

# Opportunities and Constraints Memo

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## UNIVERSITY OF HOUSTON



*MacGregor Tract*

PREPARED BY:  
SWA GROUP  
BROWN & GAY ENGINEERING



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## Objective

SWA Group was retained by the University of Houston to assist in determining the utilization of the MacGregor Tract (the “property”) from a land planning perspective including identifying a footprint for an 8-acre multi-family development site and estimating the associated site development costs. The opportunity and constraints review was completed by SWA Group with assistance from Brown & Gay Engineering.

## The MacGregor Tract

The MacGregor Tract consists of two parcels owned by the University of Houston System (UHS) and situated south of the University of Houston’s Main Campus between Wheeler, Spur 5, OST, and MLK:

- 1) 43.25 acre parcel on the south bank of Brays Bayou.
- 2) 1-acre parcel on the north bank of Brays Bayou between MLK Boulevard and Spur 5.

Abutting, non-owned properties include 5.56 acre fee strip owned by Harris County Flood Control District and a 6.79-acre parcel owned by the City of Houston Parks and Recreation Department located at the northeast corner of Wheeler and Spur 5, on the north bank of Buffalo Bayou. The future use of the City of Houston property is for open space / recreation.

\*All information shown in document is subject to re-verification as development decisions are made and improvements to the property become more certain.

