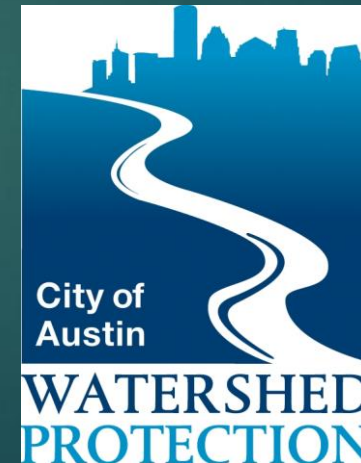


Spatially Displaying Water Quality Compliance Pollution Data

Thain Maurer

Environmental Compliance Supervisor

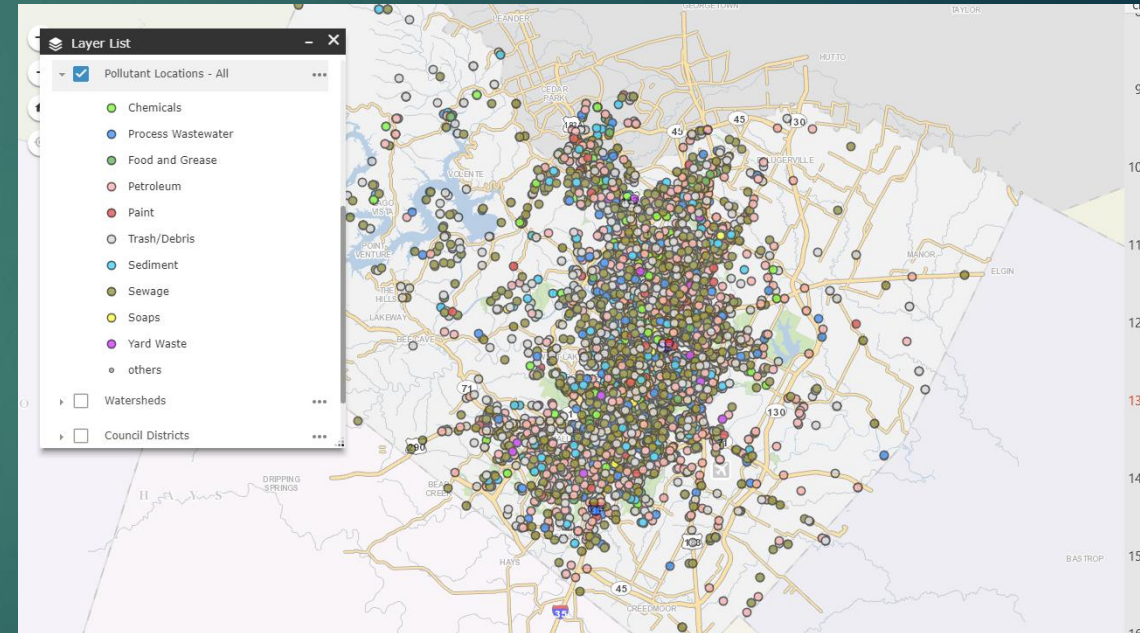
Watershed Protection Department



“Pollutant Locations” GIS Viewer

- ▶ Why am I presenting here today?
- ▶ Why did we create this tool?
- ▶ What does this new tool do?
- ▶ Context and cautions.
- ▶ Some ideas for future applications.

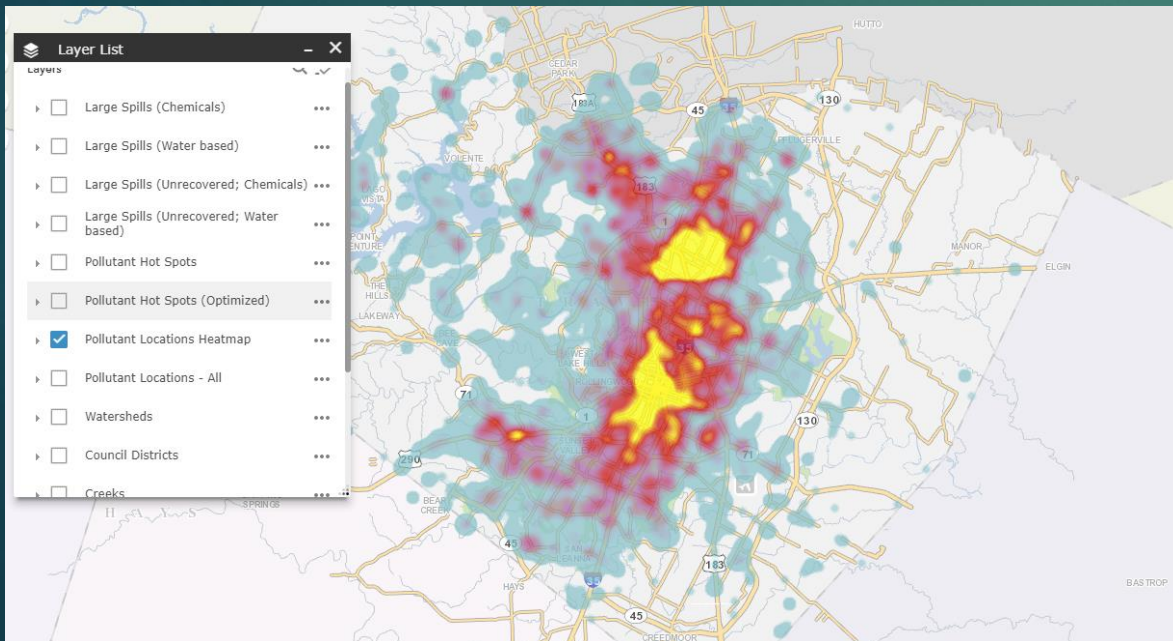
- ▶ WQC is starting to use this viewer for reports
- ▶ Intro on interpreting data
- ▶ Ideas for other applications



Why Create This Viewer?

New Regulatory Requirements

- xi. **Priority Areas.** *Within one year from the date of permit issuance, the permittee shall develop a list of priority areas likely to have illicit discharges. The permittee shall continue to evaluate and update this list each year and report the results in the annual report.*



TPDES PERMIT NO.
WQ0004705000
[For TCEQ office use only – EPA
I.D. No. TXS000401]

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

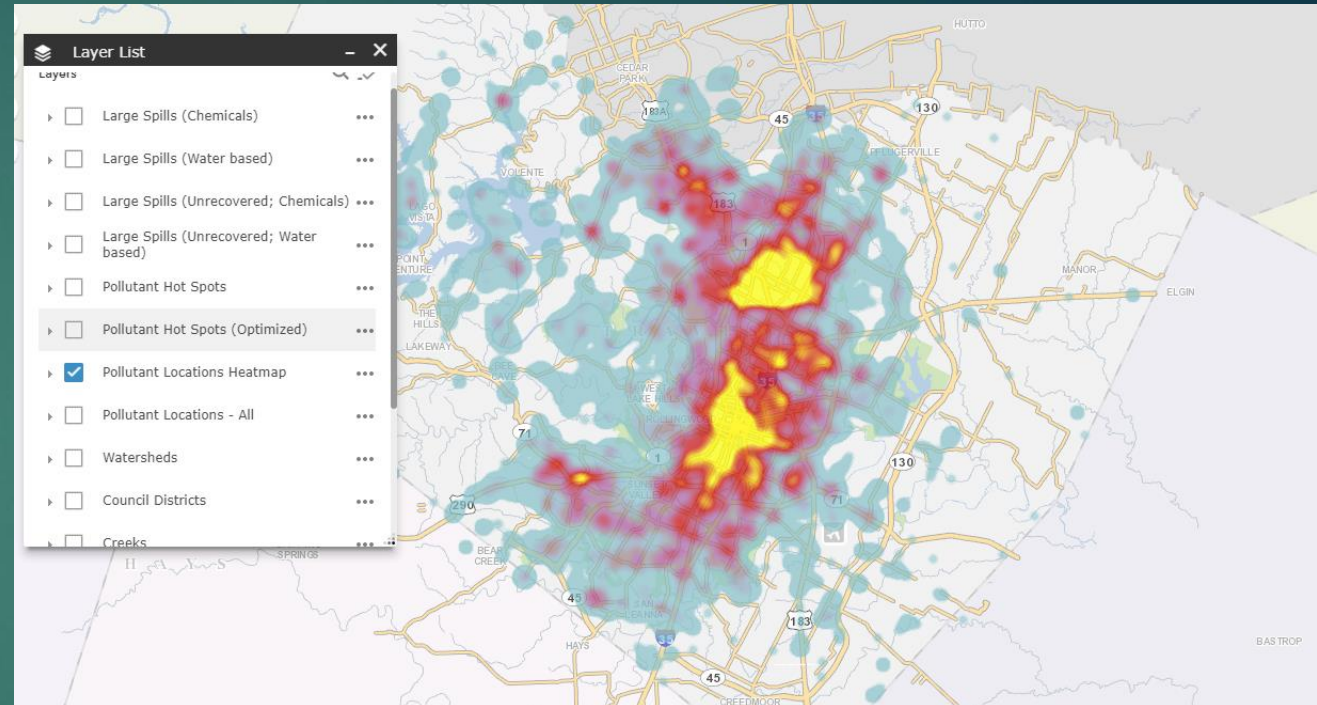
This is a renewal of TPDES
Permit No. WQ0004705000,
issued on July 20, 2011.

