



# Laredo Public Health Wastewater Surveillance



# Background Information

Wastewater surveillance tests sewage to identify contaminants like pathogens and chemicals from sources such as toilets, showers, and sinks. It helps public health professionals assess community health by detecting pathogens from infected individuals' stool, complementing clinical testing data. During the pandemic, U.S. communities monitored wastewater for SARS-CoV-2, and these programs have now expanded to include more viruses and high-risk substances. The City of Laredo Public Health Department partners with four surveillance programs: NWSS, WastewaterSCAN, High Risk Substance Monitoring, and TexWEB.



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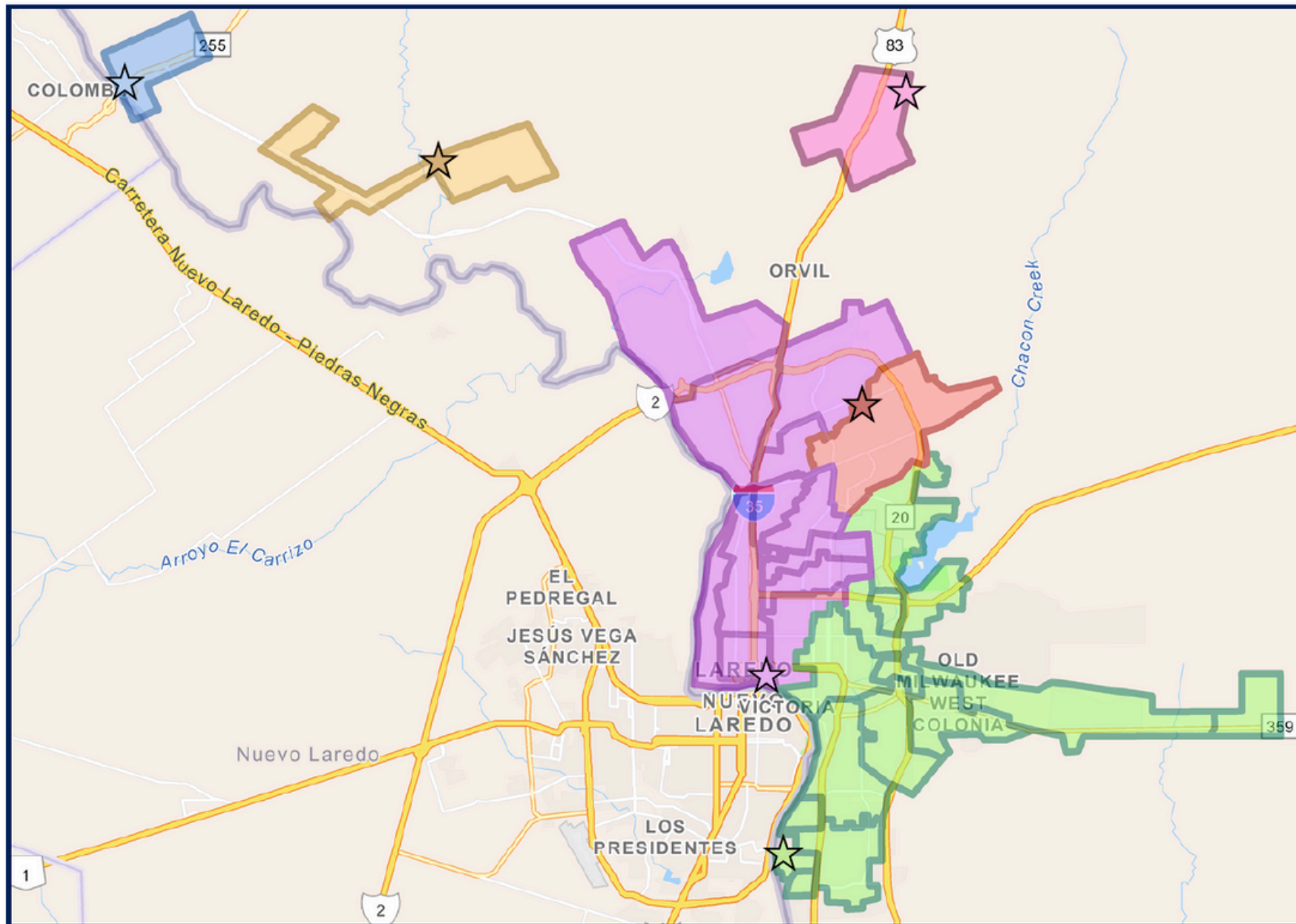
# WASTEWATER OBEJECTIVES



- **Early Detection of Outbreaks:** By monitoring the levels of certain pathogens in wastewater, public health officials can detect outbreaks before they become widespread, and take action to control the spread of the disease.
- **Monitoring Disease Trends:** By monitoring changes in the levels of pathogens in wastewater, public health officials can identify trends in disease activity, which can help inform public health interventions and resource allocation.
- **Assessing Effectiveness of Control Measures:** By monitoring changes in pathogen levels in wastewater before and after the implementation of control measures, public health officials can assess the impact of these interventions and make adjustments as necessary.
- **Population Health:** The wastewater testing program plays a crucial role in enhancing population health and safety by monitoring infectious disease and substance use trends in the community.

# Sanitary Sewage System

● Zacate Creek ● South Laredo ● North Laredo ● Colombia ● Peñitas ● Unitec



Wastewater treatment plant locations with their respective areas of population served.

## Laredo's Sanitary Sewage System

CLPHD, partnered with Laredo Utilities, collects wastewater samples from several sites across the community including the Zacate Creek, South Laredo, North Laredo, Colombia, Peñitas, and Unitec wastewater treatment plants.