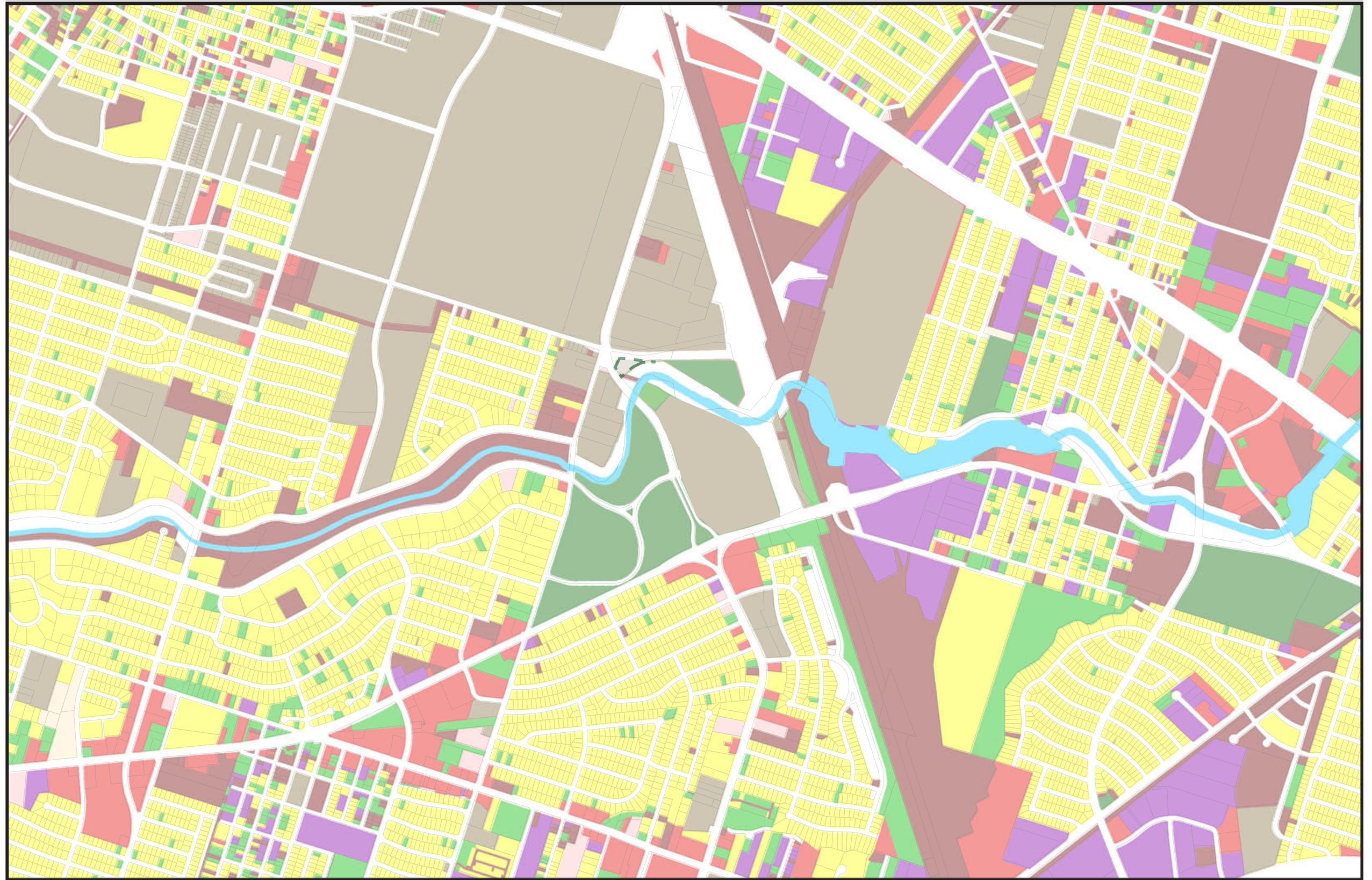




Site Context Map

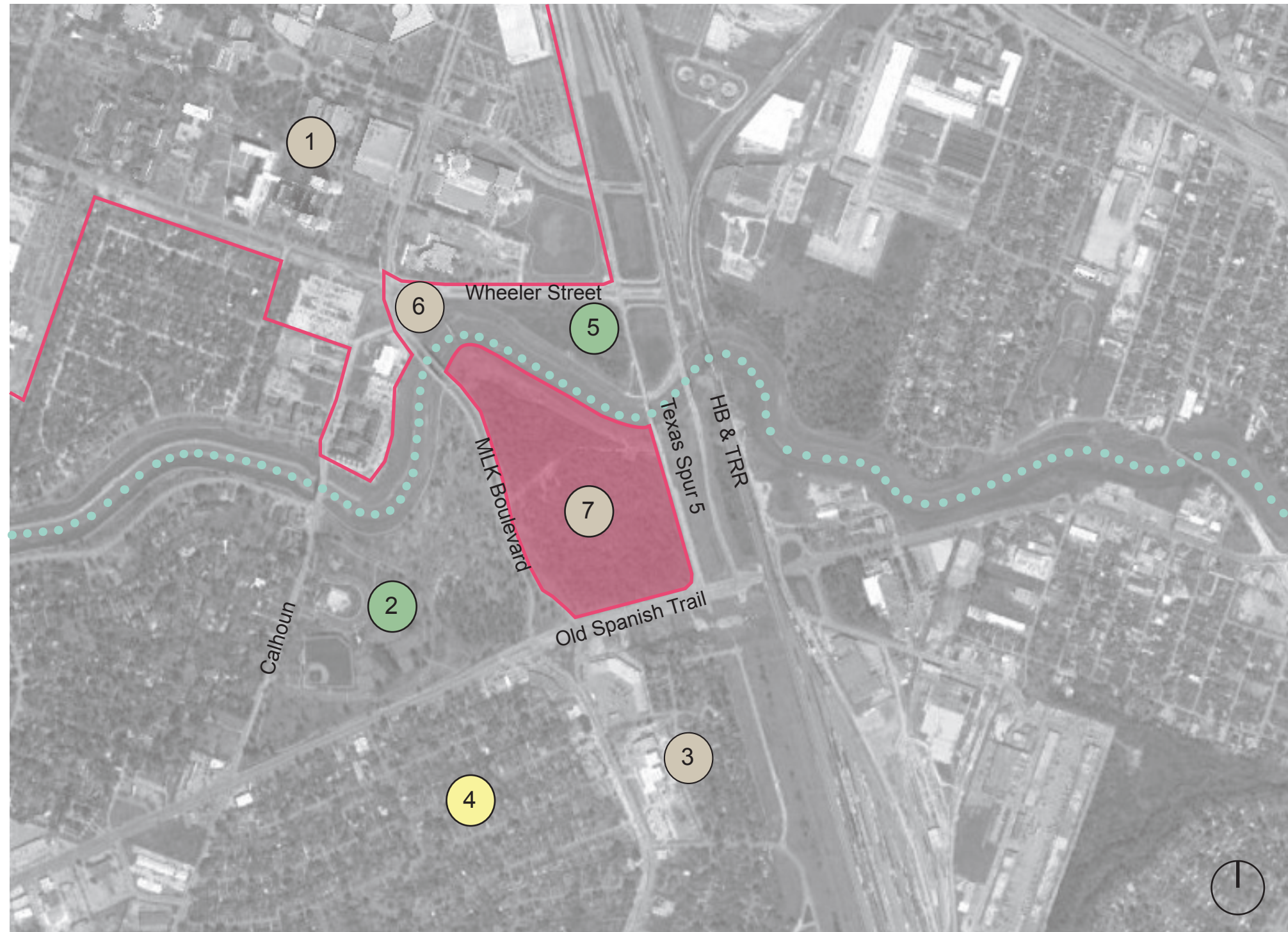
## Legend:

- Commercial
- Industrial
- Residential
- Gov / Med / Ed
- Parks
- Vacant Lot
- Undevelopable
- Water
- Other



Land Use Map

- 1 University of Houston
- 2 COH MacGregor Park
- 3 Peck Elementary
- 4 Riverside Terrace Neighborhood
- 5 COH Park Property
- 6 UHS Property
- 7 UofH MacGregor Tract
- Brays Bayou



## Site Context:

### PUBLIC IMPROVEMENTS

The MacGregor Tract is situated in an area under-going important changes, principally in the form of new public (excluding University) improvements. These include:

1) METRORail - South East Line / Purple Line is a new light rail line scheduled to begin service in 2012. The MacGregor Park Station will be located at the MLK and OST intersection to the southwest of the site. Further to the north at the Wheeler and MLK intersection will be the Wheeler / MLK Station. The new light rail line will provide the University of Houston and the MacGregor Tract with regional / sub-regional access via state of the art transit service.

2) Brays Bayou Greenway Hike and Bike Trail - This pedestrian and bike trail system is being constructed along the banks of Brays Bayou. Once complete, the trail will extend nearly 33 miles from George Bush Park to the Port of Houston, connecting important employment and education centers and recreational venues including the Texas Medical Center / Rice University, Hermann park, Texas Southern University, University of Houston, Mason and Gus Wrotham Parks, and MacGregor Park.

3) MacGregor Park - Located immediately west of the property, MacGregor Park is one of Houston's most historic parks and is recognized as a major civic feature in the community. The extreme drought in Summer 2011 resulted in a serious loss of existing trees. New tree planting in the park will be important in re-establishing the once extensive tree canopy in the park.

