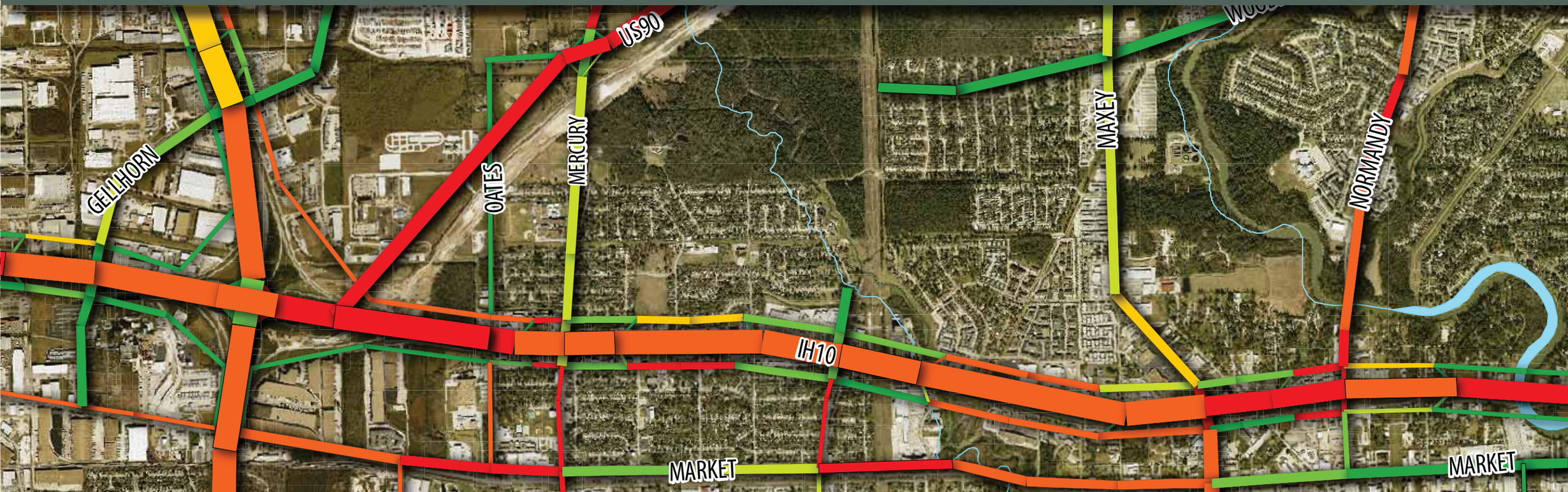
2009 Major Thoroughfare & Freeway Plan

MERCURY DRIVE STUDY



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I. INTRODUCTION

This report presents the results of the Planning and Travel Demand Model (TDM) analysis conducted for the proposed Mercury Drive between IH 10 (formerly State Highway 73) and proposed US 90 in Houston, Texas. The purpose of the study is to evaluate the impact of deleting the proposed connection of Mercury Drive, between IH 10 and proposed US 90 from the Major Thoroughfare and Freeway Plan (MTFP).

A. History

Mercury Drive has been on the City of Houston's MTFP since 1957. It was platted and dedicated in two Songwood Subdivision sections. The first segment was platted in 1956 with the Songwood Addition Subdivision from IH 10 north to Lafferty Oaks Drive. The second segment was platted with the Songwood, Section 2 in 1960 as far as Broadstairs Drive and Dunvegan Way. In 1963 The Good Shepherd Methodist Church located just north of the Songwood Subdivision, dedicated to the City (0.1041 acres) 100 feet of right-of-way for the extension of Mercury Drive from its termination north of Broadstairs Drive to the north-south extension of Oates Road. The Reverend C.W. Faulk, pastor of Good Shepherd Methodist Church petitioned the City in 1964 along with the residents of the Songwood Subdivision to have this section of Mercury Drive constructed. The Planning Director at the time responded that there was not a capital improvement plan (CIP) proposal for this construction, but that the petition would be considered with future proposals. This right-of-way for the remainder of Mercury Drive remains, and now extends through Herman Brown Park. It was referred to in the 1979 deed that conveyed property to the City for Herman Brown Park. The tract is referred to as Parcel A-9 and is limited to "future street right-of-way (Mercury)."

The right-of-way for US 90 was acquired beginning in 1962. The right-of-way between IH 610 and Oates Road, 31.63 acres, was acquired through condemnation in 1962.

The Songwood Civic Association, representing the Songwood Community in recent years has requested deleting Mercury Drive as a major thoroughfare between IH 10 and proposed Beaumont Highway. The neighborhood was opposed to the extension of Mercury because new traffic, particularly truck traffic from the Wallisville Road area, may cut through the Songwood Subdivision.

This amendment request was part of the Mercury/Oates application that was considered during the 2006 Major Thoroughfare and Freeway Plan (MTFP) amendment process. An existing CIP project to extend Mercury through Oates Road to Wallisville Road was in the design stage and prepared to be let in the following year. Again in 2007 Songwood requested deletion of Mercury. That process concluded with the Planning Commission's action of denying deletion of Mercury Drive from the MTFP and granting reclassification of Oates to a major collector between proposed US 90 and Wallisville Road, with a planned width 80 feet. As a result of the MTFP amendment request which reclassified Oates Road to a major collector the CIP project was scaled back to revise Oates Road ultimate right-of-way width and extended Oates south of the US 90 underpass where entry/exit ramps to the freeway would be constructed. There would be no connection constructed between Oates and Mercury. The application was resubmitted in 2007 by the Songwood Civic Association. The Planning Commission's action on August 9, 2007 denied the deletion of Mercury Drive from the Major Thoroughfare and Freeway Plan (MTFP) based on inconclusive information to determine whether extension of the road would be needed at some point in the future.

B. Study Area

The boundary of this study area broadly extends from Beaumont Highway on the north to Market Street on the south; and from Gellhorn/IH 610 on the west to Normandy Drive on - the east (Exhibit 1). The study area has two existing freeways, IH 10and IH 610 East, and a proposed freeway, US 90 which is currently under construction. Existing US 90 (Crosby Freeway) lies between East Sam Houston Parkway North running into Liberty County. US 90 will provide freeway access to IH 610 and IH 10 E for communities along E. Sam Houston Parkway N., and in the Crosby/Dayton area. All three freeways intersect at one massive interchange immediately west of Mercury Drive. Mercury Drive is the first intersection east of Loop 610.

The more than 750 acre Herman Brown Regional Park represents the center of the study area. Hunting Bayou bifurcates the park and the study area and acts as a barrier to local street circulation in the area. Greens Bayou runs north-south between Maxey and Normandy. Three CenterPoint transmission easements totaling 300 foot in width also crosses the study area in a north-south direction.

Mercury Drive begins in the city of Galena Park where it is known as North Main Street. Traveling north from this residential community and adjacent Port of Houston properties, it passes through Jacinto City to IH 10 and extends further north through the Songwood Subdivision to Herman Brown Park where it presently terminates into a surface parking lot. Oates Road extends north of US 90 in alignment with Mercury Drive. The thoroughfare corridor inside Houston's city limits is referred to as Oates Road/ Mercury Drive and it runs north-south between IH 10 and Wallisville Road. After a slight jog Oates Road extends to Beaumont Highway.

Mercury's current condition is that it dead-ends approximately 0.6 mile north from IH 10 in Herman Brown Park. A southern extension of Oates intersecting with IH 10 and is not part of the thoroughfare corridor. It is actually aligned 0.25 mile west of Mercury where it bears north approximately 0.875 mile. At that point, Oates turns at a 90o angle bearing east for approximately 0.25 miles before taking another 90o turn to the north.

The Houston-Galveston Area Council (H-GAC) has projected that over the next 30 years (2005 – 2035) the population within this study area* will increase by 5,603 persons from 22,461 to 28,064, a 25.0% increase. Persons per acre is projected to increase from approximately 4.37 to approximately 5.46. During the same period total jobs in the subject area will increase by 10,948 from 11,770 to 22,718 representing a 93.1% increase. Also, jobs per acre are projected to increase from approximately 2.29 to 4.42. (Refer to Table No. 01)

Expressed in percentages, population growth in the subject area is expected to be less than the overall City of Houston's population growth. The study area population growth will increase by 25.0% versus 29.0% for the overall City's population growth. Job growth, however, is expected to be greater in the study area than inside the City (93.1% versus 44.6%).

Table No. 01 – Demographic Projections

Mercury Drive Study Area*	Year	Population (Persons/Acre)	% Chg	Jobs (Jobs/Acre)	% Chg	Households (HH/Acre)	% Chg
	2005	4.37		2.29		1.2	
	2010	4.58	5.0%	2.63	15.0%	1.29	7.1%
	2015	4.71	2.8%	2.94	11.9%	1.35	4.6%
	2020	4.79	1.6%	3.19	8.2%	1.41	4.6%
	2025	4.91	2.6%	3.57	11.9%	1.47	4.3%
	2030	5.26	7.0%	4.02	12.8%	1.62	10.1%
	2035	5.46	3.8%	4.42	9.7%	1.7	5.3%
Change from 2005 to 2035		1.09	25.0%	2.13	93.1%	0.5	41.6%
Change in City of Houston (2005 -2035)			29.0%		44.6%		31.7%
Change in Houston 's ETJ (2005-2035)			91.9%		91.6%		112.7%

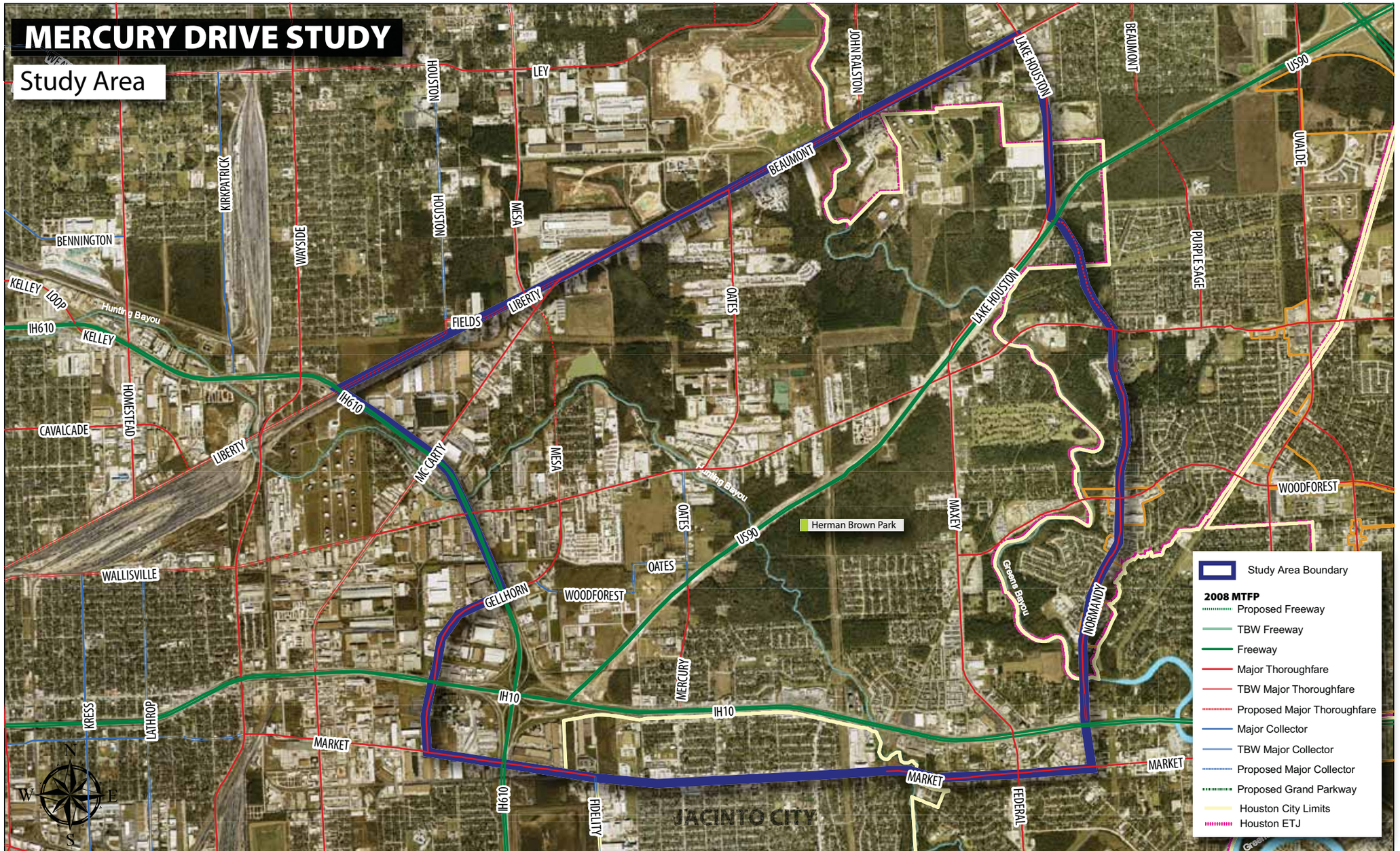

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EXHIBIT 1

B. Regional Context

Texas is one of the fastest growing states in the nation, and Harris County is the fastest growing county in the state1. Today, more than 2.2 million people live in the City of Houston and another 700,000 live in the City's ETJ. Houston and its ETJ's rich employment sector is home to more than 1.7 million jobs, making it the state's most populous and robust economic center.

One of the greatest challenges to Houston's mobility is that by 2035 more than 870,000 new residents are projected to live just outside the City limits in the ETJ while the major thrust of employment growth is within the City limits. This makes for greater commuter trips to be traveled on a freeways and major roadways. The distance between population and employment centers will result in more travel, greater time traveling, and longer travel delays.

While the ETJ is growing, the City will also be taking in an additional 550,000 new residents. The most notable population growth occurs inside Loop 610. It reflects efforts to create a dense urban core through mixed-use development strategies.

In 2008 the Planning & Development Department (PD) and the Department of Public Works and Engineering (PWE) pursued the City Mobility Planning (CMP) initiative to analyze Houston's regional mobility. The CMP included an assessment of existing and future transportation needs and development of a new roadway classification system. This will assist with the prioritization of roadway projects, based upon projected population growth and future travel demand.

1. Eschbach, Karl. "Population Change in Texas" Texas State Data Center. 2008 http://txsdc.utsa.edu. Accessed May, 2009.

D. Scope of Study

After the Planning Commission's action in 2007 to deny the requested deletion of this segment of Mercury Drive from the Major Thoroughfare and Freeway Plan the department was asked to do a more detailed study examining the future need of Mercury Drive as a major thoroughfare and whether there were suitable alternative routes. It was discussed that since the City was preparing for the City Mobility Plan, Phase 1 that included an up-dated travel demand model for the region that the staff from both Public Works and Engineering and the Planning Department would be able reevaluate this major thoroughfare designation.

The scope of study examines from transportation planning and traffic analysis standpoints the history behind the major thoroughfare designation, impacts from changing demographics in the area, the condition of the existing street network surrounding the Mercury Drive area, and level of service projections for the base year (2007), 2015 and 2035. The current and projected land development and street connectivity form the basis for the planning study. Additionally, undeveloped or insufficiently constructed major thoroughfares, major collectors and local streets have been analyzed, in some cases, future capital improvement projects have been assumed fundable for build-out to adjust the travel demand model characteristics so that the model more accurately reflects future conditions.

From a transportation analysis standpoint the study goes beyond our traditional examination of level of service at a projected year (2035), to an analysis of changing assumptions to the travel demand model. Here we have been able to examine alternative route scenarios to support our recommendation. The analysis of these scenarios is done at a sub-regional scale to take into account, more specifically, what the traffic trends are in the immediate area. The study, although refers to Houston's overall transportation network in broad relationships. Additionally, this traffic analysis does not examine the micro-level traffic operations and detailed lane geometric designs of various intersections.

As with all major thoroughfare issued brought before the Planning Commission the primary focus is on the right-of-way and secondarily the number of lanes. Beyond those two issues the specific design and operation studies will be conducted by Public Works and Engineering at a later date.

II. STUDY ELEMENTS

A. Land Use + Street Network

The predominant existing land use along Mercury Drive between IH 10 and US 90 is single-family residential, except for Ebbert L. Furr High School and Herman Brown Park. Commercial development exists at the intersection of Mercury and the IH 10 access road. Mercury Drive south of IH 10 is also predominantly single-family residential with commercial and institutional uses along the segment between Market and IH 10. (Exhibit 2)

The freeways divide the study area in 4 large quadrants. These are a) East Zone – the area between US 90; b) North Zone - the area between US 90 and IH 610; c) West Zone: the area west of IH 610; and d) the South Zone – the area south of IH 10 and east of IH 610. (Exhibit 3 & 4)

The East Zone is predominantly developed with commercial uses along IH 10, Maxey Road and Normandy Drive. The rest of the area is predominantly single-family residential other than Herman Brown Park. A number of large undeveloped parcels exist along Greens Bayou. Public and institutional uses are dispersed throughout this area primarily along the major thoroughfares. Hunting Bayou and a CenterPoint transmission easement physically separate the East Zone into two parts. The circulation in the eastern portion is limited to local streets since Mercury Drive does not extend through Herman Brown Park, and John Ralston does not extend across the Park and CenterPoint easement to connect to Wood Forest Boulevard. The western portion of the East Zone has east-west mobility with Wallisville & Wood Forest and north-south thoroughfares Maxey and Normandy.

The North Zone predominantly consists of commercial and industrial uses with some large undeveloped and agricultural parcels. Four single-family residential subdivisions which are not connected by local streets because of the central location of the park are also dispersed throughout this zone. There are some public and institutional uses in this zone including the Houston Community College East Campus at the intersection of US 90 and IH 610. There is limited connectivity within this area with Wallisville Road being the primary east-west between Beaumont Highway and US 90. North-south mobility is restricted to IH 610, McCarty-Mesa Road and Oates Road since Gellhorn – Mesa Road right-of-way has not been improved.

The West Zone is predominantly developed with large commercial and industrial uses. Gellhorn and McCarty are the primary north-south thoroughfares west of IH 610, and Wallisville Road, IH 10 and Market Street are the east-west thoroughfares. There is no local street circulation in this zone. Lack of full interchanges at Gellhorn and IH 10 and Gellhorn and IH 610 limits usage of Gellhorn as a significant collector street between Market and IH 610.

The South Zone contains mixed use development with single family along the local streets, and commercial uses along IH 610, IH 10, Market, Federal Road and portions of Mercury and Holland Street. Public and intuitional uses are sprinkled throughout the residential areas and some along IH 10. There is a good grid local street network in this zone except across Hunting Bayou between Holland Street and Federal Road.

The aggregation of land uses within major street network (Exhibit 5) allows a better understanding of the residential and non-residential uses in the area. The street network clearly indicates existing gaps in the network. These aggregated land uses and the zones identify the areas that are stable uses, those that are transitional and mixed land uses. (Exhibit 6)

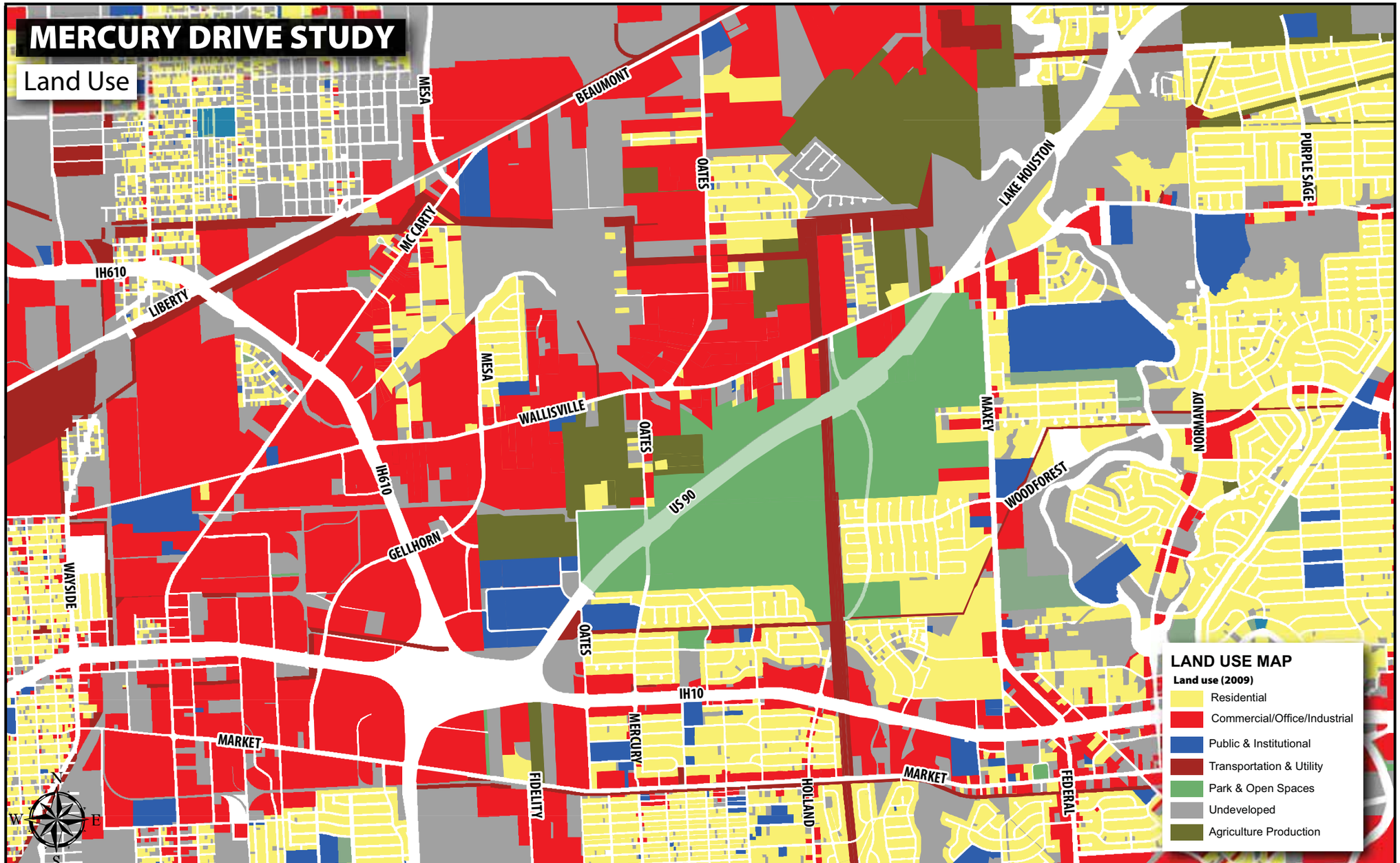

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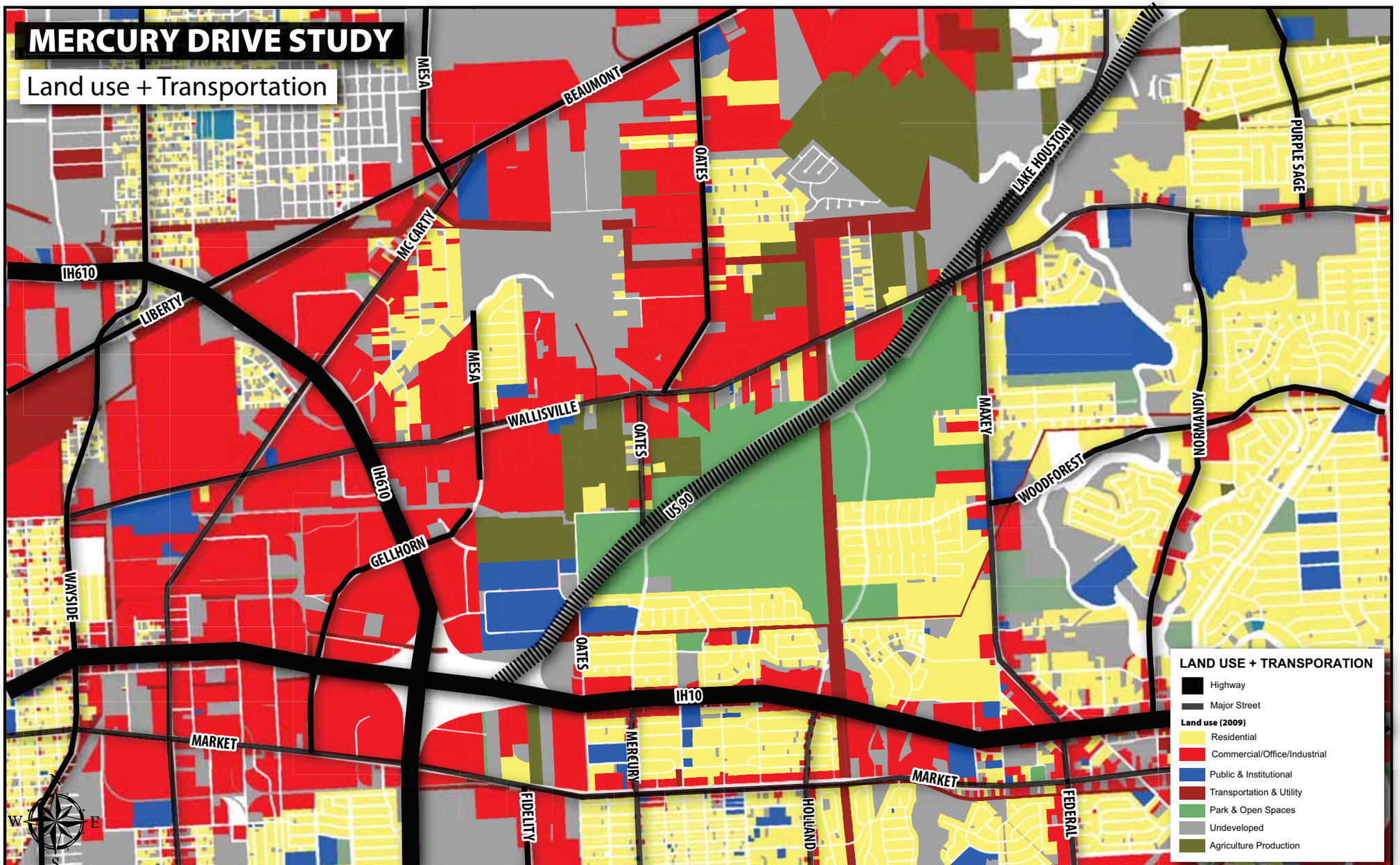
EXHIBIT 2



