

# Using GIS for Hazardous Materials Planning in Dallas County



Presented by

Dallas County Office of Homeland Security & Emergency Management

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# Outline

- Background
  - Hazmat Planning Goals
  - Working with Facilities
  - Working with Jurisdictions
- Tools
  - Overview
  - Data Sources
  - CAMEO
  - MARPLOT
- Projects



**West Fertilizer Explosion and Fire  
April 17, 2013**

# Background: Hazmat Planning Goals

- Develop partnerships with local jurisdictions and facilities
- Address planning and resource gaps
- Create HAZMAT planning tools/documents
- Enhance understanding of HAZMAT threats
- Identify and share best practices



# Background: Working with Facilities

- Site Visits
  - At the invitation of facilities
  - Connect with supervisors and managers
  - Coordinate with local fire department
- LEPC Participation
  - Invite managers and supervisor to speak and participate at meetings
  - Develop partnership with Dallas County OHSEM



# Background: Working with Jurisdictions

- Meet and Greet
  - Addison, Balch Springs, Carrollton, Cedar Hill, Garland
  - Discuss HAZMAT related issues
  - Identify projects to work on (sometimes)
- Projects
  - Hazard Vulnerability Analysis – Addison
  - HAZMAT Table Top Exercise – Balch Springs
  - TIER II Facility Map – Cedar Hill



# Tools: Overview

- Computer-Aided Management of Emergency Operation (CAMEO)
  - CAMEOfm – Reporting Facilities Database
  - ALOHA – Air Hazard Modeling
  - MARPLOT – Mapping
  - CAMEO Chemical – Chemical Reference
- GIS
  - R | Python – Data Cleaning, Exploratory and Descriptive Analysis, Mapping
  - QGIS | ArcMap – Geoprocesses, Map Layout and Publishing
- Report Design
  - Adobe InDesign
  - Adobe Illustrator

# Tools: Data Sources

- TIER II Reports – Facilities with Reportable Quantities
- TCEQ
- OSHA
- EPA
- FEMA
- TEXAS EGRT
- CDC
- NCTCOG
- OpenStreetMap
- Local Open Data Portals





# Tools: MARPLOT

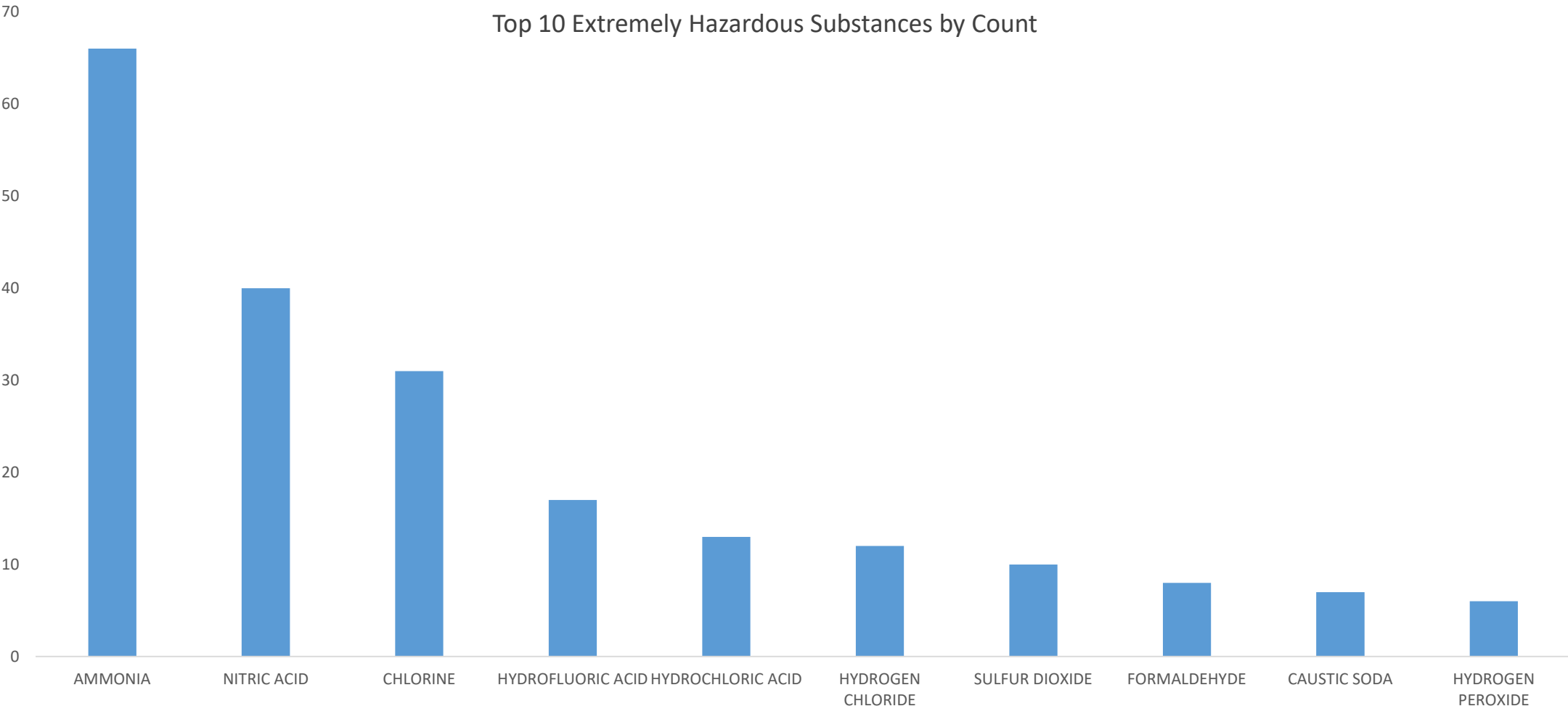
The screenshot displays the MARPLOT web application interface. At the top, there are several toolbars: 'Controls' with navigation and selection tools, 'Edit' with a 'Choose layer...' dropdown and drawing tools, 'Search & Get Info' with search and information icons, and 'ALOHA & CAMEO' with application-specific icons. Below these is a 'Selection Info' section indicating '1 object selected (WASTE CONNECTIONS - DALLAS WEST, Facilities)'. The main map area shows a satellite view of Dallas with many circular markers representing facilities. A popup window is open over one marker, displaying the following information:

- Name:** WASTE CONNECTIONS - DALLAS WEST
- Layer:** Facilities
- Latitude:** 32.777500°N
- Longitude:** 96.845000°W
- USNG:** 14S QB 01835 28677

At the bottom of the map, a 'Cursor' section shows coordinates: 32.750400°N, 96.747889°W and USNG: 14S QB 10996 25861. On the right side, a 'Boxes & Legends' panel is visible, showing a list of layers:

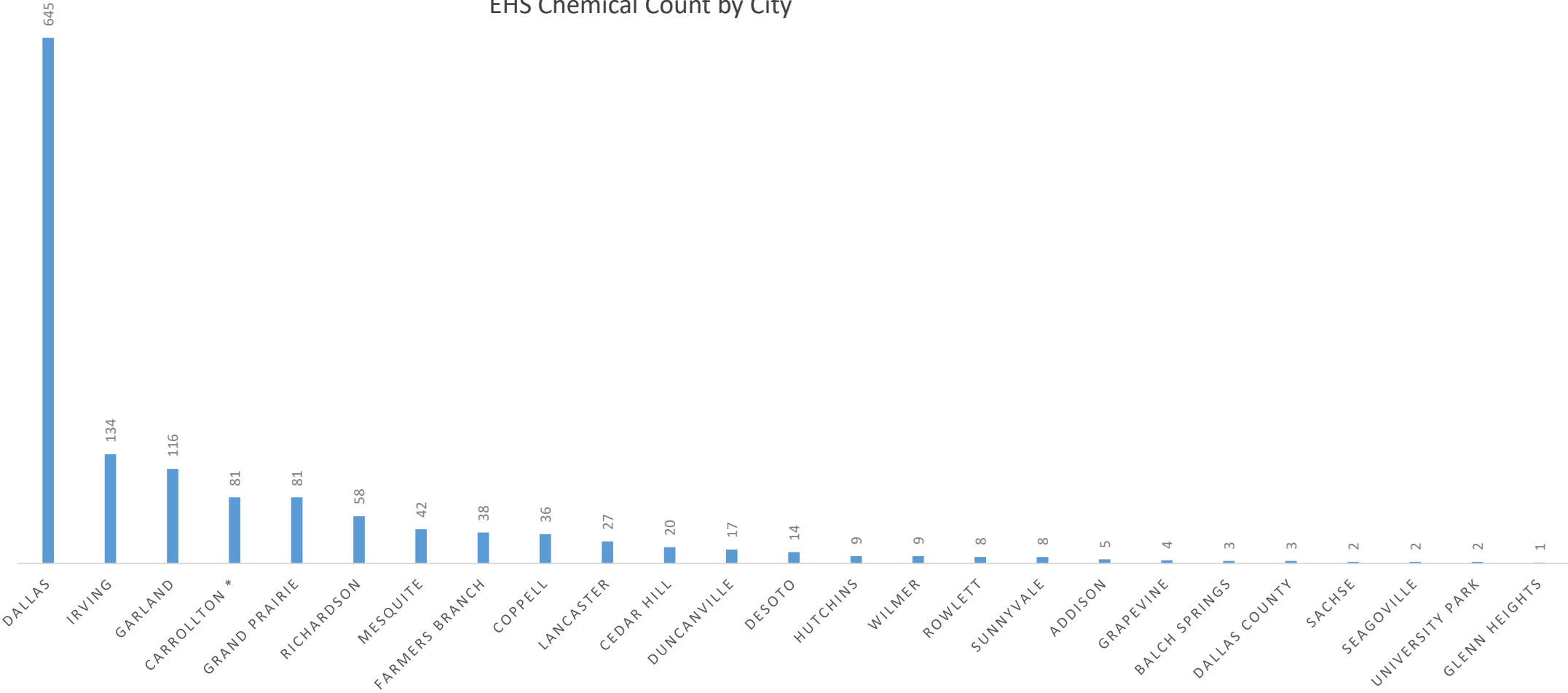
- Layers: 1 Shown
  - Facilities
  - Temporary Layer
  - Boundaries (U.S.)
  - Places
  - American Indian, Alaska Native, a...
  - Counties
  - States
  - CAMEO Suite
    - (no objects) ALOHA
    - (no objects) CAMEO Scenarios
- WMSS & Raster Maps: 0 Shown
- Basemap: Google Hybrid