PERMIT TO DISCHARGE UNDER THE TEXAS
POLLUTANT DISCHARGE ELIMINATION SYSTEM
under provisions of
Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

PART I: AUTHORIZATION

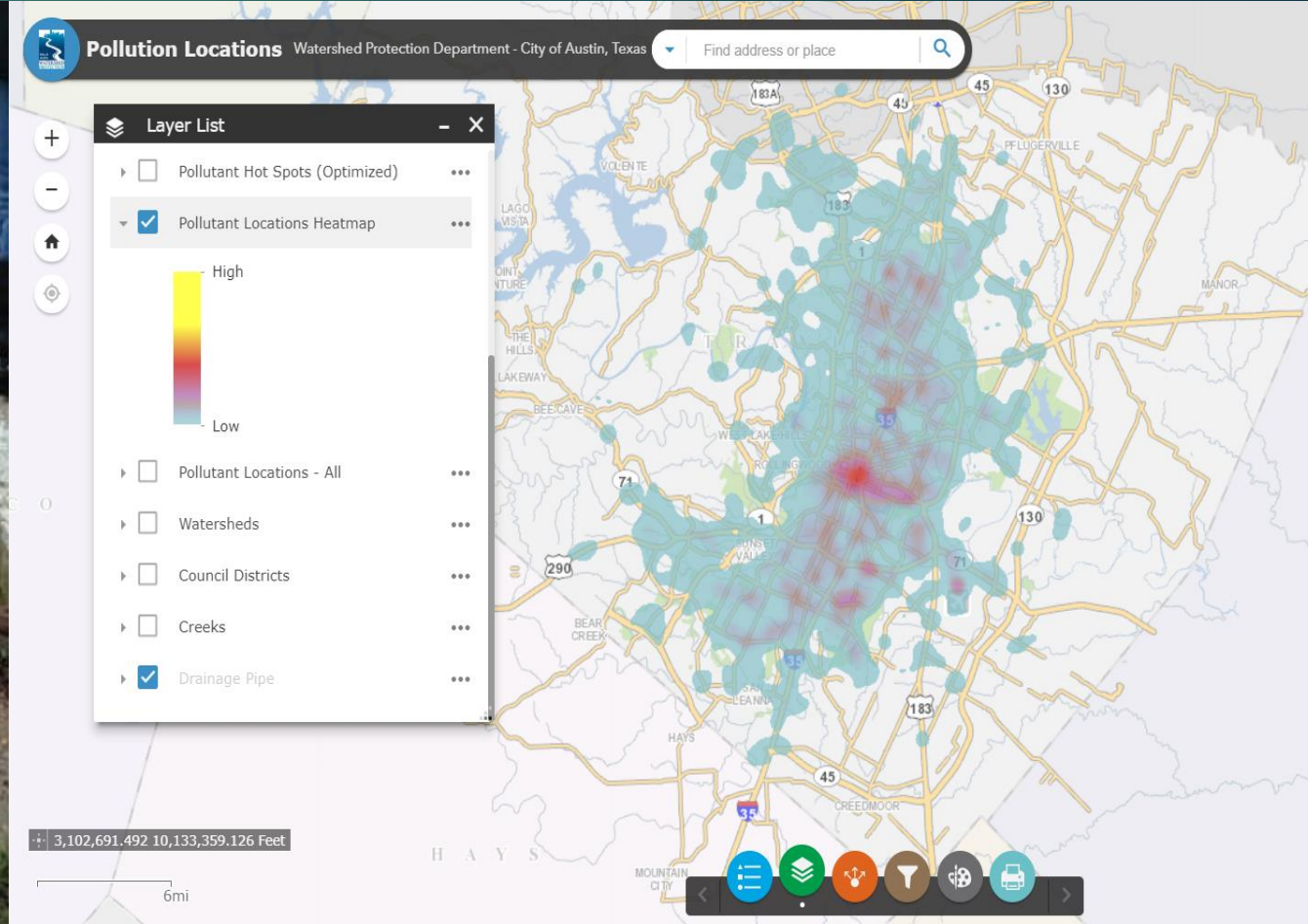
City of Austin
505 Barton Springs
Austin, Texas 78704

Why Create This Viewer? Educational Outreach



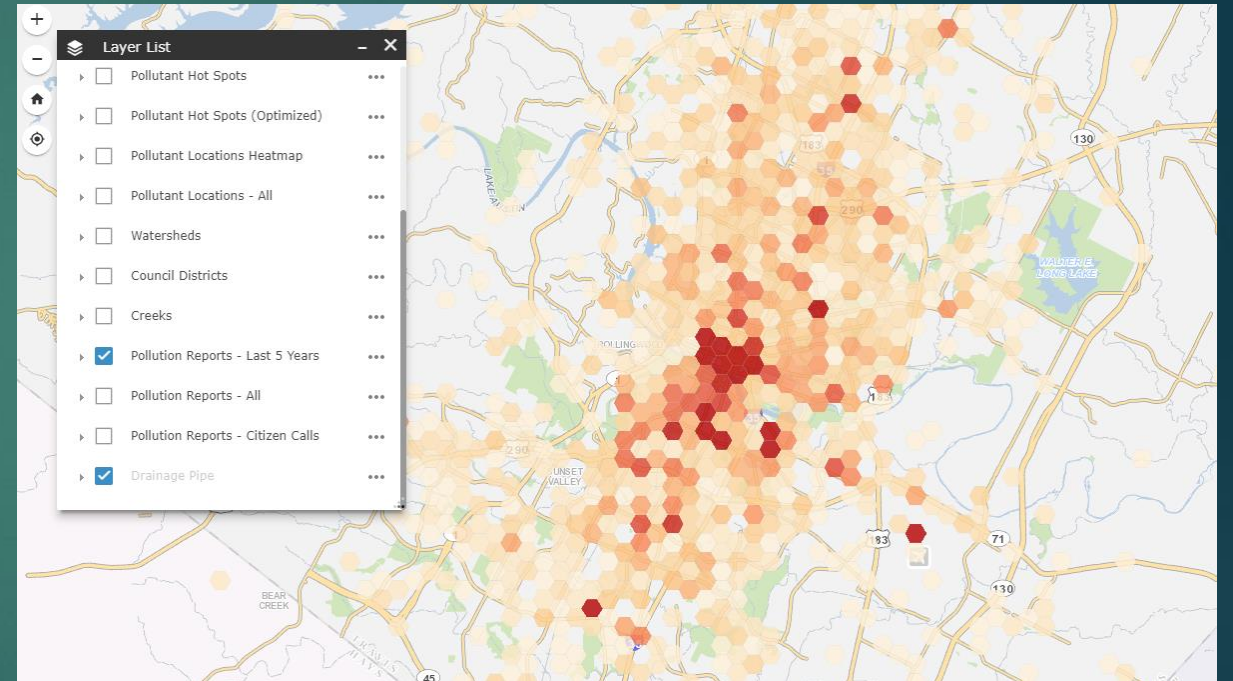
Why Create This Viewer?

