



**PORT HOUSTON™**  
THE INTERNATIONAL PORT OF TEXAS

# **Stormwater Mapping & Successful Illicit Discharge Detection**

April 4, 2017

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# Port Commission



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# Port of Houston

- 25-mile-long
- Diverse public and private facilities
- 150 private industrial companies
- 8 public terminals





- Environmental management of its 9 terminals (14,000 acres)
- Cargo operations (3,400 acres) comprise approximately 15 percent of the overall commerce that occurs along the HSC.
- An environmental leader for all industries and terminal operators located along the HSC.
- No regulatory authority over the operations or activities of these private facilities.
- Adheres to the same municipal, state, federal, and international laws and regulations as the private facilities.

Houston Ship Channel

# Port of Houston Authority

# MISSION

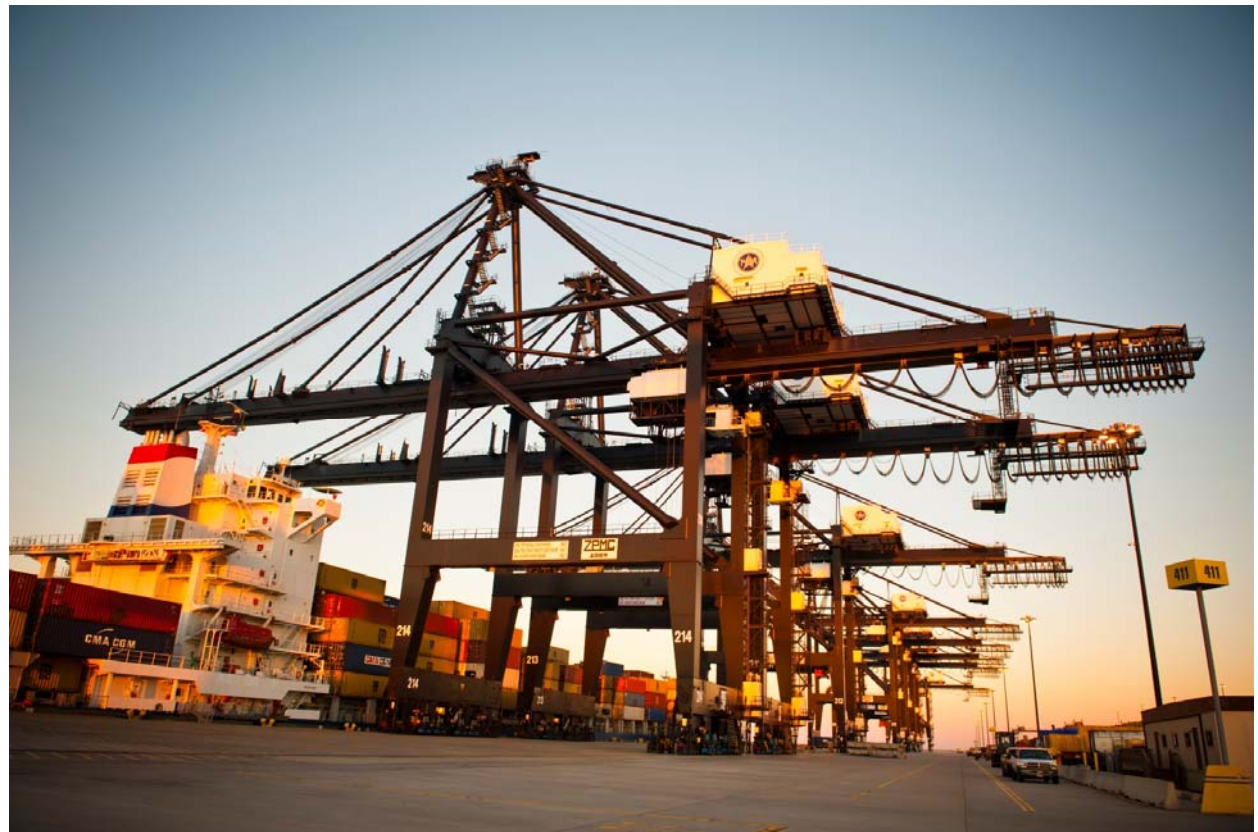
To move the world and drive regional prosperity

