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Drainage Impact Fee Study

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Executive Summary

Introduction

Impact Fees are a mechanism for funding the public infrastructure necessitated by new development. They originated and evolved in Florida, California, and other fast-growing municipalities and counties, primarily in the Southern and Western United States. Across the country, they are used to fund various items, including police and fire facilities, parks, schools, roads, and utilities. In Texas, the legislature has allowed their use for water, wastewater, roadway, and drainage facilities. Since 1990, they have been used to fund public water and wastewater improvements in the City of Houston, and since 2013 they have been used to fund drainage improvements. They are being updated as required by state law.

Drainage Impact Fees fund a part of the City's Dedicated Drainage and Street Renewal Fund, also known as the ReBuild Houston (now Build Houston Forward) program. The impact fees were authorized by Ordinance No. 2013-281 in 2013 (codified at Houston, Tx. Code of Ordinances, Section 47-881, *et seq.*) and had been dedicated to funding drainage infrastructure by the passage of the Proposition 1 Charter Amendment in a Special Election on November 2, 2010 (codified in Article IX, Section 22(b)(i) of Houston's charter). Following a successful court challenge to another portion of the charter amendment in 2015, the charter amendment that was Proposition 1, including its dedication of drainage impact fees, was re-submitted to voters in 2018. It was again approved.

In the most basic terms, impact fees are meant to recover the incremental cost of each new unit of development in terms of new infrastructure needs. In the case of drainage impact fees, the infrastructure need is increased capacity within the City's drainage system. The purpose of this Impact Fee Study is to identify the fee per unit of new development allowed to fund these improvements in accordance with the enabling legislation, Chapter 395 of the Texas Local Government Code.

Impact Fees are a one-time fee and are charged only against new development. They are based on the cost of the improvements to the drainage system, both increasing the capacity of existing systems and constructing new systems, necessary to accommodate new growth. A Drainage Impact Fee would supplement the City's ability to fund drainage improvements; however, it would not replace existing funding mechanisms.

The primary goal of the Impact Fee program is to directly correlate fees with actual impacts and to spread the cost of needed improvements across all new developments. In this way, all new development shares the cost of expanding the drainage system in a predictable and equitable fashion.



Impact Fee Basics

Drainage Impact Fees are determined by several key variables, each described below in greater detail.

Impact Fee Study

The primary purpose of the Impact Fee Study is to determine the maximum impact fee per unit of new development allowed by state law. The determination of the maximum impact fee contained within this study is not a recommended fee level; the actual fee amount ultimately assessed is at the discretion of the Houston City Council, so long as it does not exceed the maximum assessable by law as contained within this study. The study looks at a period of 10 years to project new growth and corresponding capacity needs, as required by state law. The study (and corresponding maximum fees) must be updated at least every five years. The study could be updated at any time, however, to accommodate significant changes in any of the key variables of the impact fee equation.

Service Areas

A Service Area is a geographic area within which a unique maximum impact fee is determined. All fees collected within the Service Area must be spent on eligible improvements within the same Service Area. For Drainage Impact Fees, the Service Area may include all or part of the land within the political subdivision or its extraterritorial jurisdiction (ETJ) but shall not exceed the area actually served by the storm water, drainage, and flood control facilities designated in the capital improvements plan and shall not extend across watershed boundaries.

For the City of Houston, it was determined that the fee would only include land within the City's corporate limits. The Service Area boundaries are based on the TSARP (Tropical Storm Allison Recovery Project) Watershed boundaries and modified based on additional information provided by the City, regarding the routing of existing storm sewer networks. It should be noted that Service Areas include both developable and undevelopable land (i.e., lakes, bayous, etc.). As part of this study, the original Addicks Reservoir, Barker Reservoir, Buffalo/White Oak, and Ship Channel Services Areas were combined as one Service Area. The application of these provisions resulted in the creation of seven separate Service Areas.

Since each Service Area has a unique maximum impact fee, the maximum assessable per-unit fee for an identical property calculated within this study may vary from one Service Area to the next.



