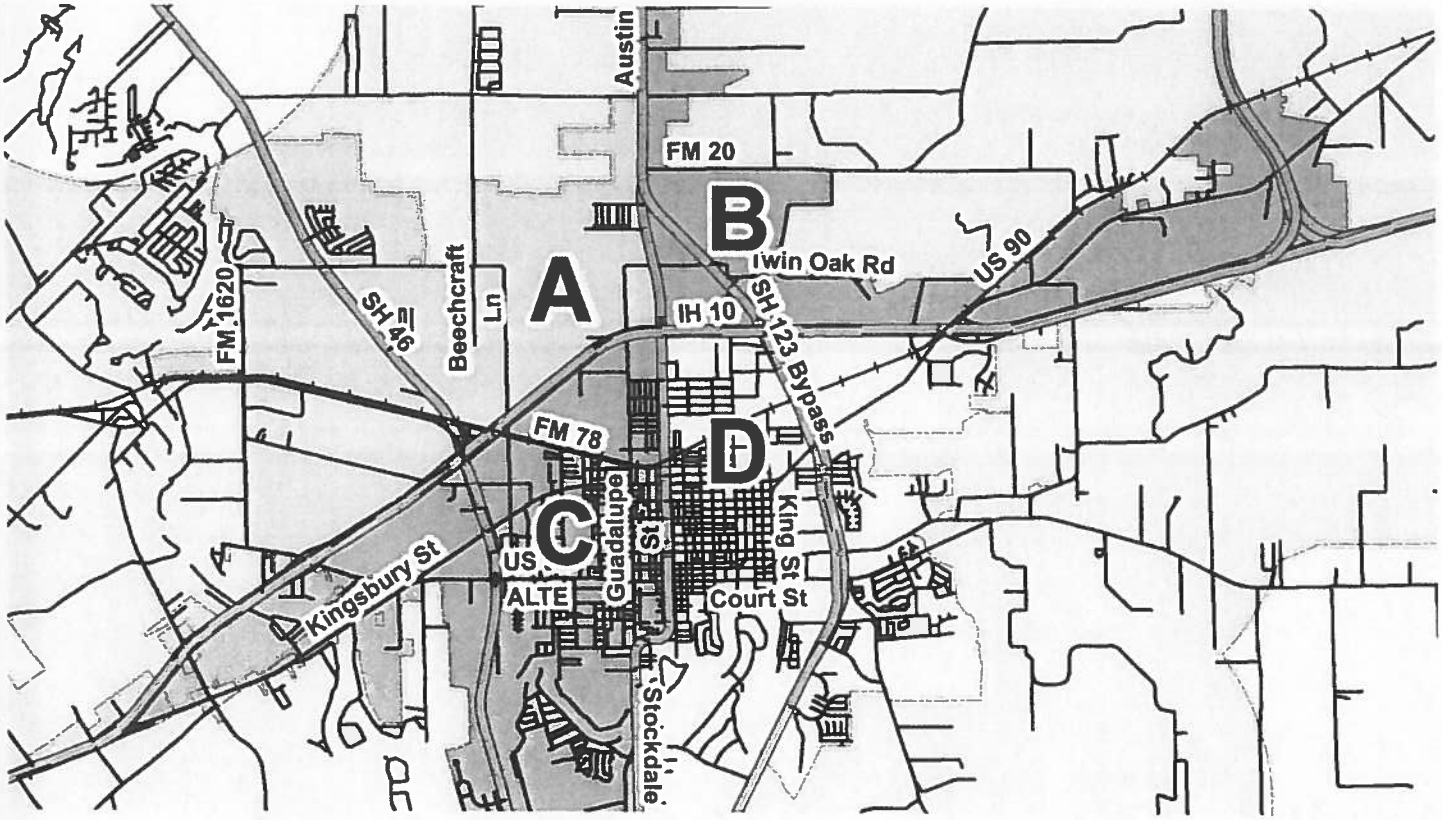

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SEGUIN ROADWAY IMPACT FEE STUDY

