

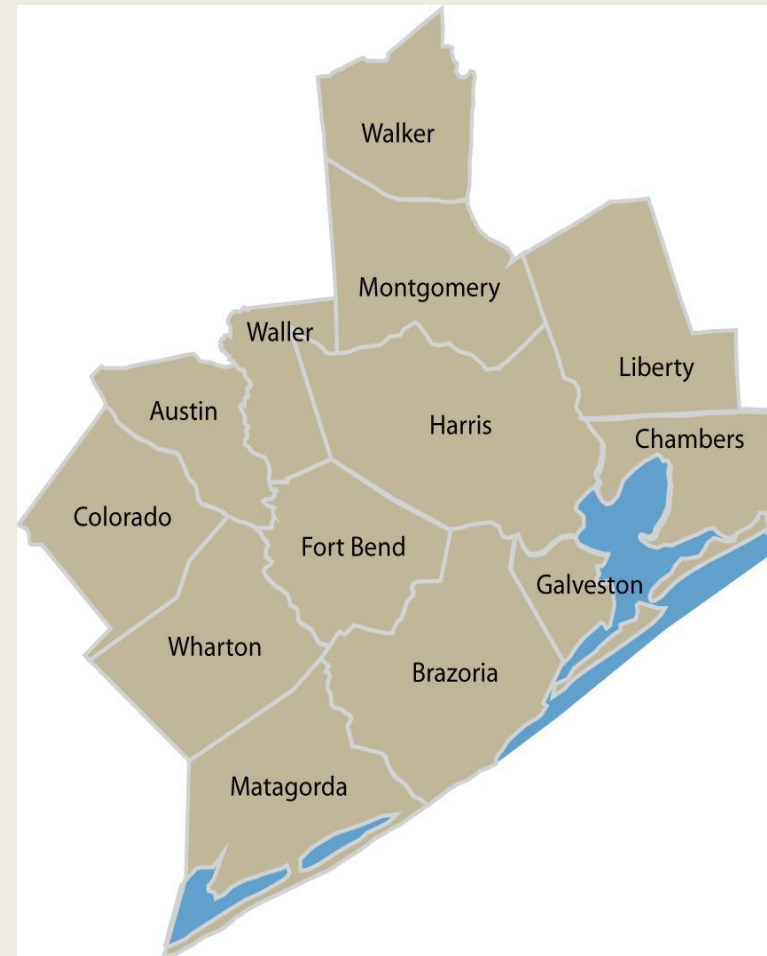
# Onsite Sewage Facilities (OSSFs) and Water Quality

Will Merrell



# Critical Need

- Estimated 2 Million OSSFs in Texas
- H-GAC Region Estimation:  
300,000+ or 15% of all OSSFs





# Critical Need

*“In order for a Designated Representative to fulfill the responsibilities of the job, it is important to have a complete understanding of the number and location of the OSSF systems within his/her jurisdiction.”*

Study to Determine the Magnitude of, and Reasons for, Chronically Malfunctioning OSSFs in Texas, TOWTRC, 2001, p. 71.



# Challenges to Addressing OSSFs

- Permitted

- No combined dataset of all regional OSSFs
- No common source/format of data
- Different DRs track data at different levels of precision
- Not all existing data has spatial reference

- Unpermitted/Grandfathered

- Very little location data
- Unknown condition
- 1989



# History of OSSF Database

- Identified as priority in BIG, et al.
  - Stakeholders identified location data as primary need for addressing OSSFs



- Funded under ARRA contract
  - Initial two years of effort



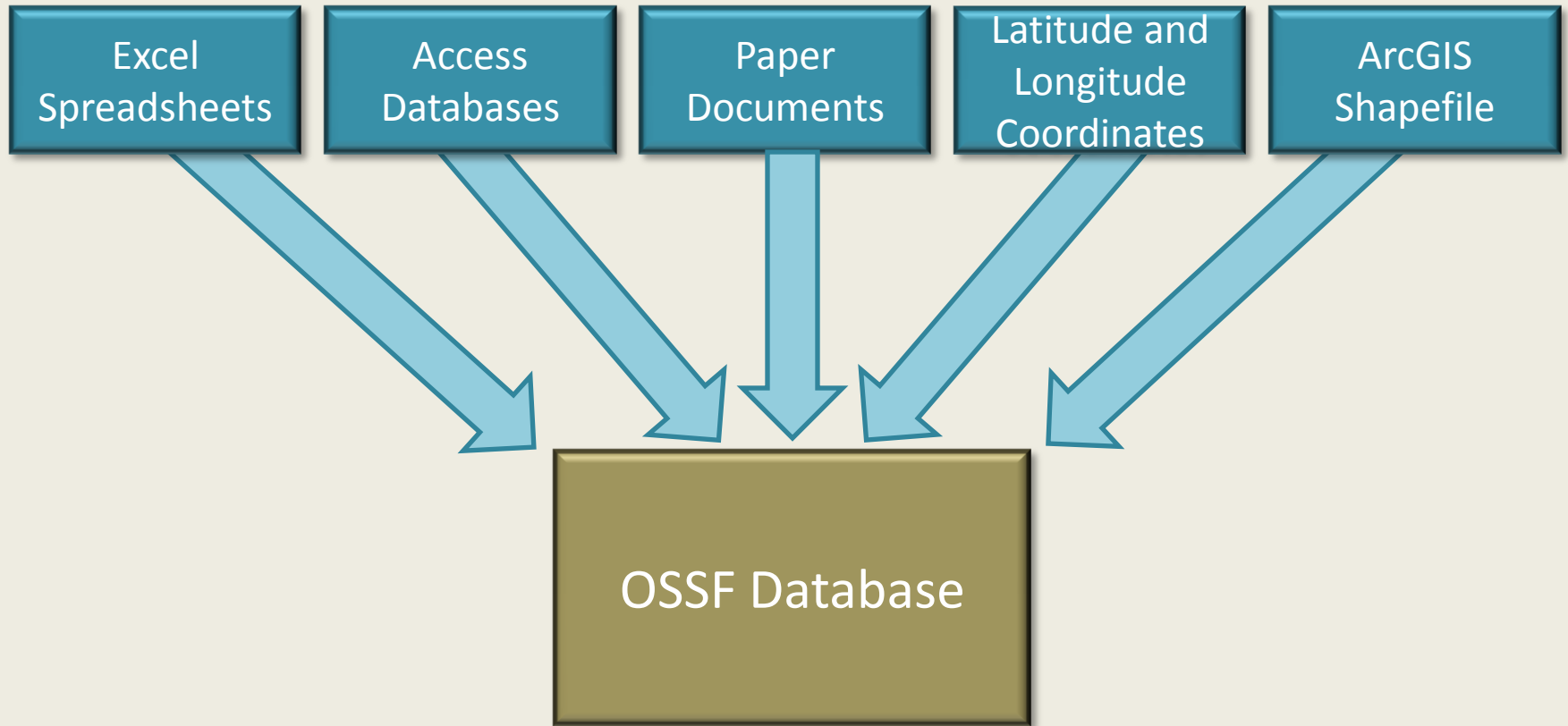
- Continued Funding through 604b

# Getting Started/Collecting Data

- Contacted AA's
- MOST Challenging Part of the Project



# Editing Data



107,986 Records Received

# Editing Data

3555 Timmons Lane, Suite 120 Houston, Texas 77027



Street_Num	Street_Name	Street_Type	Unit_Num	City	State	Zip_Code
3555	Timmons	Ln	Suite 120	Houston	Tx	77027



# Editing Data

3555 Timmons Lane, Suite 120 Houston, Texas 77027



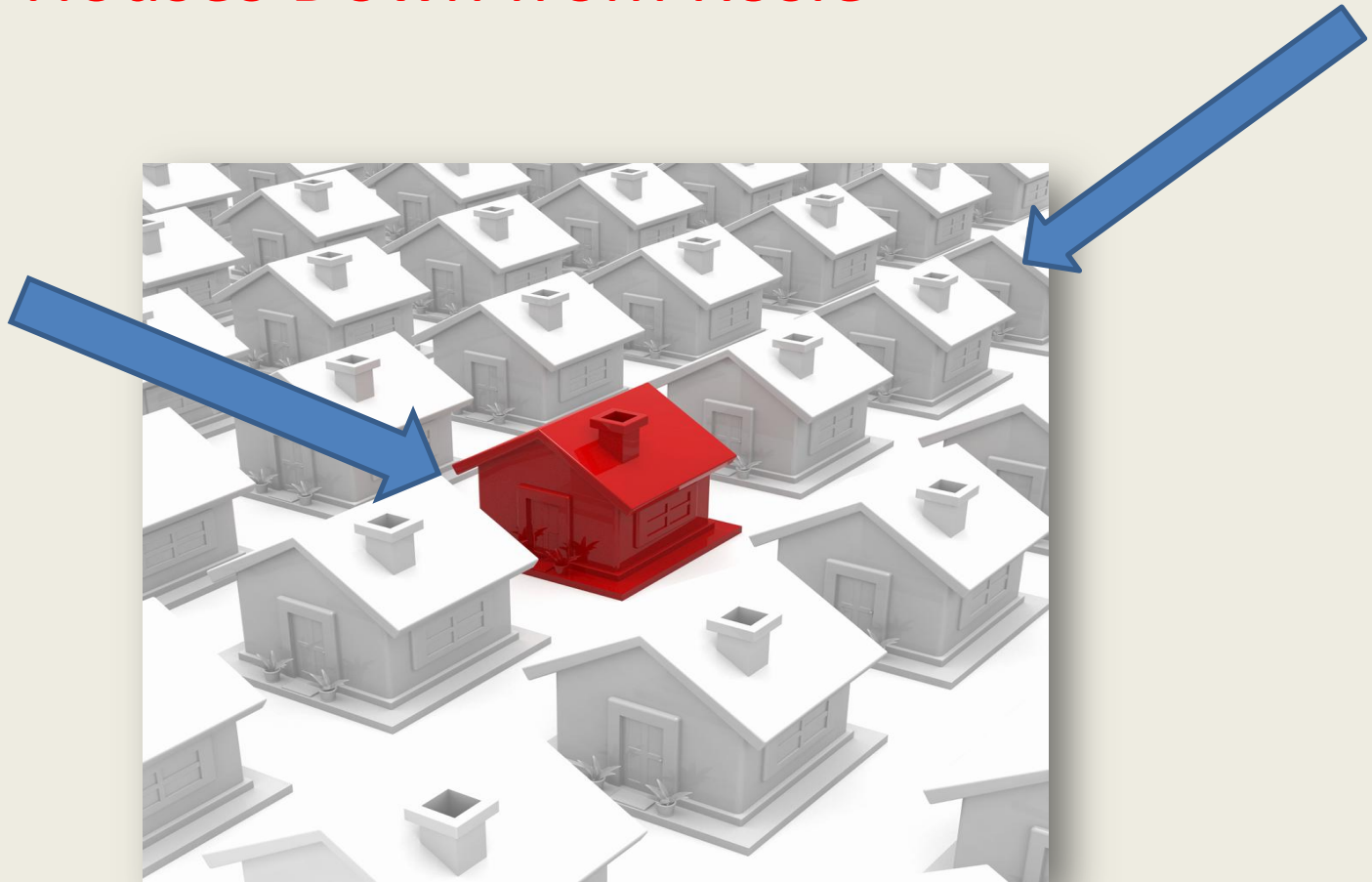
Street_Num	Street_Name	Street_Type	Unit_Num	City	State	Zip_Code
3555	Timmons	Ln	Suite 120	Houston	Tx	77027