Land Use Assumptions

The Impact Fee determination is required to be based on the projected growth and corresponding capacity needs in a 10-year window. This study considers the years 2022-2032 (1/1/2022 – 12/31/2031). Acknowledging that the parameters of the study (the corporate boundaries most notably) do change over time (and this study needed to take a snapshot at one point in time); this study is based on conditions as they were on January 1, 2022. Within five years of adoption, or sooner, if necessary, changes to these study parameters will be included in an update of the Impact Fee Study.

One of the key elements in the determination of the impact fee is the amount of new development anticipated over 10 years. To arrive at a reasonable projection of growth, demographic projections developed and adopted by HGAC (Houston-Galveston Area Council) were utilized to develop the Land Use Assumptions. Reasonable estimates of the amount of impervious area to be expected with that new development were also applied. Tables were created to present existing (2022), 10-year (2032), and ultimate (2045) population and employment data, along with impervious area.

Drainage Impact Fee Improvements Plan (DIFIP) for Impact Fees

The Drainage Impact Fee Improvements Plan (DIFIP), as it is referred to within this study, is the listing of projects described as the Capital Improvements Plan (CIP) within Chapter 395 of the Texas Local Government Code. This naming convention change was done to create a distinct and separate list of projects from the City's CIP. The DIFIP is simply the list of projects eligible for funding through impact fees. Capacity improvements may only include projects that are intended to accommodate future development. Mitigation of existing deficiencies and maintenance activities do not qualify as capacity improvements under impact fee law in Texas.

The cost of the DIFIP is one of the fundamental factors in the calculation of the per-unit impact fee amount. The DIFIP cost was calculated through evaluation of each eligible project. A standard methodology was utilized for estimating project delivery costs once the project scope was defined. Referencing recent drainage projects within Houston and the immediate vicinity, uniform costs were determined for the major items of work, associated construction items, and project delivery costs. Once the project cost was determined, the Atlas 14 inflation factor developed in an earlier phase of this project was applied as applicable to future projects. It should be noted that these cost projections are based on conceptual level planning and are subject to refinement upon final design.

Only those projects listed in the DIFIP are eligible to utilize future impact fee funds collected from new development. Only the costs associated with providing the additional capacity necessitated by 10 years' growth can be used to calculate the maximum impact fee. To calculate the fee, the total cost of the DIFIP was reduced to eliminate (1) the portion of new capacity that will address existing needs, and (2) the portion of new capacity that will not be necessitated until beyond the 10-year growth window.



Impact Fee Calculation

In simplest terms, the maximum impact fee allowable by law is calculated by dividing the total cost of the DIFIP by the number of new units of development. In accordance with state law, both the cost of the DIFIP and the number of new units of development used in the equation are based on the growth and corresponding capacity needs projected to occur within a 10-year window. This calculation is performed for each Service Area individually; each Service Area has a stand-alone DIFIP and 10-year growth projections.

Collection and Use of Impact Fees

Funds collected within a Service Area can be used only on projects identified within the same Service Area. Fees must be utilized within 10 years of collection or must be refunded with interest.

Adoption Process

Chapter 395 of the Texas Local Government Code stipulates a specific process for the adoption of Impact Fees. An Advisory Committee is required to review the Land Use Assumptions and DIFIP used in calculating the maximum fee and to provide its finding for consideration by the City Council. The composition of the Advisory Committee is required to adequately represent the building and development communities. The Advisory Committee is proposed to be the Planning Commission in the City of Houston. The City Council must then conduct a public hearing on the Land Use Assumptions and DIFIP before considering an Impact Fee ordinance.

The Impact Fee ordinance is considered separately from the Land Use Assumptions and DIFIP. The Advisory Committee must review the Impact Fee ordinance and provide its findings to the City Council. Following receipt of the report by the Advisory Committee, the City Council is required to conduct a public hearing on the Impact Fee ordinance prior to adoption.

Following ordinance adoption, the Advisory Committee meets on a semiannual basis and advises the City Council of the need to update the Land Use Assumptions or DIFIP at any time within five years of adoption. Finally, the Advisory Committee oversees the proper administration of the Impact Fee, once in place, and advises the Council as necessary.