Kimley»Horn

March 2017

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2. Roadway Impact Fee Calculation Inputs

A. Land Use Assumptions

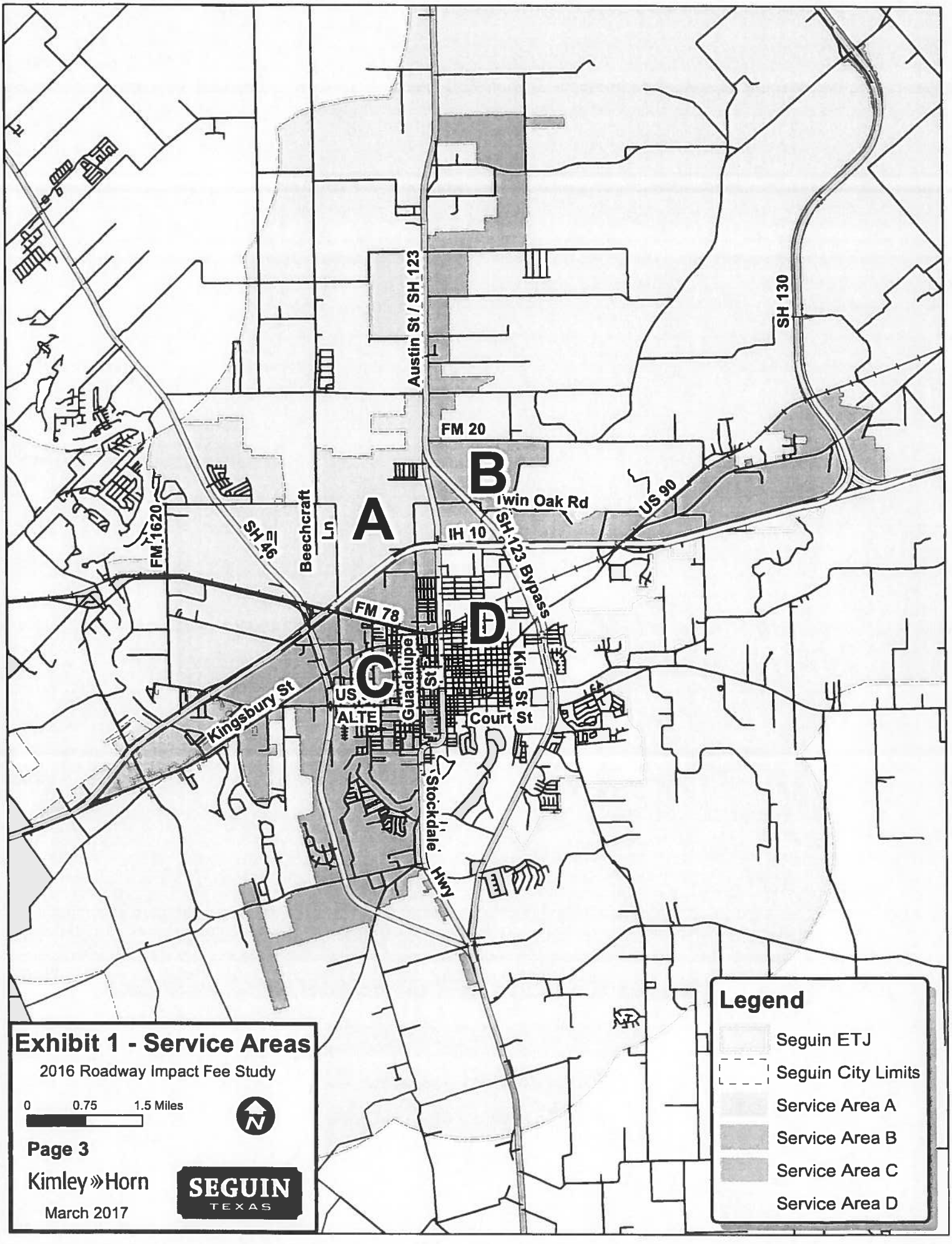
In order to assess an impact fee, land use assumptions must be developed to provide the basis for population and employment growth projections within a political subdivision. As defined by Chapter 395 of the Texas Local Government Code, these assumptions include a description of changes in land uses, densities, and population in the service area in a 10-year span. The land use assumptions used in this report were developed using information found in the City of Seguin Future Land Use Plan, and with input from City staff.

