Feasibility Study:
Expanding the Transit Corridor Ordinance Rules

Houston Planning Commission Committee

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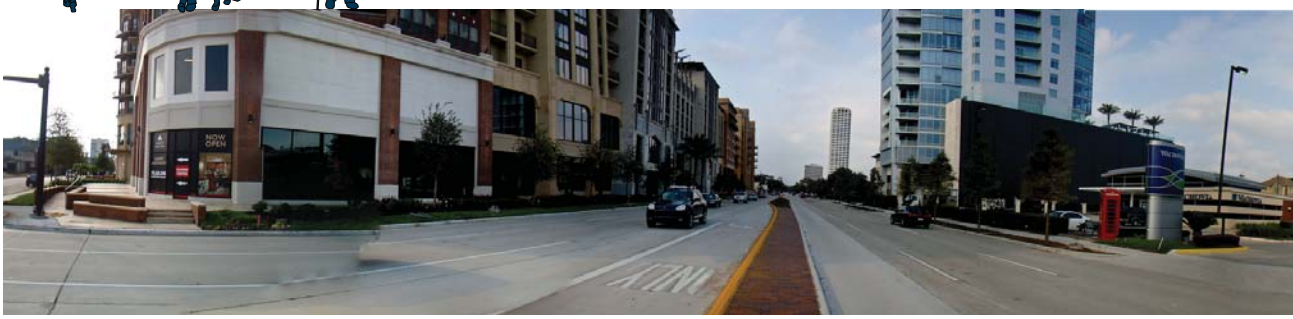

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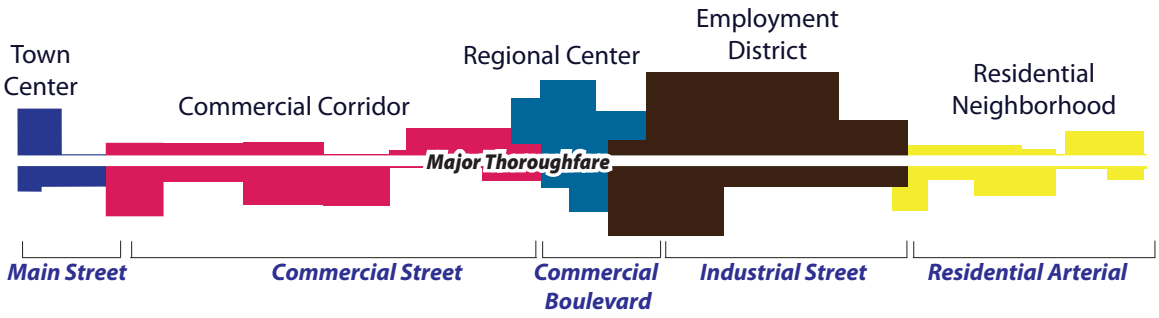
Introduction

The City's new Transit Corridor Ordinance amends Chapter 42 allowing property owners to apply certain performance standards to their projects in the vicinity of Metro's light rail stations. The purpose of the Transit Corridor initiative is to encourage an urban environment that improves pedestrian mobility, supports Metro's light rail investment and helps accommodate the City's anticipated growth. Such criteria as a 15 foot pedestrian realm, wide sidewalks, transparent facades, and pedestrian amenities were analyzed for five specific corridors, in addition to the existing Main and Fannin corridor, that would be transformed by METRO's light rail system. The Planning and Development Department was asked to explore expanding the Transit Corridor Ordinance rules to other major thoroughfares in the City and to provide City Council with a report on the feasibility in November 2009. Dr. Lewis, Chair of the Houston Planning Commission, asked four Planning Commissioners to look at this issue.

To determine the feasibility of expanding the program, the Planning Commission Committee studied the possible impacts of applying Transit Corridor Ordinance rules to other mixed use corridors. Not all of Houston's thoroughfares serve similar purposes or are surrounded by pedestrian friendly development. Instead, they are often surrounded by a variety of development patterns, from tight street grid systems with small parcels of land and mixed uses to long blocks with large parcels of land and widely spaced developments. In fact, pairs of thoroughfares often complement each other to create a 'sub system' with one being wider and allowing for faster moving traffic and one being more narrow and conducive to pedestrian and bicycle traffic. Other characteristics such as surrounding land uses, deed restricted properties and anticipation for redevelopment and growth contribute to a finer grain analysis for determining appropriate development regulations along various major thoroughfares.

Rather than applying Transit Corridor Ordinance rules uniformly to all major thoroughfares throughout Houston, the Commission recommends that our major roadway system be analyzed holistically so that development and infrastructure standards can be developed for the varying situations that our roadways service. A framework for analyzing thoroughfare types including their functionality and relationship with surrounding land uses should be created. The characteristics of a major thoroughfare changes as it traverses the city, so much so that speeds, volumes and capacity change frequently. One size does not fit all.



Concept that "One Size Does Not Fit All"

Resource: CMP1:Executive Summary, 2009

Phase 2 of the City Mobility Plan (CMP2), which is currently underway, will consider such a framework and provides an opportunity to examine the potential for applying Transit Corridor Ordinance rules in other areas of the city. This CMP2 effort would fit under the larger umbrella of a Houston area transportation plan integrating land use and transportation issues as contemplated by the Planning Commission's General Plan Subcommittee in its December 14, 2006 Report.

Chapter 33 of the Code of Ordinances provides for the Commission's role in the development of a comprehensive transportation plan. The Commission recommends that the Planning and Development Department, with input from Public Works and Engineering Department, identify existing transportation projects from around the metropolitan area and develop a framework for prioritizing and funding future mobility improvements to address regional, sub-regional and neighborhood transportation needs. Such an approach would allow the City to maximize its transportation investments.

Following is a brief history of transportation planning in the Houston area and a description of the city's major thoroughfare and freeway plan. Then a summary of the Planning Commission's case study and the basis for their recommendation is presented.

Houston's Transportation History

Houston has been a key component of Texas transportation since its founding. In 1837, when Texas was still a Republic, a stagecoach line was operating between Harrisburg Townsite and Houston. By 1839, an additional line was operating between Houston and Washington-on-the-Brazos.

Houston was the site of the first successful railroad in Texas. The Buffalo Bayou, Brazos and Colorado Railway began operation on September 7, 1853 offering service from Harrisburg to Stafford's Point (now Stafford, TX). The BBB & C Railway was not only the first railroad in the State of Texas, it was the second railroad to be built west of the Mississippi River. It later became the oldest component of the Southern Pacific Rail Road.

The stagecoach and railroad lines entering and exiting Houston founded the beginnings of Houston's hub and spoke roadway layout. Routes and lines joined near Houston's center and radiated out from the center in many different directions. Later the loop system of major roadways would be added.

Comprehensive and transportation planning has had a very long history in Houston. The earliest master plan dates from 1913. At that time, the Houston Park Commission secured the services of Arthur Coleman Comey of Cambridge, Massachusetts, a nationally-known consultant of city planning, to prepare a plan for Houston's future development. The plan was titled *Houston – Tentative Plans for its Development*. One section of the plan "Proposed Highway System" included a skeleton street hierarchy plan for Houston which identified several proposed street types. These street classifications included Parked Highways, Thoroughfares, Secondary Business Streets and Residential Streets. Along with these street types the plan identified specific geometric standards for right-of-way width and street cross sections showing the street functions with cars, streetcars, street trees and landscaping. The Master Plan recommended pavement widths that "should be apportioned according to the density of travel," and that travel lanes should have a minimum standard width of eight and one-half feet.

Later, in 1929, a revision to the Master Plan was prepared. Also, the City Planning Commission recommended that Houston adopt a zoning ordinance, but found scant support.

Until 1942 the City Planning Commission used the 1913 and 1929 plans as references to laying out streets and addressing the needs of adjacent development patterns. In 1941-42 a *Major Street Plan for Houston and Vicinity* was approved by the City Planning Commission. One of the fascinating things about this plan was that it began to reflect Loop 610 as a future loop roadway around the City of Houston. It was not until the early 1960s that the first component of the Loop 610 West was constructed and opened for service.

Houston Comprehensive Plan, Policy Report Series (1965)

The work program for the *Comprehensive Plan* was set forth in a report dated August 1965, which was approved by the Houston City Planning Commission. The fifth subject under "Planning Objects" was "Transportation and Circulation." There were ten general principles identified in this section. Five of the highlights were:

- Completion of a transportation and circulation network for people and goods and services.
- Coordination with other agencies in the region.
- Separate rights-of-way for transportation modes having sufficient rates of travel.
- A comprehensive transportation system should be encouraged.
- Transportation and circulation facilities should allow for future changes in the volume, type, and speed of circulation without jeopardizing the use of adjacent land.

In the summer of 1966 the Planning Commission took into consideration a report titled "Planning Objectives." *The Policy Report no. 1* was the first in a series of reports in the *Houston Comprehensive Plan* which set forth general objectives and goals for guidance in the preparation of the *Houston Comprehensive Plan*. At the time, the plan covered a jurisdictional area of 2000 square miles and forecasted development trends to 1990.

In November 1966 the Planning Commission was presented for consideration *Report no. 2*, "Urban Form." The *Policy Report no. 2* was the second in a series of reports in the *Houston Comprehensive Plan*. The "Urban Form" report concluded with a simple projection of past and present growth trends, and planning objectives stated in terms of urban form, and relevant emerging trends exploration.

> *"Movement from one place to another……becomes inefficient and burdensome as the extent of development outstrips the freeway capacity. Some changes in the physical structure of the city would be advisable before congestion becomes intolerable."*

Highways

Houston's freeway system is made up of 739.3 miles of freeways and expressways in a ten-county metropolitan area. Its highway system uses a hub-and-spoke freeway structure serviced by multiple loops. The innermost loop is Interstate 610, which encircles downtown, the medical center, and many core neighborhoods with around a 10-mile diameter. Beltway 8 and its limited access lanes and the Sam Houston Tollway, form the middle loop at a diameter of roughly 25 miles. A proposed highway project, State Highway 99 (The Grand Parkway), would form a third loop outside of Houston with a 50 mile diameter.

Houston also lies along the route of the proposed Interstate 69 NAFTA superhighway that would link Canada, the U.S. industrial Midwest, Texas, and Mexico. Other spoke high capacity limited access roadways either planned or under construction include the Fort Bend Parkway, Hardy Toll Road, Crosby Freeway, and the future Alvin Freeway.

Major Thoroughfares and Major Collectors

Background and Theory

Since its adoption in 1942, the MTFP has undergone many refinements and is an example of a respected working document that has a daily impact on the growth and development of the city and its extraterritorial jurisdiction.