I. INTRODUCTION

Chapter 395 of the Texas Local Government Code (Chapter 395) describes the procedures and regulations that Texas cities must follow to create, update, and implement impact fees within a political subdivision. In 2001, Senate Bill 243 (SB 243) was enacted, redefining the Impact Fee according to Chapter 395 as “a charge or assessment imposed by a political subdivision against a new development in order to generate revenue for funding or recouping the costs of capital improvements or facility expansions necessitated by and attributable to the new development.”

Accordingly, the City of Houston has developed its Land Use Assumptions and Drainage Impact Fee Improvements Plans (DIFIP) to implement Drainage Impact Fees. The City has retained NewGen Strategies and Solutions (NewGen) to provide professional services for the development of the drainage impact fee policy. Kimley-Horn and Associates (Kimley-Horn) led the effort to develop the drainage impact fee as a sub-consultant to NewGen. This report includes details of the impact fee calculation methodology in accordance with Chapter 395, the applicable Land Use Assumptions, development of the DIFIP, and the Impact Fee calculations.

This report introduces and references two of the basic inputs to the Drainage Impact Fee: the **Land Use Assumptions** and the **Drainage Impact Fee Improvements Plan (DIFIP)**. Information from these two components is used extensively throughout the remainder of the report. This report consists of a detailed discussion of the methodology for the computation of impact fees. This discussion – **Methodology for Drainage Impact Fees** and **Impact Fee Calculation** addresses each of the components of the computation and calculations required for the policy. The components include:

- Service Areas
- Service Units
- Cost Per Service Unit
- Cost of the DIFIP
- Service Unit Calculation
- Maximum Assessable Impact Fee Per Service Unit
- Service Unit Demand Per Unit of Development
- Plan for Awarding the Drainage Impact Fee Credit

Lastly, using the information compiled above, this study details the maximum assessable drainage impact fee per service unit that the City of Houston may apply under Chapter 395.



II. LAND USE ASSUMPTIONS

A. PURPOSE AND OVERVIEW

To assess the drainage impact fee, Land Use Assumptions must be developed to provide a basis for growth projections within a political subdivision. As defined by Chapter 395, these assumptions include a description of changes in land use, densities, intensities, and populations within the Service Area. These assumptions are also useful to the City of Houston in determining the need and timing of capital improvements to serve future development.

Chapter 395 states that the Drainage Impact Fee and Capital Improvements Plan must contain specific enumeration of "...the projected demand for capital improvements or facility expansions required by new service units projected over a reasonable period of time, not to exceed 10 years." In the case of the Drainage Impact Fee, this demand was measured by comparing the existing impervious cover at the location of each improvement with those projected in the 10-year growth and conditions in 2045. Therefore, Land Use Assumptions must be developed for existing, 10-year growth, and conditions anticipated in 2045 within the watershed.

The Land Use Assumptions include the following components:

- **Methodology** – An overview of the general methodology used to generate the land use assumptions;
- **Impact Fee Service Areas** – Explanation of the division of Houston into Service Areas for drainage facilities;
- **Impervious Cover** – Data on population and employment within the Service Area for existing conditions (2022), the conditions at the furthest extent of the current HGAC planning window (2045), and growth projections by Service Area over the next ten years (2022 – 2032); and

B. METHODOLOGY

The Land Use Assumptions prepared for the Drainage Impact Fee focused on current impervious cover in the City, and anticipated growth in impervious cover. The impervious cover projections utilized in this report were done using reasonable and generally accepted planning principles. The following factors were considered in developing these projections:

- Growth trends in households and jobs from 2022 to 2045; and
- Impervious cover of each Service Area.



C. IMPACT FEE SERVICE AREAS

In order to set the Service Areas, consideration was made to the City of Houston corporate boundary, TSARP (Tropical Storm Allison Recovery Project) Watershed boundaries, drainage area delineations provided by the City, and consultation with City staff. The Service Areas contain watersheds that drain to a common outfall point. The geographic boundary of the seven proposed impact fee Service Areas for drainage facilities is shown in **Sheet A1** of **Appendix A. Table 1** summarizes the Service Areas along with associated TSARP watersheds. It should be noted that the Clear Creek Service Area excludes area controlled by the Clear Lake Water Authority.