# Editing Data – Insufficient Records

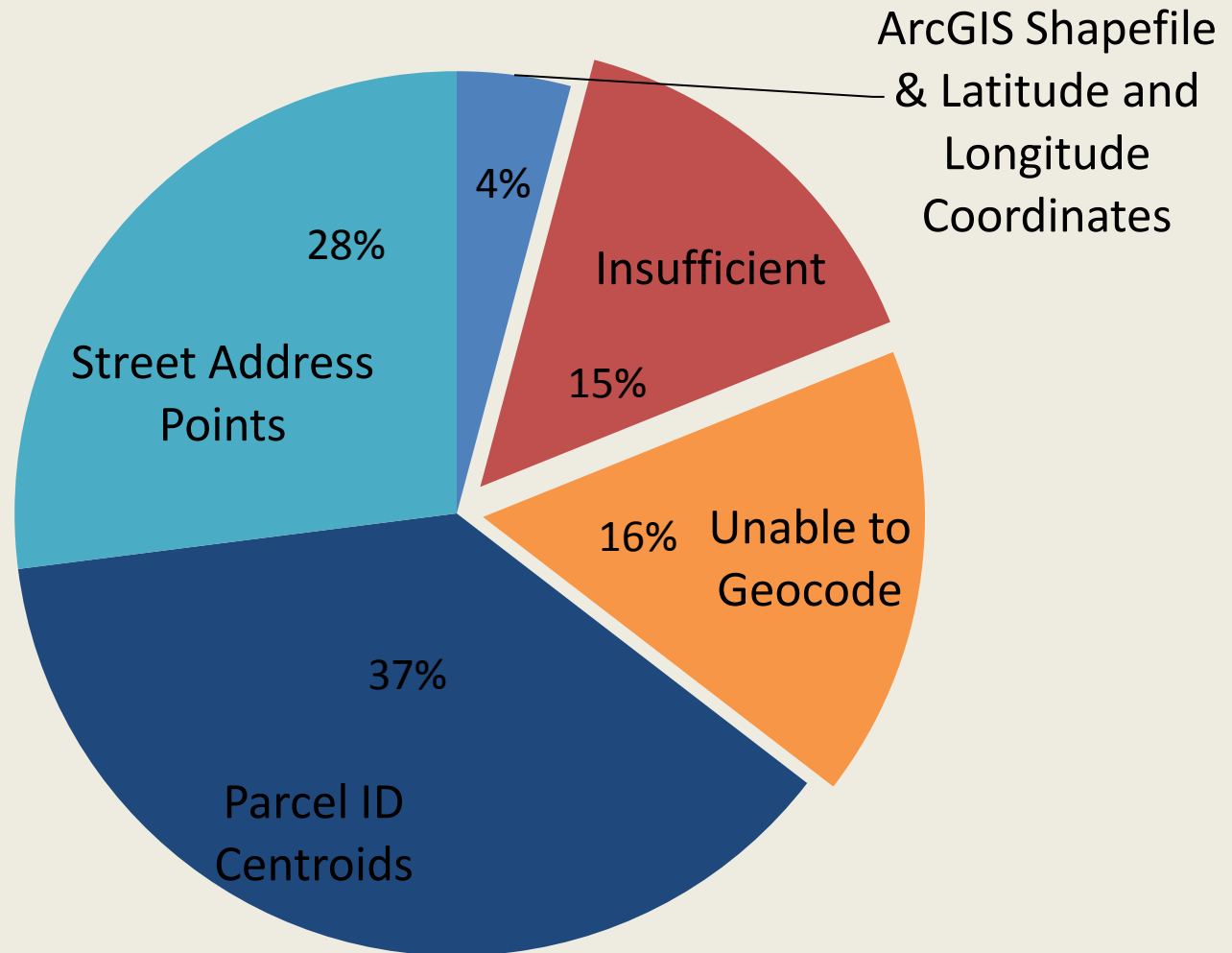
“Three Houses Down from Rosie”

Three Houses Down?

Rosie



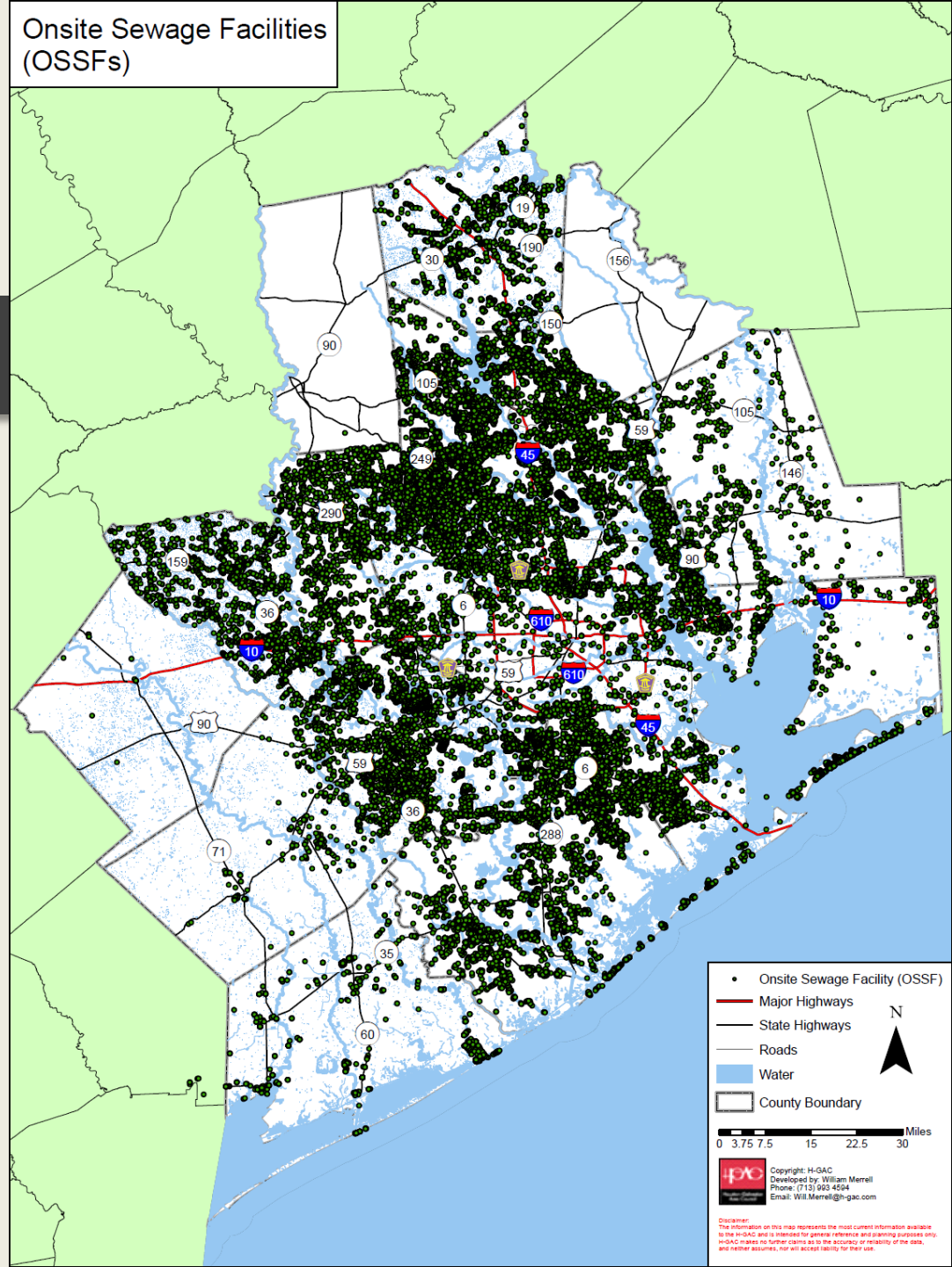
# Building the Geo-database



# Permitted OSSF Locations

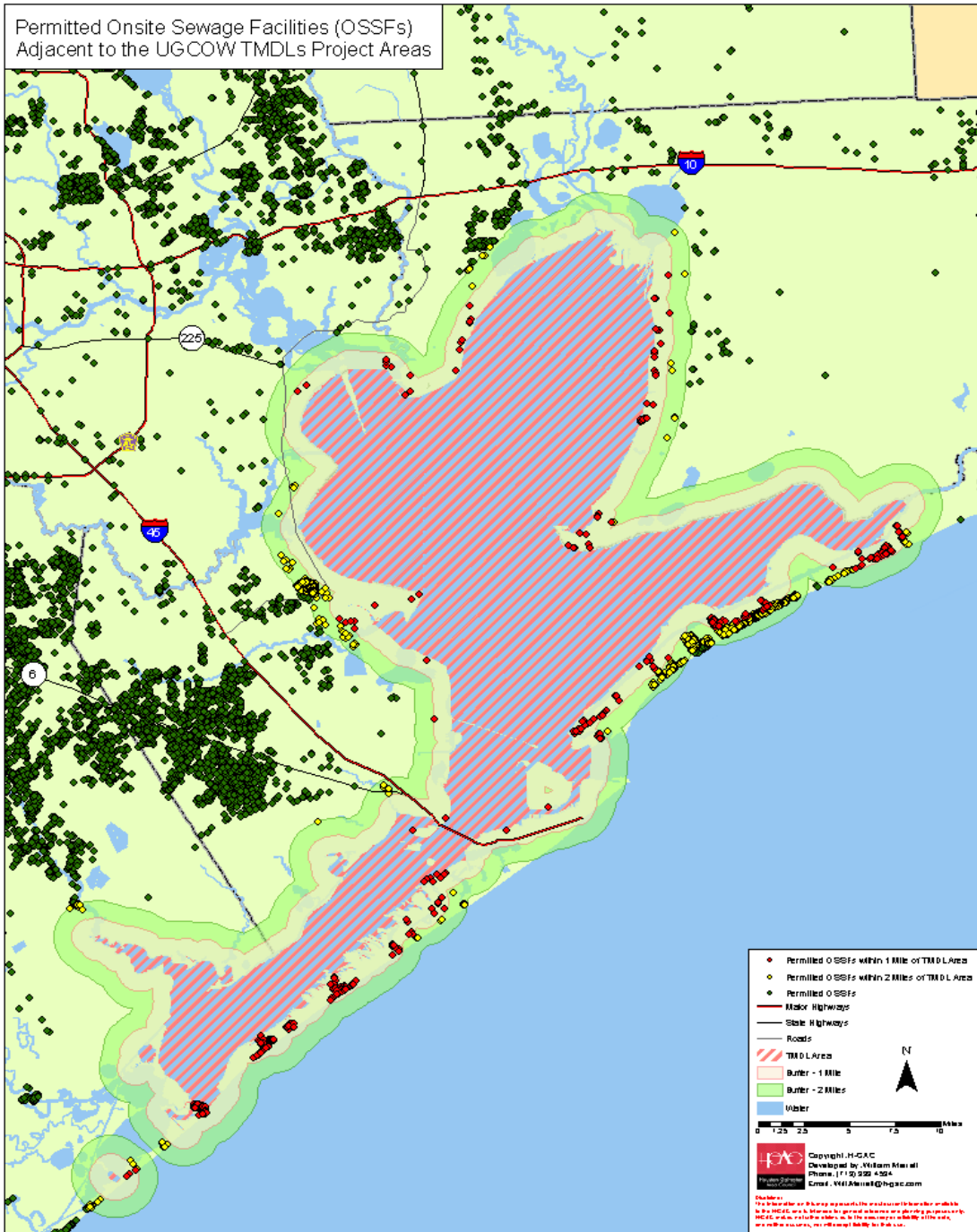


- 107,986 Records Collected
- 73,870 Records Identified
- **34,116 Records Remaining**





# Applications: OGCOW TMDLs



# Limitations of Address Matching: Street Network and Parcel ID Centroids



# ■ ■ ■ Limitations of Address Matching





# ■ ■ ■ Limitations of Address Matching



# Implementing GPS



- Precision and Accuracy
- Eliminating “Lost” Records
- Using TCEQ OPP 8.12 Standards
  - Receiver Procurement
  - Training