The geographic boundaries of the impact fee service areas for roadway facilities are shown in **Exhibit 1**. The City of Seguin is divided into four (4) service areas, each based on a six (6) mile limit as required in Chapter 395.

Table 1 summarizes the residential and non-residential 10-year growth projections by service area within the City of Seguin.

Table 1 – Residential and Non-Residential 10-Year Growth Projections for the City of Seguin

	Residential	Employment		
Service Area	Single & Multi Family	Basic (Low) (i.e. Industrial)	Service (Med) (i.e. Office)	Retail (High)
	Dwelling Units	Sq. Ft.	Sq. Ft.	Sq. Ft.
A	1,000	544,500	174,240	1,110,780
B	203	359,370	174,240	326,700
C	540	544,500	174,240	653,400
D	500	544,500	174,240	849,420
Sub-Total	2,243	1,992,870	696,960	2,940,300
Total	**2,243**	**5,630,130**		


Austin St / SH 123
SH 130
FM 20
B
Twin Oak Rd
US 90
A
Beechcraft Ln
FM 1620
SH 46
IH 10
SH 123 Bypass
FM 78
D
C
US
ALTE
Guadalupe St
King St
Court St
Kingsbury St
Stockdale Hwy
Exhibit 1 - Service Areas
2016 Roadway Impact Fee Study
0
0.75
1.5 Miles
N
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TEXAS
Legend
Seguin ETJ
Seguin City Limits
Service Area A
Service Area B
Service Area C
Service Area D

Table 2A – Capital Improvement Plan for Roadway Impact Fees – Service Area A

Service Area	Proj. #	Impact Fee Class	Project	Limits	Length (mi)	% In Service Area
A	A-1	ARTE	Cordova Rd (1)	1470' W of SH 123 / City Limits to 447' W of SH 123	0.20	50%
	A-2	ARTE	Cordova Rd (2)	447' W of SH 123 to SH 123	0.08	100%
	A-3	PKWY	Outer Loop (1)	FM 1620 to 2345' E of FM 1620	0.44	100%
	A-4	PKWY	Outer Loop (2)	2345' E of FM 1620 to SH 46	0.62	100%
	A-5	PKWY	Outer Loop (3)	SH 46 to Rudeloff Rd	0.71	100%
	A-6	PKWY	Outer Loop (4)	Rudeloff Rd to City Limits	0.63	50%
	A-7	ARTE	Rudeloff Rd (1)	SH 46 to 4432' E of FM 46	0.84	100%
	A-8	ARTE	Rudeloff Rd (2)	4432' E of FM 46 to Beechcraft Ln	0.44	50%
	A-9	ARTE	Rudeloff Rd (3)	Beechcraft Ln to Huber Rd	0.24	100%
	A-10	ARTE	Rudeloff Rd / FM 20 (1)	Huber Rd to 3765' E of Huber Rd	0.84	100%
	A-11	ARTE	Rudeloff Rd / FM 20 (2)	3883' E of Huber Rd to 4156' E of Huber Rd	0.09	100%
	A-12	ARTE	Rudeloff Rd / FM 20 (3)	6126' E of Huber Rd to SH 123	0.27	100%
	A-13	ARTE	Rudeloff Rd / Strempel Rd	Rudeloff Rd / FM 20 to SH 123	1.07	100%
	A-14	ARTE	Huber Rd	IH 10 to Rudeloff Rd	1.30	100%
	A-S1	-	Future Grade Separated	Outer Loop & SH 46	-	100%
	A-S2	-	Signal Installation	SH 123 & FM 20	-	50%
	A-S3	-	Turn Lane Installation	SH 123 & Cordova Rd	-	50%