# Weekly WWS Report

Laredo Public Health

  
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## Wastewater Surveillance Weekly Report



(March 23, 2025 – March 29, 2025)  
Report produced on 4/3/2025 by the  
Epidemiology/PHEP Division


Laredo Public Health

  
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## Reporte semanal de la vigilancia de aguas residuales




(23 de marzo de 2025 – 29 de marzo de 2025)  
Reporte generado el 3/4/2025 por la división de  
Epidemiología/PHEP


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# Analysis



NATIONAL™  
WASTEWATER  
SURVEILLANCE  
SYSTEM

WASTEWATER  
SCAN



Biobot Analytics



TEXAS EPIDEMIC  
PUBLIC HEALTH  
INSTITUTE

## City of Laredo Wastewater Surveillance Schedule

	National Wastewater Surveillance System (NWSS)	Wastewater SCAN	High Risk Substance and SUD Treatment Monitoring	Texas Wastewater Environmental Biomonitoring (TexWEB)
Targets	SARS-CoV-2, Influenza A & B, Respiratory Syncytial Virus, and Mpox	SARS-CoV-2, Influenza + Variants, Respiratory Syncytial Virus, Human Metapneumovirus, Norovirus GII, Enterovirus D68, Mpox Clade Ib & Clade II, <i>Candida auris</i> , and Hepatitis A	Methamphetamine, cocaine, fentanyl, xylazine, and nicotine. Naloxone, buprenorphine and methadone	SARS + Variants, Influenza + Variants, Respiratory Syncytial Virus A and B, Human Metapneumovirus, Enterovirus D68, Parainfluenza Virus 1 & 3, Noroviruses, Rotavirus, Echovirus E11, Human Adenovirus B, Parvovirus B19, Mpox, Hepatitis A, West Nile, Dengue, Chikungunya, and Zika virus
WWTP Locations	Zacate Creek, South Laredo, North Laredo, Laredo Colombia, Unitec, and Peñitas	Zacate Creek and South Laredo	Zacate Creek, South Laredo and North Laredo	Zacate Creek and South Laredo
Pick-Up Schedule	Monday and Wednesday (Weekly)	Monday, Wednesday, and Friday (Weekly) until JUNE 2025	Wednesday (Biweekly) until SEPT 2025	Monday (Weekly)
Leading Org.	Centers for Disease Control and Prevention	Scientists from Emory University and Stanford University	Biobot Analytics	Texas Epidemic Public Health Institute (TEPHI)
Testing Entity	Verily Life Sciences	Verily Life Sciences	GT Molecular	Baylor College of Medicine, CMMR



# What are we monitoring?

## Respiratory Pathogens

- SARS-CoV-2
- Influenza A + B + H1 + H3 + H5N1
- Respiratory Syncytial Virus
- Human Metapneumovirus
- Enterovirus D68
- Parainfluenza Virus 1 & 3
- Human Adenovirus B
- Parvovirus B19

## Enteric Pathogens

- Norovirus GII
- Rotavirus

## Vector-Borne Pathogens

- West Nile
- Dengue
- Chikungunya
- Zika virus

## Other Pathogens of Concern

- Candida auris
- Hepatitis A
- Mpox Clade Ib & Clade II
- Echovirus E11
- Measles