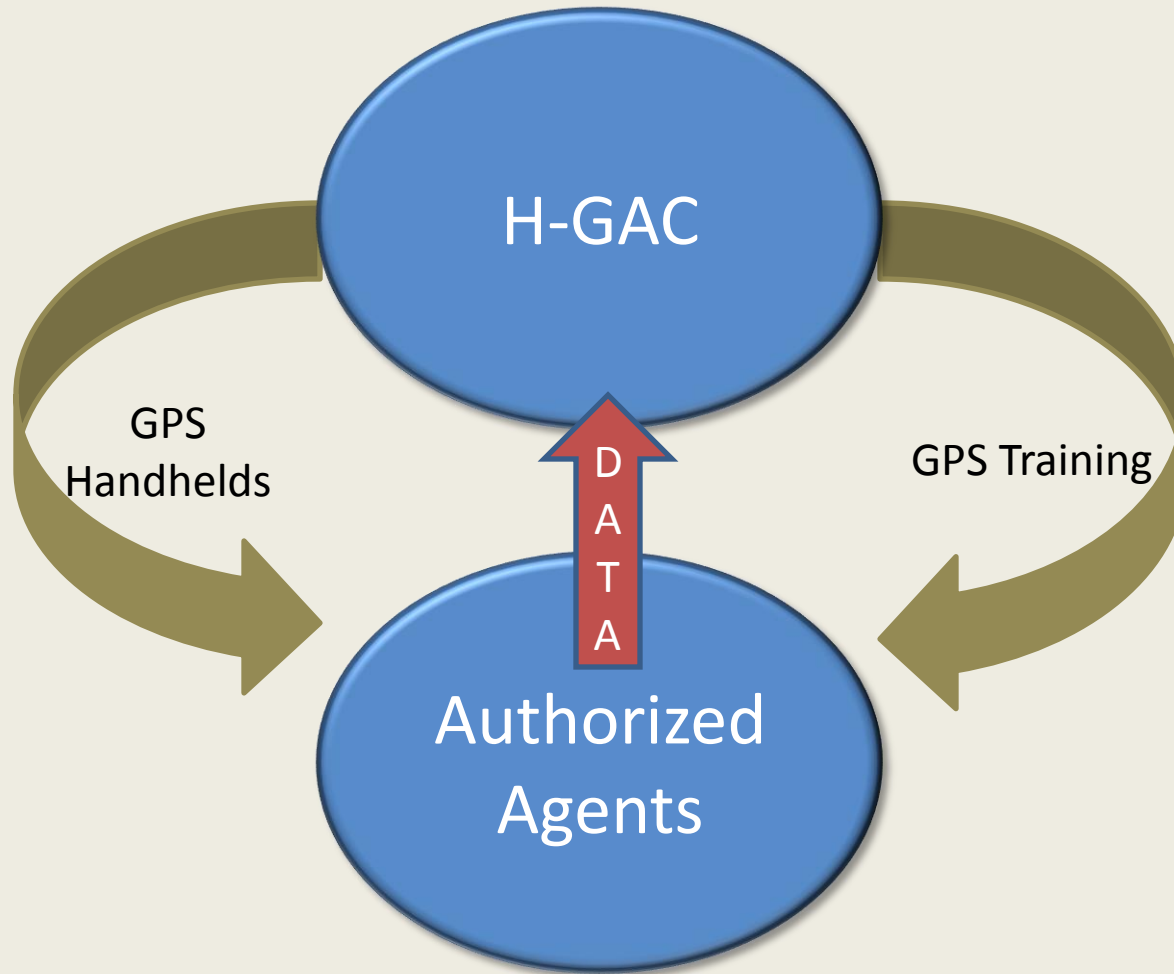
# GPS



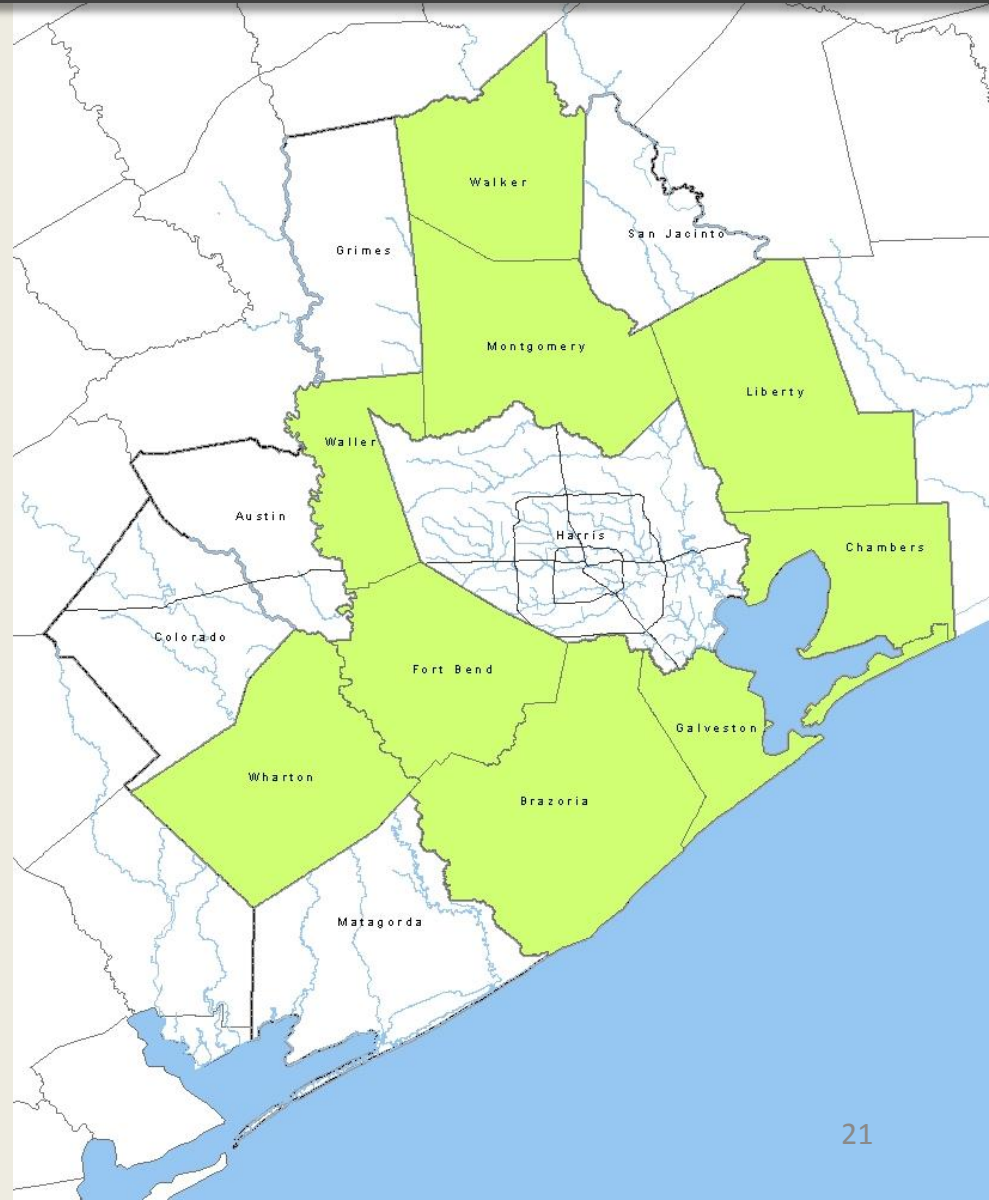
- Garmin eTrex Vista H
  - High-Sensitivity GPS Unit
  - 24 MB Internal Storage
  - USB for Electronic Storage



# GPS



Brazoria, Chambers,  
Fort Bend, Galveston,  
Liberty, Montgomery,  
Walker, Waller,  
and Wharton  
currently  
participating



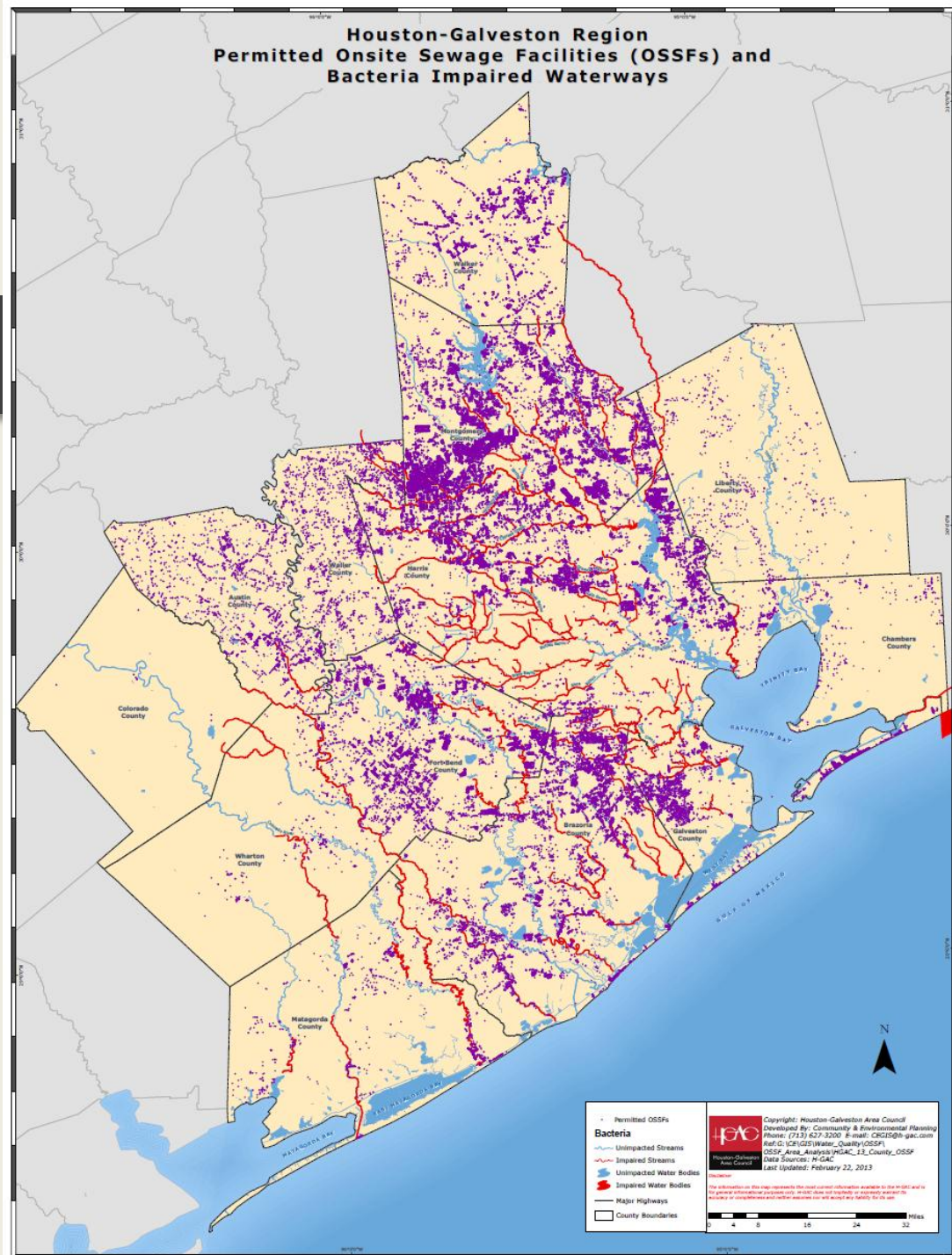
■ ■ ■ GPS



# H-GAC OSSF Database Update



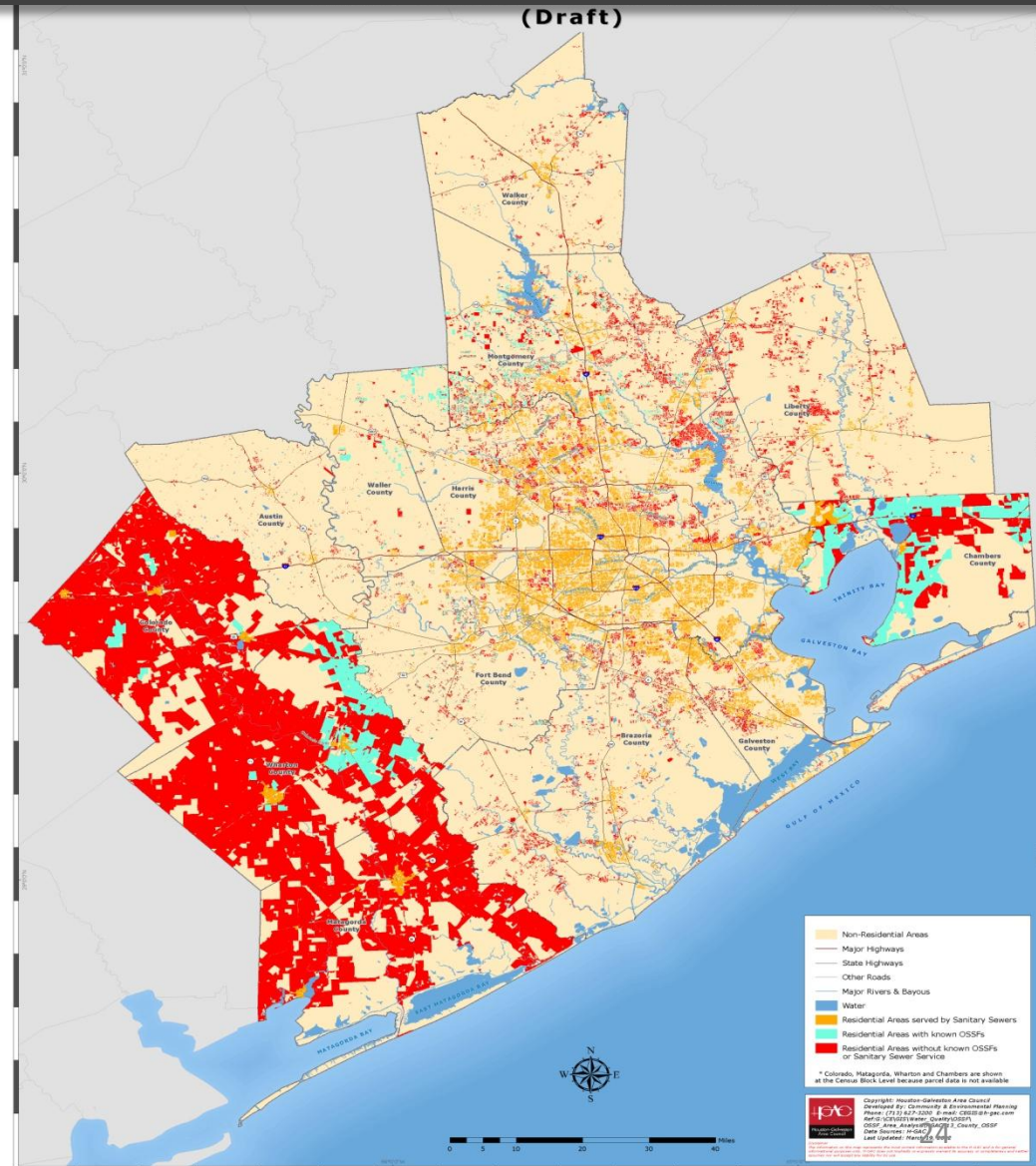
- 73,870 Permit Locations Originally Identified
- 7,994 Added in October
- **81,864 Total in Permits Database**