Table 2B – Capital Improvement Plan for Roadway Impact Fees – Service Area B

Service Area	Proj. #	Impact Fee Class	Project	Limits	Length (mi)	% In Service Area
B	B-1	MAJC	FM 20 (1)	SH 123 to 1067' E of SH 123	0.20	100%
	B-2	MAJC	FM 20 (2)	1067' E of SH 123 to City Limits	1.39	50%
	B-3	PKWY	SH 123 Bypass	SH 123 to IH 10	1.65	100%
	B-4	ARTE	Strempel Rd	SH 123 to SH 123 Bypass	0.47	100%
	B-5	MAJC	Heideke St / Martindale Rd	SH 123 Bypass to 156' NE of Twin Oak Rd	0.46	100%
	B-6	MAJC	Martindale Rd	156' NE of Twin Oak Rd to 1300' NE of Twin Oak Rd	0.23	50%
	B-7	MAJC	Future Major Collector C	1300' NE of Twin Oak Rd to FM 20	0.60	100%
	B-8	MAJC	Heideke St	IH 10 to SH 123 Bypass	0.33	100%
	B-S1	-	Signal Installation	SH 123 & FM 20	-	50%
	B-S2	-	Turn Lane Installation	SH 123 & Cordova Rd	-	50%

Table 2C – Capital Improvement Plan for Roadway Impact Fees – Service Area C

Service Area	Proj. #	Class	Project	Limits	Length (mi)	% In Service Area
C	C-1	ARTE	SH 123 / Austin St	Kingsbury St to IH 10	1.26	50%
	C-2	ARTE	Fleming Dr	Kingsbury St to IH 10	0.80	100%
	C-3	FR	IH 10 Frontage Road	C H Matthies to SH 123	2.30	100%
	C-4	COL	Hidalgo St / Vaughan Ave	US 90 ALTE to FM 78	1.08	100%
	C-5	COL	Jefferson Ave	SH 46 to Guadalupe St	1.16	100%
	C-6	COL	C H Matthies Jr / Lawson St	IH 10 Frontage Road to Kingsbury St	0.94	100%

Table 2D – Capital Improvement Plan for Roadway Impact Fees – Service Area D

Service Area	Proj. #	Class	Project	Limits	Length (mi)	% In Service Area
D	D-1	ARTE	SH 123 / Austin St	US 90 to IH 10	1.26	50%
	D-2	COL	Walnut St	King St to SH 123 Bypass	0.62	100%
	D-3	COL	Meadow Lake Dr	Stockdale Hwy to SH 123 Bypass	0.65	100%
	D-4	COL	Heideke St	Kingsbury St to IH 10	1.23	100%
	D-5	COL	Tor Dr	Stockdale Hwy to SH 123 Bypass	1.03	100%
	D-S1	-	Realignment	Eastwood Dr & Preston Dr	-	100%
	D-S2	-	Signal and Turn Lanes	King St & Gloria Dr	-	100%

For the purpose of impact fees, all developed and developable land is categorized as either residential or non-residential. For residential land uses, the existing and projected population is converted to dwelling units. The number of dwelling units in each service area is multiplied by a transportation demand factor to compute the vehicle-miles of travel that occur during the afternoon peak hour. This factor computes the average amount of demand caused by the residential land uses in the service area. The transportation demand factor is discussed in more detail below.

For non-residential land uses, the process is similar. The Land Use Assumptions provide existing and projected number of building square footages for three (3) categories of non-residential land uses – basic, service, and retail. These categories correspond to an aggregation of other specific land use categories based on the North American Industrial Classification System (NAICS).