## Substances

- Methamphetamine
- Cocaine
- Fentanyl
- Xylazine
- Nicotine

## Treatments

- Naloxone
- Buprenorphine
- Methadone

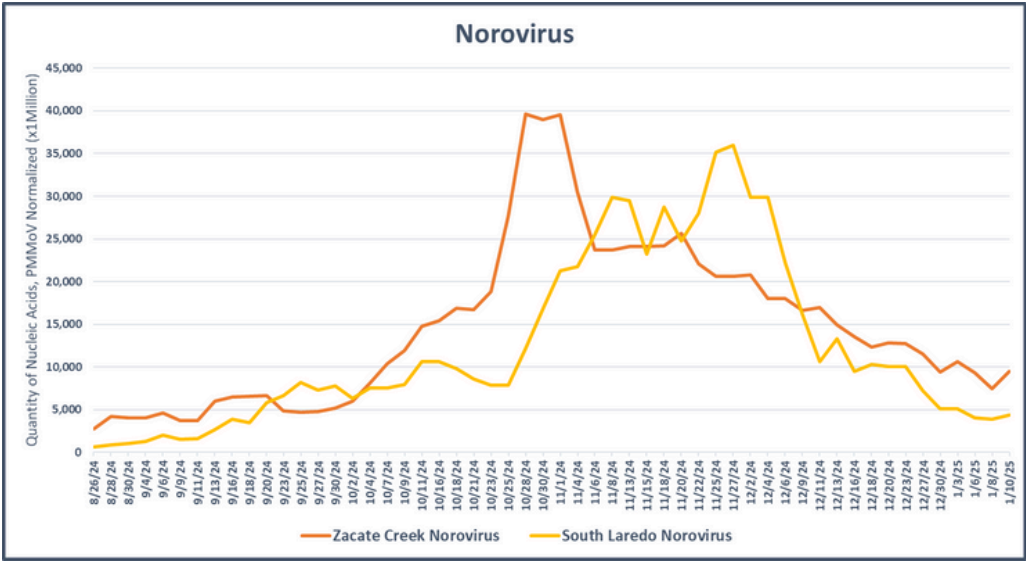
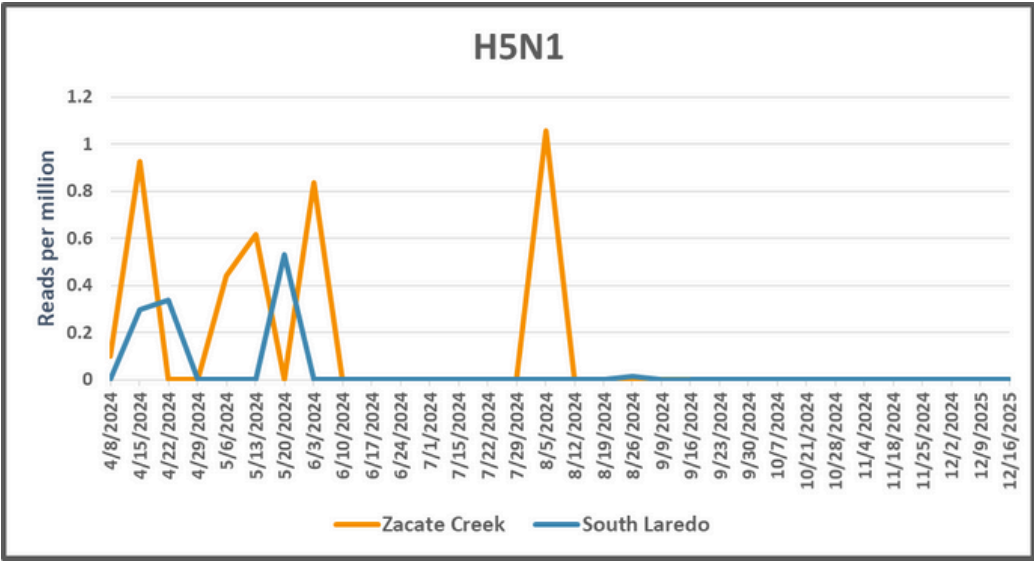
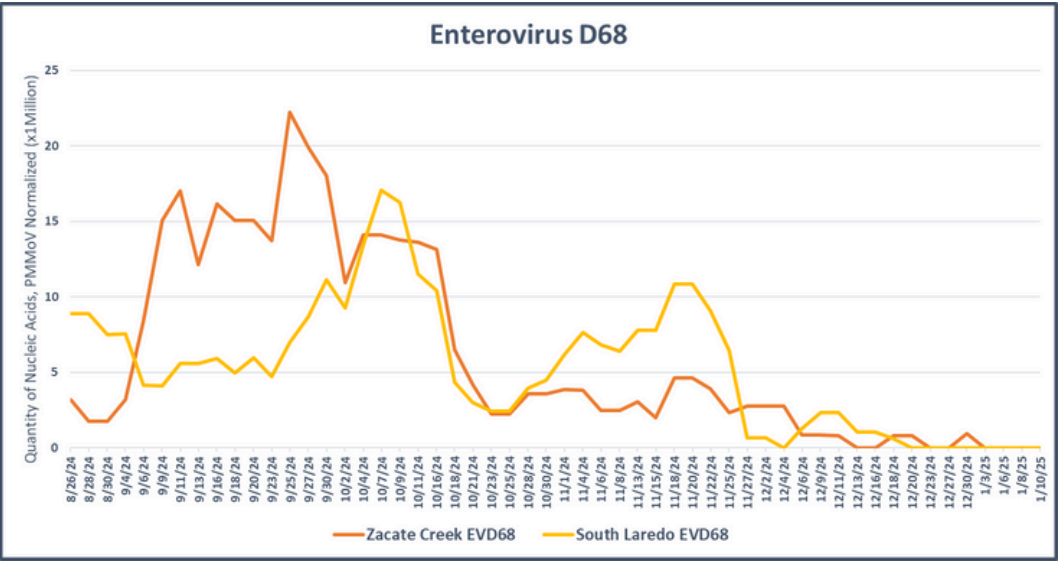
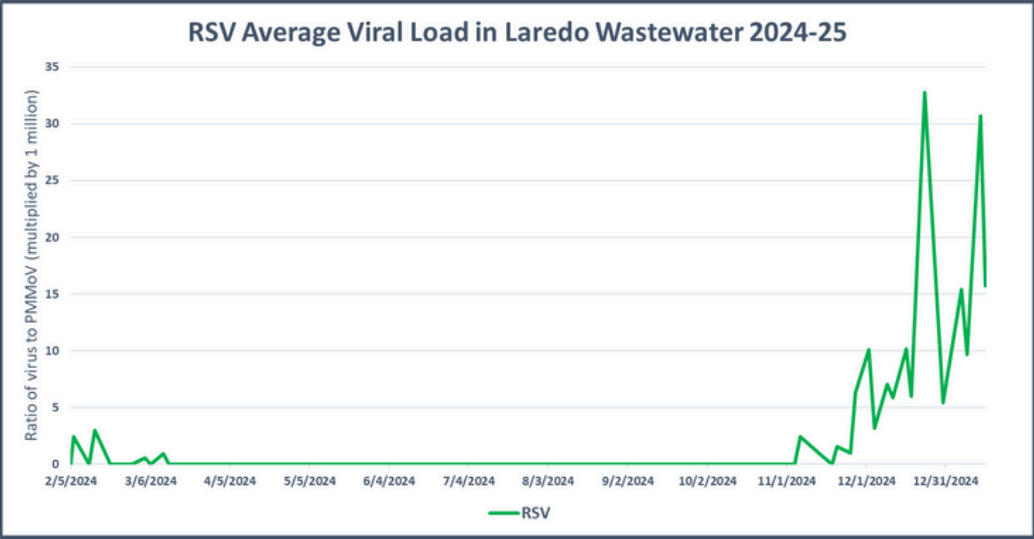
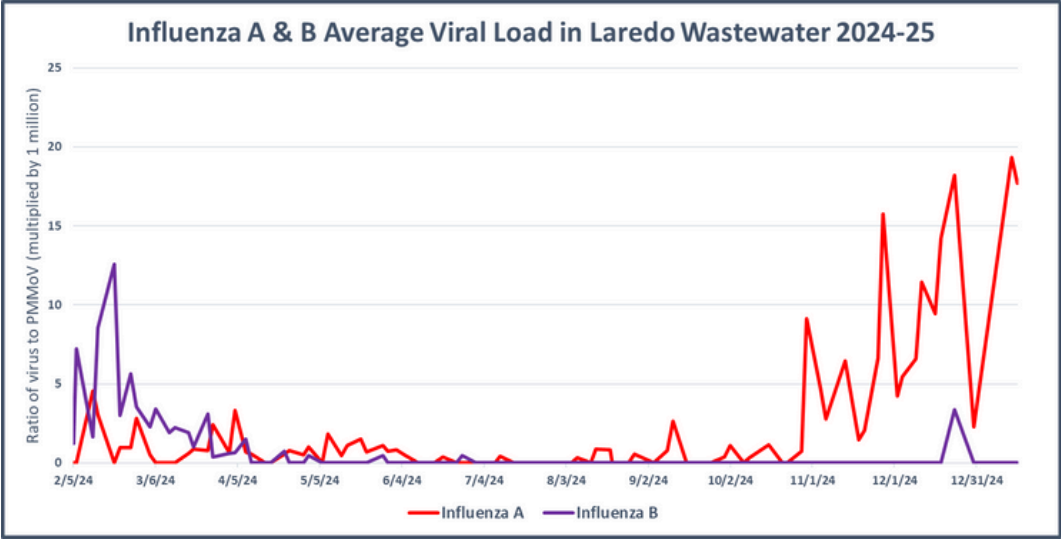
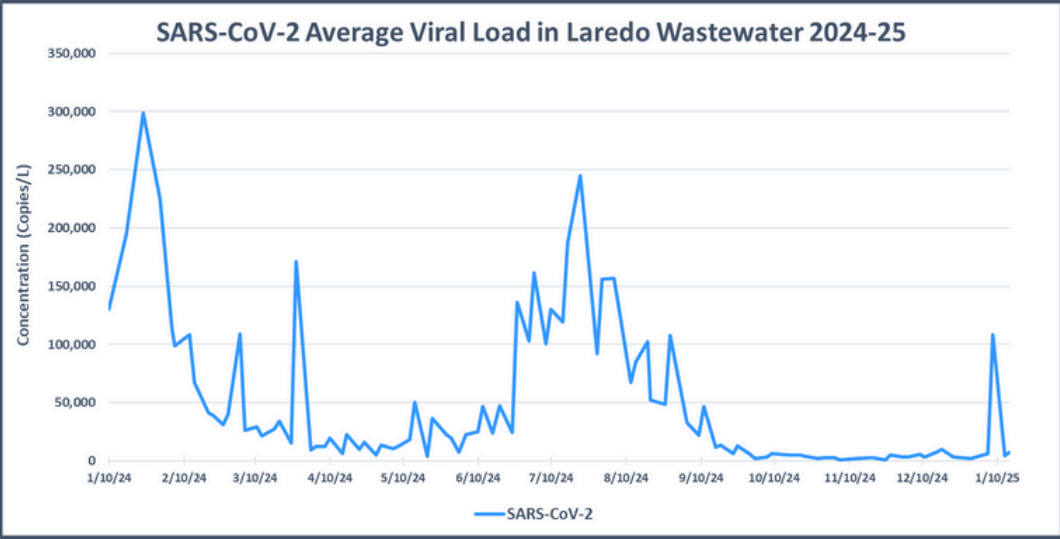