The Port of Houston  
provides 1.175 million jobs  
to Texas

Annual statewide economic impact  
is \$265 billion



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# VISION

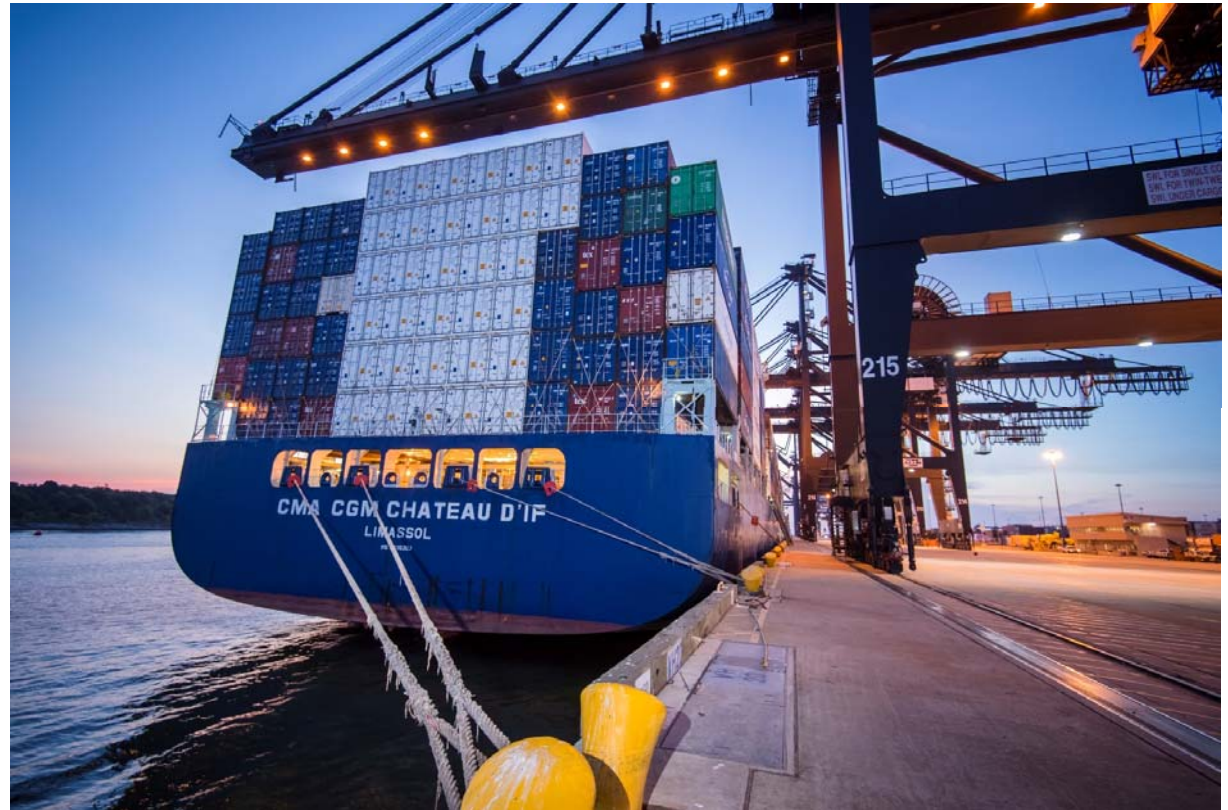
Americas's distribution hub for the next generation

- First in Foreign waterborne tonnage
- First in U.S. import tonnage
- First U.S. export tonnage
- Second in total tonnage

Replacing aging infrastructure with more modern equipment



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## Barbours Cut Terminal 3-29-17

<http://www.khou.com/news/severe-weather-causes-major-damage-in-morgans-point/426749089>

# ISO 14001 EMS



The Port of Houston Authority will:

- **Comply** with environmental laws and regulations
- **Create** business practices to prevent pollution and support sustainability
- **Communicate**, engage, and collaborate with stakeholders
- **Commit** to being a recognized maritime industry leader in environmental stewardship
- **Continuously improve** environmental performance

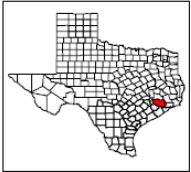
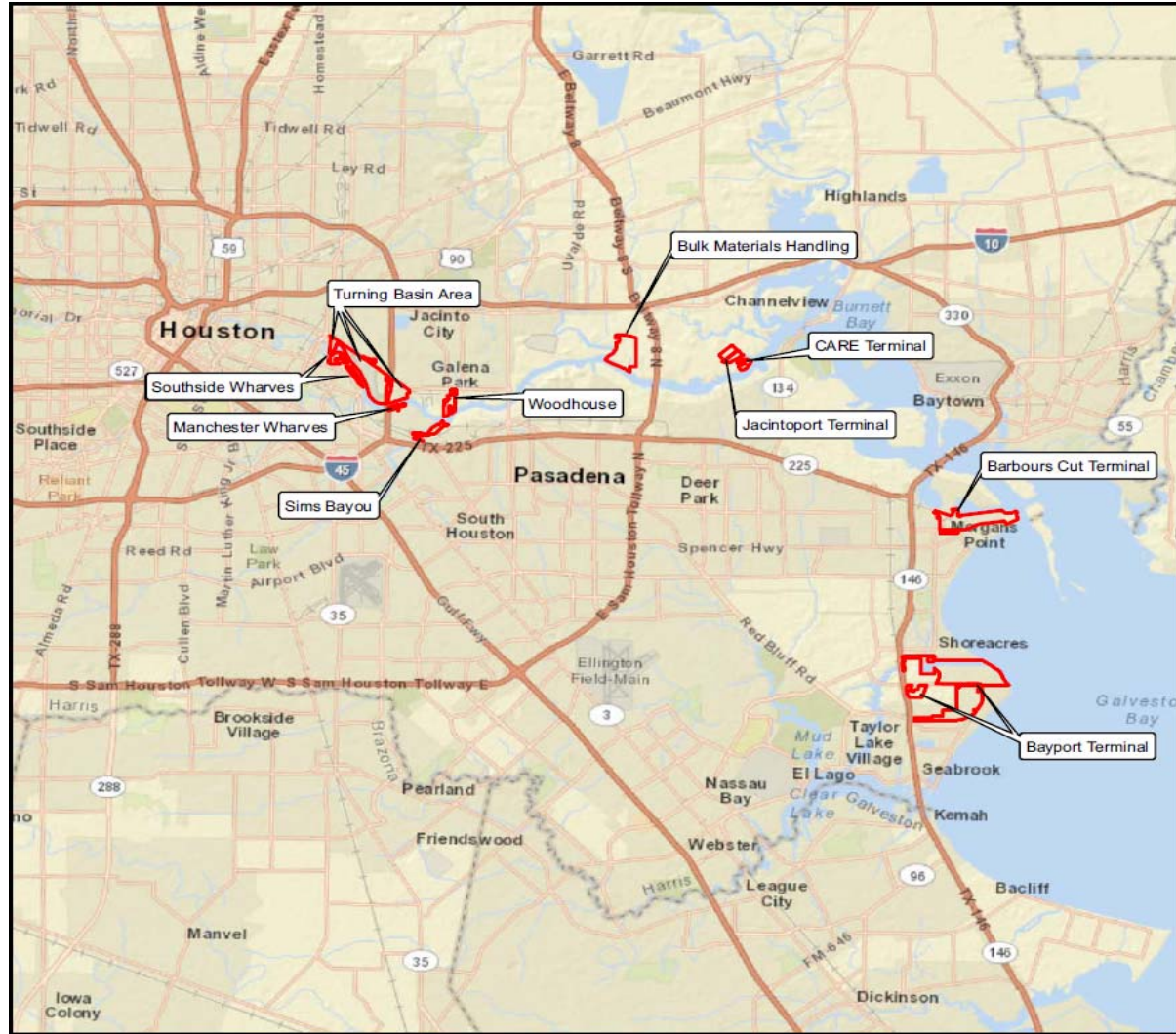