Table 1: Service Areas

Service Area	TSARP Watershed(s)	Area (sf)	Area (acres)
Brays Bayou	Brays Bayou	2,748,960,569	63,107
Buffalo / White Oak	Buffalo Bayou, White Oak Bayou, Addicks Reservoir, Barker Reservoir, Ship Channel	6,751,007,487	154,982
Clear Creek	Armand Bayou, Clear Creek	1,107,612,567	25,427
Greens Bayou	Greens Bayou	2,740,606,901	62,916
Hunting Bayou	Hunting Bayou	660,534,197	15,164
San Jacinto	Carpenters Bayou, Cypress Creek, Spring Creek, Willow Creek, Luce Bayou, Little Cypress Creek, Jackson Bayou, San Jacinto River	1,863,038,345	42,769
Sims / Vince	Sims Bayou, Vince Bayou	2,416,759,014	55,481
TOTAL AREA		18,288,519,080	419,846



D. IMPERVIOUS COVER

10-year growth (2032) and 2045 projected impervious information for the City was compiled using data provided by HGAC and the City. HGAC provided information regarding jobs, households, and population starting in the year 2015 and actual / projected demographic information for each year from 2015 to 2045. The information was provided for census tracts that cover the entire extent of the region. An evaluation of the job and household growth trends was conducted for 2022 to 2032 and 2022 to 2045.

The City provided an impervious area GIS layer based on an analysis performed in 2018. The City also provided an Excel file with development that had occurred between 2012 and 2022 with proposed growth in impervious area. It should be noted that Service Areas include both developable and undevelopable land (i.e., lakes, bayous, etc.). By correlating the relationship between existing impervious cover and current (2022) household and job population for each Service Area and projecting a similar relationship for future development, a reasonable estimate of additional impervious cover per additional population in the 10-year and 2045 condition could be determined. For areas where population was projected to decrease, no reduction of impervious area was anticipated. It was not anticipated that a reduction in population or jobs would coincide with the restoration of open space and the removal of impervious area.



Table 2 summarizes each Service Area’s household, employment, and impervious projections for 2022, 2032, and 2045.

Table 2: Service Area Impervious Projections

Service Area	Year	Total Area		Total Impervious Area		Total Percent Impervious (%)	HGAC Projections (Total)	
		(ft ²)	(acres)	(ft ²)	(acres)		Households	Jobs
Brays Bayou	2022	2,748,960,569	63,107	1,536,183,323	35,266	55.88%	284,576	510,444
	2032			1,724,030,741	39,578	62.72%	320,263	568,300
	2045			2,148,878,451	49,331	78.17%	419,152	605,883
Buffalo / White Oak	2022	6,751,007,487	154,982	3,145,503,462	72,211	46.59%	462,653	1,016,579
	2032			3,626,726,147	83,258	53.72%	537,633	1,158,915
	2045			4,202,932,893	96,486	62.26%	637,674	1,297,119
Clear Creek	2022	1,107,612,567	25,427	383,177,308	8,797	34.59%	36,387	43,883
	2032			409,988,560	9,412	37.02%	40,213	46,008
	2045			425,832,300	9,776	38.45%	41,433	48,032
Greens Bayou	2022	2,740,606,901	62,916	1,169,717,940	26,853	42.68%	80,746	160,770
	2032			1,244,464,124	28,569	45.41%	87,739	169,651
	2045			1,366,978,592	31,382	49.88%	94,532	187,753
Hunting Bayou	2022	660,534,197	15,164	331,317,889	7,606	50.16%	21,086	34,448
	2032			344,610,949	7,911	52.17%	21,674	35,974
	2045			364,779,248	8,374	55.22%	22,058	38,573
San Jacinto	2022	1,863,038,345	42,769	346,666,466	7,958	18.61%	34,242	25,316
	2032			457,078,574	10,493	24.53%	42,613	34,604
	2045			515,958,370	11,845	27.69%	48,572	38,835
Sims / Vince	2022	2,416,759,014	55,481	1,008,693,563	23,156	41.74%	104,745	97,272
	2032			1,095,176,517	25,142	45.32%	111,648	106,982
	2045			1,347,860,351	30,943	55.77%	138,530	130,926



III. DRAINAGE IMPACT FEE IMPROVEMENTS PLAN

Chapter 395 of the Texas Local Government Code dictates that impact fees “may be imposed only to pay the costs of constructing capital improvements or facility expansions” within the subject Service Area. A capital improvement, such as a storm water, drainage, or flood control facility that is owned and operated by or for the benefit of the political subdivision, must be listed within the Drainage Impact Fee Improvements Plan (DIFIP) in order to be eligible for funding through the drainage impact fee. Drainage needs analyses previously prepared by the City were used to develop the list of projects for the DIFIP.