Building square footage is the most common independent variable for the estimation of non-residential trips in the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 9th Edition. This characteristic is more appropriate than the number of employees because building square footage is tied more closely to trip generation and is known at the time of application for any development or development modification that would require the assessment of an impact fee.

The existing and projected Land Use Assumptions for the dwelling units and the square footage of basic, service, and retail land uses provide the basis for the projected increase in vehicle-miles of travel. As noted earlier, a transportation demand factor is applied to these values and then summed to calculate the total peak hour vehicle-miles of demand for each service area.

The transportation demand factors are aggregate rates derived from two sources – the ITE Trip Generation Manual, 9th Edition and National Household Travel Survey (NHTS). ITE's Trip Generation Manual, 9th Edition provides the number of trips that are produced or attracted to the land use for each dwelling unit, square foot of building, or other corresponding unit. For the retail category of land uses, the rate is adjusted to account for the fact that a percentage of retail trips are made by people who would otherwise be traveling past that particular establishment anyway, such as a trip between work and home. These trips are called pass-by trips, and since the travel demand is accounted for in the land use calculations relative to the primary trip, it is necessary to discount the retail rate to avoid double counting trips.

The next component of the transportation demand factor accounts for the length of each trip. The average trip length for each category is based on the region-wide travel characteristics found in the most recent National Household Travel Survey (NHTS).

The computation of the *transportation demand factor* is detailed in the following equation:

$$TDF = T * (1 - P_b) * L_{\max}$$

$$\text{where...} \; L_{\max} = \min(L * OD \text{ or } \mathrm{SA_L})$$

Variables:

- TDF = Transportation Demand Factor,
- T = Trip Rate (peak hour trips / unit),
- P_b = Pass-By Discount (% of trips),
- L_{max} = Maximum Trip Length (miles),
- L = Average Trip Length (miles),
- OD = Origin-Destination Reduction (50%)
- SA_L = Max Service Area Trip Length (see **Table 5**)

The maximum trip length was limited to 6.0 miles for all Service Areas A - D. Chapter 395 of the Texas Local Government Code allows for a service area of six (6) miles, and the service areas within Seguin are approximately 6.0 miles in distance each.

The adjustment made to the average trip length statistic in the computation of the maximum trip length is the origin-destination reduction. This adjustment is made because the Roadway Impact Fee is charged to both the origin and destination end of the trip. For example, impact fee methodology will account for a trip from home to work within Seguin to both residential and non-residential land uses. To avoid counting these trips as both residential and non-residential trips, a 50% origin-destination (OD) reduction factor is applied. Therefore, only half of the trip length is assessed to each land use. This methodology is consistent with that used in the National Household Travel Survey.

Table 5 shows the derivation of the Transportation Demand Factor for the residential land uses and the three (3) non-residential land use categories for each service area. The values utilized for all variables shown in the transportation demand factor equation are also shown in the table.

Table 5 – Transportation Demand Factor Calculations

Variable	Residential (ITE 210)	Basic (ITE 110)	Service (ITE 710)	Retail (ITE 820)
T	1.00	0.97	1.49	3.71
Pb	0%	0%	0%	34%
L	9.32	12.93	12.93	5.28
Lmax	4.66	6.00	6.00	2.64
TDF	**4.66**	**5.82**	**8.94**	**6.47**

The application of the demographic projections and the transportation demand factors are presented in the 10-Year Growth Projections in **Table 6**. This table shows the total vehicle-miles by service area for the years 2016 and 2026. These estimates and projections lead to the Vehicle-Miles of Travel for both 2016 and 2026