# Unpermitted/Grandfathered OSSFs

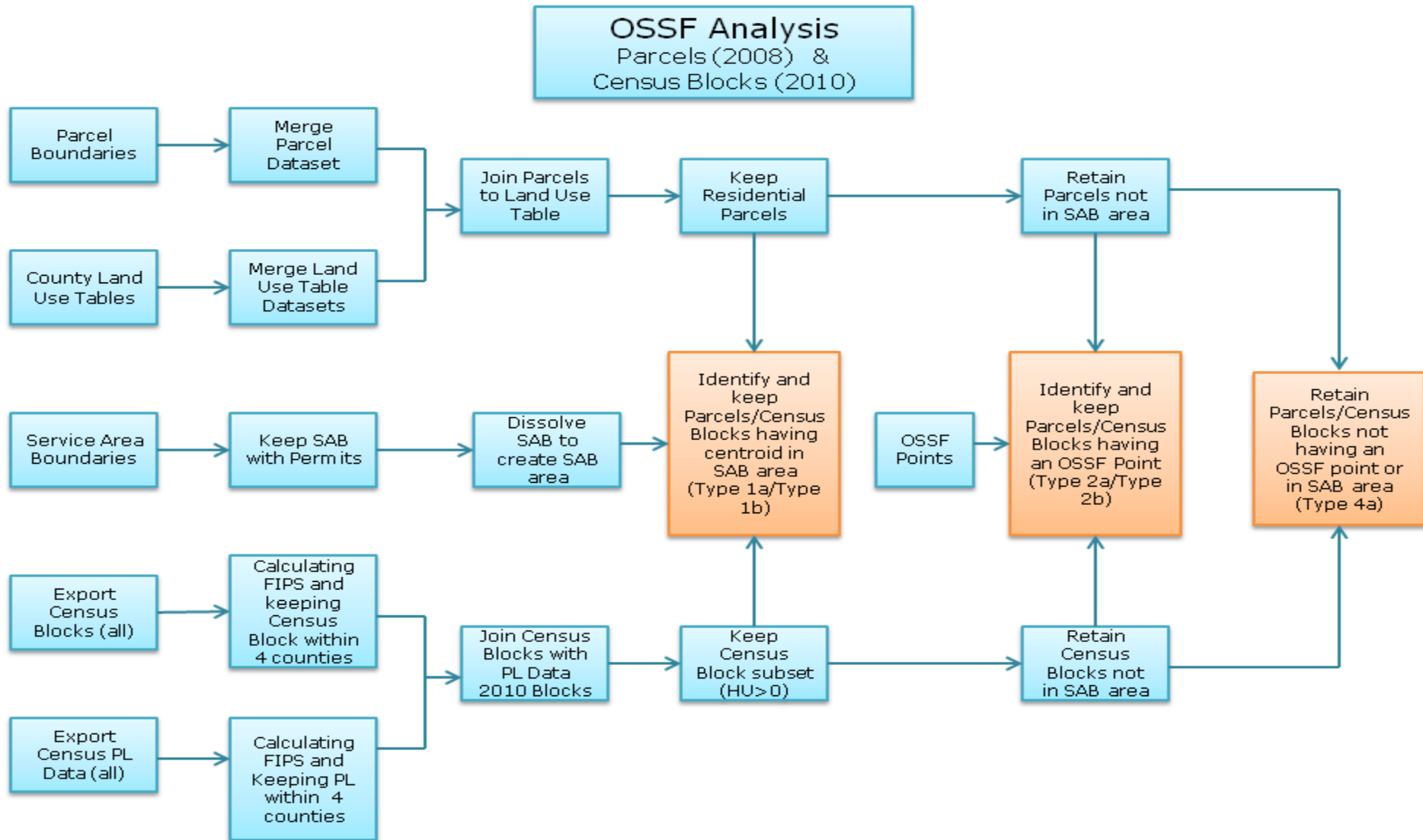
Analysis to Identify Probable Unpermitted, Grandfathered, and/or Undocumented Residential Septic Systems







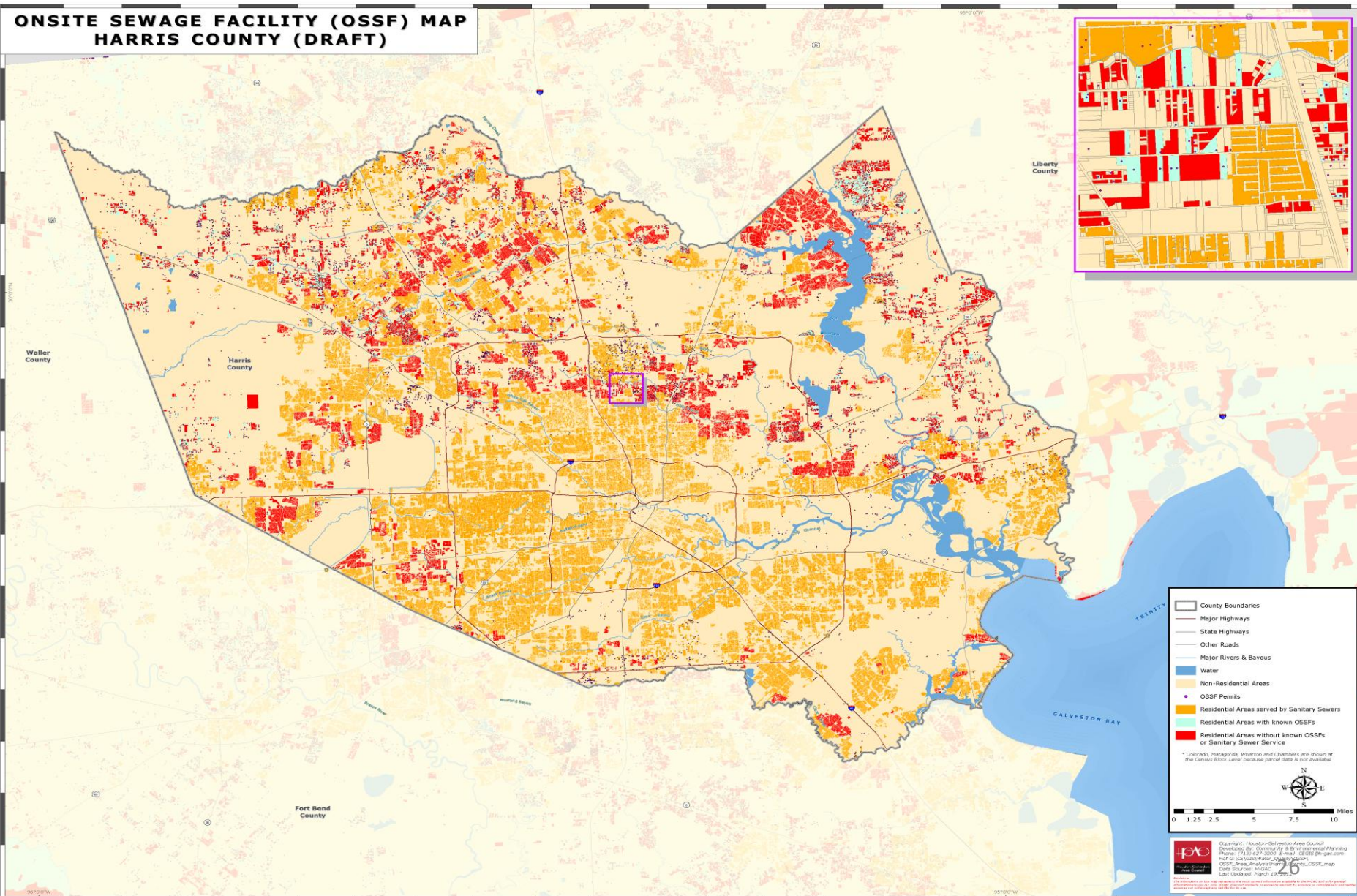
# Unpermitted/Grandfathered OSSFs





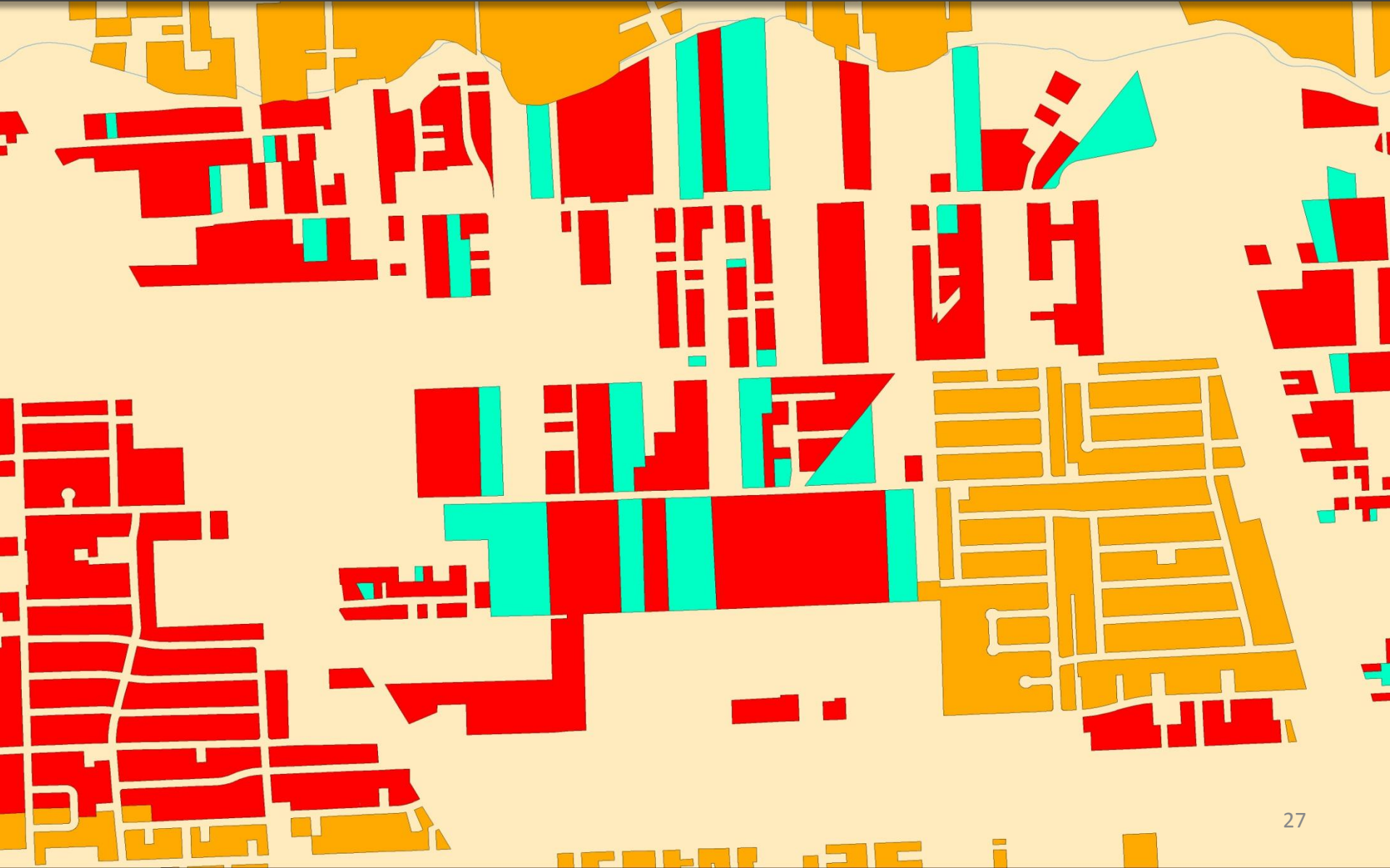
# Unpermitted/Grandfathered OSSFs

**ONSITE SEWAGE FACILITY (OSSF) MAP  
HARRIS COUNTY (DRAFT)**





# Unpermitted/Grandfathered OSSFs





# OSSF Information System

View OSSF information for the region

<http://arctgis02.h-gac.com/ossf/>



# OSSF Information System

View OSSF information for the region

## Map Layers and Legends

Layer Transparency 0%  100%

Current Selected Layer is:

Click '+' icon to expand layers to view legends

Permitted OSSFs by Age

Permitted OSSFs by Agent

Political Boundaries

Roads (ESRI Service)