# Making Data Truly Comparable

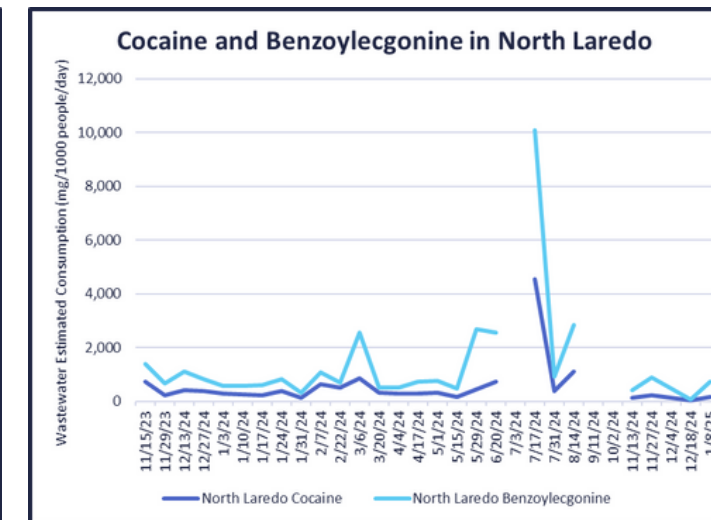
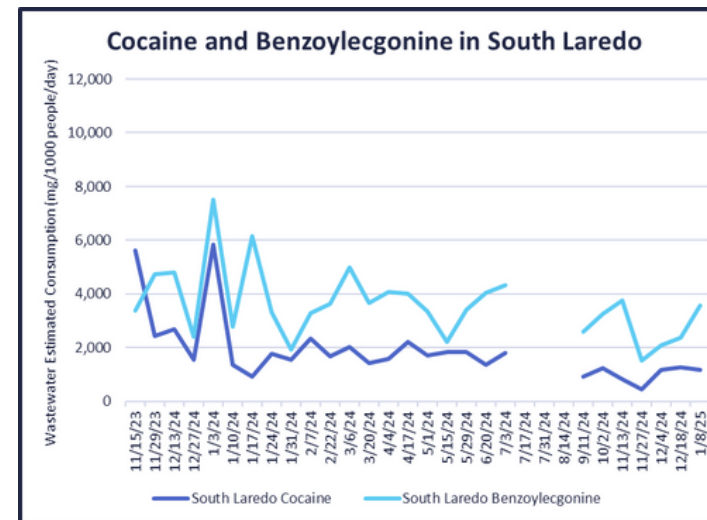
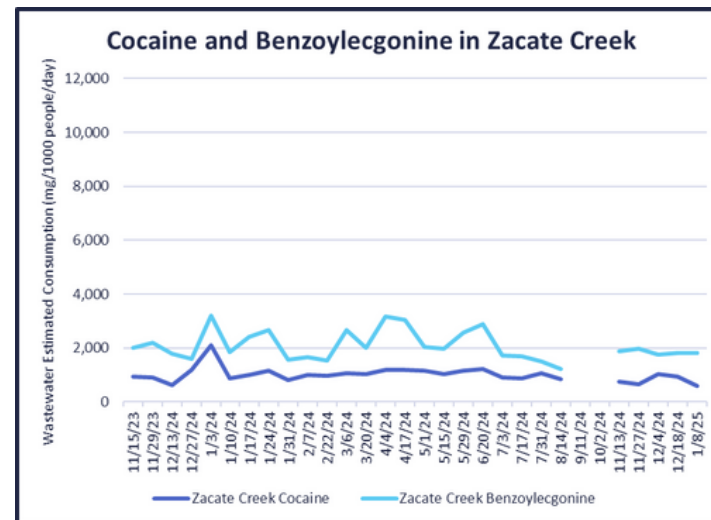
In wastewater surveillance, we detect how much of a virus's genetic material is present in the community's sewage. But to ensure the data is reliable—especially when water is more or less diluted due to rain or population shifts—we use a common virus found in all human feces, called Pepper Mild Mottle Virus (PPMoV), as a normalization marker.

We divide the viral concentration (e.g., SARS-CoV-2) by the PPMoV concentration to correct for dilution and population effects. This gives us a 'normalized' result that reflects true community infection trends. We then multiply this ratio by 1 million for easier interpretation and comparison across sites and time.