The MTFP has been generally accepted as the basic guideline for the implementation of major thoroughfare and highway improvements by other governmental agencies within the jurisdiction of the City of Houston, including the Texas Department of Transportation. The plan has acted for many years as a significant informal catalyst securing close intergovernmental cooperation between those governmental agencies responsible for the implementation of the street and highway network of the greater Houston area.

An annual MTFP amendment process was not fully developed until 1982. Since 1982 the Planning Department and Planning Commission has permitted requests to amend the plan each year, except 2002.

Design Concepts

The MTFP is a melding of five distinct street and highway systems, each of which is implemented by various groups or governmental agencies. These systems are:

1) local streets, laid-out by individual subdividers and developers in conformance with certain governmental standards;
2) major thoroughfares, mostly dedicated by individual subdividers and developers, located in conformance with the general one-mile grid system illustrated on the MTFP;
3) radial streets and highways, usually existing streets extending radially from the center of the city and within the jurisdiction of either the County or the Harris County Toll Road Authority;
4) circumferential highways, implemented by TxDOT or the HCTRA and located at various distances away from and encircling the central area of the city; and
5) major collectors, adopted by City Council as a street category in 1998, represents the intermediate classification that provides the connection between local streets and thoroughfares.

Major thoroughfares are those streets designed for fast, heavy traffic, and are intended to serve traffic arteries of considerable length and continuity throughout the community. The location of these streets is based on a grid system covering the area within the City's jurisdiction, which provides a theoretical spacing of major thoroughfares at one-mile intervals. This grid system, of course, must be modified to be compatible with various physical features, such as radial highways and railroads, property ownership patterns, topographical conditions and existing developments. Collectors allow for more flexibility in roadway design and address more issues within neighborhoods.

City Mobility Planning, Phase 1 (2009)

The City, through a nine month effort, has developed a new process for conducting mobility studies for transportation planning that will utilize existing resources and will improve mobility. The mobility study process includes:

- Coordination of transportation planning among various public agencies.
- Identification of the full range of mobility solutions for an area or corridor in collaboration with the public, stakeholders and other agencies.
- Application of full range of technical tools to study an area or corridor.
- Utilization of an enhanced travel demand model (TDM) with measures of effectiveness to assess the traffic impacts of a proposed mobility solution. H-GAC's CUBE TDM was modified specifically for the use.

Through the new mobility study process, the City has the means to identify targeted mobility improvements. The mobility study process widens the range of mobility options to be considered and represents a model for developing an efficient and functional multimodal transportation system. Under Houston's standard street classifications: major thoroughfare, major collector and local streets a new functional street classification system was developed. Under the main headings - Urban, Suburban, Transit and Industrial streets were subheadings of Boulevard, Avenue and Street created. With these additional classifications the city will be able to apply greater flexibility in street design based on many situational circumstances. Finally, measures of effectiveness gauge a project's effectiveness at addressing the overall goal of improved mobility. Together, the mobility study process reflects "best practices" in transportation planning. By inviting community input, recognizing the aesthetic as well as functional aspects of transportation facilities, and increasing opportunities for greater interagency coordination, future multimodal mobility improvements can be prioritized. These efforts will keep Houston moving forward.

Sub-categories of street types were embedded under major thoroughfare, major collector and local street design standards. Chapter 10 of the Public Works Infrastructure Design Manual was modified to include the additional function classifications. The primary purpose of this new classification system was to connect street design to the context of the city. To accomplish this, the classification system was designed to adapt to the change in the built or planned environment as it passes through areas that are urban or suburban.

Transit Corridor Ordinance

The City of Houston took the opportunity to accommodate projected and supported growth along the new METRO transit corridors that were approved in METRO's Solutions Phase 2. The City began the Urban Corridor Planning initiative in June 2006. The goal was to change how the City regulates development and designs its streets and other infrastructure in order to promote mobility and pedestrian access in areas along METRO's five light rail corridors.

The City and its consultants held workshops, meetings and tours with stakeholders of all five corridors. The consultants provided a report for each corridor with recommendations.

This was followed in 2008 by a working group of the Houston Planning Commission charged with drafting ordinances and rules that would consider the consultant's recommendations, City staff research, and a report developed by the Urban Land Institute under an independent process. The group recommended creating both mandatory rules to improve pedestrian infrastructure and "opt-in" rules that would allow developers to receive certain incentives through specific performance standards.

The Transit Corridor Ordinance was adopted in August 2009. The changes brought about by this ordinance will affect how Houston grows and develops far into the future. It can shape the quality, character, and connectivity of neighborhoods. It is change that makes sense for Houston by guiding both public and private investment in the urban transit corridors while preserving the market-driven flexibility that is a hallmark of the City.

City Mobility Planning, Phase 2 (2009-10)

One of the next steps identified in the conclusion of the CMP1 was to apply the newly created mobility study process to study focus areas and corridors. The first planned study will assess the Northwest Inner Loop area (NWIL) looking at the existing transportation network west of downtown, north of US 59, east of Loop 610 West, and south of IH 10. Given the existing street network and the extremely limited ability for additional street circulation and capacity, how should the City move forward within the NWIL area with providing efficient transportation to the given street network? Specialized modes should include: passenger vehicles, delivery, bus, light-rail transit, bicycle and pedestrian. Specialized types of mode need to become identified sub-categories to principal thoroughfare, major thoroughfare, and major collectors. An inventory of street types, connectivity, existing travel lanes/programmed travel lanes, where reduction of travel lanes can occur, signalized intersections, etc. are to be studied in detail. This study will allow us to refine our major roadways in the study area to capitalize on the given network of streets and their capacities. This pilot project is also an opportunity to explore the type of transit corridor oriented development rules that can be applied.

Case Studies for this Report

In order to understand which major thoroughfares would benefit from the application of the Transit Corridor Ordinance rules a case study was conducted to evaluate different types of thoroughfares and their context. Five study areas were selected with varying street types and context. They are:

- **Westheimer Road** - Montrose to Shepherd
- **Kirby Drive** - San Felipe to US 59
- **Old Spanish Trail** - SH 288 to Scott Street
- **Wilcrest Drive** - Westheimer Drive to Richmond
- **Town & Country** - Beltway 8 and Interstate 10 West

The study area analyzed for each of the five cases extended approximately one-quarter mile around the corridor/area. The following factors were analyzed and compiled into a table (see Appendix):

Existing conditions along the corridor

ROW width
Scale of existing built form
Density of built form (FAR)

Transportation

MTFP Classification (ROW width & No. of lanes)
Existing and Projected ADT (Average Daily Trips)
Existing street network
Existing public transit

Land use composition

Demographic
Public and Institutional uses in the area
Urban Facilities (supermarkets/employment centers, etc)

Other factors

Special Districts (TIRZ, Management and Improvement Districts)

The case study indicates that these thoroughfares vary in form, size and classification. Kirby is a six-lane principal thoroughfare with higher density and more urban form of development as compared to Wilcrest which is also a six-lane major thoroughfare with lower density and suburban form of development. An analysis of size of the blocks indicated that average block size along Westheimer and Kirby are 2.26 and 2.8 acres respectively; while the same for Town & Country and Wilcrest is 15.75 and 18.14 acres respectively. The average block size indicated the level of connectivity of the public street system which is an important characteristic for pedestrian mobility. The higher the average block size the lower the pedestrian use. As a reference the average block size in downtown Houston is 1.43 acres.

The demographic information indicates that the person per acre and household per acre are highest along Westheimer and employee per acre and business per acre are highest along Wilcrest and second being Westheimer. Westheimer and Kirby have the highest percentage of parcels with residential uses at 71 and 59 percent respectively within its study area. On the other hand Wilcrest and Town & Country have the maximum percentage of commercial and office uses at 62 and 43 percent respectively.

The study area for Kirby had the maximum number of bus stops (49). Westheimer has the maximum number of pedestrian crossings. All the study areas other than Wilcrest have one or more schools within the study area. The Westheimer study area had the maximum number of Public/Urban Facilities. OST and Kirby are both within a TIRZ; and Kirby, Wilcrest and Westheimer are within Management Districts.

Demographics (2008)

	Westheimer		Kirby		Old Spanish Trail		Wilcrest		Town & Country	
Total Area (Acre)	287.5		332.5		226.2		165.2		312.4	
Density	Number	Density(/acre)	Number	Density (/acre)	Number	Density (/acre)	Number	Density (/acre)	Number	Density (/acre)
Population	5,631	19.6	5,653	13.9	2,582	11.5	2,099	12.7	342	1.09
Households	3,325	11.6	3,337	8.2	938	4.2	1,212	7.3	119	0.38
Employees	3,451	12.0	4,059	10.0	1,677	7.4	4,911	29.7	3,058	9.79
Business	577	2.0	580	1.4	113	0.5	406	2.5	383	1.23

Resource: ESRI Business Analyst, 2009

The intent of the Transit Corridor Ordinance was to improve the quality of pedestrian environment and encourage higher density and a more appropriate built environment around public transit stations. Prior to the Transit Corridor Ordinance, roadway designs created for major thoroughfares were primarily for vehicular traffic and not necessarily for streets that were intended for multimodal use (automobiles, buses/transit, bicycles and pedestrians). The majority of thoroughfares are streets that function as arterial streets for moving vehicular traffic at capacities and speeds higher than the existing local and collector streets. The function of the Transit Corridor Ordinance is to allow for multimodal transportation use of the street rather than primarily focusing on the movement of automobiles and trucks. Until the Transit Corridor Ordinance was adopted, development code rules did not encourage higher mixed-use density and pedestrian friendly development along transit corridors.

The concept of encouraging appropriate built form and density along specific transportation corridors is an effective way of improving our City's overall mobility. However, the concept needs to be applied while taking into account the sub-regional and regional travel patterns that vary throughout the City.

Conclusion

The case study analysis indicates that thoroughfares vary dramatically in their composition of land use, demographics, block size, street typology, and transportation uses. A simple application of the Transit Corridor Ordinance rules to all major thoroughfares would probably not produce the best results and outcomes intended pedestrian friendly environment for every situation. A systematic study needs to be conducted to:

a. identify, categorize and classify the thoroughfares in Houston, and utilizing our current system of classification, and
b. understand the implication of allowing the Transit Corridor Ordinance rules along these multimodal roadways.

This is critical to the ensuring of our public health, safety and welfare.

The process of doing a sub-area study as planned in the CMP2 and creating a sub/functional classification of streets would provide the necessary framework for developing and applying subdivision platting regulations that are more context sensitive to street typology rather than system simply based on the current broad generalization under the MTFP. The NWIL study area described herein will serve as a prototype for how a sub-area study can be evaluated in order to apply the street classification in other areas of the City. Opportunities and challenges in the urban and suburban fabric of Houston vary dramatically.