Cites and Places

OSSF Residential Analysis

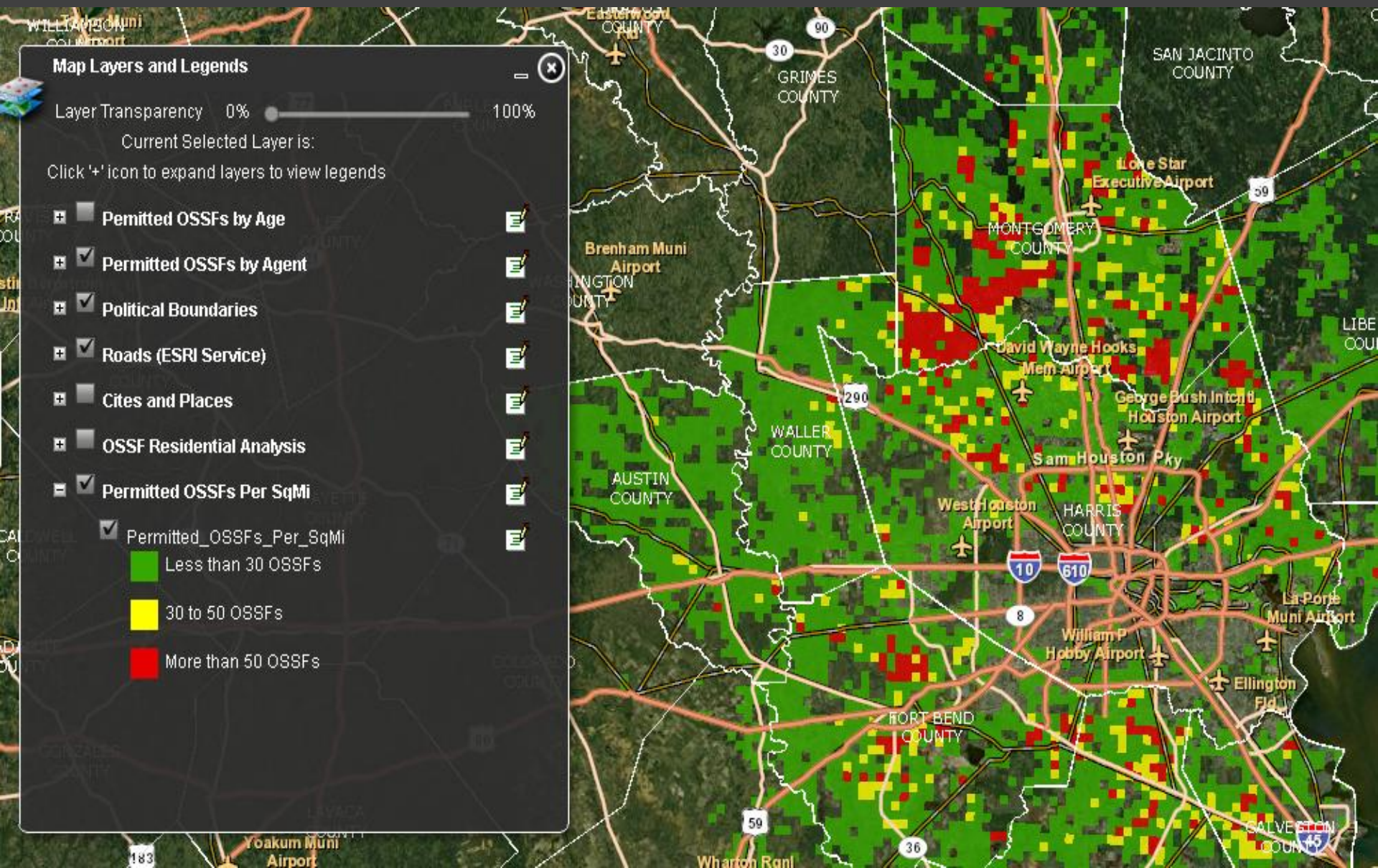
Permitted OSSFs Per SqMi

Permitted\_OSSFs\_Per\_SqMi

Less than 30 OSSFs

30 to 50 OSSFs

More than 50 OSSFs





# OSSF Information System

View OSSF information for the region

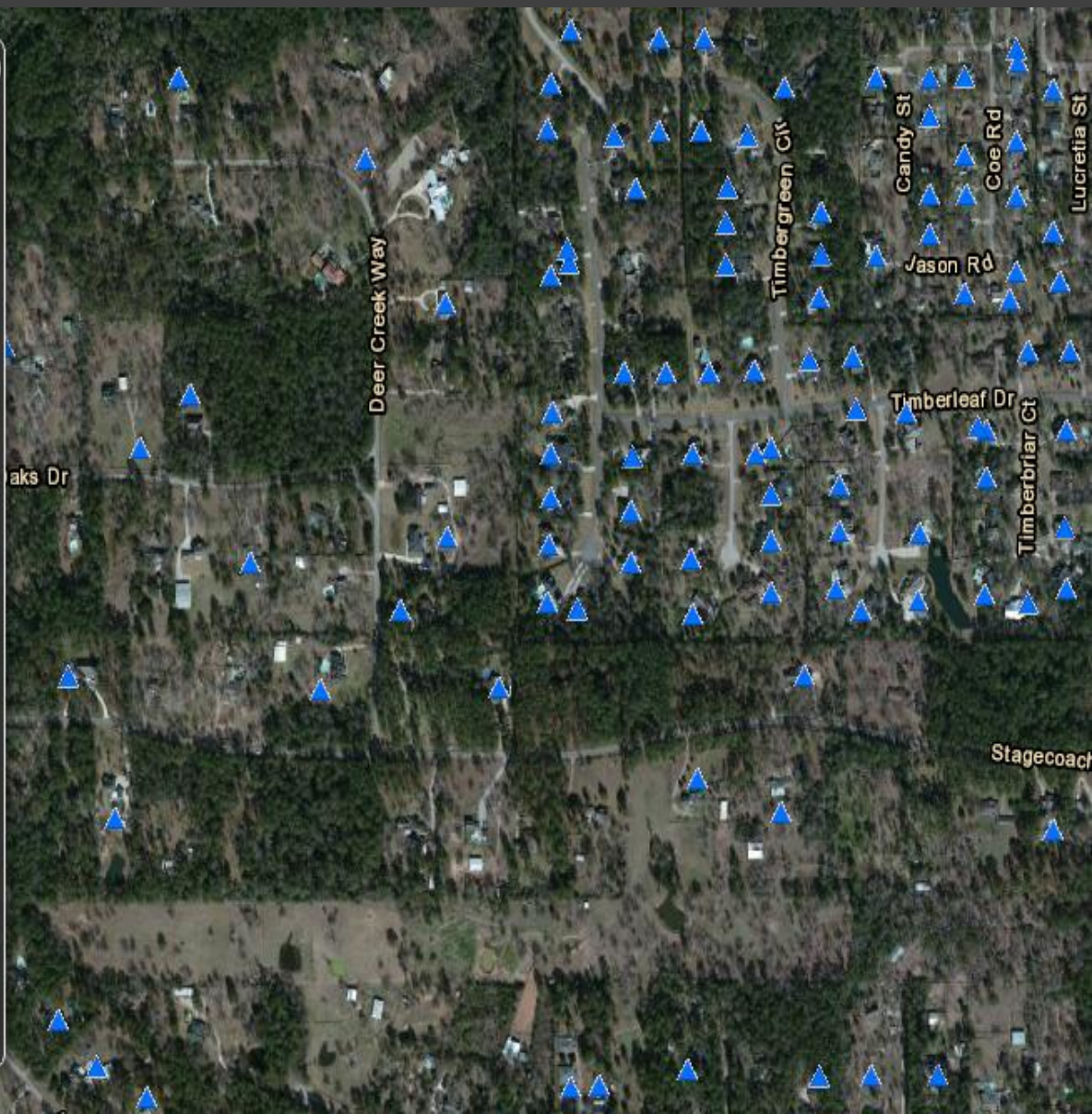
## Map Layers and Legends

Layer Transparency 0%  100%

Current Selected Layer is:

Click '+' icon to expand layers to view legends

-  Chambers County
-  City of Manvel
-  City of Surfside Village
-  Colorado County
-  Fort Bend County
-  Galveston County
-  Harris County
-  Liberty County
-  Matagorda County
-  Montgomery County
-  SJRA
-  TCEQ Region Twelve
-  Village of Surfside Beach
- 





# OSSF Information System

View OSSF information for the region

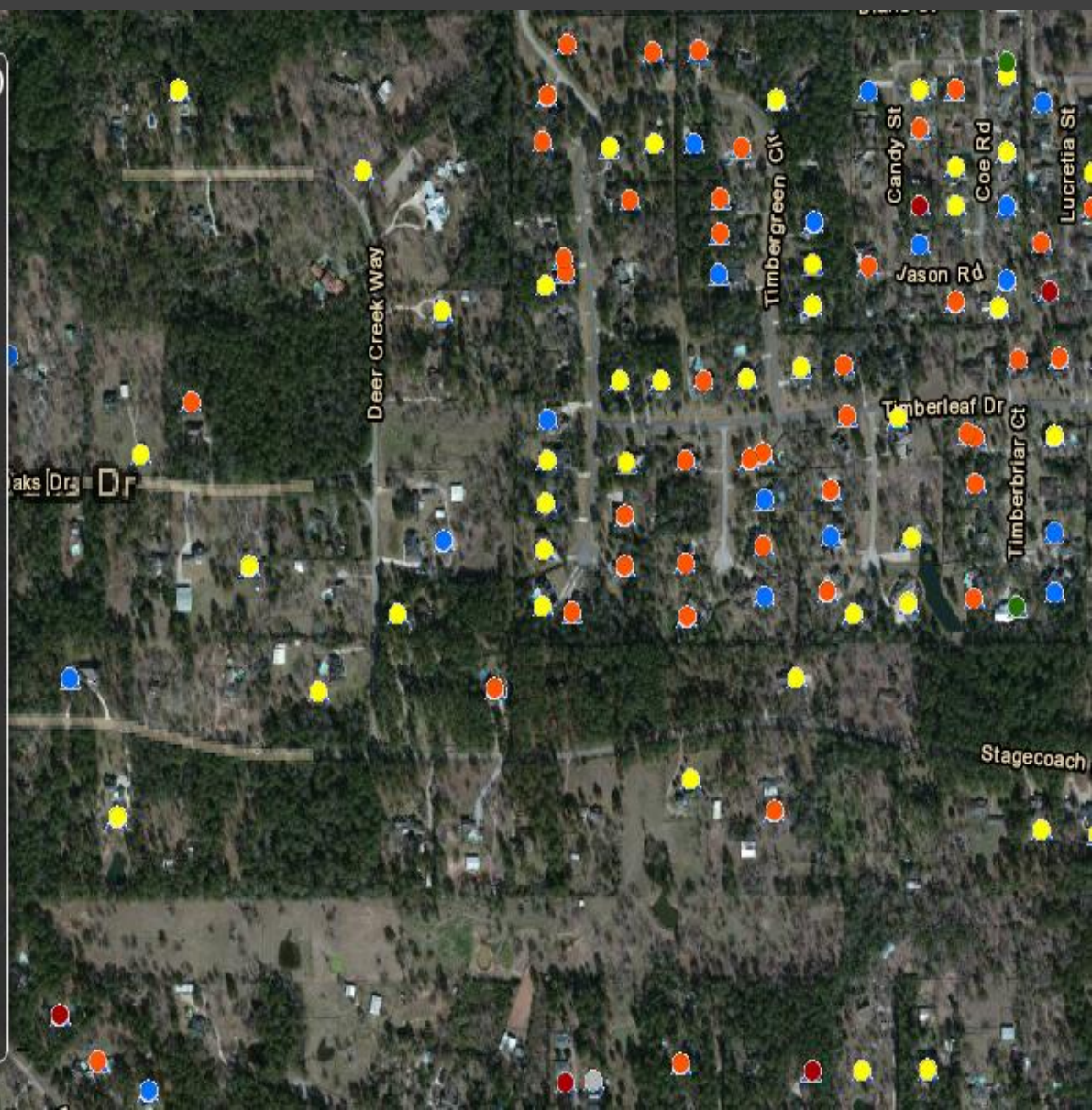
## Map Layers and Legends

Layer Transparency 0%  100%

Current Selected Layer is:

Click '+' icon to expand layers to view legends

- Permitted OSSFs by Age**
  - Less Than 5 Years
  - 5 to 10 Years
  - 11 to 15 Years
  - 16 to 20 Years
  - Greater Than 20 Years
  - Unknown Age
- Permitted OSSFs by Agent**
- Political Boundaries**
- Roads (ESRI Service)**
- Cities and Places**
- OSSF Residential Analysis**
- Permitted OSSFs Per SqMi**





# OSSF Information System

View OSSF information for the region

## Map Layers and Legends

Layer Transparency 0%  100%

Current Selected Layer is:

Click '+' icon to expand layers to view legends

- Permitted OSSFs by Age
- Permitted OSSFs by Agent
- Political Boundaries
- Roads (ESRI Service)
- Cites and Places
- OSSF Residential Analysis
  - OSSF\_Residential\_Analysis
    - Residential Areas with OSSFs
    - Residential Areas with Services
    - Residential Areas without Services
- Permitted OSSFs Per SqMi