**PORT OF HOUSTON AUTHORITY**




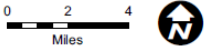


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**Legend**

 MS<sub>4</sub> Boundary

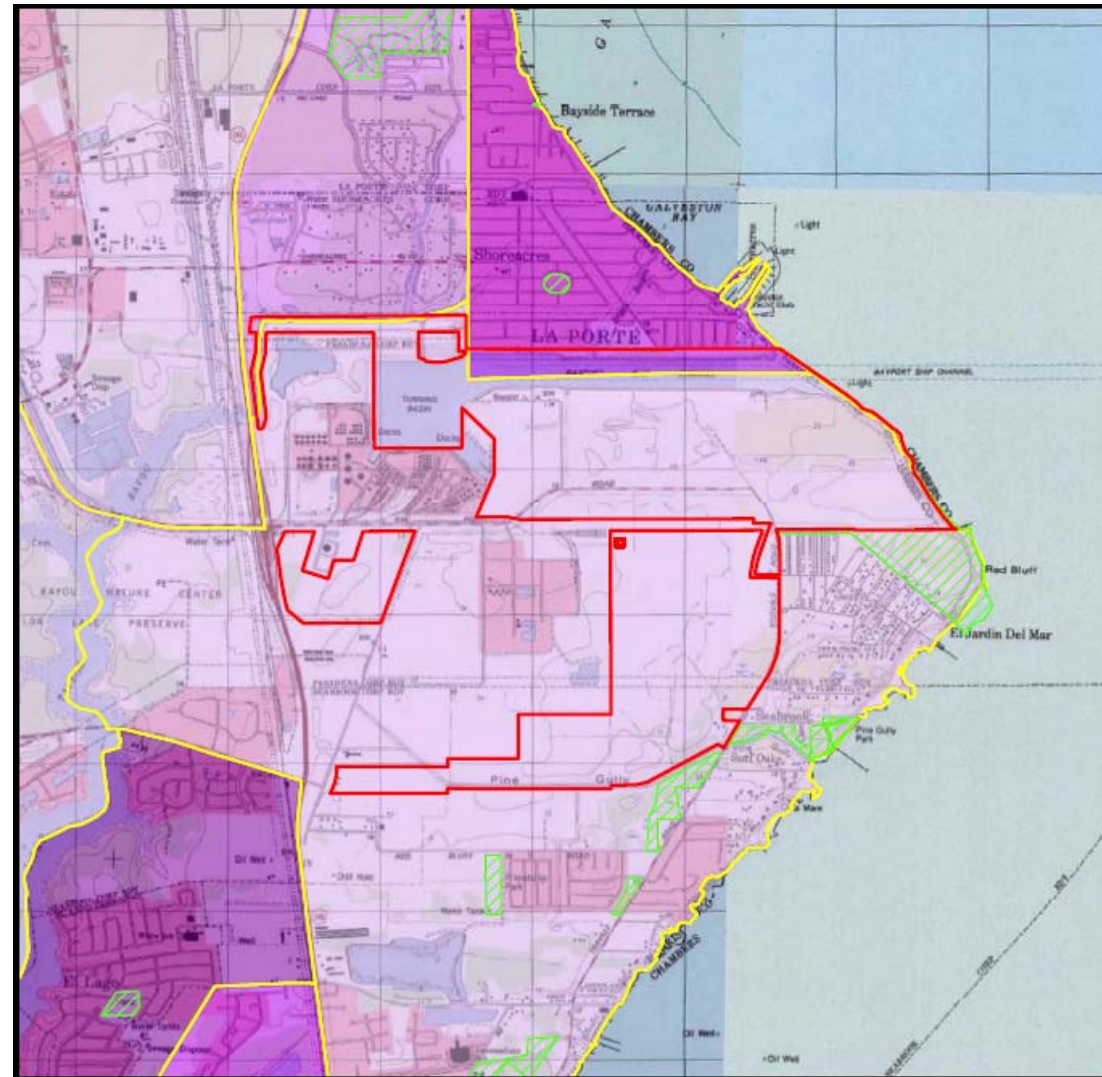
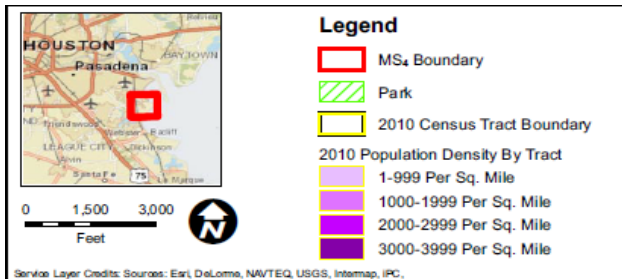


Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand).

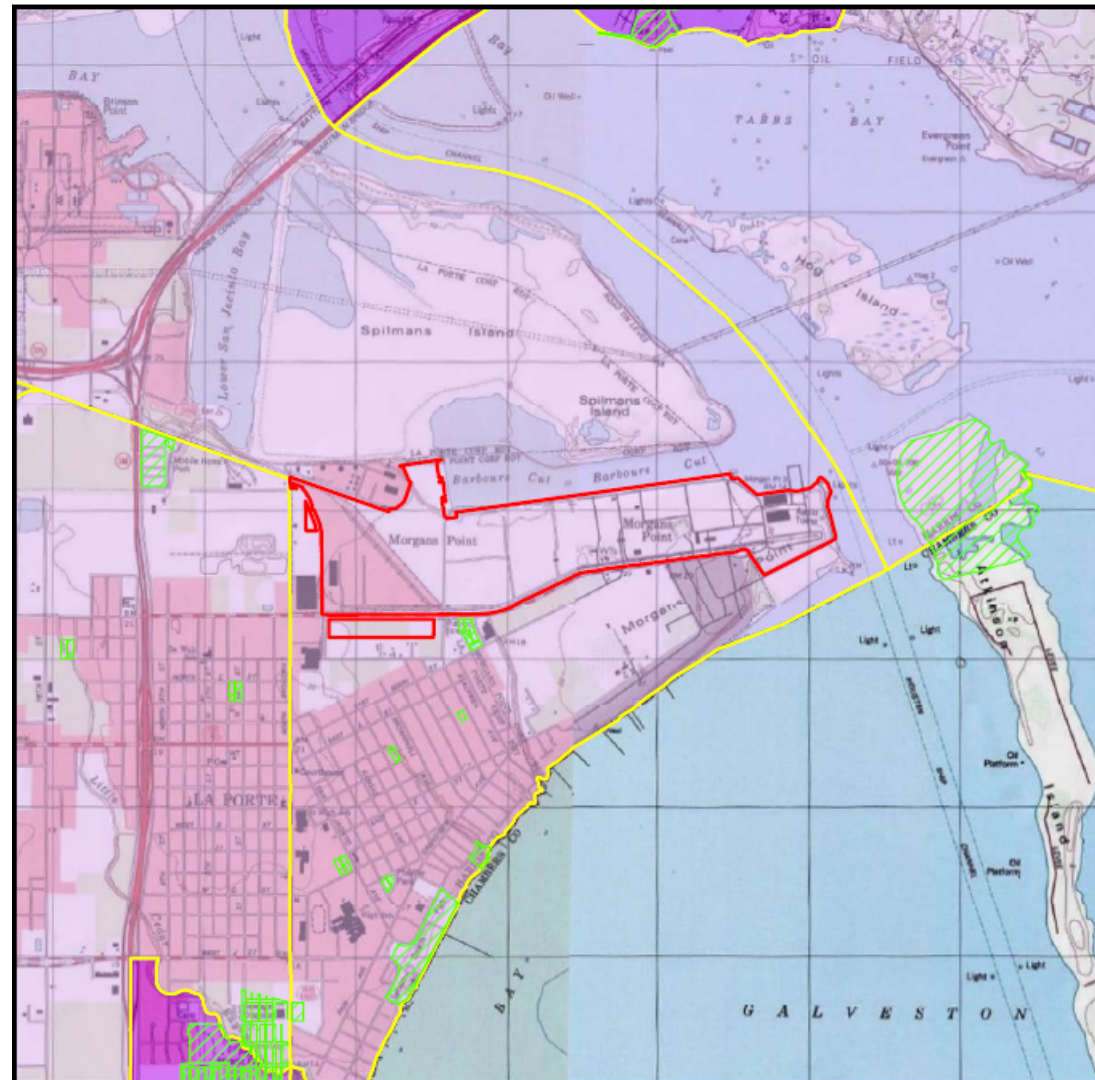
# BAYPORT



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# BARBOURS CUT



HOUSTON  
Pasadena

0 1,500 3,000  
Feet

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC,

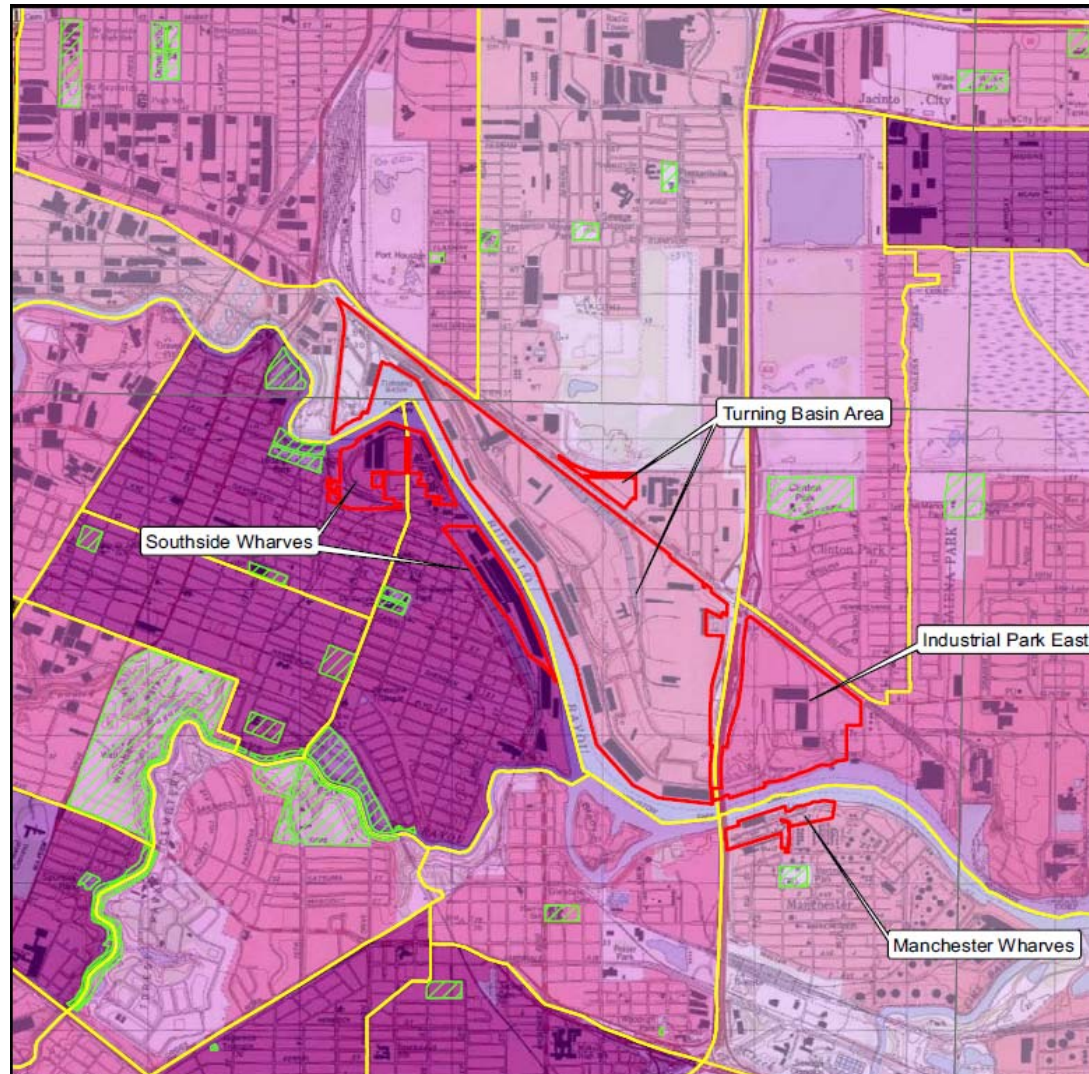
**Legend**

- MS<sub>1</sub> Boundary
- Park
- 2010 Census Tract Boundary

2010 Population Density By Tract

- 1-999 Per Sq. Mile
- 1000-1999 Per Sq. Mile
- 2000-2999 Per Sq. Mile

# TURNING BASIN



**Legend**

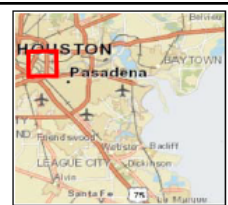
- MS4 Boundary
- Park
- 2010 Census Tract Boundary

2010 Population Density By Tract

- 1-999 Per Sq. Mile
- 1000-4999 Per Sq. Mile
- 5000-9999 Per Sq. Mile

0 1,000 2,000 Feet

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC.