As a thriving city at the heart of a growing metropolitan area with an increasingly dense urban core, growing regional centers and maturing suburban neighborhoods, it is important for the City of Houston to adopt an innovative approach in exploring how to make our transportation infrastructure more efficient. This approach must be combined and balanced with strategic investments in future multimodal developments with a goal of prioritizing projects. Currently, there are multiple groups within the City of Houston that compete for local, state and federal transportation funds that include the City of Houston, METRO, TxDOT, several Management Districts and others. While all have the same goal of providing a better transportation system, the individual groups frequently have overlapping or sometimes conflicting ideas or intentions. Additionally, while each of these interest groups look at what is best for their individual needs, they frequently fail to look at the bigger picture that involves the well-being of entire city and the region.

CMP1 began the process of looking holistically at the entire City and its transportation needs for the future. Phase 2 will build on this process further by developing a systematic methodology for conducting sub-area studies, identifying projects and ranking them within the Capital Improvement Program. A further step would be to develop a City Transportation Plan with the same planning year as that used in the Regional Transportation Plan. The development of a City plan would allow the City to coordinate between the different interest groups and act as a storehouse for all the transportation related projects within the City limits , systematically ranking the importance of each project to the overall transportation goals of the City of Houston allowing the City to pursue federal funding more effectively. A City Transportation Plan would feed directly into the CIP and H-GAC's Regional Transportation Plan clearly indicating what the City feels are its priorities.

Appendix

CASE STUDIES

Westheimer - Montrose to Shepherd

Kirby Drive - San Felipe to US 59

Old Spanish Trail - SH 288 to Scott Street

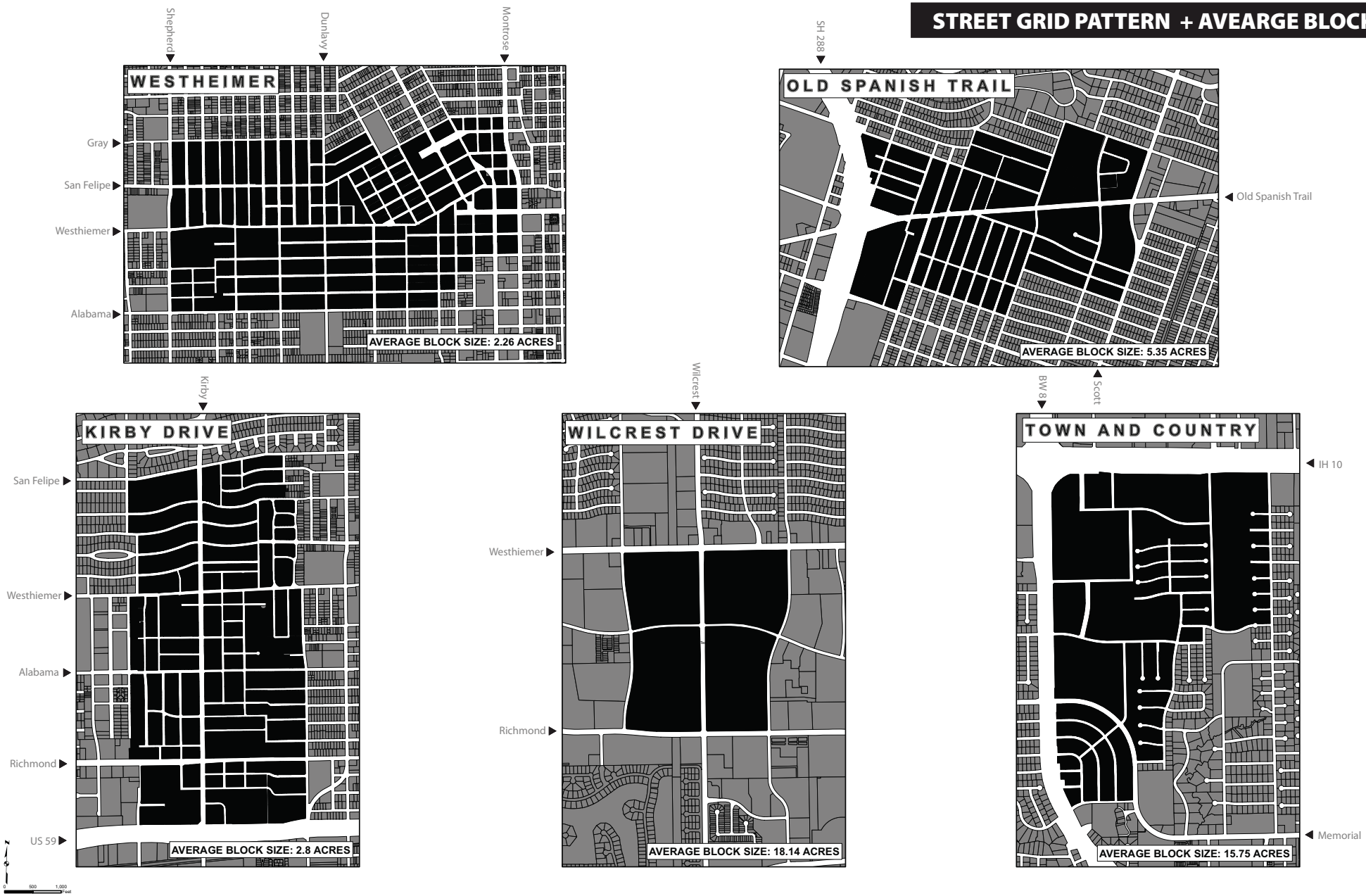
Wilcrest Drive - Westheimer to Richmond

Town And Country - Beltway 8 at IH 10 West

TCS EXPANSION STUDY CRITERIA

Segment			Westheimer Montrose to Shepherd		Kirby San Felipe to US 59		Old Spanish Trail SH 288 to Scott		Wilcrest Westheimer to Richmond		Town & Country North of Queensbury	Town & Country Queensbury to Kimberly
Street Type												
Street Classification												
	MTFP		Major Thoroughfare		Principle Thoroughfare		Principle Thoroughfare		Major Thoroughfare		Local Street	Local Street
	Transit Corridor Street		No		No		No		No		No	No
Street Configuration												
	ROW		70'		100		100'		100'		70'	100'
	Pavement		42'		66'-82'		76'		79'		39'	80'
	Number of Lanes		4		6		6		4		2	4
	Bicycle Lane		No		No		No		Yes (Meadogen to Richmond)		No	No
	Sidewalk		4'		5'		4'		4'		4'	No
Density												
Demographics			**Number**	**/acre**	**Number**	**/acre**	**Number**	**/acre**	**Number**	**/acre**	**Number**	**/acre**
	Population		5,631	19.6 people/acre	5,653	13.9 people/acre	2,582	11.5 people/acre	2,099	12.7 people/acre	342	1.09 people/acre
	Households		3,325	11.6 households/acre	3,337	8.2 households/acre	938	4.2 households/acre	1,212	7.3 households/acre	119	households/acre
	Employees		3,451	12 employees/acre	4,059	10.0 employees/acre	1,677	7.4 employees/acre	4,911	29.7 employees/acre	3,058	employees/acre
	Business		577	2 business/acre	580	1.4 business/acre	113	0.5 business/acre	406	2.5 business/acre	383	1.23 business/acre
Land Use												
	Residential		**Acre**	**Percentage**	**Acre**	**Percentage**	**Acre**	**Percentage**	**Acre**	**Percentage**	**Acre**	**Percentage**
		Single family housing	171.8	59.8%	141.2	42.5%	81.4	36.1%	0	0.0%	103.8	33.2%
		Multi-family housing	31.6	11.0%	56.0	16.8%	19.6	8.7%	51.5	26.4%	8.9	2.8%
	Commercial		49.4	17.2%	72.0	21.7%	37.2	16.1%	57.1	29.3%	110.7	35.4%
	Office		5.2	1.8%	29.6	8.9%	1.1	0.5%	62.9	32.2%	23.7	7.6%
	Industrial		7.3	2.6%	3.3	1.0%	17.7	7.9%	0.0	0.0%	0.0	0.0%
	Public & Institutional		14.1	4.9%	14.6	4.4%	36.0	16.0%	2.5	1.5%	57.7	18.5%
	Park & Open Space		1.5	0.5%	0.0	0.0%	1.0	0.5%	0.0	0.0%	0.9	0.3%
	Undeveloped		6.6	2.3%	15.9	4.8%	30.8	13.7%	12.1	6.2%	6.6	2.10%
Public Transit(along)												
High Capacity Transit												
	Light Rail Station		0		1		0		0		0	
	Transit Center		0		0		0		0		0	
Bus												
	Bus Stop		21		20		15		4		9	
School												
University			0		0		0		0		0	
High/Middle School			1		0		1		0		1	
Elementary School			0		1		1		0		2	
Education Institute			0		0		0		0		0	
Safety												
Crossing (along)			9		6		5		3		2	
Special District												
Management District			0		Upper Kirby PID		0		Westchase		Proposed Memorial City	
TIRZ			0		Upper Kirby		O.S.T/Almeda		0		0	
Public / Urban Facilities												
Library			0		0		0		1		0	
Park			5		0		1		0		1	
Museum			0		0		0		0		0	
Hospital			0		0		0		0		0	
Community/Recreation Center			1		0		0		0		0	
City/State/Federal Office			2		0		1		0		1	
Sports Complex			0		0		0		0		0	
Major Supermarket			2		1		0		3		0	
Church			11		1		4		0		1	
Major Employment Center (500 + employees)			0		0		0		1		0	

STREET GRID PATTERN + AVEARGE BLOCK SIZE



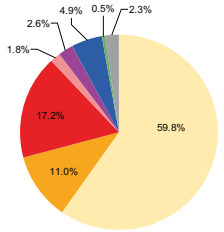
Westhiemer Corridor

LAND USE + DEMOGRAPHICS

Land Use Composition (2009)

Land Use	Area(SF)	Acre	%
Total	12,525,066	287.5	100.0%
Single-Family Residential	7,485,531	171.8	59.8%
Multi-Family Residential	1,378,042	31.6	11.0%
Commercial	2,150,190	49.4	17.2%
Office	228,223	5.2	1.8%
Industrial	319,775	7.3	2.6%
Public & Institutional	612,317	14.1	4.9%
Park & Open Spaces	64,682	1.5	0.5%
Undeveloped	286,308	6.6	2.3%

