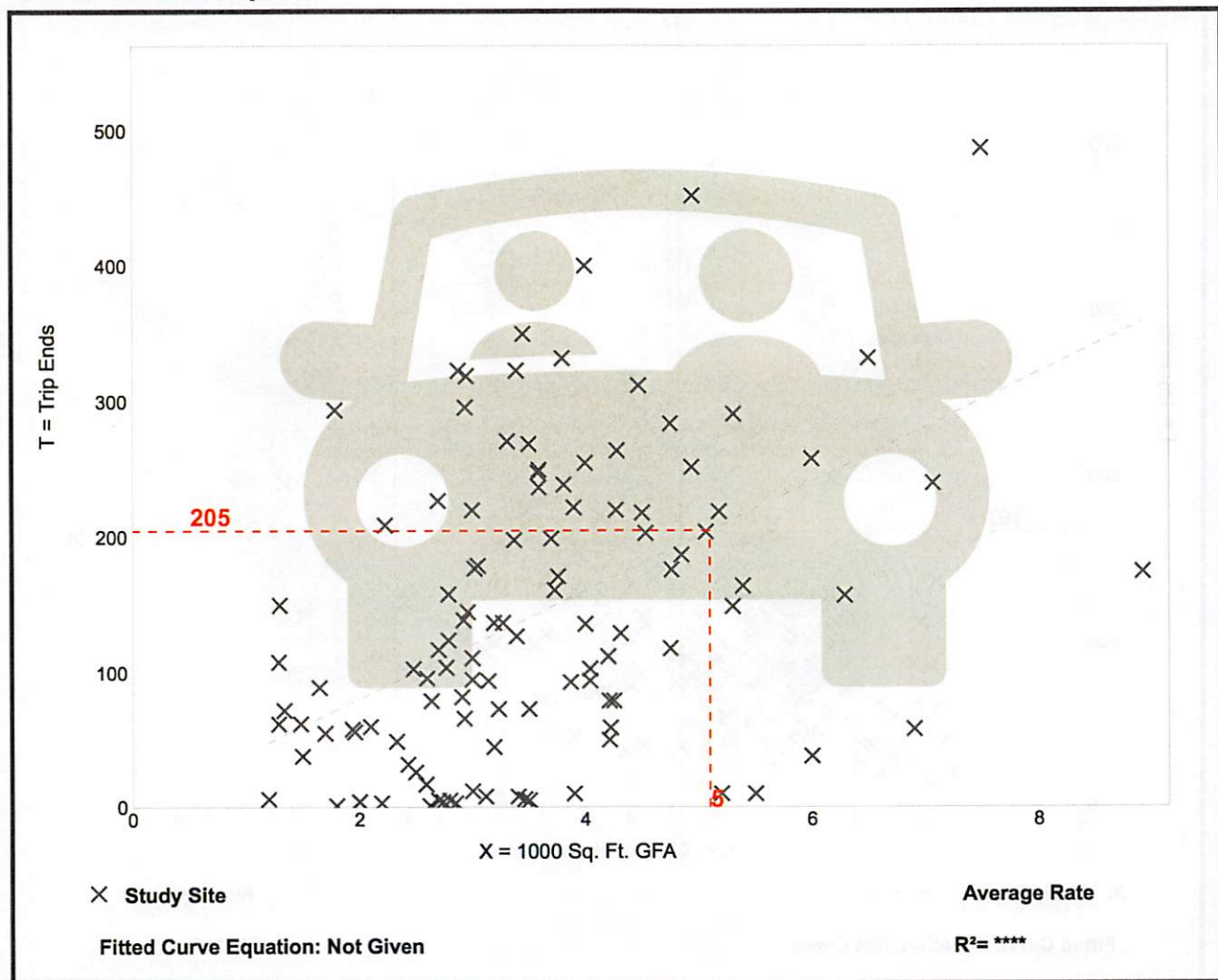
Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 111
 Avg. 1000 Sq. Ft. GFA: 4
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
40.19	0.38 - 164.25	28.78

Data Plot and Equation



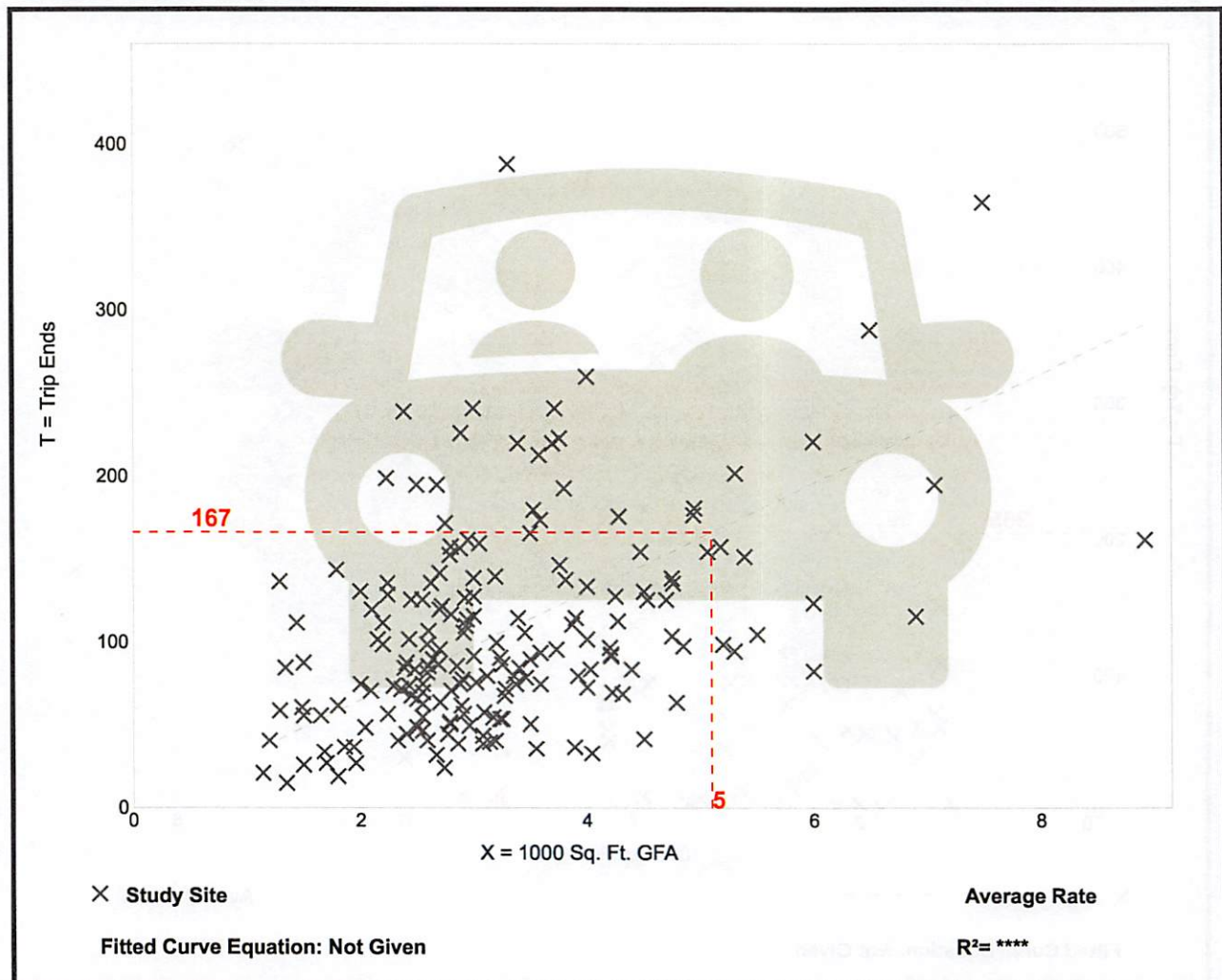
Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 185
 Avg. 1000 Sq. Ft. GFA: 3
 Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
32.67	8.17 - 117.22	17.87

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

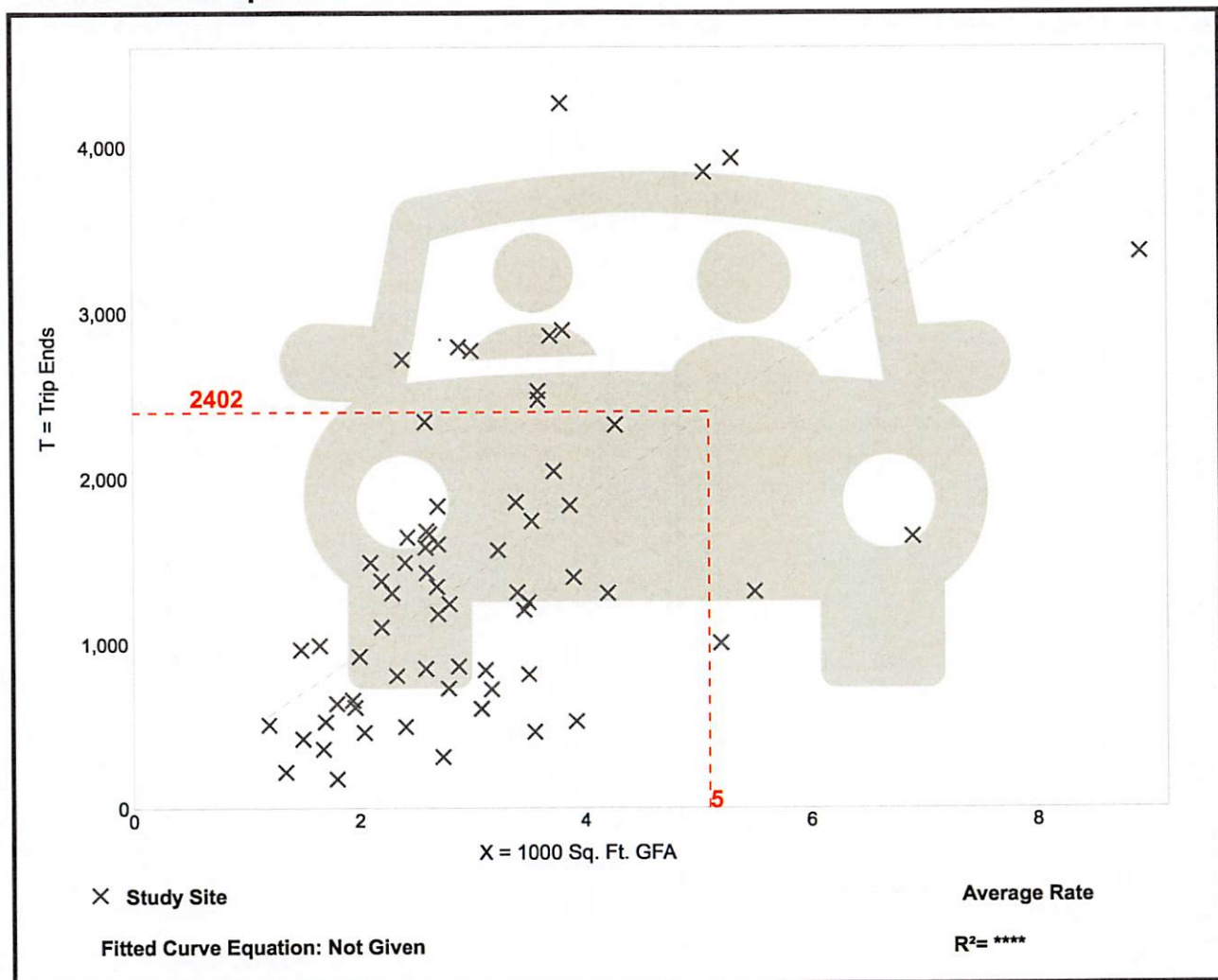
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 67
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
470.95	98.89 - 1137.66	244.44

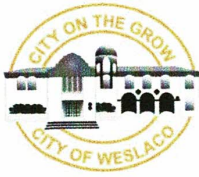
Data Plot and Equation





**Planning & Zoning Commission
Standardized Agenda Request Form**

Date of Meeting: SEPTEMBER 1, 2021	Agenda Item No. (to be assigned by PCE): IV.B
From: Rebekah de la Fuente, Planning Director, on behalf of Juan Alonzo.	
Subject/Agenda Item: Discussion and consideration for the Preliminary Plat for White Rose Subdivision– being a 4.644 acre tract of land out of Farm Tract 31, West Tract Subdivision, Weslaco, Hidalgo County, Texas Located approximately 2000ft North of Intersection Frontage Road & Bridge Ave. Possible Action.	
Discussion/Overview: The proposed two (2) lot subdivision is located inside the City of Weslaco. This subdivision is being serviced with water by the City of Weslaco Company through an 18” waterline and sewer by City of Weslaco services through an 8” sewer line. The property is within a Flood Zone “B”.	
If item requires Publication Notice, provide date and periodical of publication; indicate if comments received from letters mailed to property owners: N/A	
Staff recommendation for Commission’s Action: Staff recommends approval of Preliminary Plat.	
Additional Action Prompted: ☒ Mayor’s Signature ☐ Public Hearing ☐ Budget Amendment ☐ Resolution ☐ Ordinance – First Reading ☐ Ordinance – Final Reading	
Advisory Review, (if any): (name of board/committee, date of action, recommendation): N/A	
If item previously considered, provide date and action by Commission: N/A	
Attachments,(if any): Application for Subdivision platting, Staff’s comments, Drainage Report, Subdivision plat and Utility layout.	
Responsibilities upon Commission’s Action: Planning staff will advise applicant.	



SUBDIVISION PLATTING APPLICATION

The Planning & Zoning Commission meets every 1st Wednesday of each month at 5:30 pm.

The City Commission meets every 1st and 3rd Tuesday of each month at 5:30 pm

FILE NO. _____

This form shall be completed by the Property Owner or Applicant and submitted to the Planning Department along with the required number of copies of the respective plat, review fee and all other required information listed below and in the Subdivision Ordinance. The submittal of an application does not constitute acceptance for processing until the staff reviews and determines the application is complete.

STAFF USE ONLY

☐ Single Lot Variance ☐ Minor Plat ☐ Planned Unit Development ☐ Standard Subdivision

GENERAL INFORMATION

Name of Subdivision: White Rose Subdivision

Location: Approximately 2000 feet North of Intersection of Frontage Road and Bridge Ave.

Legal Description: 4.644 acre tract out of Farm Tract 31, West Tract Subdivision as recorded in Vol 2 page 34, HCMR.