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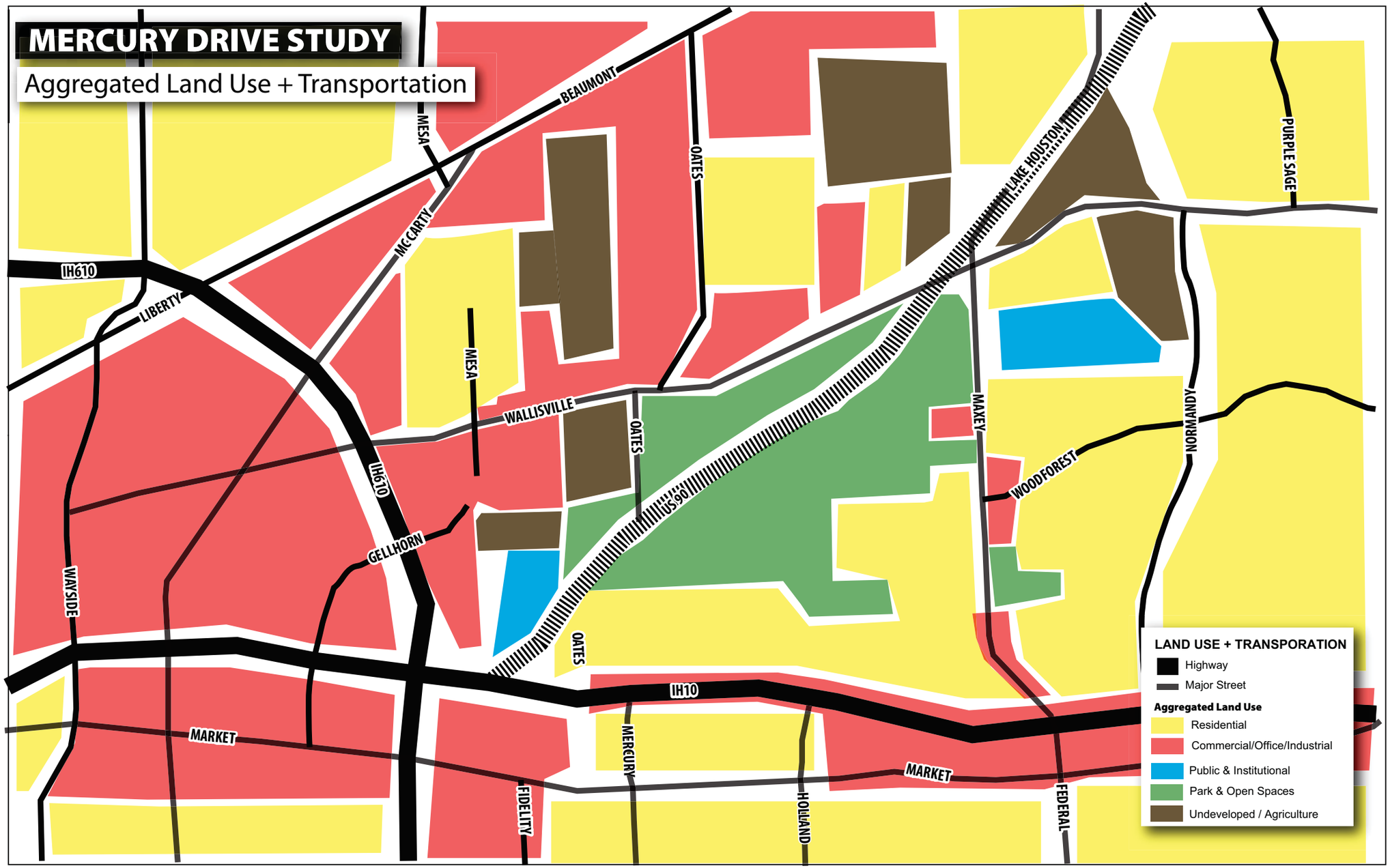

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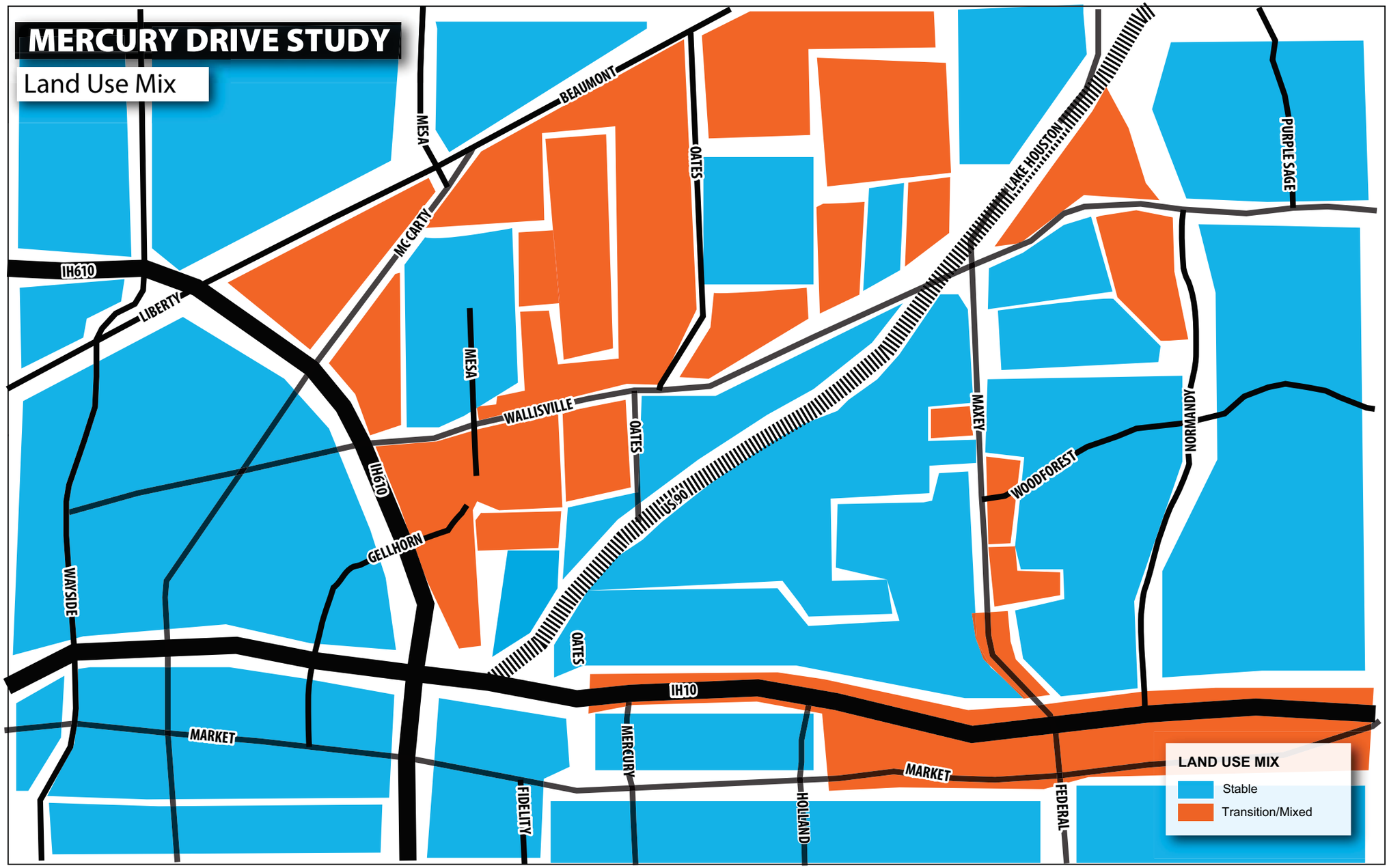

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EXHIBIT 6

B. Songwood Subdivision

Songwood Subdivision consists of six sections. It is a single-family residential community of 687 lots on public streets that form a local street grid network with several short in length cul-de-sacs. A centrally located neighborhood park is along Fleming Drive. Mercury Drive running north-south through the western portion of the subdivision was platted in two segments. The first segment was platted in 1956 with the Songwood Addition subdivision from IH 10 north to Lafferty Oaks Drive. The second segment was platted with the Songwood, Section 2 subdivision in 1960 as far as Broadstairs Drive and Dunvegan Way. The remainder of Mercury Drive enters Herman Brown Park, as dedicated public right-of-way and terminates into a surface parking area.

Mercury Drive starts out as an 90-foot right-of-way at IH 10, for the first 150' and then narrows down to 80'. The ROW width stays 80' up to the 100' wide HL&P right-of-way along the northern boundary of Songwood Addition. It widens to 100-foot right-of-way in Section 2 just north of its intersection with Lafferty Oaks Drive within Songwood Section 2. The southern end of Mercury Drive where the 80-foot ROW exists contains two-lanes of traffic in a 25-foot curb and gutter section. Then north of Lafferty Oaks Drive where the right-of-way widens to 100-foot Mercury Drive contains four-lanes in 2-25 foot paving sections with a 31-foot central esplanade.

32 residential properties and Furr High School abut Mercury Drive. Of the residential properties, 13 homes front or face Mercury Drive. The other 19 residential homes side to Mercury while facing the intersecting streets. All 32 residential homes' garages take access from Mercury Drive. The houses that front Mercury Drive have a 35' building setback while the lots siding along Mercury have a 20' building setback. Furr High School's front door entrance is facing Mercury Drive. There is a turn-around driveway in front of the building where student drop-offs take place.

East-west local streets in Songwood Subdivison that provide external access are Dunvegan and Valencia (to Oates Road); and Dunvegan, Filey and Fleming (to John Ralston Road). North-south local streets that extend from IH 10 to Herman Brown Park are Mercury and Baca.

C. Furr High School

Ebbert L. Furr High School is a Houston Independent School District secondary school serving grades 9 through 12. It is located along the western side of Mercury Drive in the Songwood Subdivision. Construction of the Furr building began in 1960 and the campus opened in fall 1961.

Furr High School is one of four high schools in the HISD's East Region. As of 2008 there were 893 students and 54 teachers and faculty. Furr is centrally located within its attendance zone. The zone extends from the Port of Houston north to Beaumont Highway. In the east-west direction the zone goes from Green Bayou to N. Wayside Drive. Furr serves several Houston neighborhoods in eastern Houston inside and outside Loop 610, including Clinton Park, Pleasantville, Port Houston, Songwood Homes, Oates Prairie and Northshore area neighborhoods north of Market Street and west of the Greens Bayou. The school also serves the Houston ISD portion of Jacinto City (areas north of Market Street). RP Harris, Oates, Pleasantville, Port Houston, Robinson and Whittier elementary schools feed into Furr from Holland Middle School. (Exhibit 7)

School bus service is provided to some students. The school buses and parents drop-off area is accessed from Mercury Drive.

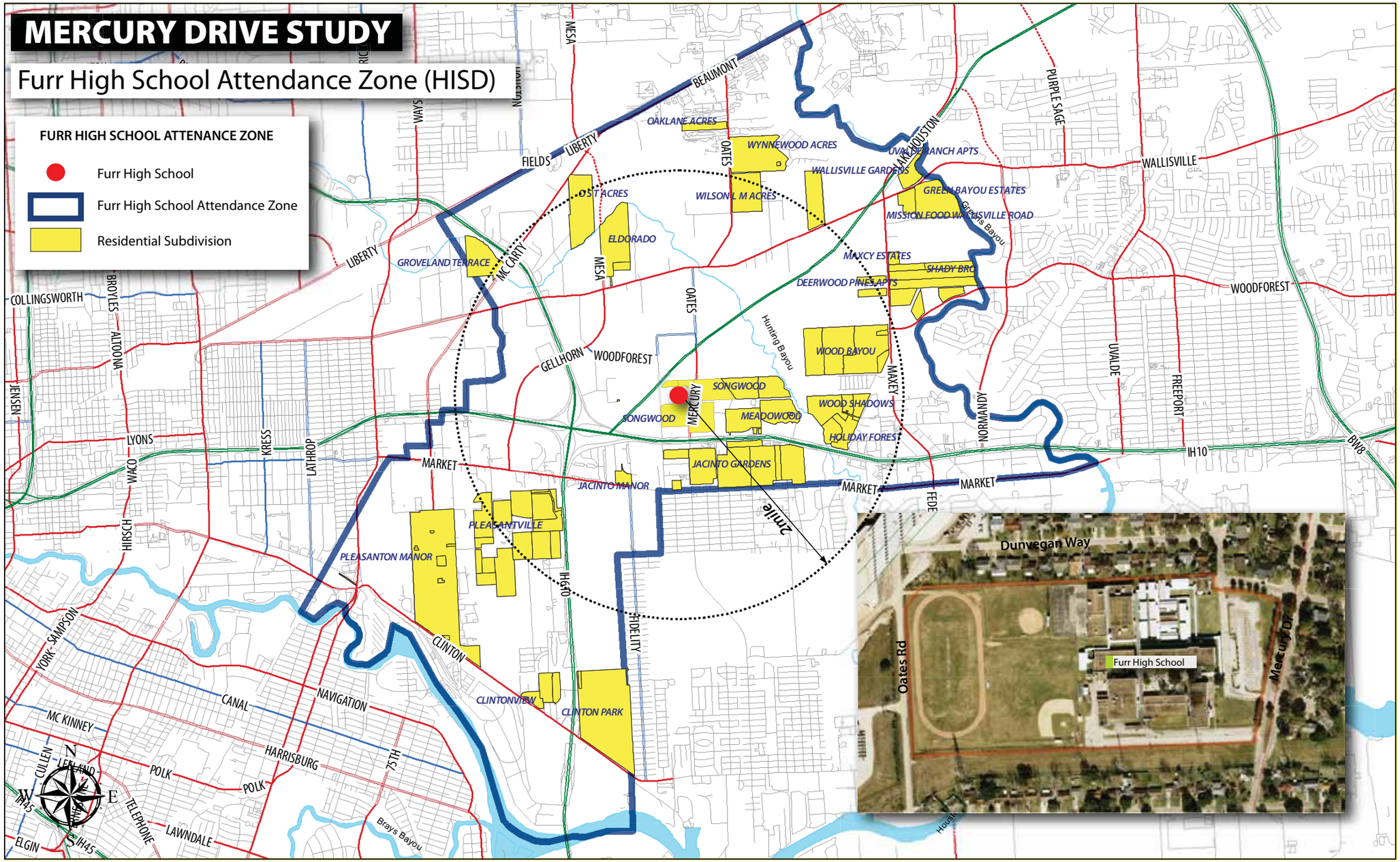

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EXHIBIT 7

SCHOOL ACCESS ROUTE ANALYSIS

In order to understand the accessibility to Furr High School from its neighborhoods within the school's attendance zone, route analysis has been conducted. The analysis is done using Google Maps for evaluating the distances traveled. Two scenarios on existing roadways were selected. Existing Option 1 is a non-freeway access route and Existing Option 2 represents a freeway access route. Future Option represents the option considering Mercury Drive being improved through Herman Brown Park. The travel distances were evaluated using ArcGIS Route Analysis.

Exhibit 8 represents the result of the comparative route analysis from OST Acres Subdivision to the southern entrance to the Herman Brown Park in the Songwood Neighborhood. Existing Option 1 route distance is 3.3 miles measured along Wallisville-Oates-Dunvegan Way, and Existing Option 2 route distance is 3.8 miles route measured from McCarty-Wallisville-IH 610-IH 10-Mercury. The resulting Future Option route distance measured along Wallisville-Oates-Mercury is only 2.5 miles which demonstrates a 24% shorter travel route than Existing Option 1. The Future Option reflects a 34% shorter travel route than Existing Option 2.

A similar analysis has been conducted for travel route distances for Wynewood Subdivision and Greens Bayou Subdivision (Exhibit 9 & 10). The reduction in the length of trips varies from 19 to 61 %. Future Option 2 represents an alternative route to access Furr High School from Green Bayou Estates Subdivision via US 90 and Mercury Drive. Table No 02. summarizes the results of the route analysis.

Table No. 02 – School Access Route Comparison

From Neighborhood	Existing Option 1 Distance (mile)	Existing Option 2 Distance (mile)	Future Option 1 Distance (mile)	Future Option 1 EP1 (%)	Future Option 1 EP2 (%)	Future Option 2 Distance (mile)	Future Option 2 EP1 (%)	Future Option 2 EP2 (%)
OST Acres	3.3	3.8	2.5	24%	34%			
Wynewwood Acres	2.7	5.1	2	26%	61%			
Greens Bayou Estates	3.7	4.6	3	19%	35%	2.6	30%	43%

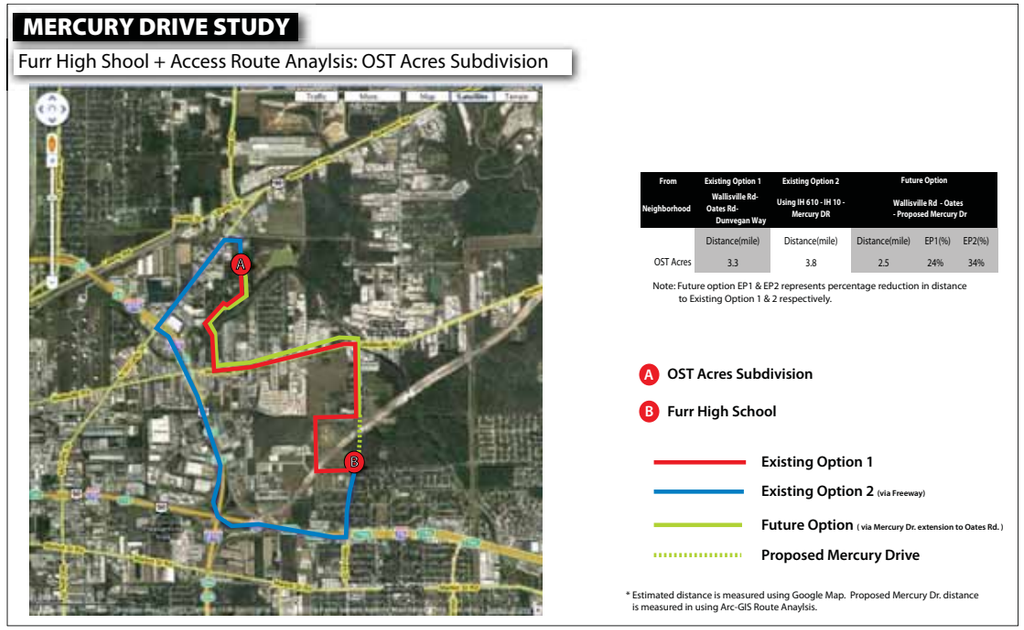

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EXHIBIT 8

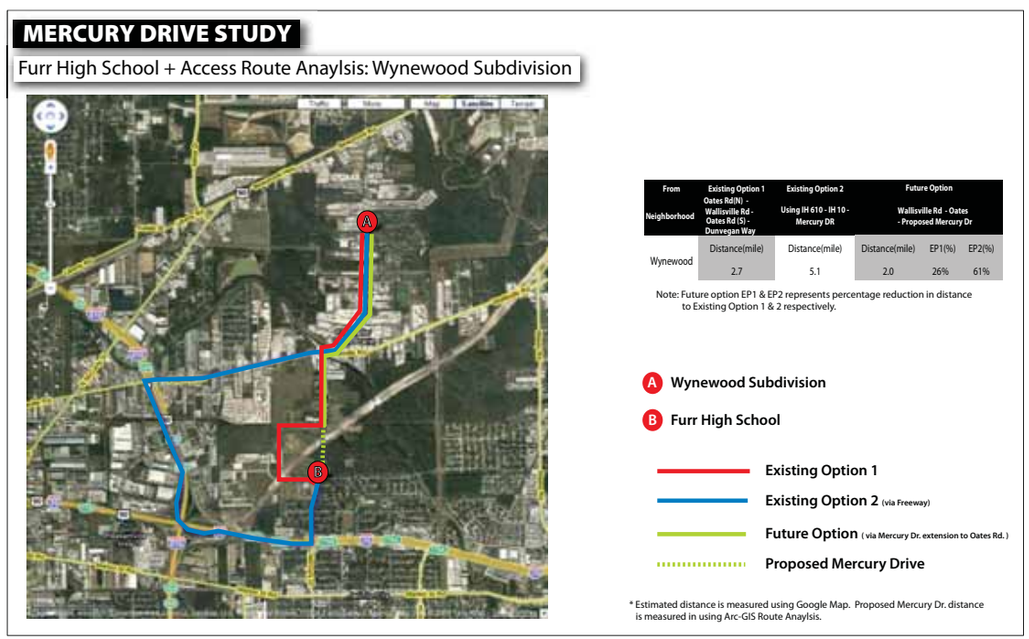

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EXHIBIT 9

D. Herman Brown Park

Herman Brown Park was created by the Brown Foundation, Inc., the City of Houston and the Houston Parks Board, Inc. in 1979. The park contains more than 750 acres and is a part of the Buffalo Bayou watershed (Exhibit 11). The total cost of the acquisition was over eight million dollars and was funded by a Land and Water Conservation grant from the Texas Parks and Wildlife Department and a gift from the Brown Foundation, Inc. Four funded phases have constructed lighted softball fields, soccer fields, tennis courts, a basketball court, a playground, picnic tables, passive recreational trails and visitor parking. The park's bikeway consists of 1.6 miles of trails through the park and one mile of on-street bike routes west of Hunting Bayou. (Exhibit 12)

South Zone vehicular access to the park comes from Mercury Drive and Rainy Meadow Lane in the Songwood Subdivision to the south. Additionally, south zone access comes from Oates Road west of the Songwood Subdivision. From the north zone vehicular access is from Oates Road or from using IH 610 and IH 10 and Mercury Drive. From the east zone vehicular access comes from Maxey Road to IH 10 to Mercury Road.

Current permitted uses for the softball and soccer facilities at Herman Brown Park reflect 34,944 visitors for soccer 11 months per year, and 14,880 visitors for softball five months per year.

PARK ACCESS ROUTE ANALYSIS

In order to understand the accessibility to Herman Brown Park along the north and south end from its neighborhoods within 3 miles a route analysis has been conducted. The analysis is done using Google Maps for evaluating the distances traveled. Two scenarios on existing roadways were selected. Existing Option 1 is a non-freeway access route and Existing Option 2 represents a freeway access route. Future Option represents the option considering Mercury Drive being improved through Herman Brown Park. The travel distances were evaluated using ArcGIS Route Analysis.

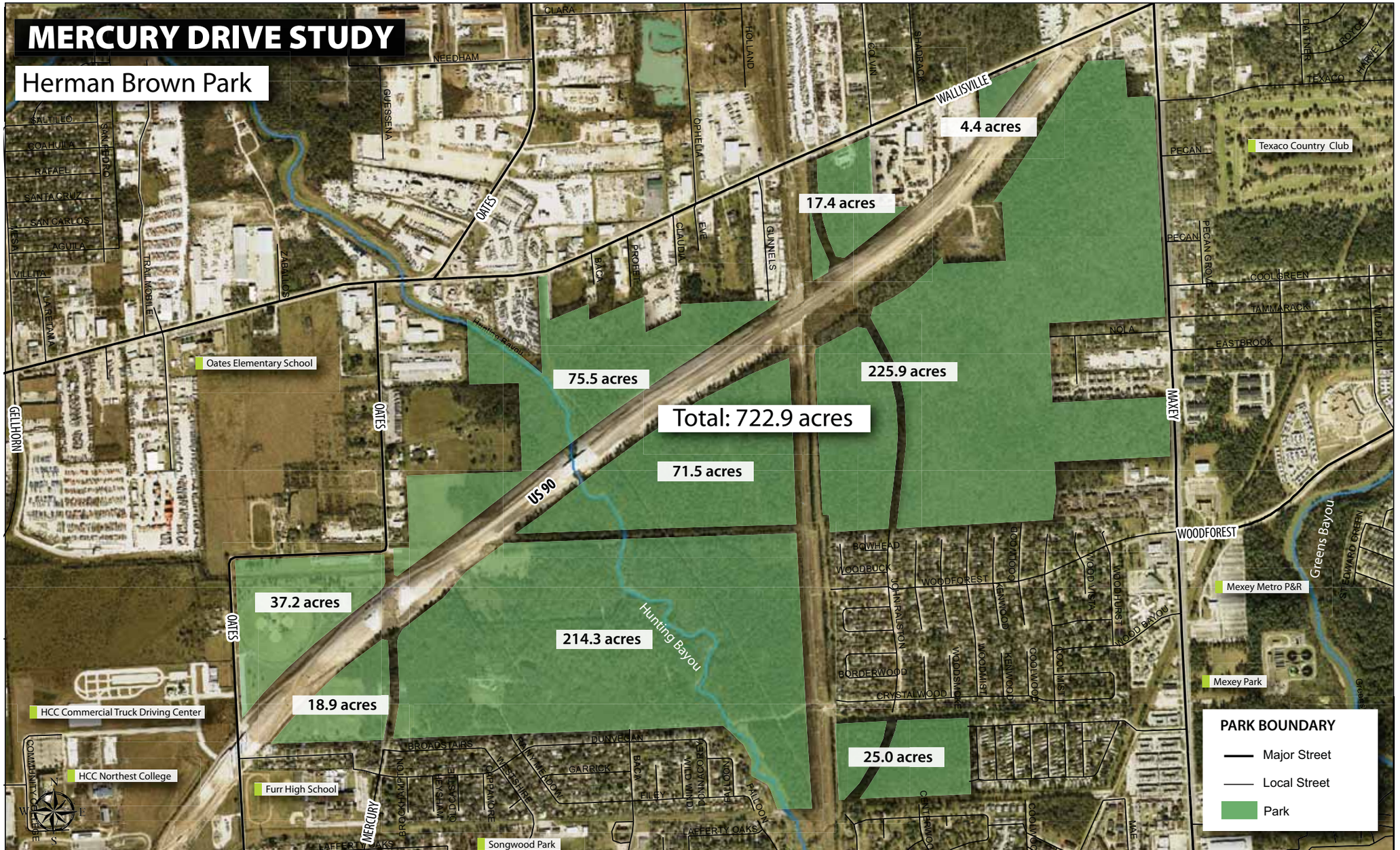
Exhibit 15 represents the result of the comparative route analysis from El Dorado Subdivision to the southern entrance to the Herman Brown Park in the Songwood Neighborhood. Existing Option 1 route distance is 3 miles measured along Mesa-Wallisville-Oates-Dunvegan Way, and Existing Option 2 route distance is 3.9 miles measured from Mesa-Wallisville-IH 610-IH 10-Mercury. The resulting Future Option measured along Mesa-Wallisville-Oates-Mercury is only 2.1 mile which demonstrates a 30% shorter travel route than Existing Option 1. The Future Option reflects a 46% shorter travel route than Existing Option 2. Similar analysis has been conducted for travel route distances Wynewood Subdivision and Industrial Addition Subdivision (Exhibit 16 & 17). The reduction in the length of trips varies from 25 to 64 %. Table No 03 summarizes the result of the route analysis.