### CONNECTIVITY:

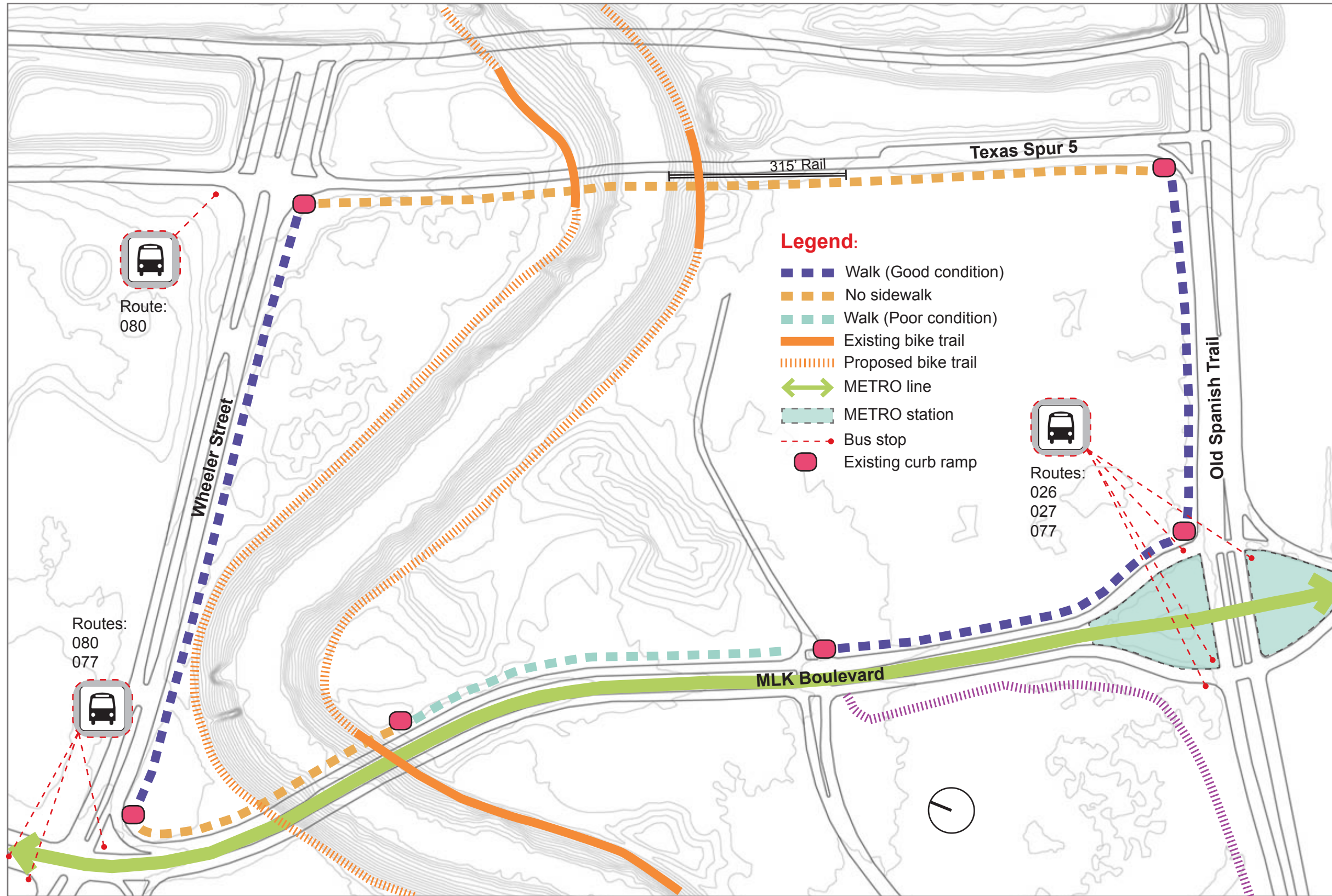
The property is well-served by existing roads (including major thoroughfares and freeways), public transportation (including bus service) and pedestrian routes (including sidewalks and trails). As noted above with public improvements, multi-modal transportation alternatives will expand people's choices in the near and far terms as these systems are completed.

APPROXIMATELY  
5.56 ACRES HCFC  
EASEMENT

0.33 ACRES HL&P  
FEE STRIP

APPROXIMATELY  
1 ACRE UNIVERSTIY  
OF HOUSTON





Site Accessibility



## Roads:

A Traffic Impact Analysis (TIA) may need to be completed for each increment of development as the site uses are confirmed and a determination made on related trip generation. OST and Spur 5 are TxDOT controlled thoroughfares and will have to adhere to TxDOT standards. TxDOT driveway permitting takes approximately 3-4 months to complete.

**MLK Boulevard** is a 100' ROW / 4 lane major thoroughfare that serves the MacGregor Tract and MacGregor Park. The boulevard is designated as a Transit Corridor by the City of Houston (COH). This classification grants conditional entitlements for private development that are intended to take advantage of and leverage the benefits of public transit. This road presents the best option for a signalized intersection with left turn lanes serving the property. A left turn lane will likely be required by the COH. In addition, a signal is likely to be allowed but will be subject to a TIA review by COH.

**OST** is a 100' ROW / 6 lane divided major thoroughfare located on the southern boundary of the property. Also known as Hwy 90, OST has a 40 MPH speed limit and TXDOT restrictions of 360' between two-way private drives into the property. Access to the subject property from OST is important but will be limited based on TxDOT regulations. Based on the frontage of 778' along OST, TxDOT spacing will only allow for one driveway. TxDOT will not permit a median opening for a left turn lane into the property. The TxDOT spacing criteria for a driveway with a right turn deceleration lane is 540'. Due to the limited frontage along OST a right turn lane cannot be provided; therefore, the driveway access must be limited to 60 trips at the peak hour. This is equivalent to 40,000 square feet of retail or a 120 unit multi-family development. TxDOT is unlikely to grant a variance on the right turn lane spacing due to the close proximity to Texas Spur 5.

**Texas Spur 5** has a freeway designation and runs along the eastern edge of the property. The speed limit is 50 MPH. TxDOT restricts one-way private drives to 425' separation. Access to the property from Spur 5 is limited due to the limited visibility at the Brays Bayou Bridge. The driveway will have to be placed a minimum of 300' from the end of the bridge railing. If more than 50 peak hour trips are necessary based on the TIA, the driveway spacing will need to be extended to 540' to allow for a right turn lane. The 540' can overlap the 300' required from the end of the bridge railing. TxDOT will require a categori

cal exclusion if new pavement is added in the form of a turn lane. The process typically takes 10 - 12 months before construction can begin.