# Infectious Disease Graphs

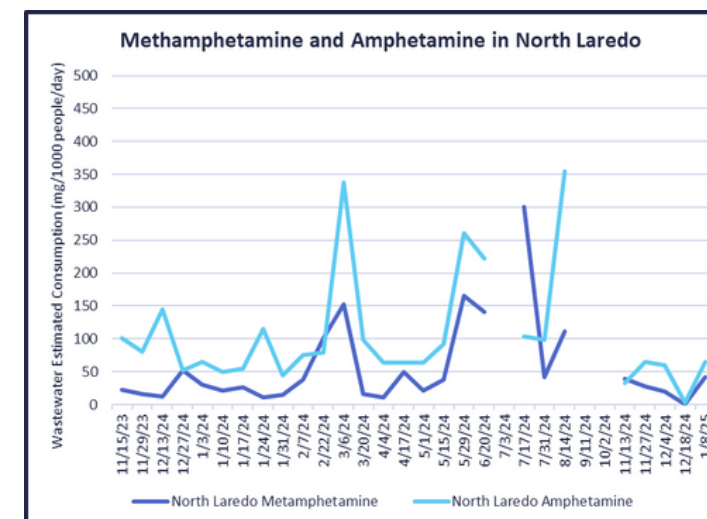
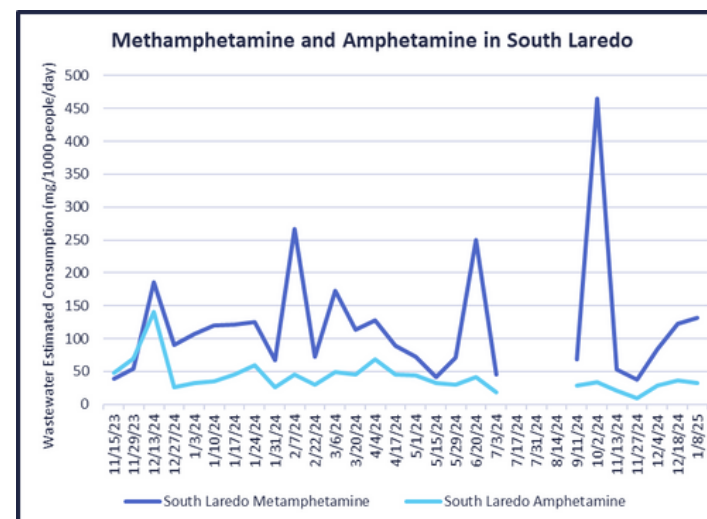
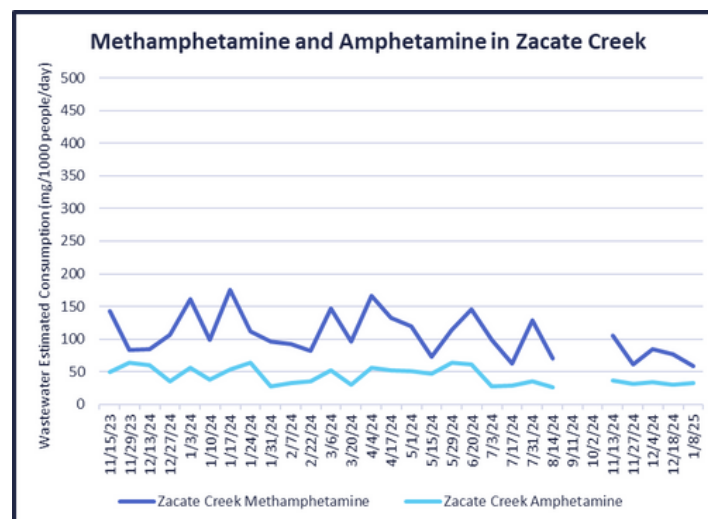


# High Risk Substance Monitoring



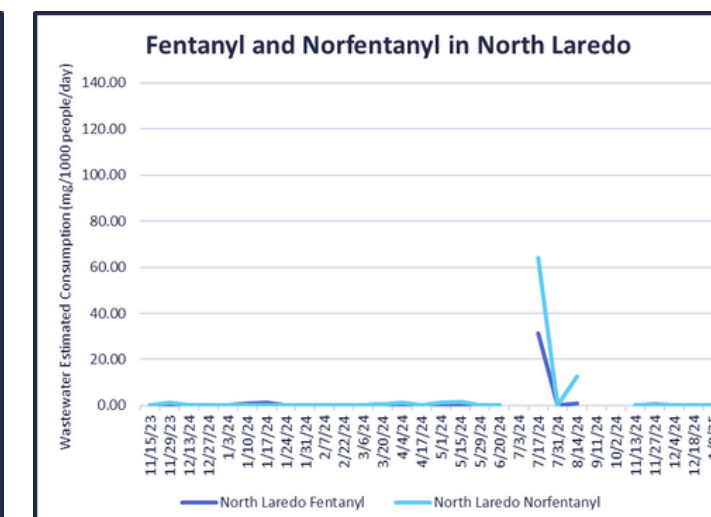
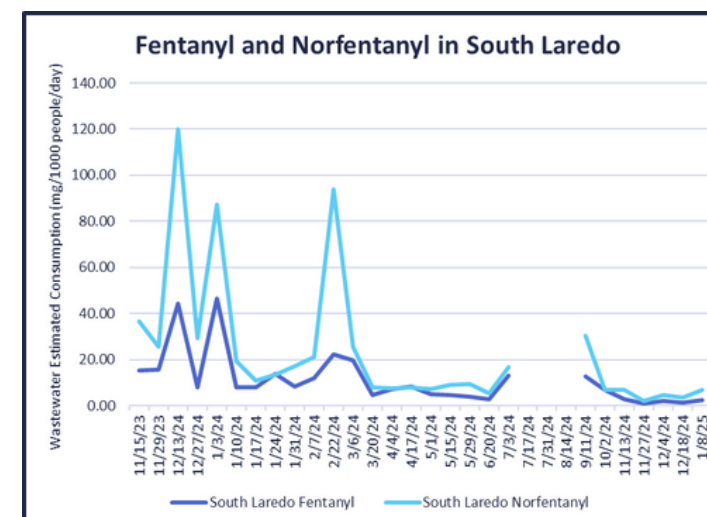
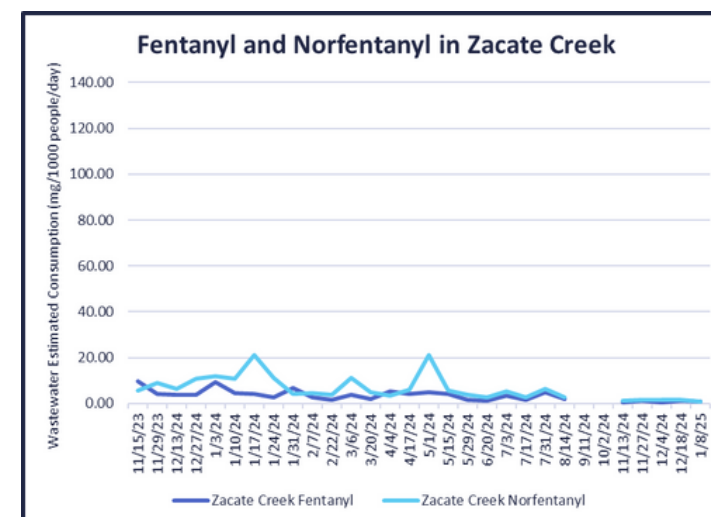
## Cocaine and its metabolite benzoyllecgonine

