

La Porte, Morgan's Point, and Shoreacres
LOCAL EMERGENCY PLANNING COMMITTEE

LEPC

...safety in knowledge®

Truck Transport of Hazardous Materials 2021 Update Study

JOEY BOYD,
SOUTHERN IONICS,
LEPC EXECUTIVE COMMITTEE

Activities in La Porte Area

- The La Porte, Morgan's Point, and Shoreacres (LEPC) is among the area's leaders in hazmat emergency planning. Prior transport studies include:
 - HazMat commodity flow study in 2015
 - Transportation risk assessment in 2016
- 2021 Truck Transport Commodity Study updates the traffic estimates from the 2015 study.
- Study completed by David Bierling, Research Scientist, Texas A&M Transportation Institute.
- Study funded primarily by a grant from Texas with a small supplement from the LEPC to have the study performed in our area.

What is a commodity flow study?

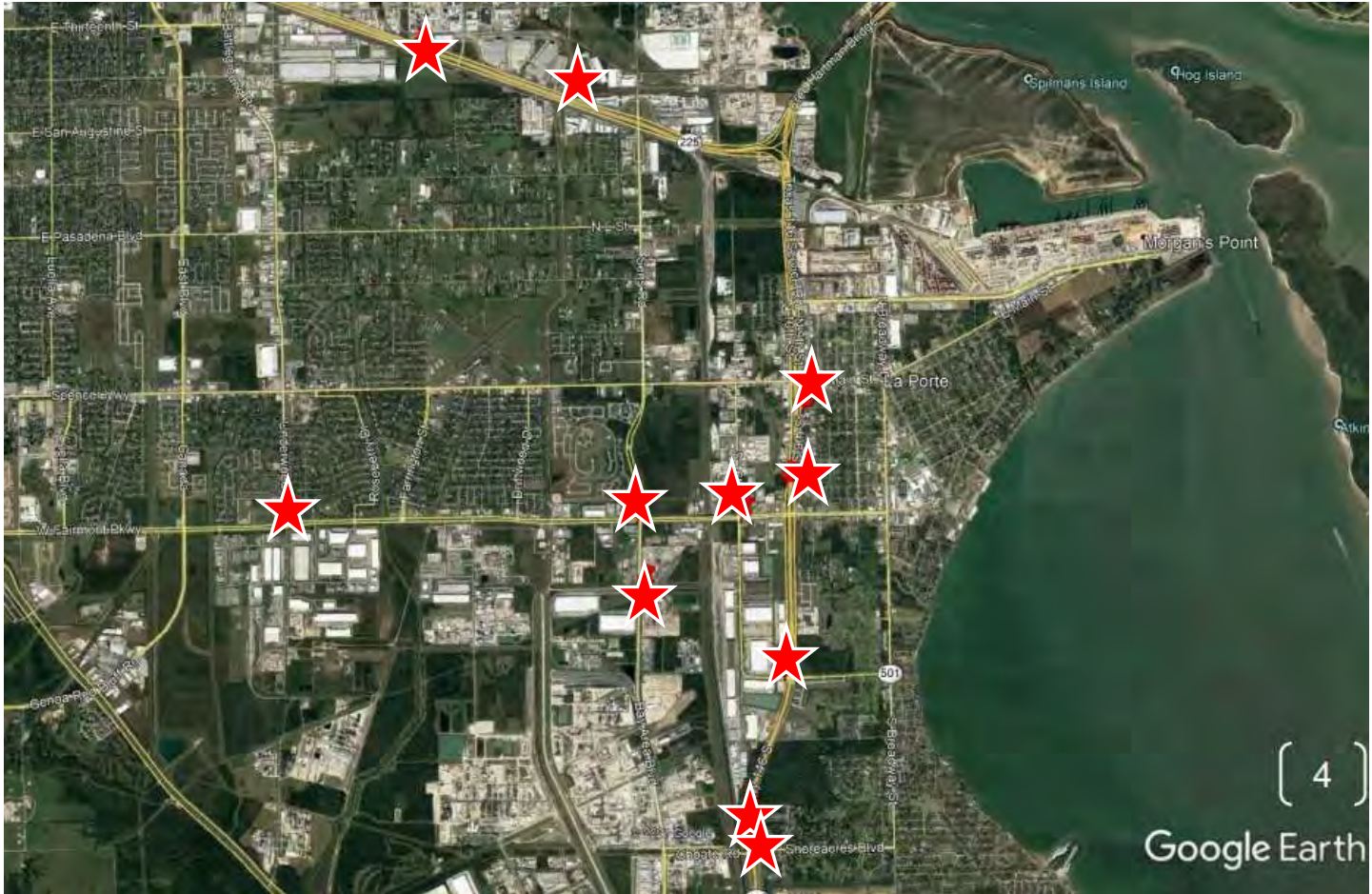
- A hazmat commodity flow study (HMCFS) looks at where, when, how, and what kinds of hazardous materials are transported within or through a jurisdiction or area.
- Used for emergency and community planning, and education programs.