## Public Transportation:

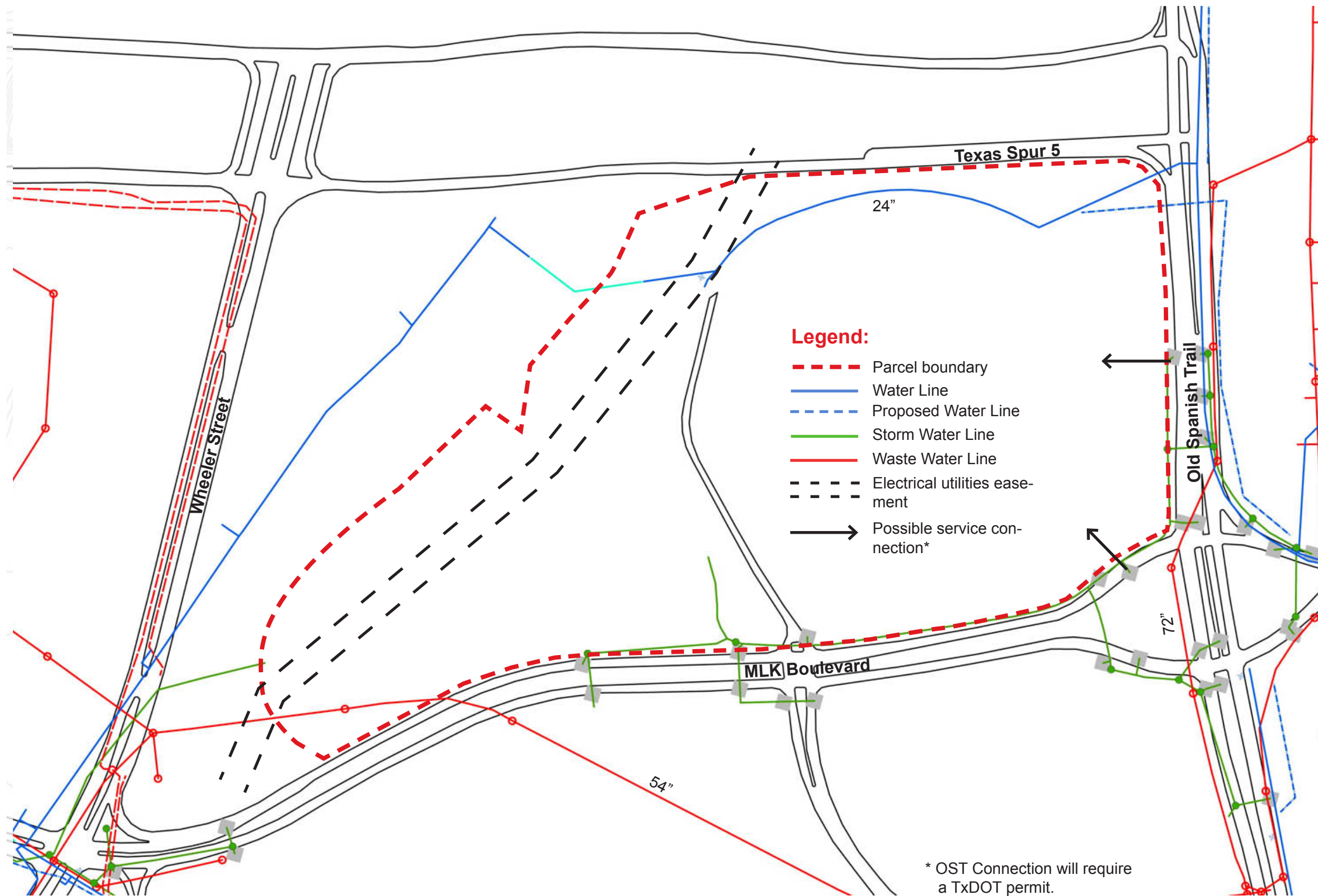
METRO:

Bus service is currently available with numerous stops within a three minute walk to the site. The METRO light rail is currently under construction with 2 stations, one located at MLK and OST to the south and MLK, Calhoun, and Wheeler to the north. Construction is set to be completed in 2012. METRO is expected to review existing bus service once the Purple Line commences service. This review may result in changes to bus operations up to and possibly including the termination of service.

Shuttles:

University shuttle service is available through the UH Campus Pedestrian system and Shuttle Services.





**Utilities:**

Listed below are existing locations for the public utilities. A formal utility request will have to be filed with the COH to guarantee that the existing lines have sufficient capacity to serve the property.

1) A 2 inch waterline crosses the eastern portion of the parcel adjacent to Spur 5. There is also a 12 inch water line on the south side of OST. The City of Houston will not allow waterlines to be stubbed out to the property in preparation for development. The end users will have to install the individual water meters as the tracts are developed.

2) Storm Water lines, drains, man-holes, and clean-outs are abundant and available for tie in. There is an 18 inch storm sewer line on the south side of OST and a 36 inch line on the east side of MLK. Both lines have manholes adjacent to the property for connection.

3) There is a 72 inch sanitary sewer line on the south side of OST with multiple manholes for connections. There will be costs associated with extending the sanitary sewer to the multi-family site.

\* OST Connection will require a TxDOT permit.

**Drainage**


Floodway and 100-year floodplain boundaries are based on TSARP data. The floodplain footprint is approximately 28.25 acres and is concentrated on the south side of the property.

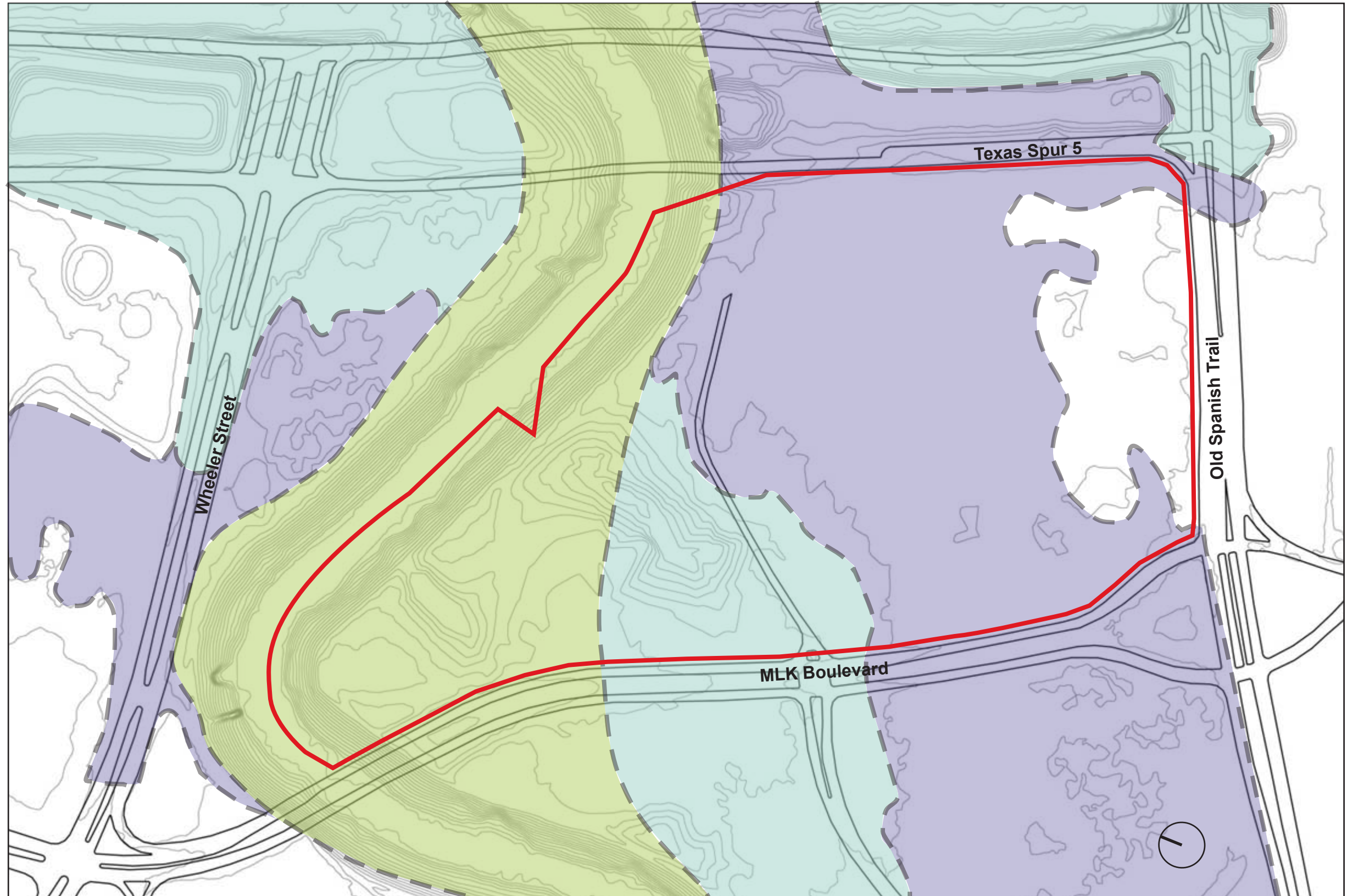
The site is located on Flood Insurance Rate Map Number 48201C0880L, revised June 18, 2007. According to the map, a portion of the property is located in Zone AE, which is area determined to be inside the 100-year floodplain and Zone X (shaded), which is area determined to be inside the 500-year floodplain. A small portion of the tract adjacent to OST is located in Zone X (unshaded).

