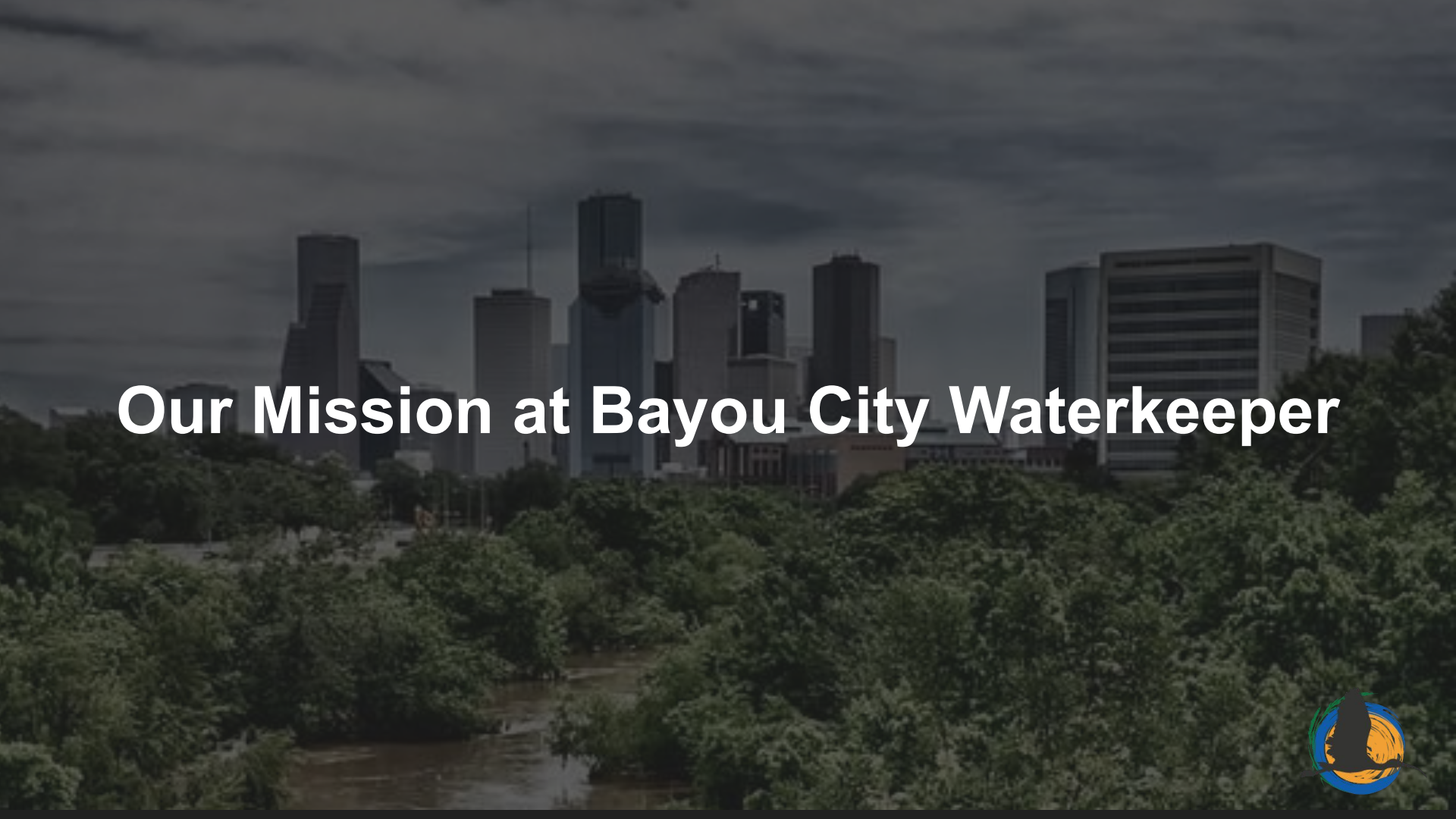
Climate Change, Water, and Environmental Justice

Mashal Awais, Bayou City Waterkeeper
January 28, 2023

Agenda

- Introduction
- Water, Pollution and Water regulation
- Break
- Climate Change and Environmental Justice
- Break
- Questions

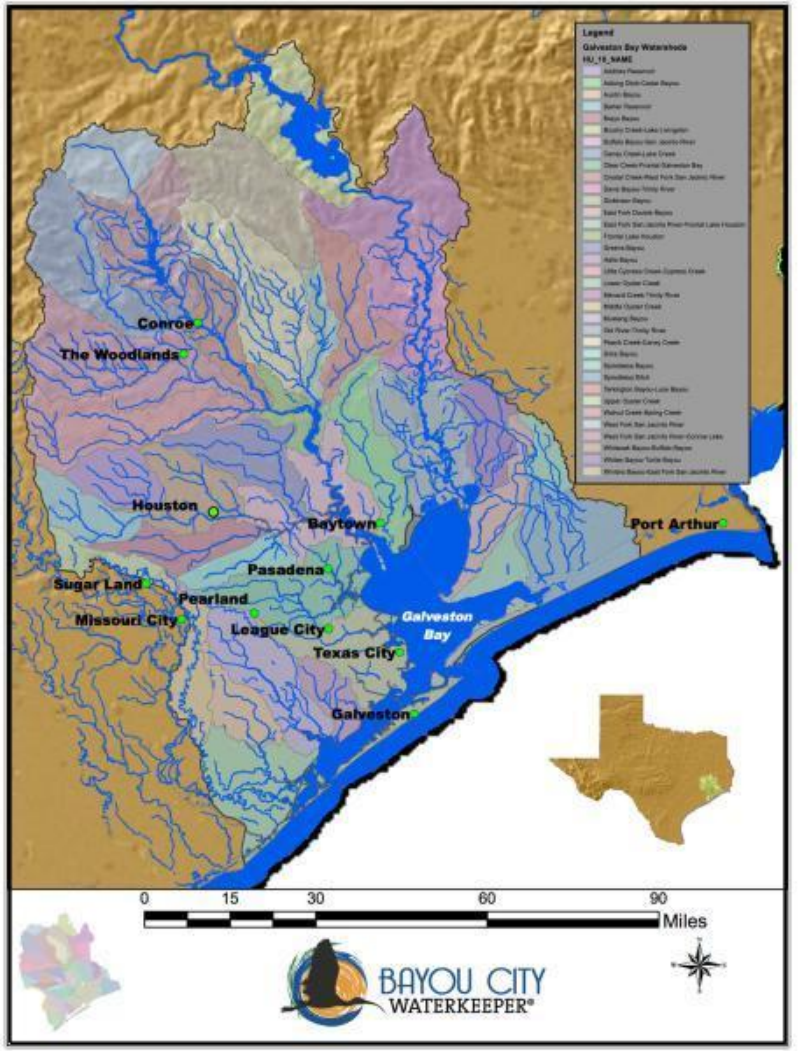


Our Mission at Bayou City Waterkeeper

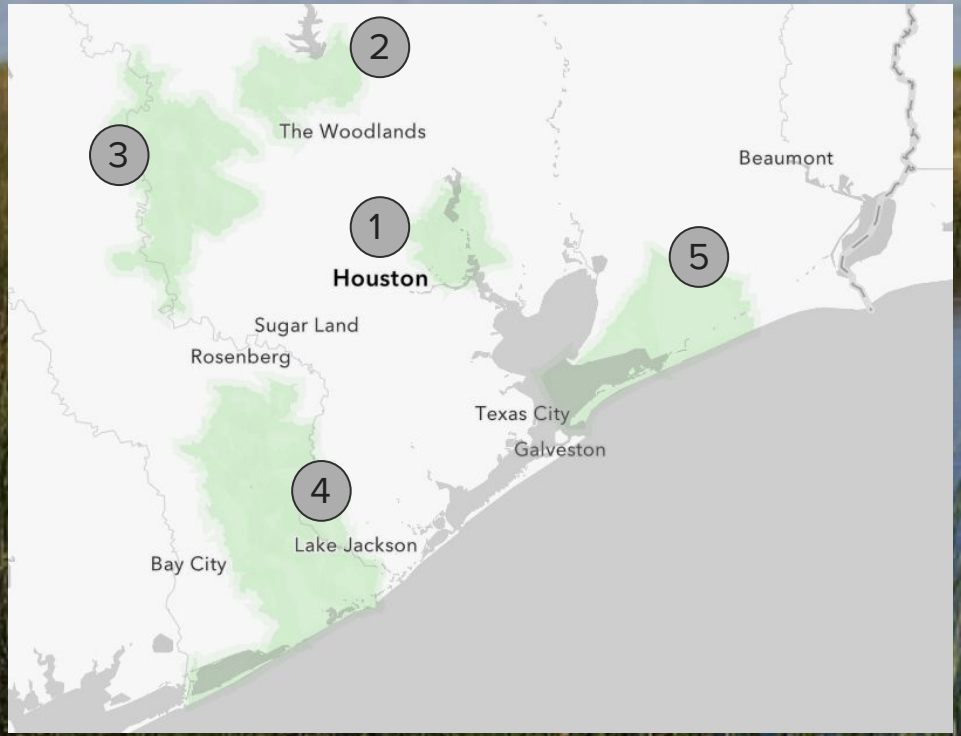
- PROTECTING WETLANDS
- CLEAN WATER
- JUST CLIMATE TRANSITIONS

Galveston Bay Watershed

- 2,500 Miles of Bayous
- 120,000 Acres of Complete Wetlands
- Three Major Rivers
- Fourth Largest City: Houston
- Third Most Populous County: Harris County



5 Critical Wetland Areas



1. Lake Houston Wetlands
2. Greater Lake Creek
3. Greater Katy Prairie - Pothole Pimple-Mound Complexes
4. Trans-Brazos Region
5. Anahuac Coastal Marsh and Prairies

Community Science

- Community driven and community centered
- Local knowledge, collective empowerment - **place based**
- Rooted in data to action , transform and inform decision making
- Interconnectivity - social learning and external partnerships

https://i.gifer.com/ENuJ.gif

Community Science in Practice

- Share purpose and transitions academia, creates **relevance**
- Improves processes by generating new data, **recognizing communities as experts**
- **Builds local expertise and capacity**
- Just Climate Transitions - recognize and bridge the **information gap**
- BCWK - strategic liason between government, academic and community experts