# OSSF Information System

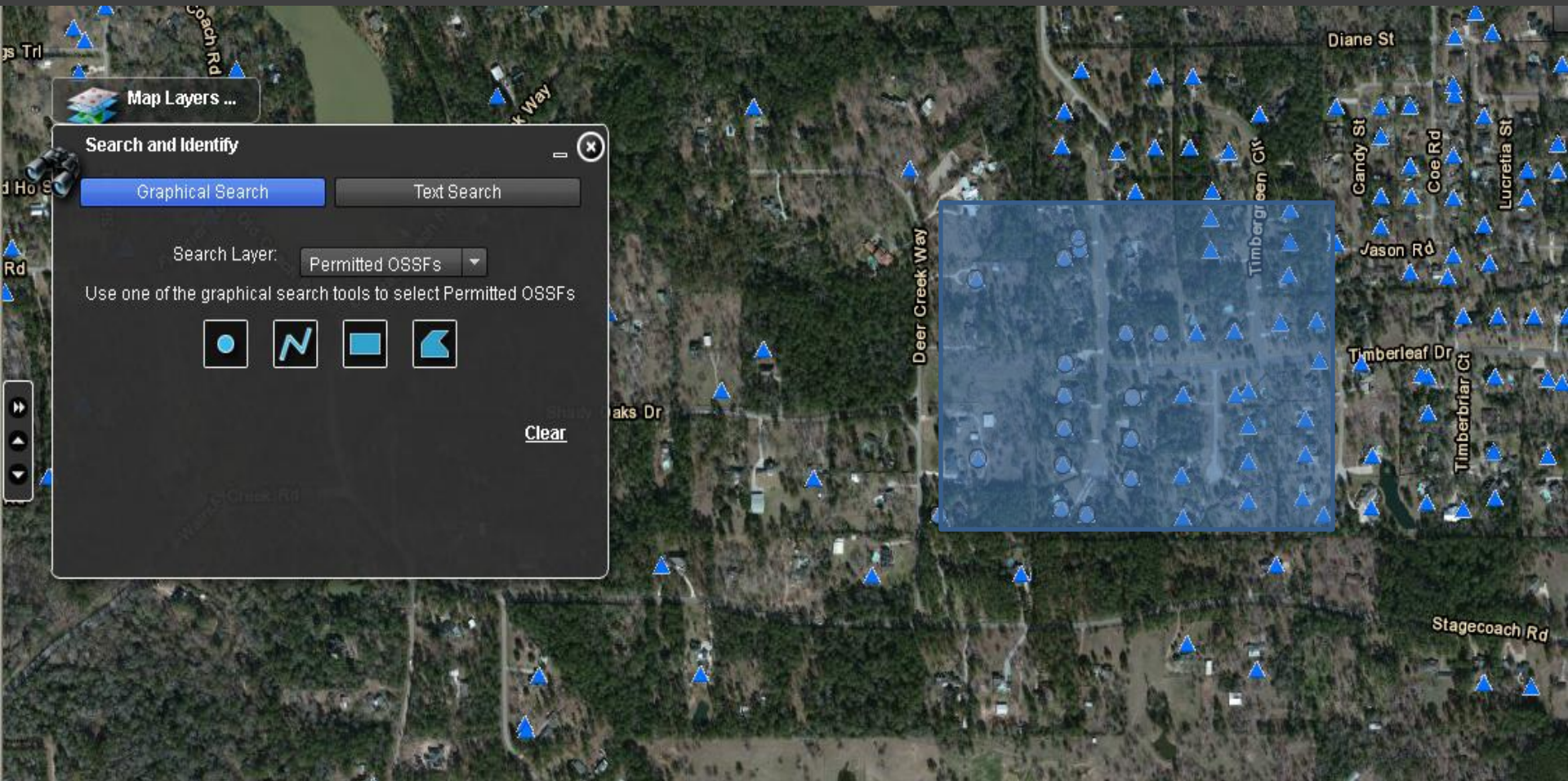
View OSSF information for the region

- Tool Bar





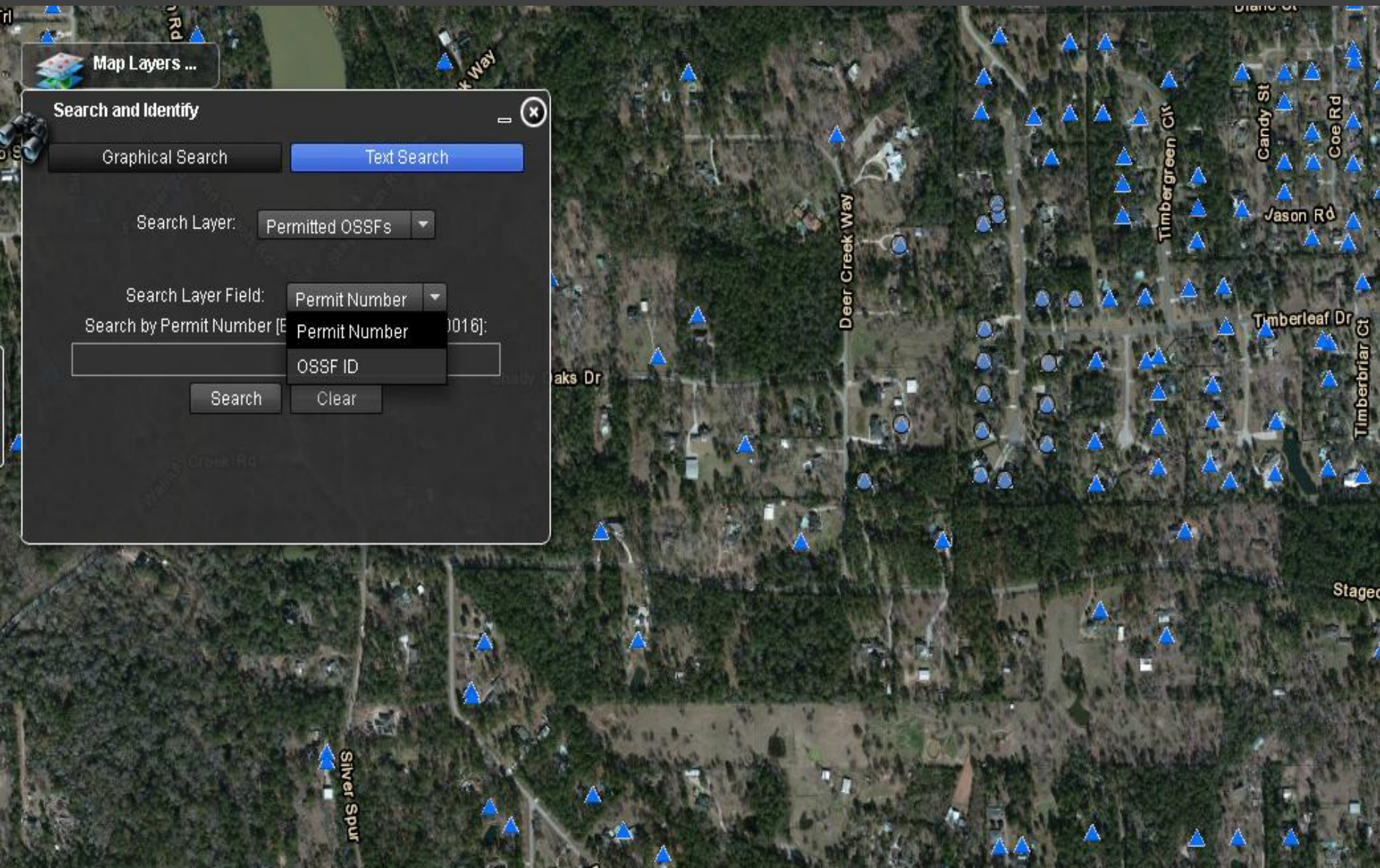
# Interactive Tools



Search Results										
OSSF ID	Latitude	Longitude	Permit #	Permit Date	Permit Year	Permit Age (Yrs)	System Classification	System Type	Authorized Agent	County
OP48154	30.14268206	-95.70021295	42833-98		1998	14	Unknown	Surface Application	Montgomery County	Montgomery
OP48186	30.14049128	-95.70018296	69597-03		2003	9	Unknown	Surface Application	Montgomery County	Montgomery
OP62945	30.14202568	-95.69789639	57188-00		2000	12	Unknown	Surface Application	Montgomery County	Montgomery



# Interactive Tools



Map Layers ...

## Search and Identify

Graphical Search **Text Search**

Search Layer: Permitted OSSFs

Search Layer Field: Permit Number

Search by Permit Number [E Permit Number 0016]:

Search Clear




# Interactive Tools



Sketch

Map Layers...

Clear drawings

Line Color  Style Solid

Width 5 Alpha 1

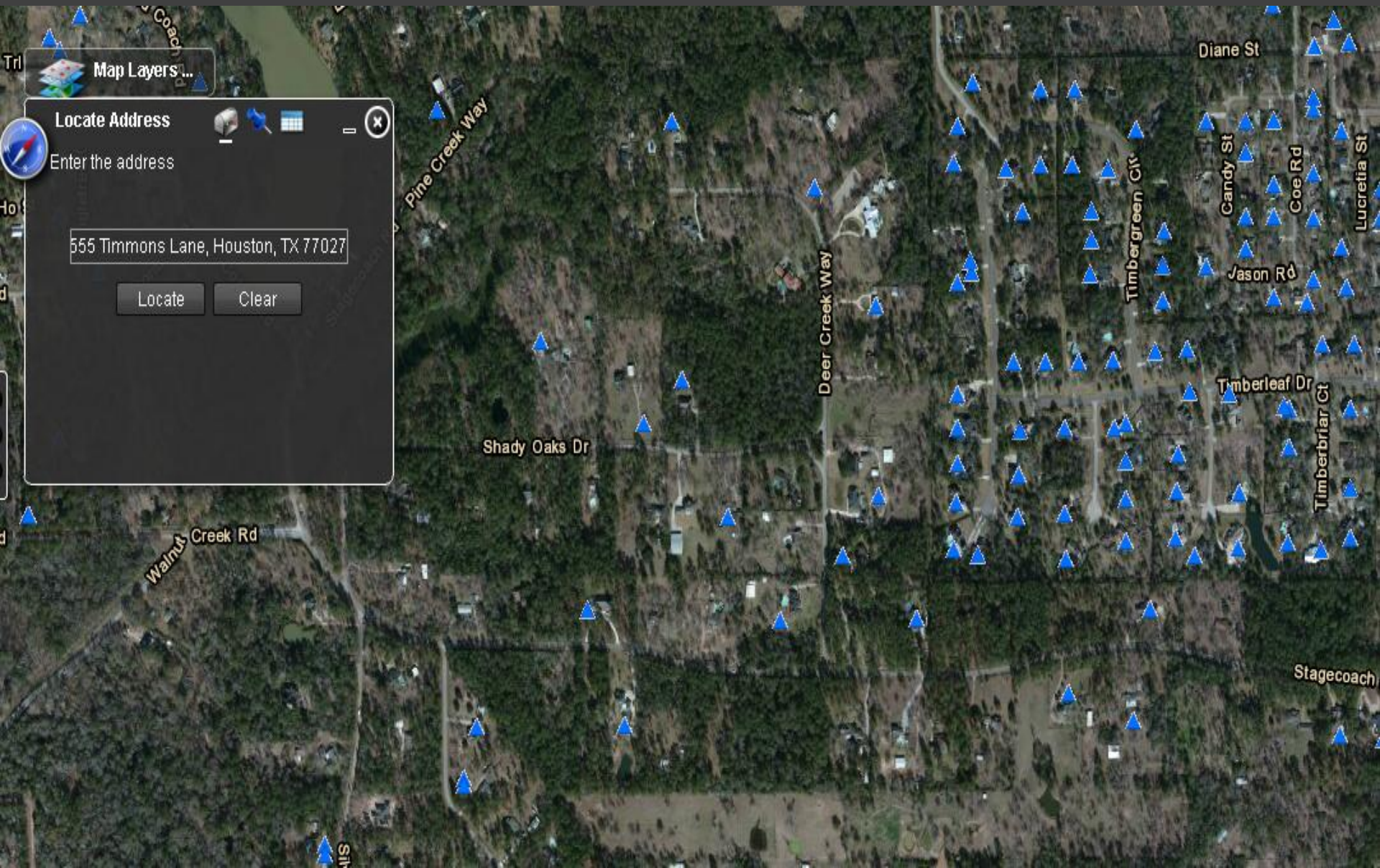
Show Measurements

The sketch tool panel contains several drawing icons: a circle, a line, a curve, a rectangle, a filled circle, a filled oval, a polygon, a star, and a text tool. The 'Line Color' is set to yellow, 'Style' is 'Solid', 'Width' is 5, and 'Alpha' is 1. There is a 'Show Measurements' checkbox which is currently unchecked.

Not  
OSSFs!



# Interactive Tools



Map Layers...