Source: HCAD, 2009



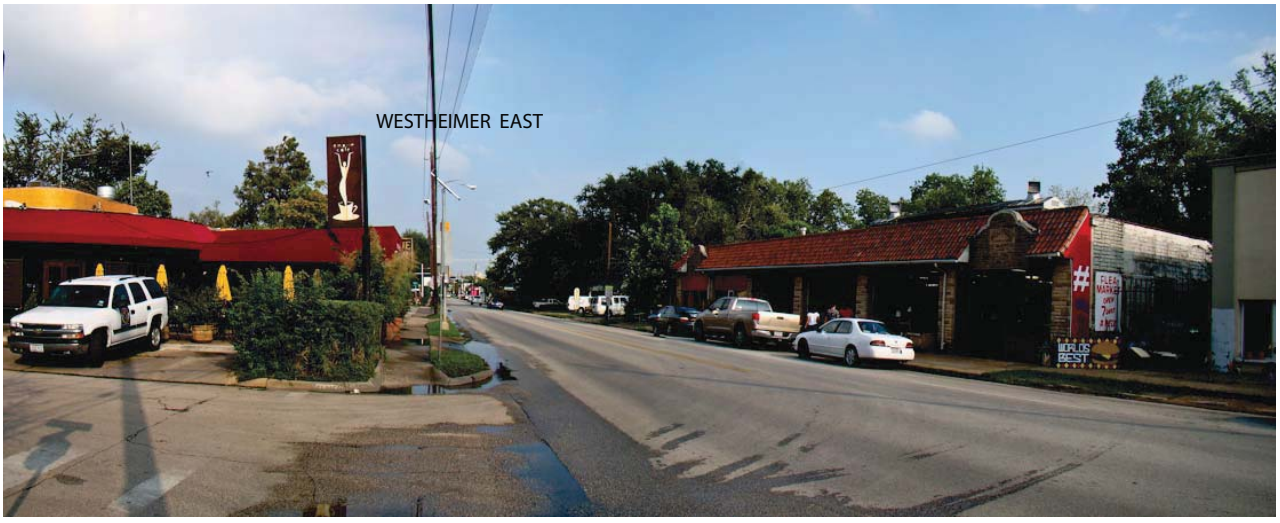
Demographics (2008)

	Population	Households	Employees	Business
Total	5,631	3,325	3,451	577
#/acre	19.6	11.6	12.0	2.0

Source:ESRI, Business Analyst


WESTHEIMER EAST


WESTHEIMER EAST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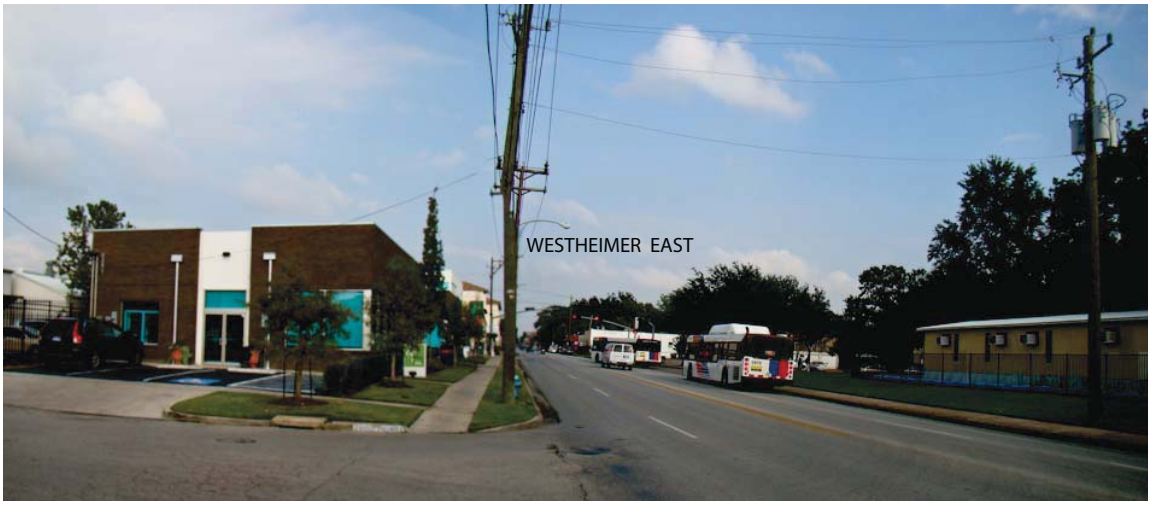
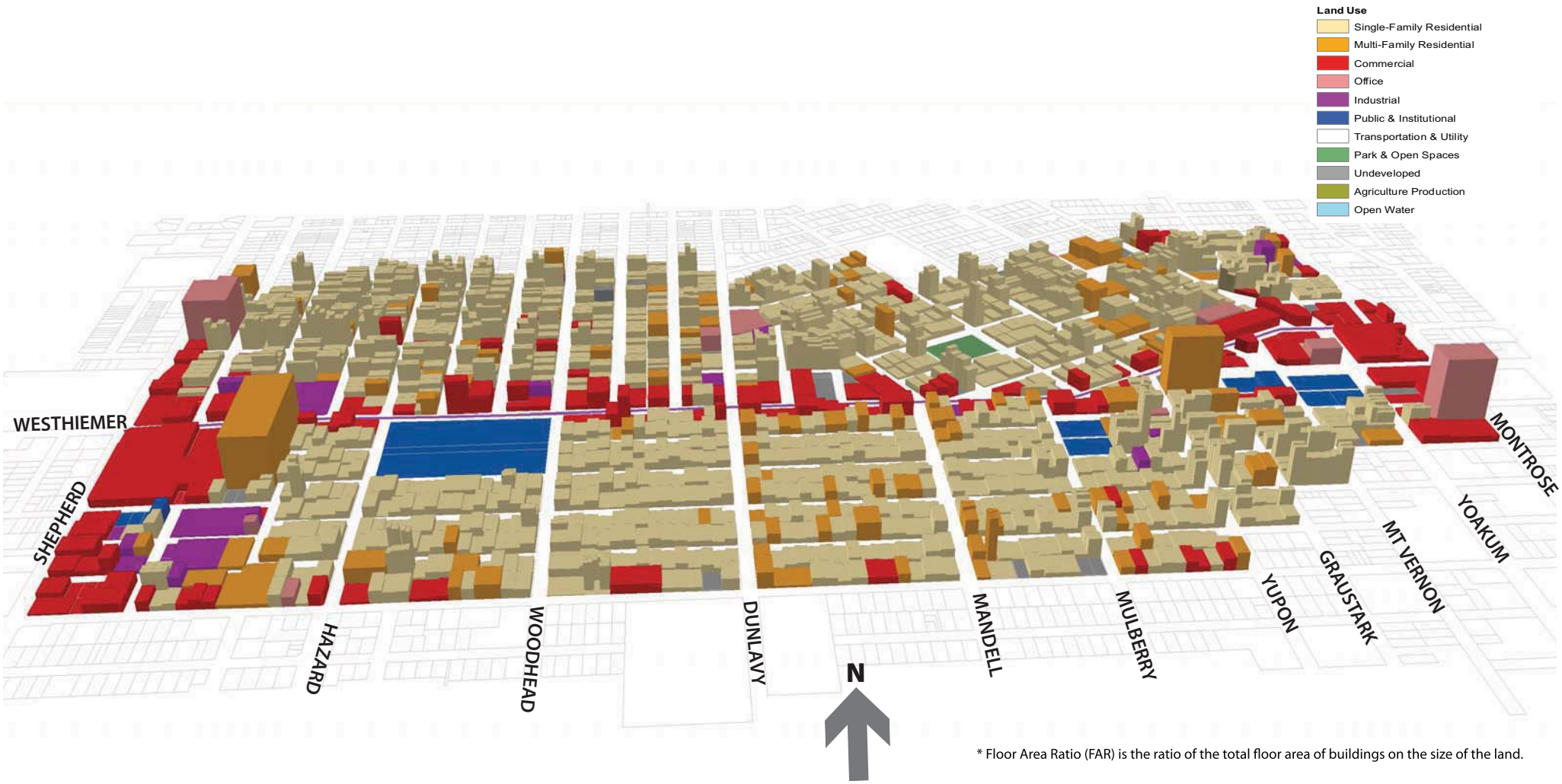
WESTHEIMER