Projects included in the DIFIP were obtained from four primary sources:

- Projects from the DIFIP generated in 2012 were evaluated to determine if growth of impervious was anticipated in the 10-year window, or if they were already constructed. If growth was anticipated and the project was not constructed, it was included in the 2022 DIFIP.
- Projects constructed by the City between 2012 and 2022 were evaluated to determine if they were in areas anticipating growth in impervious area, and if they had capacity for developed flow. If growth was anticipated and capacity was available, it was included in the 2022 DIFIP.
- Projects included in the City’s current Capital Improvements Plan (CIP) were evaluated to determine if they were in areas anticipating growth in impervious area. If growth was anticipated, the project was included in the 2022 DIFIP.
- Areas where no improvements were currently proposed, but systems were deemed to be inadequate and 10-year growth was expected, were evaluated to determine if a new project was warranted. These projects fell into two categories:
 - Local projects – Using GIS information provided by the City, areas with projected growth and inadequate were isolated. Specific areas were selected throughout the City, with a priority on areas with significant anticipated growth. At these locations, a project was developed anticipating new facilities would be installed to handle future growth.
 - Regional projects – The City reviewed the local projects and requested a number of those be expanded to encompass a wider area. In addition to these projects, the City provided additional anticipated regional projects as well as improvements to Harris County Flood Control District (HCFCD) facilities that will be partially funded by the City.

The location of each project in the DIFIP is shown in **Appendix A** and a list of the projects is included with the files attached to this document. The provided lists include the length and size and/or project description of each DIFIP project within each Service Area.

Weighted C Values for existing (2022), 10-year (2032), and 2045 conditions were calculated for the watersheds of each project based on anticipated impervious area to estimate the portion of capacity necessary for future growth for each project. The proportion of each project attributable to 10-year growth was calculated using the following formula:



$$\% \text{ Attributable} = \frac{(C_{10\text{-year}} - C_{\text{existing}})}{C_{2045}}$$

The DIFIP establishes the list of projects for which Impact Fees may be utilized. Essentially, it establishes a list of projects for which an impact fee funding program can be established. Projects not included in the Impact Fee DIFIP are not eligible to receive impact fee funding. The Impact Fee DIFIP is different from a City's construction CIP, which provides a short-term list of projects for which the City is committed to building. This Impact Fee DIFIP is simply an inventory of future projects needed to serve future development for which the Impact Fee is calculated.



IV. DRAINAGE IMPACT FEE METHODOLOGY

A. SERVICE AREA

The Service Areas used in the Drainage Impact Fee Study are shown in **Appendix A**. These Service Areas cover the entire boundary of the City of Houston as of January 1, 2022.

B. SERVICE UNIT

The service unit is a measure of use of the Capital Improvement facilities within the Service Area. The use of drainage Capital Improvements is measured by the amount of runoff generated. As impervious area increases, the volume and peak rate of runoff increases. Therefore, the use of the Capital Improvements facilities is directly tied to impervious area. For the purposes of the Drainage Impact Fee, a service unit is a measure of the increase in impervious area that occurs within the Service Area.

A service unit will be defined as additional 1,000 square feet of impervious cover. The total number of service units within each Service Area was calculated by estimating the amount of additional impervious area proposed to be added via development within the next 10 years, as derived from the Land Use Assumptions. Establishing service units as a measurable increase in impervious area rather than based on a land use provides a direct measurement of the use of the storm sewer system and allows for an equitable application of the drainage impact fee.

Table 3 summarizes the Service Units for each Service Area.