Problem Areas by Pollutant Category



Why Create This Viewer?

Can We Correlate EI and Spills?



What Does This Viewer Show?

- ▶ <https://arcg.is/e0Pbe>
- ▶ Spatially displays WQC pollutant data
- ▶ Has various statistical analyses of pollution data
- ▶ Allows sorting by pollutant group and date range
- ▶ Can display large spills and unrecovered volumes of pollutants

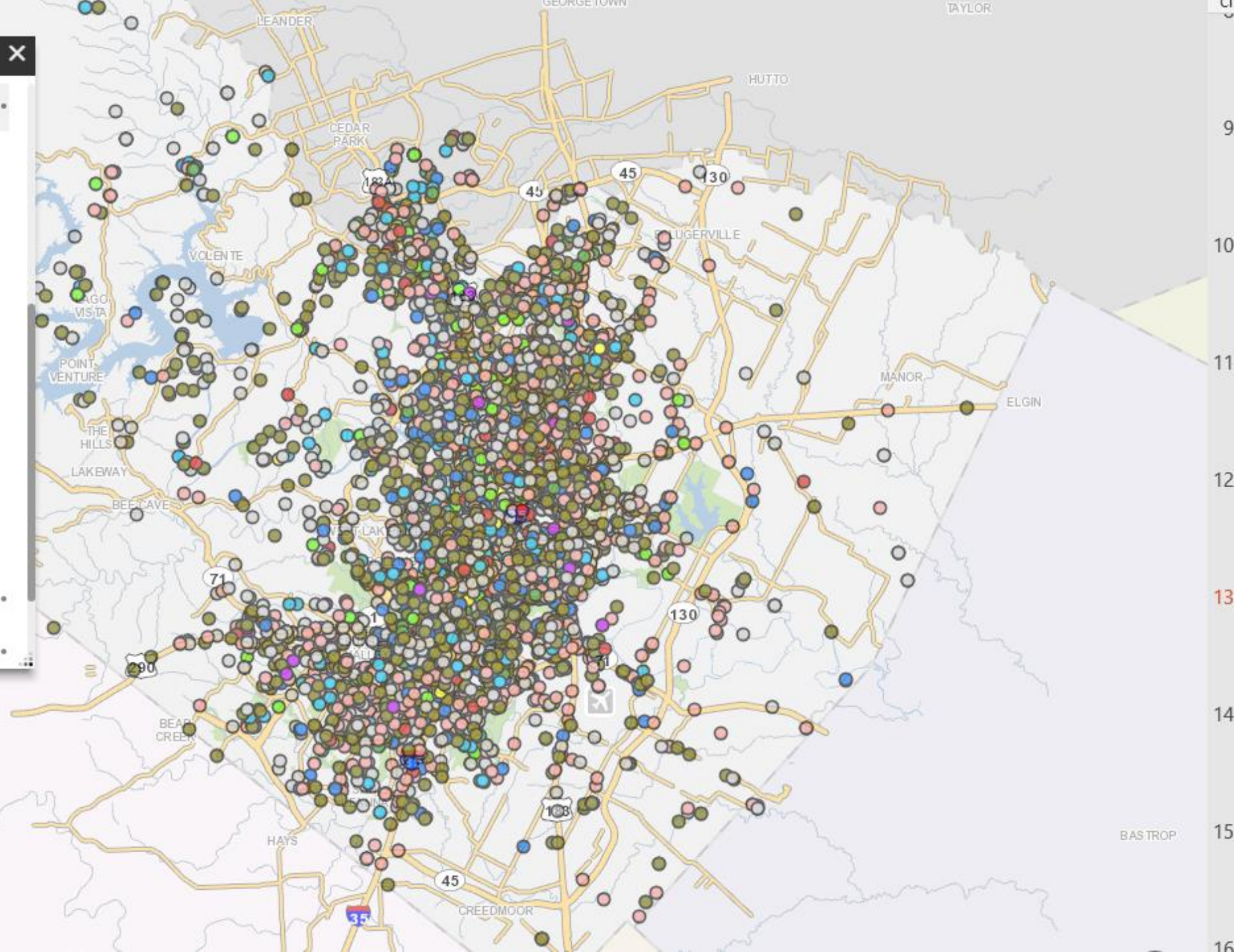
Layer List

▼ ☒ Pollutant Locations - All ...

- ☒ Chemicals
- ☒ Process Wastewater
- ☒ Food and Grease
- ☒ Petroleum
- ☒ Paint
- ☒ Trash/Debris
- ☒ Sediment
- ☒ Sewage
- ☒ Soaps
- ☒ Yard Waste
- ☒ others

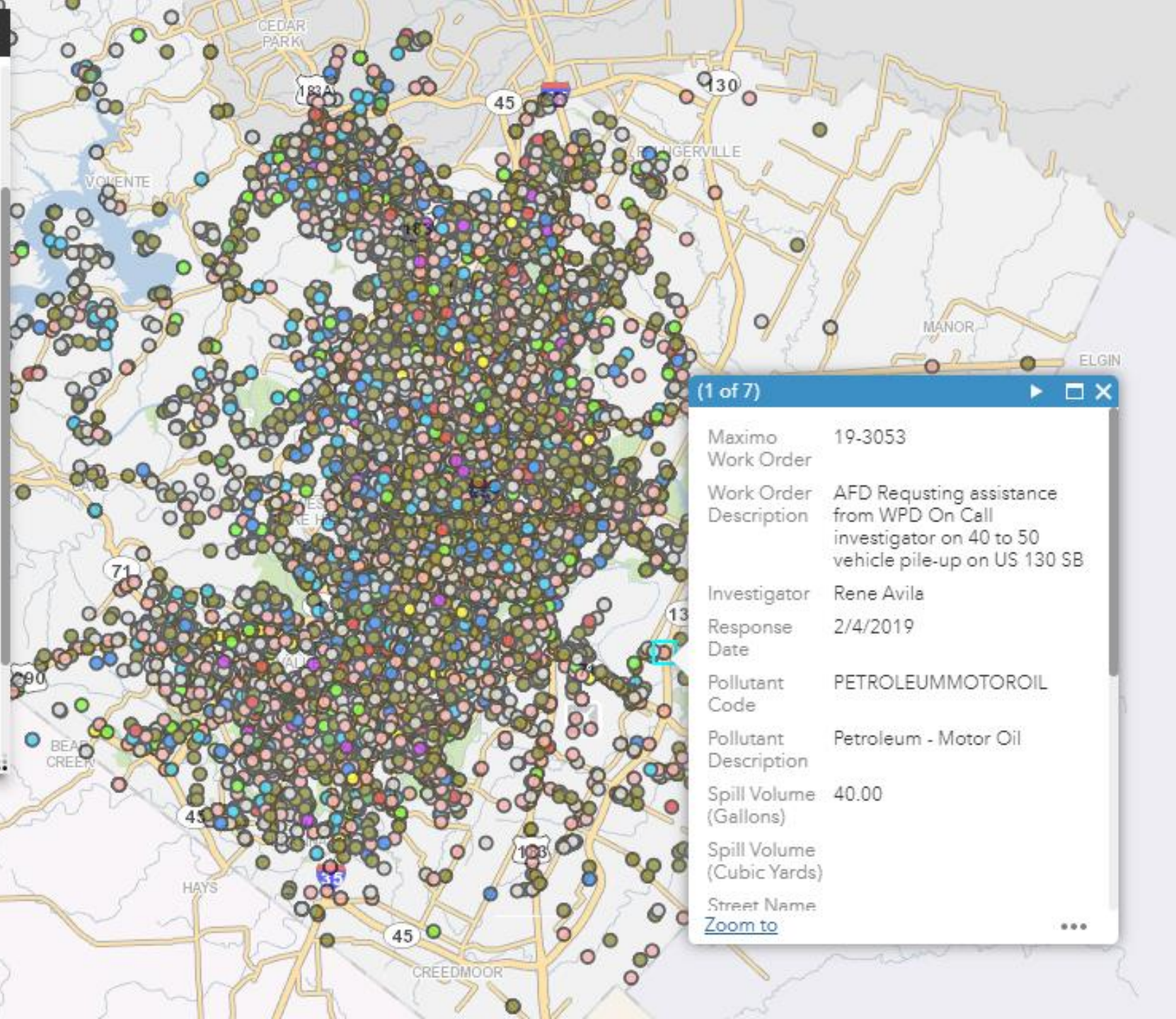
▶ ☐ Watersheds ...