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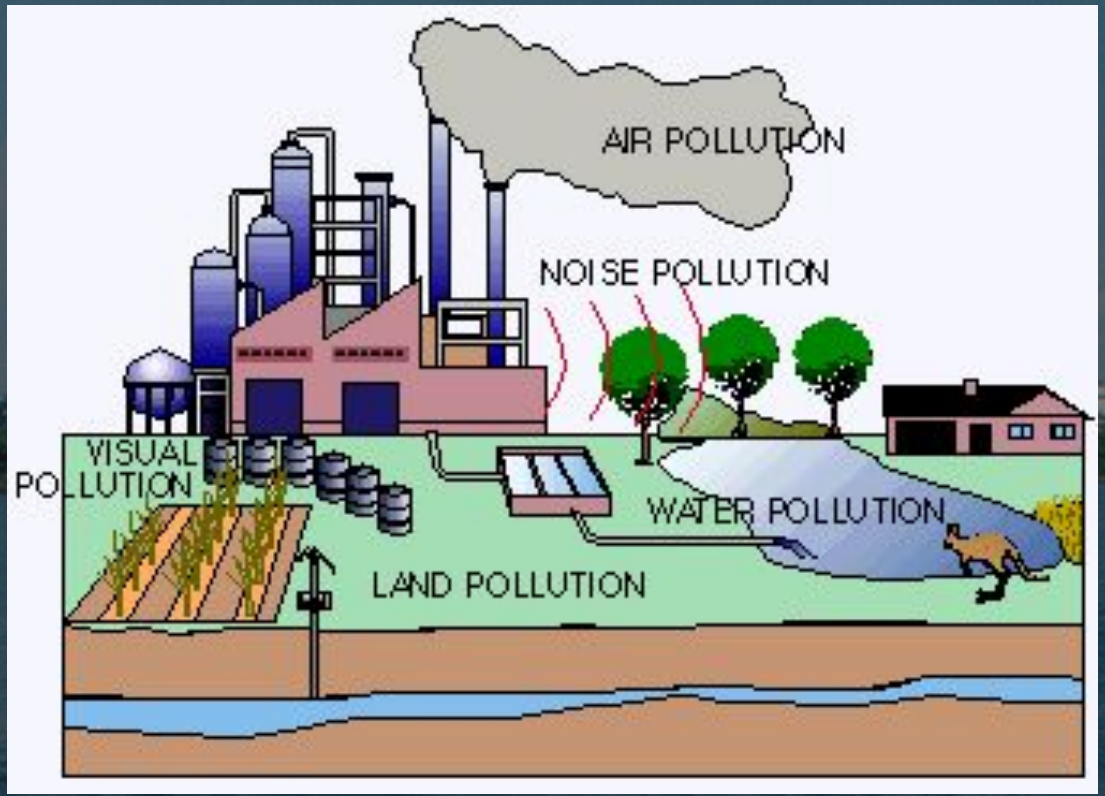
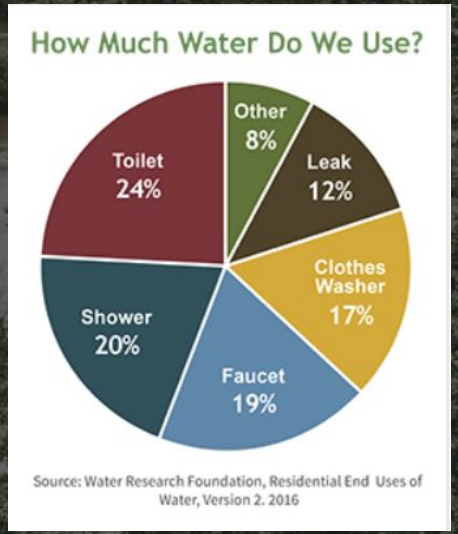
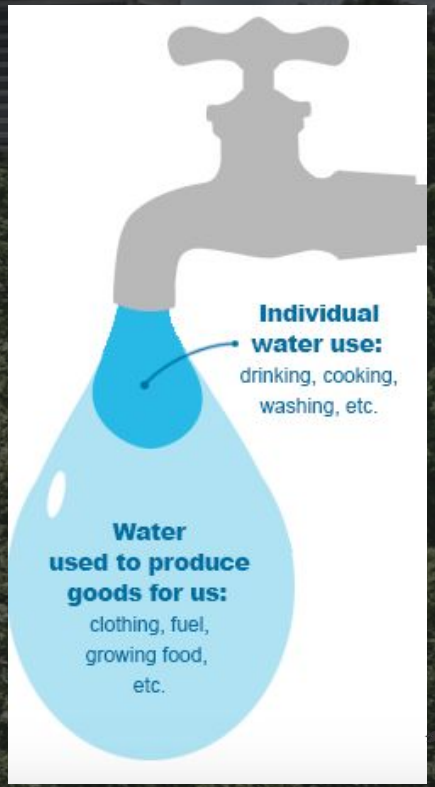
Environmental Pollution



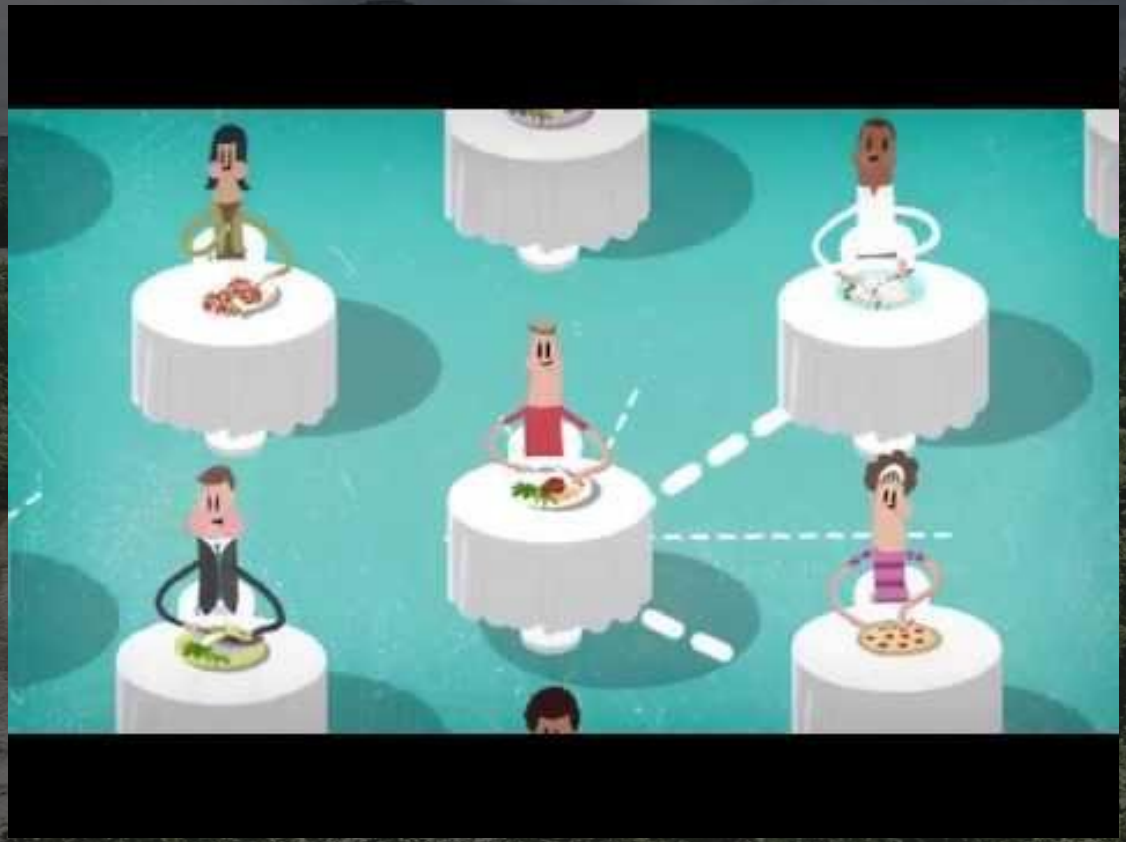
Water and our footprint

- Direct Sources of consumption of water
  - Municipal tap water, domestic use, cleaning, swimming, cooking, drinking
- Indirect sources of consumption of water
  - Agriculture
  - Medicine
  - Personal (clothes, food, fuel)
  - Electricity (hydropower)





How do we use water?




How do we interact with water ?


The not so good interaction with water

Swimming in Houston

By Robert Zaretsky

Aug. 28, 2017

A home in Spring, Tex., north of Houston, on Monday. David J. Phillip/Associated Press


2004 11 17


610 EAST
S Post Oak Rd
EXIT ONLY

'It's time to stop': 700 bags of trash pulled from Buffalo Bayou each week

By Charly Edsitty

Thursday, June 20, 2019

NEWS // HOUSTON & TEXAS

Here's why Houston's water smells like earthy fish nightmares

Alison Medley

Feb. 24, 2021 | Updated: Feb. 25, 2021 7:07 p.m.

According to Houston public works officials, there have now been 9,400 complaints lodged about water woes.

Featured image: Houston residents fill up water containers after 2021 winter storm.
Brett Coomer, MBO / Associated Press


The good interactions with water

PETS & ANIMALS

Go Fish: Here's what's swimming in Brays Bayou

Sunday, December 10, 2017

City of Houston enters Stage 1 of drought contingency plan for water conservation measures

Here's what we know

State, Feds Know Valley Residents Have Eaten Toxic Fish for Decades

For more than two decades, federal and state health officials have known that residents of a poor community in the Rio Grande Valley are eating fish laced with unsafe levels of toxic chemicals, but they haven't found a way to stop it.

BY ALEXA URA APRIL 23, 2016 6 AM CENTRAL

COPY LINK REPUBLISH

Is it safe?

Dallas Wastewater Keeps Trinity Flowing, Houston Drinking

DECEMBER 21, 2011 | 7:00 AM
BY DAVE FEHLING

28 Comments Email
Tweet Recommend

DAVE FEHLING/STATEIMPACT TEXAS

FM 3278 crosses the Trinity River just downstream from the Lake Livingston Dam

Is it safe?

2 of 2

People enjoy a summer day in Galveston in this June 2018 file photo. A new report issued Thursday, Aug. 30, 2018, by Environment Texas says Galveston's water contains bacteria that could cause illnesses.

Texas Among Nation's Worst Water Polluters

Texas is the second-biggest water polluter in the country, in terms of pounds released. But when the toxicity of the pollution is factored in, Texas jumps to the top of the list — and it's not even close.