**Detention**

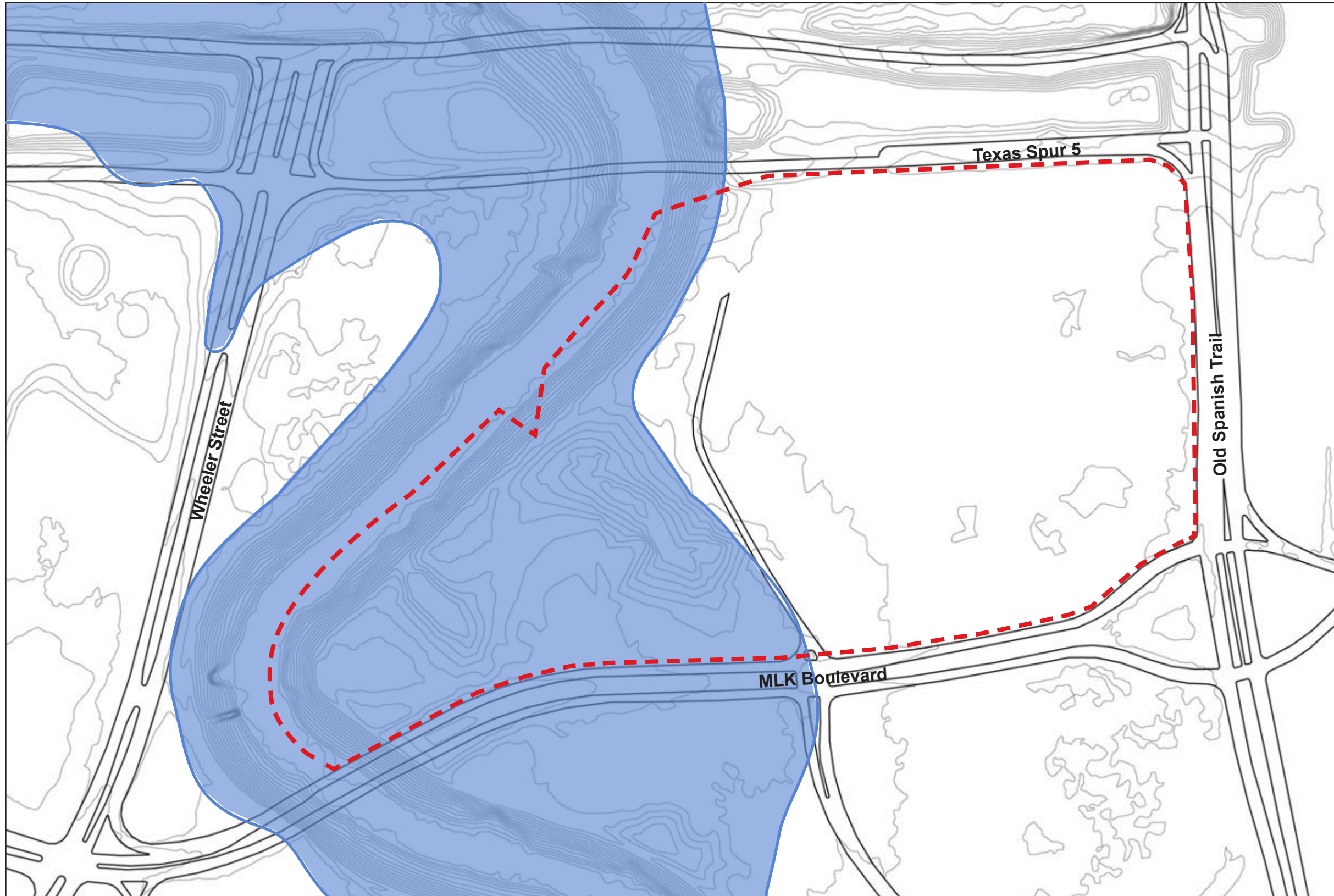
Detention will be required at a rate of 0.55 acre feet per acre of developed area. For a developed area of 26.28 acres, 14.45 acre feet of detention will be required.

**Legend:**

-  Floodway
-  100-Year Floodplain
-  500-Year Floodplain
-  Property Boundary



Flood way and Flood zones



**Flood Conveyance:**

The COH's flood conveyance zone comprises much of the floodway and the 100-year floodplain. The area shown indicates the zone advisable to be kept clear of major permanent construction. A 100' strip on the outside edge of the conveyance zone could be available for development subject to approval of detailed conveyance analysis and impact studies.