## Illicit Discharge Detection and Elimination

### (a) Illicit Discharges

A section within the SWMP must be developed to establish a program; including inspection procedures, methods and a schedule; to detect, prevent, and eliminate illicit discharges and improper disposal to the MS4. The SWMP must include the manner and process to be used to effectively prohibit illicit discharges. To the extent allowable under state and local law, a legal authority mechanism such as a statute, ordinance, permit, contract, lease, or tariff, must be utilized to prohibit and eliminate illicit discharges. Elements must include:

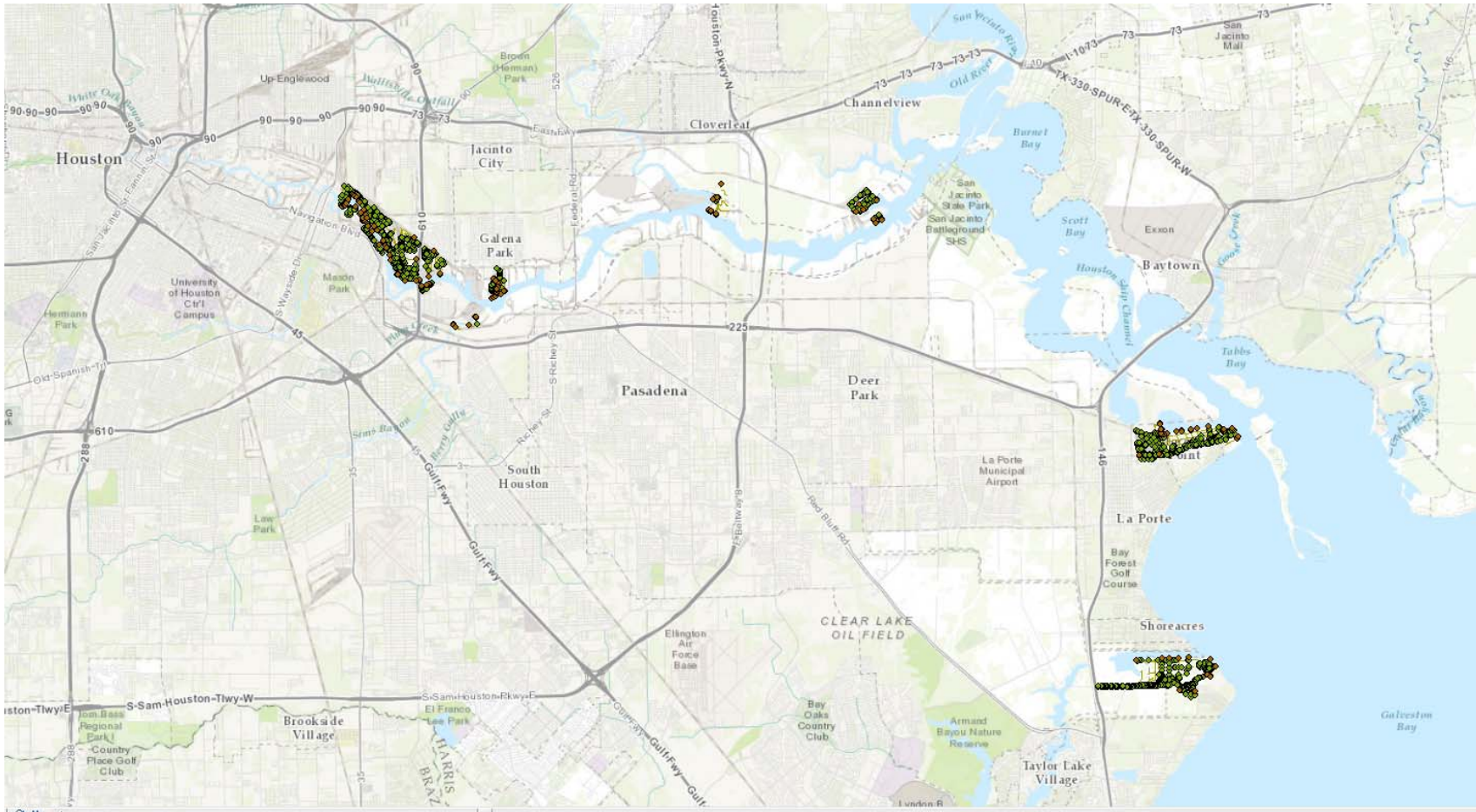


**(d) Storm Sewer Map**

- (1) The permittee shall continue to develop and revise as necessary a map of the storm sewer system. The map must include the following:**
  - (i) the location of storm sewer pipes, ditches, and other conveyances owned by the permittee, or at a minimum, the drainage area for each outfall;**
  - (ii) the location of all outfalls; and**
  - (iii) the names and locations of all waters of the U.S. that receive discharges from the outfalls.**