Table No. 03 – Park Access Route Comparison

From	Existing Option 1	Existing Option 2	Future Option		
Neighborhood	Distance(mile)	Distance(mile)	Distance (mile)	EP1 (%)	EP2 (%)
El Dorado	3	3.9	2.1	30%	46%
Wynewood	2.9	5.3	1.9	34%	64%
Industrial Addition	2.4	4.7	1.8	25%	62%

HERMAN BROWN PARK MASTERPLAN

Houston Parks and Recreation Department is in the process of updating the master plan for Herman Brown Park. The master plan proposes to create a new primary access and parking area to the park from the dead-end portion of Mercury Drive south of US 90. Two secondary points of access and parking are proposed along the south side along Mercury Drive and Rainy Meadow Lane providing local access to the park. The two parking areas from Mercury Drive will not connect to each other. The master plan also recommends improvements to the existing soccer fields, better internal circulation and parking within the park and improvements around the Brown Pavilion and tennis courts.



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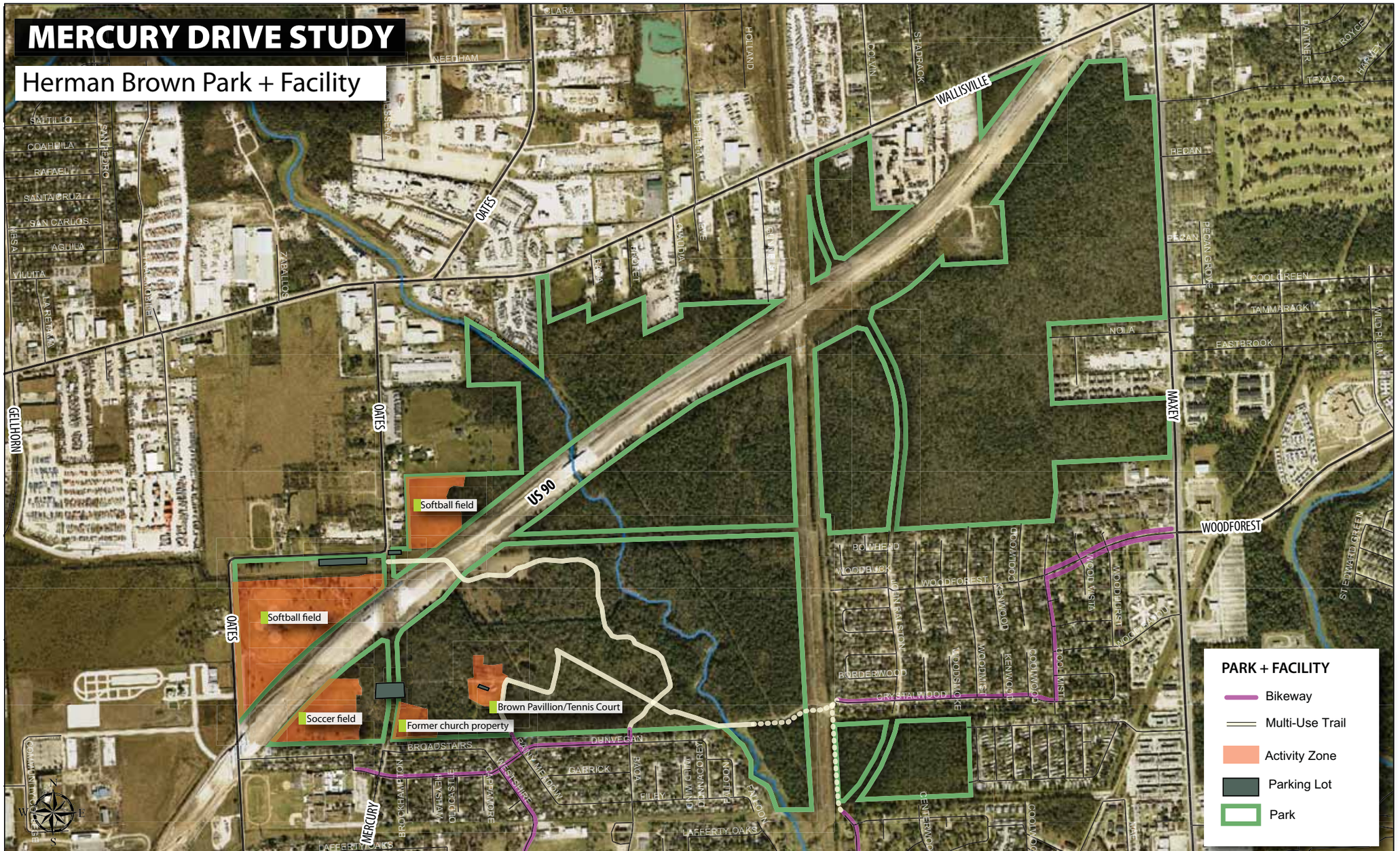

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EXHIBIT 12

MERCURY DRIVE STUDY

Herman Brown Park + Access Route Anaylsis: El Dorado Subdivision

From Neighborhood	Existing Option 1 Using Oates-Dunvegan Way-Mecury Dr	Existing Option 2 Using IH 610 - IH 10 - Mercury DR	Future Option Oates - Proposed Mercury Dr		
	Distance(mile)	Distance(mile)	Distance(mile)	EP1(%)	EP2(%)
El Dorado	3.0	3.9	2.1	30%	46%

Note: Future option EP1 & EP2 represents percentage reduction in distance to Existing Option 1 & 2 respectively.

A El Dorado Subdivision

B South Parking Lot

Existing Option 1

Existing Option 2 (via Freeway)

Future Option (via Mercury Dr. extension to Oates Rd.)

Proposed Mercury Drive

* Estimated distance is measured using Google Map. Proposed Mercury Dr. distance is measured in using Arc-GIS Route Anaylsis.

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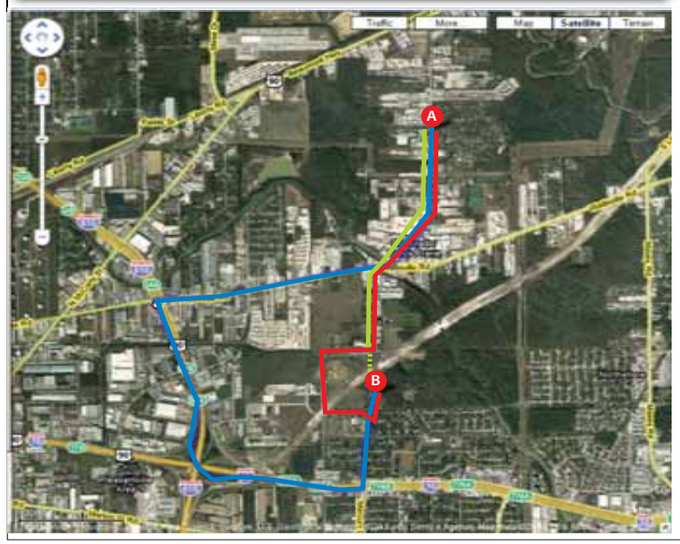
EXHIBIT 15

MERCURY DRIVE STUDY

Herman Brown Park + Access Route Anaylsis: Wynewood Subdivision



From Neighborhood	Existing Option 1 Using Oates-Dunvegan Way-Mecury Dr	Existing Option 2 Using IH 610 - IH 10 - Mercury DR	Future Option Oates - Proposed Mercury Dr		
	Distance(mile)	Distance(mile)	Distance(mile)	EP1(%)	EP2(%)
Wynewood	2.9	5.3	1.9	34%	64%

Note: Future option EP1 & EP2 represents percentage reduction in distance to Existing Option 1 & 2 respectively.

A Wynewood Subdivision

B South Parking Lot

Existing Option 1

Existing Option 2 (via Freeway)

Future Option (via Mercury Dr. extension to Oates Rd.)

Proposed Mercury Drive

* Estimated distance is measured using Google Map. Proposed Mercury Dr. distance is measured in using Arc-GIS Route Anaylsis.

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EXHIBIT 16

MERCURY DRIVE STUDY

Herman Brown Park + Access Route Anaylsis: Industrial Addition Subdivision

From Neighborhood	Existing Option 1 Mercury-East Fwy - Oastes	Existing Option 2 Mercury -IH 10 W - IH 610 N - Wallisville - Oates RD	Future Option Mercury - Proposed Mercury		
	Distance(mile)	Distance(mile)	Distance(mile)	EP1(%)	EP2(%)
Industrial Addition	2.4	4.7	1.8	25%	62%

Note: Future option EP1 & EP2 represents percentage reduction in distance to Existing Option 1 & 2 respectively.

A Industrial Addition Subdivision

B North Parking Lot

Existing Option 1

Existing Option 2 (via Freeway)

Future Option (via Mercury Dr. extension to Oates Rd.)

Proposed Mercury Drive

* Estimated distance is measured using Google Map. Proposed Mercury Dr. distance is measured in using Arc-GIS Route Anaylsis.

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EXHIBIT 17

E. TRANSPORTATION

This section of the ordinance evaluates existing roadway network, condition of the roadways and planned long and short them improved within the study area.

1. Thoroughfare Spacing & Roadway

THOROUGHFARE SPACING

The Houston Planning Commission's Major Thoroughfare and Freeway Plan is a graphic illustration of a network of various types of streets and highways which are designated to provide maximum accessibility to all parts of the urban area and facilitate the maintenance of a high level of mobility for its citizens. The Plan is a melding of four distinct street and highway systems, each of which is implemented by various groups or governmental agencies.

These systems are:

- Local streets, implemented by individual subdividers and developers in conformance to certain governmental standards;
- Major thoroughfares, mostly implemented by individual subdividers and developers, but located in conformance with the general one-mile grid system illustrated on the major thoroughfare plan;
- Radial streets and highways, usually existing streets extending radially from the center of the city and under the jurisdiction of either the County or the State Department of Highways and Public Transportation; and
- Circumferential highways, implemented by the State Department of Highways and Public Transportation and located at various distances away from and encircling the central area of the city.

Each of these systems plays an important part in the overall roadway network. Particular functions and characteristics of these roadways are described as follows:

Local Streets

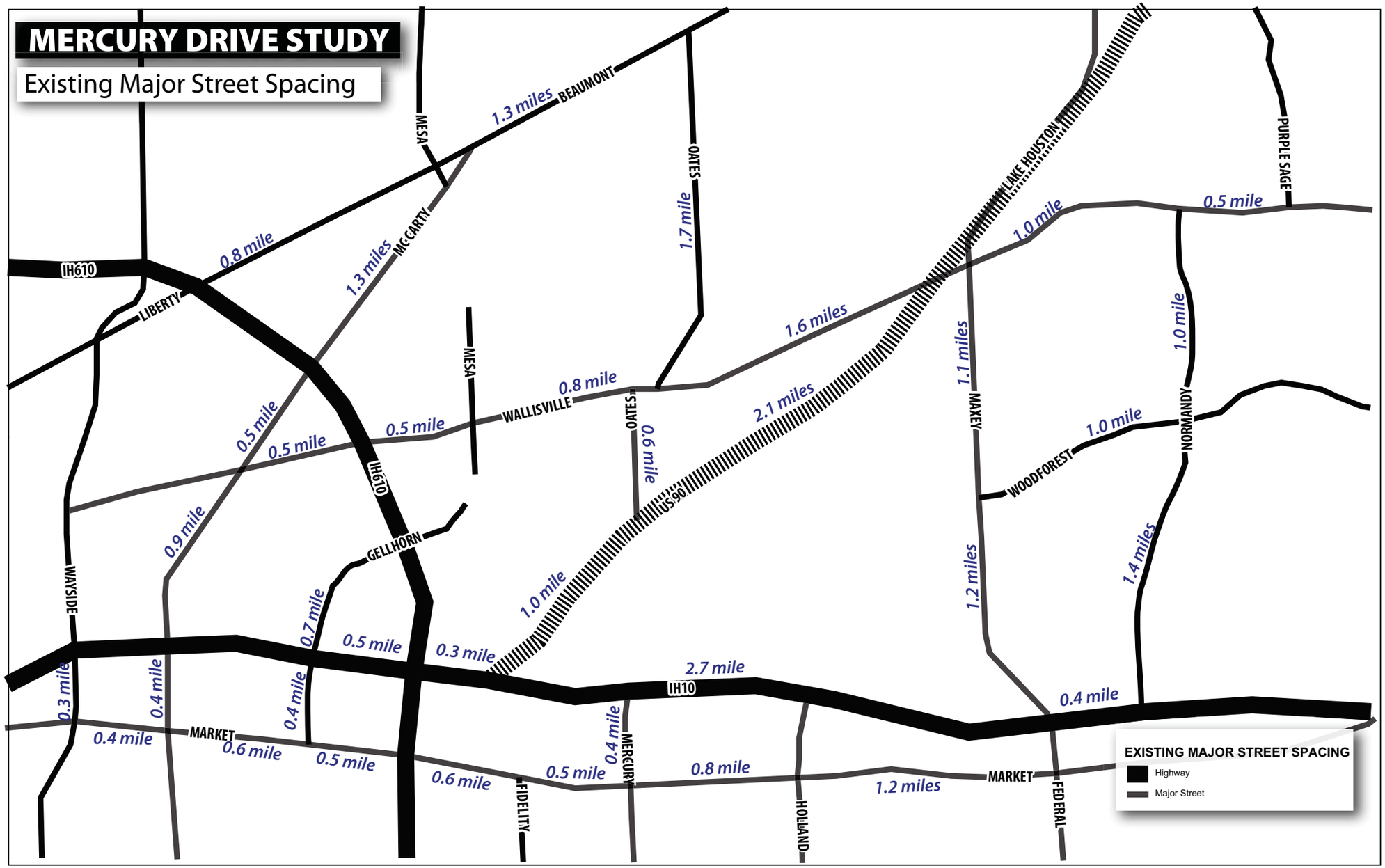
Local streets provide primary access to adjacent private property and form the basic urban pattern of lots and blocks of land. These streets are generally not continuous for any considerable distance, carry light traffic, and are planned to serve individual neighborhoods. They are designated and constructed by subdividers and developers in conformance with the policies adopted by the Planning Commission for approval of land subdivision.

Major thoroughfare grid system

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.

To maximize mobility, streets designated as major thoroughfares generally require a wider right-of-way, typically 100 feet, designed to accommodate dual 2- or 3-lane roadways. They can be separated by an esplanade and can contain protected left-turn lanes at intersections where significant left-turn movement is anticipated.

In general, right-of-way, paving, and drainage for new major thoroughfares are provided by the subdivider or developer as part of the overall subdivision development plan approved by the Planning Commission with the alignment of any designated major thoroughfare also being in general conformance with the Commission's Major Thoroughfare and Freeway Plan.



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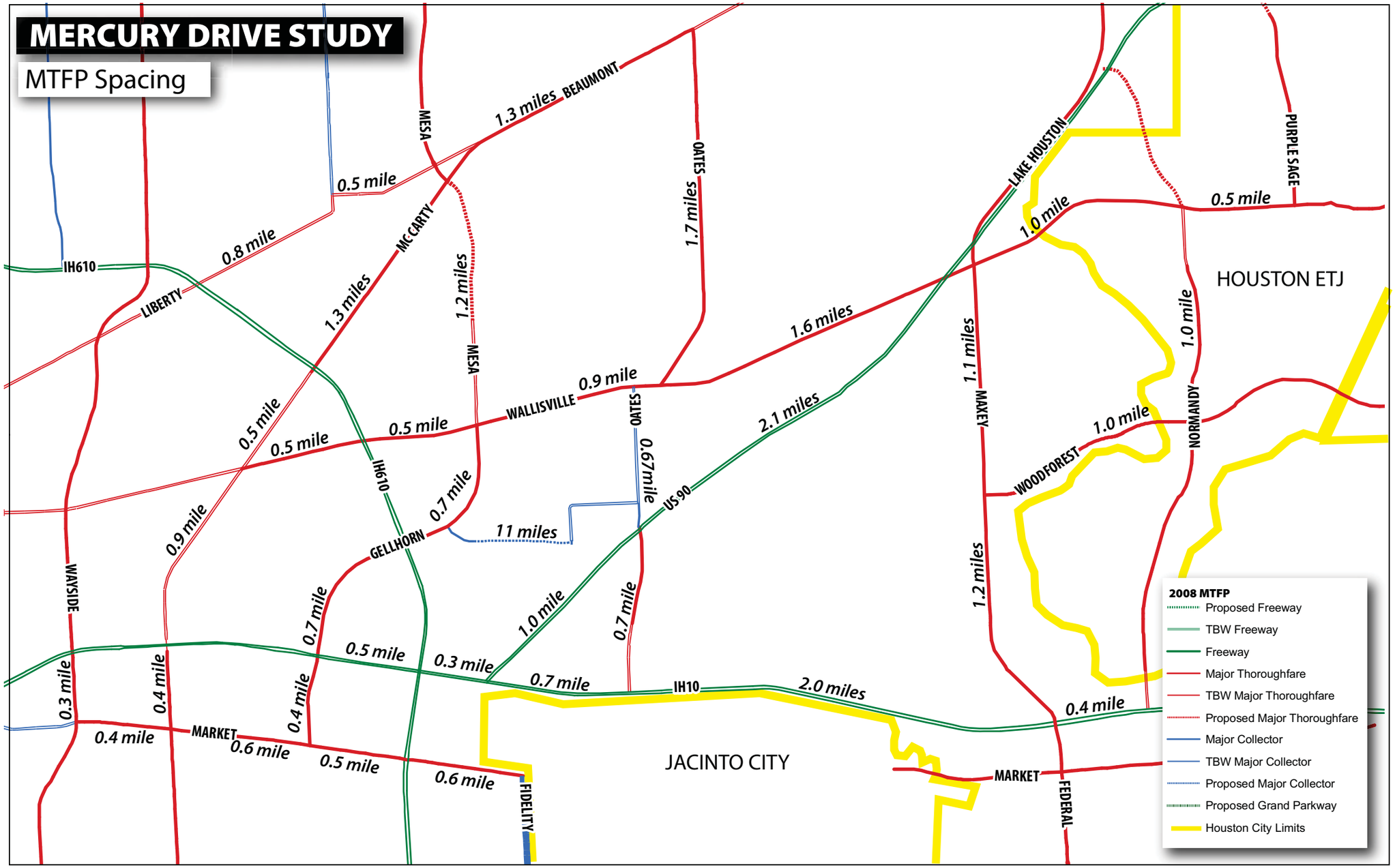

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In some instances, major thoroughfares are constructed by the City or County when there is a demonstrated need to improve an existing roadway or develop such thoroughfares through property which may not be suitable to subdivide, or when it is desirable to complete a connection between two segments of previously developed major thoroughfares to provide a continuous facility. In these cases, the right-of-way and paving standards described above are used as the basis for any public development of major thoroughfares.

As a part of this analysis the existing thoroughfare spacing with roadway improvements and the proposed thoroughfare spacing with the proposed improvements are evaluated. Exhibit 18 identifies the thoroughfare network and thoroughfare spacings as they exist today. Inside the IH 610 loops north-south major thoroughfares Wayside Drive, McCarty Road and Gellhorn Drive. They are each spaced approximately one-half mile apart.

Between IH 610 and Maxey Road the north-south spacing of thoroughfares between IH 10 and Wallisville Road is 2.7 miles from IH 610 to Maxey Road measured along IH 10. Additionally, the spacing from IH 610 to Maxey Road measured along Wallisville Road is 2.9 miles. Similarly, north of Wallisville Road, Oates Road has a spacing of 1.3 miles and 2.5 miles from IH 610 along Wallisville Road and Beaumont Highway to Maxey Road, respectively. The north-south thoroughfares east Oates Road are Maxey and W. Lake Houston Parkway. Wallisville Road spacing between Oates Road and Maxey Road is 1.6 miles. Thoroughfare spacing from Maxey Road to W. Lake Houston Parkway is 2 miles measured along Beaumont Highway. Additionally there is limited local street connectivity within this area due to the locations of Hunting Bayou and major CenterPoint transmission easements.

East of Maxey Road between Wallisville Road and IH 10 the thoroughfare grid is well established. The spacing varies between one-half mile to 1.5 miles due to existing natural drainage. Also the local street connectivity is well established in this area allowing for better connectivity between neighborhoods and to area collectors and thoroughfares.

MERCURY DRIVE

Primary and direct access to the Mercury Drive is provided via IH 10, which is described below:

IH 10 (formerly SH 73) is the southernmost east-west, coast-to-coast Interstate Highway in the United States. With the construction of US 90 the only interchange between IH 610 and Maxey Road will be Mercury Drive which will provide access to the Herman Brown Park and would also connect to Oates Road. Mercury Drive, south of IH 10 can be accessed from IH 610 via Clinton Drive and Market Street in the city of Galena Park and Jacinto City.

The existing paving section of Mercury Drive (N. Main Street in Galena Park) is a two-lane undivided roadway which becomes a two-lane roadway with a center turn lane through Jacinto City. The portion of Mercury Drive between Broadstairs Street and Lafferty Street, north of IH 10 is a four-lane boulevard roadway.

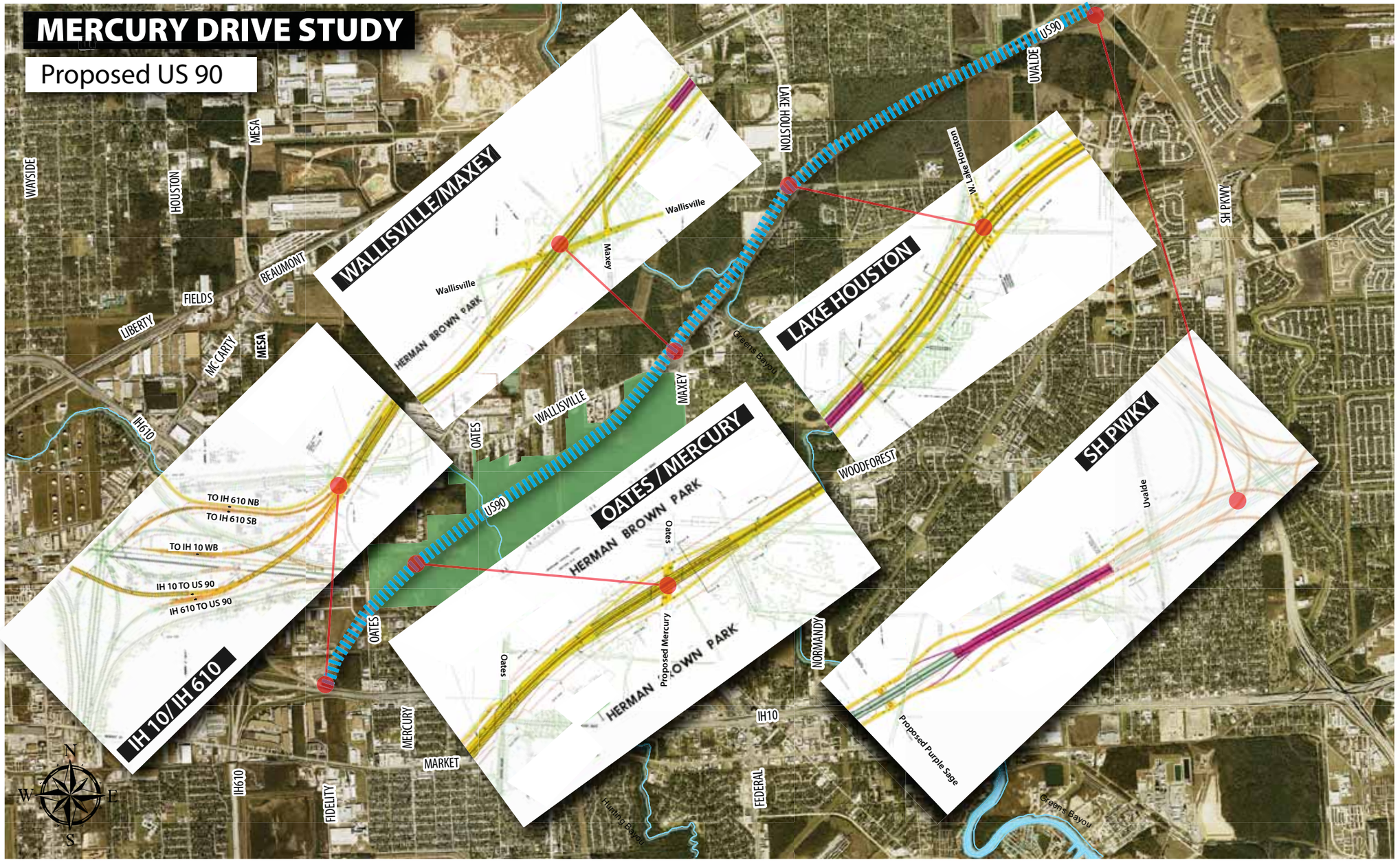
The existing ROW for Mercury Drive is sufficient width which will accommodate an improved four lane boulevard section. The Technical Review Committee's assessment for Mercury Drive from 2007 clearly indicates that along the portion of Mercury Drive where there is an existing 80' ROW, two 25' wide paving sections and a 13' wide median for landscaping could be reconstructed. The remainder of Mercury Drive would be reconstructed as two 25' paving sections and a 31' wide median for landscaping where the existing ROW is 100' in width. Based on the Herman Brown Park deeds 100-feet of ROW exist for the portion of Mercury Drive within Herman Brown Park. Thus the four-lane boulevard cross section could be extended up to US 90.