Is subdivision inside city limits? ☒ YES ☐ NO

If subdivision is in the ETJ, indicate? ☐ 3.5 Mile ☐ 5 Mile

If no submit letter of Annexation (Contiguous or Consensual)

Existing Zoning: Commercial

Existing Land Use: Commercial Proposed Land Use: Commercial/Multi Family

Number of Lots Proposed: 2 Gross Acreage: 4.644ac

Title Report Submitted: ☐ YES ☐ NO

OWNER INFORMATION

Owner's Name: Raul Guerra Telephone: 956-429-8434

Address: 621 Tierra Prometida Fax: _____

City: Weslaco State: TEXAS Zip: 78599 E-mail: _____

ENGINEER INFORMATION

Name: Juan Alonzo, P.E. Telephone: 956-294-1241

Address: 50 N. Vermont Ave. Suite C Fax: _____

City: Mercedes State: Tx Zip: 78570 E-mail: jalonzo@altexeng.com

255 S. KANSAS AVE ■ WESLACO, TEXAS 78596-6285 ■ 956-447-3401 ■ (Fax) 956-973-3128 ■ WWW.WESLACOTX.GOV

UTILITY PROVISIONS

Will proposed subdivision connect to:

☒ YES ☐ NO Water Provision: City of Weslaco

☐ YES ☐ NO Wastewater Provision: City of Weslaco

☐ YES ☐ NO Electric Company: AEP

☒ YES ☐ NO Phone Utility _____

☐ YES ☒ NO Gas Utility _____

☒ YES ☐ NO Cable Utility _____

Proposed subdivision is in the following districts:

☒ YES ☐ NO Drainage District HCCD1

☒ YES ☐ NO Irrigation District HCCID9

Has the property been assessed as flat rate irrigable property: ☐ YES ☒ NO

Have Water Rights been conveyed to City/Water Supplier? ☐ YES ☒ NO

(Attach written proof of such assessment or that it has never been assessed as such a property) If **YES**, attach an estimate from the irrigation district of the proportional water rights for the subdivision as calculated under Texas Water Code § 49.505.

SUBMITTALS REQUIRED FOR MINOR PLAT REVIEW

☒ Two (2) sets of plats **folded and stapled** (24 x 36) and forward a copy in PDF format to mhinojosa@weslacotx.gov & rdelafuente@weslacotx.gov

☒ \$350.00 Planning Review fee

☒ One 11" X 17" reduced copy of plat

☒ Plat Layout

☒ Existing & Proposed Easements

☒ Existing & Proposed ROW

☒ Existing & Proposed Drainage Easements

☒ Contours

☒ Flood Zones

☒ Adjoiners

☒ Existing street names

☒ Drainage plans and calculations with engineer's seal

☒ Elevations

☒ Flood directional arrows

☒ Detention areas

☒ Street names

☒ Proof of ownership of the property

☒ If septic tank system required, submit soil evaluation report

☒ Water Rights associated with the property

☒ Tax Receipt for all taxing entities showing that taxes are paid in full

SUBMITTALS REQUIRED FOR PRELIMINARY (P & Z)

☒ Twelve (12) sets of preliminary plat **folded and stapled** (24 x 36) and forward a copy in PDF format to mhinojosa@weslacotx.gov & rdelafuente@weslacotx.gov

☒ \$350.00 (one time fee for preliminary and final plat)

☒ One 11" X 17" reduced copy of plat

☒ Plat Layout

☒ Existing & Proposed Easements

☒ Existing & Proposed ROW

☒ Existing & Proposed Drainage Easements

255 S. KANSAS AVE ■ WESLACO, TEXAS 78596-6285 ■ 956-447-3401 ■ (Fax) 956-973-3128 ■ WWW.WESLACOTX.GOV

- ☒ Contours
- ☒ Flood Zones
- ☒ Adjoiners
- ☒ Existing & Proposed street names
- ☒ Utility Layout
 - ☒ Existing & Proposed Utilities
 - ☒ Proposed Fire Hydrants
 - ☒ Adjoiners
 - ☒ Street names
- ☒ Drainage plans and calculations with engineer's seal
 - ☒ Elevations
 - ☒ Flood directional arrows
 - ☒ Detention areas
 - ☒ Street names
- ☒ Proof of ownership of the property
- ☒ If septic tank system required, submit soil evaluation report
- ☒ Water Rights associated with the property
- ☒ Tax Receipt for all taxing entities showing that taxes are paid in full
- ☒ Number of fire hydrants proposed for subdivision
- ☒ Trip Generation Worksheet

SUBMITTALS REQUIRED FOR FINAL (P & Z) **Will not apply to Single Lot Variance**

- ☒ Twelve (12) sets of plans **FOLDED & STAPLED** (24 x 36) & PDF copy **with all corrections**
- ☒ Plats to be sealed by Professional Engineer
- ☒ Approved Drainage Report
- ☒ Traffic Impact Analysis (If required)

SUBMITTALS REQUIRED FOR FINAL (City Commission)

- ☐ One set of 8 1/2 x 11 of plat and utilities with all corrections done

SUBMITTALS REQUIRED FOR PRE-CONSTRUCTION MEETING

- ☐ Seven (7) full sets of construction plans 24 x 36 and one (1) 11 x 17 with plan & profile.
- ☐ Engineering cost estimates for 3% geotechnical testing fees and 2% inspection fees
- ☐ Notice of Intent
- ☐ SW3P

SUBMITTALS REQUIRED FOR RECORDING OR HIDALGO COUNTY PLANNING

- ☐ Electronic file of final plat and as-builds
- ☐ Reproducible plat to be recorded with all required signatures
- ☐ 3% geotechnical testing fees or negotiated Material Testing fee by City, whichever is higher
- ☐ 2% inspection fee
- ☐ Park Fees
- ☐ Checks or Receipts: HCCID #9; HCDD #1; County Clerk
- ☐ Tax certificates
- ☐ Memo from engineering inspector releasing subdivision
- ☐ Water Rights associated with the property dedicated and assigned to City of Weslaco or payment of fees sufficient to meet the needs necessitated and attributable to development
- ☐ 30 Year Water and 30 Year Sewer Service Agreements
- ☐ Park dedication/Fees in lieu of

SUBMITTALS REQUIRED FOR RECORDING BY SECURITY

- ☐ Sealed engineering cost estimates
- ☐ Letter of Credit/Performance Bond/Escrow

AUTHORIZATION AND ACKNOWLEDGEMENTS

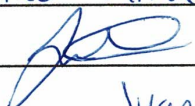
I certify that I am the actual owner of the property described above and this application is being submitted with my consent (include corporate name if applicable); and the following person listed below is my authorized agent to act on my behalf.

I certify that the above information is correct and complete to the best of my knowledge. I understand that I must comply with all applicable local, state, and federal regulations.

Owner Printed Name: RAUL GUERRA

Owner Signature:  Date: 06-16-2021

Juan Alonzo Altex Engineering is the authorized agent

Authorized Agent Signature:  Date: 06-05-21

Authorized Agent Printed Name: Juan Alonzo Jr

THIS PAGE FOR STAFF USE ONLY

Date Received: _____ Received By: _____ Date Paid _____

Preliminary Subdivision Review Date: _____

General Comments: _____

DRAINAGE REPORT

FOR

WHITE ROSE SUBDIVISION

4.644 Acre Tract out of Farm Tract 31, West Tract Subdivision
map or plat thereof recorded in Vol.2, Page 34-37, H.C.D.R.

Prepared for:

Raul Guerra

Prepared by:



ALTEX ENGINEERING

DESIGN ♦ PLANNING ♦ MANAGEMENT
TBPE FIRM REGISTRATION NO. F-19737
50 N. VERMONT AVE., SUITE C
MERCEDES, TEXAS 78570
PH: (956)294-1241
JALONZO@ALTEXENG.COM

Project No. 21.137

JUNE 2021



[Signature]
6-7-21

TABLE OF CONTENTS

A. PROJECT LOCATION.....	1
B. FLOOD PLAIN.....	1
C. SOIL CONDITIONS.....	1
D. EXISTING CONDITIONS	2
E. PROPOSED CONDITIONS.....	2

EXHIBITS

EXHIBIT "A" - LOCATION MAP

EXHIBIT "B" - FIRM ZONE DESIGNATION MAP

EXHIBIT "C" - SOILS SURVEY MAP

EXHIBIT "D" - RUNOFF COEFFICIENTS

EXHIBIT "E" - DRAINAGE CALCULATIONS

EXHIBIT "F" - SITE PLAN

EXHIBIT "G" - SUBDIVISION PLAT w/DRAINAGE LAYOUT

EXHIBIT "H" - AERIAL of USGS MAP

**DRAINAGE REPORT
FOR
WHITE ROSE SUBDIVISION**

A. PROJECT LOCATION

White Rose Subdivision is located on a 4.644-Acre tract of land out of Farm Tract 31, of the West Adams Subdivision, Hidalgo County, Texas. The tract is located approximately 1,980 feet north of the intersection of Mile 4 ½ W Road and W Frontage Road within the City Limits of Weslaco.

B. FLOOD PLAIN

The subject tract predominantly lies in "Zone B-Shaded" areas to be between limits of 100-year flood and 500 year flood plain, or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood, in accordance with F.E.M.A.-F.I.R.M. Community Panel No. 480349 0005 B, Map Revised: March 4, 1980 (Refer to Exhibit B).

C. SOIL CONDITIONS

A review of the Soil Survey of Hidalgo County (Refer to exhibit C) indicates the subject tract lies in an area of soil consisting of Hidalgo Fine Sandy Loam (25,B,SM-SC) and Hidalgo Clay Sandy Loam (28,B,SC,CL) (that have moderately well drained properties.

(25)Hidalgo fine sandy loam, 0 to 1 percent slopes (25, B, SM-SC):

The Hidalgo fine sandy loam, 0 to 1 percent slopes, is well drained. Permeability is moderate, and the available water capacity is medium. Surface runoff is slow.

(28)Hidalgo sandy clay loam, 0 to 1 percent slopes (28, B, SC, CL):

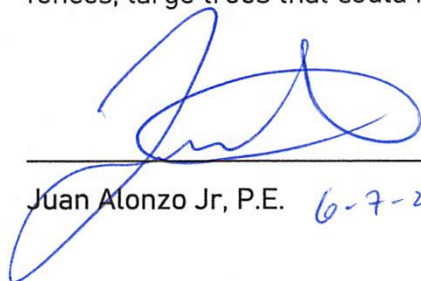
The Hidalgo sandy clay loam, 0 to 1 percent slopes, is well drained. Permeability is moderate, and the available water capacity is high. Surface runoff is slow.

D. EXISTING CONDITIONS

The subject tract is predominantly undeveloped with only a single story commercial building of approximately 1100 sqft and natural grasses present. The existing terrain has a level grade. Existing runoff from the site is by form of sheet flow that gently runs towards the eastern portion of the property. For the existing 10-year storm, the water runoff of this site is 5.22 cfs.

E. PROPOSED CONDITIONS

The proposed conditions for this subdivision will be for development in (two) 2 lots for multi-family use and commercial use. The total contributing 50-year developed storm water discharge of the site will be 31.74cfs (Refer to Exhibit E), an increase of 26.52 cfs from the existing conditions. The total increased flow of this subdivision to the existing drainage district facilities is a total of 36,310 cf (0.834 Ac-ft) (See Exhibit E). A system of detention ponds and swales with a capacity to detain 36,627 cf (0.841Ac-ft) will be constructed along several sections of the lot boundaries that would detain the runoff created by the developed lots. Water from the drainage swales will convey in an easterly flow that will eventually outfall into the existing pond maintained by the city of Weslaco. Additionally, lot owners must maintain their portion of drainage swale. The drainage swale easement must be kept clear of any buildings, fences, large trees that could impede the flow of storm water.

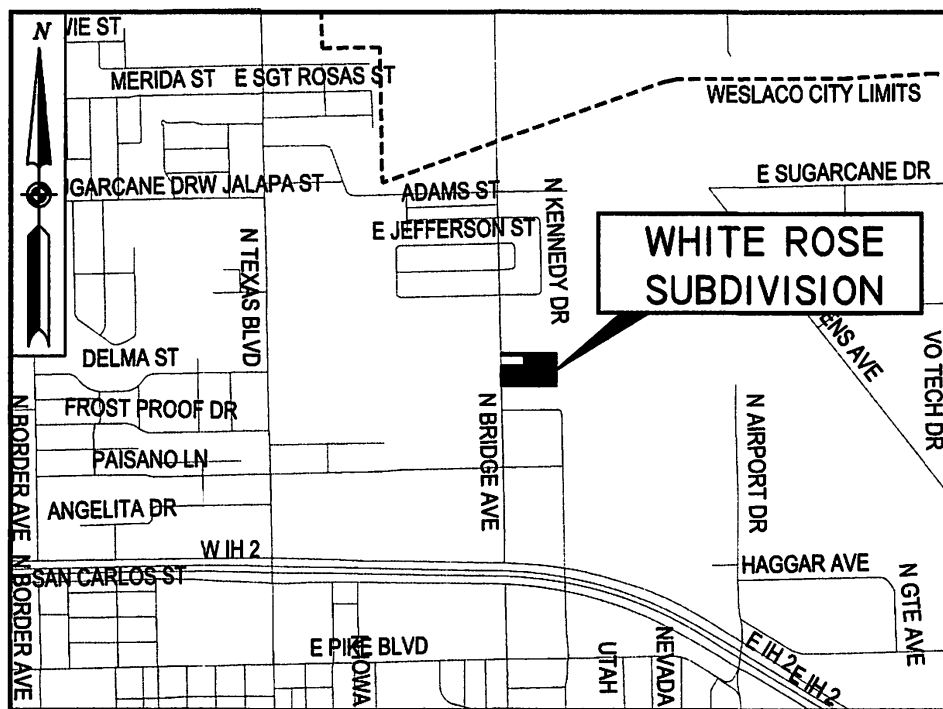


Juan Alonzo Jr, P.E. 6-7-21



EXHIBIT A

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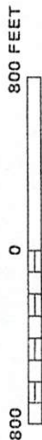
LOCATION MAP
N.T.S.