WESTHEIMER EAST

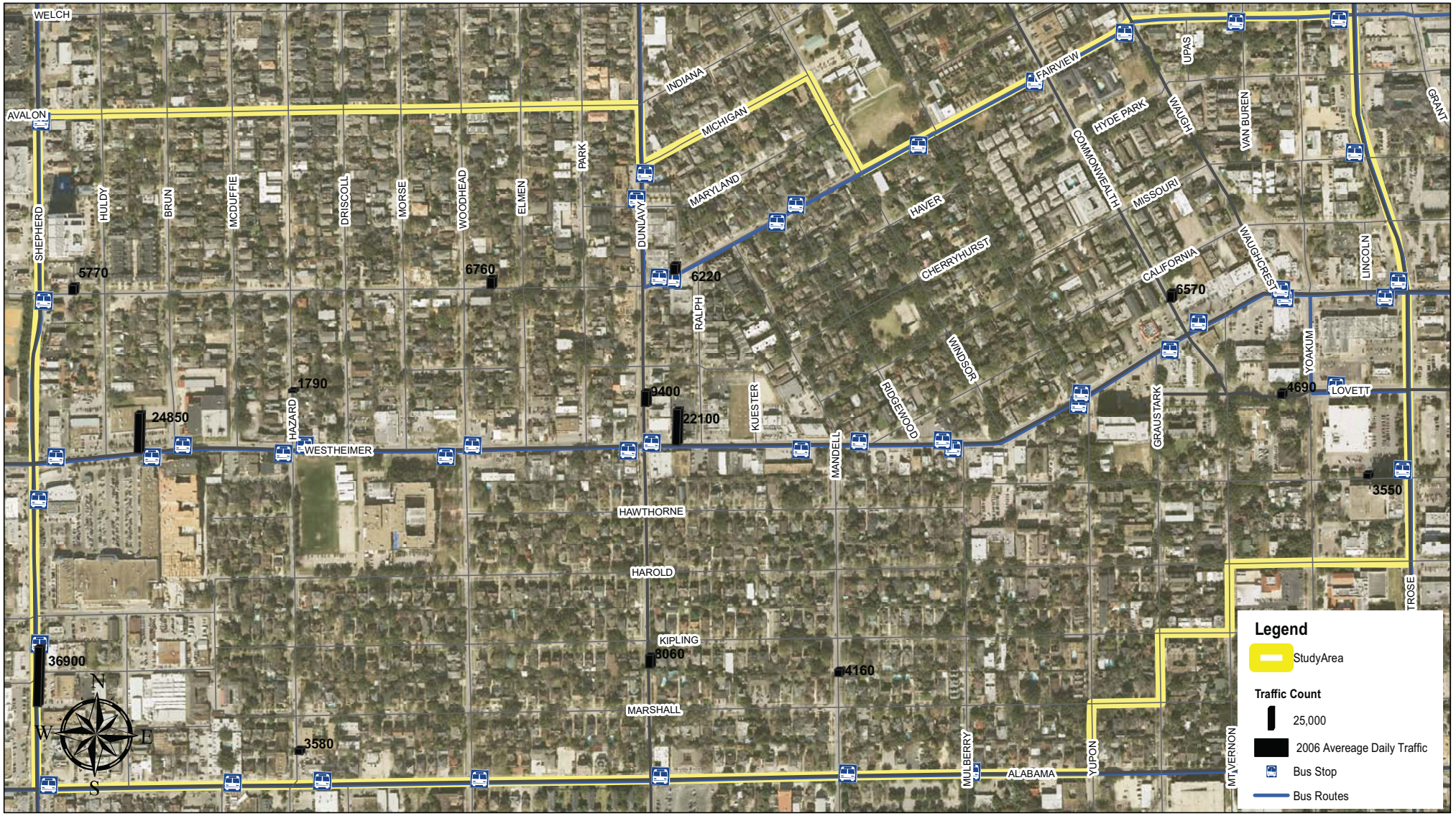
Westhiemer Corridor

LAND USE + FAR*



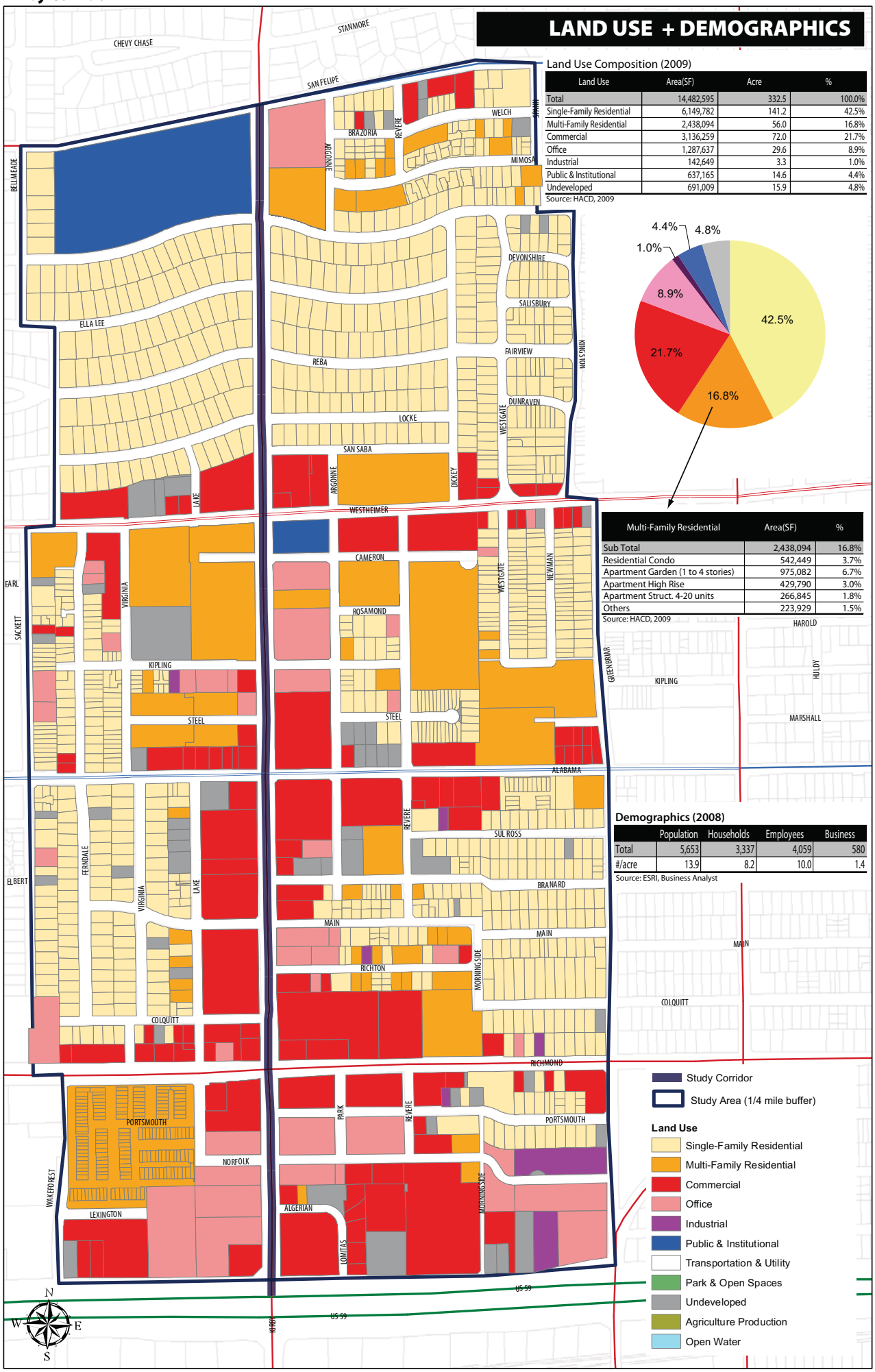
* Floor Area Ratio (FAR) is the ratio of the total floor area of buildings on the size of the land.

BUS ROUTE + TRAFFIC COUNT



Kirby Corridor

LAND USE + DEMOGRAPHICS



Land Use Composition (2009)

Land Use	Area(SF)	Acre	%
Total	14,482,595	332.5	100.0%
Single-Family Residential	6,149,782	141.2	42.5%
Multi-Family Residential	2,438,094	56.0	16.8%
Commercial	3,136,259	72.0	21.7%
Office	1,287,637	29.6	8.9%
Industrial	142,649	3.3	1.0%
Public & Institutional	637,165	14.6	4.4%
Undeveloped	691,009	15.9	4.8%

Source: HACD, 2009

Multi-Family Residential	Area(SF)	%
Sub Total	2,438,094	16.8%
Residential Condo	542,449	3.7%
Apartment Garden (1 to 4 stories)	975,082	6.7%
Apartment High Rise	429,790	3.0%
Apartment Struct. 4-20 units	266,845	1.8%
Others	223,929	1.5%

Source: HACD, 2009

Demographics (2008)

	Population	Households	Employees	Business
Total	5,653	3,337	4,059	580
#/acre	13.9	8.2	10.0	1.4

Source: ESRI, Business Analyst

Study Corridor

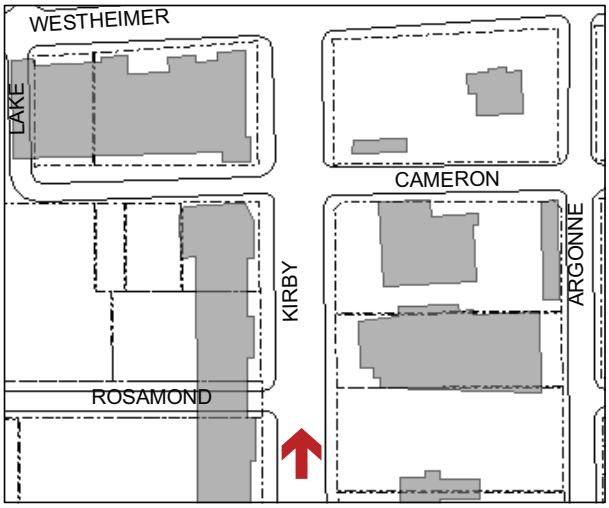
Study Area (1/4 mile buffer)

Land Use

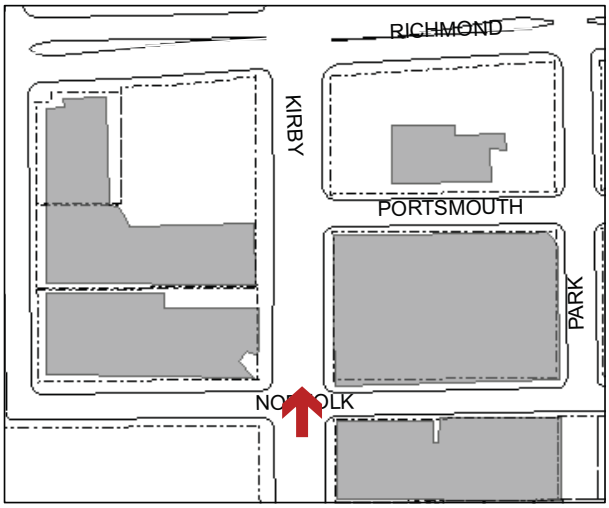
- Single-Family Residential
- Multi-Family Residential
- Commercial
- Office
- Industrial
- Public & Institutional
- Transportation & Utility
- Park & Open Spaces
- Undeveloped
- Agriculture Production
- Open Water