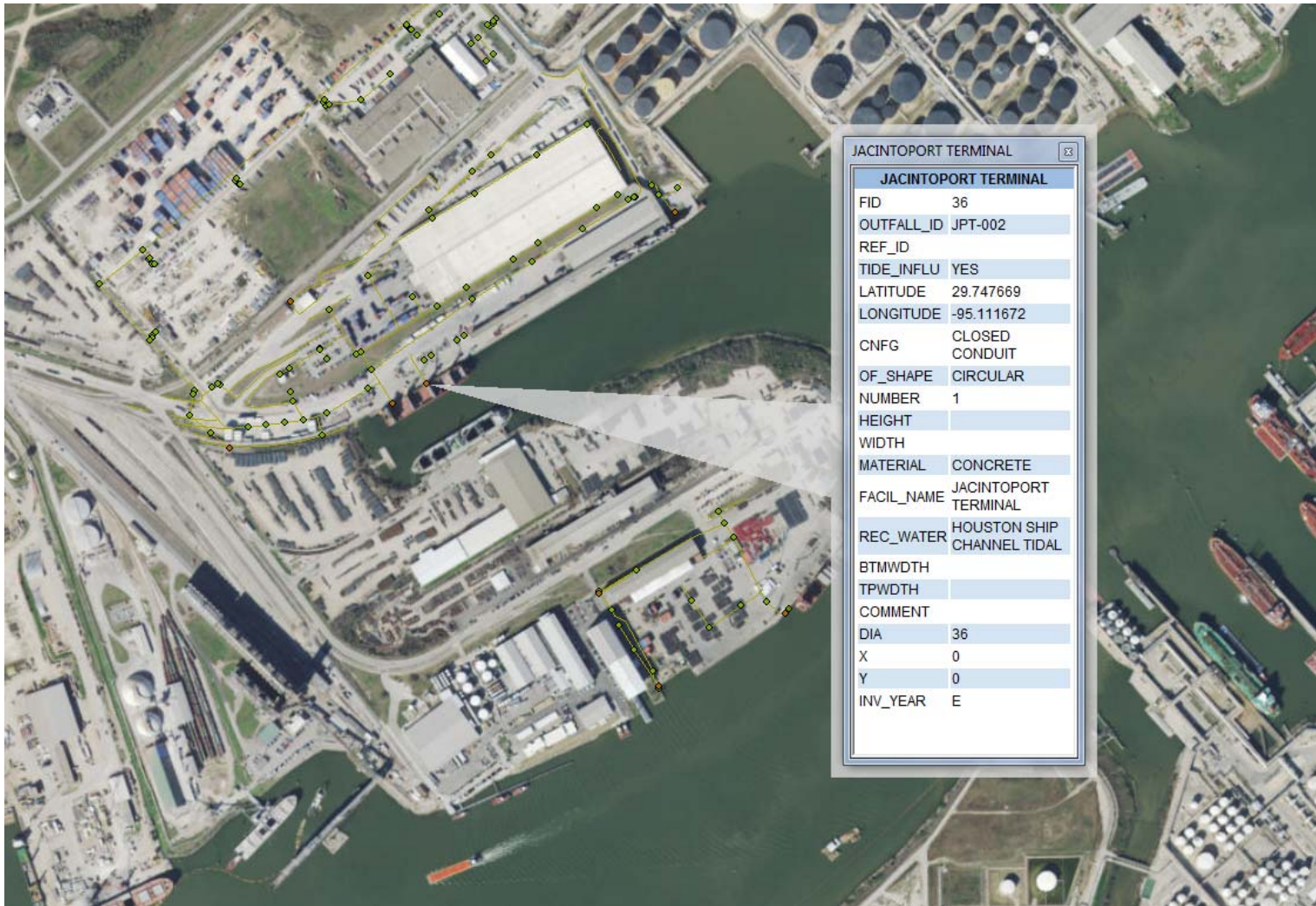
Terminal	Terminal ID	Receiving Water	Estimated No. of Outfalls	Permit Year A				Permit Year B				Permit Year C				Permit Year D				Permit Year E			
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SouthSide Turning Basin	SSD	Buffalo Bayou (HSC)	7																				
Industrial Park East	IPE	Buffalo Bayou (HSC)	4																				
Manchester	MAN	Buffalo Bayou (HSC)	4																				
Turning Basin	TBT	Buffalo Bayou (HSC)	33																				
Barbours Cut	BCT	Barbours Cut Channel	24																				
Woodhouse	WHS	Buffalo Bayou (HSC)	18																				
Sims Bayou	SIM	Sims Bayou	4																				
Bulk Materials Handling Basin	BHMP	Confluence of Buffalo Bayou (HSC) and Greens Bayou	7																				
Jacintoport	JPT	Buffalo Bayou (HSC)	5																				
Care	CAR	Buffalo Bayou (HSC)	3																				
Bayport	BPT	Bayport Channel	5																				
<b>Total No. of Outfalls</b>			<b>114</b>																				





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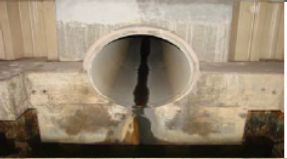

JACINTOPORT TERMINAL	
FID	36
OUTFALL_ID	JPT-002
REF_ID	
TIDE_INFLU	YES
LATITUDE	29.747669
LONGITUDE	-95.111672
CNFG	CLOSED CONDUIT
OF_SHAPE	CIRCULAR
NUMBER	1
HEIGHT	
WIDTH	
MATERIAL	CONCRETE
FACIL_NAME	JACINTOPORT TERMINAL
REC_WATER	HOUSTON SHIP CHANNEL TIDAL
BTMWTH	
TPWTH	
COMMENT	
DIA	36
X	0
Y	0
INV_YEAR	E