# Projects: TIER II Exploratory Data Analysis



# Projects: TIER II Exploratory Data Analysis

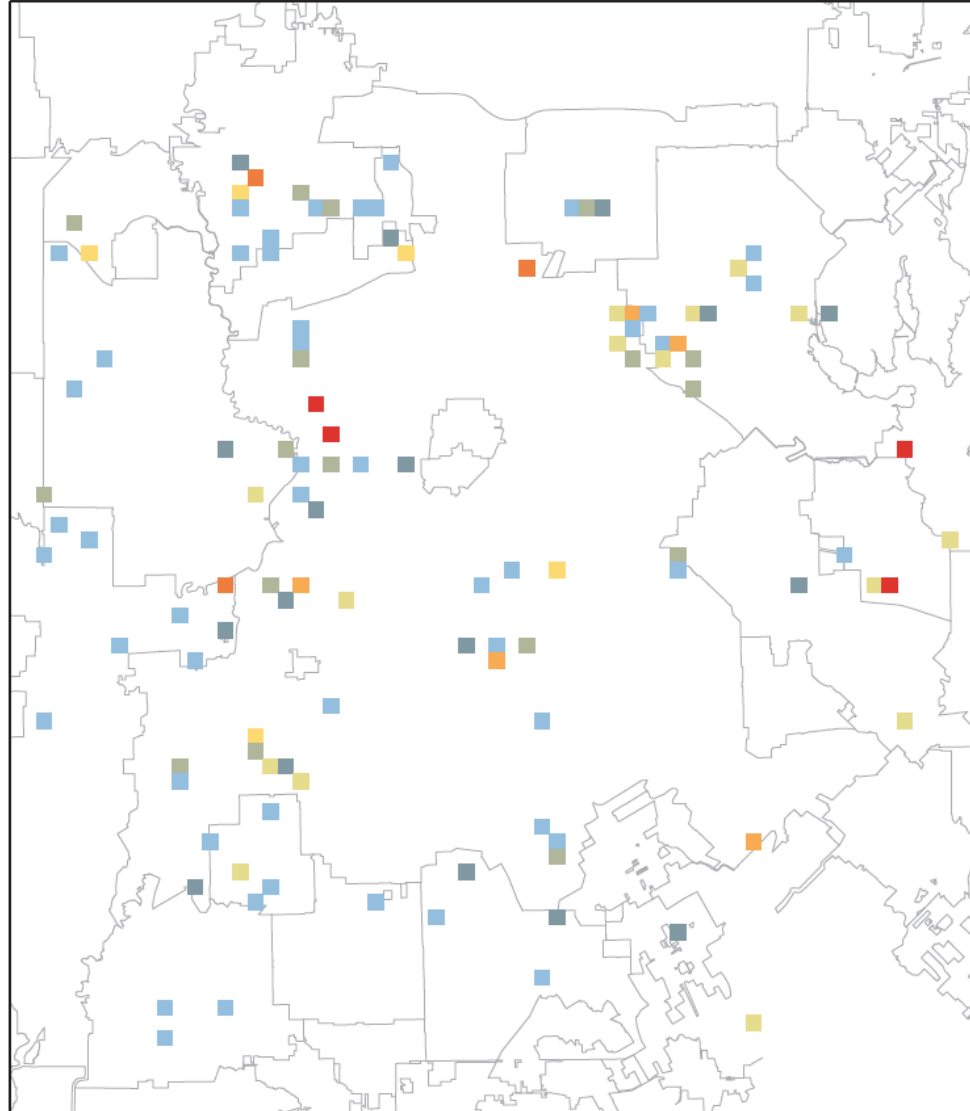
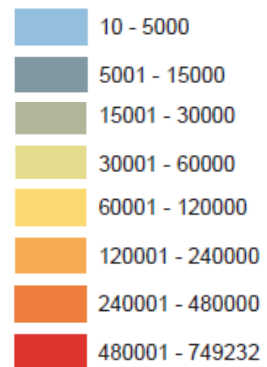
EHS Chemical Count by City