US 90

The proposed US 90 under construction will allow for the extension of the existing US 90 (Crosby Freeway) which presentlhy terminates at E. Sam Houston (SH) Parkway to extend to IH 10 and IH 610. Currently these trips, generated as far away as the Crosby/ Dayton area, are diverted to the SH Parkway & IH 10, or to the Beaumont Highway & McCarty Road. Proposed US 90 will consist of six main-lanes between the SH Parkway and Mercury Drive. The portion of US 90 between Mercury Drive and IH 10 will have four -lanes which could be restriped to six lanes in the future. There are planned frontage roads with three lanes in each direction between Maxey Road and SH Parkway. There are no frontage roads planned along Herman Brown Park west of the Wallisville Road interchange mainly due to right-of-way limitations and restricted access considerations for the park. The planned interchanges along US 90 between IH 10 and SH Parkway are – Mercury/Oates, Wallisville/Maxey, S. Lake Houston Parkway, Purple Sage and Uvalde. The proposed US 90/IH 10/Loop 610 interchange will allow for the following connections (Exhibit 20):

- IH 10 east-bound to US 90
- IH10 E/W to US 610 N/S
- US 90 to IH 10 west-bound
- US 90 to IH 610 south-bound
- US 90 to IH 610 north-bound via frontage roads
- IH 610 N/S to IH 10 E/W
- IH 610 north-bound to US 90

The IH 10 west-bound to US 90, and US 90 to IH 10 east-bound connections were not included in the TxDOT design and are not programmed for future construction. Without these connections trips generated in the northern portions of the study area must utilize north-south thoroughfares and major roads to access IH 10 east-bound. Currently that only means Maxey Road or IH 610 will take traffic north of the park to east-bound IH 10. The proposed Mercury/Oates interchange with US 90 is approximately one-half mile east of the US 90/IH10/Loop 610 interchange. The planned extension of Mercury Drive between IH 10 to US 90 would have allowed a third option for east-bound IH 10 traffic. The Maxey/US 90 interchange allows for trips to IH 10 east-bound by using Maxey Road. Similarly trips from IH 610 south-bound to US 90 would use Wallisville Road to connect to US 90. The IH 610/Wallisville intersection is only 1.1 mile north of US 90/IH10/Loop 610 interchange.



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2. TDM Average Daily Traffic (ADT) & Volume-to-Capacity (V/C) Ratio

The existing ADT and V/C Ratio data was obtained from CMP for the base year 2007 is listed in Table No. 04. The data for Level of Service (LOS) under existing conditions is also summarized. The data indicates that Federal/Maxey near IH 10, Mercury south of IH 10, McCarty between IH 610 and Beaumont Highway, and Wallisville Road between Mesa and Oates roads are operating at a LOS E or F.

The Highway Capacity Manual and AASHTO Geometric Design of Highways and Streets list the following descriptions for levels of service:

A = Free flow

B = Reasonably free flow

C = Stable flow

D = Approaching unstable flow

E = Unstable flow

F = Forced or breakdown flow

The following street segments are evaluated within this study:

- Normandy Dr from IH 10 to Woodforest Dr.
- Normandy Dr. from Woodforest Dr. to Wallisville Rd.
- Federal/Maxey Rd. from IH 10 to Woodforest St.
- Federal/Maxey Rd. from Woodforest St. to Wallisville Rd.
- Oates from IH 10 to Wallisville Rd.
- Oates from Wallisville to Beaumont
- Mercury from Market to IH10
- Mercury from IH 10 to US 90
- Mercury/ Oates from US 90 to Wallisville
- Market St. from Normandy to Federal/Maxey
- Market St. from Federal/Maxey to Holland
- Market St. from Holland to Mercury
- Market St. from Mercury to IH 610
- Gellhorn from Market to IH 610
- Gellhorn from IH 610 to Wallisville
- Mesa from Wallisville to Beaumont
- Mesa from Beaumont to Ley
- MCCarty from IH 610 to Beaumont
- Wallisville from IH 610 to Mesa
- Wallisville from Mesa to Oates
- Wallisville from Oates to Maxey
- Wallisville from Maxey to Normandy

The following freeway segments are evaluated within this study:

- US-90 from IH 610 to Mercury
- US-90 from Mercury to Maxey
- IH 10 from IH 610 to Mercury
- IH 10 from Mercury to Holland
- IH 10 from Holland to Federal/Maxey
- IH 610 from IH 10 to Wallisville

Table No. 04 – Street Segment ADT, V/C Ratio & LOS (2007)

STREET	SEGMENT	ADT (2007)	V/C Ratio (Average)	LOS (2007)
Normandy	IH 10 to Woodforest	21,375	0.78	D
Normandy	Woodforest to Wallisville	9,705	0.36	A
Federal/Maxey	IH 10 to Woodforest	28,343	0.95	E
Federal/Maxey	Woodforest to Wallisville	16,529	0.52	B
Oates	IH 10 to Wallisville	1,715	0.3	A
Oates	Wallisville to Beaumont	7,603	0.49	B
Mercury	Market to IH 10	16,024	**1.14**	**F**
Mercury	IH 10 to US 90	N/A	N/A	N/A
Mercury/Oates	US 90 to Wallisville	N/A	N/A	N/A
Market	Normandy to Federal	13,134	0.5	B
Market	Federal to Holland	19,734	0.78	D
Market	Holland to Mercury	13,246	0.5	B
Market	Mercury to IH 610	17,463	0.72	C
Woodforest	Gellhorn to Oates	N/A	N/A	N/A
Gellhorn	Market to IH 610	4,575	0.19	A
Gellhorn	IH 610 to Wallisville	N/A	N/A	N/A
Mesa	Wallisville to Beaumont	N/A	N/A	N/A
Mesa	Beaumont to Ley	16,142	0.57	B
MCCarty	IH 610 to Beaumont	29,298	**1.02**	**F**
Wallisville	IH 610 to Mesa	N/A	N/A	N/A
Wallisville	IH 610 to Oates	27995	**1.05**	**F**
Wallisville	Mesa to Oates	N/A	N/A	N/A
Wallisville	Oates to Maxey	20,721	0.73	C
Wallisville	Maxey to Normandy	10,395	0.39	A

Table No. 05 – Freeway Segment ADT, V/C Ratio & LOS (2007)

Freeway	Segments	ADT	V/C Ratio (Average)	LOS (2007)
US 90	IH 610 to Mercury	N/A	N/A	N/A
US 90	Mercury to Maxey	N/A	N/A	N/A
IH 10	IH 610 to Mercury	226,739	**1.22**	**F**
IH 10	Mercury to Holland	209,101	0.87	E
IH 10	Holland to Maxey	192,952	0.79	D
IH 610	IH 10 to Wallisville	164,199	0.7	C

The existing ADT and Volume-to-Capacity (V/C) Ratio was also obtained for the freeway segments from CMP for the year 2007. Table No. 06 summarizes the existing ADT and LOS for the freeway segments. The segment of IH 10 between Holland/John Ralston and Mercury Dr. has a LOS E, while the segment between Mercury Dr. and IH 610 has a LOS F.

F. OTHER PLANS

The list of projects below in Table No. 06 represents the project on the 2035 Regional Transportation Plan (RTP), Transportation Improvement Program (TIP), and the City of Houston's Capital Improvement Plan and other federally funded projects. The proposed improvement of Gellhorn Drive from IH 610 to McCarty Road on the TIP was canceled after review of the Environmental Site Assessment due to residential neighborhood opposition. The project may be revised to limit the proposed reconstruction between IH 610 and Wallisville Road. The Mercury/Oates project originally planned from IH 10 to Wallisville Road was revised to be implemented from US 90 to Wallisville Road due to neighborhood opposition in 2007.

TxDOT is constructing US 90. It is being extended from IH-10/Loop 610 interchange northeast to the East Sam Houston Parkway. TxDOT let the project in July 2006. US 90 will interchange with Mercury/Oates so that traffic can go east or west on US 90, but no travel lanes will go south into Herman Brown Park or into the Songwood Subdivision. South of US 90, Oates will terminate in a roundabout so that visitors to the park can arrive at a parking facility via US 90 from either direction. The design calls for a gap just south of the US.90 interchange so that park traffic can enter and exit US 90 at Mercury, but through traffic from US 90 to IH 10 would not be allowed.

Table No. 06 – RTP/TIP/CIP Project List

Conformity Year	CSJ # CIP ID	Street	Description	Amount	Status
2015	B20005	Gellhorn Dr - IH 610 to McCarty Rd	Construct 4-lane divided section	$22,718,090	TIP
2015	0912-71-078	Market St at Hunting Bayou	Replace bridge (east bound)	$641,388	TIP
2015	0912-71-079	Market St at Hunting Bayou	Replace bridge and approaches (west bound)	$641,388	TIP
2025	156	McCarty - US 90 to IH10	Smart street improvements	$31,262,000	LONG
2009	N-0625	Mercury/Oates - Wallisville to south of US 90	ROW acq, engg. & construct of two 24' concrete roads w/ curbs, sidewalks, street lighting & necessary underground utilities.	$4,870,000	SHORT
2025	155	Mesa - BW 8 to McCarty	Smart street improvements	$93,548,000	LONG
2015	N/A	Normandy - US 90 to Wallisville	Construct new 4-lane road	$10,755,640	SHORT
2015	N/A	Oates Rd - IH 10 to Market St	Widen to 4-lane undivided	$1,515,360	SHORT
2015	N/A	Oates Rd - N City Limit to Wallisville	Construct 4-lane undivided (in sections)	$23,234,628	SHORT
2015	N-0625	Oates Rd - Wallisville Rd proposed US 90	Widen to 4-lanes	$5,000,000	TIP
2019	0028-02-076	US 90 - 0.5 Mi E of Wallisville 0.15 Mi W of Uvalde	Construct 8 main lanes and 8-lane grade separation at Normandy (phase 2)	$38,150,571	SHORT
N/A	0028-02-083	US 90 at Oates Rd and Mercury Dr	Access roads, exit ramps, u-turns and drainage/detention	$11,610,976	TIP
2009	0028-02-081	US 90 - IH 10 E 0.290 Mi W of Mercury Dr	Construct 6-lane freeway and auxiliary lane with grade separation at Oates road	$16,788,166	TIP
2015	0028-02-086	US 90 - IH 10 E East of Mercury Dr	Restripe main lanes from 4-lane to 6-lanes	$172,983	TIP
2014	N-0626	Wallisville Rd - Lockwood Dr to IH 610 E	Construction of two 24 feet - wide concrete roads with curbs, street lighting, sidewalks and necessary underground utilities. Engineering Design, right of way acquisition and Construction	$70,000,000	TIP
2009	912-71-591	Bike & Hike Trail	Through Herman Brown Park - Within Herman Brown Park to Autumnwood Dr.	$1,553,371	

TIP: Projects that are in the Transportation Improvement Program (1 to 4 years)
SHORT: Projects that are considered Short Range (5 to 10 years)
LONG: Projects that are considered Long Range (11 to 30 years)

III. TRAVEL DEMAND MODEL (TDM) ANALYSIS

This report presents the results of the TDM analysis conducted for the proposed Mercury Drive between IH 10 and proposed US 90 in Houston. The impacts of the project are evaluated following the standards and methodologies set forth by CMP. The TDM analysis is based on levels of service (LOS) and Average Daily Traffic (ADT) for the major streets and freeway segments.

A. Travel Demand Model Process

The H-GAC Regional TDM is a daily model, meaning forecasted traffic volumes are for a 24-hour time period. The TDM software used for the City of Houston model was Cube version 5.1. The Cube package uses the traditional four-step modeling concept of trip generation, trip distribution, mode choice and trip assignment to produce traffic demand forecasts.

The first step, trip generation, involves estimating the number of trips generated in, and attracted to, each traffic analysis zone (TAZ). Each trip on the regional transportation system has both an origin and a destination.

The second step, trip distribution, involves the distribution of the trip ends between all possible zones, accomplished through the use of a mathematical trip distribution model. The third step, mode choice, involves the distribution of the zone-to-zone person trips, resulting from the earlier steps of the process, into trips using available transportation modes between each zone pair. Mode choice models predict traveler's decisions to choose a particular mode of travel.

The fourth step, trip assignment, follows an iterative process. The trip productions and attractions (from trip generation) are converted to origins and destinations (from trip distribution).The output of trip distribution is an origin-destination (O-D) matrix containing total vehicle trips for each O-D pair. Comparisons occur between the results obtained from traffic assignment and the actual traffic volume ground counts in order to complete the validation of the base model. Once the model validation occurs, it is ready for use in the planning and development of forecast networks.

B. Model Development

The CMP was developed using the analysis tools available for the Regional TDM developed by H-GAC for 2007, 2015 and 2035. These analysis options have been constrained to the study area. The H-GAC Regional TDM is a sophisticated regional travel demand model that describes the existing transportation system for the eight –county planning area.

To evaluate existing travel conditions and future travel demand for the City of Houston, a CMP travel demand model will be used that projects future travel patterns and transportation demands based on anticipated transportation system improvements, land use development and demographic forecasts. The TDM estimates the number of vehicles or travelers that will use a specific transportation facility in the future.

The network area was divided into traffic analysis zones. TAZ defines geographic areas utilized to relate travel demand to socio-economic characteristics. H-GAC designated 3,000 detailed TAZ in the Houston-Galveston region, which includes 2,954 internal zones and 46 external stations. The external stations capture external to external and external to local trips into through the region

C. Methodology

This section presents the methods used to determine the traffic conditions for each scenario described below. The figures required for the analysis were obtained from H-GAC. Traffic condition assessment along the study area streets and freeway segments were evaluated using LOS and ADT. LOS is a qualitative description of operating conditions ranging from LOS A i.e. free-flow conditions with little or no delay, to LOS F, i.e. jammed conditions with excessive delays.

Existing Conditions - Existing ADT and V/C ratio was obtained from the base year 2007 CMP.

Baseline Conditions - ADT and V/C ratio are estimated based on the transportation improvements included in the 2035 RTP and the demographic projections. A no build scenario is also evaluated to compare the impacts of the planned improvements or 2035 build out scenario.

Alternatives Conditions - Alternative scenarios are modeled to evaluate the impact on the street segments within the study area and ADT and V/C ratio results are compared against the baseline conditions and the no build scenario.

D. Baseline Conditions

Baseline Conditions represents the proposed improvements to the roadway network for 2035 based on the planned improvements in the 2035 RTP. The proposed improvements in the RTP were assessed as a part of the CMP process. To compare the build-out scenario a no build scenario is also modeled for 2035 using the 2007 roadway network. This scenario includes portion of US 90 currently under construction. Table No. 6 compares the existing, no build and build-out V/C ratio and LOS for the major streets.

EXISTING (2007) (Exhibit 21)

The existing base conditions indicated that Maxey Road north of IH 10 (four lanes with a center turn lane) is already at LOS E, i.e. unstable flow, and has an ADT of 28,343. Mercury Drive south of IH 10 (two-lanes with a center turn lane) is operating at LOS F with and 16,024 ADT. McCarty between IH 610 and Beaumont Highway (four-lanes with a center turn lane) is also at a LOS F and has an ADT of 29,298. Wallisville Road, a four-lane boulevard, between IH 610 & Oates Road borderlines at a LOS E/F with an average ADT of 28,000. IH 10 (six-lanes) between Mercury Drive and IH 610 is also functioning at a LOS F with an ADT of 226,739. IH 610 (eight-lanes) is also functioning at a LOS F with an ADT of 164,199.

NO BUILD (2035) (Exhibit 22)

The no build scenario helps us understand the impact of no improvements in the region through 2035. The scenario includes the population and employment projections in 2035; however, no infrastructure improvements are modeled in this scenario. Since US 90 has been under construction, this scenario includes the portions of US 90 currently under construction, but no other planned improvements. These improvements to US 90 do not include the main lanes of US 90 between Maxey/Wallisville and East Sam Houston Parkway along this section of US 90. Only the frontage road lanes are included. As a result the TDM diverts portions of trips on US 90 to other facilities. Table No. 07 indicates that portions of Normandy, Oates, Mercury and Market would all be at a LOS F by 2035. Maxey Road north of IH 10 is projected to stay at LOS E.

BUILD OUT (2035) (Exhibit 23)

The build-out scenario allows us to understand the future conditions taking into account all the proposed improvements programmed in the 2035 RTP. ADT and V/C ratio are estimated based on the transportation improvements included in the 2035 RTP and the demographic projections. The build-out scenario shows Mercury Drive between IH 10 and US 90 at LOS C. Also a number of segments improve their LOS with the programmed improvements. Segments that severely fail in this scenario are Mercury between IH 10 and Market Street with an ADT of 22,620 as it is not programmed for improvements in the RTP. Also, Wallisville Road between Mesa Road and Oates Road fails with 40,063 ADT on a four-lane roadway. The ADT on Maxey Road between IH 10 and Woodforest and IH 10 is 38,172 and however the LOS is D since the street was classified in the model as an express street.

Table No. 07 – V/C Ratio and LOS for Existing & Baseline Condition

STREET	SEGMENT	Existing		Baseline			
		2007		2035 No Build		2035 Build Out	
		V/C Ratio (Average)	LOS	V/C Ratio (Average)	LOS	V/C Ratio (Average)	LOS
Normandy	IH 10 to Woodforest	0.78	D	**1.04**	**F**	0.92	E
Normandy	Woodforest to Wallisville	0.36	A	0.44	A	0.28	A
Federal/Maxey	IH 10 to Woodforest	0.95	E	0.91	E	0.86	D
Federal/Maxey	Woodforest to Wallisville	0.52	B	0.82	D	0.71	C
Oates	IH 10 to Wallisville	0.3	A	0.58	B	N/A	N/A
Oates	Wallisville to Beaumont	0.49	B	**1.41**	**F**	0.73	D
Mercury	Market to IH 10	**1.14**	**F**	**1.34**	**F**	**1.61**	**F**
Mercury	IH 10 to US 90	N/A	N/A	N/A	N/A	0.68	C
Mercury/Oates	US 90 to Wallisville	N/A	N/A	**1.34**	**F**	**1.12**	**F**
Market	Normandy to Federal	0.5	B	0.78	D	0.62	B
Market	Federal to Holland	0.78	D	**1.1**	**F**	0.96	E
Market	Holland to Mercury	0.5	B	0.74	C	0.64	B
Market	Mercury to IH 610	0.72	C	**1.04**	**F**	0.97	E
Woodforest	Gellhorn to Oates	N/A	N/A	N/A	N/A	N/A	N/A
Gellhorn	Market to IH 610	0.19	A	0.21	A	0.51	B
Gellhorn	IH 610 to Wallisville	N/A	N/A	N/A	N/A	0.38	A
Mesa	Wallisville to Beaumont	N/A	N/A	N/A	N/A	0.45	B
Mesa	Beaumont to Ley	0.57	B	0.94	E	0.88	E
MCCarty	IH 610 to Beaumont	**1.02**	**F**	**1.27**	**F**	**1.08**	**F**
Wallisville	IH 610 to Mesa	N/A	N/A	N/A	N/A	0.88	E
Wallisville	IH 610 to Oates	**1.05**	**F**	**1.27**	**F**	N/A	N/A
Wallisville	Mesa to Oates	N/A	N/A	N/A	N/A	**1.41**	**F**
Wallisville	Oates to Maxey	0.73	C	**1.12**	**F**	0.96	E

Table No. 08 – ADT for Existing & Baseline Condition

STREET	SEGMENT	EXISTING	BASELINE	
		2007 ADT	2035 No Build ADT	2035 Build Out ADT
Normandy	IH 10 to Woodforest	21,375	30,909	26,366
Normandy	Woodforest to Wallisville	9,705	12,611	7,927
Federal/Maxey	IH 10 to Woodforest	28,343	28,712	38,172
Federal/Maxey	Woodforest to Wallisville	16,529	21,001	30,819
Oates	IH 10 to Wallisville	1,715	2,945	
Oates	Wallisville to Beaumont	7,603	20,027	20,315
Mercury	Market to IH-10	16,024	19,452	22,620
Mercury	IH 10 to US 90			19,716
Mercury/ Oates	US 90 to Wallisville		33,749	29,357
Market	Normandy to Federal	13,134	20,399	16,272
Market	Federal to Holland	19,734	28,538	25,327
Market	Holland to Mercury	13,246	20,305	16,777
Market	Mercury to IH-610	17,463	27,016	24,993
Woodforest	Gellhorn to Oates			
Gellhorn	Market to IH-610	4,575	5,799	12,554
Gellhorn	IH 610 to Wallisville			11,107
Mesa	Wallisville to Beaumont			12,691
Mesa	Beaumont to Ley	16,142	26,729	39,012
MCCarty	IH 610 to Beaumont	29,298	36,491	31,114
Wallisville	IH 610 to Mesa			24,293
Waliisville	IH 610 to Oates	27,995	36,450	
Wallisville	Mesa to Oates			40,063
Wallisville	Oates to Maxey	20,721	31,936	27,244
Wallisville	Maxey to Normandy	10,395	31,617	19,362