Table 8. Maximum Assessable Transportation Impact Fee

	SERVICE AREA:	A	B	C	D
1	TOTAL VEH-MI OF CAPACITY ADDED BY THE CIP (FROM ROADWAY IMPACT FEE CIP SERVICE UNITS OF SUPPLY, **APPENDIX B**)	29,443	17,928	14,826	9,352
2	TOTAL VEH-MI OF EXISTING DEMAND (FROM ROADWAY IMPACT FEE CIP SERVICE UNITS OF SUPPLY, **APPENDIX B**)	711	2,074	5,010	2,496
3	NET AMOUNT OF VEH-MI OF CAPACITY ADDED (LINE 1 - LINE 2)	28,732	15,854	9,816	6,856
4	TOTAL COST OF THE CIP WITHIN SERVICE AREA (FROM **TABLE 4**)	$ 58,536,000	$ 15,505,100	$ 18,913,100	$ 15,101,900
5	COST OF NET CAPACITY SUPPLIED (LINE 3 / LINE 1) * (LINE 4)	$ 57,122,452	$ 13,711,393	$ 12,521,988	$ 11,071,282
6	COST TO MEET EXISTING NEEDS AND USAGE (LINE 4 - LINE 5)	$ 1,413,548	$ 1,793,707	$ 6,391,112	$ 4,030,618
7	TOTAL VEH-MI OF NEW DEMAND OVER TEN YEARS **(FROM TABLE 6 and Land Use Assumptions)**	16,574	6,710	11,470	12,553
8	PERCENT OF CAPACITY ADDED ATTRIBUTABLE TO GROWTH (LINE 7 / LINE 3)	57.6%	42.3%	116.8%	183.0%
9	IF LINE 7 > LINE 3, REDUCE LINE 8 TO 100%, OTHERWISE NO CHANGE	57.6%	42.3%	100.0%	100.0%
10	COST OF CAPACITY ADDED ATTRIBUTABLE TO GROWTH (LINE 5 * LINE 9)	$ 32,902,532	$ 5,799,919	$ 12,521,988	$ 11,071,282
11	CREDIT FOR AD VALOREM TAXES (50% OF LINE 10)	$ 16,451,266	$ 2,899,960	$ 6,260,994	$ 5,535,641
12	MAX ASSESSABLE FEE PER SERVICE UNIT ($ PER VEH-MI) (LINE 11 / LINE 7)	$ 993	$ 432	$ 546	$ 441

5. Sample Calculations

The following section details two (2) examples of maximum assessable Roadway Impact Fee calculations.

Example 1:
Development Type - One (1) Unit of Single-Family Housing in Service Area A

Roadway Impact Fee Calculation Steps – Example 1	
Step 1	**Determine Development Unit and Vehicle-Miles Per Development Unit**
	From Table 9 [Land Use – Vehicle-mile Equivalency Table] Development Type: 1 Dwelling Unit of Single-Family Detached Housing Number of Development Units: 1 Dwelling Unit Veh-Mi Per Development Unit: 4.66
Step 2	**Determine Maximum Assessable Impact Fee Per Service Unit**
	From Table 8, Line 12 [Maximum Assessable Fee Per Service Unit] Service Area A: $993
Step 3	**Determine Maximum Assessable Impact Fee**
	Impact Fee = # of Development Units * Veh-Mi Per Dev Unit * Max. Fee Per Service Unit Impact Fee = 1 * 4.66* $993 Maximum Assessable Impact Fee = $4,627.38

Example 2:
Development Type – 125,000 square foot Home Improvement Superstore in Service Area B

Roadway Impact Fee Calculation Steps – Example 2	
Step 1	**Determine Development Unit and Vehicle-Miles Per Development Unit**
	From Table 9 [Land Use – Vehicle-mile Equivalency Table] Development Type: 125,000 square feet of Home Improvement Superstore Development Unit: 1,000 square feet of Gross Floor Area Veh-Mi Per Development Unit: 3.19
Step 2	**Determine Maximum Assessable Impact Fee Per Service Unit**
	From Table 8, Line 12 [Maximum Assessable Fee Per Service Unit] Service Area 2: $432
Step 3	**Determine Maximum Assessable Impact Fee**
	Impact Fee = # of Development Units * Veh-Mi Per Dev Unit * Max. Fee Per Service Unit Impact Fee = 125 * 3.19 * $432 Maximum Assessable Impact Fee = $172,260

6. Conclusion

The City of Seguin has established a process to implement the assessment and collection of Roadway Impact Fees through the adoption of an impact fee ordinance that is consistent with Chapter 395 of the Texas Local Government Code.