When cocaine consumption occurs, the parent drug (cocaine) concentration will be lower than its metabolite in the wastewater



## Methamphetamine and its metabolite amphetamine

When methamphetamine consumption occurs, the parent drug (methamphetamine) concentration will be higher than its metabolite in the wastewater



## Fentanyl and its metabolite norfentanyl

When fentanyl consumption occurs, the parent drug (fentanyl) concentration will be lower than its metabolite in the wastewater



# What we have done?



**PRESS RELEASE**  
**MONDAY, DECEMBER 30, 2024**

**CONTACT:**  
Jaime Perez, Public Information Specialist  
City of Laredo Health Department  
956-857-7474  
[japerez@ci.laredo.tx.us](mailto:japerez@ci.laredo.tx.us)

## Laredo Public Health Department Issues Advisory on Rising RSV, Influenza, and Influenza-Like Illnesses (ILIs) in the Community

Laredo, Texas – In response to recent surveillance data, the Laredo Public Health Department has identified an uptick in influenza-like illnesses (ILIs) and the high presence of Respiratory Syncytial Virus (RSV) and influenza viral particles in the community’s wastewater. Prioritizing the health and well-being of our residents, we are issuing this proactive advisory to keep the community informed and equipped with the

**Come get your FREE FLU VACCINE!**

*Working with livestock, poultry, or dairy? Protect yourself with a free flu shot! We're offering 100 free doses to keep our local farmers and ranchers healthy and ready for the season.*

**RESERVE YOUR DOSE TODAY!**

Know other farmers or ranchers? Spread the word about this free opportunity to ensure our entire community is protected!

- 1 CHECK ELIGIBILITY
- 2 CALL TO RESERVE
- 3 GET VACCINATED

**LAREDO Public Health**

To schedule your FREE dose call (956)795-4933 - (956)727-6966 - (956)795-4956 or visit Laredo Public Health Immunizations Department located at 2600 Cedar Ave (1st Floor), Laredo, Texas, 78040

## FOOD AND WATERBORNE ILLNESSES

- 1 **SALMONELLA**
  - STEC (Shiga Toxin-Producing Escherichia coli) is a type of bacteria that can cause foodborne illness. This strain of E. coli produces toxins that can damage the intestines and lead to severe illness
- 2 **CRYPTOSPORIDIOSIS**
  - This parasite affects the gastrointestinal system, leading to diarrhea and other digestive symptoms. It is one of the most common causes of waterborne diseases.
- 3 **SHIGELLOSIS**
  - It primarily affects the intestines, leading to severe diarrhea, stomach cramps, and sometimes fever. It is highly contagious and commonly spreads through contaminated food, water, or direct contact with infected individuals.
- 4 **STEC**
  - STEC (Shiga Toxin-Producing Escherichia coli) is a type of bacteria that can cause foodborne illness. This strain of E. coli produces toxins that can damage the intestines and lead to severe illness

**LAREDO Public Health**



**PRESS RELEASE**  
**THURSDAY, APRIL 3, 2025**

**CONTACT**  
Deidra C. Hernandez, Public Information Specialist  
[dchernande@ci.laredo.tx.us](mailto:dchernande@ci.laredo.tx.us)  
(956) 552-2824

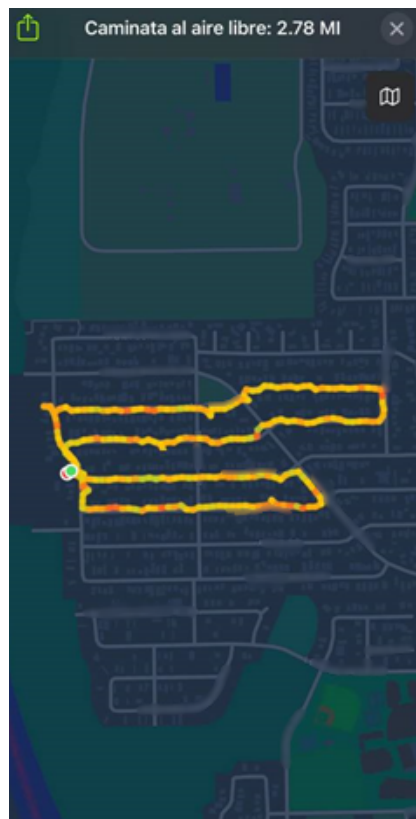
## City of Laredo Public Health Department Issues Health Alert Amid Increased Norovirus Activity

**LAREDO, Texas** - The City of Laredo Public Health Department is urging the community and healthcare providers to take precautions as increasing levels of norovirus have been detected in wastewater. Coupled with an increase in reported cases through active surveillance and a rise in gastrointestinal-related emergency room visits, Laredo Public Health strongly recommends heightened awareness and preventive measures.