BY GILAD EDELMAN | JUNE 19, 2014 4 PM CENTRAL

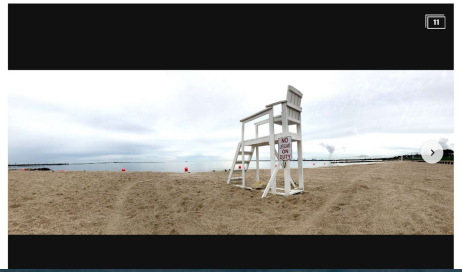
COPY LINK REPUBLISH

The Dow chemical plant along the Brazos River in Freeport, Texas. Michael Stravato

Officials warn against swimming in Brazoria County beaches after reports of sewage discharge

Rebecca Hennes

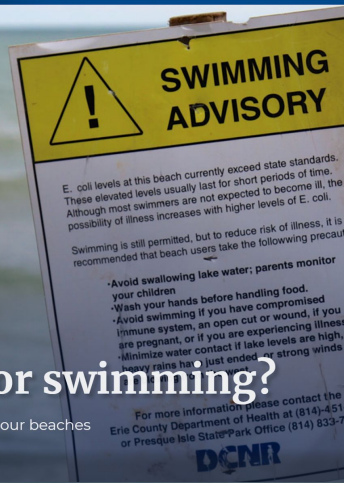
July 31, 2019 | Updated: Aug. 1, 2019 12:45 p.m.



ENVIRONMENT AMERICA

Clean air. Clean water. Open space.

ABOUT OUR WORK NEWS BLOG JOBS SHOP



Safe for swimming?

Water quality at our beaches

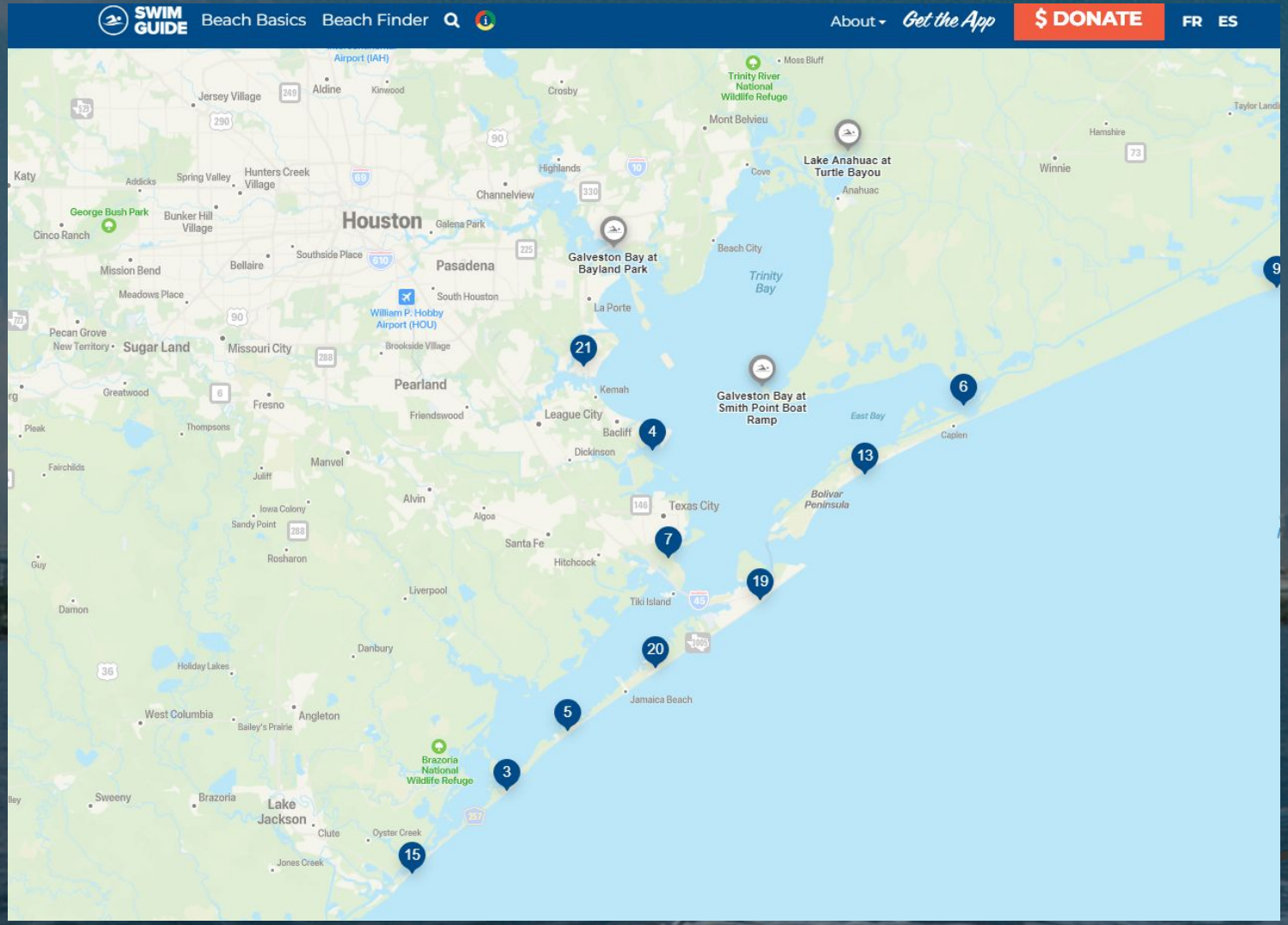
“It is not safe to eat fish out of Brays Bayou,” said Dr. Raun, adding that eating fish from any of Houston's other bayous is also unsafe.

Dr. Raun says HHD tests the water in the bayous on a regular basis and finds its sediment has bacteria, dioxins, and PCBs. She says those toxic chemicals get into the soft bodies of the fish, which humans eat.

“Bacteria’s tested all the time,” said Dr. Raun. “Dioxins and PCBs were tested in the ship channel, but fish in the ship channel swim into the bayous. Those two chemicals cause cancer, so if you were to eat enough of them, and the fish were contaminated, you could put yourself at risk for developing cancer.”

Lara Anton, a spokesperson for the Texas Department of State Health Services, which monitors fish for the presence of environmental contaminants, provided KHOU with the most recent version of the advisory for the Houston Ship Channel and the waterways that feed into it.

A map shows the areas of concern and warns “women of child-bearing age” and children under 12 to avoid eating blue crab and all species of fish from the ship channel and surrounding bayous and rivers. For adult men and women past child-bearing age, they recommend eating no more than 8 ounces per month.


SWIM GUIDE
Beach Basics
Beach Finder
About
Get the App
$ DONATE
FR
ES
Houston
Pasadena
Pearland
Sugar Land
Missouri City
Bellaire
Southside Place
Galena Park
South Houston
Meadows Place
Mission Bend
Cinco Ranch
Katy
Addicks
Spring Valley
Hunters Creek Village
Bunker Hill Village
George Bush Park
Jersey Village
Aldine
Kinwood
Crosby
Channelview
Highlands
Mont Belvieu
Moss Bluff
Trinity River National Wildlife Refuge
Cove
Lake Anahuac at Turtle Bayou
Anahuac
Winnie
Hamshire
Beach City
Galveston Bay at Bayland Park
Trinity Bay
La Porte
William P. Hobby Airport (HOU)
Airport (IAH)
Brookside Village
Pecan Grove
New Territory
Greatwood
Fresno
Thompsons
Pleak
Fairchilds
Juliff
Manvel
Alvin
Iowa Colony
Sandy Point
Rosharon
Guy
Damon
Liverpool
Danbury
Holiday Lakes
West Columbia
Angleton
Bailey's Prairie
Brazoria National Wildlife Refuge
Sweeny
Brazoria
Lake Jackson
Clute
Oyster Creek
Jones Creek
Friendswood
League City
Kemah
Bacliff
Dickinson
Galveston Bay at Smith Point Boat Ramp
East Bay
Caplen
Bolivar Peninsula
Texas City
Algoa
Santa Fe
Hitchcock
Tiki Island
Jamaica Beach
21
4
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9