Table 3: Service Unit Calculation

	<i>Column 1</i>	<i>Column 2</i>	<i>Column 3</i>	<i>Column 4</i>
Service Area	Existing (2022) Impervious Area (sf)	10-Year (2032) Projected Impervious Area (sf)	10-Year Growth (2032 – 2022) (sf)	Number of Service Units (1 Service Unit = 1,000 sf)
	<i>(from Table 2)</i>	<i>(from Table 2)</i>	<i>(Column 2 – Column 1)</i>	<i>(Column 3/ 1,000 sf)</i>
Brays Bayou	1,536,183,323	1,724,030,741	187,847,418	187,847.42
Buffalo / White Oak	3,145,503,462	3,626,726,147	481,222,685	481,222.69
Clear Creek	383,177,308	409,988,560	26,811,252	26,811.25
Greens Bayou	1,169,717,940	1,244,464,124	74,746,184	74,746.18
Hunting Bayou	331,317,889	344,610,949	13,293,060	13,293.06
San Jacinto	346,666,466	457,078,574	110,412,108	110,412.11
Sims / Vince	1,008,693,563	1,095,176,517	86,482,954	86,482.95



C. COST PER SERVICE UNIT

A fundamental step in the impact fee process is to establish the cost for each service unit. In the case of the drainage impact fee, this is the cost per 1,000 of additional impervious square feet of a proposed development. This cost per service unit is the cost to construct the portion of a drainage facility (size and linear foot) needed to accommodate a proposed development at a level of service corresponding to the City's standards. Although a service unit is based on 1,000 square feet of impervious cover, all development will be assessed the impact fee for each square foot of impervious area proposed. The cost per service unit is calculated for each Service Area based on a specific list of projects within that Service Area.

The second component of the cost per service unit is the number of service units in each Service Area. This number is the measure of the development growth that is projected to occur in the ten-year period. Chapter 395 requires that Impact Fees are assessed only to pay for growth projected to occur within the next ten years, a concept that will be covered in a later section of this report.

D. COST OF THE DIFIP

The project costs for the drainage system are eligible to be included in the Drainage Impact Fee Improvements Plan. Chapter 395 of the Texas Local Government Code specifies that the allowable costs are "...including and limited to the:

1. Construction contract price;
2. Surveying and engineering fees;
3. Land acquisition costs, including land purchases, court awards and costs, attorney's fees, and expert witness fees; and
4. Fees actually paid or contracted to be paid to an independent qualified engineer or financial consultant preparing or updating the capital improvements plan who is not an employee of the political subdivision."

The planning level opinions of probable cost of the CDP, local, and regional projects in the DIFIP are based, in part, on the calculation of a unit cost of construction. This means that a cost per linear foot of storm drainage pipe is calculated based on an average price for the various components of drainage construction. This allows the probable cost to be determined by the type of facility being constructed, the number of pipes, and the length of the project.

Appendix B summarizes unit cost estimates for each proposed storm sewer size identified in the DIFIP projects. The following elements were built into each pipe size's unit cost per linear foot:

- Removal of existing pipe and pavement (for replacement projects)
- Storm sewer pipe (assuming Reinforced Concrete Pipe)
- Manholes
- Inlets
- Replacement of pavement
- Dewatering



- Trench safety
- Traffic control
- Mobilization
- Engineering
- Contingency

Costs for the projects included in the DIFIP were calculated as follows:

- Costs for projects from the DIFIP generated in 2012 were estimated on a per linear foot basis or as a percentage of the total construction cost. These projects are originally from the 1999 Comprehensive Drainage Plan (CDP) provided by the City.
- Costs for projects constructed by the City between 2012 and 2022 were provided by the City.
- Costs for projects included in the City’s current Capital Improvements Plan (CIP) or with cost share from HCFCD were provided by the City.
- Costs for projects developed as part of this study were estimated on a per linear foot basis or as a percentage of the total construction cost.

Engineering has prepared an Atlas 14 Inflation Factor Study for use in the development of costs for the Drainage Impact Fee. Based on the recommendations included in the study, the following inflation factors were applied to the projects in the DIFIP:

Table 4: Atlas 14 Inflation Factors

Project Type	Atlas 14 Inflation Factor
CDP Projects	4.39
Constructed CIP Projects	1.00
Proposed 2022 CIP Projects	4.36
New Local Projects (2022 DIFIP Projects)	4.36
Houston Public Works Identified and New Regional Projects	4.36
HCFCD Regional Projects	1.0274

E. SERVICE UNIT CALCULATION

As mentioned earlier in this report, impact fees may only be assessed for needs associated with development in the upcoming 10-year timeframe. The projects listed in the DIFIP will be constructed to convey both existing and future flows. Therefore, only a portion of the cost of the DIFIP is assessable to the impact fee.