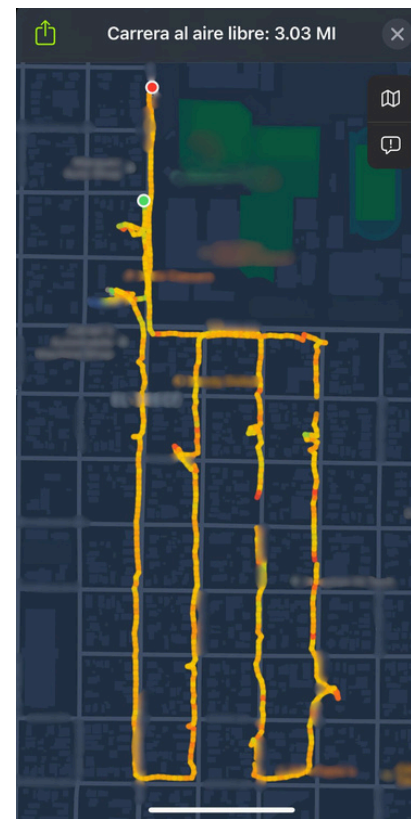


# Knock and Talk

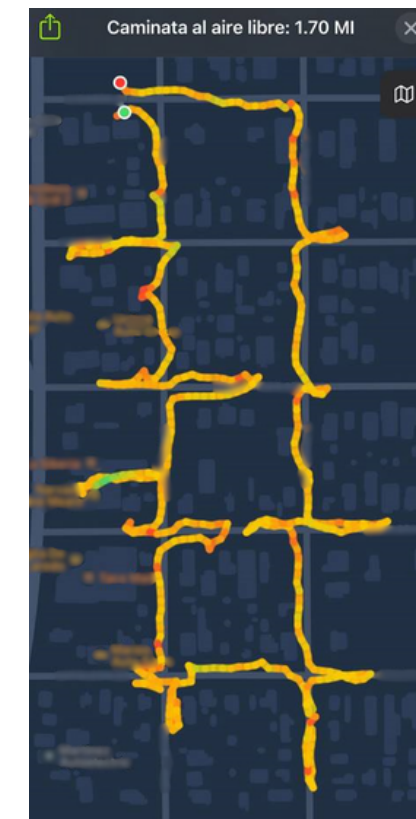
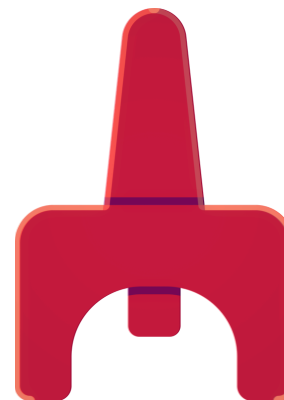
The Wastewater surveillance identified high-risk areas with significant substance use, prompting us to initiate the "Knock and Talk" public health harm reduction operation. We visited high-risk neighborhoods, **canvassing 22 miles**, to provide health education, improve health literacy, and increase access to Naloxone (Narcan) for individuals with Substance Use Disorders (SUD). This event aimed to reduce overdose-related deaths in our community. We thank the Fire, Police, and Public Health staff for their collaboration.