# Projects: TIER II Exploratory Data Analysis

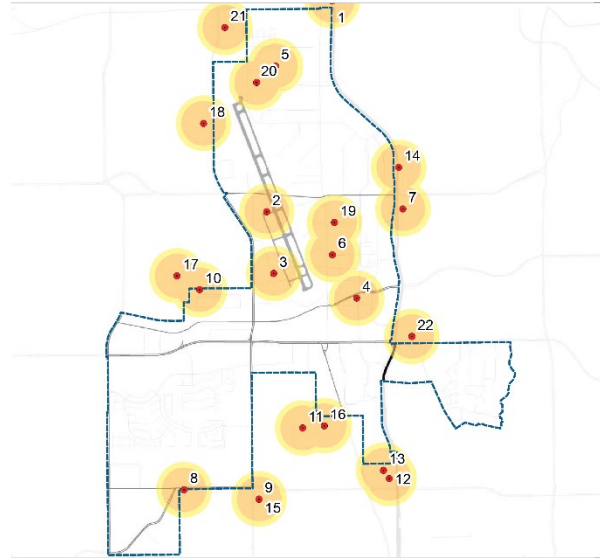
Distribution of Top EHS Chemicals  
for Dallas County (in Pounds)

## Legend

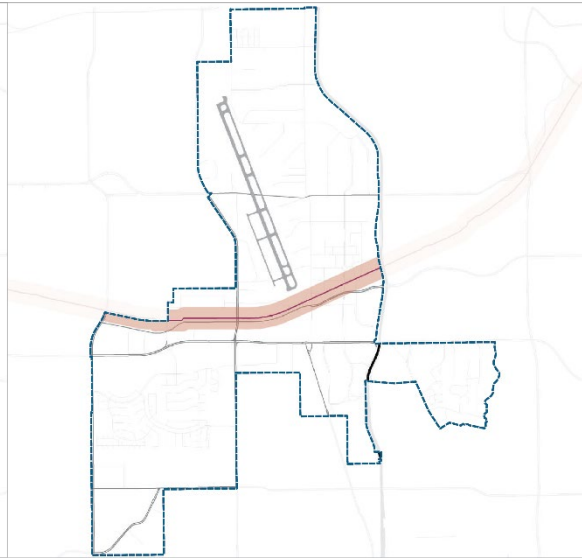


# Projects: Hazardous Chemical Vulnerability Analysis

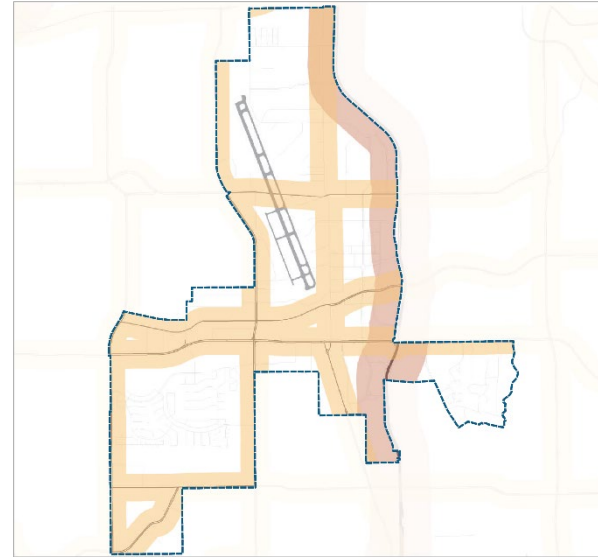
HAZARD ASSESSMENT: TIER II FACILITIES



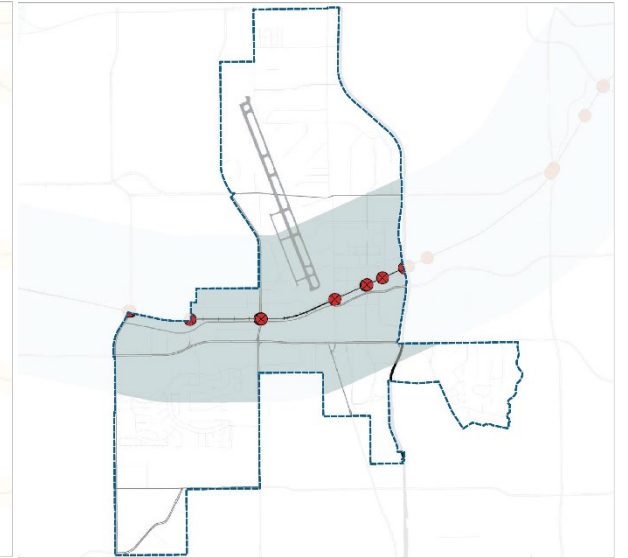
HAZARD ASSESSMENT: PIPELINES



HAZARD ASSESSMENT: ROADWAYS



HAZARD ASSESSMENT: RAILWAYS



# Projects: Preliminary Tank Farm Analysis

Map 3. ExxonMobil Fuel Terminal Half-Mile Buffer



Map 5. Magellan Pipelines Fuel Terminal Half-Mile Buffer

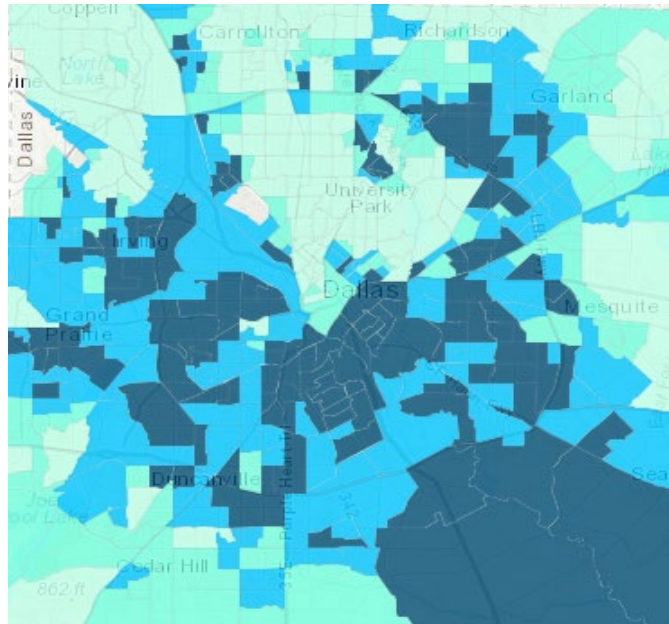


Map 7. Motiva Enterprises Fuel Terminal Half-Mile Buffer

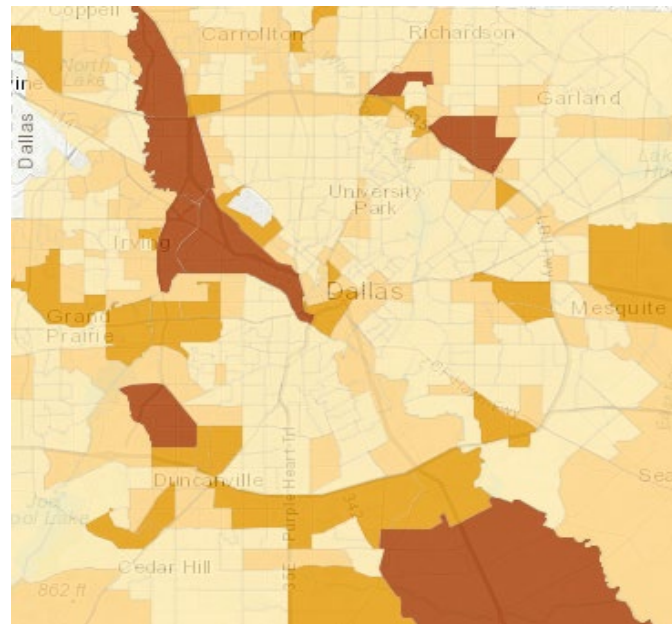


# Projects: Cumulative Vulnerability Index

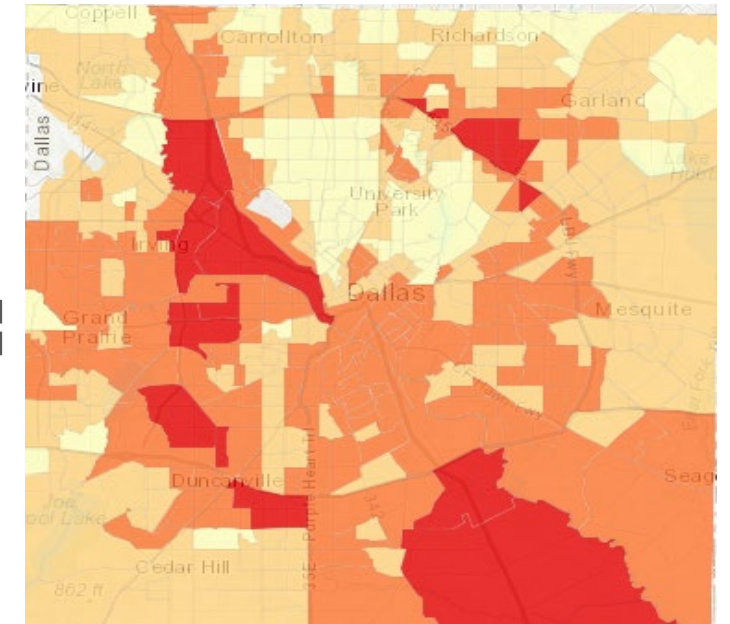
Social Vulnerability Index



Chemical Hazards



Cumulative Vulnerability