▶ ☐ Council Districts ...



Layer List

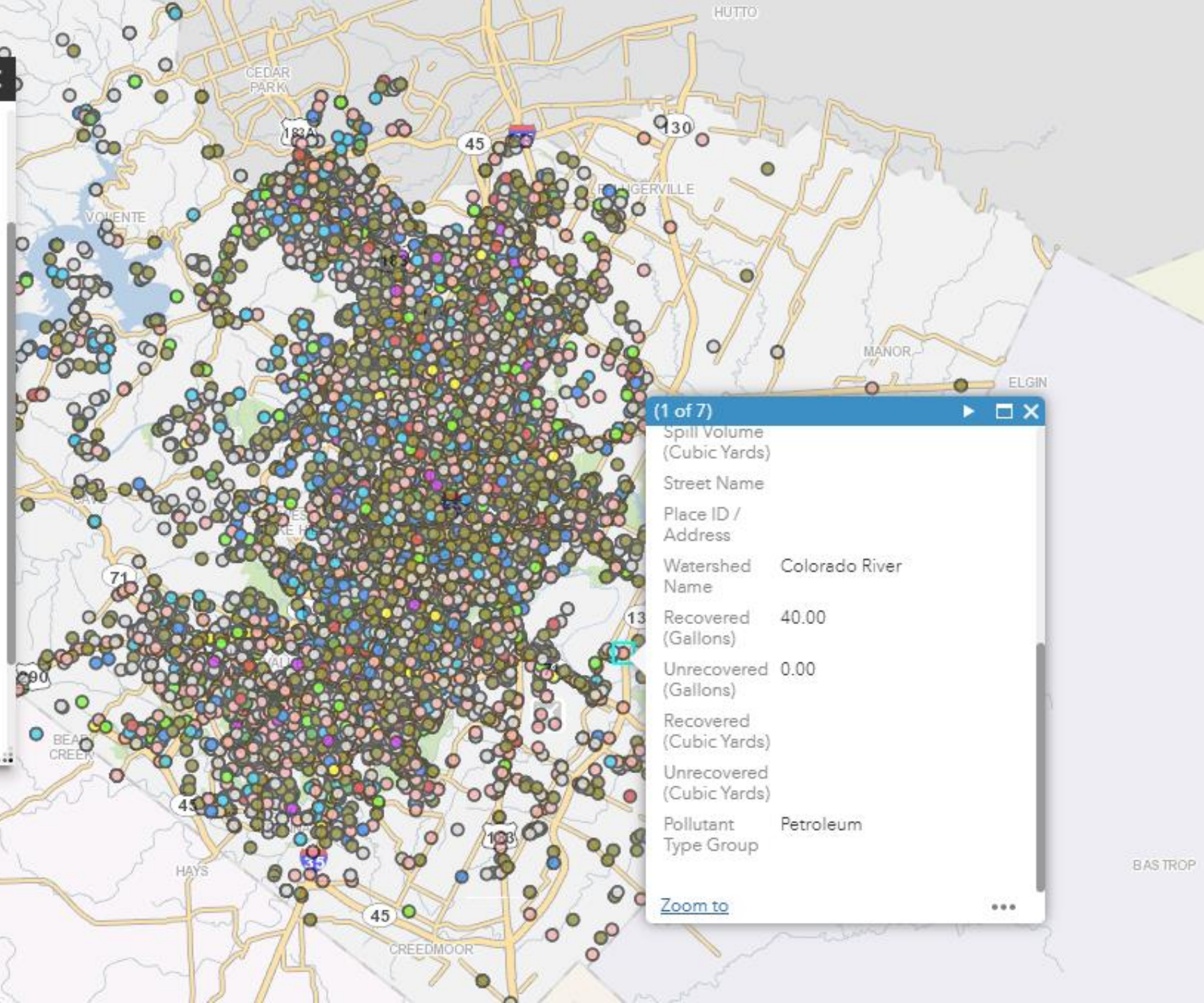
- ▶ ☐ Large Spills (Unrecovered; Chemicals) ...
- ▶ ☐ Large Spills (Unrecovered; Water based) ...
- ▶ ☐ Pollutant Hot Spots ...
- ▶ ☐ Pollutant Hot Spots (Optimized) ...
- ▶ ☐ Pollutant Locations Heatmap ...
- ▶ ☒ Pollutant Locations - All ...
- ▶ ☐ Watersheds ...
- ▶ ☐ Council Districts ...
- ▶ ☐ Creeks ...
- ▶ ☐ Pollution Reports - Last 5 Years ...
- ▶ ☐ Pollution Reports - All ...





Layer List

- ▶ ☐ Large Spills (Unrecovered; Chemicals) ...
- ▶ ☐ Large Spills (Unrecovered; Water based) ...
- ▶ ☐ Pollutant Hot Spots ...
- ▶ ☐ Pollutant Hot Spots (Optimized) ...
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- ▶ ☒ Pollutant Locations - All ...
- ▶ ☐ Watersheds ...
- ▶ ☐ Council Districts ...
- ▶ ☐ Creeks ...
- ▶ ☐ Pollution Reports - Last 5 Years ...
- ▶ ☐ Pollution Reports - All ...



(1 of 7)

Spill Volume (Cubic Yards)	
Street Name	
Place ID / Address	
Watershed Name	Colorado River
Recovered (Gallons)	40.00
Unrecovered (Gallons)	0.00
Recovered (Cubic Yards)	
Unrecovered (Cubic Yards)	
Pollutant Type Group	Petroleum
Zoom to	

Layer List

Layers

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Large Spills (Chemicals)

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Large Spills (Water based)

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Large Spills (Unrecovered; Chemicals)

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Large Spills (Unrecovered; Water based)

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Pollutant Hot Spots

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Pollutant Hot Spots (Optimized)