EXHIBIT B

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APPROXIMATE SCALE



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
WESLACO, TEXAS
HIDALGO COUNTY

ONLY PANEL PRINTED

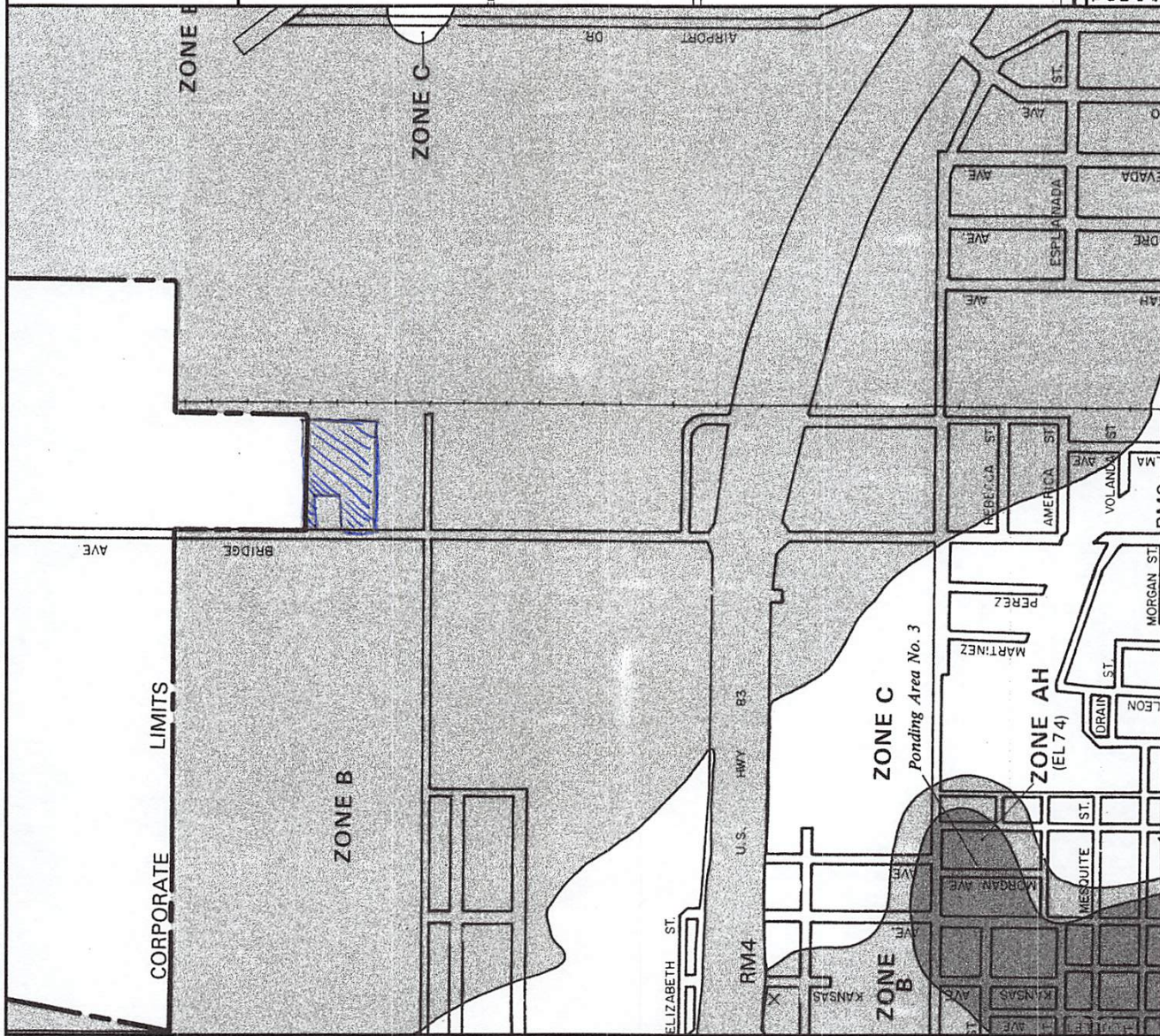
COMMUNITY-PANEL NUMBER
480349 0005 B

EFFECTIVE DATE:
MARCH 4, 1980

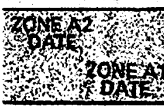


U.S. DEPARTMENT OF HOUSING
AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <https://msc.fema.gov>.



KEY TO MAP

500-Year Flood Boundary	_____
100-Year Flood Boundary	_____
Zone Designations* With Date of Identification e.g., 12/2/74	
100-Year Flood Boundary	_____
500-Year Flood Boundary	_____
Base Flood Elevation Line With Elevation In Feet**	~~~~~ 513 ~~~~~
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7 X
River Mile	• M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood, or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V)

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <https://msc.fema.gov>.

EXHIBIT C

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Custom Soil Resource Report
Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)			Spoil Area
	Area of Interest (AOI)		Stony Spot
Soils			Very Stony Spot
	Soil Map Unit Polygons		Wet Spot
	Soil Map Unit Lines		Other
	Soil Map Unit Points		Special Line Features
Special Point Features		Water Features	
	Blowout		Streams and Canals
	Borrow Pit	Transportation	
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow	Background	
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Hidalgo County, Texas
Survey Area Data: Version 19, Jun 11, 2020

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

Date(s) aerial images were photographed: Sep 20, 2015—Nov 5, 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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
25	Hidalgo fine sandy loam, 0 to 1 percent slopes	1.6	35.9%
28	Hidalgo sandy clay loam, 0 to 1 percent slopes	2.8	64.1%
Totals for Area of Interest		4.4	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

Custom Soil Resource Report

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Hidalgo County, Texas

25—Hidalgo fine sandy loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2sxn
Elevation: 20 to 500 feet
Mean annual precipitation: 20 to 27 inches
Mean annual air temperature: 72 to 74 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hidalgo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hidalgo

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy alluvium

Typical profile

Ap - 0 to 17 inches: fine sandy loam
Bk1 - 17 to 28 inches: sandy clay loam
Bk2 - 28 to 38 inches: clay loam
Ck - 38 to 80 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: R083DY019TX - Gray Sandy Loam
Hydric soil rating: No

Custom Soil Resource Report

Minor Components

Willacy

Percent of map unit: 10 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Brennan

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R083EY023TX - Sandy Loam
Hydric soil rating: No

28—Hidalgo sandy clay loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2sxxv1
Elevation: 20 to 500 feet
Mean annual precipitation: 20 to 27 inches
Mean annual air temperature: 72 to 74 degrees F
Frost-free period: 300 to 365 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hidalgo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hidalgo

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy alluvium

Typical profile

Ap - 0 to 17 inches: sandy clay loam
Bk1 - 17 to 28 inches: sandy clay loam
Bk2 - 28 to 38 inches: clay loam
Ck - 38 to 80 inches: clay loam

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 2c
Hydrologic Soil Group: B
Ecological site: R083DY019TX - Gray Sandy Loam
Hydric soil rating: No

Minor Components

Raymondville

Percent of map unit: 7 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R083DY025TX - Clay Loam
Hydric soil rating: No

Racombes

Percent of map unit: 6 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R083DY025TX - Clay Loam
Hydric soil rating: No

Willacy

Percent of map unit: 2 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

EXHIBIT D

Runoff Coefficients "c"	
Agricultural and, unimproved Areas	0.3
Parks and Improved Open Areas	0.4
Residential (>1acre lots)	0.40
Residential (1/2 acre lots)	0.55
Residential (1/4 acre lots)	0.6
Residential (1/8 acre lots)	0.65
Multi-Family (Low density MF-1)	0.65
Multi-Family (Medium and Medium-High Density MF-2 and MF-3)	0.85
Commercial, Industrial, and Business	0.85
Asphalt	0.9

EXHIBIT E

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Runoff Coefficient Determination Pre Developed

1) Accepted Runoff Coefficients

1 acre = 43560 SF

a) Building/Roofs	c = 0.90			
b) Asphalt	c = 0.90			
c) Detention Pond /swale	c = 0.30			
d) Concrete	c = 0.90			
e) Unimproved area (grass)	c = 0.23			
Total Area =	4.4977 ac	195919.00 SF	0.24	Cumulative Areas
Area 1	0.0269 ac	1172.00 SF	0.90	Building/Roofs
Area 2	0.0452 ac	1968.00 SF	0.75	Asphalt
Area 3	0.0899 ac	3916.00 SF	0.50	Flex base
Area 4	0.0016 ac	68.00 SF	0.90	Concrete
Area 5	4.3341 ac	188795.00 SF	0.23	Unimproved area (grass)

Weighted Runoff Coefficient

$$C = (C1A1 + C2A2 + C3A3 + C4A4 + \dots) / A_{total} = 0.24$$

Rainfall Intensity-Duration-Frequency Coefficients for Texas

Based on United States Geological Survey (USGS) Scientific Investigations Report 2004-5041
"Atlas of Depth-Duration Frequency of Precipitation Annual Maxima for Texas"

1. Select English or SI Units

English

2. Select or Enter a County

Hidalgo

3. Enter a Time of Conc.

Select Units

26 min

Pre-Developed

Coefficient	50% (2-year)	20% (5-year)	10% (10-year)	4% (25-year)	2% (50-year)	1% (100-year)
e	0.8645	0.8647	0.8599	0.8572	0.8613	0.8619
b (in.)	72.40	100.21	116.24	140.47	170.66	201.07
d (min)	12.92	13.90	14.33	15.32	16.71	18.00

Intensity
(in./hr)

3.06	4.14	4.84	5.78	6.73	7.71
------	------	------	------	------	------

TIME OF CONCENTRATION CALCULATOR
PRE DEVELOPED CONDITIONS

SHEET FLOW (LIMITED TO 100 FEET)

$$t_{sh} = \frac{0.007(n_{ol}L_{sh})^{0.8}}{(P_2)^{0.5}S_{sh}^{0.4}}$$

n_{ol} see table below

Table 4-6: Overland Flow Roughness		
Surface description		n_{ol}
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:	Residue	
	%	0.06
	Residue cover	
	> 20%	0.17
Grass:	Short grass	
	prairie	0.15
	Dense grasses	0.24
	Bermuda	0.41
Range (natural):		0.13
Woods:	Light	
	underbrush	0.4
	Dense	
	underbrush	0.8

DRAINAGE AREA 1

Lsh 100 Length of Segment (100ft Maximum)
P2 3.3 2 yr 24 hr Rainfall Depth
Ssh 0.008 Sheet flow slope

Tsh 0.2320 Sheet Flow Time (hr)

SHALLOW CONCENTRATED FLOW (UNPAVED)

$$t_{sc} = \frac{L_{sc}}{3600KS_{sc}^{0.5}}$$

Lsc 542.8 Length of Segment
K 20.32 Paved
16.13 Unpaved

Ssc 0.0022 Slope (ft/ft)

Tsc 0.19929 Shallow Concentrated Flow (hr)

Total Time 0.431 25.88 use 26 min

DRAINAGE AREA 1

C	0.24	Existing Coefficient for Runoff
I	4.84	(in/hr) intensity
A	4.498	Net area of project (Ac)
Q	5.22	cfs

Runoff Coefficient Determination Post Developed - Area 1 (Commercial-Retail Plaza)

1) Accepted Runoff Coefficients

1 acre = 43560 SF

a) Building/Roofs	c = 0.90			
b) Asphalt	c = 0.90			
c) Detention Pond /swale	c = 0.30			
d) Concrete	c = 0.90			
e) Unimproved area (grass)	c = 0.23			
Total Area =	0.9772 ac	42568.00 SF	0.89	Cumulative Areas
Area 1	0.1796 ac	7823.00 SF	0.90	Building/Roofs
Area 2	0.0000 ac	0.00 SF	0.75	Asphalt
Area 3	0.0000 ac	0.00 SF	0.50	Flex base
Area 4	0.4974 ac	21667.00 SF	0.90	Concrete
Area 5	0.3002 ac	13078.00 SF	0.23	Unimproved area (grass)

Weighted Runoff Coefficient

C= (C1A1+C2A2+C3A3+C4A4+...)/Atotal=

0.69

Use: 0.7

Runoff Coefficient Determination Post Developed - Area 2 (Multi-Family Apartments)

1) Accepted Runoff Coefficients

1 acre = 43560 SF

a) Building/Roofs	c = 0.90			
b) Asphalt	c = 0.90			
c) Detention Pond /swale	c = 0.30			
d) Concrete	c = 0.90			
e) Unimproved area (grass)	c = 0.23			
Total Area =	3.5205 ac	153351.00 SF	0.65	Cumulative Areas
Area 1	0.7230 ac	31493.00 SF	0.90	Building/Roofs
Area 2	0.0000 ac	0.00 SF	0.75	Asphalt
Area 3	0.0000 ac	0.00 SF	0.50	Flex base
Area 4	1.4986 ac	65278.00 SF	0.90	Concrete
Area 5	1.2989 ac	56580.00 SF	0.23	Unimproved area (grass)

Weighted Runoff Coefficient

C= (C1A1+C2A2+C3A3+C4A4+...)/Atotal=

0.65

Use:

0.7

Rainfall Intensity-Duration-Frequency Coefficients for Texas

Based on United States Geological Survey (USGS) Scientific Investigations Report 2004-5041
"Atlas of Depth-Duration Frequency of Precipitation Annual Maxima for Texas"

Post-Developed

1. Select English or SI Units

English

2. Select or Enter a County

Hidalgo

3. Enter a Time of Conc.

Select Units

10min

Coefficient	50% (2-year)	20% (5-year)	10% (10-year)	4% (25-year)	2% (50-year)	1% (100-year)
e	0.8645	0.8647	0.8599	0.8572	0.8613	0.8619
b (in.)	72.40	100.21	116.24	140.47	170.66	201.07
d (min)	12.92	13.90	14.33	15.32	16.71	18.00

Intensity
(in./hr)

4.83	6.44	7.47	8.80	10.08	11.38
------	------	------	------	-------	-------

Existing Conditions (10 yr)

Q=CIA

C	I (in/hr)	A (acres)	Q (cfs)
0.24	4.84	4.498	5.22

Area 1 (Commercial - Retail Plaza)**Developed Conditions(50 yr)**

Q=CIA

C	I (in/hr)	A (acres)	Q (cfs)
0.7*	10.08	0.977	6.89

Area 2 (Multi-Family Apartments)**Developed Conditions(50 yr)**

Q=CIA

C	I (in/hr)	A (acres)	Q (cfs)
0.7*	10.08	3.521	24.84

* Refer to Site Plan on Exhibit F

Prop. Runoff C = 0.7
Area = 4.498 ac
Post Dev. Tc = 10 min

Exist Runoff C = 0.24
Exist. Intensity = 4.8

Total Q= 31.74 cfs

Detention Calculations						
Duration (minutes)	I50year (in./hr.)	Q in (c.f.s.)	Vol. in (c.f.)	Qout (c.f.s.)	Vol. out (c.f.)	Storage (c.f.)
5	12.05	37.93	11,379	5.22	2,349	9,030
10	10.08	31.73	19,037	5.22	3,132	15,905
15	8.69	27.37	24,633	5.22	3,915	20,718
20	7.66	24.13	28,952	5.22	4,698	24,254
25	6.86	21.61	32,421	5.22	5,481	26,940
30	6.23	19.61	35,291	5.22	6,264	29,027
35	5.70	17.96	37,720	5.22	7,047	30,673
40	5.27	16.59	39,814	5.22	7,830	31,984
45	4.90	15.42	41,647	5.22	8,613	33,034
50	4.58	14.42	43,271	5.22	9,396	33,875
55	4.30	13.55	44,725	5.22	10,179	34,546
60	4.06	12.79	46,039	5.22	10,962	35,077
65	3.85	12.11	47,236	5.22	11,745	35,491
70	3.65	11.51	48,333	5.22	12,528	35,805
75	3.48	10.97	49,344	5.22	13,311	36,033
80	3.33	10.48	50,281	5.22	14,094	36,187
85	3.19	10.03	51,154	5.22	14,877	36,277
90	3.06	9.62	51,970	5.22	15,660	36,310

95	2.94	9.25	52,735	5.22	16,443	36,292
100	2.83	8.91	53,456	5.22	17,226	36,230
105	2.73	8.59	54,138	5.22	18,009	36,129
110	2.64	8.30	54,783	5.22	18,792	35,991
115	2.55	8.03	55,395	5.22	19,575	35,820

Detention Pond Dimensions

Flow Line Width W1 (ft)	Cross Sect.		Volume Width W2 (ft)	Slope Length L2 (ft)	Top (outer) V2 (cf)	Volume V (cf)
	Depth H (ft)	S				
26.0	3.0	1.0	32.0	349.0	30363.0	30363.0
1.0	2.0	1.0	5.0	544.0	3264.0	3264.0
8.0	2.0	1.0	12.0	150.0	3000.0	3000.0
					TOTAL	36627.0

A
B
C

Detention Provided = 36627 cf > 36310 cf = Detention Required

Therefore, the proposed detention pond is O. K.