This report establishes the maximum allowable Roadway Impact Fee that could be assessed by the City of Seguin within each of the four (4) service areas. The maximum assessable Roadway Impact Fees calculated in this report are presented in the table below:

Service Area	1	2	3	4
2016 Roadway Impact Fee Study Maximum Assessible Fee Per Vehicle-Mile	$ 993	$ 432	$ 546	$ 441

This document serves as a guide to the assessment of Roadway Impact Fees pertaining to future development and the City's need for roadway improvements to accommodate that growth. Following the public hearing process, the City Council may establish an amount to be assessed (if any) up to the maximum established within this report and update the Roadway Impact Fee Ordinance accordingly.

In conclusion, it is our opinion that the data and methodology used in this update are appropriate and consistent with Chapter 395 of the Texas Local Government Code. Furthermore, the Land Use Assumptions and the proposed Capital Improvement Plan are appropriately incorporated into the process.

City of Seguin

Kimley-Horn and Associates, Inc.

2016 Roadway Impact Fee Study

Conceptual Level Project Cost Projection

updated: 3/6/2017

Project Information:		Description:	Project No.	A-7
Name:	Rudeloff Rd (1)	**This project consists of the reconstruction of the existing pavement to an arterial.**		
Limits:	SH 46 to 4432' E of FM 46			
Impact Fee Class:	5U_(120)			
Ultimate Class:	ARTE			
Length (lf):	4430			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
104	Unclassified Street Excavation	36,424	cy	$ 13.50	$ 491,730
204	4" Type D Asphalt	33,471	sy	$ 25.50	$ 853,513
304	15" Crushed Limestone Flexible Base Material	35,932	sy	$ 19.50	$ 700,678
404	6" Lime Stabilization (with Lime @ 27#/sy)	35,932	sy	$ 3.00	$ 107,797
504	4" Topsoil	19,689	sy	$ 4.00	$ 78,756
604	5' Concrete Sidewalk	44,300	sf	$ 4.50	$ 199,350
704	Turn Lanes and Median Openings	0	sy	$ 48.00	$ -
				Paving Construction Cost Subtotal:	**$ 2,431,824**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 121,591
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 72,955
√	Roadway Drainage	Standard Internal System	15%	$ 364,774
√	Illumination		6%	$ 145,909
√	Special Drainage Structures	2 Stream Crossings	0%	$ 1,027,000
√	Water	Minor Adjustments	5%	$ 121,591
√	Sewer	Minor Adjustments	2%	$ 48,636
√	Basic Landscaping and Irrigation		4%	$ 97,273
	Miscellaneous:		0%	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 1,999,730**

Paving and Allowance Subtotal:		**$ 4,431,553**
Construction Contingency:	15%	$ 664,733
Mobilization	6%	$ 265,893
Prep ROW	5%	$ 221,578
Construction Cost TOTAL:		**$ 5,584,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 5,584,000**
Engineering/Survey/Testing:		20%	$ 1,116,800
ROW/Easement Acquisition:	Existing Alignment (1/2 ROW)	10%	$ 558,400
		Project Subtotal:	**$ 7,260,000**
		Impact Fee Project Cost TOTAL	**$ 7,260,000**

NOTE: The planning level cost projections listed in this appendix have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Planning within the City of Seguin

The planning level cost projections shall not supersede the City's design standards contained or the determination of the City Engineer for a specific project.