# Projects: TCEQ Fines Web Map

www14.tceq.texas.gov/epic/CIO/

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Questions or Comments >> Home

### Commission Issued Orders

Find orders (dating from 1995 - present) regarding permit applications that have gone through the administrative hearing process, enforcement orders, resolutions, and other orders issued by the Commission.

**Search By Specific Docket Number**

TCEQ Docket Number (example: 1996-0863-AIR-E)  Search Clear

Or SOAH Docket Number (example: 582-97-0708)  Search Clear

**Or Search By Agenda Date Range**

Find all docket numbers between given start and end dates.

Start Date: month  day  year

End Date: month  day  year

Search By Date Range Clear

**OR Search by Key Fields within a specific calendar year range:**

Please note that this search may take up to a minute to return results.

Step One: Select Calendar Year Range

From 2019 To 2019

Step Two (optional): Select one or more fields below

Penalty Amount: Select a Range

Program Area:

Order Type:

Applicant/Respondent (may enter part or all of name):

Has an SEP (Supplemental Environmental Project):

County: Select a County

Search By Key Fields Clear

**Or Search By TCEQ Number**

By TCEQ ID Number (permit, license, enforcement case, etc.):  Search Clear

Or RN Number (example format: RN101524239)  Search Clear

Or CN Number (example format: CN600789127)



Map controls: +, -, Q

North Lake

Quad Graphics Commercial & Specialty  
2 Records found

[2008-0798-AIR-E](#) Agenda Date: 11/05/2008 Penalty Amount: \$10000

**Order Issued To:**  
WILLIAMSON PRINTING CORPORATION,  
CN600127708

**Now known as:** 6700 HAWES INC,  
CN600127708

**Summary:**  
... an Agreed Order assessing administrative penalit:  
air quality violations pursuant to Tex. Health & Safety C  
including specifically 30 Texas Administrative Code ch