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Pollutant Locations Heatmap

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Pollutant Locations - All

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Watersheds

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Council Districts

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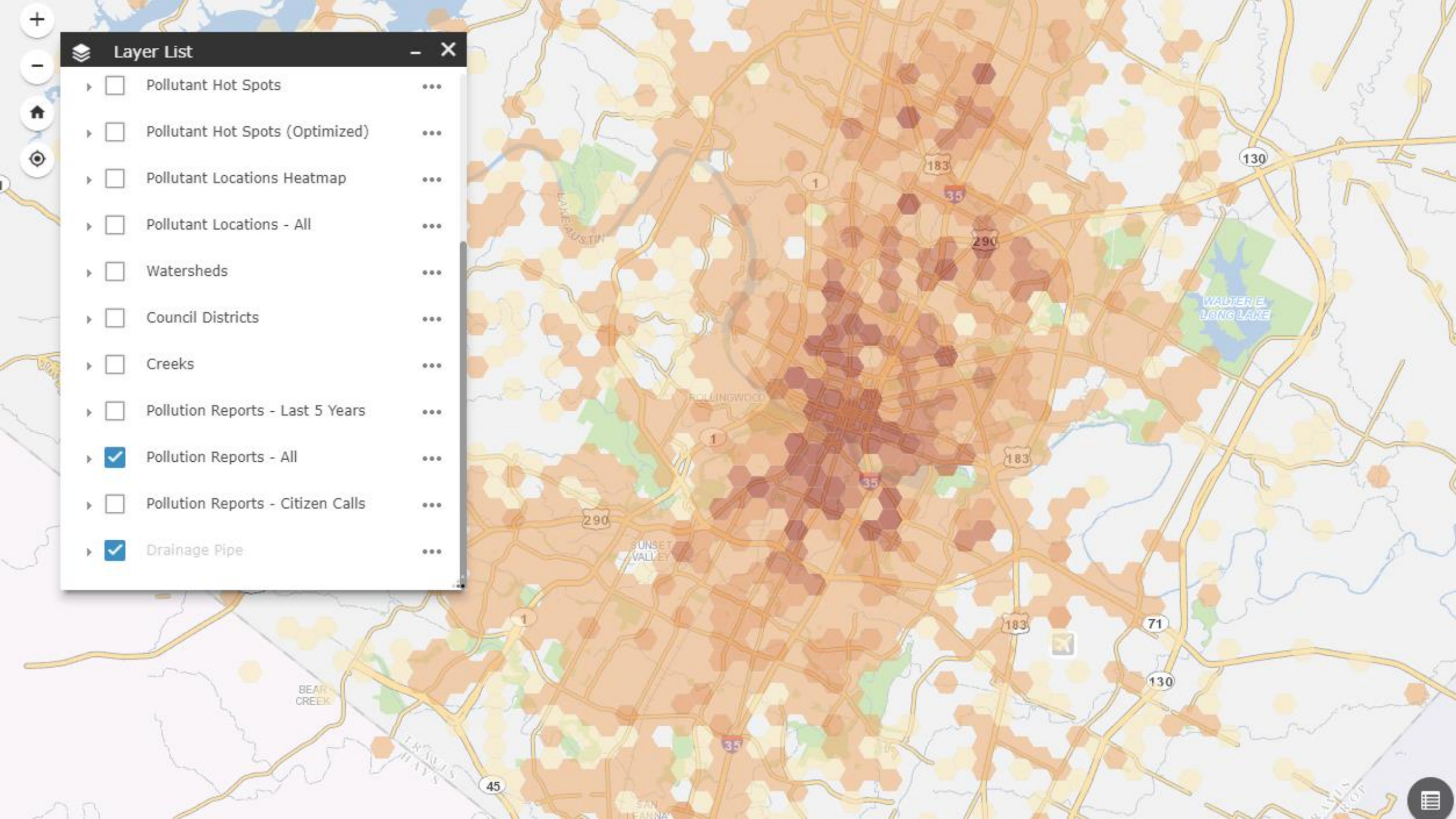
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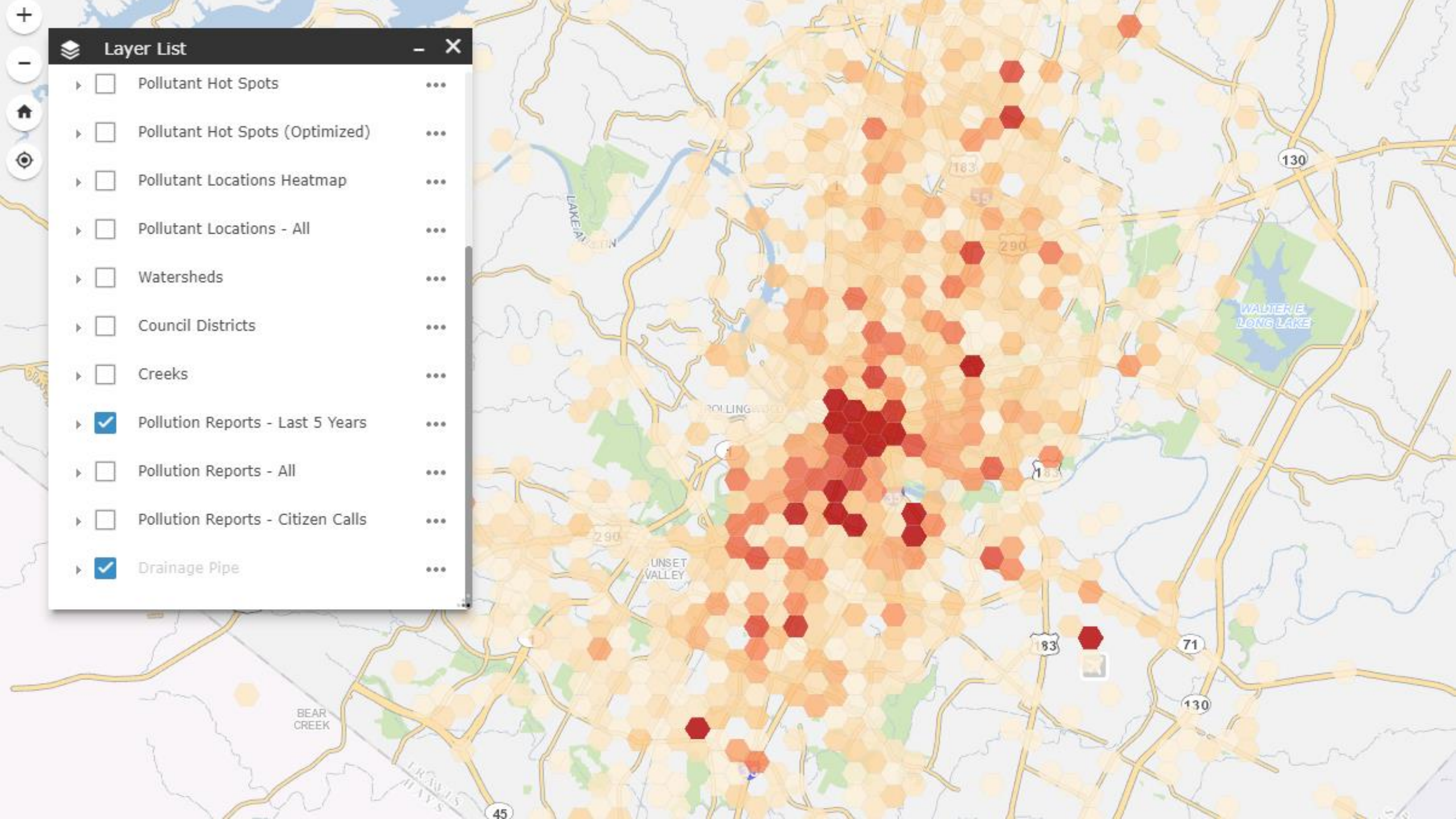
☐

Creeks

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A map of San Antonio, Texas, displaying a heatmap of pollutant locations. The map features a network of roads, including major highways like I-35, I-10, and I-183, as well as local roads like Loop 1604 and Loop 71. The heatmap uses a color scale from blue (low density) to red (high density) to indicate the concentration of pollutant locations. The highest concentrations are visible in the central urban area, particularly around the downtown core and the area near the airport. The map also shows various geographical features like the San Antonio River and surrounding areas like Hays, Elgin, and Manor.





Context and Cautions

- ▶ No toxicity information
- ▶ Heat map/Hotspot map are based on occurrences, not volumes
- ▶ Some data and trends are more easily seen in non-spatial analyses
- ▶ Context matters, especially for volumes