TRIP GENERATION WORKSHEET
FOR
WHITE ROSE SUBDIVISION
4.644 ACRE TRACT
OUT OF FARM TRACT 31
WEST TRACT SUBDIVISION
WESLACO, HIDALGO COUNTY, TEXAS

Prepared for:

RAUL GUERRA

Prepared by:



ALTEX ENGINEERING

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Project No. 21.137

JUNE 2021



TRIP GENERATION REPORT
FOR
WHITE ROSE SUBDIVISION
(WESLACO, TEXAS)

White Rose Subdivision is located on a 4.644-Acre tract of land out of Farm Tract 31, of the West Adams Subdivision, Hidalgo County, Texas. The tract is located approximately 1,980 feet north of the intersection of Mile 4 ½ W Road and W Frontage Road within the City Limits of Weslaco. The lot is predominantly undeveloped with natural grasses and a small commercial building.

The report is based on the Trip Generation, 8th Edition Book (Institute of Traffic Engineers).

Apartment (220)

1a. - On a weekday, A.M. Peak hour Generator

Directional Distribution: 29% Entering, 71% Exiting

Equation: $\ln(T) = 0.54(x) + 2.45$ where T = avg vehicle trip ends; X = Number of Dwelling Units

X = 54 Dwelling Units (Apartment Units)

$$(T) = 0.54 (54) + 2.45 \quad T = 32$$

Tenter = $32(0.29) = 10$ trips/hour

Texiting = $32(0.71) = 23$ trips/hour

1b. - On a weekday, P.M. Peak hour Generator

Directional Distribution: 61% Entering, 39% Exiting

Equation: $\ln(T) = 0.60(x) + 14.91$ where T = avg vehicle trip ends; X = Number of Dwelling Units

X = 54 Dwelling Units (Apartment Units)

$$(T) = 0.60 (54) + 14.91 \quad T = 48$$

Tenter = $48(0.61) = 30$ trips/hour

Texiting = $48(0.39) = 19$ trips/hour

Threshold requirements for a Traffic Impact Analysis Report:

AM/PM PHT* < 100 TPH, TIA not Required

AM/PM PHT* > 100 TPH, TIA Required

PHT* = Peak Hour Trips

Trip Generation 8th Edition A.M. Peak hr. Generator Data Plot & Equation

Apartment (220)

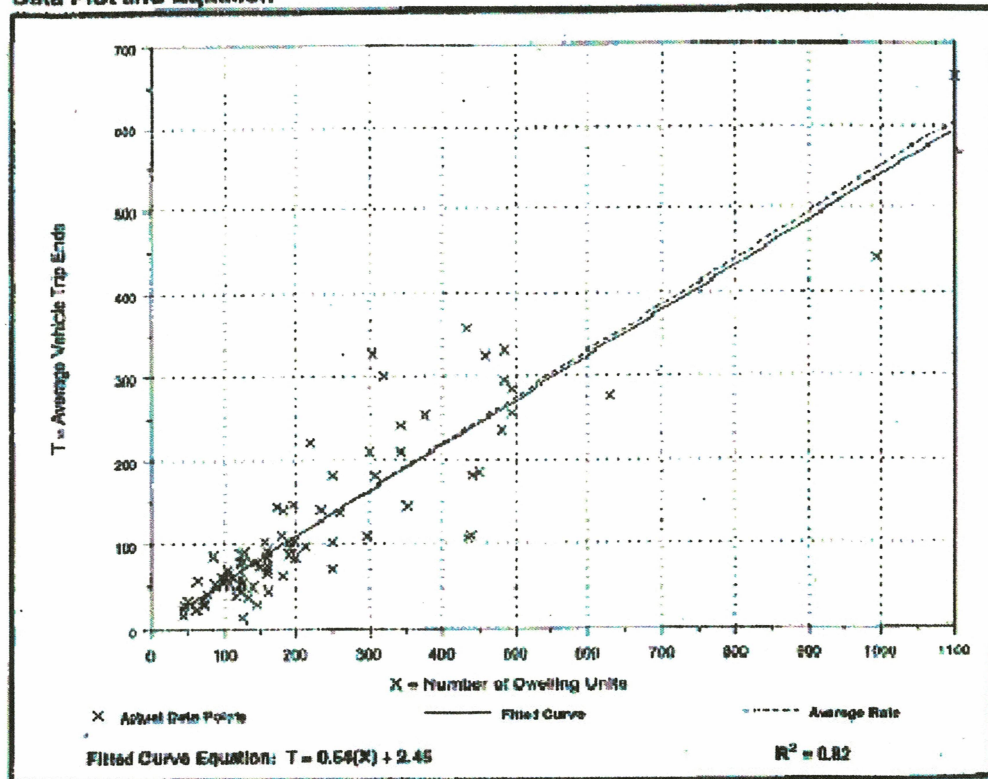
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
A.M. Peak Hour of Generator

Number of Studies: 83
Avg. Number of Dwelling Units: 230
Directional Distribution: 29% entering, 71% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.55	0.10 - 1.08	0.76

Data Plot and Equation



PEAK HOUR TRIP RATES FOR COMMON LAND USES

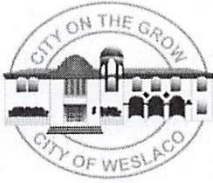
Land Use	Critical Peak Hour	Peak Hour Trip Rate	%Entering %Exiting	ITE Code
Apartments, High Rise	PM	0.35 Per Unit	61/39	222
Apartments, Low Rise	PM	0.58 Per Unit	65/35	221
Automobile Care Center	PM	3.38 Per 1,000 Sq. Ft.	50/50	942
Automobile Parts Sales and Service Center	PM	4.46 Per 1,000 Sq. Ft.	42/58	943
Automobile Sales (New)	PM	2.59 Per 1,000 Sq. Ft.	39/61	841
Bank with ATMs and Drive-Through	PM	27.41 Per Lane	51/49	912
Business Park	AM	1.43 Per 1,000 Sq. Ft.	84/16	770
Car Wash, Self Service	SAT	20.60 Per Wash Stall	50/50	947
Church	SUN	11.76 Per 1,000 Sq. Ft.	50/50	560
Convenience Store	AM	67.03 Per 1,000 Sq. Ft.	50/50	851
Convenience Store with Gas Pumps	PM	59.69 Per 1,000 Sq. Ft.	50/50	853
Day Care Center	PM	12.46 Per 1,000 Sq. Ft.	47/53	565
Discount Store	PM	5.00 Per 1,000 Sq. Ft.	50/50	815
Drinking Place	PM	15.49 Per 1,000 Sq. Ft.	66/34	925
Golf Course	PM	0.30 Per Acre	34/66	430
Hospital	PM	1.14 Per 1,000 Sq. Ft.	42/58	610
Hotel	PM	0.59 Per Room	53/47	310
Industrial Park	PM	0.86 Per 1,000 Sq. Ft.	21/79	130
Industrial, Heavy	AM	0.51 Per 1,000 Sq. Ft.	N/A	120
Industrial, Light	PM	0.97 Per 1,000 Sq. Ft.	12/88	110
Manufacturing	PM	0.73 Per 1,000 Sq. Ft.	36/64	140
Mobile Home Park	PM	0.59 Per Unit	62/38	240
Motel	AM	0.64 Per Room	36/64	320
Movie Theater with Matinee	PM	102.87 Per Screen	58/42	444
Office Building, General	AM	1.55 Per 1,000 Sq. Ft.	88/12	710
Office Building, Medical-Dental	PM	3.46 Per 1,000 Sq. Ft.	27/73	720
Office Building, Single Tenant	AM	1.80 Per 1,000 Sq. Ft.	89/11	715
Office Park	AM	1.71 Per 1,000 Sq. Ft.	89/11	750
Pharmacy, without Drive-through	PM	8.42 Per 1,000 Sq. Ft.	50/50	880
Pharmacy, with Drive-through	PM	10.35 Per 1,000 Sq. Ft.	50/50	881
Quick Lubrication Vehicle Shop	PM	5.19 Per Bay	55/45	941
Recreational Community Center	PM	1.45 Per 1,000 Sq. Ft.	29/71	495
Residential, Multi-Use, Retail Mixed Development (PUD)	PM	0.62 Per Unit	65/35	270
Residential, Single Family	PM	1.01 Per Unit	63/37	210
Restaurant, Fast-Food (with Drive-Through)	AM	49.36 Per 1,000 Sq. Ft.	51/49	934
Restaurant, High Turnover	PM	18.49 Per 1,000 Sq. Ft.	63/37	932
School, Elementary	AM	0.45 Per Student	55/45	520
School, High	AM	0.42 Per Student	69/31	530
School, Middle/Junior High	AM	0.54 Per Student	55/45	522
Service Station, with Convenience Market (with Car Wash)	PM	13.94 Per Fueling Position	50/50	946
Service Station, with Convenience Market (without Car Wash)	PM	13.38 Per 1,000 Sq. Ft.	50/50	945
Shopping Center	SAT	4.89 Per 1,000 Sq. Ft.	48/52	820
Specialty Retail Center	PM	2.71 Per 1,000 Sq. Ft.	44/56	814
Supermarket	PM	11.85 Per 1,000 Sq. Ft.	51/49	850
Video Rental	PM	13.60 Per 1,000 Sq. Ft.	46/54	896
Warehousing, General	PM	0.32 Per 1,000 Sq. Ft.	25/75	150
Warehousing, Mini	PM	0.26 Per 1,000 Sq. Ft.	51/49	151

These are some of the values from the 8th Edition ITE Manual – Refer to ITE for additional trip rates



Planning & Zoning Commission Standardized Agenda Request Form

Date of Meeting: SEPTEMBER 1, 2021	Agenda Item No. (to be assigned by PCE): IV.C.
From: Rebekah de la Fuente, Planning Director, on behalf of Ivan Garcia.	
Subject/Agenda Item: Discussion and consideration for the Final Plat for Petra Garza Subdivision– being a 1.00 acre tract of land out of Farm Tract 131, Block 162, West Tract Subdivision, Weslaco, Hidalgo County, Texas Located on the NW Corner of the intersection of N Border Ave and Valley Trace Drive. Possible Action.	
Discussion/Overview: The proposed two (2) lot subdivision is located inside the City of Weslaco. This subdivision is being serviced with water by the City of Weslaco Company through a 12” waterline and sewer by City of Weslaco services through an 8” sewer line. The property is within a Flood Zone “X”.	
If item requires Publication Notice, provide date and periodical of publication; indicate if comments received from letters mailed to property owners: N/A	
Staff recommendation for Commission’s Action: Staff recommends approval of Final Plat.	
Additional Action Prompted: ☒ Mayor’s Signature ☐ Public Hearing ☐ Budget Amendment ☐ Resolution ☐ Ordinance – First Reading ☐ Ordinance – Final Reading	
Advisory Review, (if any): (name of board/committee, date of action, recommendation): N/A	
If item previously considered, provide date and action by Commission: N/A	
Attachments,(if any): Application for Subdivision platting, Staff’s comments, Drainage Report, Subdivision plat and Utility layout.	
Responsibilities upon Commission’s Action: Planning staff will advise applicant.	



SUBDIVISION PLATTING APPLICATION

PLAT-000103-2021

The Planning & Zoning Commission meets every 1st Wednesday of each month at 5:30 pm.

The City Commission meets every 1st and 3rd Tuesday of each month at 5:30 pm

FILE NO. _____

This form shall be completed by the Property Owner or Applicant and submitted to the Planning Department along with the required number of copies of the respective plat, review fee and all other required information listed below and in the Subdivision Ordinance. The submittal of an application does not constitute acceptance for processing until the staff reviews and determines the application is complete.

STAFF USE ONLY

☐ Single Lot Variance ☐ Minor Plat ☐ Planned Unit Development ☐ Standard Subdivision

GENERAL INFORMATION

Name of Subdivision: PETRA GARZA SUBDIVISION

Location: NW CORNER OF THE INTERSECTION OF N BORDER AVENUE & VALLEY TRACE DRIVE

Legal Description: 1.00 ACRE TRACT OF LAND OUT OF FARM TRACT 131, BLOCK 162, WEST TRACT SUBDIVISION, AS PER MAP OR PLAT RECORDED IN VOLUME 1, PAGE 4, MAP RECORDS OF HIDALGO COUNTY, TEXAS.

Is subdivision inside city limits? ☒ YES ☐ NO

If subdivision is in the ETJ, indicate? ☐ 3.5 Mile ☐ 5 Mile

If no submit letter of Annexation (Contiguous or Consensual)

Existing Zoning: R-2

Existing Land Use: SINGLE FAMILY Proposed Land Use: DUPLEX & APARTMENT DISTRICT & SINGLE FAMILY

Number of Lots Proposed: 2 Gross Acreage: 1.00 ACRE

Title Report Submitted: ☐ YES ☒ NO

OWNER INFORMATION

Owner's Name: PETRA R GARZA Telephone: 956-332-0494

Address: 1819 N BORDER AVE

Fax: _____

City: WESLACO State: TX Zip: 78599 E-mail: PETRAWESLACO@GMAIL.COM

ENGINEER INFORMATION

Name: IVAN GARCIA, P.E., R.P.L.S. - RIO DELTA ENGINEERING Telephone: 956-380-5152

Address: 921 S. 10TH AVE

Fax: _____

City: EDINBURG State: TX Zip: 78539 E-mail: RIODELTA2004@YAHOO.COM

255 S. KANSAS AVE ■ WESLACO, TEXAS 78596-6285 ■ 956-447-3401 ■ (Fax) 956-973-3128 ■ WWW.WESLACOTX.GOV

UTILITY PROVISIONS

Will proposed subdivision connect to:

☒ YES ☐ NO Water Provision: CITY OF WESLACO
☒ YES ☐ NO Wastewater Provision: CITY OF WESLACO
☒ YES ☐ NO Electric Company: MAGIC VALLEY ELECTRIC COOP.

☒ YES ☐ NO Phone Utility <u>SPECTRUM</u>	☐ YES ☒ NO Gas Utility	☒ YES ☐ NO Cable Utility
---	---	---

Proposed subdivision is in the following districts:

☒ YES ☐ NO Drainage District <u>NO. 1</u>	☒ YES ☐ NO Irrigation District <u>NO.9</u>
--	---

Has the property been assessed as flat rate irrigable property: ☐ YES ☒ NO

Have Water Rights been conveyed to City/Water Supplier? ☐ YES ☒ NO

(Attach written proof of such assessment or that it has never been assessed as such a property) If **YES**, attach an estimate from the irrigation district of the proportional water rights for the subdivision as calculated under Texas Water Code § 49.505.