0 700 1,400 Feet

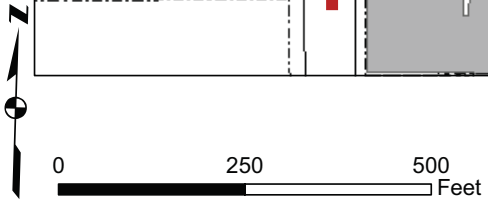
SAN FELIPE - WESTHEIMER



WESTHEIMER - ALABAMA

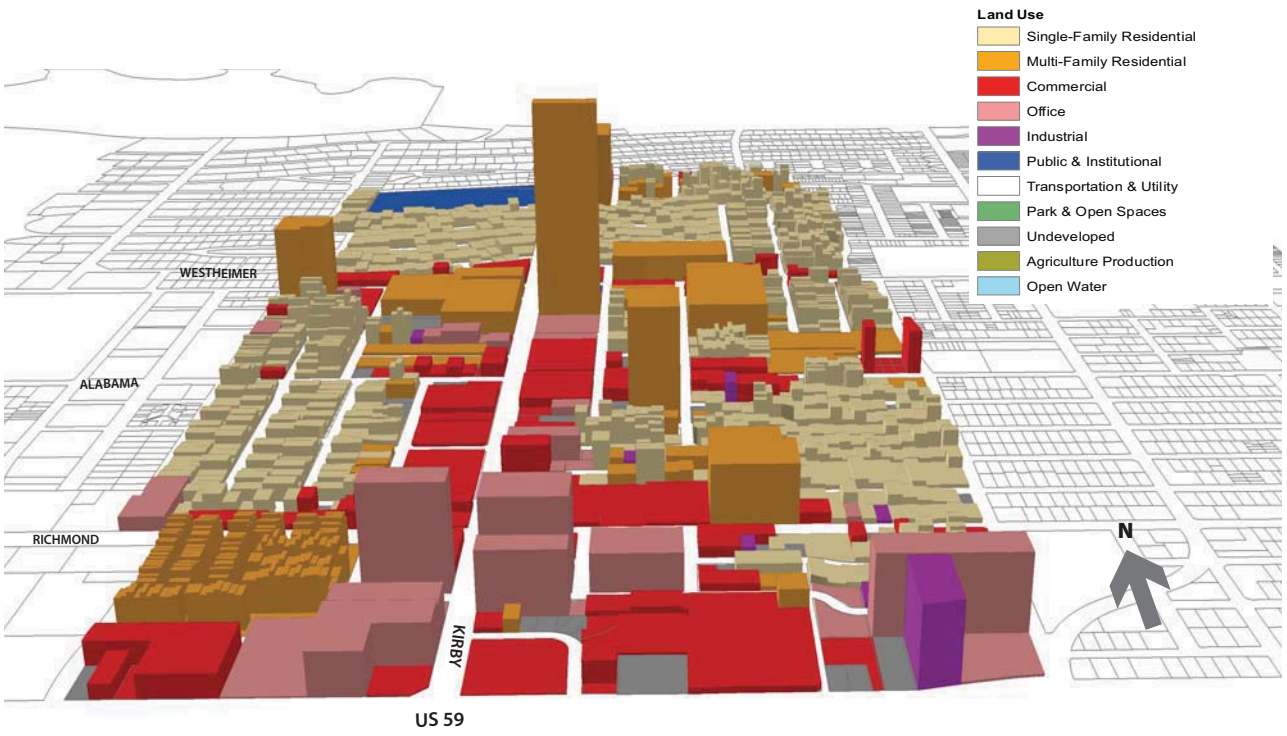


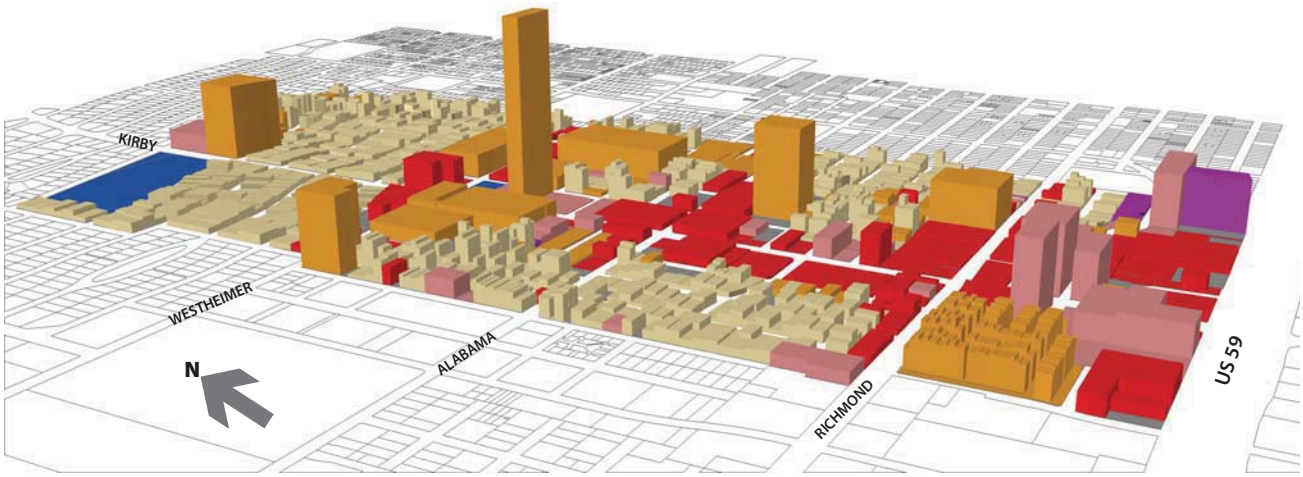
RICHMOND - US 59



EXISTING BUILT FORM

LAND USE + FAR*





* Floor Area Ratio (FAR) is the ratio of the total floor area of buildings on the size of the land.

BUS ROUTE + TRAFFIC COUNT

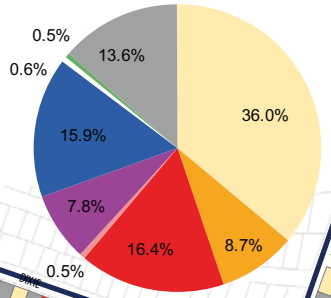
Old Spanish Trail Corridor

LAND USE + DEMOGRAPHICS

Land Use Composition (2009)

Land Use	Area(SF)	Acre	%
Total	9,853,307	226.2	100.0%
Single-Family Residential	3,544,603	81.4	36.0%
Multi-Family Residential	854,893	19.6	8.7%
Commercial	1,618,389	37.2	16.4%
Office	47,004	1.1	0.5%
Industrial	772,800	17.7	7.8%
Public & Institutional	1,567,292	36.0	15.9%
Transportation & Utility	60,572	1.4	0.6%
Park & Open Space	47,378	1.1	0.5%
Undeveloped	1,340,376	30.8	13.6%

Source: HACD, 2009



Demographics (2008)

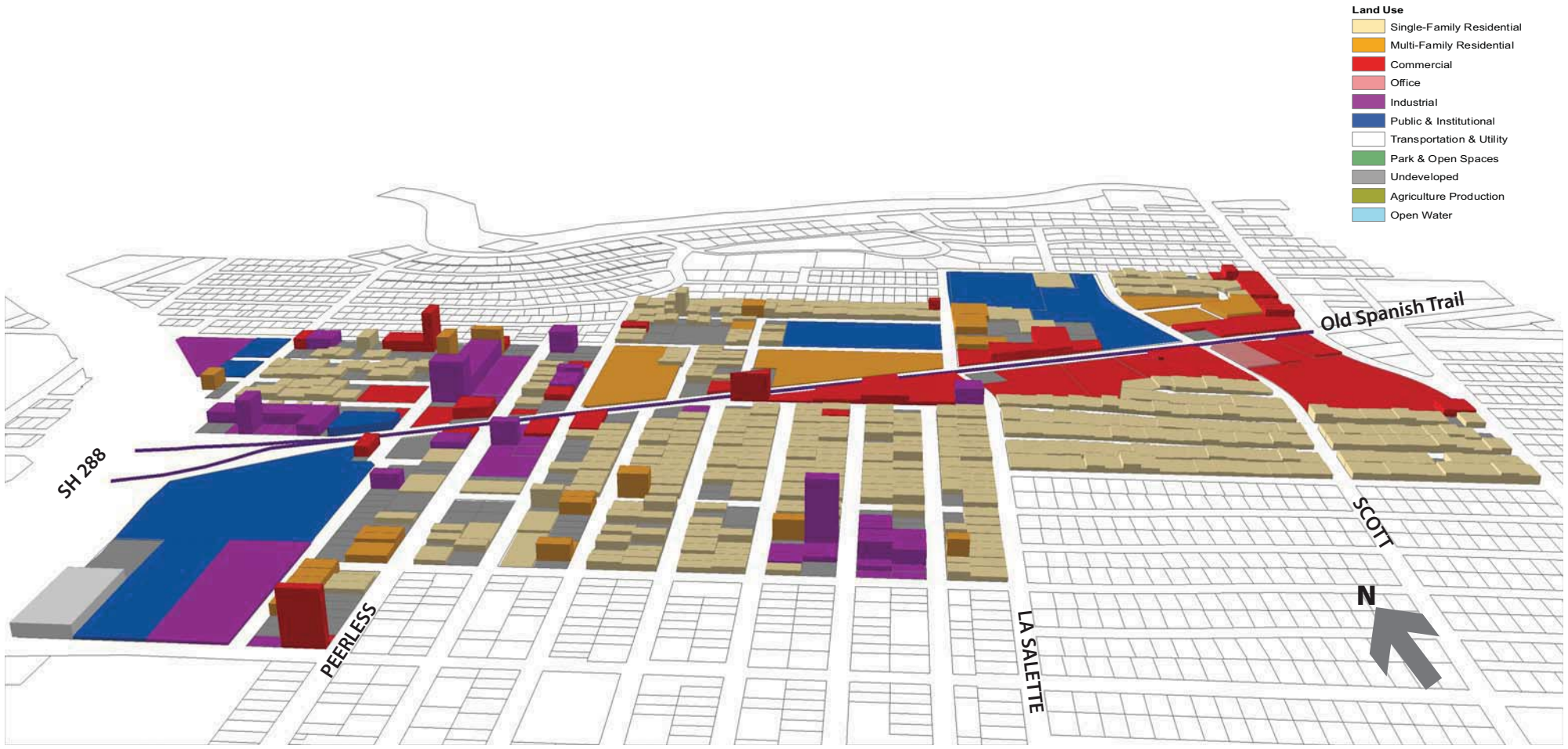
	Population	Households	Employees	Business
Total	2,582	938	1,677	113
#/acre	11.5	4.2	7.4	0.5

Source: ESRI, Business Analyst

0 750 1,500 Feet

EXISTING BUILT FORM

LAND USE + FAR*



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Old Spinish Trail Corridor

BUS ROUTE + TRAFFIC COUNT

Willcrest Corridor

LAND USE + DEMOGRAPHICS

Demographics (2008)

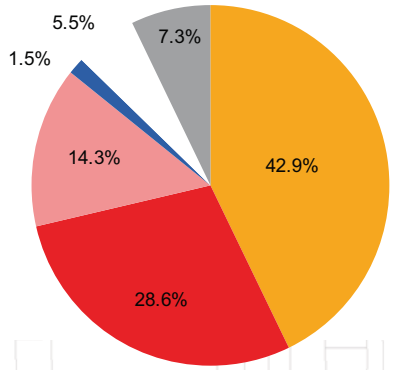
	Population	Households	Employees	Business
Total	2,099	1,212	4,911	406
#/acre	12.7	7.3	29.7	2.5