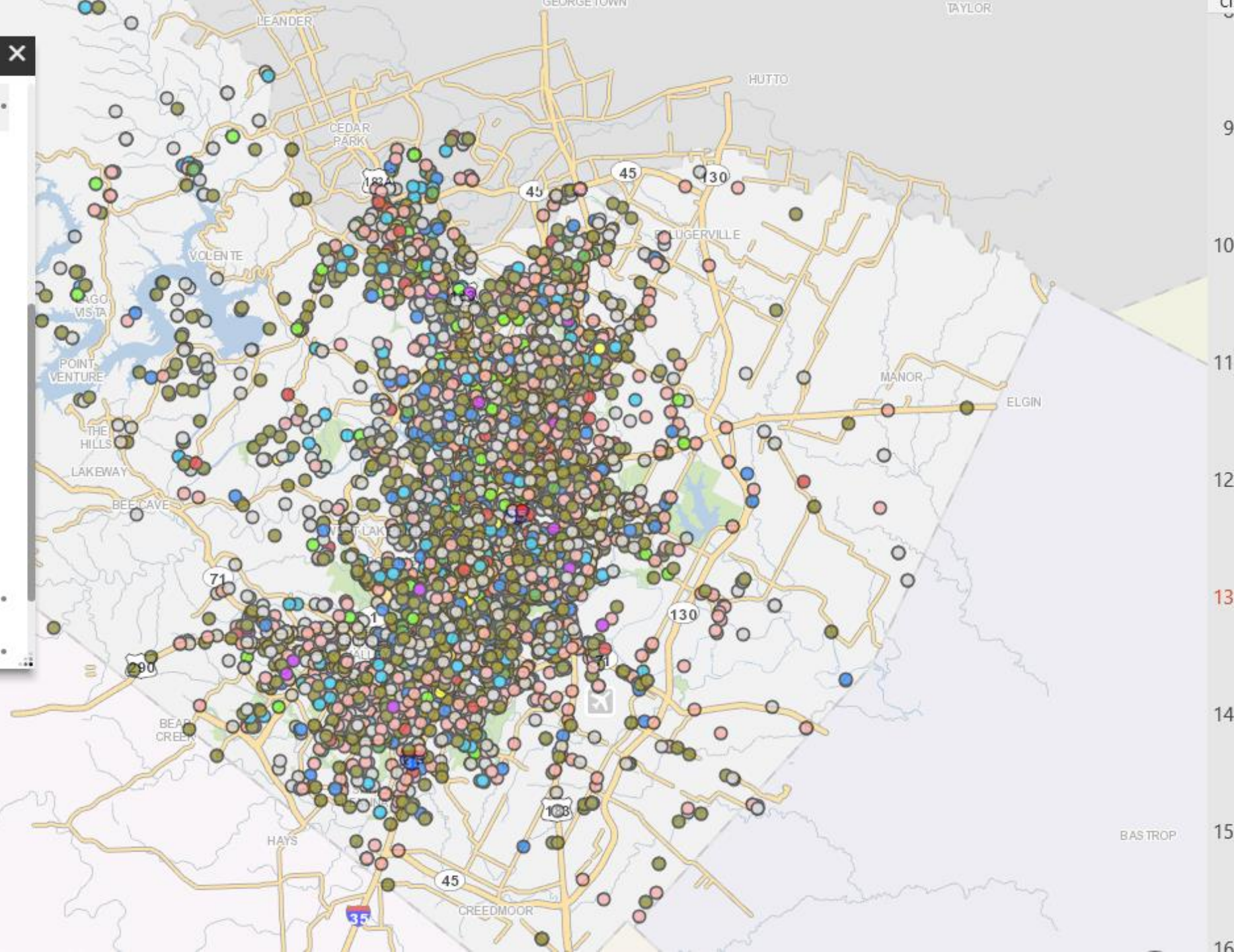
Layer List

▼ ☒ Pollutant Locations - All ...

- ☒ Chemicals
- ☒ Process Wastewater
- ☒ Food and Grease
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- ☒ Trash/Debris
- ☒ Sediment
- ☒ Sewage
- ☒ Soaps
- ☒ Yard Waste
- ☒ others

▶ ☐ Watersheds ...

▶ ☐ Council Districts ...



Layer List

Layers

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Large Spills (Chemicals)

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Large Spills (Water based)

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Large Spills (Unrecovered; Chemicals)

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Large Spills (Unrecovered; Water based)

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Pollutant Hot Spots

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Pollutant Hot Spots (Optimized)

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Pollutant Locations Heatmap

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Pollutant Locations - All

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Watersheds

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Council Districts

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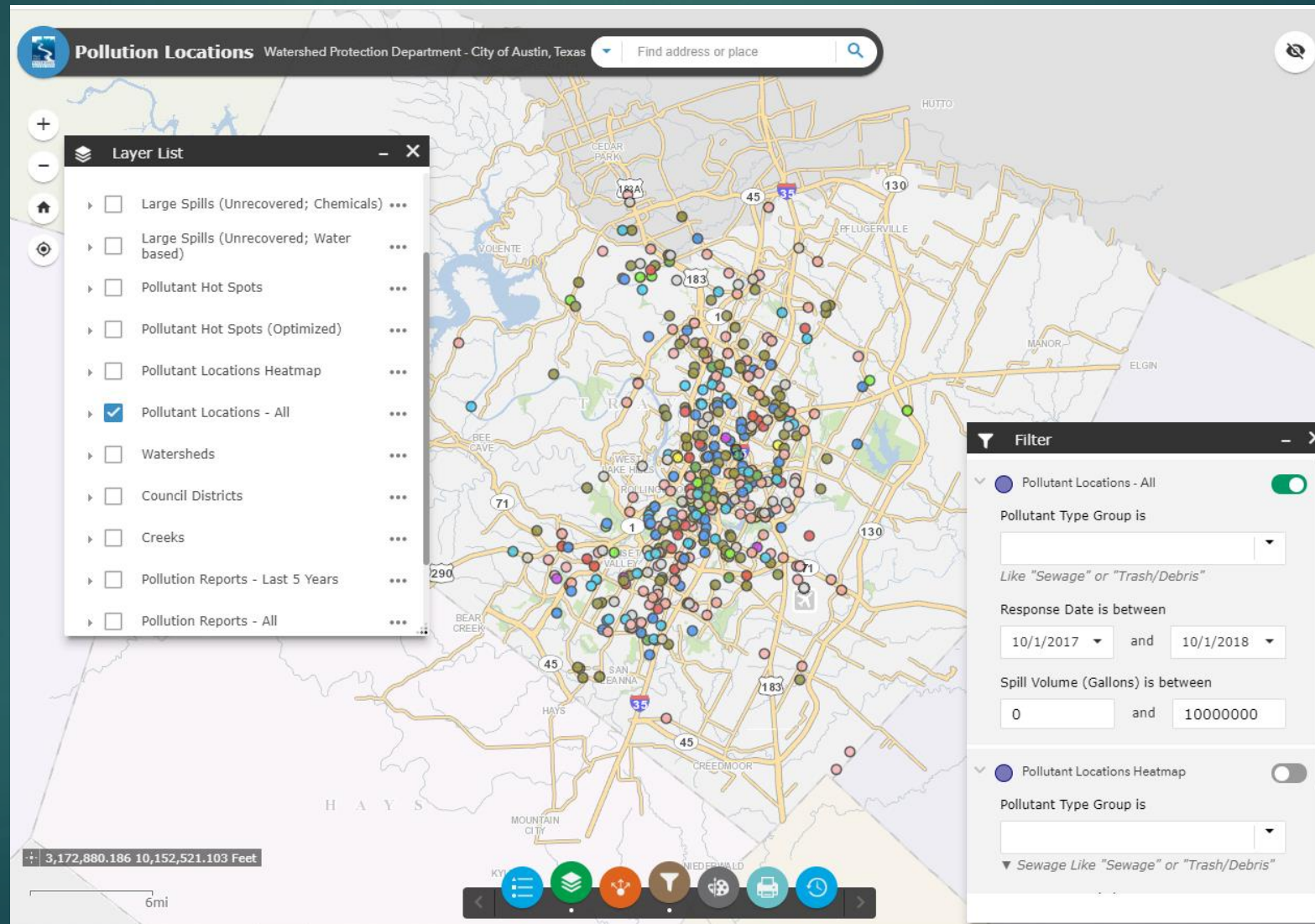
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Creeks