SUBMITTALS REQUIRED FOR MINOR PLAT REVIEW

- _____ **Two (2) sets of plats folded and stapled (24 x 36) and forward a copy in PDF format to mhinojosa@weslacotx.gov & rdelafuente@weslacotx.gov**
- _____ **\$355.00 Planning Review fee**
- _____ **One 11" X 17" reduced copy of plat**
- _____ **Plat Layout**
 - _____ Existing & Proposed Easements
 - _____ Existing & Proposed ROW
 - _____ Existing & Proposed Drainage Easements
 - _____ Contours
 - _____ Flood Zones
 - _____ Adjoiners
 - _____ Existing street names
- _____ **Drainage plans and calculations with engineer's seal**
 - _____ Elevations
 - _____ Flood directional arrows
 - _____ Detention areas
 - _____ Street names
- _____ **Proof of ownership of the property**
- _____ **If septic tank system required, submit soil evaluation report**
- _____ **Water Rights associated with the property**
- _____ **Tax Receipt for all taxing entities showing that taxes are paid in full**

SUBMITTALS REQUIRED FOR PRELIMINARY (P & Z)

- _____ **Twelve (12) sets of preliminary plat folded and stapled (24 x 36) and forward a copy in PDF format to mhinojosa@weslacotx.gov & rdelafuente@weslacotx.gov**
- _____ **\$350.00 (one time fee for preliminary and final plat)**
- _____ **One 11" X 17" reduced copy of plat**
- _____ **Plat Layout**
 - _____ Existing & Proposed Easements
 - _____ Existing & Proposed ROW
 - _____ Existing & Proposed Drainage Easements

255 S. KANSAS AVE ■ WESLACO, TEXAS 78598-6285 ■ 956-447-3401 ■ (Fax) 956-973-3128 ■ WWW.WESLACOTX.GOV

- _____ Contours
- _____ Flood Zones
- _____ Adjoiners
- _____ Existing & Proposed street names
- _____ Utility Layout
- _____ Existing & Proposed Utilities
- _____ Proposed Fire Hydrants
- _____ Adjoiners
- _____ Street names
- _____ Drainage plans and calculations with engineer's seal
- _____ Elevations
- _____ Flood directional arrows
- _____ Detention areas
- _____ Street names
- _____ Proof of ownership of the property
- _____ If septic tank system required, submit soil evaluation report
- _____ Water Rights associated with the property
- _____ Tax Receipt for all taxing entities showing that taxes are paid in full
- _____ Number of fire hydrants proposed for subdivision
- _____ Trip Generation Worksheet

SUBMITTALS REQUIRED FOR FINAL (P & Z) **Will not apply to Single Lot Variance**

- _____ Twelve (12) sets of plans **FOLDED & STAPLED** (24 x 36) & PDF copy **with all corrections**
- _____ Plats to be sealed by Professional Engineer
- _____ Approved Drainage Report
- _____ Traffic Impact Analysis (If required)

SUBMITTALS REQUIRED FOR FINAL (City Commission)

- _____ One set of 8 ½ x 11 of plat and utilities with all corrections done

SUBMITTALS REQUIRED FOR PRE-CONSTRUCTION MEETING

- _____ Seven (7) full sets of construction plans 24 x 36 and one (1) 11 x 17 with plan & profile.
- _____ Engineering cost estimates for 3% geotechnical testing fees and 2% inspection fees
- _____ Notice of Intent
- _____ SW3P

SUBMITTALS REQUIRED FOR RECORDING OR HIDALGO COUNTY PLANNING

- _____ Electronic file of final plat and as-builds
- _____ Reproducible plat to be recorded with all required signatures
- _____ 3% geotechnical testing fees or negotiated Material Testing fee by City, whichever is higher
- _____ 2% inspection fee
- _____ Park Fees
- _____ Checks or Receipts: HCCID #9; HCDD #1; County Clerk
- _____ Tax certificates
- _____ Memo from engineering inspector releasing subdivision
- _____ Water Rights associated with the property dedicated and assigned to City of Weslaco or payment of fees sufficient to meet the needs necessitated and attributable to development
- _____ 30 Year Water and 30 Year Sewer Service Agreements
- _____ Park dedication/Fees in lieu of

SUBMITTALS REQUIRED FOR RECORDING BY SECURITY

- _____ Sealed engineering cost estimates
- _____ Letter of Credit/Performance Bond/Escrow

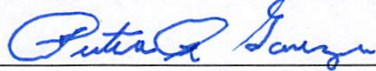
** Any revisions requested would require resubmission of plats and reduced copy reflecting changes.

AUTHORIZATION AND ACKNOWLEDGEMENTS

I certify that I am the actual owner of the property described above and this application is being submitted with my consent (include corporate name if applicable); and the following person listed below is my authorized agent to act on my behalf.

I certify that the above information is correct and complete to the best of my knowledge. I understand that I must comply with all applicable local, state, and federal regulations.

Owner Printed Name: PETRAK GARZA

Owner Signature:  Date: 06-06-2021

Ivan Garcia, P.E., R.D.L.S. - RIO DELTA ENGINEERING is the authorized agent

Authorized Agent Signature:  Date: 6/24/21

Authorized Agent Printed Name: Ivan Garcia

THIS PAGE FOR STAFF USE ONLY

Date Received: _____ Received By: _____ Date Paid: _____

P & Z Commission Approval on Preliminary Plat: _____

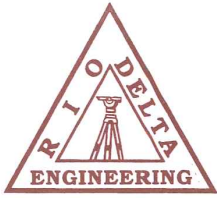
P & Z Commission Approval on Final Plat: _____

City Commission Approval on Final Plat: _____

Preconstruction Meeting Date: _____

Date Recorded: _____ Instrument No. _____

General Comments: _____



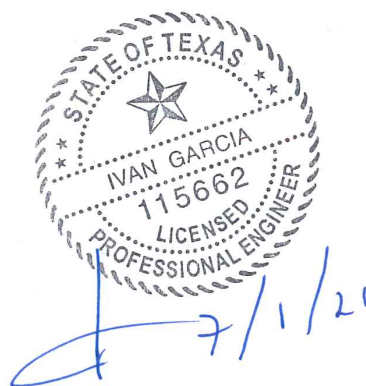
RIO DELTA ENGINEERING

CIVIL ENGINEERING • PROJECT MANAGEMENT • LAND DEVELOPMENT
TEXAS REGISTERED ENGINEERING FIRM F-7628
TEXAS LICENSED SURVEYING FIRM #10194027

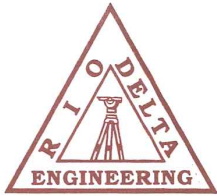
PETRA GARZA SUBDIVISION DRAINAGE REPORT

Prepared By:
Ivan Garcia P.E., R.P.L.S.

Date:
July 1, 2021



1. COVER SHEET
2. INDEX SHEET
3. DRAINAGE REPORT
4. PROJECT LOCATION MAP
5. HYDRAULIC CALCULATIONS
6. "C" VALUES FOR METHOD
7. RAINFALL INTENSITY FOR HIDALGO COUNTY
8. FLOOD PLAIN
9. SOIL SURVEY
10. PRELIMINARY PLAT AND UTILITY & DRAINAGE LAYOUT



RIO DELTA ENGINEERING

CIVIL ENGINEERING • PROJECT MANAGEMENT • LAND DEVELOPMENT
TEXAS REGISTERED ENGINEERING FIRM F-7628
TEXAS LICENSED SURVEYING FIRM #10194027

DRAINAGE REPORT Petra Garza Subdivision, City of Weslaco, Texas

Petra Garza Subdivision is a proposed 2 lot residential and multi-family subdivision, situated in the City of Weslaco, County of Hidalgo, Texas, same being a 1.00 acre tract of land, out of and forming a part or portion of Farm Tract 131, Block 162, West and Adams Tracts in Hidalgo County, Texas, as per map recorded in Volume 2, Pages 34-37, Map Records of Hidalgo County, Texas. Lot 1 is currently occupied by an existing single-family home and Lot 2 will be used for a multi-family development.

The subdivision is in Zone "X" of the flood insurance rate, areas determined to be outside 500-year flood plain, according to the FEMA's Flood Insurance Rate Map Community Panels No.: 480334 0325 C map revised: May 17, 2001.

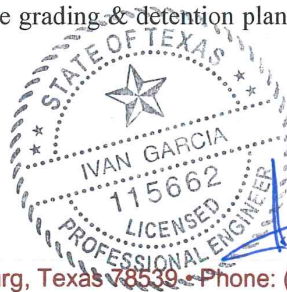
According to the Soil Survey Report prepared for Hidalgo County by the U.S.D.A. Soil Conservation Service, the site consists of 60.9% of Hidalgo Sandy Clay Loam (28), with 0 to 1 % slopes, the soil is well drained and surface runoff is negligible, permeability is moderately high to high and the water capacity is moderate. This soil is classified as Group (B). The site also consists of 39.1% of Hidalgo Fine Sandy Loam (25), with 0 to 1 % slopes, the soil is well drained and surface runoff is negligible, permeability is moderately high to high and the water capacity is moderate. This soil is classified as Group (B). Please see the attached tables for the engineering, physical and chemical properties of these soils.

Existing runoff sheet flows overland in a easterly direction into an existing City of Weslaco curb inlet (as part of Border Avenue's storm drainage improvements) located at the northeast corner of the proposed subdivision, on the west right of way of N Border Avenue, with outfall to a City of Weslaco Drain Ditch, then north to the Weslaco North Lateral, and subsequently with final outfall to the Laguna Madre.

Using the Rational Method, we have determined that a 10-yr rainfall event will generate approximately 0.85 CFS of storm runoff for Lot 1. We have also used the Rational Method to determine that the improved site will generate an estimated 1.59 CFS of runoff for a 50-yr rainfall event. The improved site will have an approximate increase of 0.74 CFS of storm runoff for a 50-yr rainfall event.

Using the Rational Method, we have determined that a 10-yr rainfall event will generate approximately 0.85 CFS of storm runoff for Lot 2. We have also used the Rational Method to determine that the improved site will generate an estimated 4.55 CFS of runoff for a 50-yr rainfall event. The improved site will have an approximate increase of 3.70 CFS of storm runoff for a 50-yr rainfall event.

In accordance with the City of Weslaco's drainage requirements, we have calculated that approximately a total of 3,213 CF or 0.074 AC-FT, will need to be detained on-site for a 50-yr rainfall event for this subdivision. For Lot 1, current runoff will be held on swales and green areas of the lot with overflow in a easterly direction into an existing City of Weslaco curb inlet (as part of Border Avenue's storm drainage improvements) located at the northeast corner of the proposed subdivision, on the west right of way of N Border Avenue, with outfall to a City of Weslaco Drain Ditch, then north to the Weslaco North Lateral, and subsequently with final outfall to the Laguna Madre. For Lot 2, current runoff will be detained in designated detention areas within the lot with outfall into the existing City of Weslaco curb inlet. Tables, and calculations, are attached. Site grading & detention plans will be required at the building permit stage for the development of Lot 2.



STORM WATER DETENTION CALCULATIONS

SUMMARY SHEET

Project Name: **PETRA GARZA SUBDIVISION**

City:	WESLACO	
State:	TEXAS	
County:	HIDALGO	
Total Area:	1.00	Acres Gross
Total Net Area:	0.764	Acres Net
Total lots:	2	* Lot 1 Singlefamily and Lot 2 Multifamily

	Lot 1	*Singlefamily
Area already developed:	0.00	Acres
Area unimproved:	0.38	Acres Net
		*Pre-developed condition
Existing Run off:	0.85	cfs
Future Run off:	1.49	cfs
Future Run off:	1.59	cfs
		*Pre-developed condition
		*10 year storm
		*25 year storm
		*50 year storm
Total on site detention required:	473	cft
	0.011	Ac-ft
		*50 year storm

	Lot 2	*Multifamily
Area already developed:	0.00	Acres
Area unimproved:	0.38	Acres Net
		*Pre-developed condition
Existing Run off:	0.85	cfs
Future Run off:	4.27	cfs
Future Run off:	4.55	cfs
		*10 year storm
		*25 year storm
		*50 year storm
Total on site detention required:	2,740	cft
	0.063	Ac-ft
		*50 year storm

*References for calculations and procedure: **1) TxDOT Hydraulic Design Manual
Revised March 2009**

**2) FHWA, Urban Drainage Design Manual HEC-22
Revised September 2009**



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STORM WATER DETENTION CALCULATIONS

SUMMARY SHEET

Project Name: **PETRA GARZA SUBDIVISION**

City: **WESLACO**

State: **TEXAS**

County: **HIDALGO**

Total Area: **0.500** Acres Gross

Total Net Area: **0.382** Acres Net

Total lots: **1** *Single-Family Residential

Area already developed: **0.00** Acres

Area unimproved: **0.15** Acres Net

Existing Run off: **0.85** cfs *10 year storm

Future Run off: **1.49** cfs *25 year storm

Future Run off: **1.59** cfs *50 year storm

Total on site detention required: **473** cft *50 year storm

0.011 Ac-ft

*references for calculations
and procedure:

1) TxDOT Hydraulic Design Manual

Revised March 2009

2) FHWA, Urban Drainage Design Manual HEC-22

Revised September 2009

I. EXISTING RUN OFF (10 YEAR STORM)

*Rational Method

Project Name: **PETRA GARZA SUBDIVISION**

City: **WESLACO**

State: **TEXAS**

0.38 Acres Net

Highest elevation= **75.50** ft

Lowest elevation= **74.00** ft

Watercourse length, L= **185.00** ft

Slope, S_p = **0.81** %

Average flow velocity, V= **0.63** ft/sec

$$V = K_u k S_p^{0.5}$$

$K_u = 3.28$

k= **0.213**

*From Table 3-2 - Intercept Coefficients

*For short grass pasture

Time of concentration, t_c = **4.90** min (calculated)

$$t_c = L / 60V$$

4.90 min (used)

Intensity, i= **11.10** in/hr

$$i = \frac{b}{(t_c + d)^e}$$

*From table 3-1- Intensity-Frequency-Duration

*Coefficients for HIDALGO, County, Texas from TXDOT IDF Coefficients

*For a recurrence interval of 10 years

e= **0.778**
b= **87**
d= **9.2**

Area already developed= **0.00** SQFT *Pre-developed condition

0.00 ACRES

Existing Run off Coefficient: **0.2** *For Unimproved areas

*From Table 3-3 - Run off Coefficients

Area unimproved= **6,500** SQFT

0.15 ACRES

Existing Run off Coefficient: **0.2** *For Unimproved areas

*From Table 3-3 - Run off Coefficients

Weighted Run off Coefficient, C_w = **0.20**

$$C_w = (C_1 A_1 + C_2 A_2) / A_{Total}$$

Peak flow, Q= **0.85** CFS

$$Q = CiA$$

II. FUTURE RUN OFF (25 YEAR STORM)

*Rational Method

Project Name: **PETRA GARZA SUBDIVISION**

City: **WESLACO**

State: **TEXAS**

0.38 Acres Net

Highest elevation= **75.50** ft

Lowest elevation= **74.00** ft

Watercourse length, L= **185.00** ft

Slope, S_p = **0.81** %

Average flow velocity, V = **0.63** ft/sec

$$V = K_u k S_p^{0.5}$$

K_u = 3.28

k = 0.213

*From Table 3-2 - Intercept Coefficients

*For short grass pasture

Time of concentration, t_c = **4.90** min (calculated)

$$t_c = L / 60V$$

4.90 min (used)