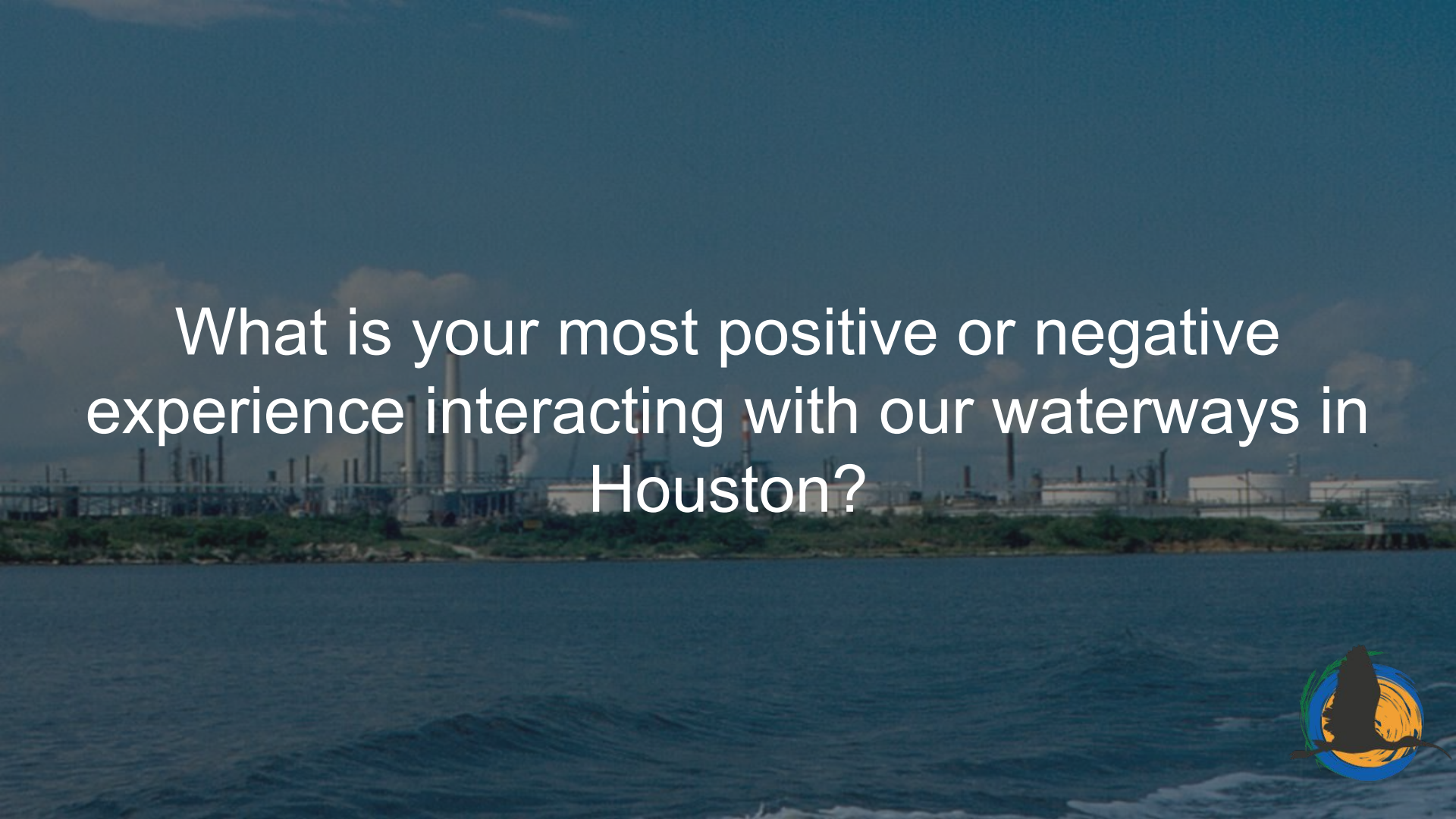
Environmental Regulations

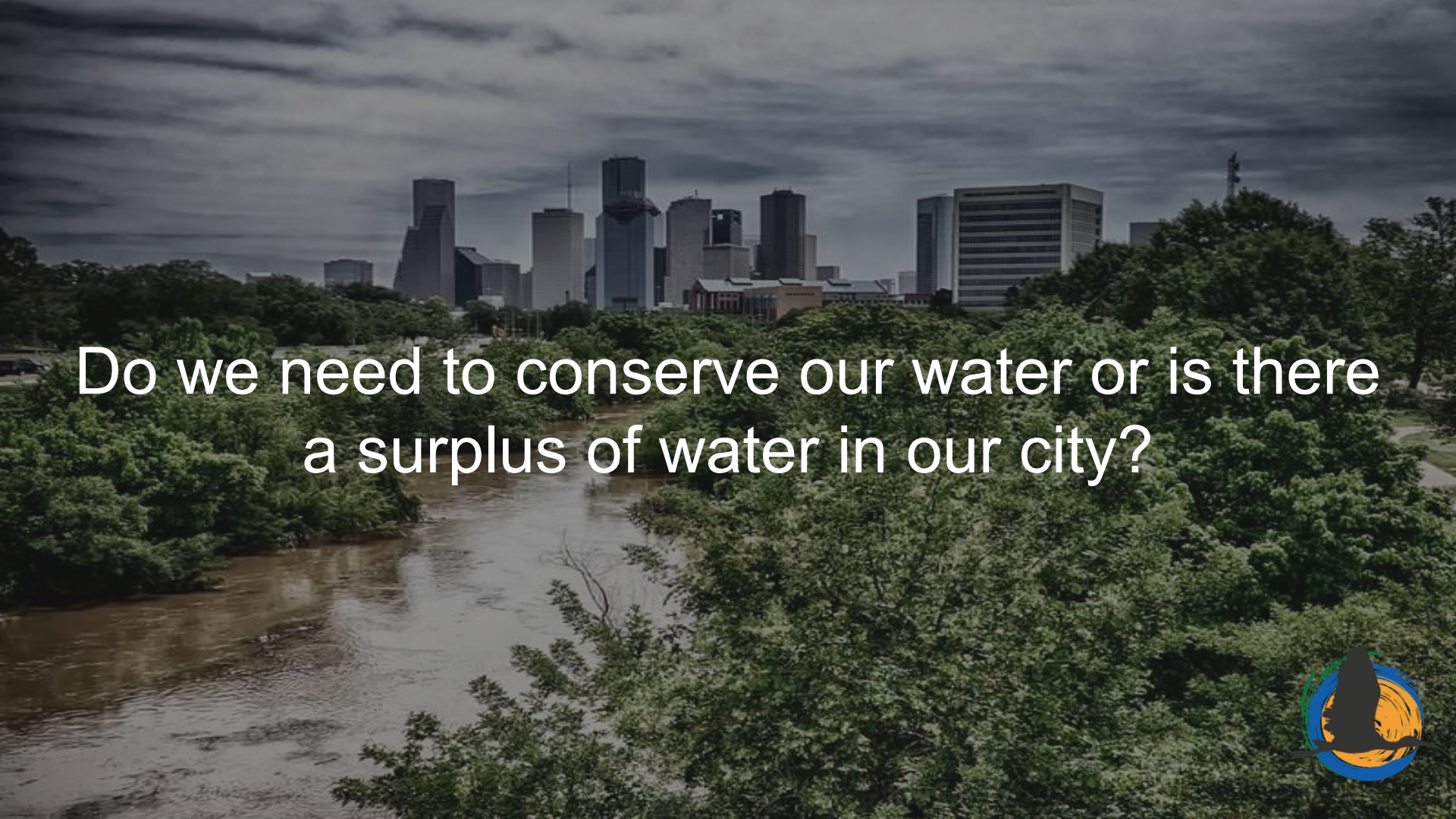

rawpixel


THE CLEAN WATER ACT
PROTECTS MORE THAN WATER.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NEPA
NATIONAL ENVIRONMENTAL POLICY ACT


What is your most positive or negative experience interacting with our waterways in Houston?


Do we need to conserve our water or is there a surplus of water in our city?

Local Water Pollution and Water Management


2004 11 17

WASTEWATER SPILL FROM TROPICAL STORM BETA

HOUSTON - Intense, sustained, rainfall of greater than 10 inches in the last 24 hours resulted in the spill of domestic wastewater at five locations:

- 1424 Wrightwood Street
- 1222 Wrightwood Street
- 800 Commerce Street
- 308 Washington Avenue
- 201 Girard Street

Houston Public Works is closely monitoring the situation. As of today, September 22 at 6:30PM, the estimated volume of released wastewater at each of these location is greater than 100,000 gallons. Appropriate local officials and the Texas Commission on Environmental Quality (TCEQ) have been notified.

City sewer spills have disproportionate impact

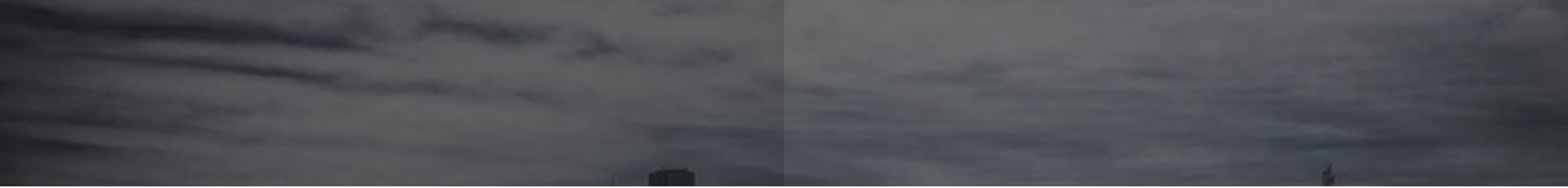
The neighborhoods most likely to feel the consequences of Houston's long-running struggle with sewer overflows are disproportionately home to low-income and minority residents, a Houston Chronicle analysis of city data shows. The four dozen zip codes with above-average rates of raw sewage spills also have higher poverty rates and larger concentrations of Hispanic or black residents than the city as a whole, a trend that is even more pronounced in the 10 zip codes with the most spills since 2009, when officials say they began keeping reliable data.


TCEQ

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
P.O. Box 13087
Austin, Texas 78711-3087

PERMIT TO DISCHARGE WASTES
under provisions of
Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

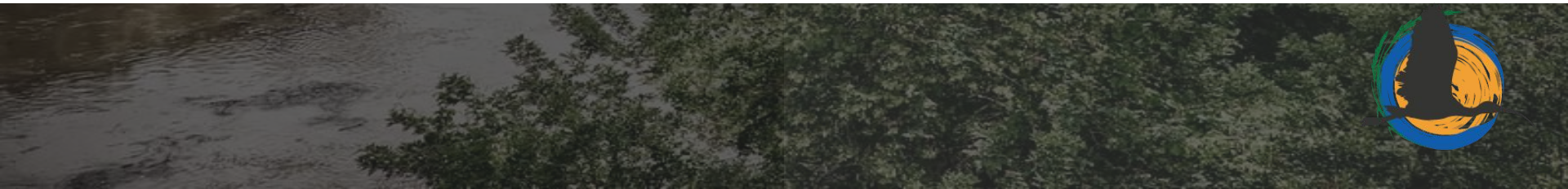
City of Houston



RE: Notice of Intent to Sue for Violations of the Federal Clean Water Act Based on Sanitary Sewer Overflows and Bypasses from Wastewater Treatment Facilities in Houston, Texas