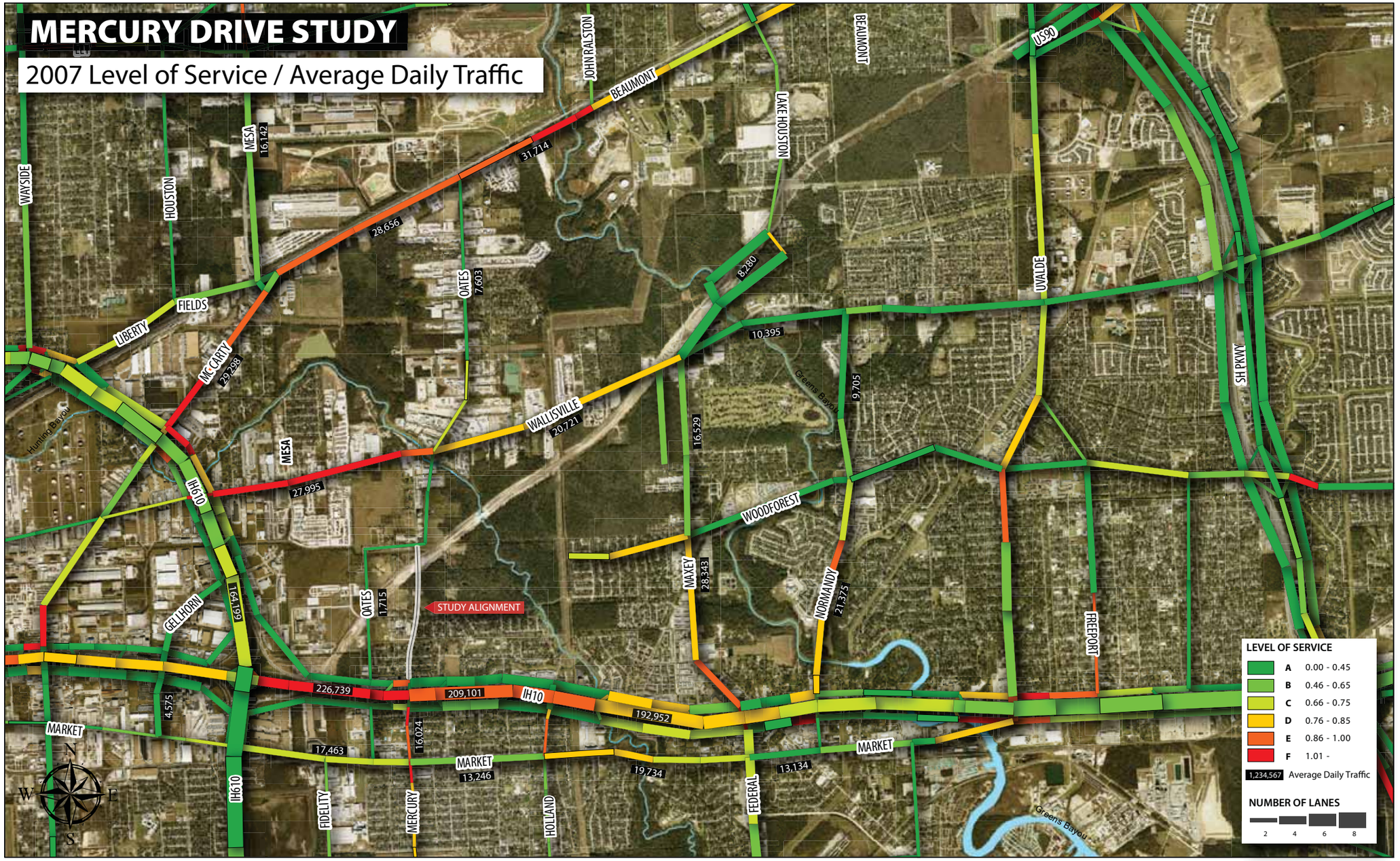

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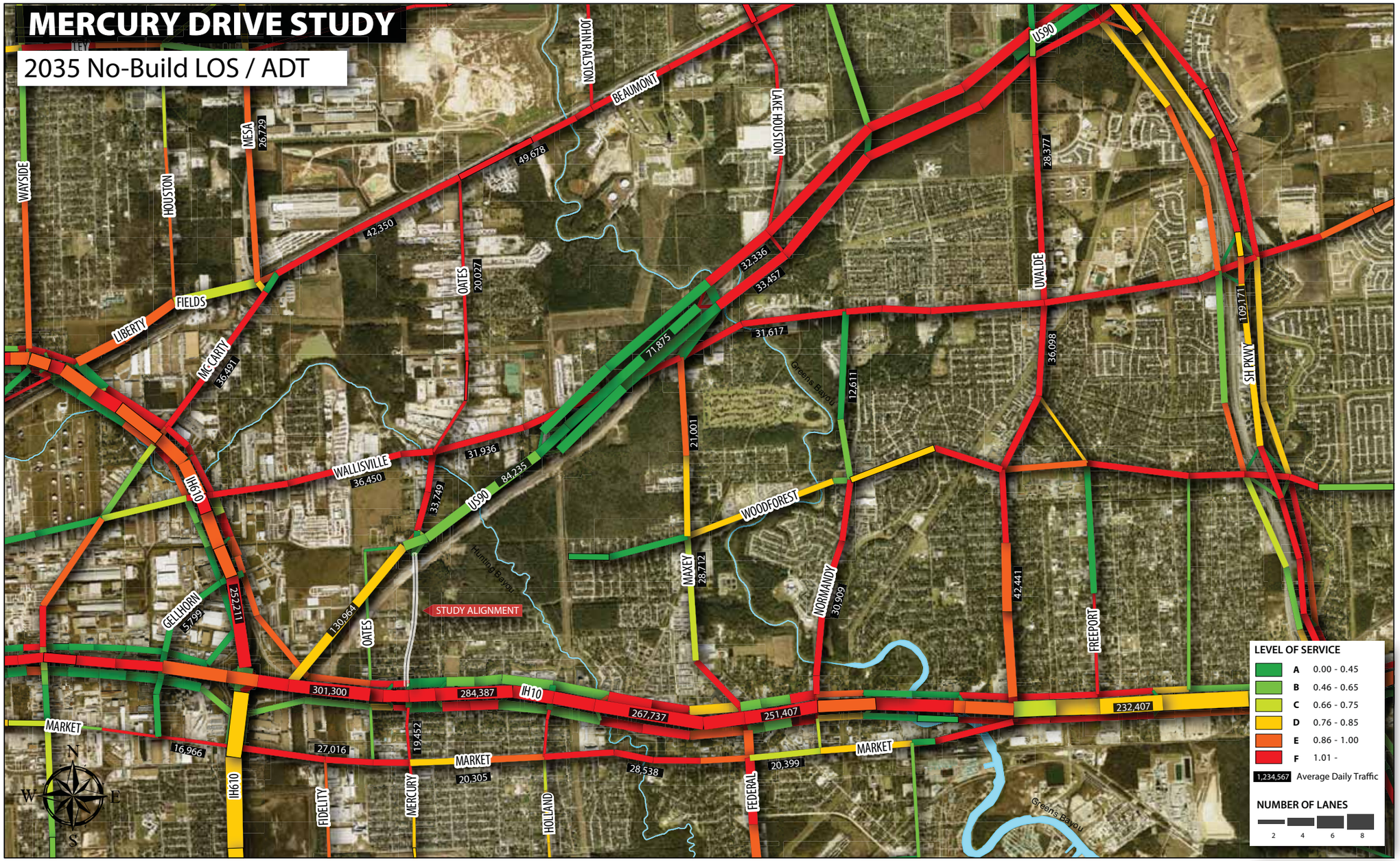
EXHIBIT 21



Planning & Development Department, City of Houston

EXHIBIT 22

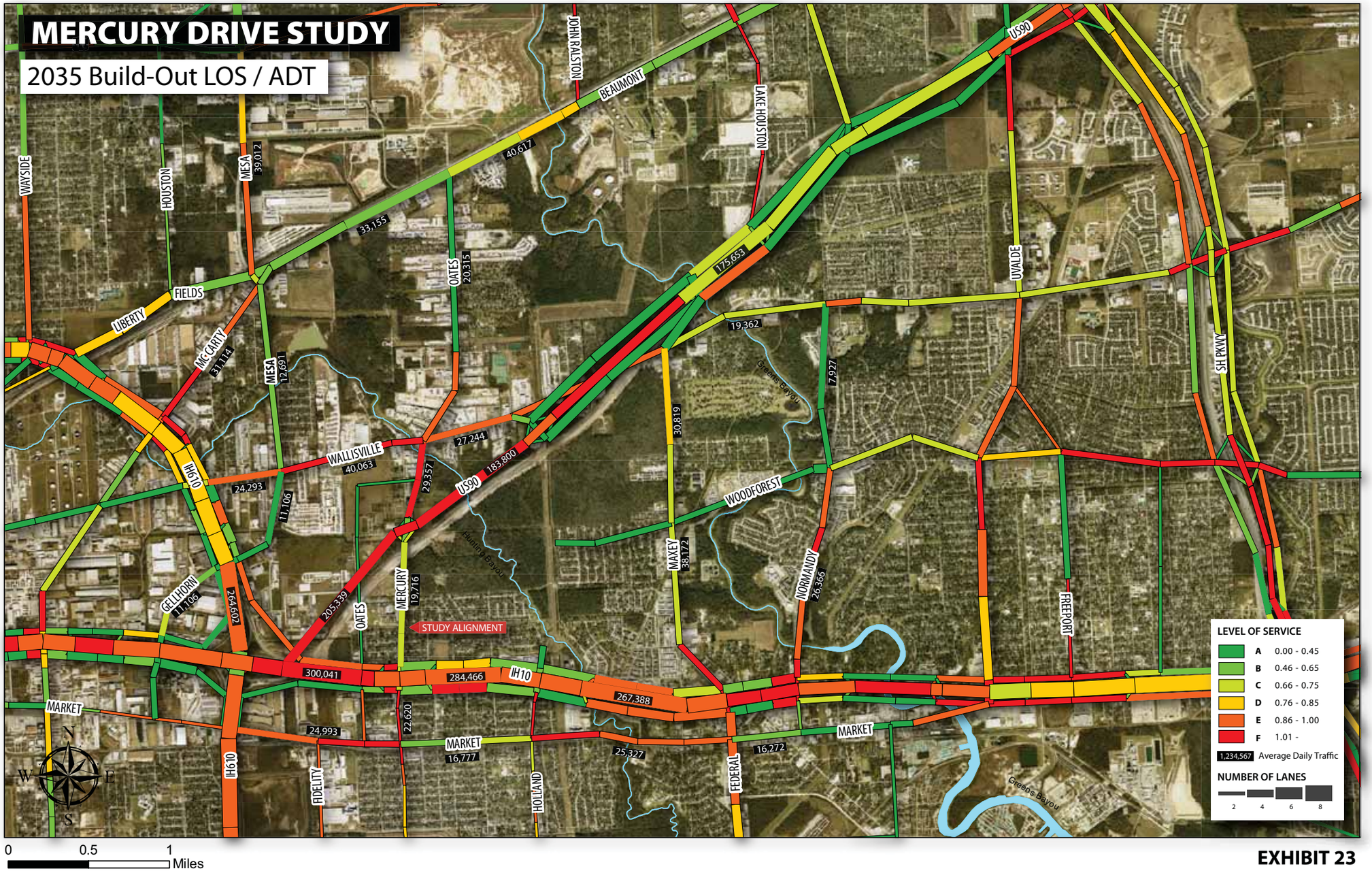

MERCURY DRIVE STUDY
2035 Build-Out LOS / ADT
JOHN RALSTON
BEAUMONT
US90
LAKE HOUSTON
WAYSIDE
HOUSTON
MESA
39,012
40,617
33,155
OATES
20,315
175,653
UVALDE
LIBERTY
FIELDS
MCCARTY
31,114
MESA
12,691
19,362
Greens Bayou
7,927
SH PKWY
30,819
27,244
WALLISVILLE
40,063
IH610
183,800
29,357
24,293
11,106
US90
WOODFOREST
Hunting Bayou
MAXEY
38,172
NORMANDY
26,366
FREEPORT
GELLHORN
11,106
264,692
205,339
OATES
MERCURY
19,716
STUDY ALIGNMENT
300,041
284,466
IH10
267,388
MARKET
24,993
22,620
MARKET
16,777
25,327
16,272
MARKET
IH610
FIDELITY
HOLLAND
FEDERAL
Greens Bayou
N
W
E
S
0
0.5
1
Miles
LEVEL OF SERVICE
A 0.00 - 0.45
B 0.46 - 0.65
C 0.66 - 0.75
D 0.76 - 0.85
E 0.86 - 1.00
F 1.01 -
1,234,567 Average Daily Traffic
NUMBER OF LANES
2
4
6
8

EXHIBIT 23

E. Alternative Conditions

The following alternatives were evaluated:

Alternative A1: Mercury Dr. (two-lane major thoroughfare) between IH 10 & US 90 in 2015

Alternative A2: Mercury Dr. (four-lane major thoroughfare) between IH 10 & US 90 in 2015

Alternative A3: Mercury Dr. (two-lane major thoroughfare) and Woodforest Dr. (two lane collector) between Gellhorn and Oates in 2015

Alternative A4: Mercury Dr. (four-lane major thoroughfare) and Woodforest Dr. (two-lane collector) between Gellhorn & Oates and in 2015

Alternative A5: Mercury Dr. (two-lane major thoroughfare) and Woodforest Dr. (two-lane collector) in 2035

Alternative A6: Mercury Dr. (four-lane major thoroughfare) and Woodforest Dr. (two-lane collector) in 2035

Alternative A7: Woodforest Dr. (two-lane collector) and elimination of Mercury Dr. in 2015

Alternative A8: Woodforest Dr. (two-lane collector) and elimination of Mercury Dr. in 2035

Alternative A9: Mercury Dr. (two-lane collector) and Woodforest Dr. (two-lane collector) in 2015

Alternative A10: Mercury Dr. (two-lane collector) and Woodforest Dr. (two-lane collector) in 2035

Exhibit 33 and 34 compares all of the above 10 alternatives. Two 2015 alternatives and two 2035 scenarios were selected for further analysis. Exhibit 23 and 33 summarizes the existing, baseline and the four alternatives. The four alternatives selected are:

Alternative A2: Mercury Dr. (four-lane major thoroughfare) between IH 10 & US 90 in 2015

Alternative A7: Woodforest Dr. (two-lane collector) and elimination of Mercury Dr. in 2015

Alternative A8: Woodforest Dr. (two-lane collector) and elimination of Mercury Dr. in 2035

Alternative A10: Mercury Dr. (two-lane collector) and Woodforest Dr. (two lane collector) in 2035

The 2015 scenarios, alternative A2 and A7, were selected to further assess the need of Mercury to be improved in 2015. The 2035 options, A8 and A10, evaluate the impact of eliminating Mercury and downgrading it to a collector street (2-lanes).

ALTERNATIVE A2

Based on the programmed RTP, TIP and CIP the following assumptions were made to evaluate the impact on the overall street system in Alternative A2

- Mercury Drive is a constructed as 4-lane boulevard major thoroughfare between IH 10 and US 90
- Mercury/Oates between US 90 and Wallisville is constructed as a 4-lane undivided arterial roadway
- Gellhorn/Mesa between IH 610 and Beaumont Hwy. is constructed as a 4-lane boulevard major thoroughfare.
- The first phase of US 90 would be complete. This phase does not include the main-lanes of US 90 between Maxey/Wallisville and Sam Houston Parkway. Only the frontage road lanes are included along this section of US 90.
- IH 10 has four-lanes in each direction (3-lanes in existing condition - 2007)

The output from the TDM model is represented in Exhibit 24. Mercury Drive between IH 10 and US 90 is expected to be a LOS A with ADT of 9959. LOS A indicates free flow. Similarly Gellhorn/Mesa and US 90 between IH-10 and Maxey is also functioning at a LOS A. When compared to the existing condition the LOS along Wallisville improves from F to B between IH 610 and Gellhorn and from E/F to D/E between Gellhorn and Oates Road. However Oates Road between US 90 and Wallisville has a LOS D/E. The portion of Oates Road, north of Wallisville has a LOS F. Other improvement in the system can be seen along Beaumont Hwy. where LOS changes from existing E/F to C/D in 2015. Also McCarty changes from a LOS D/E in 2007 to C/D in 2015. Maxey between Woodforest and IH 10 changes LOS from existing D/E to B/C. LOS along portions of IH 10, between IH 610 interchange and Maxey, changes from existing D/E/F to D/E.

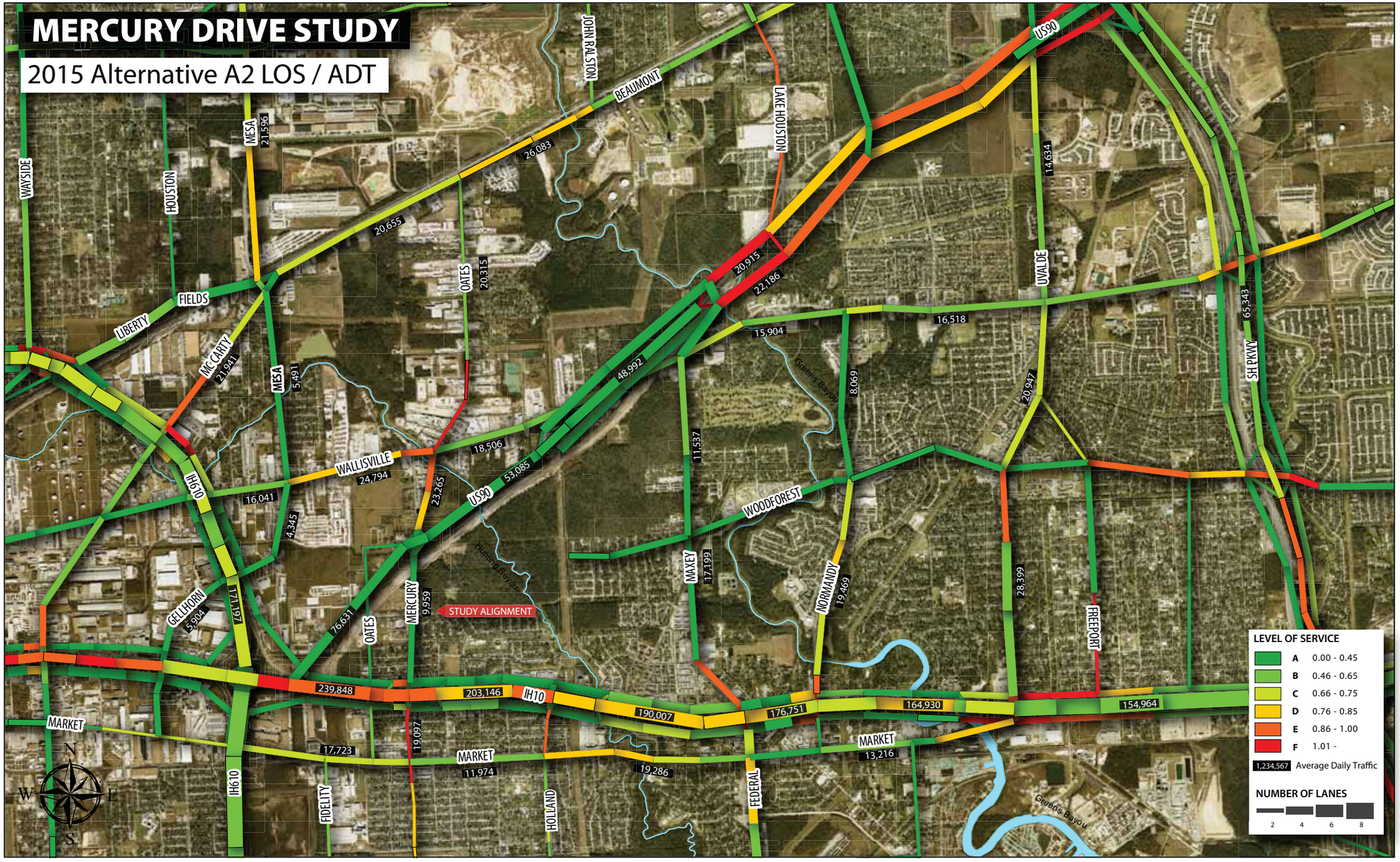


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EXHIBIT 24

ALTERNATIVE A7

Based on the programmed RTP, TIP and CIP the following assumptions were made to evaluate the impact on the overall street system in Alternative A7

- Eliminate the Mercury Drive as 4-lane boulevard major thoroughfare between IH 10 and US 90 from the study network area.
- Mercury/Oates between US 90 and Wallisville is constructed as a 4-lane undivided arterial roadway.
- Gellhorn/Mesa between IH 610 and Beaumont Hwy. is constructed as a 4-lane boulevard major thoroughfare.
- The first phase of US 90 would be complete. This phase does not include the main-lanes of US 90 between Maxey/Wallisville and Sam Houston Parkway. Only the frontage road lanes are included along this section of US 90.
- IH 10 has four-lanes in each direction (3-lanes in existing condition – 2007).

As shown in Exhibit 25 Maxey Road between IH 10 to woodforest is projected to be a LOS B with ADT of 18,459.LOS B indicates reasonably free flow. Due to elimination of Mercury Drive, US 90 between IH 610 and Mercury Drive has the LOS of A with ADT of 80, 947.With completion of the first phase of US 90, the LOS along Wallisville Road would improve from F to B between IH 610 and Gellhorn and from F to D between Gellhorn and Oates. The ADT in Waliisville Road between IH 610 and Mesa reduce with 78% from 28,491 in existing condition to 16,002 in this alternative.

ALTERNATIVE A8

Based on the programmed RTP, TIP and CIP the following assumptions were made to evaluate the impact on the overall street system in Alternative A8

- Eliminate the Mercury Drive as 4-lane boulevard major thoroughfare between IH 10 and US 90 from the study area.
- Mercury/Oates between US 90 and Wallisville is constructed as a 4-lane undivided arterial roadway.
- Gellhorn/Mesa between IH 610 and Beaumont Hwy. is constructed as a 4-lane boulevard major thoroughfare.
- The entire of US 90 is expected to be complete.
- Upgrading the number of lanes in Oates between Wallisville to Beaumont from 2 to 4 lanes.
- IH 10 has five-lanes in each direction (3-lanes in existing condition – 2007).
- Increase the number of lanes in Beaumont Hwy from 4-lanes to 6-lanes

The results of the streets and freeways LOS and ADT are summarized in Exhibit 26. The results show that all of the study streets would continue to operate at vary LOS under this alternative. Exhibit 26 indicates an increase in the ADT on Maxey Road due to elimination of Mercury Drive between IH 10 and US 90. The ADT in Maxey Road between IH 10 and Woodforest increase 7.5 percent from 38,172 in the build out scenario to 41,257 in this alternative. Due to cut the number of connection between IH 10 and US 90, the LOS and ADT in Wallisville and Maxey Road would increase. The LOS in Wallisville from Mesa to Maxey would be F. Also US 90 from IH 610 to Maxey will expect to carry the huge amount of traffic with LOS of F in 2035.

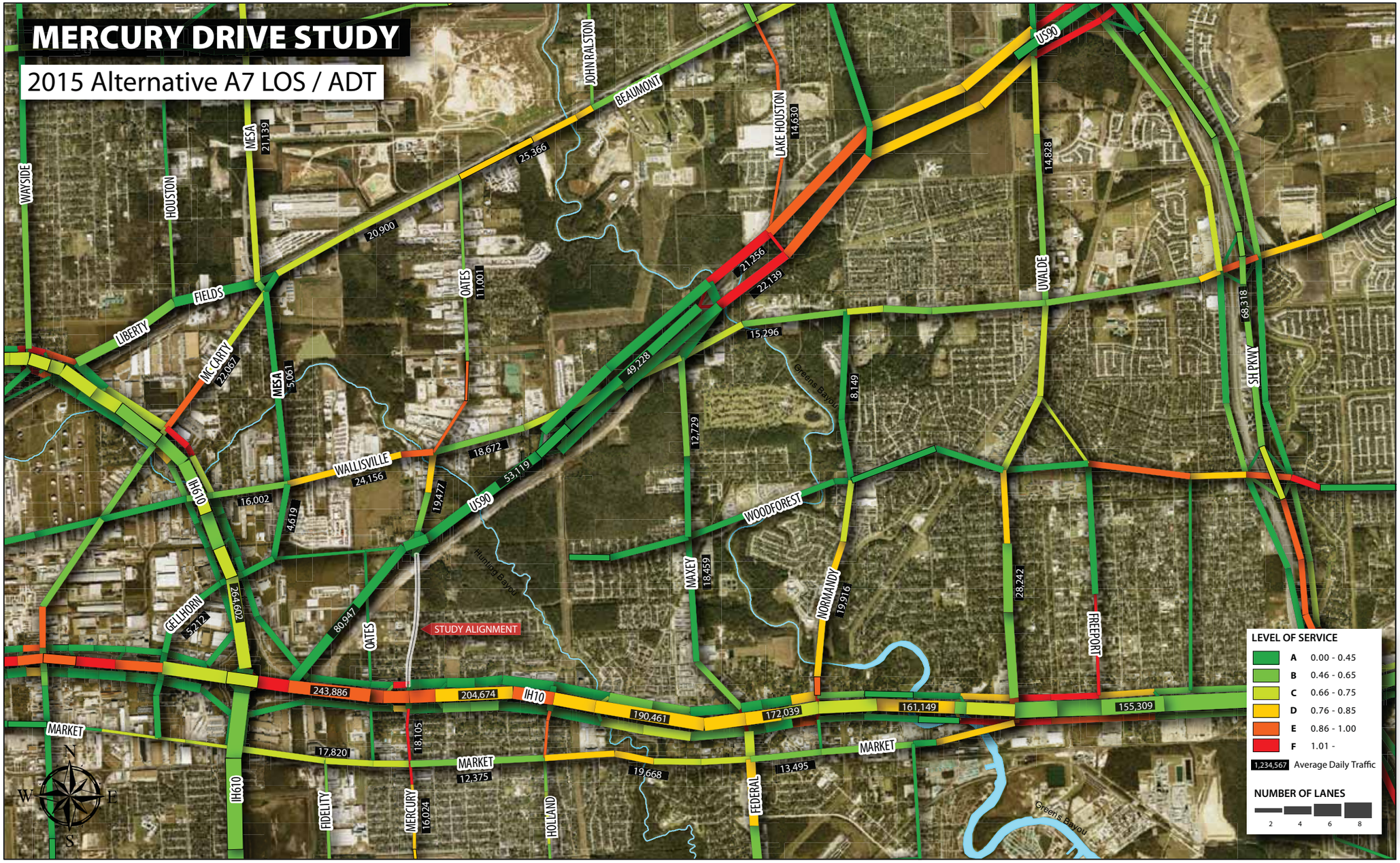

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EXHIBIT 25

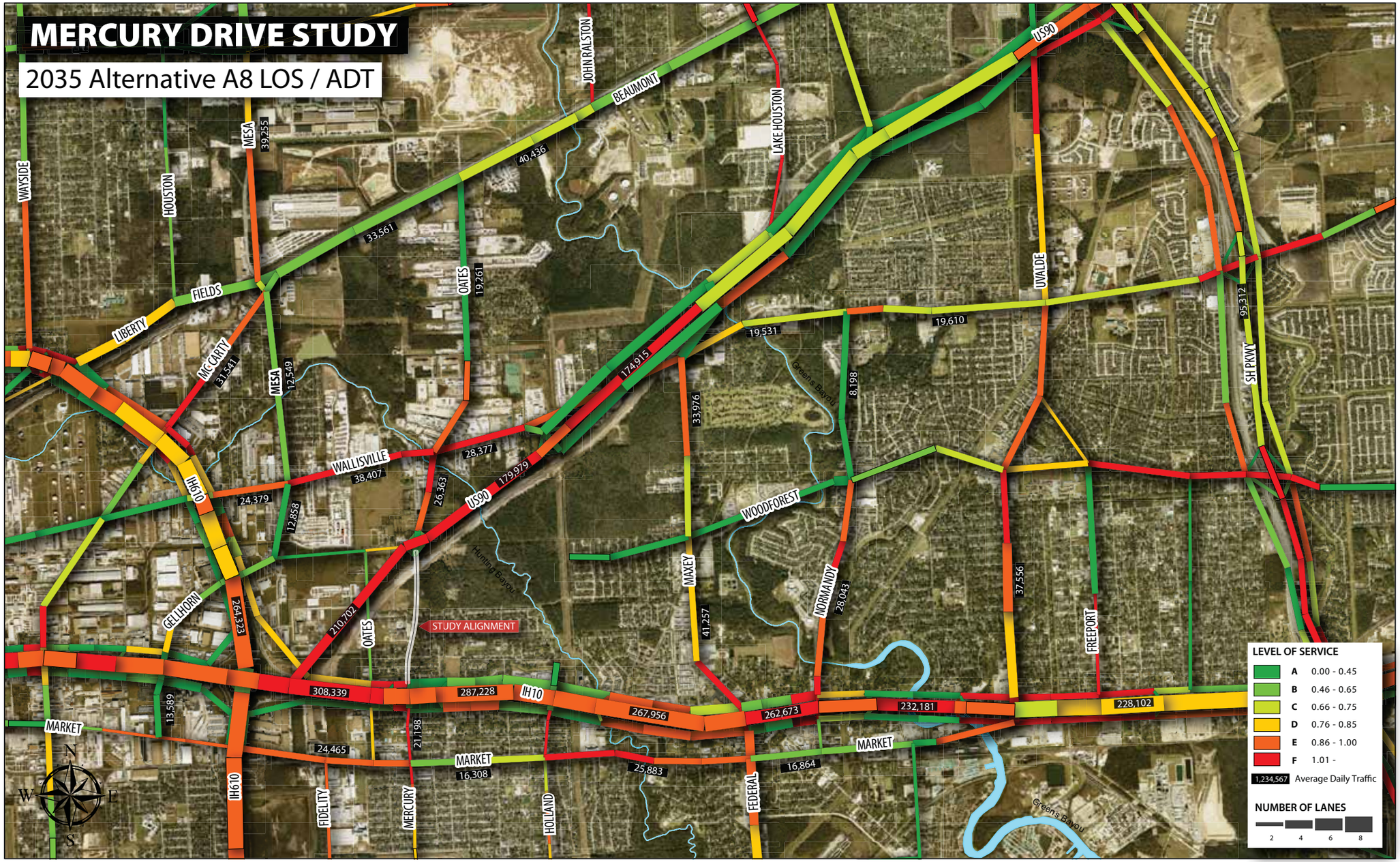

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EXHIBIT 26

ALTERNATIVE A10

Based on the programmed RTP, TIP and CIP the following assumptions were made to evaluate the impact on the overall street system in Alternative A10.