Intensity, i = **12.74** in/hr

$$i = \frac{b}{(t_c + d)^e}$$

*From table 3-1- Intensity-Frequency-Duration

*Coefficients for HIDALGO, County, Texas from TXDOT IDF Coefficients

*For a recurrence interval of 25 years

e = 0.771
 b = 98.0
 d = 9.2

Area already developed= **0.00** SQFT
 (buildings and driveway) **0.00** ACRES
0.2

Area 1 to be developed= **2,500** SQFT 2500 SF for home, drive and walks
0.06 ACRES (1 existing single family home)

Future Run off Coefficient: **0.9** *Average for roofs, drives and walks
 *From Table 3-3 - Run off Coefficients

Area left unimproved= **14,140** SQFT *Remaining area
 Total area left unimproved= **0.32** ACRES

Existing Run off Coefficient: **0.2** *For Unimproved areas
 *From Table 3-3 - Run off Coefficients

Weighted Run off Coefficient, C_w = **0.31**

Peak flow, Q = **$Q = CiA$**

$$C_w = (C_1 A_1 + C_2 A_2) / A_{Total}$$

1.49 CFS

III. STORAGE CALCULATIONS (50 YEAR STORM)

*Rational Method

Project Name: PETRA GARZA SUBDIVISION	
City:	WESLACO
State:	TEXAS
	0.38 Acres Net
Highest elevation=	75.50 ft
Lowest elevation=	74.00 ft
Watercourse length, L=	185.00 ft
Slope, S_p =	0.81 %

$$V = K_u k S_p^{0.5}$$

Average flow velocity, V = **0.63** ft/sec

$$t_c = L / 60V$$

$K_u = 3.28$
 $k = 0.213$ *From Table 3-2 - Intercept Coefficients
 *For short grass pasture

Time of concentration, t_c = **4.90** min (calculated)
4.90 min (used)

Intensity, i = **13.64** in/hr

$$i = \frac{b}{(t_c + d)^e}$$

*From table 3-1- Intensity-Frequency-Duration
 *Coefficients for HIDALGO, County, Texas from TXDOT IDF Coefficients
 *For a recurrence interval of 50 years

$e = 0.749$
 $b = 99.0$
 $d = 9.2$

Area 1 to be developed = **2,500** SQFT 2500 SF for home, drive and walks
0.06 ACRES (1 existing single family home)

Future Run off Coefficient: **0.9** *Average for roofs, drives and walks
 *From Table 3-3 - Run off Coefficients

Area left unimproved = **14,140** SQFT *Remaining area
 Total area left unimproved = **0.32** ACRES

Existing Run off Coefficient: **0.2** *For Unimproved areas
 *From Table 3-3 - Run off Coefficients

Weighted Run off Coefficient, C_w = **0.31**

$$C_w = (C_1 A_1 + C_2 A_2) / A_{Total}$$

Peak flow, Q =

$$Q = C i A$$

1.59 CFS

IV. STORM WATER DETENTION CALCULATIONS

*Modified Rational Method

Duration (min)	Intensity (in/hr)	Q in (cfs)	Vol in (cft)	Q out (cfs)	V out (cft)	Storage (cft)
5	13.57	1.58	475	0.85	252	223
10	10.83	1.26	757	0.85	379	378
15	9.10	1.06	955	0.85	506	449
20	7.91	0.92	1,106	0.85	634	473
25	7.03	0.82	1,228	0.85	761	468
30	6.34	0.74	1,331	0.85	888	443
35	5.80	0.68	1,419	0.85	1,015	404
40	5.35	0.62	1,497	0.85	1,143	354
45	4.98	0.58	1,566	0.85	1,270	296
50	4.66	0.54	1,629	0.85	1,397	232
55	4.38	0.51	1,686	0.85	1,524	162
60	4.14	0.48	1,739	0.85	1,651	88
65	3.93	0.46	1,788	0.85	1,779	9
35	5.80	0.68	1,419	0.85	1,015	404
40	5.35	0.62	1,497	0.85	1,143	354
45	4.98	0.58	1,566	0.85	1,270	296
70	3.75	0.44	1,834	0.85	1,906	-72
75	3.58	0.42	1,877	0.85	2,033	-156
80	3.43	0.40	1,917	0.85	2,160	-243
85	3.29	0.38	1,955	0.85	2,288	-332
90	3.16	0.37	1,992	0.85	2,415	-423

Total on site detention required=

473
0.011

 cft
acres-ft

Duration: Duration in minutes

Intensity: Intensity for respective duration (50-year event)

Q in: Developed conditions peak discharge ($C_{dev} \times i_{50} \times \text{Area}$)

Vol in: Developed conditions run off volume ($Q_{in} \times \text{Duration} \times 60$)

Q out: Pre-developed peak discharge ($C_{pre} \times i_{10} \times \text{Area}$)

V out: ($0.5 \times [\text{duration} + t_c] \times Q_{out} \times 60$)

Storage: Required storage ($V_{in} - V_{out}$)

Table 3-1. Rainfall Intensity-Duration-Frequency Coefficients for Hidalgo County

Coefficient	2-year	5-year	10-year	25-year	50-year	100-year
e (in)	0.831	0.795	0.778	0.771	0.749	0.740
b	74	80	87	98	99	103
d (mins)	9.6	9.2	9.2	9.2	9.2	9.6

Reference: TxDOT Hydraulic Design Manual, (2009)

Table 3-2. Intercept Coefficients for Velocity vs. Slope Relationship

Land Cover/Flow Regime	k
Forest with heavy ground litter; hay meadow (overland flow)	0.076
Trash fallow or minimum tillage cultivation; contour or strip cropped; woodland (overland flow)	0.152
Short grass pasture (overland flow)	0.213
Cultivated straight row (overland flow)	0.274
Nearly bare and untilled (overland flow); alluvial fans in western mountain regions	0.305
Grassed waterway (shallow concentrated flow)	0.457
Unpaved (shallow concentrated flow)	0.491
Paved area (shallow concentrated flow); small upland gullies	0.619

Reference: FHWA, Urban drainage Design Manual HEC-22, (2009)

Table 3-3. Runoff Coefficients for Rational Formula

Type of Drainage Area	Runoff Coefficient, C*
Business:	
Downtown areas	0.70 - 0.95
Neighborhood areas	0.50 - 0.70
Residential:	
Single-family areas	0.30 - 0.50
Multi-units, detached	0.40 - 0.60
Multi-units, attached	0.60 - 0.75
Suburban	0.25 - 0.40
Apartment dwelling areas	0.50 - 0.70
Industrial:	
Light areas	0.50 - 0.80
Heavy areas	0.60 - 0.90
Parks, cemeteries	0.10 - 0.25
Playgrounds	0.20 - 0.40
Railroad yard areas	0.20 - 0.40
Unimproved areas	0.10 - 0.30
Lawns:	
Sandy soil, flat, 2%	0.05 - 0.10
Sandy soil, average, 2 - 7%	0.10 - 0.15
Sandy soil, steep, 7%	0.15 - 0.20
Heavy soil, flat, 2%	0.13 - 0.17
Heavy soil, average, 2 - 7%	0.18 - 0.22
Heavy soil, steep, 7%	0.25 - 0.35
Streets:	
Asphaltic	0.70 - 0.95
Concrete	0.80 - 0.95
Brick	0.70 - 0.85
Drives and walks	0.75 - 0.85
Roofs	0.75 - 0.95
*Higher values are usually appropriate for steeply sloped areas and longer return periods because infiltration and other losses have a proportionally smaller effect on runoff in these cases.	

Reference: FHWA, Urban drainage Design Manual HEC-22, (2009)

I. EXISTING RUN OFF (10 YEAR STORM)

***Rational Method**

LOT 2 *MULTIFAMILY

Project Name: **PETRA GARZA SUBDIVISION**

City: **WESLACO**

State: **TEXAS**

County: **HIDALGO**

0.38 Acres Net

Highest elevation= **75.50** ft

Lowest elevation= **74.00** ft

Watercourse length, L= **185.00** ft

Slope, S_p = **0.81** %

Average flow velocity, V= **0.63** ft/sec

$$V = K_u k S_p^{0.5}$$

$K_u = 3.28$

k= **0.213**

*From Table 3-2 - Intercept Coefficients

*For short grass pasture (overland flow)

Time of concentration, t_c = **4.90** min (calculated)

$$t_c = L / 60V$$

4.90 min (used)

Intensity, i= **11.10** in/hr

$$i = \frac{b}{(t_c + d)^e}$$

*From table 3-1- Intensity-Frequency-Duration

*Coefficients for HIDALGO, County, Texas

*For a recurrence interval of 10 years

e=	0.778
b=	87
d=	9.2

Area already developed= **0.00** SQFT
(buildings and driveway) **0.00** ACRES

*Pre-developed condition

Existing Run off Coefficient: **0.9** *Avg for roof, drives and walks
*From Table 3-3 - Run off Coefficients

Area unimproved= **16,640** SQFT
0.38 ACRES

Existing Run off Coefficient: **0.2** *For Unimproved areas
*From Table 3-3 - Run off Coefficients

Weighted Run off Coefficient, C_w = **0.20**

$$C_w = (C_1 A_1 + C_2 A_2) / A_{Total}$$

Peak flow, Q= **0.85** CFS

$$Q = CiA$$

II. FUTURE RUN OFF (25 YEAR STORM)

*Rational Method

LOT 2 *MULTIFAMILY

Project Name: **PETRA GARZA SUBDIVISION**
 City: **WESLACO**
 State: **TEXAS**
 County: **HIDALGO**
0.38 Acres Net
 Highest elevation= **75.50** ft
 Lowest elevation= **74.00** ft
 Watercourse length, L= **185.00** ft
 Slope, S_p = **0.81** %
 Average flow velocity, V= **1.23** ft/sec

$$V = K_u k S_p^{0.5}$$

$K_u = 3.28$
 $k = 0.416$

*From Table 3-2 - Intercept Coefficients
 avg. between paved areas and short grass pasture

Time of concentration, t_c = **2.51** min (calculated)
2.51 min (used)

$$t_c = L / 60V$$

Intensity, i = **14.70** in/hr

$$i = \frac{b}{(t_c + d)^e}$$

*From table 3-1- Intensity-Frequency-Duration
 *Coefficients for HIDALGO, County, Texas
 *For a recurrence interval of 25 years

$e = 0.771$
 $b = 98.0$
 $d = 9.2$

Area already developed= **0.0** SQFT
0.00 ACRES *Pre-developed condition
0.2 *For unimproved areas
 *From Table 3-3 - Run off Coefficients

Area 1 to be developed= **13,312** SQFT *80% of net area for
0.31 ACRES apartments, drives and walks
 Future Run off Coefficient: **0.9** *Avg for roofs, drives and walks
 *From Table 3-3 - Run off Coefficients

Area left unimproved= **3,328** SQFT *Remaining area
 Total area left unimproved= **0.08** ACRES
 Existing Run off Coefficient: **0.2** *For Unimproved areas
 *From Table 3-3 - Run off Coefficients

Weighted Run off Coefficient, C_w = **0.76**

$$C_w = (C_1 A_1 + C_2 A_2) / A_{Total}$$

Peak flow, Q = **4.27** CFS

$$Q = C_i A$$

III. STORAGE CALCULATIONS (50 YEAR STORM)

*Rational Method

Project Name: **PETRA GARZA SUBDIVISION**

City:	WESLACO	
State:	TEXAS	
County:	HIDALGO	
	0.38	Acres Net
Highest elevation=	75.50	ft
Lowest elevation=	74.00	ft
Watercourse length, L=	185.00	ft
Slope, S _p =	0.81	%
Average flow velocity, V=	1.23	ft/sec

$$V = K_u k S_p^{0.5}$$

K_u=3.28
k= 0.416

*From Table 3-2 - Intercept Coefficients
avg. between paved areas and short grass pasture

Time of concentration, t_c= **2.51** min (calculated)
2.51 min (used)

$$t_c = L/60V$$

Intensity, i= **15.68** in/hr

$$i = \frac{b}{(t_c + d)^e}$$

*From table 3-1- Intensity-Frequency-Duration
*Coefficients for HIDALGO, County, Texas
*For a recurrence interval of 50 years

e= **0.749**
b= **99**
d= **9.2**

Area already developed= **0.0** SQFT
0.00 ACRES *Pre-developed condition
0.2 *For unimproved areas
*From Table 3-3 - Run off Coefficients

Area to be developed= **13,312** SQFT *80% of net area for
0.31 ACRES apartments, drives and walks
Future Run off Coefficient: **0.9** *Avg for roofs, drives and walks
*From Table 3-3 - Run off Coefficients

Area left unimproved= **3,328** SQFT *Remaining area
Total area left unimproved= **0.08** ACRES
Existing Run off Coefficient: **0.2** *For Unimproved areas
*From Table 3-3 - Run off Coefficients

Weighted Run off Coefficient, C_w= **0.76**

$$C_w = (C_1 A_1 + C_2 A_2) / A_{Total}$$

Peak flow, Q= **4.55** CFS

$$Q = C i A$$

IV. STORM WATER DETENTION CALCULATIONS

*Modified Rational Method

Duration (min)	Intensity (in/hr)	Q in (cfs)	Vol in (cft)	Q out (cfs)	V out (cft)	Storage (cft)
5	13.57	3.94	1,182	0.85	191	991
10	10.83	3.14	1,886	0.85	318	1,567
15	9.10	2.64	2,378	0.85	446	1,933
20	7.91	2.30	2,755	0.85	573	2,182
25	7.03	2.04	3,059	0.85	700	2,359
30	6.34	1.84	3,314	0.85	827	2,487
35	5.80	1.68	3,534	0.85	954	2,580
40	5.35	1.55	3,728	0.85	1,082	2,646
45	4.98	1.44	3,900	0.85	1,209	2,692
50	4.66	1.35	4,057	0.85	1,336	2,720
55	4.38	1.27	4,199	0.85	1,463	2,736
60	4.14	1.20	4,331	0.85	1,591	2,740
65	3.93	1.14	4,453	0.85	1,718	2,735
70	3.75	1.09	4,567	0.85	1,845	2,722
75	3.58	1.04	4,674	0.85	1,972	2,701
80	3.43	0.99	4,775	0.85	2,099	2,675
85	3.29	0.95	4,870	0.85	2,227	2,643
90	3.16	0.92	4,960	0.85	2,354	2,606
95	3.05	0.89	5,047	0.85	2,481	2,565
100	2.94	0.85	5,129	0.85	2,608	2,521
105	2.85	0.83	5,208	0.85	2,736	2,472
110	2.76	0.80	5,284	0.85	2,863	2,421
115	2.67	0.78	5,356	0.85	2,990	2,366
120	2.60	0.75	5,426	0.85	3,117	2,309
125	2.52	0.73	5,494	0.85	3,245	2,249
130	2.45	0.71	5,559	0.85	3,372	2,188
135	2.39	0.69	5,623	0.85	3,499	2,124
140	2.33	0.68	5,684	0.85	3,626	2,058
145	2.27	0.66	5,743	0.85	3,753	1,990