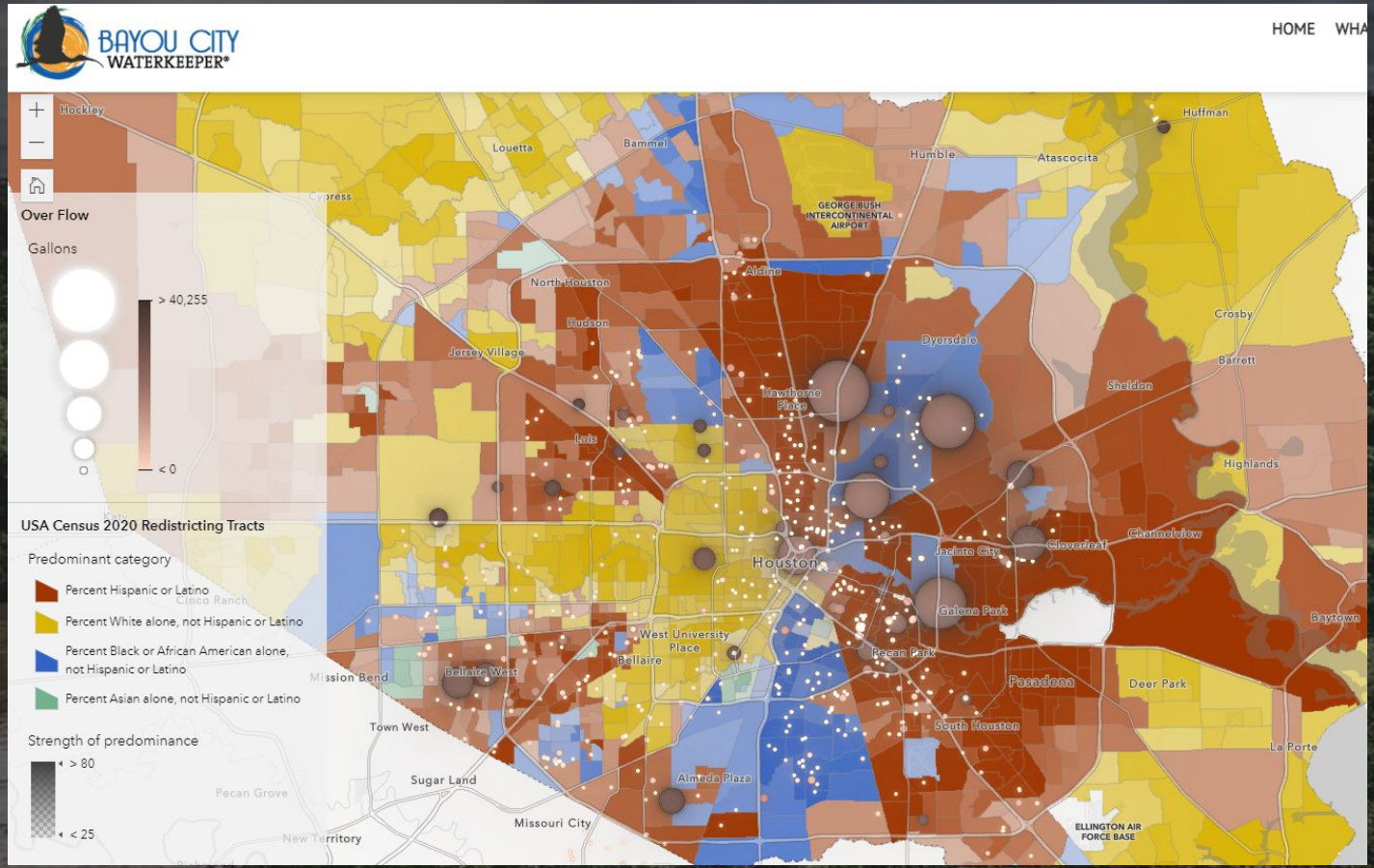
Dear Mayor Turner:

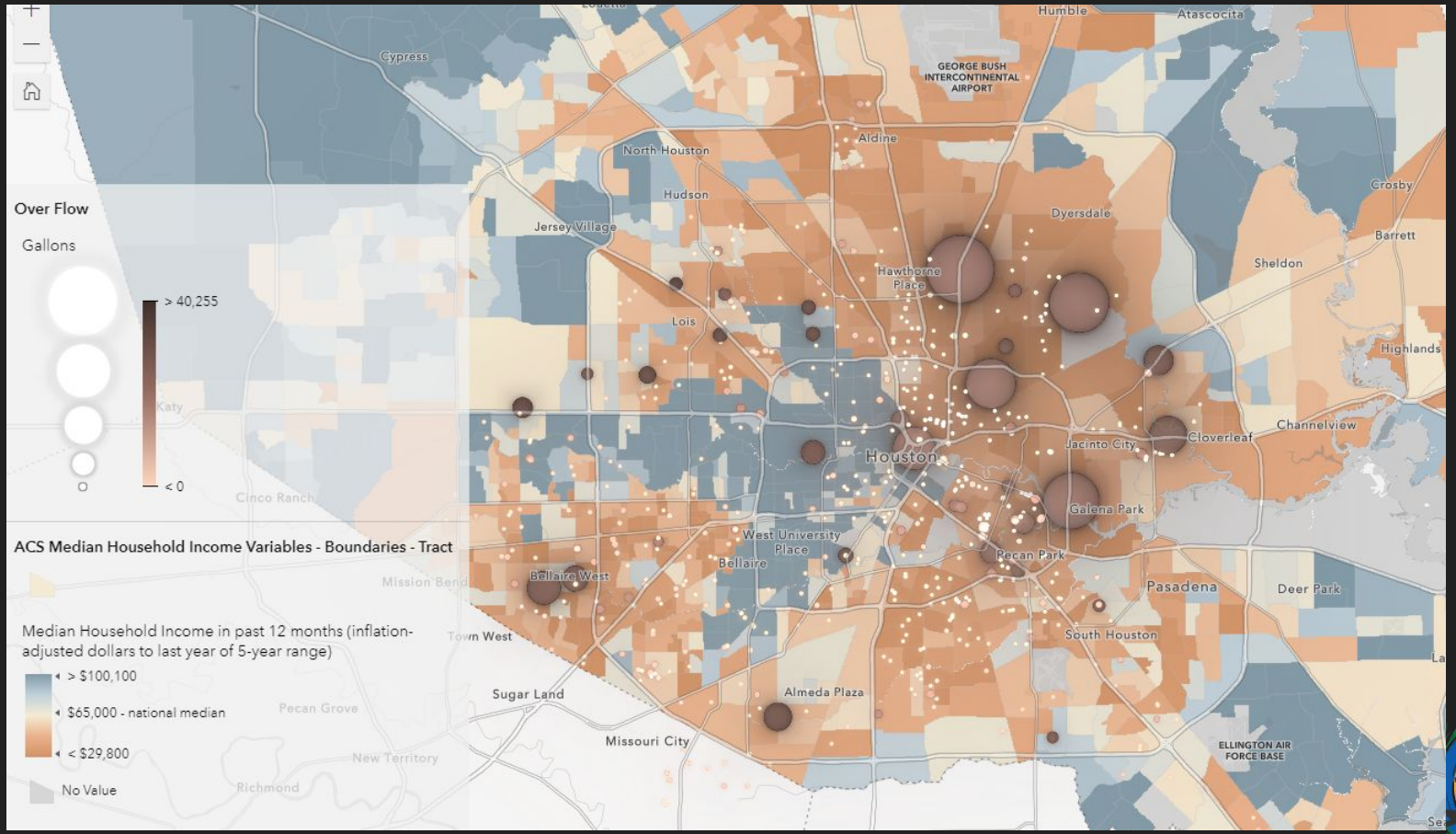
Through this letter, Bayou City Waterkeeper ("Waterkeeper") notifies you of its intent to file a citizen suit against the City of Houston (the "City") on or after the 60th day from the date of this notice for violations of the Federal Water Pollution Control Act, 33 U.S.C. §§ 1251 *et seq* ("Clean Water Act" or "CWA"), and violations of the Texas Pollution Discharge Elimination Systems ("TPDES") permits it holds in order to operate its wastewater treatment facilities.

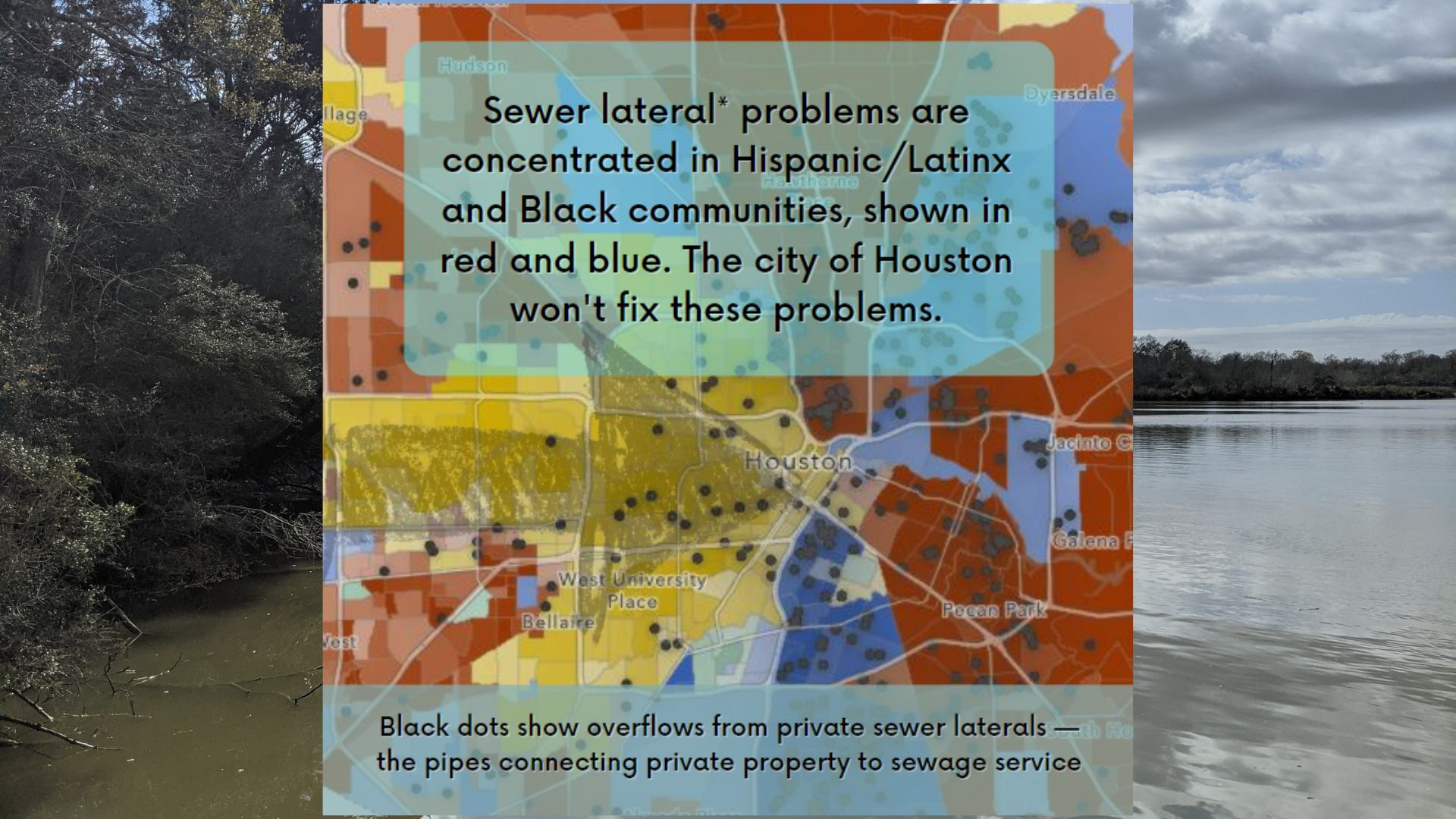



Justice in the Sewers

Justice in the Sewers




Over Flow
Gallons
> 40,255
< 0
ACS Median Household Income Variables - Boundaries - Tract
Median Household Income in past 12 months (inflation-adjusted dollars to last year of 5-year range)
> $100,100
$65,000 - national median
< $29,800
No Value
Humble
Atascocita
Cypress
GEORGE BUSH INTERCONTINENTAL AIRPORT
Aldine
North Houston
Hudson
Jersey Village
Dyersdale
Crosby
Barrett
Sheldon
Hawthorne Place
Lois
Highlands
Channelview
Jacinto City
Cloverleaf
Houston
Galena Park
West University Place
Bellaire
Pecan Park
Bellaire West
Pasadena
Deer Park
South Houston
Mission Bend
Town West
Sugar Land
Almeda Plaza
Pecan Grove
Missouri City
New Territory
Richmond
ELLINGTON AIR FORCE BASE
Cinco Ranch
Katy