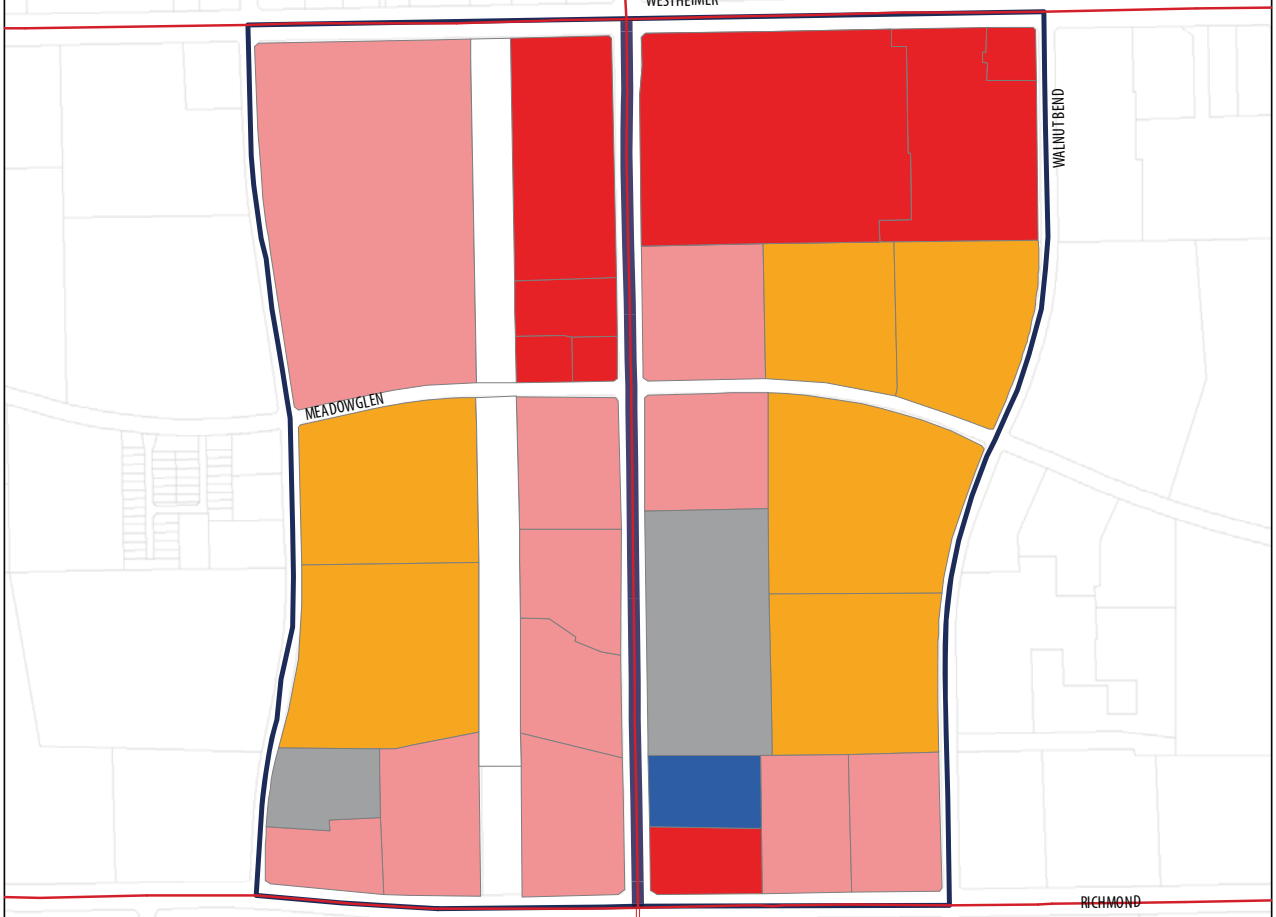
Source: ESRI, Business Analyst

Land Use Composition (2009)

Land Use	Area(SF)	Acre	%
Total	7,197,756	165.2	100.0%
Multi-Family Residential	3,084,753	70.8	42.9%
Commercial	2,056,502	47.2	28.6%
Office	1,028,251	23.6	14.3%
Public & Institutional	110,485	2.5	1.5%
Transportation & Utility	392,360	9.0	5.5%
Undeveloped	525,407	12.1	7.3%

Source: HCAD, 2009





Land Use Composition (detail)

Land Use	Detail Land Use	Area (SF)	Acre	%
Commercial		2,488,101	57.1	29.3%
	Auto Service Garage	35,395	0.8	0.4%
	Community Shopping Center	762,513	17.5	9.0%
	Convenience Food Market	27,219	0.6	0.3%
	Discount Department	349,106	8.0	4.1%
	Drugstore (Freestanding)	101,381	2.3	1.2%
	Hotel/Motel, Low-Rise	79,465	1.8	0.9%
	Restaurant	798,457	18.3	9.4%
	Supermarket	334,564	7.7	3.9%
Multi-Family Residential		2,245,128	51.5	26.4%
	Apartment Garden (1 to 4 stories)	1,877,497	43.1	22.1%
	Residential Condo	367,632	8.4	4.3%
Office		2,739,247	62.9	32.2%
	Office Bldgs. Hi-Rise (5+ stories)	209,222	4.8	2.5%
	Office Bldgs. Low-Rise (1-4 stories)	1,551,608	35.6	18.3%
	Parking Garage	978,417	22.5	11.5%
Public & Institutional		110,485	2.5	1.3%
	Library	110,485	2.5	1.3%
Transportation & Utility		392,360	9.0	4.6%
Undeveloped		525406.5658	12.1	6.2%
Total		8,500,727	195.1	100.0%

Source: HCAD, 2009

Study Corridor

Study Area (1/4 mile buffer)

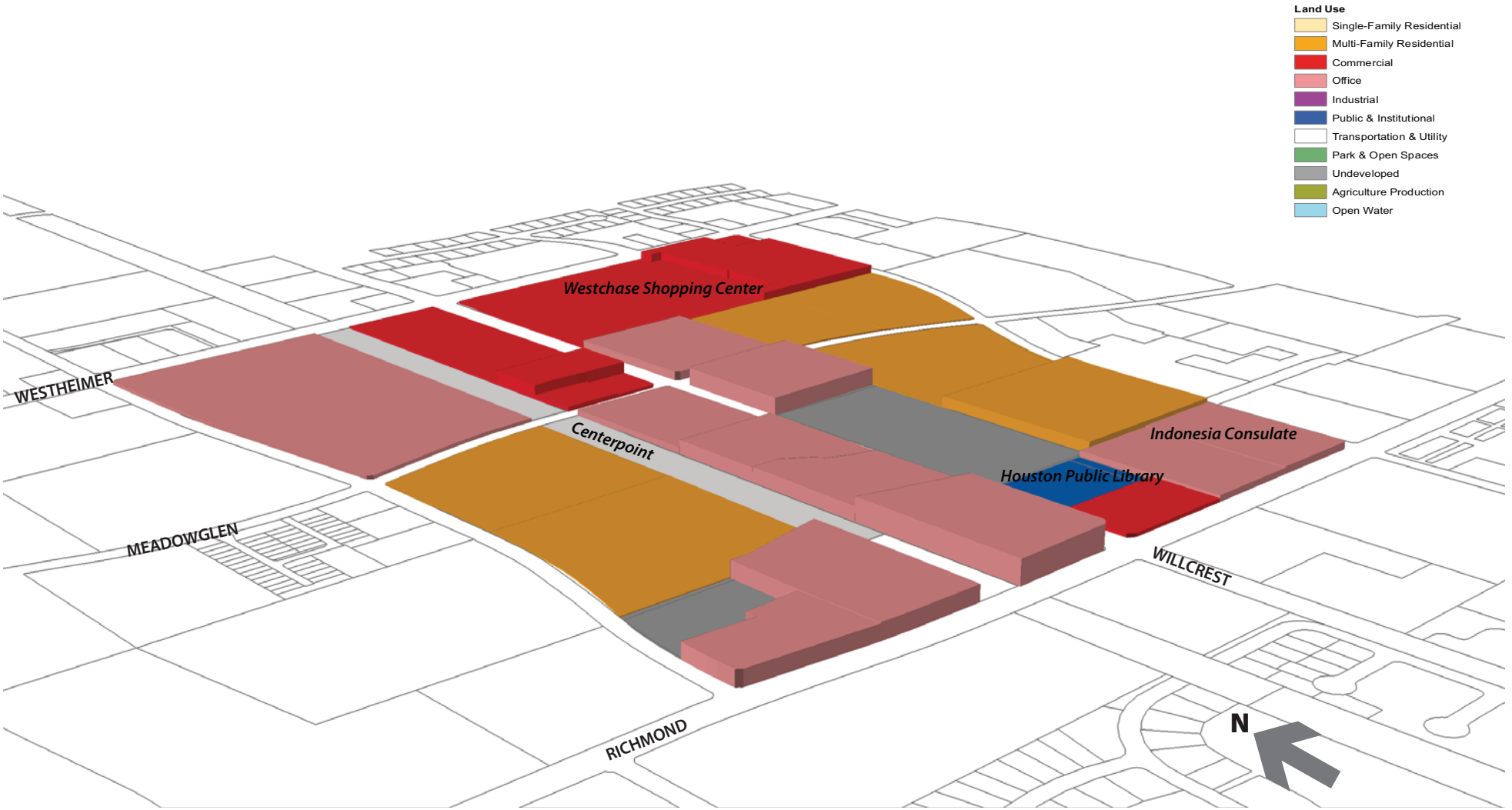
Land Use

- Single-Family Residential
- Multi-Family Residential
- Commercial
- Office
- Industrial
- Public & Institutional
- Transportation & Utility
- Park & Open Spaces
- Undeveloped
- Agriculture Production
- Open Water