Flood Conveyance Zone

**Wetlands**

The tract contains two types of wetlands. USACE jurisdictional wetlands comprise 0.10 acres of the site. Non-jurisdictional wetlands make up 3.9 acres.




**Vegetation:**

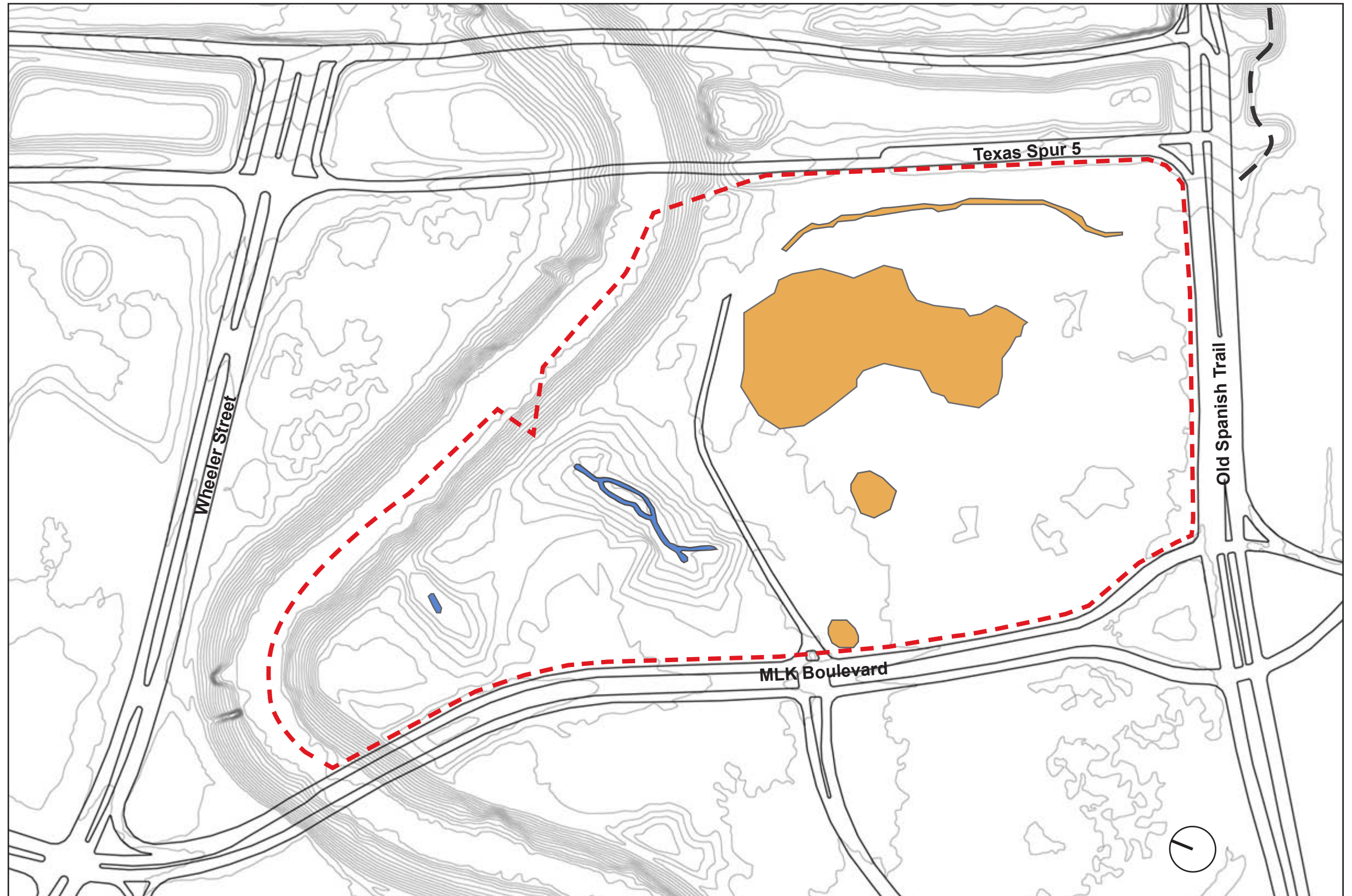
The tract is heavily wooded with even-aged trees covering a majority of the acreage. Pines, oaks, and substantial underbrush including palmetto and dewberry make up the vegetation palette. There are also many invasive species in this underbrush such as tallow and privet.