Sewer lateral* problems are concentrated in Hispanic/Latinx and Black communities, shown in red and blue. The city of Houston won't fix these problems.
Hudson
Dyersdale
Houston
West University Place
Bellaire
Pecan Park
Black dots show overflows from private sewer laterals — the pipes connecting private property to sewage service

Breakout Rooms (10 minutes)

1. Identify what is the most important issue related to water for you (climate change, poor regulation of sewer system, flooding, cost of water etc)
2. How do you think pollution or polluted waters impact your relationship with water? Identify and hold onto your local pollution issue. We will revisit this in the next section
3. Do you think Houston's water is safe to drink/swim/fish in?

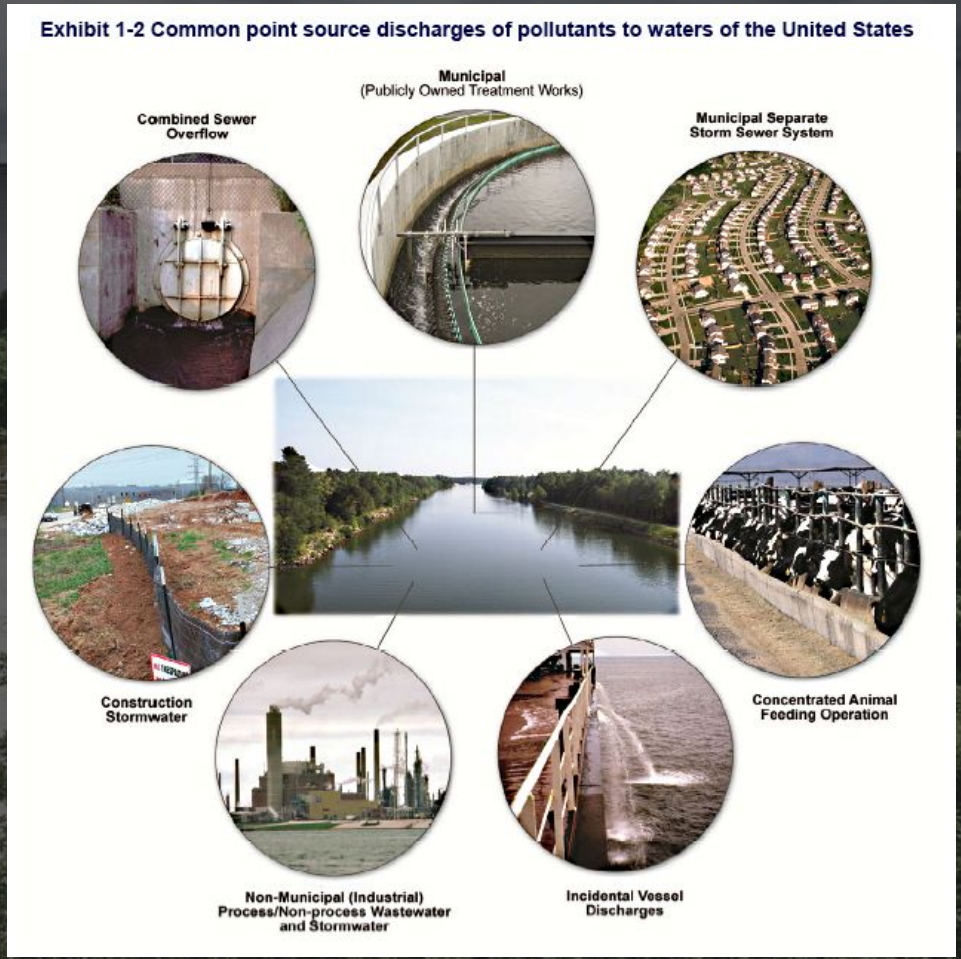
Main Sources of Water Pollution

Identify Sources of Pollution for Houston

- Industry (ship channel and other industry, no zoning, fenceline communities, illegal dumping)
- Residential (domestic runoff, stormwater discharge, etc)
- Municipal Waste (sewer overflows, stormwater discharge, etc)
- Recreational (contaminated impaired waters)

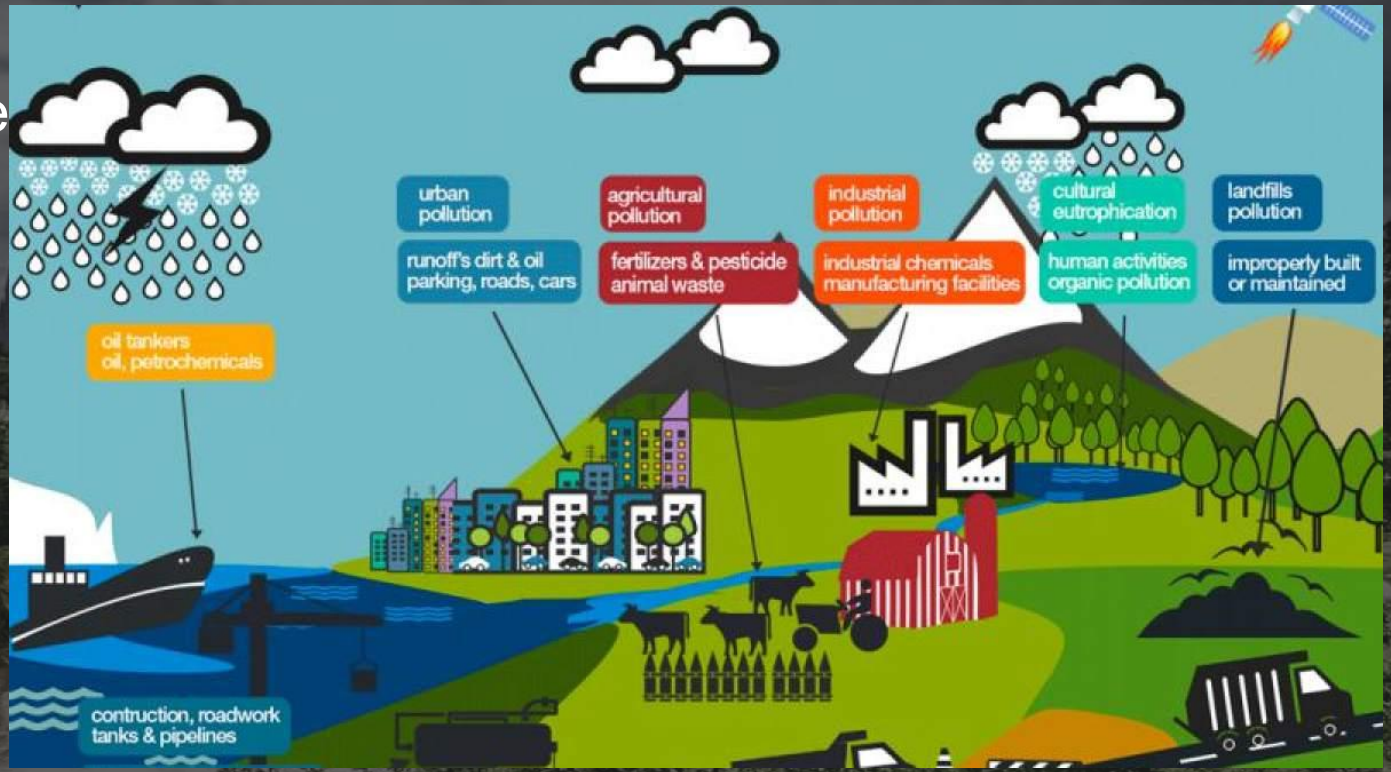
Point Sources of Pollution

When contamination occurs from a single source, it's called point source pollution. Though this pollution originates from a specific place, it can affect miles of waterways and ocean.



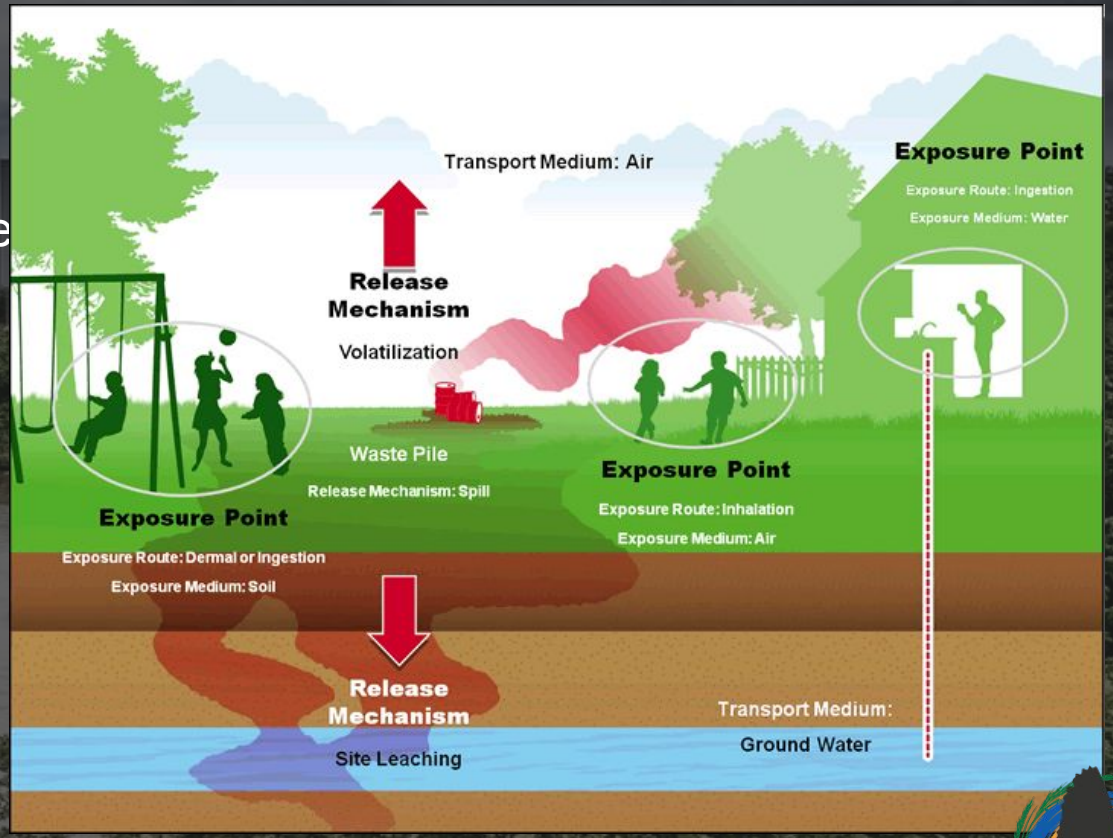
Non Point Source Pollution

Most nonpoint source pollution occurs as a result of runoff. When rain or melted snow moves over and through the ground, the water absorbs and assimilates any pollutants it comes into contact with.