Locate Address

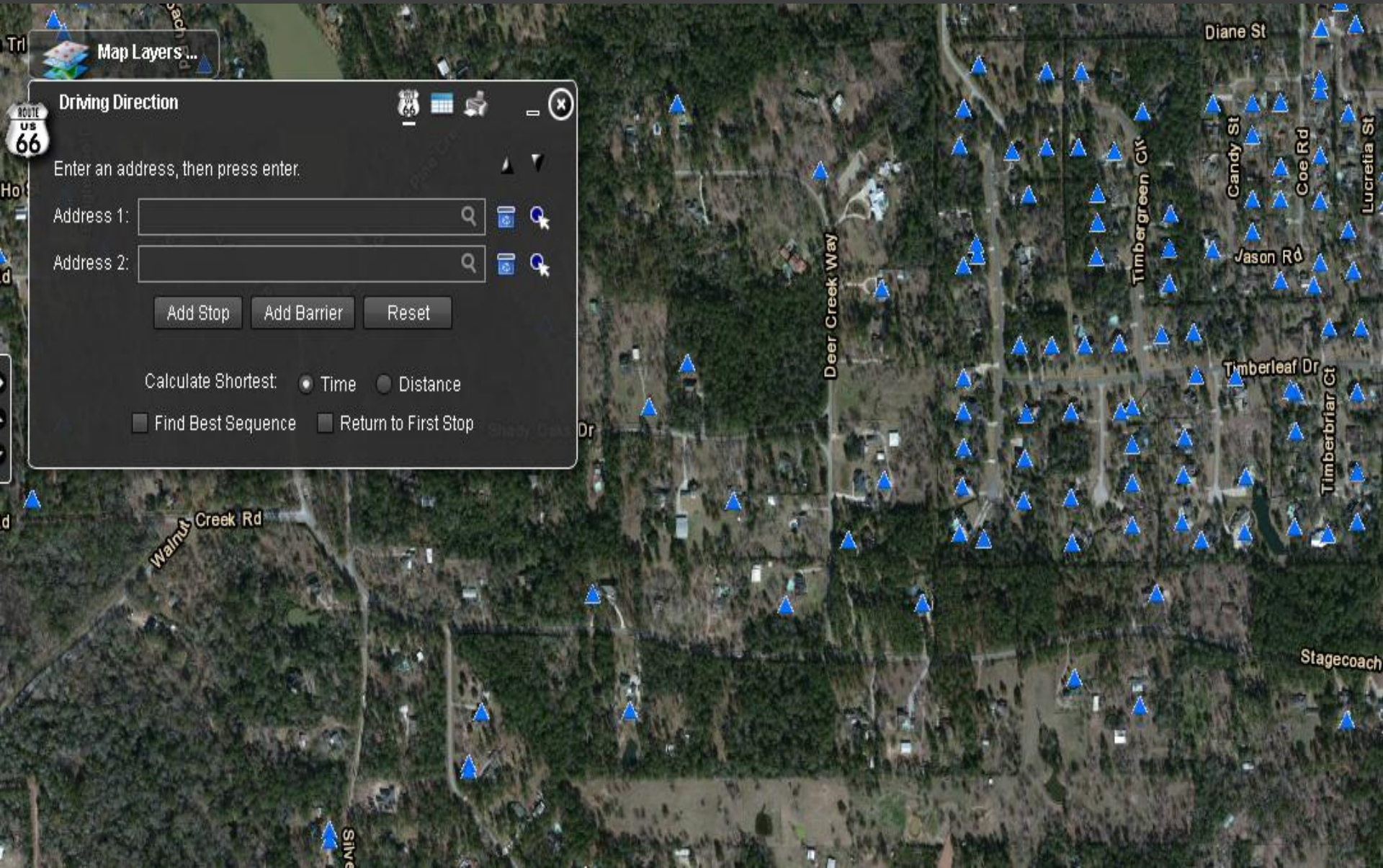
Enter the address

555 Timmons Lane, Houston, TX 77027

Locate Clear



# Interactive Tools



Map Layers...

### Driving Direction

Enter an address, then press enter.

Address 1:

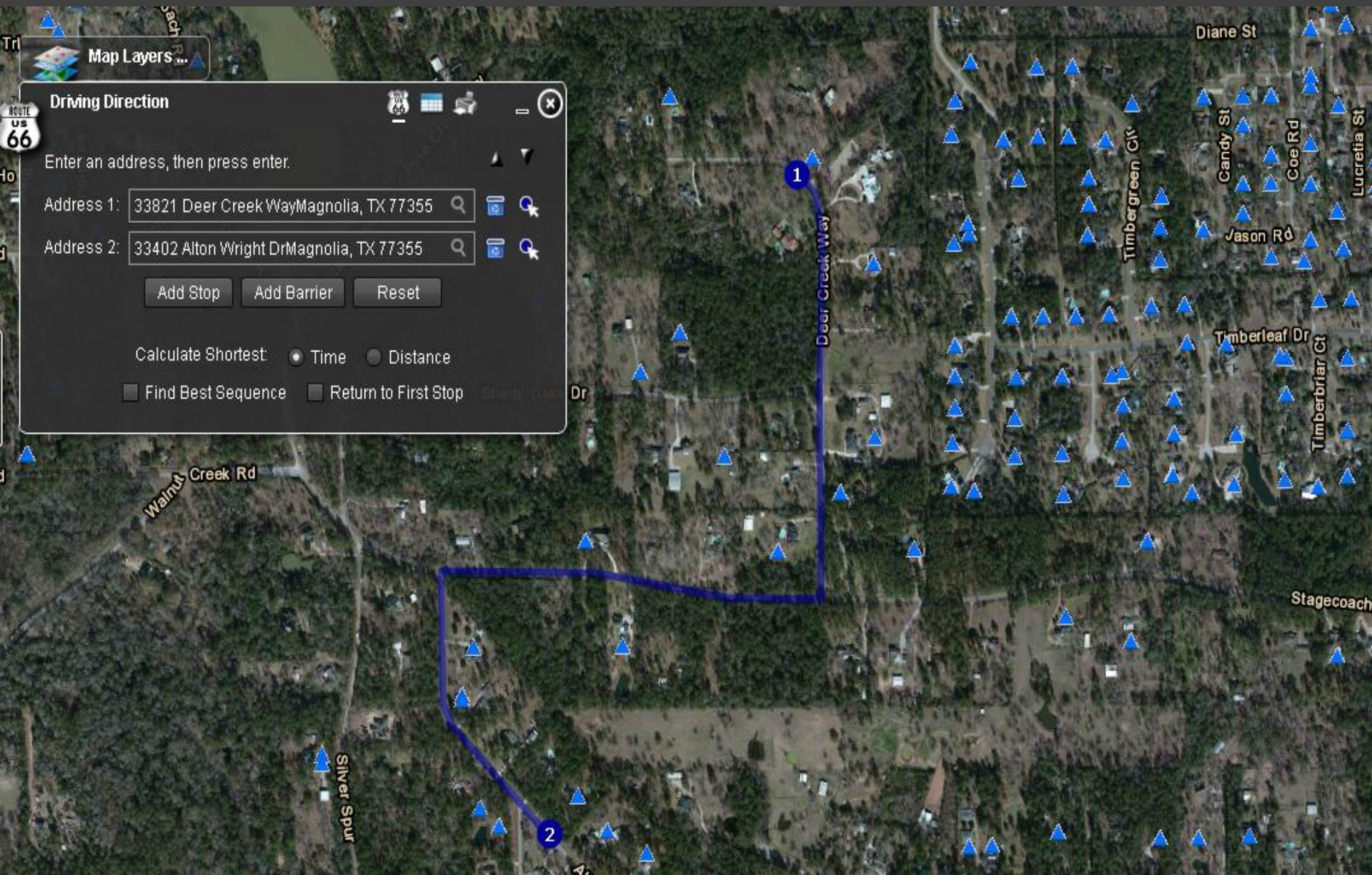
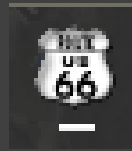
Address 2:

Calculate Shortest:  Time  Distance

Find Best Sequence  Return to First Stop



# Interactive Tools



Map Layers ...

## Driving Direction



Enter an address, then press enter.

Address 1:

Address 2:

Add Stop

Add Barrier

Reset

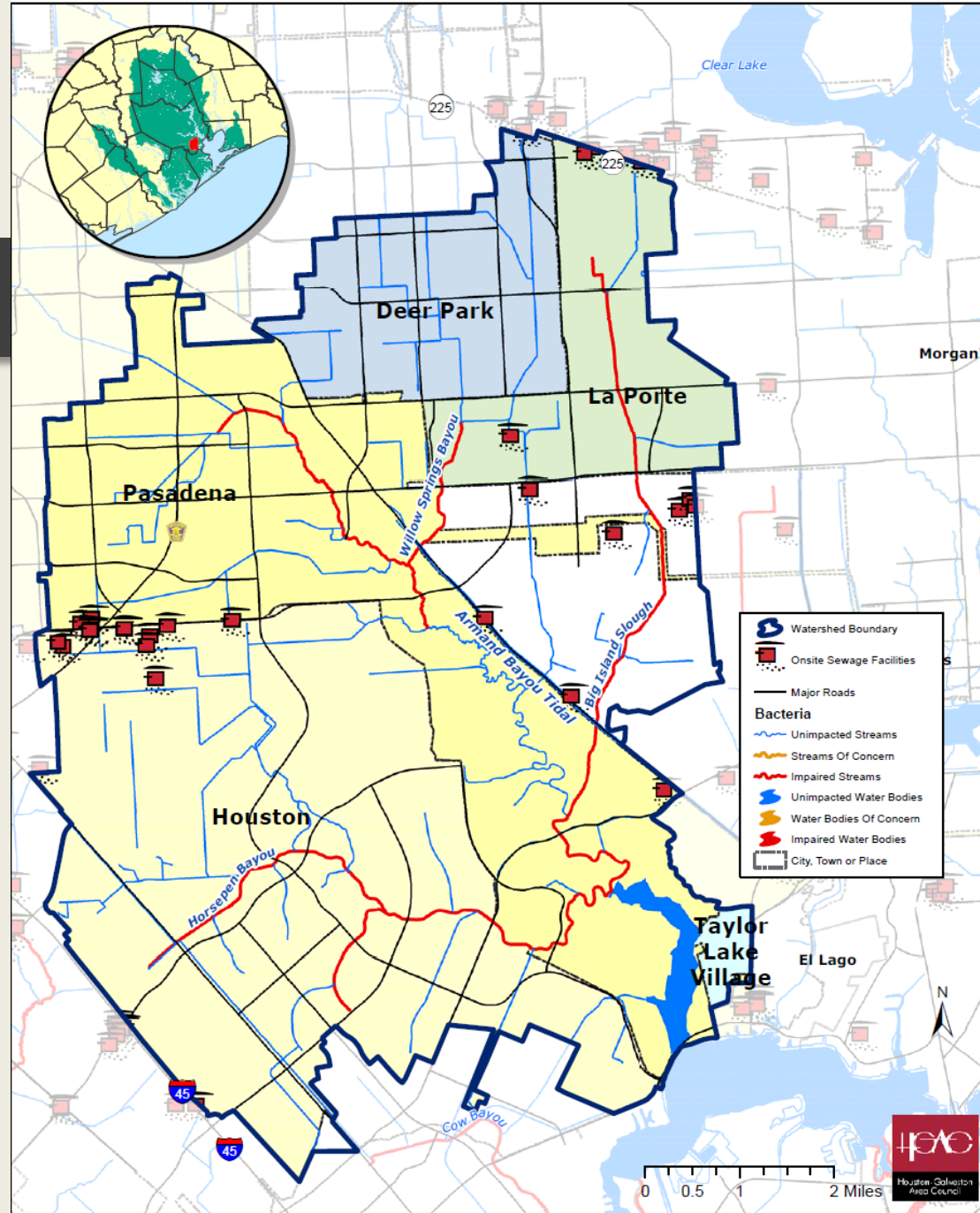
Calculate Shortest:  Time  Distance

Find Best Sequence  Return to First Stop

# Armand Bayou OSSF Analyses



- 27 Permitted OSSFs Identified

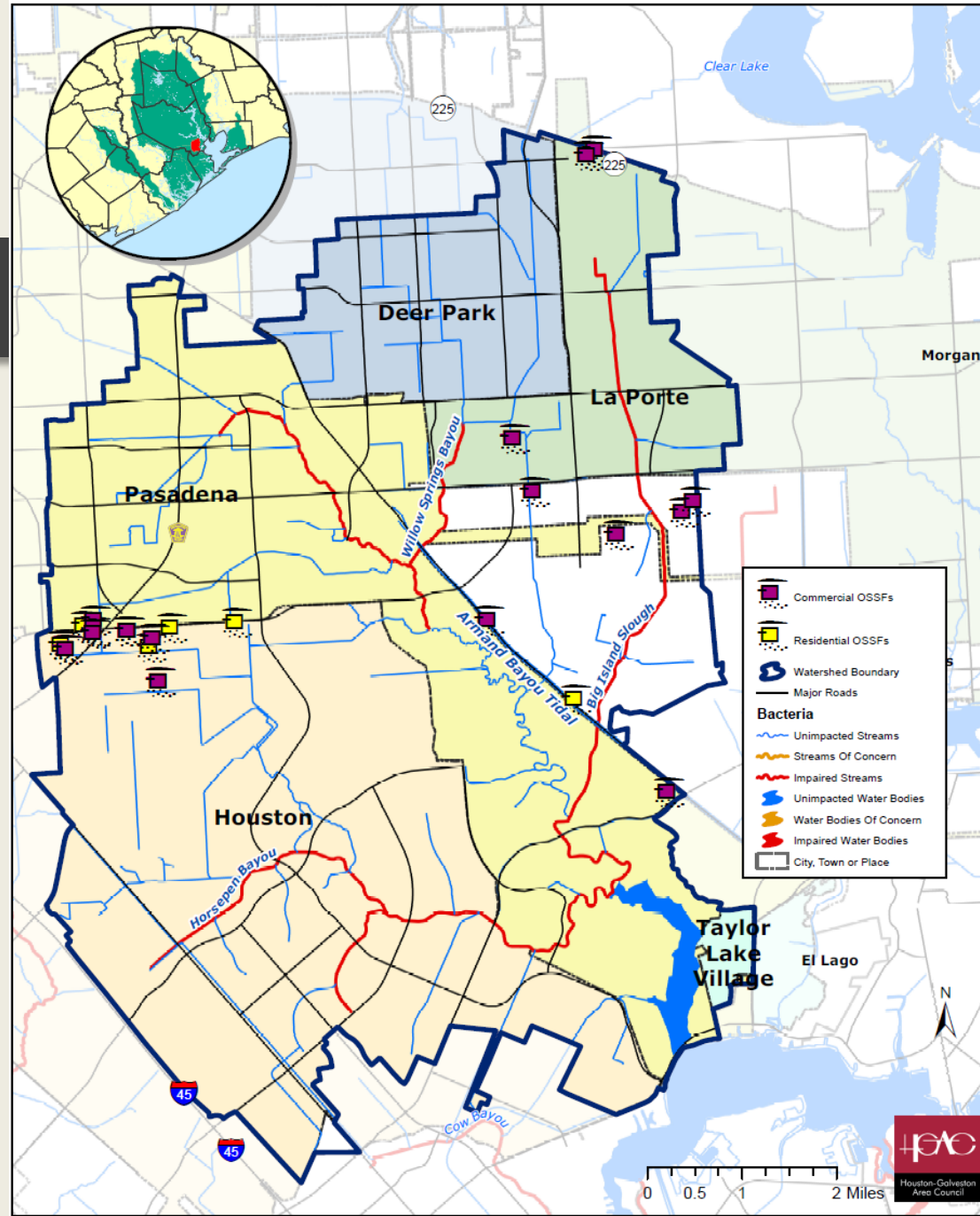




# Armand Bayou OSSF Analyses



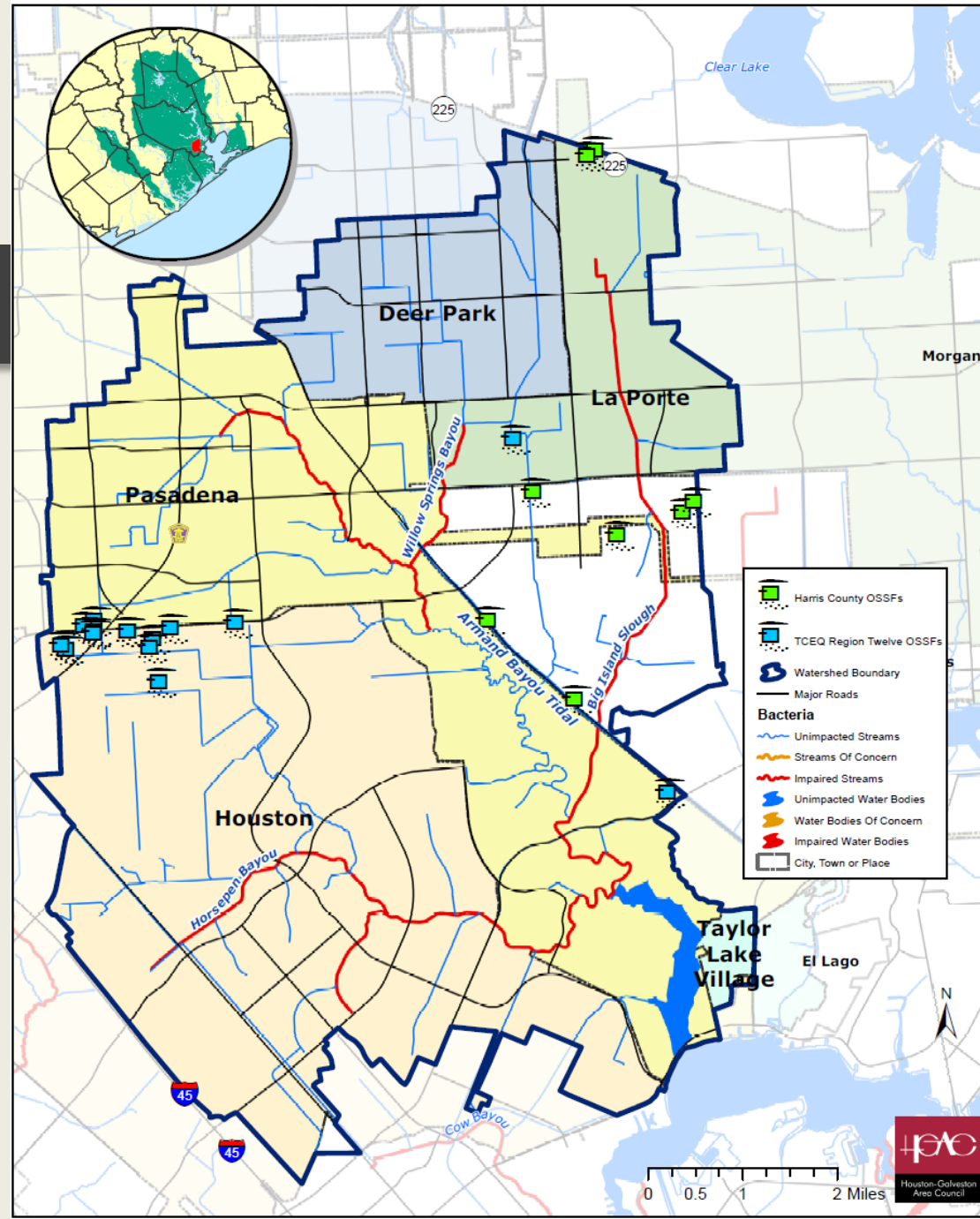
- 8 Residential (Purple)
- 19 Commercial (Yellow)



# Armand Bayou OSSF Analyses



- 9 Permitted Through Harris County (Green)
- 18 Permitted Through TCEQ Region Twelve (Blue)

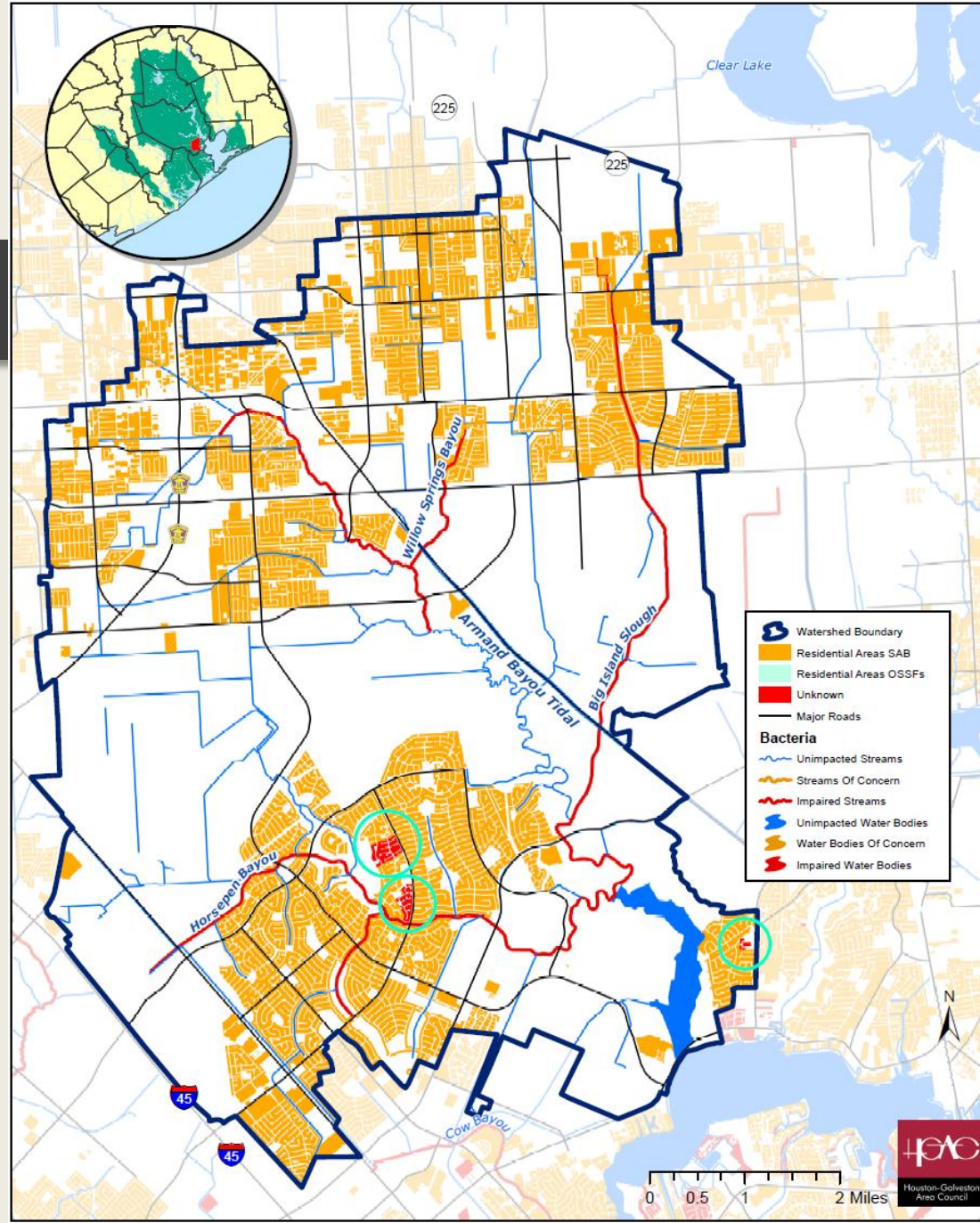


# Armand Bayou OSSF Analyses



- 10 Potential Residential OSSFs Discovered

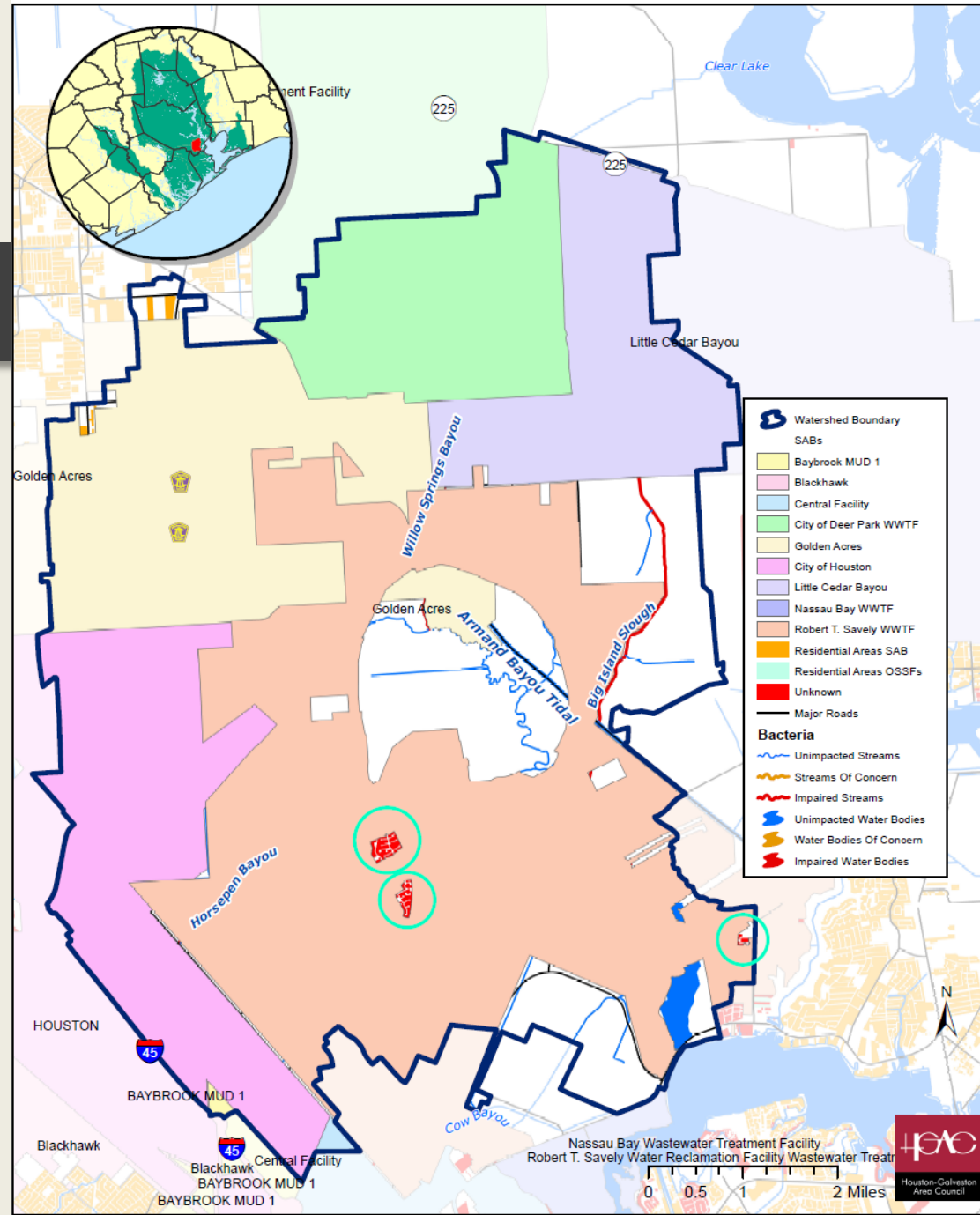
The Armand Bayou Watershed



# Armand Bayou OSSF Analyses



- 9 Service Area Boundaries





# Ongoing and Future Endeavors



- Expanding Permit Geodatabase
- Collecting Violation Data
- Expanding Unpermitted, Grandfathered, or Undocumented OSSF Analysis by Including Commercial and Industrial Parcels
- OSSF CEU Real Estate Inspection Course

# Questions?

**Will Merrell**

Environmental Planner

Houston-Galveston Area Council

Phone: (713) 993-4594

[will.merrell@h-gac.com](mailto:will.merrell@h-gac.com)