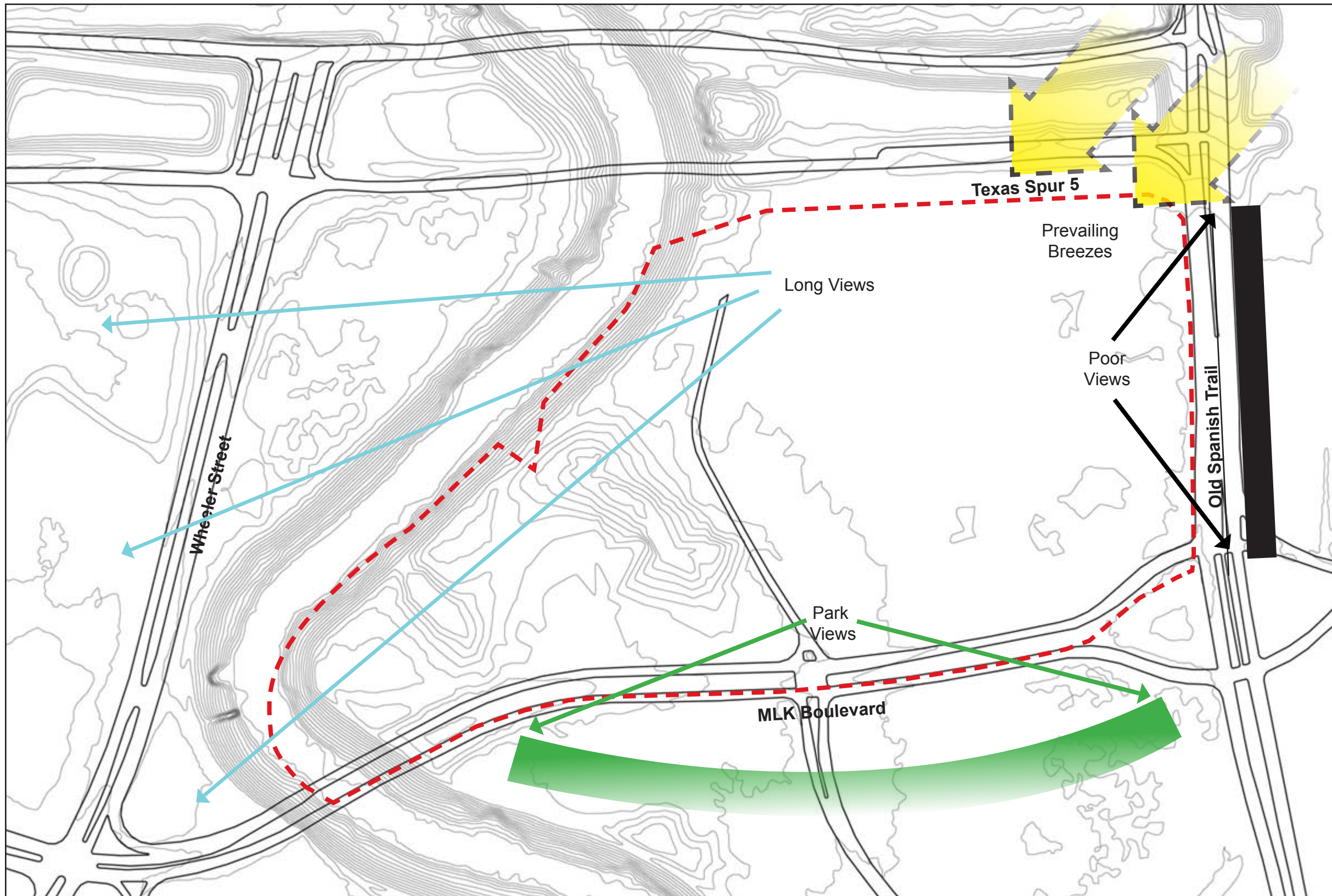
**Wildlife:**

The property lies within the Trinity Bottomlands Eco-Region. There is diverse plant and animal life in the area. Some species include, squirrels, racoons, wood ducks, egrets, otters, alligator, crawfish, and heron. Ferrel cats and dogs are also common.

**Legend:**

-  Parcel Boundary
-  Jurisdictional Wetland (Total 0.10 Acres)
-  Non-jurisdictional Wetland (Total 3.90 Acres)





**Micro-Climate:**

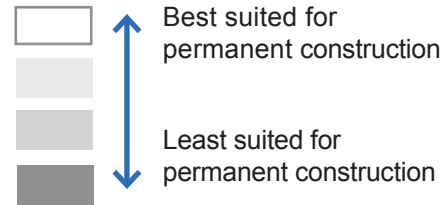
The frontage along MLK provides unobstructed views to Macgregor Park, due west.

The north east corner of the property contains views along Brays Bayou which are unique to the site and interrupted only by the MLK bridge. Additionally, new construction within UH's campus provides interesting architecture and affords panoramic views to the campus from the south.

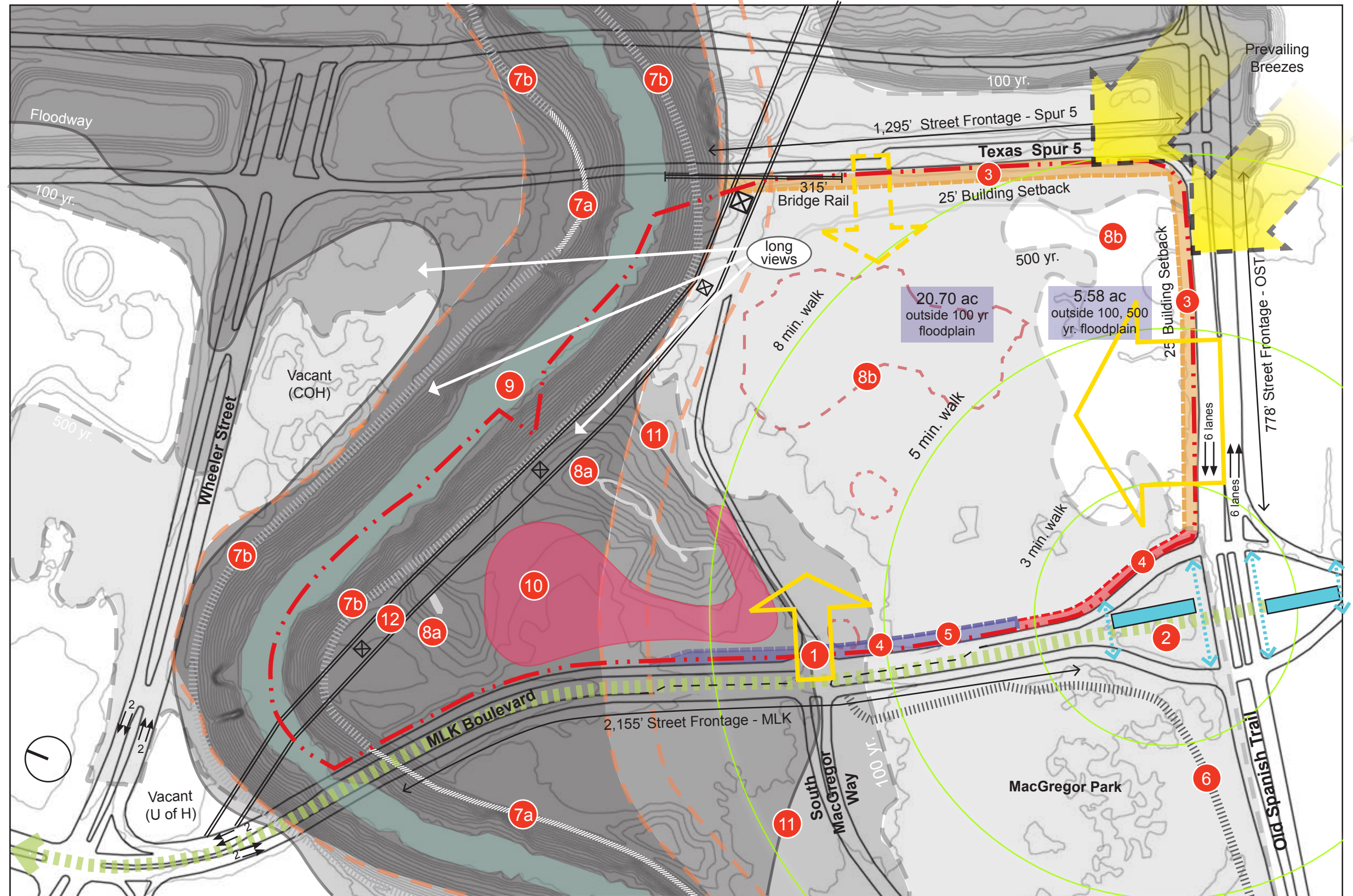
The views across OST are considered unattractive with many of the properties within the viewshed being industrial in use.