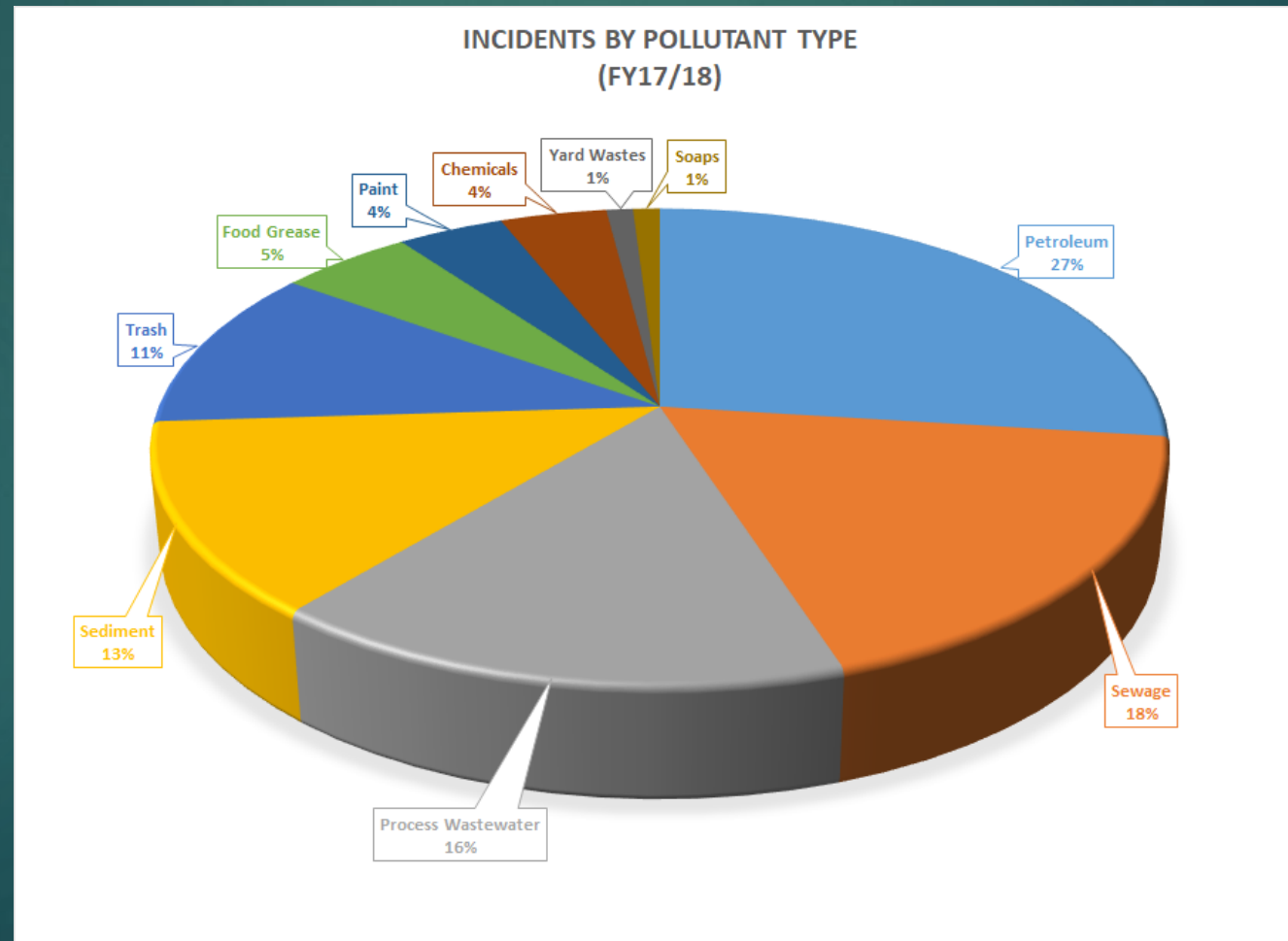
...

A map of San Antonio, Texas, displaying a heatmap of pollutant locations. The map features a network of roads, including major highways like I-35, I-10, and I-183, as well as local roads like Loop 1604 and Loop 71. The heatmap uses a color scale from blue (low density) to red (high density) to indicate the concentration of pollutant locations. The highest concentrations are visible in the central urban area, particularly around the downtown core and the area near the airport. The map also shows various geographical features like the San Antonio River and surrounding areas like Hutto, Elgin, and Hays. The map is overlaid with a grid of council districts, and the names of several districts are visible, such as Cedar Park, Volente, Lago Vista, Point Venture, The Hills, Lakeway, Bee Cave, West Lake Hills, Rollingwood, Sunset Valley, San Leanna, Hays, Creedmoor, Manor, and Elgin.