Total on site detention required=

2,740
0.063

 cft
acres-ft

Duration: Duration in minutes

Intensity: Intensity for respective duration (50-year event)

Q in: Developed conditions peak discharge ($C_{dev} \times i_{50} \times \text{Area}$)

Vol in: Developed conditions run off volume ($Q_{in} \times \text{Duration} \times 60$)

Q out: Pre-developed peak discharge ($C_{pre} \times i_{10} \times \text{Area}$)

V out: $(0.5 \times [\text{duration} + t_{c \text{ dev}}] \times Q_{out} \times 60)$

Storage: Required storage ($V_{in} - V_{out}$)

Table 3-1. Rainfall Intensity-Duration-Frequency Coefficients for Hidalgo County

Coefficient	2-year	5-year	10-year	25-year	50-year	100-year
e (in)	0.831	0.795	0.778	0.771	0.749	0.740
b	74	80	87	98	99	103
d (mins)	9.6	9.2	9.2	9.2	9.2	9.6

Reference: TxDOT Hydraulic Design Manual, (2009)

Intercept Coefficients for Velocity vs. Slope Relationship

Land Cover/Flow Regime	k
Forest with heavy ground litter; hay meadow (overland flow)	0.076
Trash fallow or minimum tillage cultivation; contour or strip cropped; woodland (overland flow)	0.152
Short grass pasture (overland flow)	0.213
Cultivated straight row (overland flow)	0.274
Nearly bare and untilled (overland flow); alluvial fans in western mountain regions	0.305
Grassed waterway (shallow concentrated flow)	0.457
Unpaved (shallow concentrated flow)	0.491
Paved area (shallow concentrated flow); small upland gullies	0.619

Reference: FHWA, Urban drainage Design Manual HEC-22, (2009)

Table 3-3. Runoff Coefficients for Rational Formula

Type of Drainage Area	Runoff Coefficient, C*
Business:	
Downtown areas	0.70 - 0.95
Neighborhood areas	0.50 - 0.70
Residential:	
Single-family areas	0.30 - 0.50
Multi-units, detached	0.40 - 0.60
Multi-units, attached	0.60 - 0.75
Suburban	0.25 - 0.40
Apartment dwelling areas	0.50 - 0.70
Industrial:	
Light areas	0.50 - 0.80
Heavy areas	0.60 - 0.90
Parks, cemeteries	0.10 - 0.25
Playgrounds	0.20 - 0.40
Railroad yard areas	0.20 - 0.40
Unimproved areas	0.10 - 0.30
Lawns:	
Sandy soil, flat, 2%	0.05 - 0.10
Sandy soil, average, 2 - 7%	0.10 - 0.15
Sandy soil, steep, 7%	0.15 - 0.20
Heavy soil, flat, 2%	0.13 - 0.17
Heavy soil, average, 2 - 7%	0.18 - 0.22
Heavy soil, steep, 7%	0.25 - 0.35
Streets:	
Asphaltic	0.70 - 0.95
Concrete	0.80 - 0.95
Brick	0.70 - 0.85
Drives and walks	0.75 - 0.85
Roofs	0.75 - 0.95
*Higher values are usually appropriate for steeply sloped areas and longer return periods because infiltration and other losses have a proportionally smaller effect on runoff in these cases.	

Reference: FHWA, Urban drainage Design Manual HEC-22, (2009)

Soil Map—Hidalgo County, Texas



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

7/1/2021
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Hidalgo County, Texas
Survey Area Data: Version 19, Jun 11, 2020

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

Date(s) aerial images were photographed: Sep 20, 2015—Nov 5, 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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
25	Hidalgo fine sandy loam, 0 to 1 percent slopes	0.4	39.1%
28	Hidalgo sandy clay loam, 0 to 1 percent slopes	0.6	60.9%
Totals for Area of Interest		1.1	100.0%

Component Legend

This report presents general information about the map units and map unit components in the selected area. It shows map unit symbols and names and the components in each map unit. It also shows the percent of the components in the map units, the kind of component, and the slope range of each component.

Report—Component Legend

Component Legend—Hidalgo County, Texas							
Map unit symbol and name	Map unit acres	Pct. of map unit	Component name	Component kind	Pct. slope		
					Low	RV	High
25—Hidalgo fine sandy loam, 0 to 1 percent slopes	60,332						
		85	Hidalgo	Series	0.0	0.5	1.0
28—Hidalgo sandy clay loam, 0 to 1 percent slopes	133,968						
		85	Hidalgo	Series	0.0	0.5	1.0

Data Source Information

Soil Survey Area: Hidalgo County, Texas
Survey Area Data: Version 19, Jun 11, 2020

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named, soils that are similar to the named components, and some minor components that differ in use and management from the major soils.

Most of the soils similar to the major components have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Some minor components, however, have properties and behavior characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description

Hidalgo County, Texas

25—Hidalgo fine sandy loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2sxn

Elevation: 20 to 500 feet

Mean annual precipitation: 20 to 27 inches
Mean annual air temperature: 72 to 74 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hidalgo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hidalgo

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy alluvium

Typical profile

Ap - 0 to 17 inches: fine sandy loam
Bk1 - 17 to 28 inches: sandy clay loam
Bk2 - 28 to 38 inches: clay loam
Ck - 38 to 80 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: R083DY019TX - Gray Sandy Loam
Hydric soil rating: No

Minor Components

Willacy

Percent of map unit: 10 percent
Landform: Terraces

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Brennan

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R083EY023TX - Sandy Loam
Hydric soil rating: No

28—Hidalgo sandy clay loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2sxxv
Elevation: 20 to 500 feet
Mean annual precipitation: 20 to 27 inches
Mean annual air temperature: 72 to 74 degrees F
Frost-free period: 300 to 365 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hidalgo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hidalgo

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy alluvium

Typical profile

Ap - 0 to 17 inches: sandy clay loam
Bk1 - 17 to 28 inches: sandy clay loam
Bk2 - 28 to 38 inches: clay loam
Ck - 38 to 80 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 2c
Hydrologic Soil Group: B
Ecological site: R083DY019TX - Gray Sandy Loam
Hydric soil rating: No

Minor Components

Raymondville

Percent of map unit: 7 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R083DY025TX - Clay Loam
Hydric soil rating: No

Racombes

Percent of map unit: 6 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R083DY025TX - Clay Loam
Hydric soil rating: No

Willacy

Percent of map unit: 2 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Hidalgo County, Texas
Survey Area Data: Version 19, Jun 11, 2020

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

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.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk "*" denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties—Hidalgo County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
25—Hidalgo fine sandy loam, 0 to 1 percent slopes														
Hidalgo	85	B	0-17	Fine sandy loam	CL, SM, SC-SM, SC	A-4, A-2-4	0-0-0	0-0-0	100-100-100	94-96-100	84-94-100	35-47-56	15-23-25	1-7-8
			17-28	Sandy clay loam, clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	100-100-100	94-98-100	85-96-100	50-60-75	30-35-44	11-17-22
			28-38	Clay loam, sandy clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	95-97-100	91-94-100	81-93-100	54-68-81	30-38-44	11-17-22
			38-80	Clay loam, sandy clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	96-97-100	91-95-100	82-94-100	57-72-84	30-38-44	11-17-22
28—Hidalgo sandy clay loam, 0 to 1 percent slopes														
Hidalgo	85	B	0-17	Sandy clay loam	CL, SC	A-6	0-0-0	0-0-0	100-100-100	95-98-100	86-96-100	44-54-63	25-30-39	11-15-18
			17-28	Sandy clay loam, clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	100-100-100	94-98-100	85-96-100	50-60-75	30-35-44	11-17-22
			28-38	Clay loam, sandy clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	95-97-100	91-94-100	81-93-100	54-68-81	30-38-44	11-17-22
			38-80	Sandy clay loam, clay loam	CL, SC	A-6, A-7-6	0-0-0	0-0-0	96-97-100	91-95-100	82-94-100	57-72-84	30-38-44	11-17-22

Data Source Information

Soil Survey Area: Hidalgo County, Texas
Survey Area Data: Version 19, Jun 11, 2020



Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (K_{sat}) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (K_{sat}) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (K_w and K_f) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and K_{sat}. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor K_w indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor K_f indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (<http://soils.usda.gov>)

Report—Physical Soil Properties

Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Physical Soil Properties—Hidalgo County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
25—Hidalgo fine sandy loam, 0 to 1 percent slopes														
Hidalgo	0-17	53-63- 75	5-19- 35	5-18- 20	1.35-1.45 -1.65	14.00-28.00-42.00	0.10-0.13-0.15	0.3- 1.4- 1.7	0.5- 1.0- 1.5	.24	.24	5	3	86
	17-28	25-48- 70	10-25- 50	23-27- 35	1.20-1.40 -1.50	4.00-9.00-14.00	0.10-0.13-0.18	1.2- 2.1- 5.0	0.3- 0.6- 1.0	.28	.28			
	28-38	25-35- 70	10-35- 50	23-30- 35	1.20-1.40 -1.60	4.00-9.00-14.00	0.10-0.13-0.18	1.2- 2.3- 5.9	0.1- 0.3- 0.5	.32	.32			
	38-80	25-30- 70	10-40- 50	23-30- 35	1.40-1.50 -1.80	4.00-9.00-14.00	0.10-0.13-0.18	1.0- 2.2- 5.0	0.1- 0.2- 0.3	.32	.32			
28—Hidalgo sandy clay loam, 0 to 1 percent slopes														
Hidalgo	0-17	45-55- 70	5-18- 28	20-27- 30	1.35-1.50 -1.65	4.00-9.00-14.00	0.10-0.13-0.18	1.5- 2.7- 5.0	1.0- 1.5- 2.0	.17	.17	5	5	56
	17-28	25-48- 70	10-25- 50	23-27- 35	1.20-1.40 -1.50	4.00-9.00-14.00	0.10-0.13-0.18	1.2- 2.1- 5.0	0.3- 0.6- 1.0	.28	.28			
	28-38	25-35- 70	10-35- 50	23-30- 35	1.20-1.40 -1.60	4.00-9.00-14.00	0.10-0.13-0.18	1.2- 2.3- 5.9	0.1- 0.3- 0.5	.32	.32			
	38-80	25-30- 70	10-40- 50	23-30- 35	1.40-1.50 -1.80	4.00-9.00-14.00	0.10-0.13-0.18	1.0- 2.2- 5.0	0.1- 0.2- 0.3	.32	.32			

Data Source Information

Soil Survey Area: Hidalgo County, Texas
Survey Area Data: Version 19, Jun 11, 2020



Chemical Soil Properties

This table shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable cations plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. It is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

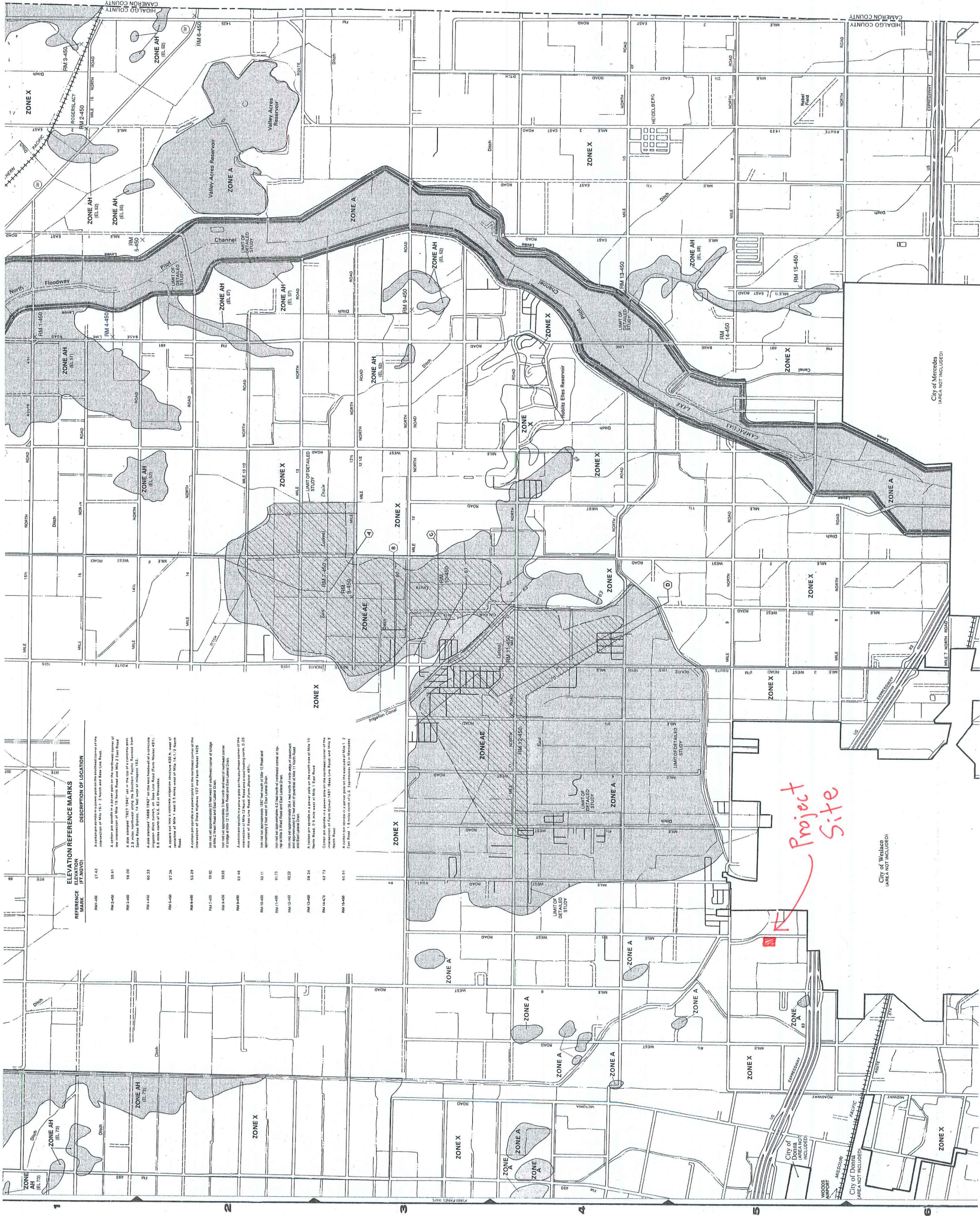
Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced saturated hydraulic conductivity and aeration, and a general degradation of soil structure.