0 700 1,400 Feet

Willcrest Corridor

LAND USE + FAR*



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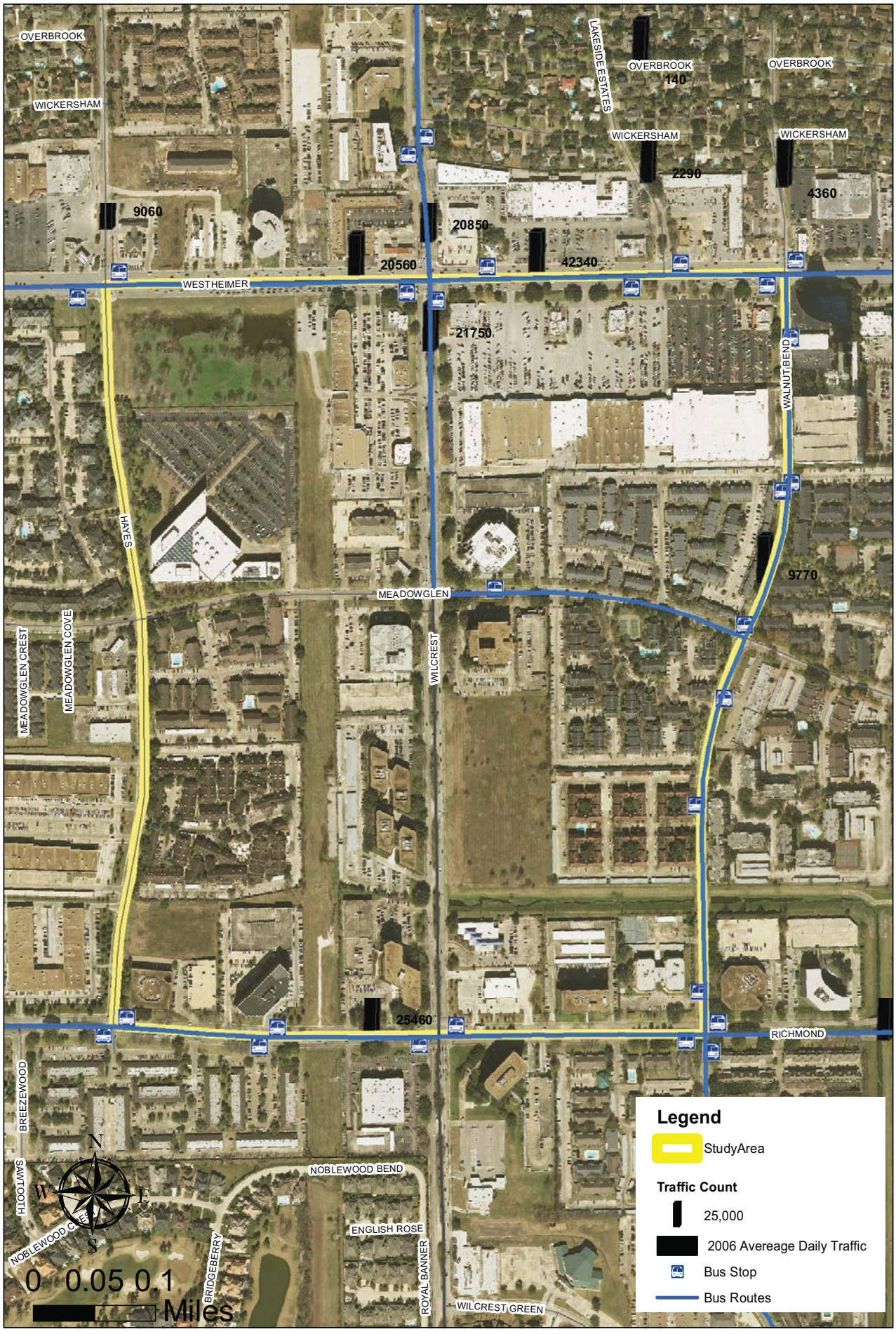
BUS ROUTE + TRAFFIC COUNT



LAND USE + DEMOGRAPHICS

Land Use Composition (2009)

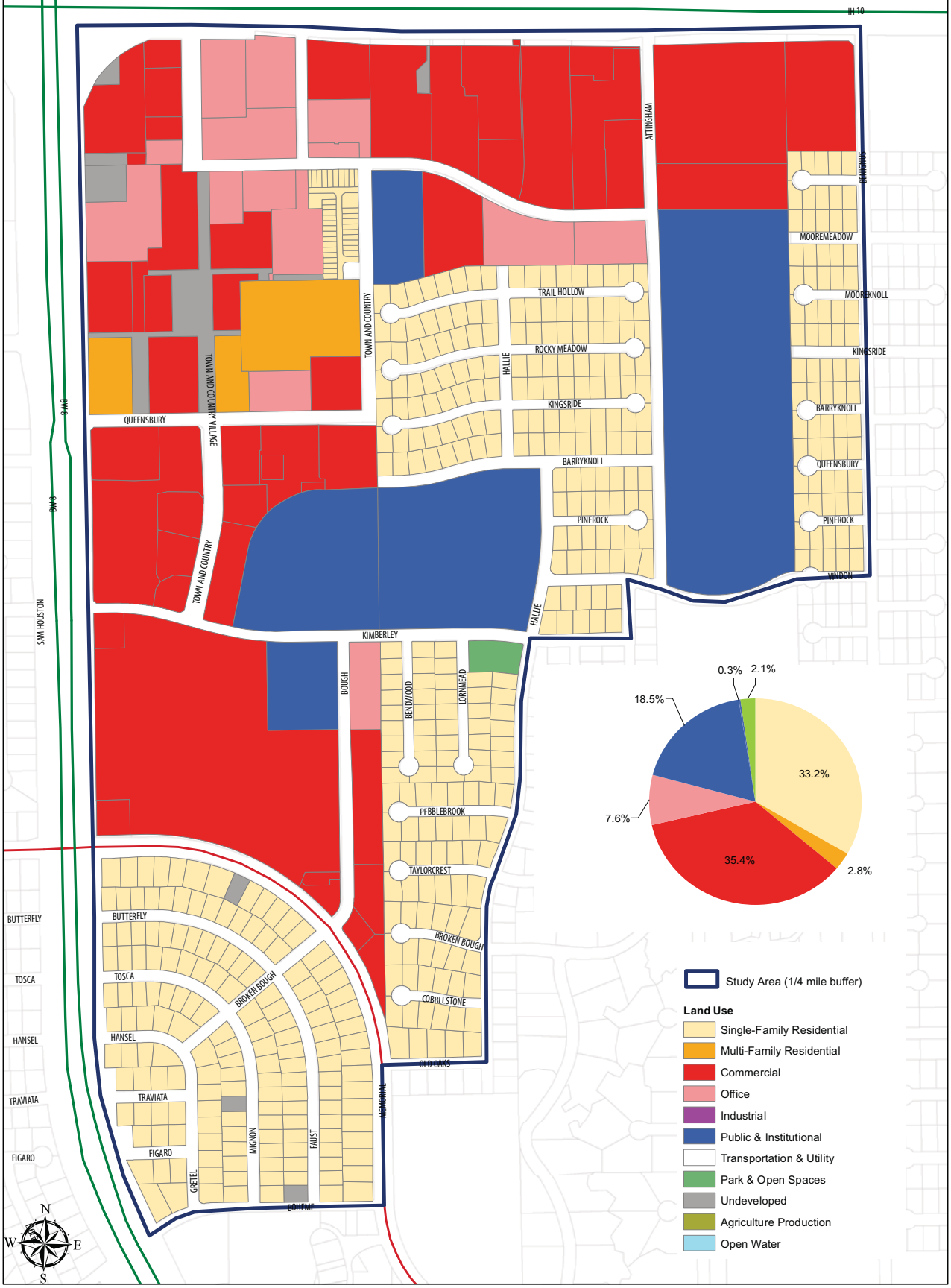
Land Use	Area(SF)	Acre	%
Total	13,608,996	312.4	100.0%
Single-Family Residential	4,521,647	103.8	33.2%
Multi-Family Residential	386,041	8.9	2.8%
Commercial	4,824,259	110.7	35.4%
Office	1,034,143	23.7	7.6%
Public & Institutional	2,514,725	57.7	18.5%
Park & Open Spaces	40,078	0.9	0.3%
Undeveloped	288,104	6.6	2.1%

Source: HCAD, 2008

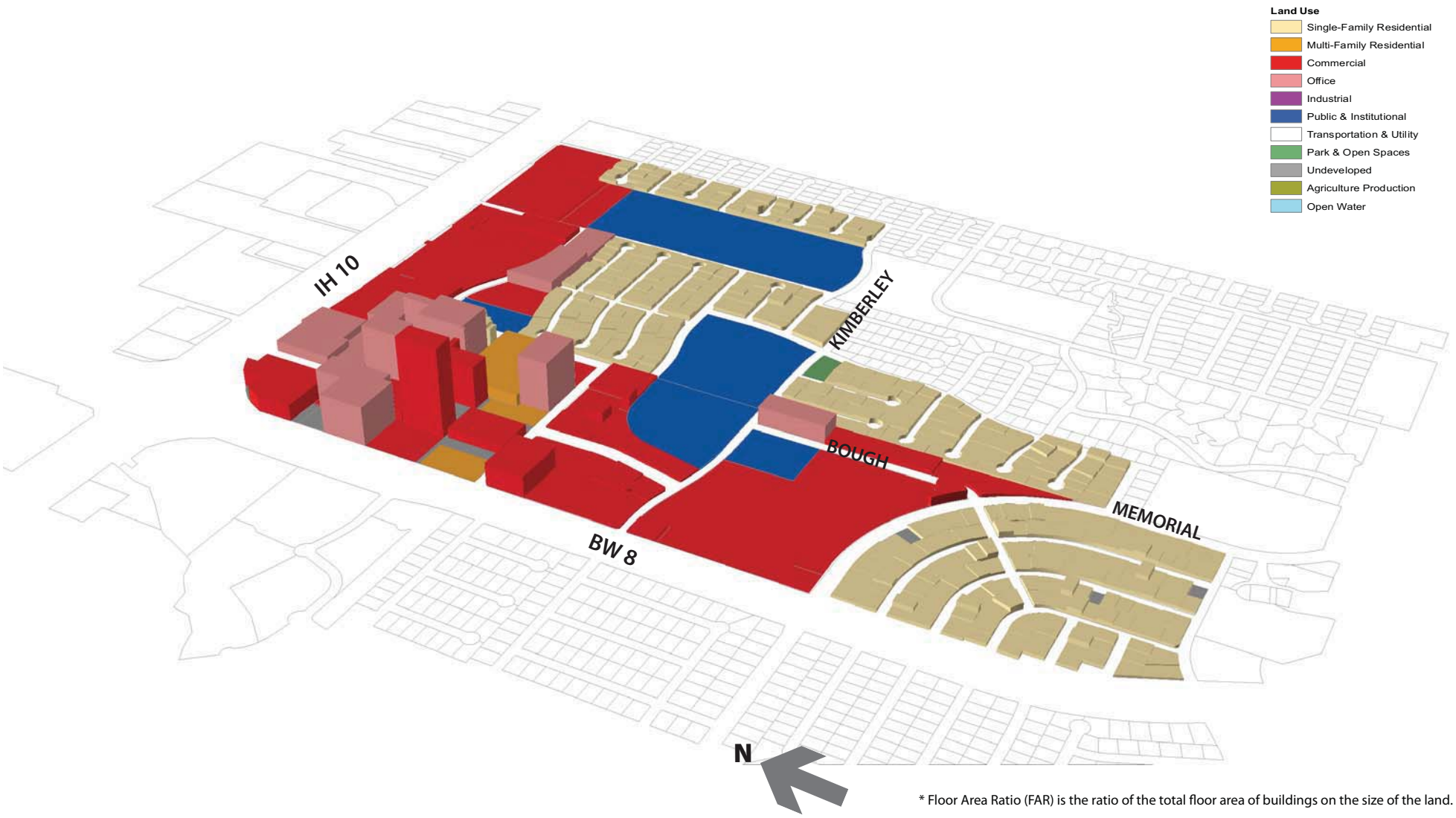
Demographics (2008)

	Population	Households	Employees	Business
Total	342	119	3,058	383
# / acre	1.09	0.38	9.79	1.23

Source: ESRI Business Analyst



LAND USE + FAR*



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BUS ROUTE + TRAFFIC COUNT