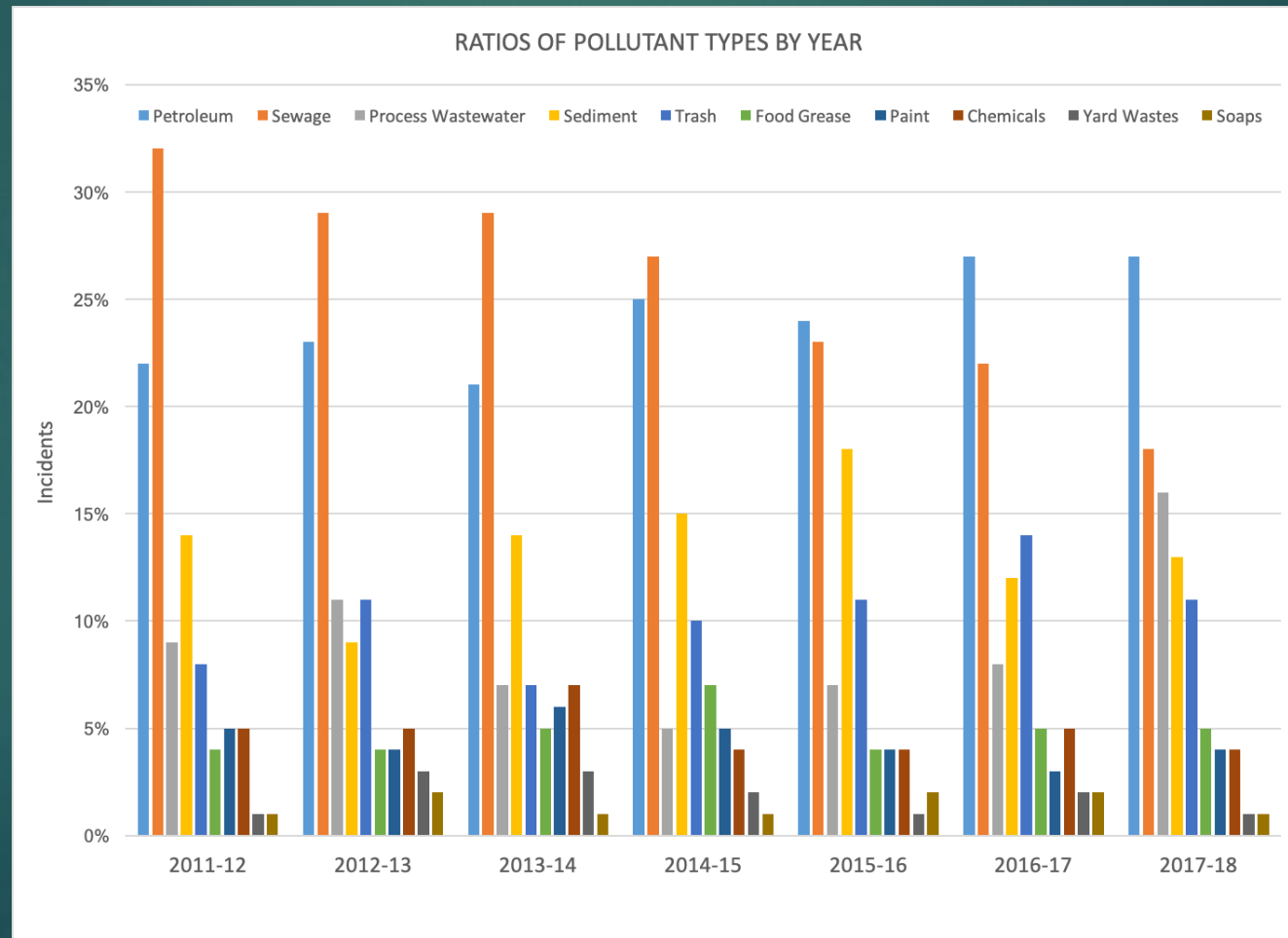
Spatial vs Non-Spatial



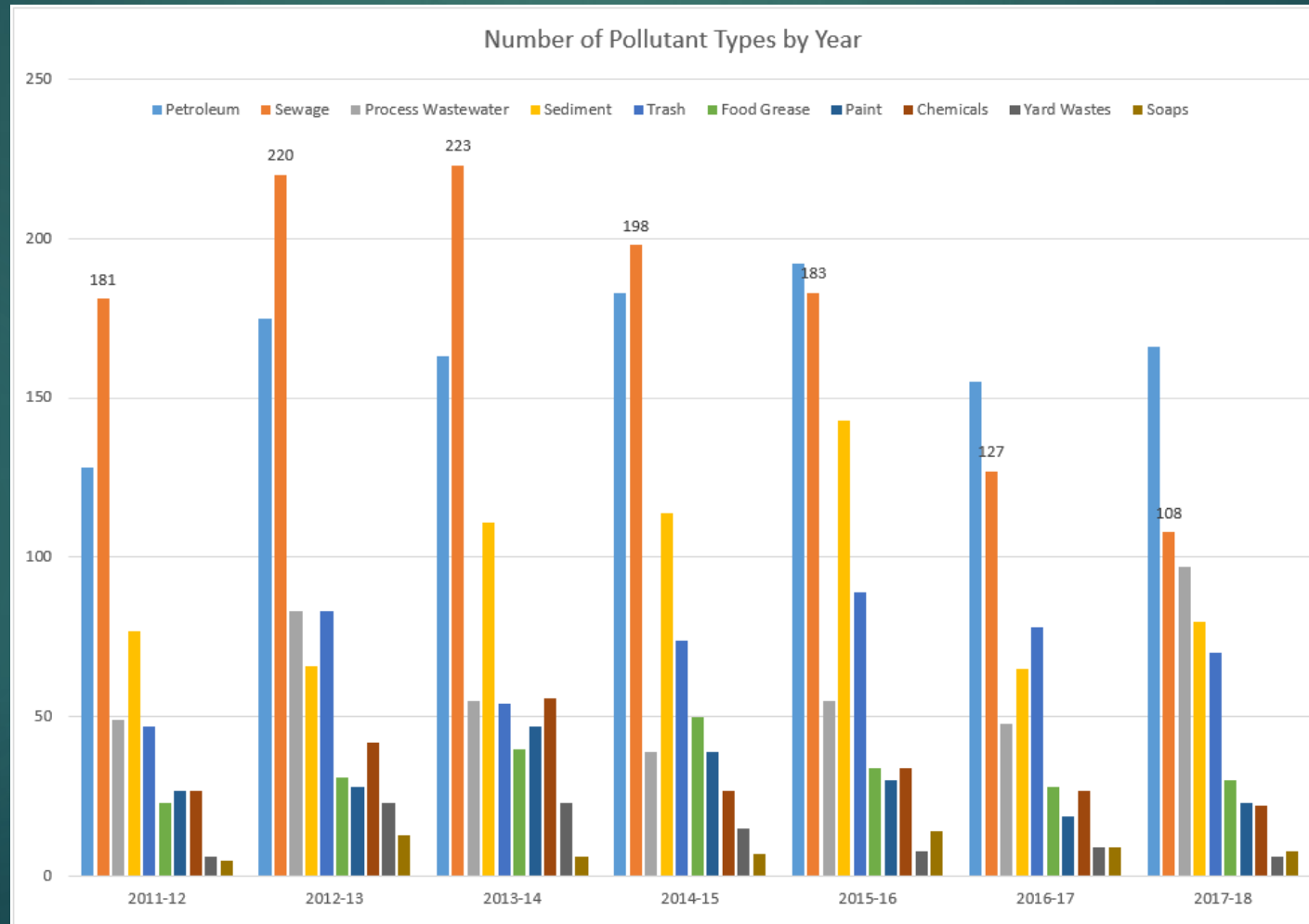
Spatial vs Non-Spatial



Spatial vs Non-Spatial



Spatial vs Non-Spatial



Future Applications and Projects

- ▶ Combining pollutant data with drainage maps to prioritize outfalls for dry weather screening
- ▶ Publicly available tool for raw pollutant location data
- ▶ Exploring how spills degrade stream health



Layer List

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Pollutant Hot Spots

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Pollutant Hot Spots (Optimized)

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Pollutant Locations Heatmap

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Pollutant Locations - All

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Watersheds

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Council Districts

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Creeks

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Pollution Reports - Last 5 Years

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Pollution Reports - All

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Pollution Reports - Citizen Calls

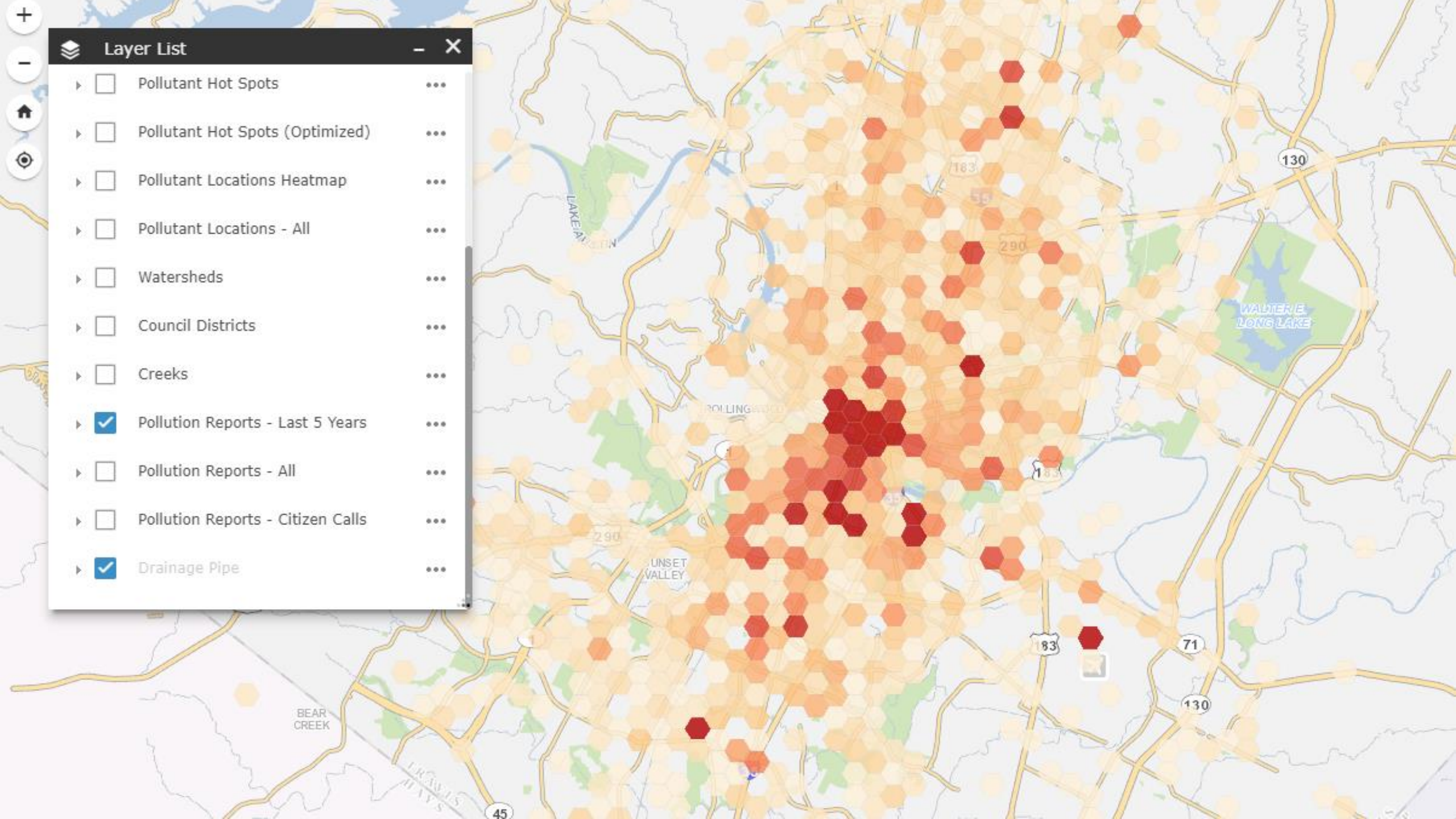
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Drainage Pipe

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Thanks!

► Any questions?