- Change the functional classification of Mercury Drive as 4-lane boulevard major thoroughfare between IH 10 and US 90 to 2- lane Collector Street.
- Mercury/Oates between US 90 and Wallisville is constructed as a 4-lane undivided arterial roadway.
- Gellhorn/Mesa between IH 610 and Beaumont Hwy. is constructed as a 4-lane boulevard major thoroughfare.
- The entire of US 90 is expected to be complete.
- Upgrading the number of lanes in Oates between Wallisville to Beaumont from 2 to 4 lanes.
- IH 10 has five-lanes in each direction (3 lanes in existing condition – 2007).
- Increase the number of lanes in Beaumont Hwy from 4 to 6 lanes

As shown in Exhibit 27 the LOS in Mercury Drive will change from C in build out scenario to F. Statistics indicate a nearly 34 percent reduction in ADT in Mercury Dr, between IH 10 and US 90 due to change the functional classification of the street. The ADT in Normandy Drive from IH 10 to Woodforest will increase 7 percent from 26,366 in build out scenario to 28,383. Similarly the ADT in Gellhorn and Market will enhance with 9 and 3 percent in this scenario respectively. Based on this alternative, the portion of US 90 between IH 610 to Maxey will operate with unacceptable LOS of F and enormous amount of traffic.

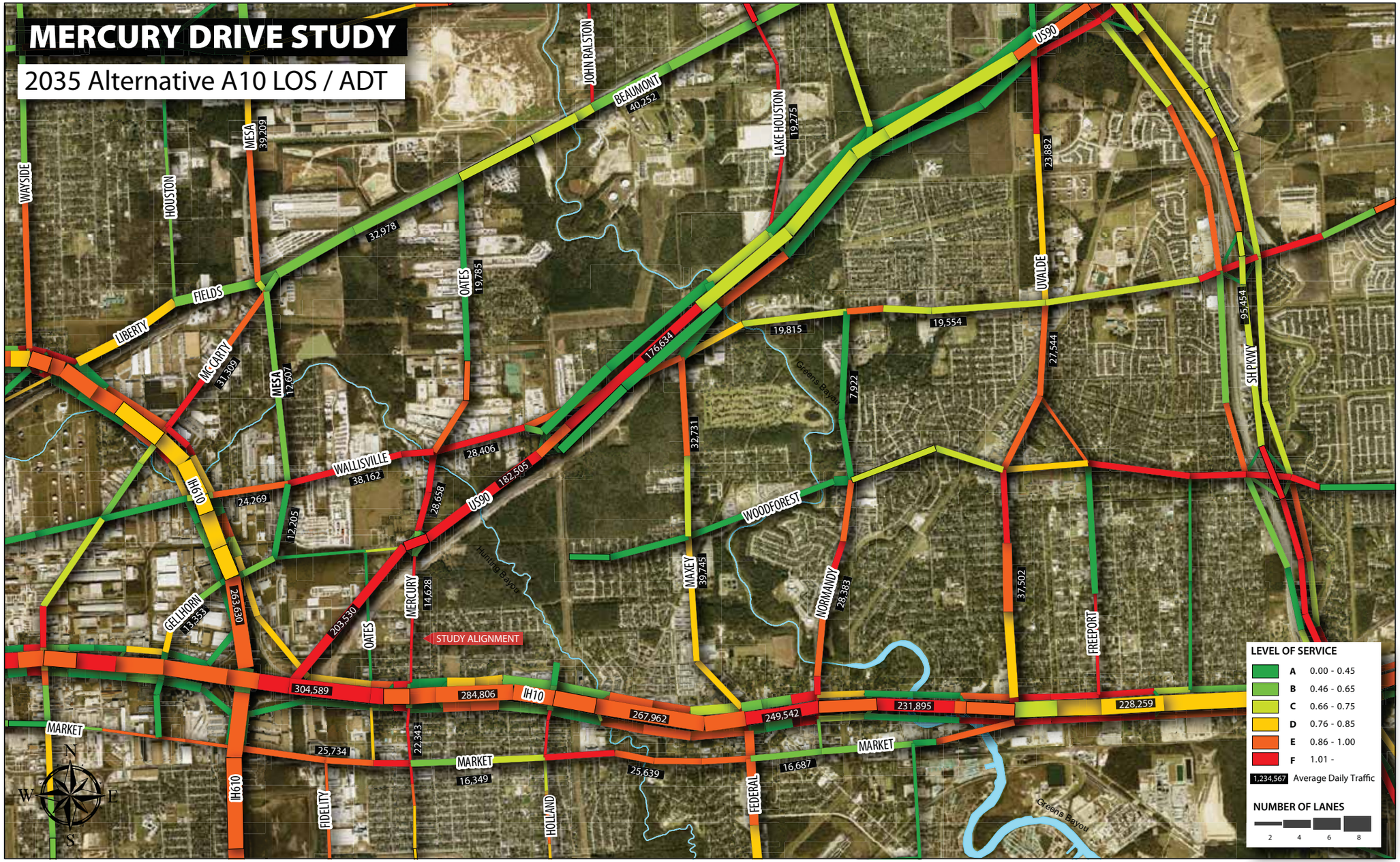

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EXHIBIT 27

2015 ANALYSIS

A visual perspective of the impact of Mercury Drive in this area in 2015 is seen through alternative A2 and A7. The ADT and LOS indicate some peaking and also a downward trend. Some significant results of eliminating the Mercury Drive from the 2015 roadway network according to alternative A7 are:

- An increase in the ADT in Maxey since the inception of the eliminating the Mercury Dr. from roadway network. The ADT in Maxey from IH 10 to Woodforest increase 7 percent from 17,199 to 18,457.
- The most reduction in the ADT is observed on Oates form Wallisville to Beaumont with 84.7 percent reduction. The ADT decrease from 20,315 in alternative A2 to 11,001 in alternative A7.
- Because traffic congestion is so critical on the Loop 610 during the peak hour, it is one of the main freeways considered in this study. The Mercury Dr. is a significant contributor to the overall reduction in ADT in IH-610. Based on alternative A2 and A7, The ADT increase 35 percent in IH 610 from 171,197 in alternative A2 to 264,602 in alternative A7.
- Based on 2015 alternatives, the ADT in some segments do not fluctuate that much with eliminating the Mercury Dr. from the 2015 roadway network. Mercury Dr. will not carry the huge amount of traffic with ADT of 9,959 and LOS of A. There is the change between 1 to 6 percent increases in ADT in the entire roadway network in Alternative A7. Exception is found on IH 610 north-bound, where the ADT will increase with 35.3 percent. Table No. 09 shows the ADT and percentage change in Alternative A2 and A7.

Table No. 09 – ADT Comparison between Alternative A2 & A7

STREET/FREEWAY	SEGMENT	Alternative		% change
		A2 (2015) ADT	A7 (2015) ADT	
Normandy	IH 10 to Woodforest	19,469	19,916	2.2%
Normandy	Woodforest to Wallisville	8,069	8,149	1.0%
Federal/Maxey	IH 10 to Woodforest	17,199	18,459	6.8%
Federal/Maxey	Woodforest to Wallisville	11,537	12,729	9.4%
Oates	IH 10 to Wallisville		1,904	
Oates	Wallisville to Beaumont	20,315	11,001	-84.7%
Mercury	Market to IH-10	19,097	18,105	-5.5%
Mercury	IH 10 to US 90	9,959		
Mercury/ Oates	US 90 to Wallisville	23,265	19,477	-19.4%
Market	Normandy to Federal	13,216	13,495	2.1%
Market	Federal to Holland	19,286	19,668	1.9%
Market	Holland to Mercury	11,974	12,375	3.2%
Market	Mercury to IH-610	17,723	17,820	0.5%
Woodforest	Gellhorn to Oates		139	
Gellhorn	Market to IH-610	5,904	5,212	-13.3%
Gellhorn	IH 610 to Wallisville	4,345	4,619	5.9%
Mesa	Wallisville to Beaumont	5,491	5,061	-8.5%
Mesa	Beaumont to Ley	21,596	21,139	-2.2%
MCCarty	IH 610 to Beaumont	21,941	22,067	0.6%
Wallisville	IH 610 to Mesa	16,041	16,002	-0.2%
Wallisville	Mesa to Oates	24,794	24,156	-2.6%
Wallisville	Oates to Maxey	18,506	18,672	0.9%
Wallisville	Maxey to Normandy	15,904	15,296	-4.0%
US 90	IH 610 to Mercury	76,631	80,947	5.3%
US 90	Mercury to Maxey	51,036	51,185	0.3%
IH 10	IH 610 to Mercury	239,848	243,886	1.7%
IH 10	Mercury to Holland	203,146	204,674	0.7%
IH 10	Holland to Maxey	190,007	190,461	0.2%
IH 610	IH 10 to Wallisville	171,197	264,602	35.3%

Table No. 10 – V/C Ratio & LOS Comparison between Alternative A2 & A7

STREET/FREEWAY	SEGMENT	ALTERNATIVE			
		A2 (2015)		A7 (2015)	
		V/C	LOS	V/C	LOS
Normandy	IH 10 to Woodforest	0.65	C	0.67	C
Normandy	Woodforest to Wallisville	0.28	A	0.28	A
Federal/Maxey	IH 10 to Woodforest	0.54	B	0.58	B
Federal/Maxey	Woodforest to Wallisville	0.4	A	0.4	A
Oates	IH 10 to Wallisville	N/A	N/A	0.36	A
Oates	Wallisville to Beaumont	0.77	D	0.79	D
Mercury	Market to IH 10	**1.36**	**F**	**1.19**	**F**
Mercury	IH 10 to US 90	**0.38**	**A**		
Mercury/Oates	US 90 to Wallisville	0.88	E	0.78	D
Market	Normandy to Federal	0.5	B	0.51	B
Market	Federal to Holland	0.73	C	0.76	D
Market	Holland to Mercury	0.46	B	0.47	B
Market	Mercury to IH 610	0.67	C	0.67	C
Woodforest	Gellhorn to Oates			N/A	N/A
Gellhorn	Market to IH 610	0.19	A	0.23	A
Gellhorn	IH 610 to Wallisville	0.14	A	0.16	A
Mesa	Wallisville to Beaumont	0.19	A	0.18	A
Mesa	Beaumont to Ley	0.76	D	0.74	C
MCCarty	IH 610 to Beaumont	0.76	D	0.82	D
Wallisville	IH 610 to Mesa	0.56	B	0.56	B
Wallisville	Mesa to Oates	0.84	D	0.85	D
Wallisville	Oates to Maxey	0.61	B	0.74	C
Wallisville	Maxey to Normandy	0.62	B	0.61	B
US 90	IH 610 to Mercury	0.43	A	0.43	A
US 90	Mercury to Maxey	0.29	A	0.29	A
IH 10	IH 610 to Mercury	0.99	E	0.94	E
IH-10	Mercury to Holland	0.83	D	0.85	D
IH 10	Holland to Maxey	0.8	D	0.78	D
IH 610	IH 10 to Wallisville	0.67	C	0.66	C

2035 ANALYSIS

As explained in alternative A8 change the functional classification of Mercury Dr. between IH 10 and US 90 is not appropriate, because the LOS change from C in build out scenario to F. Some significant findings of the comparison between build out scenario and alternative A8 are:

- The ADT increase to 7.5 and 9.3 percent in Maxey from IH 10 to Woodforest and Woodforest to Wallisville respectively. Also the LOS in Maxey from D/C changes to E/D with elimination of Mercury Dr. from roadway network.
- Delays at Maxey and IH 10 will increase since the ADT just north of IH 10 is 47,599 with the north bound segment carrying 28,326 trips and south bound segment carrying 19,273 trip. Maxey can not carry the average ADT of 41,257 from IH 10 to Woodforest in alternative A8, therefore will warrant upgrading the number of lane from 4 to 6 with access management and raised median to prevent the left turn failure in this segment.
- Based on 2035 build out scenario, Mercury Dr. will carry acceptable ADT with 19,716 and LOS of C. The truck trip on Mercury Dr. is approximately 4.8 percent with an ADT of 955. 4.8 percent is an acceptable number of truck trips on a major thoroughfare in this area, however it is not recommended on a residential subdivision street.

Some of the proposed benefits of the Mercury Drive in this area are:

- Reduce travel time and return of traffic flow to normal
- Reduce vehicle idling and emissions
- Reduce traffic congestion impact on the local economy

Table No. 11 and 12 shows that the ADT and LOS for the 2035 build out and alternative scenarios.

Table No. 11 – V/C Ratio & LOS for 2035 Build Out and Alternative A8 & A10

STREET/FREEWAY	SEGMENT	2035 Build Out		A8 (2035)		A10 (2035)	
		V/C	LOS	V/C	LOS	V/C	LOS
Normandy	IH 10 to Woodforest	0.92	E	0.93	E	0.94	E
Normandy	Woodforest to Wallisville	0.28	A	0.28	A	0.28	A
Federal/Maxey	IH 10 to Woodforest	0.85	D	0.93	E	0.9	E
Federal/Maxey	Woodforest to Wallisville	0.71	C	0.77	D	0.75	D
Oates	IH 10 to Wallisville	N/A	N/A	0.57	B	N/A	N/A
Oates	Wallisville to Beaumont	0.77	D	0.76	D	0.68	C
Mercury	Market to IH 10	**1.61**	**F**	**1.35**	**F**	**1.6**	**F**
Mercury	IH 10 to US 90	**0.68**	**C**			**1.15**	**F**
Mercury/Oates	US 90 to Wallisville	**1.12**	**F**	0.98	E	**1.06**	**F**
Market	Normandy to Federal	0.62	B	0.64	B	0.64	B
Market	Federal to Holland	0.96	E	0.98	E	**1.01**	**F**
Market	Holland to Mercury	0.64	B	0.62	B	0.6	B
Market	Mercury to IH 610	0.97	E	0.98	E	0.97	E
Woodforest	Gellhorn to Oates			0.39	A	0.43	A
Gellhorn	Market to IH 610	0.51	B	0.5	B	0.53	B
Gellhorn	IH 610 to Wallisville	0.38	A	0.44	B	0.42	A
Mesa	Wallisville to Beaumont	0.45	B	0.45	B	0.45	B
Mesa	Beaumont to Ley	0.88	E	0.91	E	0.88	E
MCCarty	IH 610 to Beaumont	**1.08**	**F**	**1.1**	**F**	**1.09**	**F**
Wallisville	IH 610 to Mesa	0.88	E	0.86	E	0.88	E
Wallisville	Mesa to Oates	**1.41**	**F**	**1.35**	**F**	**1.34**	**F**
Wallisville	Oates to Maxey	0.96	E	0.99	E	**1.01**	**F**
Wallisville	Maxey to Normandy	0.74	C	0.74	C	0.75	C
US 90	IH 610 to Mercury	**1.15**	**F**	**1.17**	**F**	**1.17**	**F**
US 90	Mercury to Maxey	**1.03**	**F**	**1.01**	**F**	**1.01**	**F**
IH 10	IH 610 to Mercury	**1.18**	**F**	**1.37**	**F**	**1.18**	**F**
IH-10	Mercury to Holland	0.94	E	0.96	E	0.95	E
IH 10	Holland to Maxey	0.89	E	0.91	E	0.89	E
IH 610	IH 10 to Wallisville	0.84	D	0.83	D	0.82	D

Table No. 12 – ADT for 2035 Build Out and Alternative A8 & A10

STREET/FREEWAY	SEGMENT	BASELINE	ALTERNATIVE		% change between Build Out & A8
		2035 Build Out	A8 (2035)	A10 (2035)	
		ADT	ADT	ADT	
Normandy	IH 10 to Woodforest	26,366	28,043	28,383	6.00%
Normandy	Woodforest to Wallisville	7,927	8,198	7,922	3.30%
Federal/Maxey	IH 10 to Woodforest	38,172	41,257	39,745	7.50%
Federal/Maxey	Woodforest to Wallisville	30,819	33,976	32,731	9.30%
Oates	IH 10 to Wallisville		5,596	3,042	
Oates	Wallisville to Beaumont	20,315	19,261	19,785	-5.50%
Mercury	Market to IH-10	22,620	21,198	22,343	-6.70%
Mercury	IH 10 to US 90	19,716		14,628	
Mercury/ Oates	US 90 to Wallisville	29,357	26,363	28,658	-11.40%
Market	Normandy to Federal	16,272	16,864	16,687	3.50%
Market	Federal to Holland	25,327	25,883	25,639	2.10%
Market	Holland to Mercury	16,777	16,308	16,349	-2.90%
Market	Mercury to IH-610	24,993	24,465	25,734	-2.20%
Woodforest	Gellhorn to Oates		5,417	5,831	
Gellhorn	Market to IH-610	12,554	13,589	13,353	7.60%
Gellhorn	IH 610 to Wallisville	11,107	12,858	12,205	13.60%
Mesa	Wallisville to Beaumont	12,691	12,549	12,607	-1.10%
Mesa	Beaumont to Ley	39,012	39,255	39,209	0.60%
MCCarty	IH 610 to Beaumont	31,114	31,541	31,309	1.40%
Wallisville	IH 610 to Mesa	24,293	24,379	24,269	0.40%
Wallisville	Mesa to Oates	40,063	38,407	38,162	-4.30%
Wallisville	Oates to Maxey	27,244	28,377	28,406	4.00%
Wallisville	Maxey to Normandy	19,362	19,531	19,815	0.90%
US 90	IH 610 to Mercury	205,339	210,702	203,530	2.50%
US 90	Mercury to Maxey	183,800	177,447	179,569	-3.60%
IH 10	IH 610 to Mercury	300,041	308,339	304,589	2.70%
IH 10	Mercury to Holland	284,466	267,956	284,806	-6.20%
IH 10	Holland to Maxey	267,388	267,956	267,962	0.20%
IH 610	IH 10 to Wallisville	264,602	264,323	263,630	-0.10%

The above data provides sufficient evidence that Mercury Drive Makes a positive change in the sub-regional and freeway travel in this area and is one of the vital connections between IH 10 and US 90 playing a critical role in the traffic circulation in this area.

F. Vehicle Miles Traveled (VMT) & Vehicle Hours Traveled (VHT)

In order to fully understand the impact of not connecting Mercury Drive, the VMT and VHT is evaluated with and without Mercury Drive for the year 2035. The 2035 ADT along Mercury Drive, between IH 10 and US 90, from the Build-Out scenario is used for comparing alternatives.

The methodology for analysis is as follows:

- Compute VMT in the study area for two selected alternatives. VMT is a measure of the extent of motor vehicle operation; the total number of vehicle miles travelled within a specific geographic area over a given period of time.
- VMT= Specific Distance * Number of Cars
- VMT= Fuel Use * Fuel Economy or Miles = Gallons * Miles per Gallon
- According to U.S. Department of Energy, Energy Information Administration, and Monthly Energy Review in 2008, the miles per gallon for regular vehicle and average gas price in Houston was 22 and 3.50 respectively
- The estimated vehicle hours traveled (VHT) in the study area for two selected alternatives.
- VHT=Travel Time * Number of Cars
- Calculate the Daily Time Cost
- Daily Time Cost=VHT *Value of the Time in Houston
- Based on Texas Transportation Institute (TTI) Transtar 2003 annual report, the value of time spent in traffic in Houston is 17.24$ per hour.
- Based on 2035 Build-Out projection, the total number of vehicles that use the Mercury Dr. between IH-10 & US-90 will be 19,716.

The selection of the alternative route is explained below.

Alternative A

Use 4-lane Mercury Dr. from IH-10 to US-90, the total distance for this alternative is 0.96 mile

Alternative B

Alternative B is analyzed as two routes B1 and B2 since the shortest distance is not the same route. Local residential streets were not considered as alternative routes since would create a cut through the residential subdivision.

Route B1

Use 2-lane Oates Road north -bound from IH-10 to US-90, the total distance for this alternative is 1.5 miles. The total number of vehicles in this alternative is 10,124.

Route B2

Use Wallisville Road to IH-610 and from IH-610 to IH-10 (south-bound trips), the total distance is 4.10 miles. The total number of vehicles in this alternative is 9,592.

Table No. 13: Distance and Travel Time for Alternatives

ALTERNATIVE	DISTANCE (MILES)	TRAVEL TIME	2035 BUILD-OUT ADT
Alternative A – Via Mercury Drive	0.96	1.24	19,716
Route B1 – Via IH 10 Frontage - Oates	1.5	5.39	10,124
Route B2 – Via Wallisville-IH 610-IH10	4.1	6.42	9,592

Table No. 14: VMT, VHT & Cost Results (2035)

Alternative	VMT	VHT	Daily Fuel Use (Gallons)	Daily Gas Cost	Daily Time Cost	Daily Benefit of Mercury Drive Connection
Alternative A	18,927	24,448	860	$3,011	$423,926	
Route B1	15,186	54,568	690	$2,416	$946,215	$521,695
Route B2	39,327	61,581	1,788	$6,257	$1,067,808	$647,128
Alternative B (B1+ B2)	54,513	116,149	2,478	$8,673	$2,014,024	**$1,168,823**
% Change between Alternative A & B *	65%	79%	65%	65%	79%	

* indicates percentage reduction with the extension of Mercury Drive.

The computation of VMT and VHT clearly indicates that there is 65 and 79 percent reduction respectively with the extension of Mercury Drive to US 90. Similarly the overall daily benefits in 2035 is approximately 1.16 million dollars daily.

IV. CONCLUSION

The findings from the above analysis can be summarized as follows:

History

Historically Mercury and John Ralston were the primary north-south thoroughfares between IH 610 and Maxey. The deletion of John Ralston, north of IH 10, in 1997 leaves Mercury as the only north-south thoroughfare connection, making it important to be preserved.

Study Area & Regional Context

The demographic analysis within the study area clearly indicates a steep increase in job growth within the study area as compared to that within the City Limits of Houston. It also reflects that the population growth is lower than that within Houston's city limits. Maintaining a balance between good thoroughfare connectivity and preserving existing neighborhoods is important for a job and population growth within this region. Without a network of major thoroughfares supporting our transportation system distances between population and employment centers will result in more travel, greater time traveling, and longer travel delays.

Land Use + Street Network

The Land Use Analysis clearly identifies the stable land uses within the region. It also identifies the areas that are vacant or mixed use and have potential to develop or redevelop within the region. The overlay of the Land Use and Transportation network shows that the area with limited connectivity between proposed US 90 and Beaumont Highway have the most potential to develop/redevelop. The lack of thoroughfare connectivity and capacity within this area will negatively impact future growth opportunities with this area. As a result this creates unsafe condition and traffic problems in areas beyond the study area.

Songwood Subdivision

Songwood Subdivision currently suffers little adverse impact from through traffic since Mercury is not improved through Herman Brown Park. Cut-through traffic between Mercury/IH 10 and western Oates Road exists. The residential subdivision has 29 lots that front or side along Mercury Drive. There are 35' and 20' building setbacks for lots fronting and siding on Mercury Drive respectively. Additionally the existing ROW for Mercury Drive is "sufficient width" along this segment. The primary traffic concern is vehicles backing out on to Mercury Drive from lots taking vehicular access from the street. However these circumstances exist along other major thoroughfares throughout the city and are not unique in Houston.

Furr High School

Furr High School has been open since 1961 and takes primary access from the boulevard portion of Mercury Drive. The schools 12,190 acre attendance area extends from Beaumont Highway to the north to Houston Ship Channel on the south, and from Greens Bayou on the east to inside IH 610 on the west. The school's route access analysis indicates a 19 to 61 percent decrease in the length of the trip to school with the proposed Mercury connection.

An analysis of new schools constructed in Houston from 2000 to 2009 indicates that majority of the school campuses are located along major thoroughfare. Schools generate a large number of trips and hence it is important to locate them near arterial streets that allow for better accessibility. The safety concerns regarding neighborhood access across a major thoroughfare can be address through a number of school traffic calming measures. Some of these measures are zero tolerance enforcement, school citation program, speed limit signs, parking restriction, signalized crosswalks, safety patrol and escort service, etc.