Rational method coefficients were calculated for the watershed of each DIFIP project in existing, 10-year, and 2045 (future) conditions using City methodology. Based on these coefficients, the portion of the projects attributable to future growth was calculated using the following formula:



$$\text{Cost Attributable to 10 – Year Growth} = \text{Cost of Project} \times \frac{C_{10\text{year}} - C_{\text{existing}}}{C_{\text{future}}}$$

The Cost Attributable to 10-Year Growth represents the portion of the DIFIP projects that can be included within the drainage impact fee calculation.

A breakdown of the costs associated with the DIFIP is shown in **Appendix C**.

Individual project cost projections can be seen in **Appendix C**. It should be noted that these tables reflect only conceptual-level opinions or assumptions regarding the portions of project costs that are recoverable through impact fees. Actual project costs are likely to change with time and are dependent on market and economic conditions that cannot be predicted. The Impact Fee DIFIP establishes the list of projects for which Impact Fees may be utilized. Essentially, it establishes a list of projects for which an impact fee funding program can be established. Projects not included in the Impact Fee DIFIP are not eligible to receive impact fee funding. The Impact Fee DIFIP is different from a City’s construction CIP, which provides a short-term list of projects for which the City is committed to building. This Impact Fee DIFIP is simply an inventory of projects needed to serve future development for which the Impact Fee is calculated. The cost projections utilized in this study should not be utilized for the City’s building program or construction CIP, as they are not based on a detailed design evaluation.



V. IMPACT FEE CALCULATION

A. MAXIMUM ASSESSABLE IMPACT FEE PER SERVICE UNIT

This section presents the maximum assessable impact fee rate calculated for new development. The maximum assessable fee is the total cost attributable to 10-year growth of the DIFIP divided by the total number of service units representing growth attributable to development within the 10-year period. The components of this calculation have been presented in previous sections of this report. The purpose of this section is to outline the computation of the impact fee and demonstrate the guidelines of Chapter 395 have been followed.

The calculations described in Section IV of this report have been performed for every improvement identified in the DIFIP within the Drainage Impact Fee Service Areas. The sum of the Costs Attributable to Growth has been calculated to determine the total cost of the DIFIP within each Service Area. Following this calculation, the Cost Per Service Unit and the Maximum Assessable Impact Fee is calculated. **Table 5** illustrates the steps of this computation.

B. PLAN FOR AWARDING THE DRAINAGE IMPACT FEE CREDIT

Chapter 395 of the Texas Local Government Code requires the Capital Improvements Plan for Drainage Impact Fees to contain specific enumeration of a plan for awarding the impact fee credit. Section 395.014 of the Code states:

“(7) A plan for awarding:

- (A) a credit for the portion of ad valorem tax and utility service revenues generated by new service units during the program period that is used for the payment of improvements, including the payment of debt, that are included in the capital improvements plan, or*
- (B) In the alternative, a credit equal to 50 percent of the total projected cost of implementing the capital improvements plan”*

The City of Houston has determined the maximum assessable impact fee per service unit shall be 50% of the total projected cost of implementing the Drainage Impact Fee Improvements Plan.

The *Total Cost Attributable to 10-Year Growth* (LINE 1) is taken from **Appendix C**. Therefore, based on the approach for determining the credit as described above, LINE 2 of **Table 5**, the *Percent of Fee Recoverable* is equal to 50%. LINE 1 is then multiplied by LINE 2 to yield the *Maximum Assessable Impact Fee Per Service Area* (LINE 3). LINE 4, the *Total Number of Service Units* for each Service Area was taken from **Table 3**. LINE 5 calculates the *Cost of DIFIP per Service Unit Attributable to 10-Year Growth*.