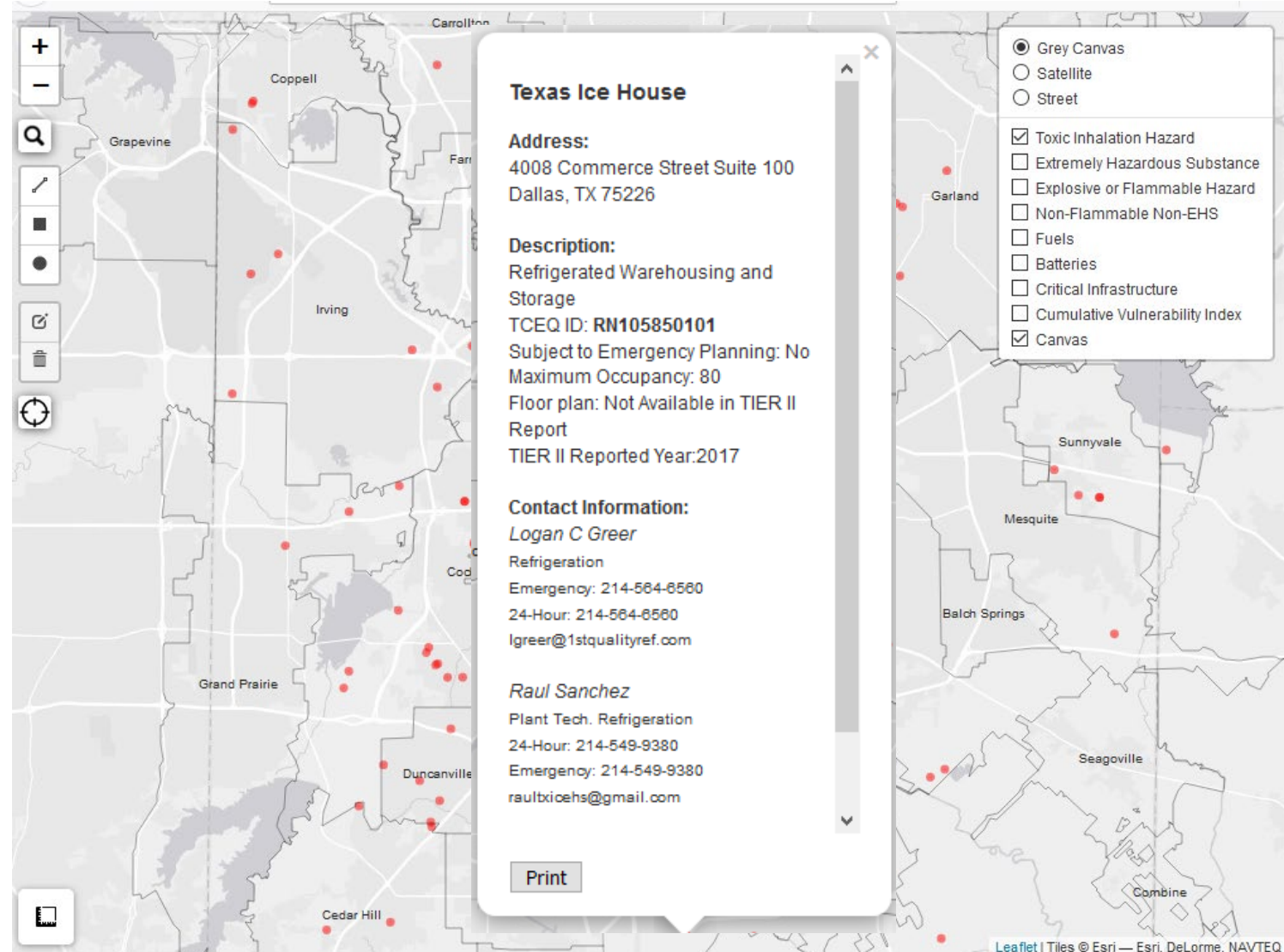
[2012-1935-AIR-E](#) Agenda Date: 12/11/2013 Penalty Amount: \$8925

**Order Issued To:**  
QUAD WILLIAMSON LLC, CN604165688

**Summary:**  
... an Agreed Order assessing administrative penalit:  
quality violations pursuant to Tex. Health & Safety Cod  
including specifically 30 Texas Administrative Code ch



# Projects: TIER II Web Map



**Texas Ice House**

**Address:**  
4008 Commerce Street Suite 100  
Dallas, TX 75226

**Description:**  
Refrigerated Warehousing and Storage  
TCEQ ID: **RN105850101**  
Subject to Emergency Planning: No  
Maximum Occupancy: 80  
Floor plan: Not Available in TIER II Report  
TIER II Reported Year: 2017

**Contact Information:**  
*Logan C Greer*  
Refrigeration  
Emergency: 214-564-6560  
24-Hour: 214-564-6560  
lgreer@1stqualityref.com

*Raul Sanchez*  
Plant Tech. Refrigeration  
24-Hour: 214-549-9380  
Emergency: 214-549-9380  
raulxicehs@gmail.com

**Legend:**

- Grey Canvas
- Satellite
- Street
- Toxic Inhalation Hazard
- Extremely Hazardous Substance
- Explosive or Flammable Hazard
- Non-Flammable Non-EHS
- Fuels
- Batteries
- Critical Infrastructure
- Cumulative Vulnerability Index
- Canvas

Leaflet | Tiles © Esri — Esri, DeLorme, NAVTEQ

# Projects: Site-Specific Reports

- Identified facilities storing large quantities of Ammonia and Chlorine – Selected top 10
- Purpose: Determine impact of potential chemical leak; coordinate with first responders; develop training exercises
- Organized by sections:
  - General Facility Information
  - Hazardous Chemical Information
  - Analysis of Initial Isolation Distances
  - Worst Case Scenarios
  - Emergency Notification