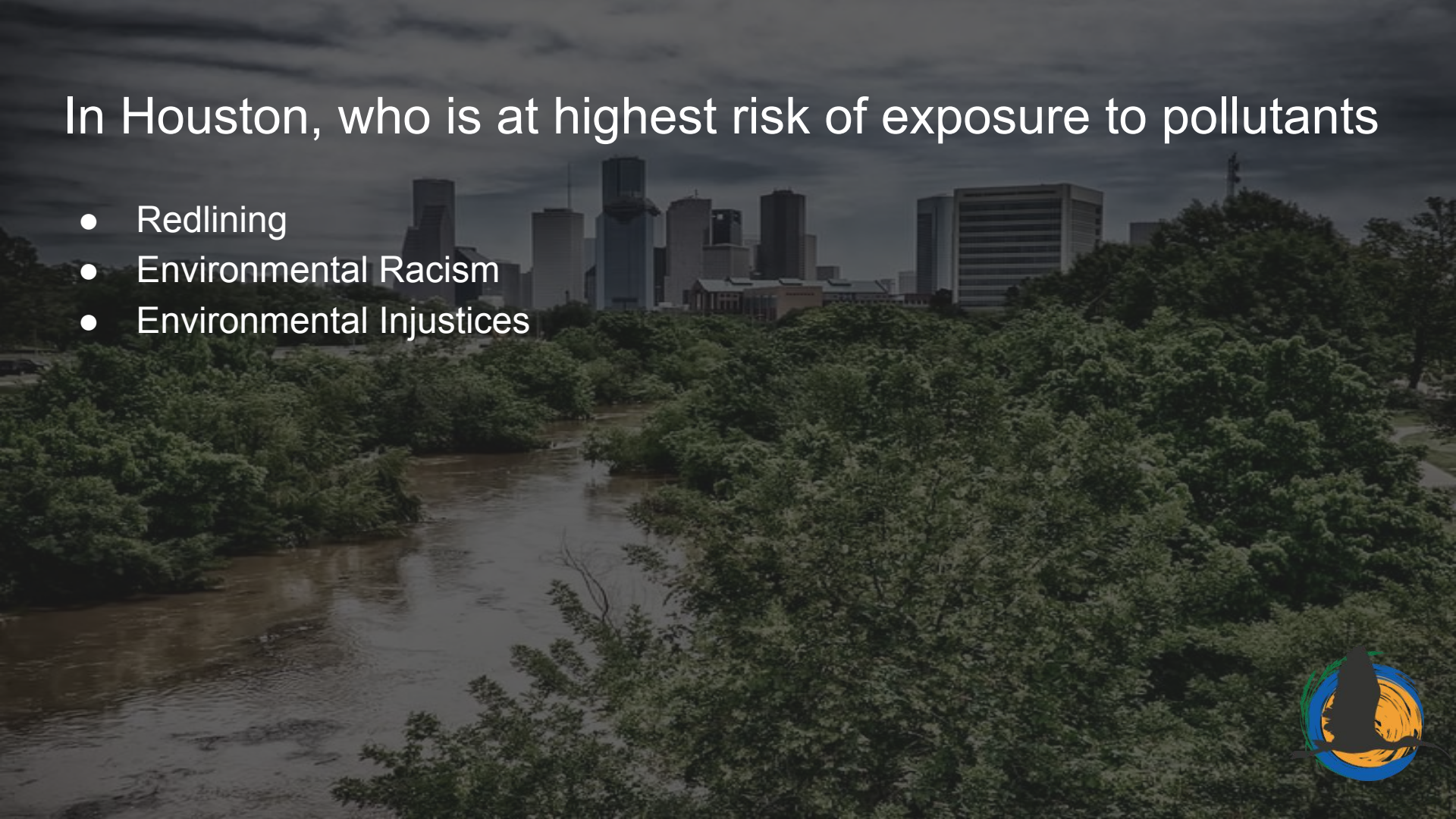
Exposure Routes

- Ingestion (groundwater,soil,surface water, food)
- Inhalation (air)
- Dermal Contact (air, water, soil, food, other)
- External Exposure to radiation (eg: gamma rays)



In Houston, who is at highest risk of exposure to pollutants

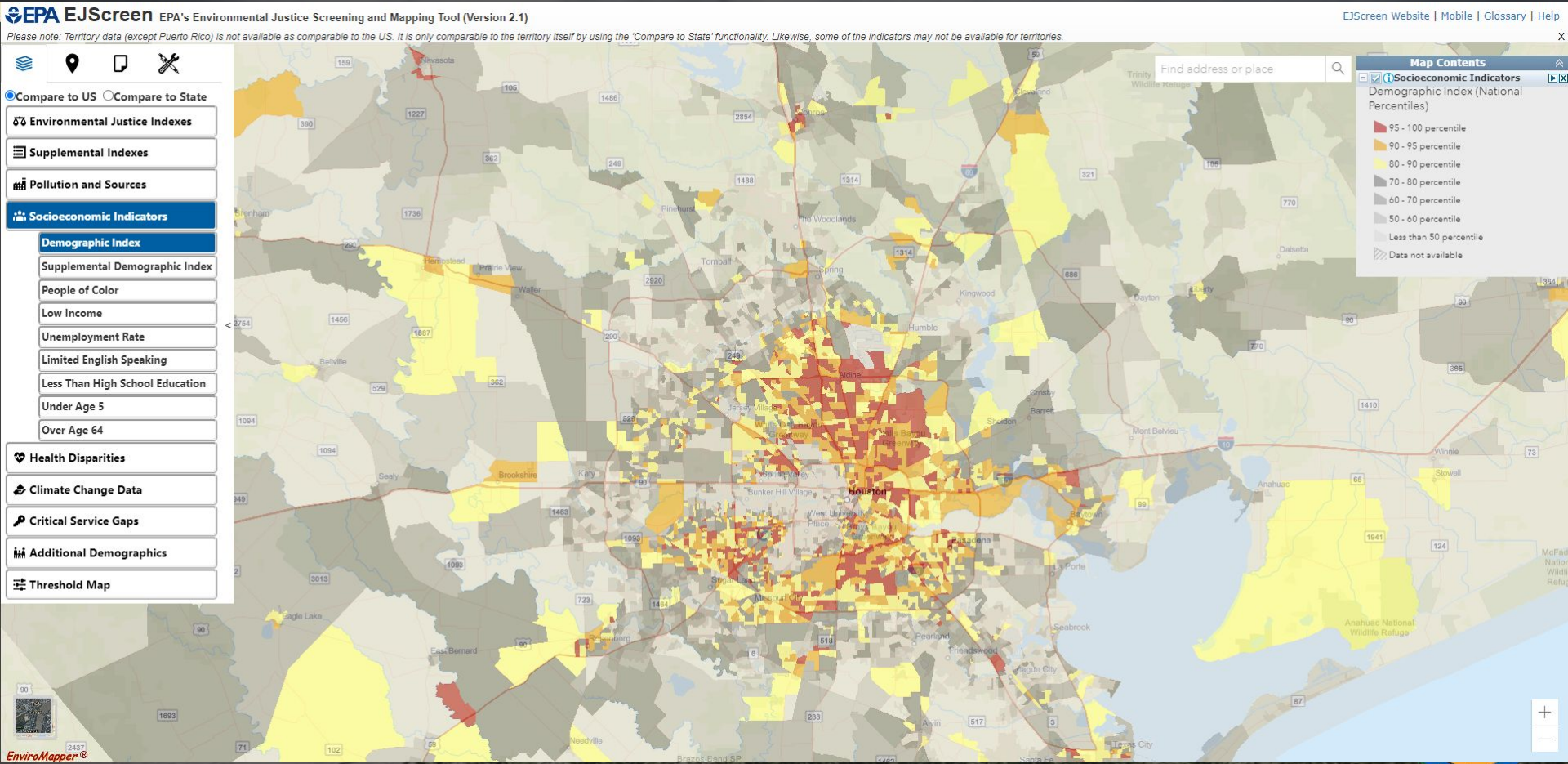
- Redlining
- Environmental Racism
- Environmental Injustices



Climate Justice and Environmental Justice


WHAT IS
ENVIRONMENTAL
JUSTICE?


What does climate justice and environmental justice look like in our region?