Herman Brown Park

Herman Brown Park is one of the nine regional parks in Houston. John Ralston and Woodforest were deleted from the Major Thoroughfare and Freeway Plan to protect the natural preserves. Hence no interchange at John Ralston or frontage road along US 90 was provided other than the interchange at Mercury Drive. Thus Mercury Drive serves as a primary access to the Park as it exists and also in the future. The segment of Mercury Drive within the Herman Brown Park is approximately 1100' (0.2 mile) in length. Portions of this right-of-way are currently being used for access to the park. The existing active use soccer fields are along the west side of Mercury Drive and Herman Brown Pavilion is on the east side. Thus the impact of extending Mercury does not impact functioning of the Park. In fact the park access route analysis clearly identifies that extension of Mercury provides better access to the park from neighborhoods within the study area.

Thoroughfare Spacing

The thoroughfares spacing varies; however, it does not exceed 1.2 miles except in areas where the natural features like Greens Bayou and Hunting Bayou create a larger spacing not exceeding approximately 1.7 miles. The deletion of John Ralston has also extended preferred one mile thoroughfare spacing to 2 miles. The deletion of Mercury from the thoroughfare plan will increase this spacing to 3 miles between Maxey and IH 610. The larger thoroughfare spacing creates limited connectivity in the system unevenly dispersing the traffic on existing network.

Mercury

The existing ROW for Mercury Drive is sufficient width which will accommodate an improved four lane boulevard section. The Technical Review Committee's assessment for Mercury Drive from 2007 clearly indicates that along the portion of Mercury Drive where there is an existing 80' ROW, two 25' wide paving sections and a 13' wide median for landscaping could be reconstructed. The remainder of Mercury Drive would be reconstructed as two 25' paving sections and a 31' wide median for landscaping where the existing ROW is 100' in width. Thus there is no impact on the existing neighborhood for ROW acquisition. The proposed boulevard cross section allows for safer movement of traffic along Mercury Drive.

US 90

The proposed US 90 improvements will allow direct access to IH 10 and IH 610 from north-east Houston. It will reduce traffic on the existing system that relies on the thoroughfare network. However US 90 does not allow for direct connections to and from IH 10 east of the interchange. Part of the reason for the lack of direct connections was the proposed CIP improvement to extend Mercury Drive as originally planned in 2006 and the existing connection at Maxey. The acute angle intersection between IH 10 and US 90 create infeasible options for the connections west of the Mercury Drive interchange.

Travel Demand Model Analysis

The TDM analysis clearly indicates for the need for Mercury Drive in the future. Additionally the ADT numbers indicate that Mercury should be maintained as a major thoroughfare as the alternative considering Mercury Drive as a two-lane collector street indicates a LOS F in 2035. The importance of preserving Mercury can also be seen with the ADT and LOS for Maxey immediately north of IH 10 in options without Mercury connection.

The daily impact of Mercury is well summarized with the VMT and VHT analysis which reduces 65% and 79% respectively with the Mercury Drive connection. Also the daily saving of fuel and time add up to approximately 1.1 million dollars.

The number of truck trips on Mercury Drive is projected to be approximately 4.8% (955). 4.8 percent is an acceptable number of truck trips on a major thoroughfare in this area, however it is not recommended on a residential subdivision street. A future assessment of truck routes in the area closer to when Mercury Drive is planned to be extended is recommended to determine the negative impact of truck on the residential subdivision. A possible solution for reducing truck traffic is creating designated truck routes to avoid large truck through residential sections.

In closing, it is recommended to preserve the existing Mercury Drive alignment as a major thoroughfare on the Major Thoroughfare and Freeway Plan. In principal, it is in the best interest of mobility for current and future residents of the City of Houston to refrain from deleting thoroughfares that have been designated on the Major Thoroughfare and Freeway Plan. Deletion of thoroughfares results in gaps in the thoroughfare system which can not easily be replaced in the future when population growth results in increased demand for travel routes.

V. APPENDIX

1. Truck Traffic

- Trucking Businesses in Houston
- Trucking Businesses in East Houston Area
- Trucking Businesses in Mercury Drive
- Truck Traffic in 2035

2. TDM Results for Scenarios

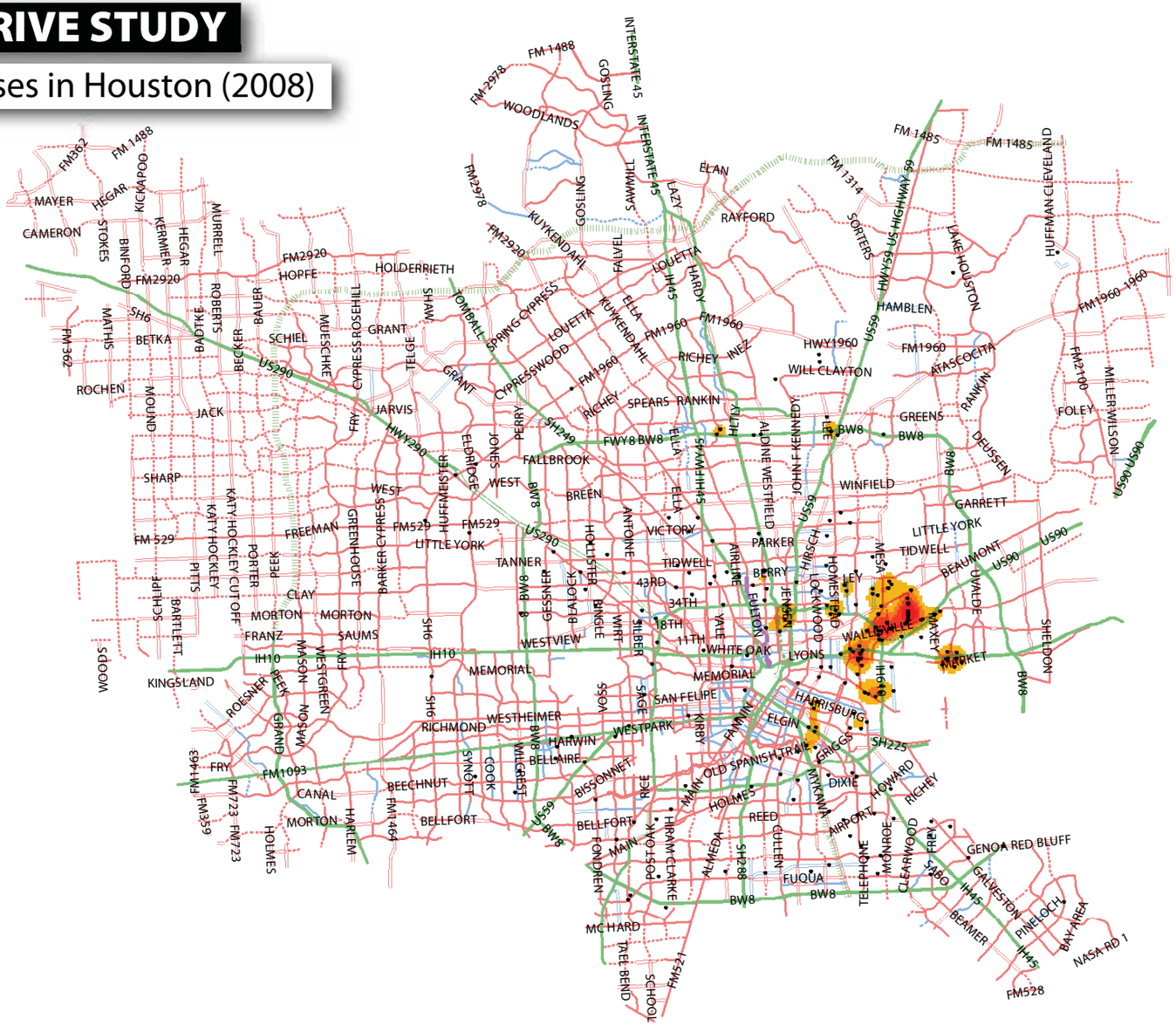
- Average Daily Trac in Selected Scenarios
- Level of Service in Selected Scenarios
- Average Daily Trac in All Scenarios
- Level of Service in All Scenarios

3. Others

- Houston Regional Parks
- Landfills in Mercury Drive

MERCURY DRIVE STUDY

Trucking Businesses in Houston (2008)



Planning & Development Department, City of Houston

EXHIBIT 29

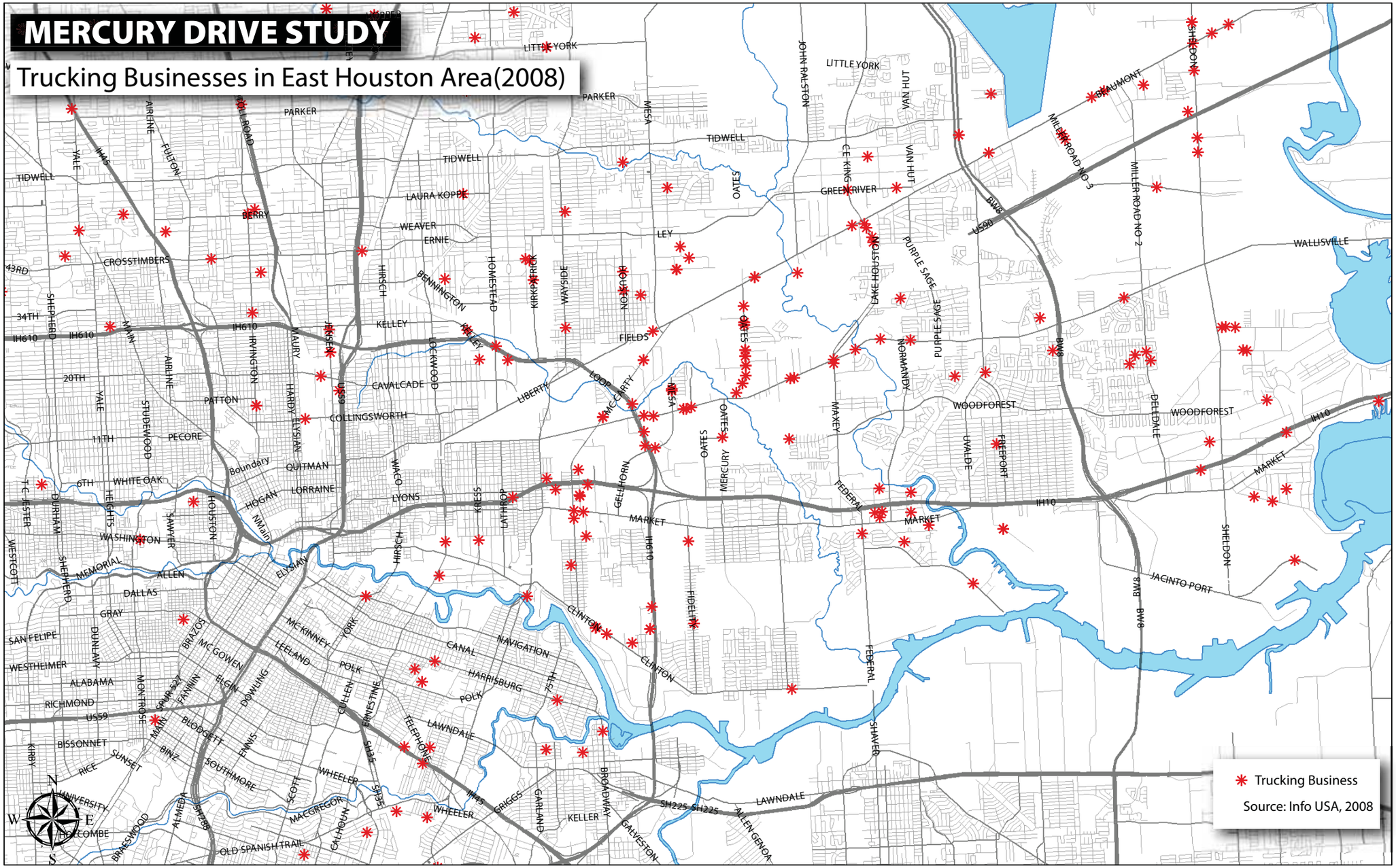
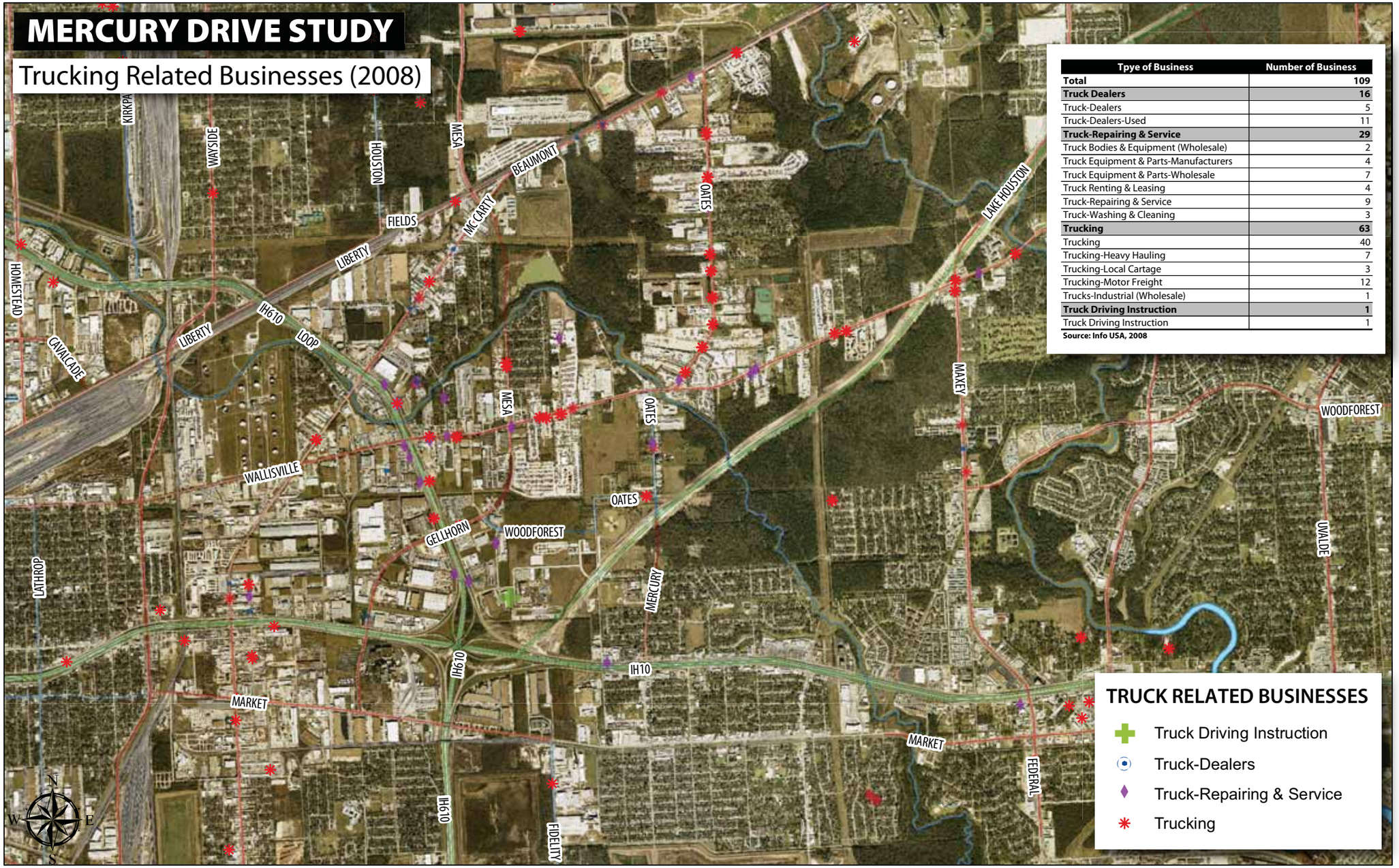

MERCURY DRIVE STUDY
Trucking Businesses in East Houston Area(2008)
Trucking Business
Source: Info USA, 2008
0
2.5
5
Miles
Planning & Development Department, City of Houston

EXHIBIT 30

MERCURY DRIVE STUDY

Trucking Related Businesses (2008)



Tpye of Business	Number of Business
Total	**109**
Truck Dealers	**16**
Truck-Dealers	5
Truck-Dealers-Used	11
Truck-Repairing & Service	**29**
Truck Bodies & Equipment (Wholesale)	2
Truck Equipment & Parts-Manufacturers	4
Truck Equipment & Parts-Wholesale	7
Truck Renting & Leasing	4
Truck-Repairing & Service	9
Truck-Washing & Cleaning	3
Trucking	**63**
Trucking	40
Trucking-Heavy Hauling	7
Trucking-Local Cartage	3
Trucking-Motor Freight	12
Trucks-Industrial (Wholesale)	1
Truck Driving Instruction	**1**
Truck Driving Instruction	1

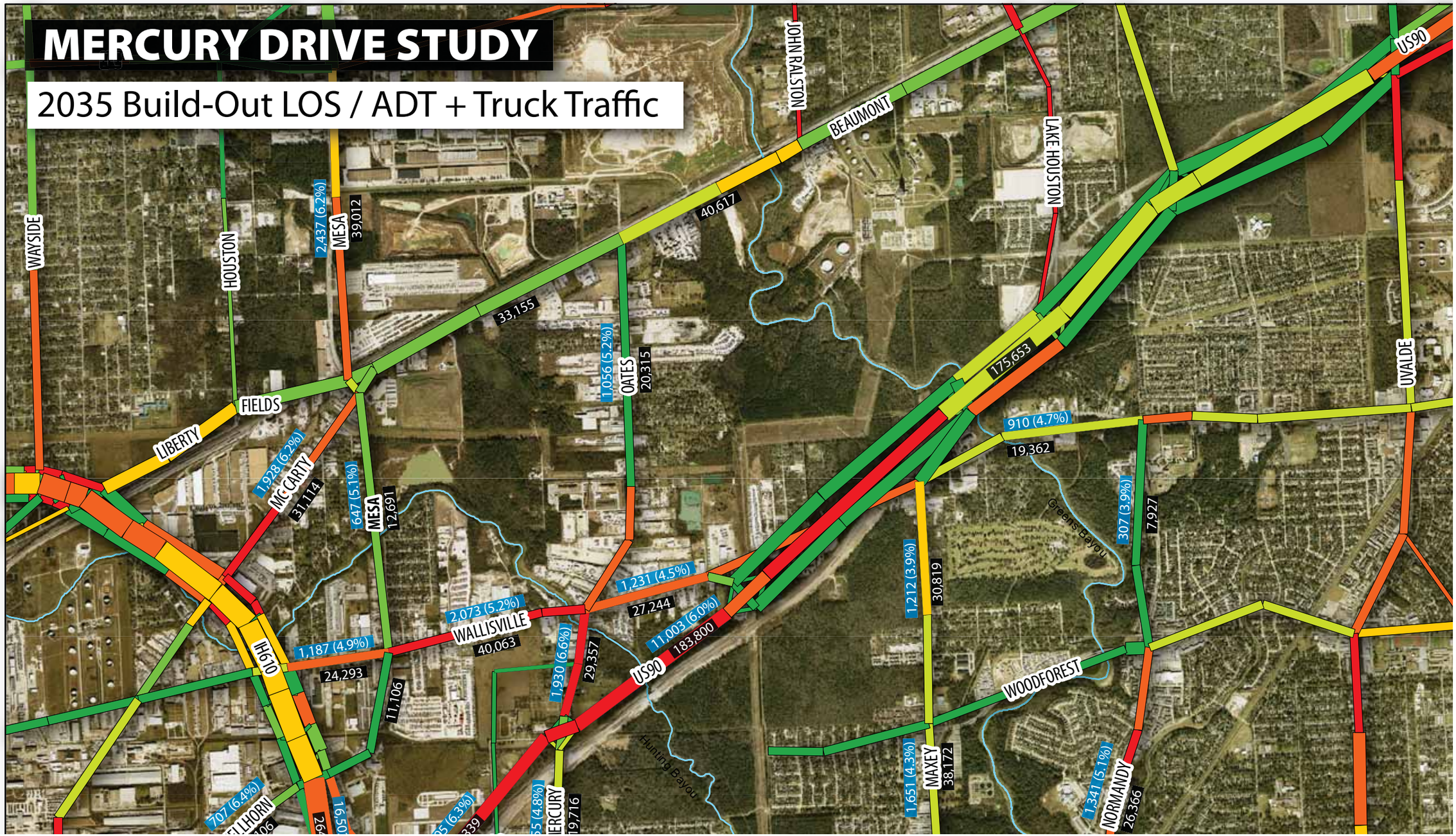
Source: Info USA, 2008

TRUCK RELATED BUSINESSES

- Truck Driving Instruction
- Truck-Dealers
- Truck-Repairing & Service
- Trucking

Planning & Development Department, City of Houston

EXHIBIT 31


MERCURY DRIVE STUDY
2035 Build-Out LOS / ADT + Truck Traffic
WAYSIDE
HOUSTON
MESA
2,437 (6.2%)
39,012
JOHN RALSTON
BEAUMONT
40,617
LAKE HOUSTON
US90
33,155
1,056 (5.2%)
OATES
20,315
175,653
UVALDE
FIELDS
LIBERTY
910 (4.7%)
19,362
1,928 (6.2%)
MCCARTY
31,114
647 (5.1%)
MESA
12,691
Greens Bayou
307 (3.9%)
7,927
1,212 (3.9%)
30,819
1,231 (4.5%)
27,244
2,073 (5.2%)
WALLISVILLE
40,063
11,003 (6.0%)
183,800
1,187 (4.9%)
24,293
11,106
1,930 (6.6%)
29,357
US90
WOODFOREST
Hunting Bayou
1,651 (4.3%)
MAXEY
38,172
1,341 (5.1%)
NORMANDY
26,366
707 (6.4%)
MERCURY
19,716

MERCURY DRIVE STUDY

Average Daily Traffic in Selected Scenarios

Street/Freeway	Segment	EXISTING	BASELINE		ALTERNATIVE			
		2007 ADT	2035 NO BUILD ADT	2035 BUILD OUT ADT	A2 (2015) ADT	A7 (2015) ADT	A8 (2035) ADT	A10 (2035) ADT
Normandy	IH-10 to Woodforest	21,375	30,909	26,366	19,469	19,916	28,043	28,383
Normandy	Woodforest to Wallisville	9,705	12,611	7,927	8,069	8,149	8,198	7,922
Federal/Maxey	IH-10 to Woodforest	28,343	28,712	38,172	17,199	18,459	41,257	39,745
Federal/Maxey	Woodforest to Wallisville	16,529	21,001	30,819	11,537	12,729	33,976	32,731
Oates	IH-10 to Wallisvile	1,715	2,945			1,904	5,596	3,042
Oates	Wallisvile to Beaumont	7,603	20,027	20,315	11,423	11,001	19,261	19,785
Mercury	Market to IH-10	16,024	19,452	22,620	19,097	18,105	21,198	22,343
Mercury	IH-10 to US-90			**19,716**	**9,959**			14,628
Mercury/ Oates	US-90 to Wallisvile		33,749	29,358	23,265	19,477	26,363	28,658
Market	Normandy to Federal	13,134	20,399	16,272	13,216	13,495	16,864	16,687
Market	Federal to Holland	19,734	28,538	25,327	19,286	19,668	25,883	25,639
Market	Holland to Mercury	13,246	20,305	16,777	11,974	12,375	16,308	16,349
Market	Mercury to IH-610	17,463	27,016	24,993	17,723	17,820	24,465	25,734
Woodforest	Gellhorn to Oates					139	5,417	5,831
Gellhorn	Market to IH-610	4,575	5,799	12,554	5,904	5,212	13,589	13,353
Gellhorn	IH-610 to Wallisville			11,106	4,345	4,619	12,858	12,205
Mesa	Wallisvile to Beaumont			12,691	5,491	5,061	12,549	12,607
Mesa	Beaumont to Ley	16,142	26,729	39,012	21,596	21,139	39,255	39,209
MCCarty	IH-610 to Beaumont	29,298	36,491	31,114	21,941	22,067	31,541	31,309
Wallisville	IH-610 to Mesa			24,293	16,041	16,002	24,379	24,269
Waliisville	IH-610 to Oates	27,170	36,450					
Wallisville	Mesa to Oates			40,063	24,794	24,156	38,407	38,162
Wallisville	Oates to Maxey	20,721	31,936	27,244	18,506	18,672	28,377	28,406
Wallisville	Maxey to Normandy	10,395	31,617	19,362	15,904	15,296	19,531	19,815
US 90	IH 610 to Mercury		130,964	205,339	76,631	80,947	210,702	203,530
US 90	Mercury to Maxey		78,056	183,800	51,036	51,185	177,447	179,569
IH 10	IH 610 to Mercury	226,739	301,300	300,041	239,848	243,886	308,339	304,589
IH 10	Mercury to Holland	209,101	284,387	284,466	203,146	204,674	267,956	284,806
IH 10	Holland to Maxey	192,952	267,737	267,388	190,007	190,461	267,956	267,962
IH 610	IH 10 to Wallisville	164,199	252,211	264,602	171,197	264,602	264,323	263,630

***Note** Alternative A2: Mercury Dr. (four lane major thoroughfare) between IH 10 & US 90 in 2015.
Alternative A7: Woodforest Dr. (two lane collector) and elimination of Mercury Dr. in 2015.
Alternative A8: Woodforest Dr. (two lane collector) and elimination of Mercury Dr. in 2035.
Alternative A10: Mercury Dr. (two lane collector) and Woodforest Dr. (two lane collector) in 2035.