Report—Chemical Soil Properties

Chemical Soil Properties—Hidalgo County, Texas									
Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio	
	<i>In</i>	<i>meq/100g</i>	<i>meq/100g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>		
25—Hidalgo fine sandy loam, 0 to 1 percent slopes									
Hidalgo	0-17	2.6-10	—	7.9-8.4	1-5	0	0.0-2.0	0-2	
	17-28	10-20	—	7.9-8.4	2-15	0	0.0-3.0	2-5	
	28-38	10-20	—	7.9-8.4	10-35	0	0.0-4.0	2-6	
	38-80	10-20	—	7.9-8.4	10-35	0	0.0-4.0	4-10	
28—Hidalgo sandy clay loam, 0 to 1 percent slopes									
Hidalgo	0-17	10-18	—	7.9-8.4	1-5	0	0.0-2.0	0-4	
	17-28	10-20	—	7.9-8.4	2-15	0	0.0-3.0	2-5	
	28-38	10-20	—	7.9-8.4	10-35	0	0.0-4.0	2-6	
	38-80	10-20	—	7.9-8.4	10-35	0	0.0-4.0	4-10	

Data Source Information

Soil Survey Area: Hidalgo County, Texas
 Survey Area Data: Version 19, Jun 11, 2020

[illegible]

NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP

CHIDALGO COUNTY,
TEXAS
(UNINCORPORATED AREAS)

SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER

180334 0450 C

MAP REVISED:

JUNE 6, 2000

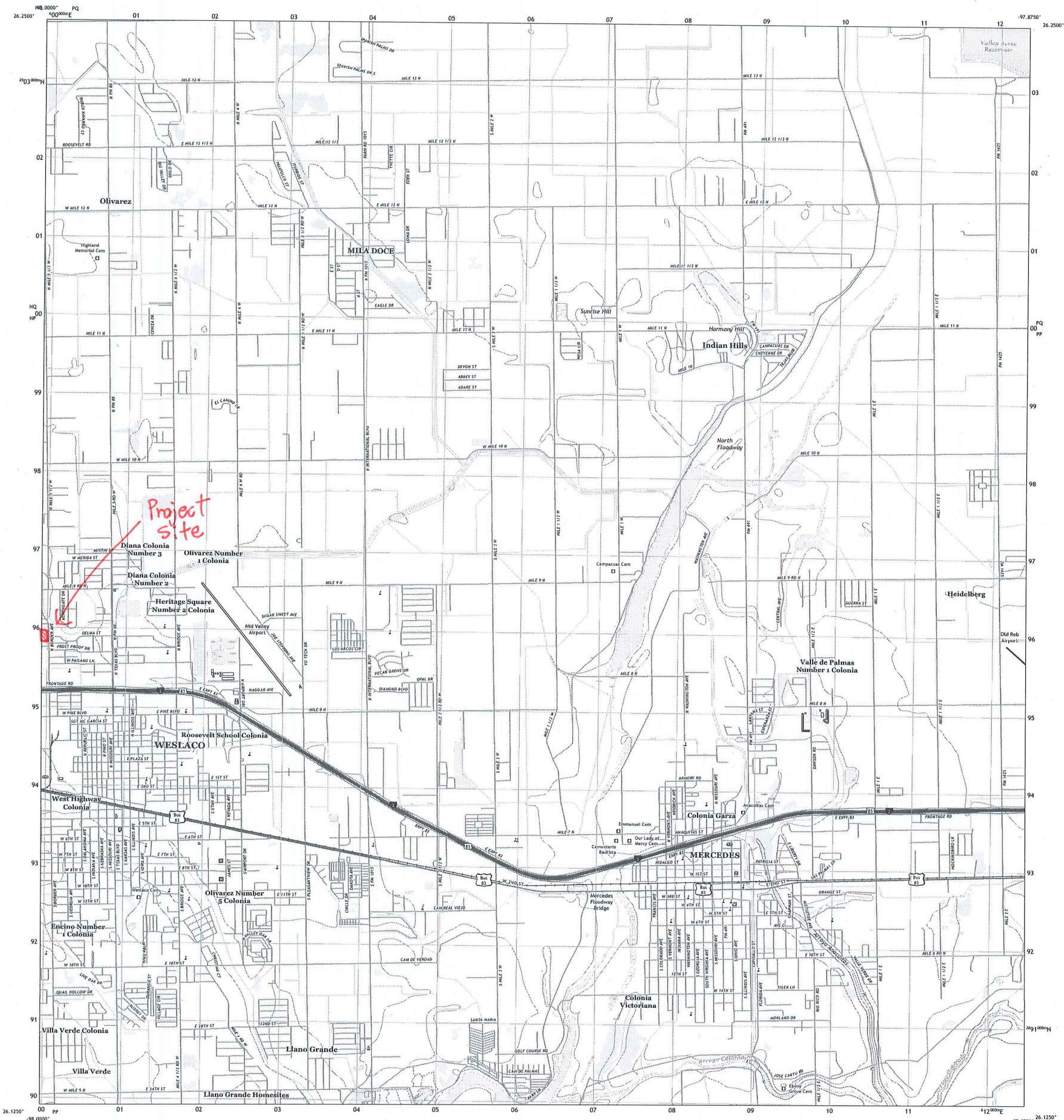




U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

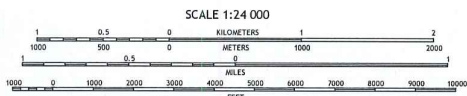
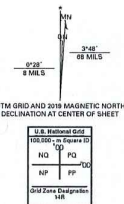


MERCEDES QUADRANGLE
TEXAS - HIDALGO COUNTY
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84) Projection and
1 000-meter grid/Universal Transverse Mercator, Zone 14R
This map is not a legal document. Boundaries may be
generalized for this map scale. Private lands within government
reservations may not be shown. Obtain permission before
entering private lands.

Imagery.....NAP, November 2016 - January 2017
Roads.....U.S. Census Bureau, 2010
Name.....U.S. Census Bureau, 1979 - 2010
Hydrography.....National Hydrography Dataset, 2002 - 2010
Contours.....National Elevation Dataset, 2003 - 2009
Boundaries.....Multiple sources; see metadata file 2016 - 2017
Wetlands.....FWS National Wetlands Inventory 1994





Planning & Zoning Commission Standardized Agenda Request Form

Date of Meeting: September 1, 2021	Agenda Item No. (to be assigned by PCE): IV. D.
From: Rebekah de la Fuente, Planning Director, on behalf of David Salinas.	
Subject/Agenda Item: Discussion and consideration for the Voluntary Annexation of Texas Road Subdivision – being West Tract E660'-N330'FT 109 & E660'-S660'FT 110 15.0 AC GR 13.63 AC net, West and Adams Tract Subdivision, Weslaco, Hidalgo County, Texas located 660' south of Mile 10 North along East Side of F.M. 88. Possible Action.	
Discussion/Overview: The proposed twenty-five (25) lot subdivision is outside the City of Weslaco city limits. This subdivision is being serviced with water by the City of Weslaco through an 8" waterline and sewer by OSSF. The property is within a Flood Zone "X".	
If item requires Publication Notice, provide date and periodical of publication; indicate if comments received from letters mailed to property owners: N/A	
Staff recommendation for Commission's Action: Staff recommends approval of the Voluntary annexation.	
Additional Action Prompted: ☒ Mayor's Signature ☐ Public Hearing ☐ Budget Amendment ☐ Resolution ☐ Ordinance – First Reading ☐ Ordinance – Final Reading	
Advisory Review, (if any): (name of board/committee, date of action, recommendation): N/A	
If item previously considered, provide date and action by Commission: N/A	
Attachments,(if any): Request letter.	
Responsibilities upon Commission's Action: Planning staff will advise applicant.	



APPLICATION FOR VOLUNTARY ANNEXATION

The Planning & Zoning Commission meets every 1st Wednesday of each month at 5:30 pm.

The City Commission meets every 1st and 3rd Tuesday of each month at 5:30 pm

FILE NO. _____

GENERAL INFORMATION

Name of Subdivision: WEST AND ADAMS TRACT

Location: 660' SOUTH OF MILE 10 NORTH ROAD ALONG E. SIDE OF

Legal Description: THE E. 15.0 AC. O/O A 30.0 AC. F.M. 88
TR. O/O F.T. 109, WEST AND ADAMS TRACT.

- ☒ Petition for annexation signed and notarized by property owners.
- ☒ Detailed dimensioned site plan/map must be submitted with this request.
- ☒ Survey and metes and bounds.
- ☒ City and school tax receipts attached.

OWNER INFORMATION

Owner's Name: MANUEL SALDIVAR Telephone: 956-638-2363

Address: 4020 N. TEXAS BLVD. Fax: _____

City: WESLACO State: TX Zip: 78599 E-mail: MSALDIVAR26@YAHOO.COM

ENGINEER INFORMATION

Name: DAVID SALINAS Telephone: 682-9081

Address: 2221 DAFFODIL AVE. Fax: 686-1489

City: MEQUEN State: TX Zip: 78001 E-mail: dsalinas@salinas
ENGINEERING.COM

AUTHORIZATION AND ACKNOWLEDGEMENTS

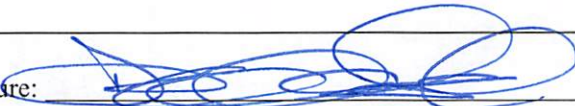
I certify that I am the actual owner of the property described above and this application is being submitted with my consent (include corporate name if applicable); and the following person listed below is my authorized agent to act on my behalf.

I certify that the above information is correct and complete to the best of my knowledge. I understand that I must comply with all applicable local, state, and federal regulations.

Owner Printed Name: MANUEL SALDIVAR

Owner Signature:  Date: 8/16/21

_____ is the authorized agent

Authorized Agent Signature:  Date: 8/16/21

Authorized Agent Printed Name: DAVID SALINAS

THIS PAGE FOR STAFF USE ONLY

Date Received: _____ Received By: _____

Staff Review Date: _____

P & Z Commission Approval: _____

City Commission Approval on First Reading: _____

City Commission Approval on Final Reading: _____



Planning & Zoning Commission Standardized Agenda Request Form

Date of Meeting: September 1, 2021	Agenda Item No. (to be assigned by PCE): IV.E.
From: Rebekah de la Fuente, Planning Director, on behalf of Meldan & Hunt, Inc.	
Subject/Agenda Item: Discussion and consideration for the six-month extension of the Final Plat for Airport Heights being 27.080 acre Tract of land of Farm Tract 21 & 22, Block 135, West and Adams Tract Subdivision, Hidalgo County, and Texas located approximately on the North corner of Airport and Business 83. Possible Action.	
Discussion/Overview: The proposed seventy-two (72) lot subdivision is inside the City of Weslaco city limits. Final Plat approval is set to expire on September 15, 2021.	
If item requires Publication Notice, provide date and periodical of publication; indicate if comments received from letters mailed to property owners: N/A	
Staff recommendation for Commission's Action: Staff recommends approval of the six-month extension.	
Additional Action Prompted: ☒ Mayor's Signature ☐ Public Hearing ☐ Budget Amendment ☐ Resolution ☐ Ordinance – First Reading ☐ Ordinance – Final Reading	
Advisory Review, (if any): (name of board/committee, date of action, recommendation): N/A	
If item previously considered, provide date and action by Commission: N/A	
Attachments,(if any): Application for Subdivision platting, Staff's comments, Drainage Report, Subdivision plat and Utility layout.	
Responsibilities upon Commission's Action: Planning staff will advise applicant.	



TBPELS Firm # F-1435
TBPELS # 10096900

MELDEN & HUNT INC.

CONSULTANTS • ENGINEERS • SURVEYORS

FRED L. KURTH • ALLAN F. BOOE • KELLEY A. HELLER-VELA • ROBERTO N. TAMEZ • MARIO A. REYNA • RUBEN JAMES DE JESUS

August 24, 2021

Rebekah De La Fuente, Planning Director
CITY OF WESLACO PLANNING DEPT.
255 South Kansas Ave.
Weslaco, TX 78596

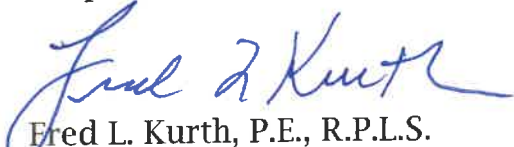
Re: AIRPORT HEIGHTS SUBDIVISION - REQUEST FOR EXTENSION

Dear Ms. De La Fuente:

On behalf of the owner, Jeffrey Erickson Construction, we are requesting a six month extension on the above referenced subdivision plat. According to our records, the last approval was in September 2020. The owners are requesting an additional six-month time frame.

Your consideration on this request at your next board meeting is appreciated. If you have any questions and/or require additional information, please do not hesitate to contact me.

Respectfully,



Fred L. Kurth, P.E., R.P.L.S.
President

Cc: Jeffrey Erickson Construction



Planning & Zoning Commission Standardized Agenda Request Form

Date of Meeting: September 1, 2021	Agenda Item No. (to be assigned by PCE): IV. F.
From: Rebekah de la Fuente, Planning Director, on behalf of SWG Engineering LLC.	
Subject/Agenda Item: Discussion and consideration for the six-month extensions of the Final Plat for Verona Subdivision– being a 20 acres out of Farm Tract 1038, West and Adams Tract Subdivision, Weslaco, Hidalgo County, Texas located approximately 1800 ft. North of mile 8 on FM 1015.	
Discussion/Overview: The proposed fifty (50) lot subdivision is inside the City of Weslaco city limits. Final Plat approval is set to expire on September 15, 2021.	
If item requires Publication Notice, provide date and periodical of publication; indicate if comments received from letters mailed to property owners: N/A	
Staff recommendation for Commission's Action: Staff recommends approval of the six-month extension.	
Additional Action Prompted: ☒ Mayor's Signature ☐ Public Hearing ☐ Budget Amendment ☐ Resolution ☐ Ordinance – First Reading ☐ Ordinance – Final Reading	
Advisory Review, (if any): (name of board/committee, date of action, recommendation): N/A	
If item previously considered, provide date and action by Commission: N/A	
Attachments,(if any): Application for Subdivision platting, Staff's comments, Drainage Report, Subdivision plat and Utility layout.	
Responsibilities upon Commission's Action: Planning staff will advise applicant.	

Randy C. Winston, P.E., President
Isaac Huacuja, EIT, CFM, Treasurer

**SIGLER, WINSTON, GREENWOOD
& ASSOC.
SWG ENGINEERING, LLC**
611 Bill Summers Intl Blvd
Weslaco, TX 78596
O 956.968.2194 F 956.968.8300
Firm Registration No. F-592

Joe B. Winston, Jr., P.E., Exec. VP
Jose G. Reyes, P.E. - VP

August 24, 2021

Ms. Rebekah de la Fuente
Planning & Code Enforcement Director
City of Weslaco
255 S. Kansas Ave.
Weslaco Texas, 78596

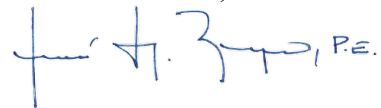
Dear Ms. De la Fuente:

I'm requesting a time extension of 6 months for approval of Verona Subdivision.

Please review this request and present it to Planning and Zoning Commission and the City Commission for their consideration.

Should you have any questions or need additional information, please feel free to call me at (956) 968-294.

Sincerely,
SIGLER, WINSTON, GREENWOOD
& ASSOC., LLC.

A handwritten signature in blue ink, appearing to read "Jose G. Reyes, P.E.", with a stylized flourish at the end.

Jose G. Reyes, P.E.
Vice-President