Table 5: Maximum Assessable Drainage Impact Fee Calculation Steps

LINE NO.	LINE DESCRIPTION
1	Total Cost Attributable to 10-Year Growth (From Appendix C)
2	Percent of Fee Recoverable (50%) (From Chapter 395 of Texas Local Government Code)
3	Maximum Assessable Fee per Service Area = (LINE 1 * LINE 2)
4	Total Number of Service Units (From Table 3)
5	Cost of DIFIP per Service Unit Attributable to 10-Year Growth = (LINE 3 / LINE 4)

C. MAXIMUM ASSESSABLE IMPACT FEE PER SERVICE UNIT

Table 6 summarizes the maximum assessable fee for each Service Area.

Table 6: Drainage Impact Fee Improvements Projects – Maximum Assessable Fee per Service Unit

Service Area	Total Cost Attributable to 10-Year Growth (LINE 1)	Maximum Assessable Fee per Service Area (LINE 3)	Number of Service Units (LINE 4; from Table 4)	Cost of DIFIP per Service Unit Attributable to 10-Year Growth (LINE 5)
Brays Bayou	\$264,040,531	\$132,020,266	187,847.42	\$702.81/SU
Buffalo / White Oak	\$381,250,921	\$190,625,461	481,222.68	\$396.13/SU
Clear Creek	\$21,833,629	\$10,916,815	26,811.25	\$407.17/SU
Greens Bayou	\$109,646,740	\$54,823,370	74,746.18	\$733.46/SU
Hunting Bayou	\$20,687,331	\$10,343,666	13,293.06	\$778.13/SU
San Jacinto	\$43,008,324	\$21,504,162	110,412.11	\$194.76/SU
Sims / Vince	\$90,882,285	\$45,441,143	86,482.95	\$525.43/SU



VI. SAMPLE CALCULATIONS

Example 1:

- Development Type - One Unit of Single-Family Housing in Brays Bayou Service Area. 3,200 square feet of increased impervious area is proposed.

Drainage Impact Fee Calculation Steps – Example 1	
Step 1	Determine Development Unit and Impervious Area
	Development Type: 1 Dwelling Unit of Single-Family Detached Housing Number of Service Units: 3,200 square feet = 3.2 SU
Step 2	Determine Maximum Assessable Impact Fee Per Service Unit
	Brays Bayou Service Area : \$702.81/SU
Step 3	Determine Maximum Assessable Impact Fee
	Impact Fee = # of Service Units * Max. Fee Per Service Unit
	Impact Fee = 3.2 SU * \$702.81/SU Maximum Assessable Impact Fee = \$2,248.99

Example 2:

- Development Type – 5-acre Commercial Development in Sims/Vince Service Area. 175,500 square feet of increased impervious area is proposed.

Drainage Impact Fee Calculation Steps – Example 2	
Step 1	Determine Development Unit and Impervious Area
	Development Type: Commercial Development Number of Service Units = 175,500 square feet = 175.5 SU
Step 2	Determine Maximum Assessable Impact Fee Per Service Unit
	Sims/Vince Service Area: \$525.43/SU
Step 3	Determine Maximum Assessable Impact Fee
	Impact Fee = # of Service Units * Max. Fee Per Service Unit
	Impact Fee = 175.5 SU * \$525.43/SU Maximum Assessable Impact Fee = \$92,212.97



VII. CONCLUSION

The City of Houston has established a process to implement the assessment and collection of drainage 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 drainage impact fee that could be assessed by the City of Houston, as shown in the previously referenced **Table 6**. This document serves as a guide to the assessment of drainage impact fees pertaining to future development and the City's need for drainage improvements to accommodate that growth. Following the public hearing process, the City Council may establish an impact fee amount to be assessed (if any) up to the calculated maximum and establish the Drainage Impact Fee Ordinance accordingly.

In conclusion, it is our opinion that the data and methodology used in this analysis are appropriate and consistent with Chapter 395 of the Texas Local Government Code. Furthermore, the Land Use Assumptions and the proposed Drainage Impact Fee Improvements Plan (DIFIP) are appropriately incorporated into the development of the maximum assessable drainage impact fee.



APPENDICES

A. SERVICE AREA MAPPING

B. STORM SEWER UNIT COST ESTIMATES

C. PLANNING LEVEL OPINIONS OF PROBABLE COST



Appendix A – Service Area Mapping



Appendix B – Storm Sewer Unit Cost Estimates



Appendix C – Planning Level Opinions of Probable Cost