# Projects: Site-Specific Reports

Figure 1-1: Lone Star Cold Storage - Satellite Imagery



# Projects: Site-Specific Reports

Figure 3-1: Lone Star Cold Storage - Initial Isolation Area (1000 Feet)



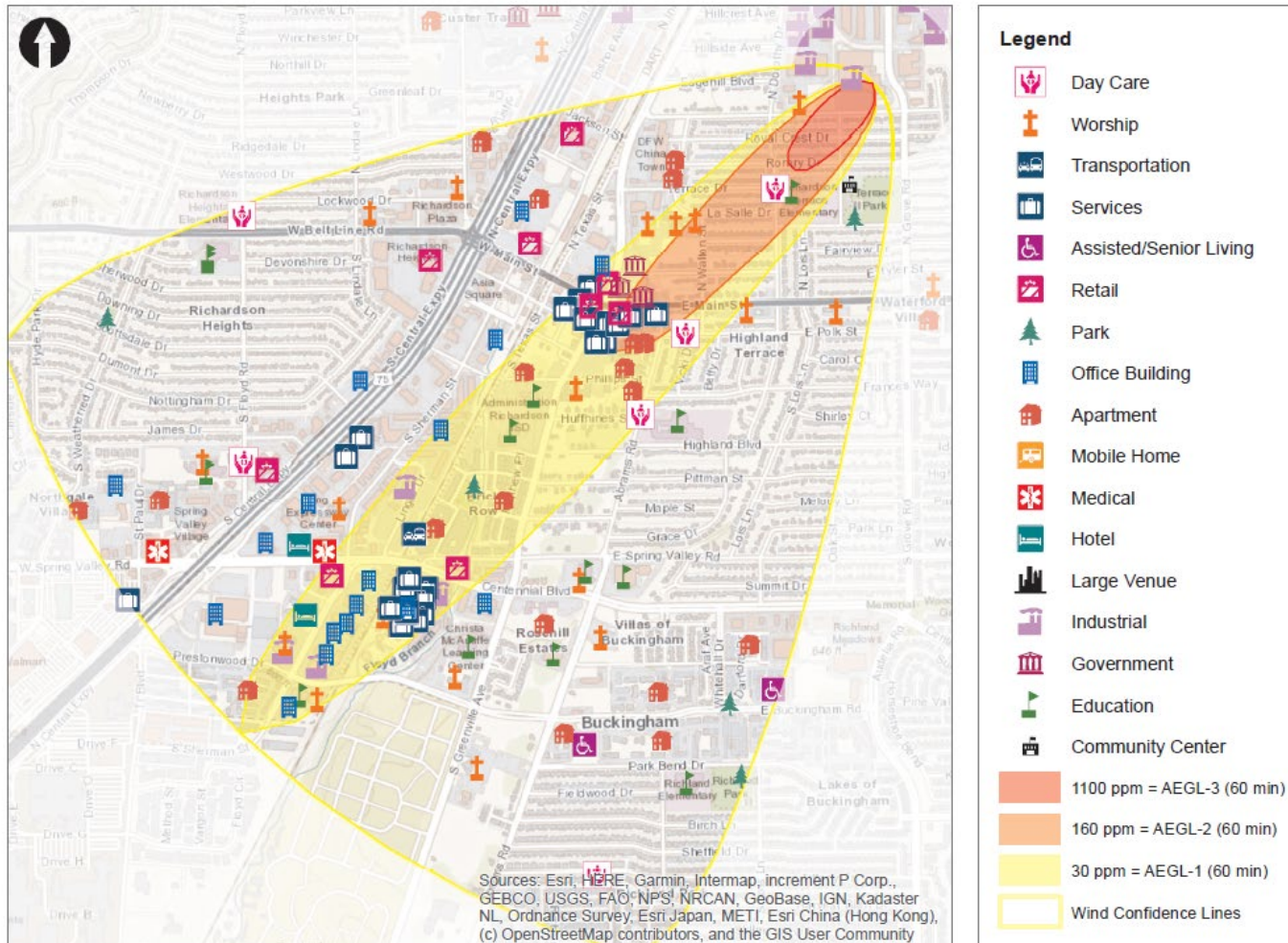
0 150 300 450 600 Feet

\*\*\* For Official Use Only \*\*\*



# Projects: Site-Specific Reports

Figure 4-1: Lone Star Cold Storage - Anhydrous Ammonia Plume Dispersion Model



0 760 1,520 2,280 3,040 Feet

\*\*\* For Official Use Only \*\*\*

# Questions/Comments ?



Contact information:

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