Homes Visited: **1,933**



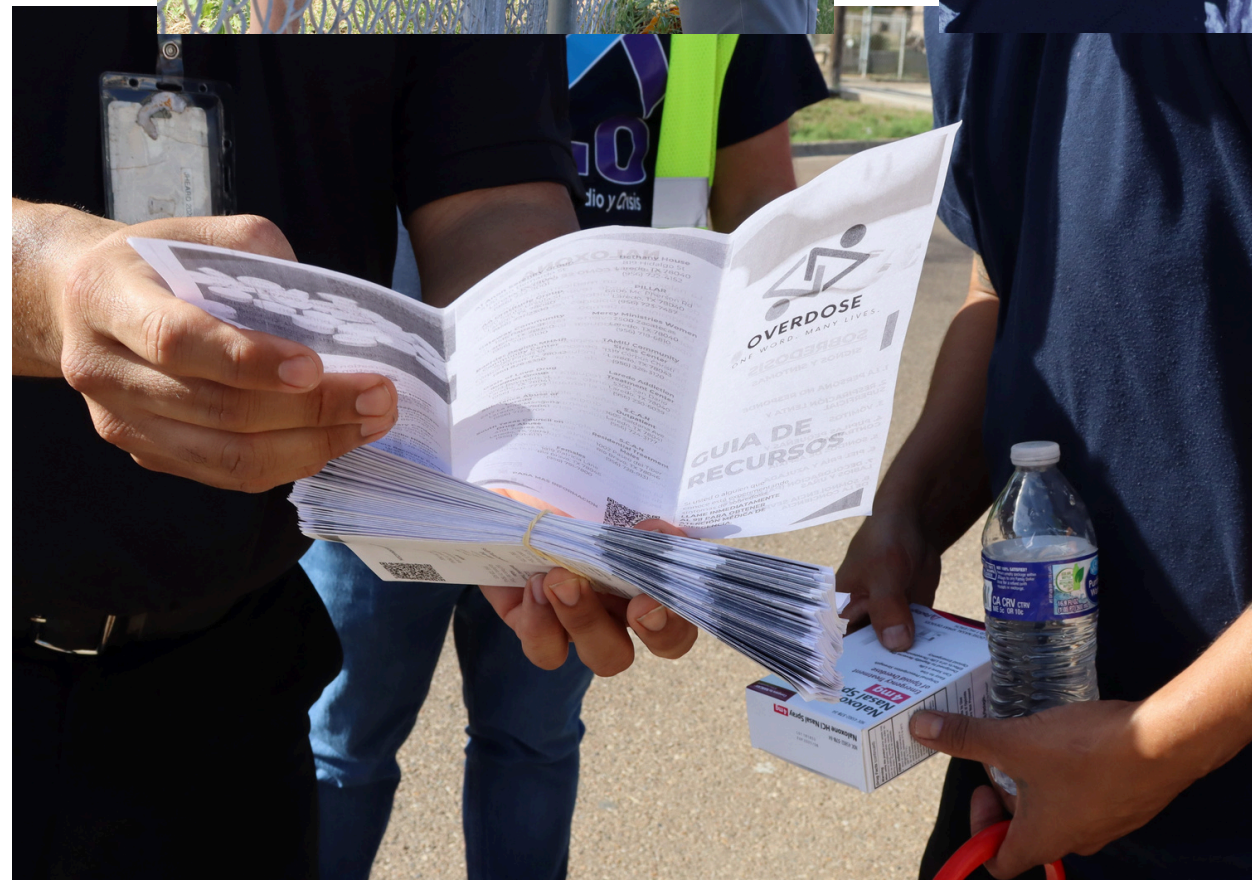
Naloxone Distributed: **82**



Educational Encounters: **202**



# Knock and Talk

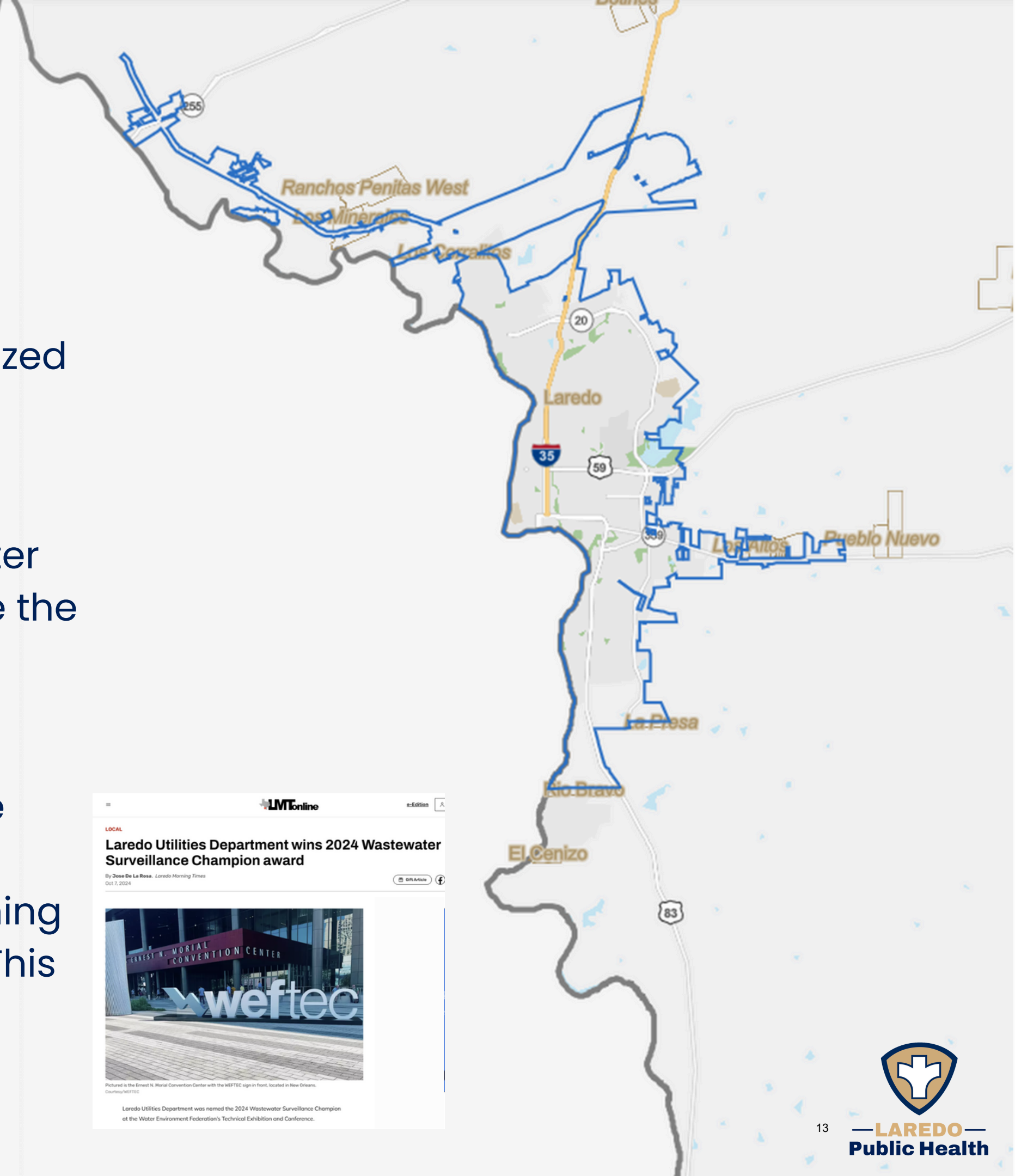
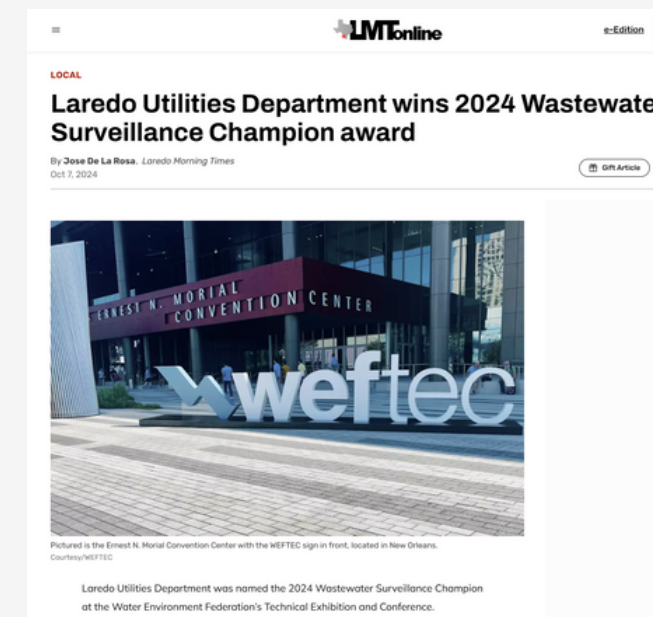


# Recognition

The City of Laredo Utilities Department was recognized as a **2024 Wastewater Surveillance Champion** at WEFTEC 2024 in New Orleans, Louisiana.

This honor highlighted their leadership in wastewater monitoring, including participation in programs like the National Wastewater Surveillance System and the Texas Wastewater Environmental Biomonitoring.

Since 2022, the department had advanced disease surveillance for SARS-CoV-2, RSV, and Influenza, ensuring public health preparedness and maintaining transparent communication with the community. This recognition underscored Laredo's commitment to protecting health along the Texas-Mexico border.



# Research

The Laredo Public Health Department is participating in a wastewater-based epidemiology (WBE) study led by the ONDCP in collaboration with the University of Florida and the University of South Carolina. This project, running from January to September 2025, will analyze weekly wastewater samples to identify drug use patterns, including substances like fentanyl, methamphetamine, and cocaine. The University of South Carolina will contribute by developing a secure dashboard to share anonymized data, working closely with this initiative to provide actionable insights.

The study, which comes at no cost to Laredo, will help track drug consumption trends and their public health impact while comparing findings with neighboring communities in Mexico. By participating, Laredo reaffirms its commitment to addressing substance misuse and improving community health. For more information, contact the ONDCP or Dr. Joseph Bisesi at the University of Florida.



# News | Leadership

**January 2025:** Laredo Public Health was selected as one of 12 recipients of the Wastewater Surveillance Mentorship Program award, supported by the Centers for Disease Control and Prevention (CDC). This program, organized by the National Association of County and City Health Officials (NACCHO), is designed to support local health departments in implementing and expanding wastewater surveillance efforts.

Through this initiative, experienced health departments will mentor organizations in the early stages of developing wastewater surveillance programs, providing valuable guidance, tools, and resources to help meet community health needs.



# Wastewater Surveillance Future Improvements

Expanding the range of infectious diseases in our wastewater surveillance program can significantly enhance the value and impact of public health efforts in the Laredo region. By incorporating more pathogens into our testing, we can:

- Gain a comprehensive understanding of community health trends, identify, and respond to outbreaks more rapidly
- Implement targeted interventions to prevent disease spread

This broader surveillance capability will strengthen our ability to protect and promote the health of our community, making Laredo a safer and healthier place to live.





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Public Health

# Thank You