EJScreen EPA's Environmental Justice Screening and Mapping Tool (Version 2.1)
EJScreen Website | Mobile | Glossary | Help
Please note: Territory data (except Puerto Rico) is not available as comparable to the US. It is only comparable to the territory itself by using the 'Compare to State' functionality. Likewise, some of the indicators may not be available for territories.
Compare to US
Compare to State
Environmental Justice Indexes
Supplemental Indexes
Pollution and Sources
Socioeconomic Indicators
Demographic Index
Supplemental Demographic Index
People of Color
Low Income
Unemployment Rate
Limited English Speaking
Less Than High School Education
Under Age 5
Over Age 64
Health Disparities
Climate Change Data
Critical Service Gaps
Additional Demographics
Threshold Map
Find address or place
Map Contents
Socioeconomic Indicators
Demographic Index (National Percentiles)
95 - 100 percentile
90 - 95 percentile
80 - 90 percentile
70 - 80 percentile
60 - 70 percentile
50 - 60 percentile
Less than 50 percentile
Data not available
HOUSTON
EnviroMapper®

Public Health Assessment

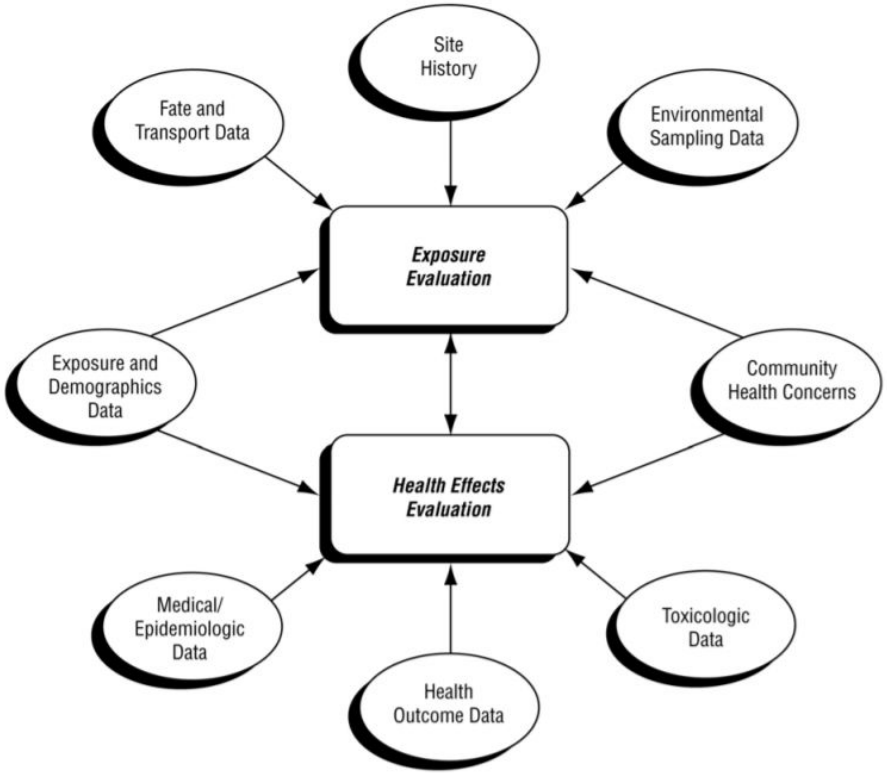
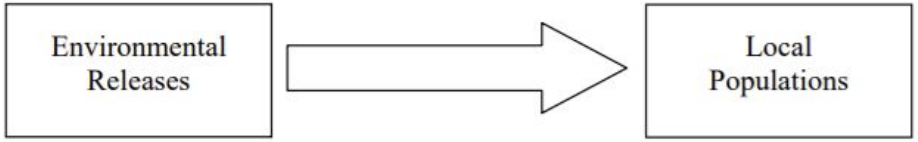


Figure 2-3. Information Needed To Evaluate Exposures and Health Effects

Exposure Pathway



6.1.1 The Five Elements of an Exposure Pathway

ATSDR environmental health scientists study exposures in the context of the following five exposure elements:

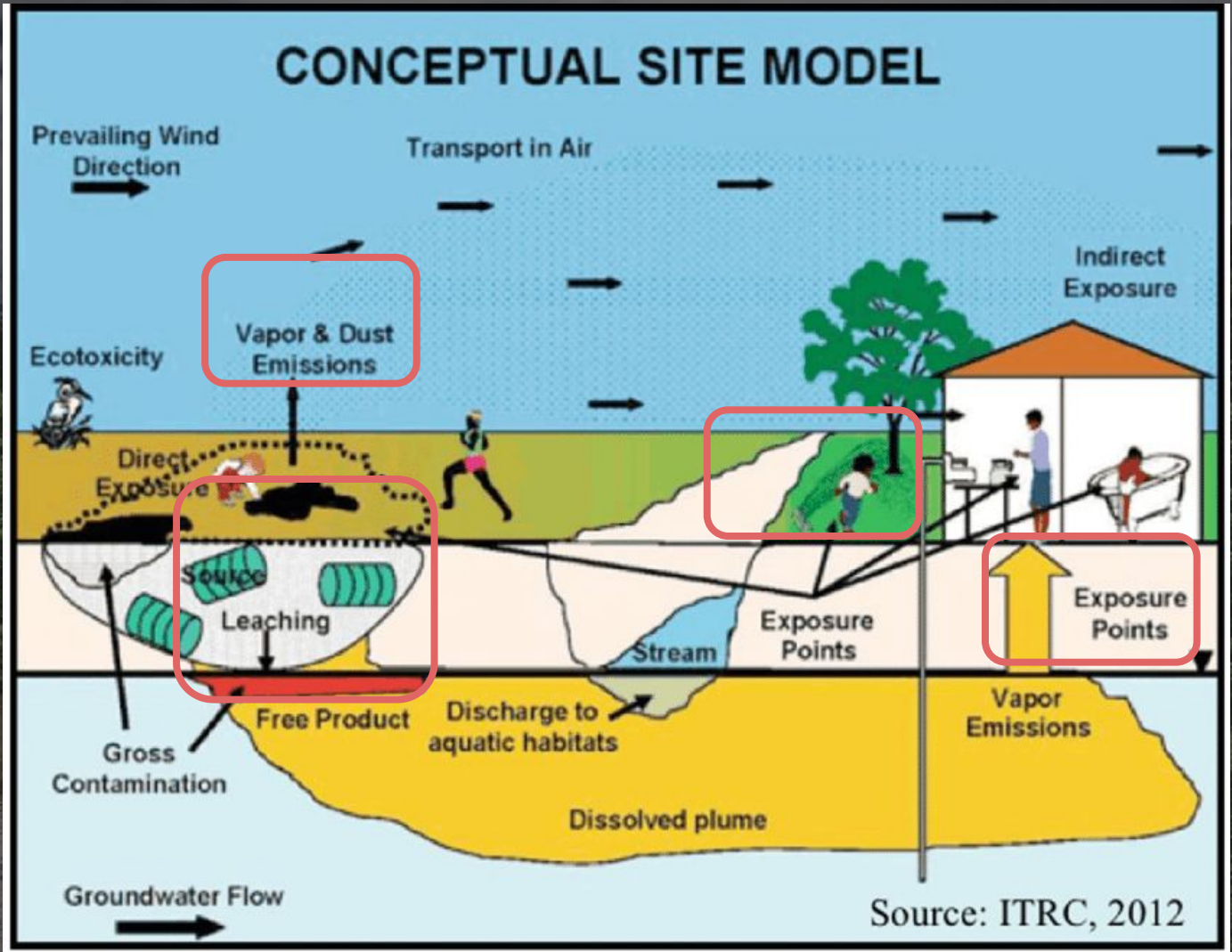
Element 1: The contaminant source or release. Sources may include drums, landfills, and many others which may release contaminants into various media. Refer to Section 6.2 for further information.

Element 2: Environmental fate and transport. Once released to the environment, contaminants move through and across different media and some degrade altogether. Section 6.3 describes these processes in detail.

Element 3: Exposure point or area. As Section 6.4 reviews, this is the specific location(s) where people might come into contact with a contaminated medium.

Element 4: Exposure route. The route is the means by which people physically contact environmental contamination at the exposure point (e.g., by inhalation, ingestion, or dermal contact). Section 6.4 also addresses this issue.

Element 5: Potentially exposed populations. Section 6.5 offers guidance on how to identify and characterize populations that may come or may have come in contact with contaminants.


CONCEPTUAL SITE MODEL
Prevailing Wind Direction
Transport in Air
Indirect Exposure
Vapor & Dust Emissions
Ecotoxicity
Direct Exposure
Source
Leaching
Stream
Exposure Points
Exposure Points
Free Product
Discharge to aquatic habitats
Vapor Emissions
Gross Contamination
Dissolved plume
Groundwater Flow
Source: ITRC, 2012

Common Types of Pollutants in our Waterways

- Petrochemical Products and Emissions/Waste
- Pesticides/Insecticides
- Chemicals (household, industrial)
- Plastic Pollution (leaching)
- Sanitary Sewer overflows
- Bacterial

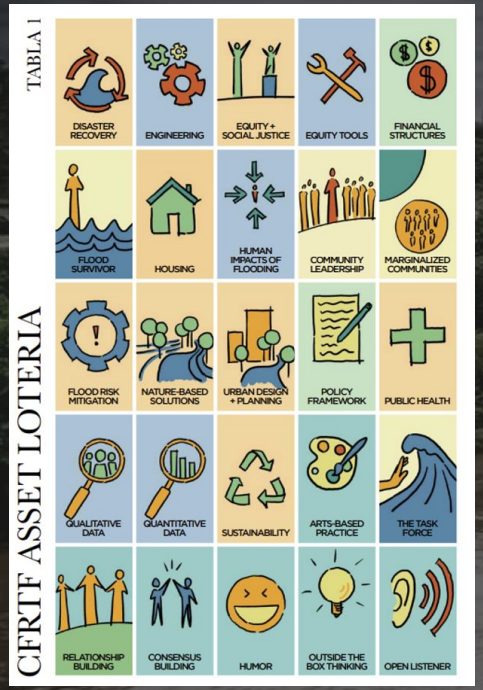
Heavy Metal Contamination

What can we do?

How do we advocate for clean water?


that they don't know
is happening to them.

Centering Community Voice in Conservation




We are not alone: Climate Justice and Environmental Justice for a better future for all!
CLEAN OUR DRAINS
CLEAN THE DRAINS
NAC : Exige Trabajen en Nuestros Drenages !!!
NAC
NORTHEAST ACTION COLLECTIVE
Nececitamos Su AYUDA !!!
NO MAS INUNDACIONES


THE PEOPLE ARE THE CITY
WE DESERVE A VOICE AT CITY COUNCIL
Questions and Thank you
Connect:
mashal@bayoucitywaterkeeper.org

References

- https://www.atsdr.cdc.gov/ToxProfiles/tp85-c6.pdf
- https://www.tceq.texas.gov/assets/public/comm_exec/pubs/gi/gi-285.pdf
- https://www.atsdr.cdc.gov/hac/phamanual/ch6.html
- https://www.houstontx.gov/health/Environmental/bcceh/fifth-ward-kashmere-gardens-union-pacific-railroad-site-contamination-area-cancer-cluster.html
- https://iris.epa.gov/static/pdfs/0360_summary.pdf
- https://www.publicworks.houstontx.gov/sites/default/files/assets/003-history_of_drinking_water_operations.pdf