MERCURY DRIVE STUDY

Level of Service in Selected Scenarios

Street/Freeway	Segment	EXISTING 2007		BASELINE 2035 NO BUILD		2035 BUILD OUT		A2 (2015)		ALTERNATIVE A7 (2015)		A8 (2035)		A10 (2035)	
		V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Normandy	IH 10 to Woodforest	0.78	D	1.04	F	0.92	E	0.65	C	0.67	C	0.93	E	0.94	E
Normandy	Woodforest to Wallisville	0.36	A	0.44	A	0.28	A	0.28	A	0.28	A	0.28	A	0.28	A
Federal/Maxey	IH 10 to Woodforest	0.95	E	0.91	E	0.85	D	0.54	B	0.58	B	0.93	E	0.9	E
Federal/Maxey	Woodforest to Wallisville	0.52	B	0.66	C	0.71	C	0.4	A	0.4	A	0.77	D	0.75	D
Oates	IH 10 to Wallisville	0.3	A	0.58	B	N/A	N/A	N/A	N/A	0.36	A	0.57	B	N/A	N/A
Oates	Wallisville to Beaumont	0.49	B	1.41	F	0.77	D	0.77	D	0.79	D	0.76	D	0.68	C
Mercury	Market to IH 10	1.14	F	1.34	F	1.61	F	1.36	F	1.19	F	1.35	F	1.6	F
Mercury	IH 10 to US 90					0.68	C	0.38	A					1.15	F
Mercury/Oates	US 90 to Wallisville			1.34	F	1.12	F	0.88	E	0.78	D	0.98	E	1.06	F
Market	Normandy to Federal	0.5	B	0.78	D	0.62	B	0.5	B	0.51	B	0.64	B	0.64	B
Market	Federal to Holland	0.78	D	1.1	F	0.96	E	0.73	C	0.76	D	0.98	E	1.01	F
Market	Holland to Mercury	0.5	B	0.74	C	0.64	B	0.46	B	0.47	B	0.62	B	0.6	B
Market	Mercury to IH 610	0.72	C	1.04	F	0.97	E	0.67	C	0.67	C	0.98	E	0.97	E
Woodforest	Gellhorn to Oates									N/A	N/A	0.39	A	0.43	A
Gellhorn	Market to IH 610	0.19	A	0.21	A	0.51	B	0.19	A	0.23	A	0.5	B	0.53	B
Gellhorn	IH 610 to Wallisville					0.38	A	0.14	A	0.16	A	0.44	B	0.42	A
Mesa	Wallisville to Beaumont					0.45	B	0.19	A	0.18	A	0.45	B	0.45	B
Mesa	Beaumont to Ley	0.57	B	0.94	E	0.88	E	0.76	D	0.74	C	0.91	E	0.88	E
MCCarty	IH 610 to Beaumont	1.02	F	1.27	F	1.08	F	0.76	D	0.82	D	1.1	F	1.09	F
Wallisville	IH 610 to Mesa					0.88	E	0.56	B	0.56	B	0.86	E	0.88	E
Wallisville	IH-610 to Oates	1.05	F	1.27	F										
Wallisville	Mesa to Oates					1.41	F	0.84	D	0.85	D	1.35	F	1.34	F
Wallisville	Oates to Maxey	0.73	C	1.12	F	0.96	E	0.61	B	0.74	C	0.99	E	1.01	F
Wallisville	Maxey to Normandy	0.39	A	1.21	F	0.74	C	0.62	B	0.61	B	0.74	C	0.75	C
US 90	IH 610 to Mercury			0.75	D	1.15	F	0.43	A	0.43	A	1.17	F	1.17	F
US 90	Mercury to Maxey			0.46	B	1.03	F	0.29	A	0.29	A	1.01	F	1.01	F
IH 10	IH 610 to Mercury	1.22	F	1.47	F	1.18	F	0.99	E	0.94	E	1.37	F	1.18	F
IH-10	Mercury to Holland	0.87	E	1.18	F	0.94	E	0.83	D	0.85	D	0.96	E	0.95	E
IH 10	Holland to Maxey	0.79	D	1.12	F	0.89	E	0.8	D	0.78	D	0.91	E	0.89	E
IH 610	IH 10 to Wallisville	0.7	C	0.99	E	0.84	D	0.67	C	0.66	C	0.83	D	0.82	D

Alternative A2: Mercury Dr. (four lane major thoroughfare) between IH 10 & US 90 in 2015
Alternative A7: Woodforest Dr. (two lane collector) and elimination of Mercury Dr. in 2015
Alternative A8: Woodforest Dr. (two lane collector) and elimination of Mercury Dr. in 2035
Alternative A10: Mercury Dr. (two lane collector) and Woodforest Dr. (two lane collector) in 2035

Planning & Development Department, City of Houston

EXHIBIT 33

MERCURY DRIVE STUDY

Average Daily Traffic in All Scenarios

Street/Freeway	Segment	EXISTING	BASELINE		ALTERNATIVE									
		2007 ADT	2035 NO BUILD ADT	2035 BUILD OUT ADT	A1 ADT	A2 ADT	A3 ADT	A4 ADT	A5 ADT	A6 ADT	A7 ADT	A8 ADT	A9 ADT	A10 ADT
Normandy	IH-10 to Woodforest	21,375	30,909	26,366	18,908	19,469	19,303	19,893	26,675	26,716	19,916	28,043	19,631	28,383
Normandy	Woodforest to Wallisville	9,705	12,611	7,927	8,085	8,069	8,041	8,041	7,966	7,845	8,149	8,198	8,079	7,922
Federal/Maxey	IH-10 to Woodforest	28,343	28,712	38,172	17,262	17,199	17,482	17,345	38,403	37,932	18,459	41,257	17,337	39,745
Federal/Maxey	Woodforest to Wallisville	16,529	21,001	30,819	11,625	11,537	10,748	11,672	31,457	30,900	12,729	33,976	11,612	32,731
Oates	IH-10 to Wallisvile	1,715	2,945				126	127	2,956	2,937	1,904	5,596	131	3,042
Oates	Wallisvile to Beaumont	7,603	20,027	20,315	11,294	11,423	11,293	11,391	18,199	18,358	11,001	19,261	11,226	19,785
Mercury	Market to IH-10	16,024	19,452	22,620	19,059	19,097	18,938	19,085	22,644	22,625	18,105	21,198	18,952	22,343
Mercury	IH-10 to US-90			19,716	9,800	9,959	9,757	9,896	17,909	19,477			9,144	14,628
Mercury/ Oates	US-90 to Wallisvile		33,749	29,358	23,170	23,265	23,298	23,337	29,762	30,518	19,477	26,363	22,927	28,658
Market	Normandy to Federal	13,134	20,399	16,272	12,938	13,216	13,278	13,163	16,382	16,200	13,495	16,864	13,110	16,687
Market	Federal to Holland	19,734	28,538	25,327	17,524	19,286	19,942	19,581	25,442	25,348	19,668	25,883	19,315	25,639
Market	Holland to Mercury	13,246	20,305	16,777	12,098	11,974	12,280	12,111	16,521	16,789	12,375	16,308	12,091	16,349
Market	Mercury to IH-610	17,463	27,016	24,993	17,775	17,723	17,840	17,395	24,689	24,721	17,820	24,465	17,277	25,734
Woodforest	Gellhorn to Oates						126	127	5,912	5,875	139	5,417	131	5,831
Gellhorn	Market to IH-610	4,575	5,799	12,554	5,241	5,904	5,334	5,365	13,353	13,329	5,212	13,589	5,248	13,353
Gellhorn	IH-610 to Wallisville			11,106	4,360	4,345	4,454	4,499	12,318	12,455	4,619	12,858	4,426	12,205
Mesa	Wallisvile to Beaumont			12,691	5,452	5,491	5,507	5,495	12,651	13,042	5,061	12,549	5,338	12,607
Mesa	Beaumont to Ley	16,142	26,729	39,012	21,720	21,596	21,420	21,576	39,164	39,168	21,139	39,255	21,556	39,209
MCCarty	IH-610 to Beaumont	29,298	36,491	31,114	21,817	21,941	21,978	21,973	31,249	30,943	22,067	31,541	21,880	31,309
Wallisville	IH-610 to Mesa			24,293	15,999	16,041	15,905	15,909	24,271	24,547	16,002	24,379	15,986	24,269
Waliisville	IH-610 to Oates	27,170	36,450											
Wallisville	Mesa to Oates			40,063	24,803	24,794	24,789	24,847	38,439	38,473	24,156	38,407	24,727	38,162
Wallisville	Oates to Maxey	20,721	31,936	27,244	18,556	18,506	18,168	18,539	27,899	27,611	18,672	28,377	18,566	28,406
Wallisville	Maxey to Normandy	10,395	31,617	19,362	15,927	15,904	15,996	15,978	19,643	19,630	15,296	19,531	15,896	19,815
US 90	IH-610 to Mercury		130,964	205,339	76,582	76,631	76,416	76,704	202,798	202,486	80,947	210,702	76,882	203,530
US 90	Mercury to Maxey		78,056	183,800	50,863	51,036	50,617	51,022	178,767	178,672	51,185	177,447	50,994	179,569
IH 10	IH-610 to Mercury	226,739	301,300	300,041	224,471	239,848	225,120	224,834	304,260	304,209	243,886	308,339	224,727	304,589
IH 10	Mercury to Holland	209,101	284,387	284,466	203,831	203,146	205,171	204,239	284,881	284,725	204,674	267,956	217,296	284,806
IH 10	Holland to Maxey	192,952	267,737	267,388	190,105	190,007	191,199	190,217	267,768	267,437	190,461	267,956	190,373	267,962
IH 610	IH-10 to Wallisville	164,199	252,211	264,602	170,912	171,197	170,497	170,319	260,962	260,284	264,602	264,323	170,640	263,630

Alternative A1: Mercury Dr. (two lane major thoroughfare) between IH 10 & US 90 in 2015
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Alternative A3: Mercury Dr. (two lane major thoroughfare) and Woodforest Dr. (two lane collector) between Gellhorn and Oates in 2015
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Alternative A5: Mercury Dr. (two lane major thoroughfare) and Woodforest Dr. (two lane collector) in 2035
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Alternative A10: Mercury Dr. (two lane collector) and Woodforest Dr. (two lane collector) in 2035

Planning & Development Department, City of Houston

EXHIBIT 34

MERCURY DRIVE STUDY

Level of Service in All Scenarios

Street/Freeway	Segment	EXISTING 2007		BASELINE 2035 NO BUILD		BASELINE 2035 BUILD OUT		ALTERNATIVE A1		A2		A3		A4		A5		A6		A7		A8		A9		A10	
		V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Normandy	IH-10 to Woodforest	0.78	D	1.04	F	0.92	E	0.7	C	0.65	C	0.71	C	0.65	C	0.96	E	0.95	E	0.67	C	0.93	E	0.7	C	0.94	E
Normandy	Woodforest to Wallisville	0.36	A	0.44	A	0.28	A	0.28	A	0.28	A	0.28	A	0.28	A	0.28	A	0.27	A	0.28	A	0.28	A	0.28	A	0.28	A
Federal/Maxey	IH-10 to Woodforest	0.95	E	0.91	E	0.85	D	0.54	B	0.54	B	0.54	B	0.55	B	0.85	D	0.86	D	0.58	B	0.93	E	0.55	B	0.9	E
Federal/Maxey	Woodforest to Wallisville	0.52	B	0.66	C	0.71	C	0.41	A	0.4	A	0.37	A	0.4	A	0.71	C	0.7	C	0.4	A	0.77	D	0.4	A	0.75	D
Oates	IH-10 to Wallisville	0.3	A	0.58	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.15	A	0.12	A	0.36	A	0.57	B	N/A	N/A	N/A	N/A
Oates	Wallisville to Beaumont	0.49	B	1.41	F	0.77	D	0.76	D	0.77	D	0.94	E	0.94	E	0.73	D	0.78	D	0.79	D	0.76	D	0.86	E	0.68	C
Mercury	Market to IH-10	1.14	F	1.34	F	1.61	F	1.28	F	1.36	F	1.33	F	1.35	F	1.63	F	1.63	F	1.19	F	1.35	F	1.35	F	1.6	F
Mercury	IH-10 to US-90					0.68	C	0.72	C	0.38	A	0.72	C	0.37	A	1.05	F	0.71	C					0.89	E	1.15	F
Mercury/Oates	US-90 to Wallisville			1.34	F	1.12	F	0.89	E	0.88	E	0.89	E	0.86	E	1.1	F	1.13	F	0.78	D	0.98	E	0.88	E	1.06	F
Market	Normandy to Federal	0.5	B	0.78	D	0.62	B	0.44	A	0.5	B	0.5	B	0.5	B	0.62	B	0.62	B	0.51	B	0.64	B	0.5	B	0.64	B
Market	Federal to Holland	0.78	D	1.1	F	0.96	E	0.73	C	0.73	C	0.79	D	0.75	D	0.97	E	0.98	E	0.76	D	0.98	E	0.74	C	1.01	F
Market	Holland to Mercury	0.5	B	0.74	C	0.64	B	0.46	B	0.46	B	0.47	B	0.46	B	0.61	B	0.63	B	0.47	B	0.62	B	0.76	B	0.6	B
Market	Mercury to IH-610	0.72	C	1.04	F	0.97	E	0.68	C	0.67	C	0.68	C	0.67	C	0.96	E	0.94	E	0.67	C	0.98	E	0.65	C	0.97	E
Woodforest	Gellhorn to Oates											N/A	N/A	N/A	N/A	0.43	A	0.43	A	N/A	N/A	0.39	A	N/A	N/A	0.43	A
Gellhorn	Market to IH-610	0.19	A	0.21	A	0.51	B	0.19	A	0.19	A	0.2	A	0.2	A	0.46	B	0.46	B	0.23	A	0.5	B	0.24	A	0.53	B
Gellhorn	IH-610 to Wallisville					0.38	A	0.15	A	0.14	A	0.14	A	0.15	A	0.46	B	0.48	B	0.16	A	0.44	B	0.15	A	0.42	A
Mesa	Wallisville to Beaumont					0.45	B	0.19	A	0.19	A	0.19	A	0.19	A	0.43	A	0.42	A	0.18	A	0.45	B	0.19	A	0.45	B
Mesa	Beaumont to Ley	0.57	B	0.94	E	0.88	E	0.76	D	0.76	D	0.74	D	0.76	D	0.88	E	0.88	E	0.74	C	0.91	E	0.76	D	0.88	E
MCCarty	IH-610 to Beaumont	1.02	F	1.27	F	1.08	F	0.76	D	0.76	D	0.76	D	0.76	D	1.08	F	1.08	F	0.82	D	1.1	F	0.76	D	1.09	F
Wallisville	IH-610 to Mesa					0.88	E	0.56	B	0.56	B	0.56	B	0.56	B	0.86	E	0.86	E	0.56	B	0.86	E	0.56	B	0.88	E
Waliisville	IH-610 to Oates	1.05	F	1.27	F																						
Wallisville	Mesa to Oates					1.41	F	0.84	D	0.84	D	0.84	D	0.84	D	1.35	F	1.35	F	0.85	D	1.35	F	0.84	D	1.34	F
Wallisville	Oates to Maxey	0.73	C	1.12	F	0.96	E	0.61	B	0.61	B	0.61	B	0.65	B	0.98	E	0.97	E	0.74	C	0.99	E	0.65	C	1.01	F
Wallisville	Maxey to Normandy	0.39	A	1.21	F	0.74	C	0.61	B	0.62	B	0.6	B	0.61	B	0.75	C	0.74	C	0.61	B	0.74	C	0.61	B	0.75	C
US 90	IH 610 to Mercury			0.75	D	1.15	F	0.43	A	0.43	A	0.43	A	0.43	A	1.12	F	1.12	F	0.43	A	1.17	F	0.43	A	1.17	F
US 90	Mercury to Maxey			0.46	B	1.03	F	0.29	A	0.29	A	0.29	A	0.29	A	1.01	F	1.01	F	0.29	A	1.01	F	0.29	A	1.01	F
IH 10	IH 610 to Mercury	1.22	F	1.47	F	1.18	F	0.99	E	0.99	E	0.94	E	0.99	E	1.18	F	1.19	F	0.94	E	1.37	F	0.99	E	1.18	F
IH-10	Mercury to Holland	0.87	E	1.18	F	0.94	E	0.83	D	0.83	D	0.84	D	0.84	D	0.94	E	0.96	E	0.85	D	0.96	E	0.86	D	0.95	E
IH 10	Holland to Maxey	0.79	D	1.12	F	0.89	E	0.81	D	0.8	D	0.79	D	0.8	D	0.89	E	0.9	E	0.78	D	0.91	E	0.79	D	0.89	E
IH 610	IH 10 to Wallisville	0.7	C	0.99	E	0.84	D	0.68	C	0.67	C	0.67	C	0.68	C	0.84	D	0.86	D	0.66	C	0.83	D	0.68	C	0.82	D

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Planning & Development Department, City of Houston

EXHIBIT 35

MERCURY DRIVE STUDY

City of Houston Regional Parks

Regional Park

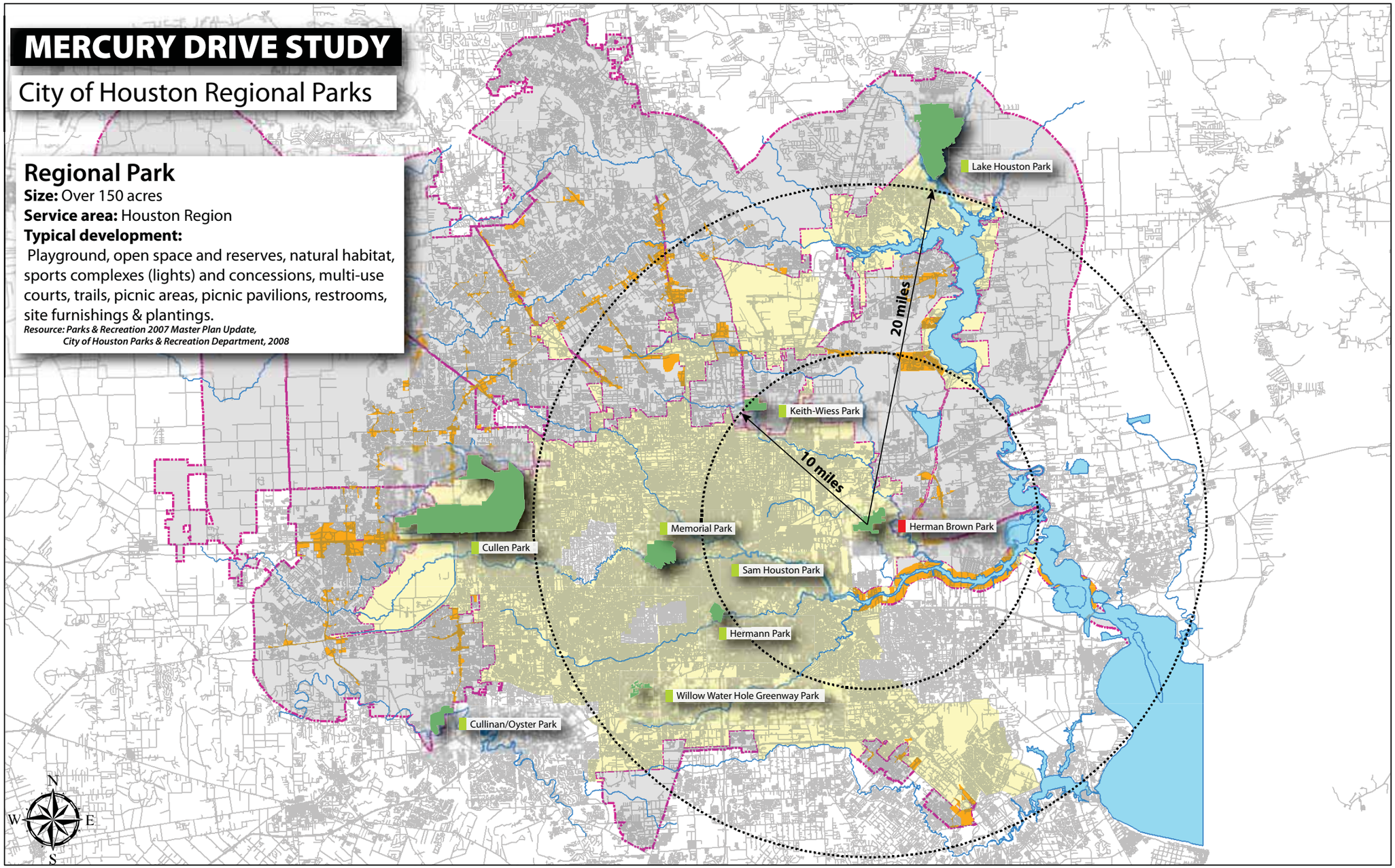
Size: Over 150 acres

Service area: Houston Region

Typical development:

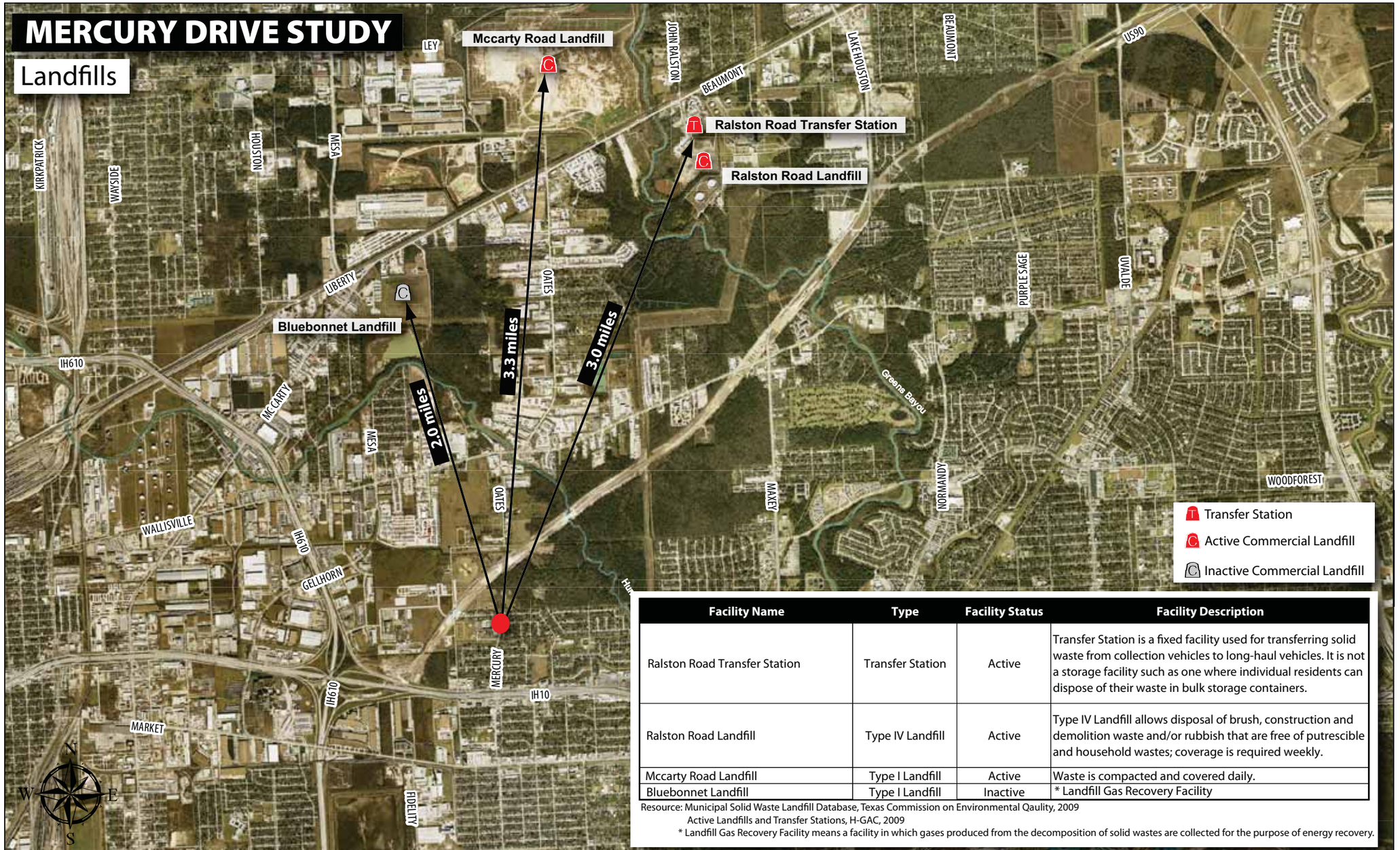
Playground, open space and reserves, natural habitat, sports complexes (lights) and concessions, multi-use courts, trails, picnic areas, picnic pavilions, restrooms, site furnishings & plantings.

Resource: Parks & Recreation 2007 Master Plan Update, City of Houston Parks & Recreation Department, 2008



Planning & Development Department, City of Houston

EXHIBIT 13



Facility Name	Type	Facility Status	Facility Description
Ralston Road Transfer Station	Transfer Station	Active	Transfer Station is a fixed facility used for transferring solid waste from collection vehicles to long-haul vehicles. It is not a storage facility such as one where individual residents can dispose of their waste in bulk storage containers.
Ralston Road Landfill	Type IV Landfill	Active	Type IV Landfill allows disposal of brush, construction and demolition waste and/or rubbish that are free of putrescible and household wastes; coverage is required weekly.
Mccarty Road Landfill	Type I Landfill	Active	Waste is compacted and covered daily.
Bluebonnet Landfill	Type I Landfill	Inactive	* Landfill Gas Recovery Facility

Resource: Municipal Solid Waste Landfill Database, Texas Commission on Environmental Qaulity, 2009
Active Landfills and Transfer Stations, H-GAC, 2009
* Landfill Gas Recovery Facility means a facility in which gases produced from the decomposition of solid wastes are collected for the purpose of energy recovery.

Planning & Development Department, City of Houston

EXHIBIT 36