Updated: August 2012

**PORT OF HOUSTON AUTHORITY**  
Storm Water Outfall Summary



FACILITY NAME	OUTFALL ID#	REPRESENTATIVE PHOTOGRAPH	OUTFALL SIZE	OUTFALL TYPE	TIDALLY INFLUENCED	GPS LATITUDE	GPS LONGITUDE	Lat-DD	Long-DD	open	open	open	open
Barbours Cut Terminal	BCT-001		10'	Elevated	YES	N 29° 40.918'	W 094° 59.560'	29.681961	-94.992663				
Barbours Cut Terminal	BCT-002		4'	Elevated	NO	N 29° 40.887'	W 094° 59.811'	29.681445	-94.99685				
Barbours Cut Terminal	BCT-003		5'	Elevated	YES	N 29° 40.870'	W 094° 59.935'	29.681163	-94.998922				
Barbours Cut Terminal	BCT-004		4'	Elevated	YES	N 29° 40.843'	W 095° 00.118'	29.680711	-95.001974				
Barbours Cut Terminal	BCT-005		5'	Elevated	YES	N 29° 40.825'	W 095° 00.235'	29.680419	-95.003923				



### ILLCIT DISCHARGE FIELD SCREENING PROGRAM



Initial Screening     Second Screening

**GENERAL INFORMATION:**  
 TERMINAL NAME: \_\_\_\_\_ TIME: \_\_\_\_\_ DATE: \_\_\_\_\_  
 OUTFALL NO: \_\_\_\_\_ INSPECTION TEAM MEMBERS: (Circle Crew Leader) \_\_\_\_\_  
 TIME SINCE LAST RAIN: >72 hrs. <72 hrs. 1) \_\_\_\_\_  
 2) \_\_\_\_\_  
 3) \_\_\_\_\_  
 LAST RAIN AMOUNT: >0.1 in. <0.1 in. 2) \_\_\_\_\_  
 3) \_\_\_\_\_

**FIELD SITE DESCRIPTION:** OPEN CHANNEL    MANHOLE    OUTFALL    OTHER \_\_\_\_\_  
 LOCATION: \_\_\_\_\_  
 LATITUDE: \_\_\_\_\_ LONGITUDE: \_\_\_\_\_  
 DOMINANT LAND USES: (circle)  
 CONTAINER YARD    RESIDENTIAL  
 GRAIN ELEVATOR    LAY-DOWN YARD    UNKNOWN  
 OFFICE BUILDINGS    OTHER \_\_\_\_\_

**FLOW ESTIMATION:** FLOW OBSERVED YES  NO  APPROXIMATE CHANNEL WIDTH OR PIPE DIAMETER: \_\_\_\_\_  
 1) WIDTH OF WATER SURFACE (FEET) \_\_\_\_\_  
 2) APPROXIMATE DEPTH OF WATER (FEET) \_\_\_\_\_  
 3) APPROXIMATE FLOW VELOCITY (FEET PER SECOND) \_\_\_\_\_  
 4) FLOW RATE (CUBIC FEET PER SECOND) = 1 X 2 X 3 = \_\_\_\_\_

**VISUAL OBSERVATIONS:** PHOTO TAKEN YES  NO  PHOTO NO. \_\_\_\_\_  
 ODOR: NONE MUSTY SEWAGE ROTTEN EGGS PETROLEUM CHEMICAL OTHER \_\_\_\_\_  
 COLOR: CLEAR RED YELLOW BROWN GREEN GREY OTHER \_\_\_\_\_  
 CLARITY: CLEAR CLOUDY OPAQUE  
 PRESENCE OF SHEEN: YES NO  
 DEPOSITS/STAINS: NONE SEDIMENTS OILY OTHER \_\_\_\_\_  
 VEGETATION CONDITION: NONE NORMAL EXCESSIVE GROWTH STUNTED  
 STRUCTURAL: NORMAL CONCRETE CRACKING METAL CORROSION OTHER \_\_\_\_\_  
 BIOLOGICAL: MOSQUITO LARVAE ALGAE OTHER \_\_\_\_\_



### ILLCIT DISCHARGE FIELD SCREENING PROGRAM



**\*FLOATABLES OBSERVATION:** Identify the level of debris and indicate by circling all of the types of debris that are observed.

LEVEL OF TRASH/DEBRIS:	Low	Medium	High
Natural Organic Material			
Cardboard/Chipboard			
Paper			
Plastic			
Glass			
Styrofoam/Polystyrene			
Metal			
Wood-Processed			
Cloth/Fabric			
Cigarette Butts			
Other: _____			

**FIELD ANALYSIS:**  
 WATER TEMP: \_\_\_\_\_ °C    CHLORINE (TOTAL): \_\_\_\_\_ mg/L  
 pH: \_\_\_\_\_ SU    COPPER: \_\_\_\_\_ mg/L  
 PHENOL: \_\_\_\_\_ mg/L    DETERGENTS: \_\_\_\_\_ mg/L

LABORATORY SAMPLE COLLECTED YES  NO   
 IF YES, COPY OF CHAIN-OF-CUSTODY RECORD NUMBER \_\_\_\_\_

**COMMENTS**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



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An aerial photograph of a city, likely Houston, showing a dense urban grid, a winding river, and a large reservoir on the right side. The text is overlaid on the left side of the image.

FIRST WE START WITH THE  
HOUSTON SHIP CHANNEL



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