From the Eastern portion of the property, topography associated with Spur 5 is visible which also buffers a nearby industrial site from low ground views.

**Composite Site Legend:**



- 1 Signalized Intersection with left turn lanes (proposed)
- 2 METRO SE light rail line and MacGregor Park Station / pedestrian crossing (under construction)
- 3 Building line - 25' setback, statutory
- 4 Building line - Reference Transit Corridor Ordinance (statutory)
- 5 Dedicated METRO R.O.W. along MLK - 0.75 ac.
- 6 Existing Park Bike Trail
- 7a Existing Brays Bike Trail
- 7b Proposed Brays Bike Trail
- 8a Existing Jurisdictional Wetlands - 0.10 ac.
- 8b Existing Non-Jurisdictional Wetlands - 3.9 ac.
- 9 Brays Bayou Base Channel
- 10 Potential Storm Water Detention Basin - 2.5 ac.
- 11 Existing Conditional Conveyance Zone - 100' wide
- 12 Existing Centerpoint easement and power towers





**Conceptual Framework:**

Based on the studies found in this booklet, the MacGregor property contains a net buildable site of 26.28 ac.

The remainder of the site will contain a series of detention basins which will service the development and function as a recreational center for the U of H campus.

**Legend:**

- D1** High Volume Detention Basin
- D2** Low Volume Detention at sport fields
- 1** Jurisdictional Wetlands and Buffer Planting
- 2** 50' Woodland Buffer



## Conceptual Cost Estimate - Site Utilities and Paving:

ITEM	ITEM TOTAL
<b>UNIT A: SANITARY COLLECTION SYSTEM</b>	
To connect to 72" sanitary sewer on the south side of OST	\$ 55,000.00
<b>TOTAL, UNIT A</b>	<b>\$ 55,000.00</b>
<b>UNIT B: DRIVEWAYS AND PAVING</b>	
1. Connection to MLK:	
a. Concrete Driveway	\$ 25,000.00
b. Left Turn Lane	\$ 50,000.00
c. Signal	\$ 175,000.00
2. Connection to OST:	
a. Concrete Driveway	\$ 25,000.00
3. Connection to Spur 5:	
a. Concrete Driveway	\$ 25,000.00
b. Right Turn Lane	\$ 150,000.00
c. Environmental Impact Analysis (Categorical Exclusion is only required if right turn lane is to be constructed)	\$ 30,000.00
4. Concrete Public Extension of MacGregor Way (390 LF, 41' wide, cul-de-sac)	\$ 80,000.00
6. Traffic Impact Analysis:	\$ 20,000.00
<b>TOTAL, UNIT B</b>	<b>\$ 580,000.00</b>
<b>UNIT C: DETENTION</b>	
1. Excavation and haul off for 630,000 cubic feet	\$ 350,000.00
2. Clearing for 11 acres	\$ 52,000.00
3. Seeding	\$ 4,500.00
4. Structures	\$ 25,000.00
<b>TOTAL, UNIT C</b>	<b>\$ 431,500.00</b>

### SUMMARY

Unit A: Sanitary Collection System	\$ 55,000.00
Unit B: Driveways and Paving	\$ 580,000.00
Unit C: Detention	\$ 431,500.00
<b>SUBTOTAL</b>	<b>\$ 1,066,500.00</b>
15% Contingency	\$ 159,975.00
<b>TOTAL</b>	<b>\$ 1,226,475.00</b>
15% Engineering	\$ 183,971.25
<b>TOTAL ESTIMATE</b>	<b>\$ 1,410,446.25</b>

\*All costs are preliminary and will need to be updated when a more concise land plan has been designed.

## Conceptual Cost Estimate - Recreation and Parking:

ITEM	QTY.	UNIT	COST	TOTAL
<b>Grading</b>				
Rough Grade Soccer Fields	191,862	sf	\$0.10	\$19,186.20
Fine Grade Soccer Fields	191,862	sf	\$0.05	\$9,593.10
Rough Grade Flag Football Field	85,680	sf	\$0.10	\$8,568.00
Fine Grade Flag Football Field	85,680	sf	\$0.05	\$4,284.00
<i>Grading Subtotal</i>				<b>\$41,631.30</b>
<b>Hardscape</b>				
Concrete Pedestrian Walks	6,240	sf	\$6.00	\$37,440.00
Concrete Parking	16,000	sf	\$8.00	\$128,000.00
<i>Hardscape Subtotal</i>				<b>\$165,440.00</b>
<b>Irrigation</b>				
Irrigation (sprinkler)	277,542	sf	\$0.75	\$208,156.50
<i>Irrigation Subtotal</i>				<b>\$208,156.50</b>
<b>Site Electrical and Lighting</b>				
Parking Lot Lighting	6	ea	\$6,500.00	\$39,000.00
Sports Field lighting	8	ea	\$18,000.00	\$144,000.00
Pedestrian Lighting	44	ea	\$4,500.00	\$198,000.00
Electrical Service	1	ls	\$50,000.00	\$50,000.00
<i>Site Electrical and Lighting</i>				<b>\$381,000.00</b>
<b>Planting</b>				
Sod	277,542	sf	\$0.40	\$111,016.80
<i>Planting Subtotal</i>				<b>\$111,016.80</b>
<b>Subtotal</b>				<b>\$1,018,261.40</b>
<b>Design Fee 15%</b>				<b>\$152,739.21</b>
<b>Construction Contingency 10%</b>				<b>\$101,826.14</b>
<b>Contractors General Conditions, Bonds Etc. @ 10%</b>				<b>\$112,008.75</b>
<b>Total</b>				<b>\$1,384,835.50</b>

**PROJECT TOTAL: \$2,795,281.75**