Data Collection

- Study performed over a 2-month period with random days between M-F selected for data collection. (January and February 2021)
- 500+ Hours of field work
- 11 locations provided directional truck traffic data



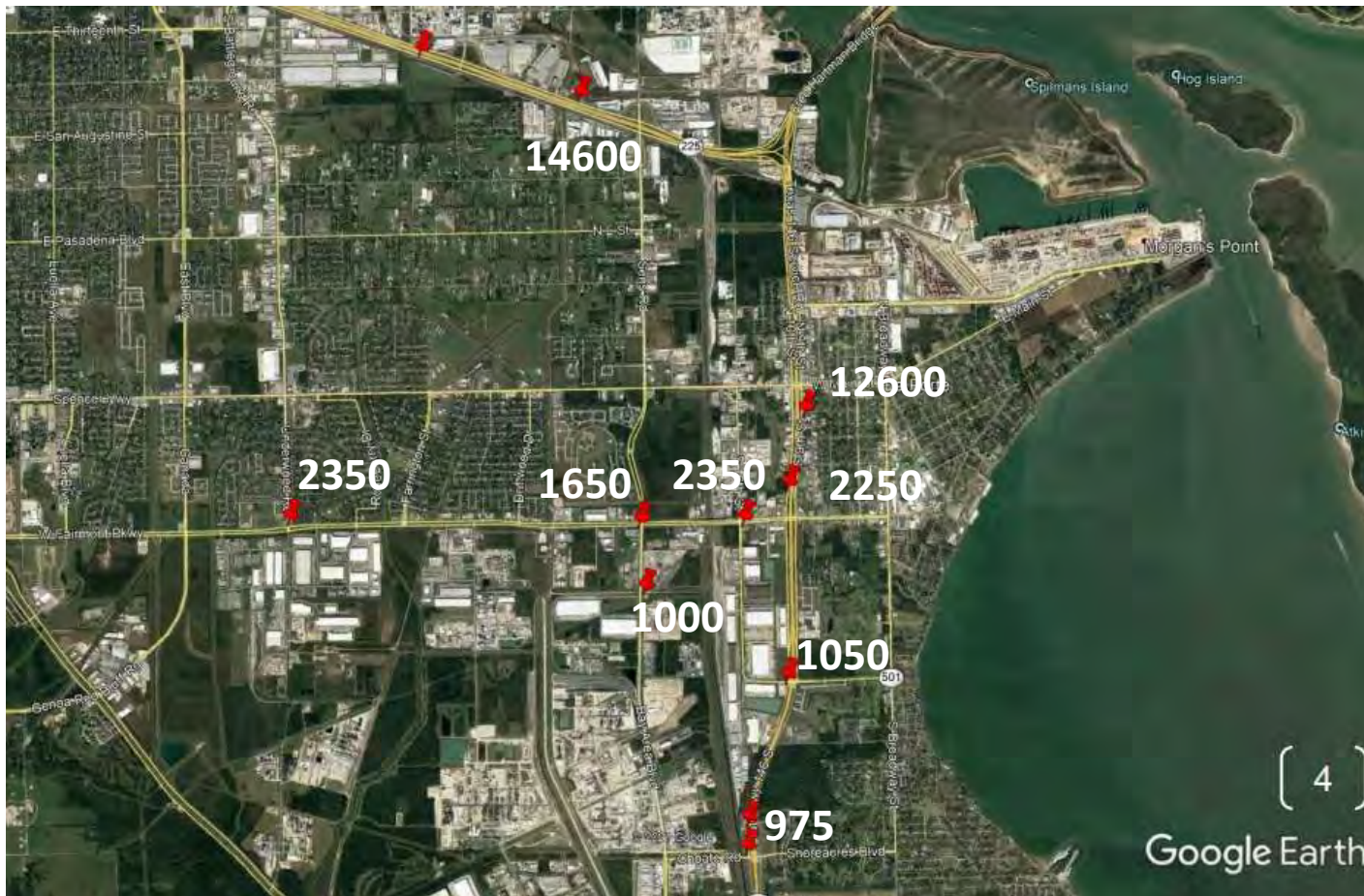
Data Collection Locations



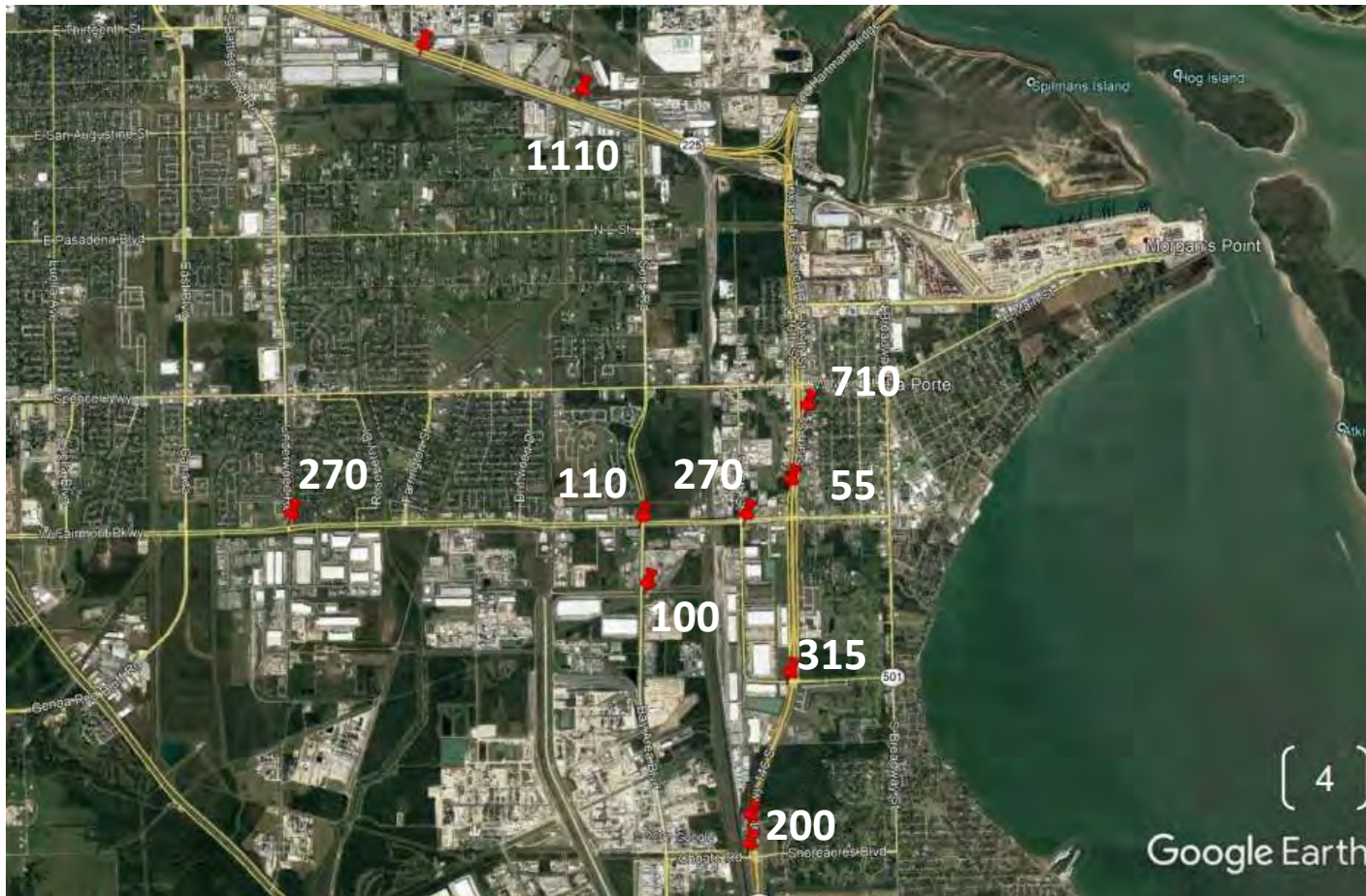
Data Collection Locations

Location
SH 146, South of SH 225, La Porte
SH 225, West of SH 146, La Porte
Fairmont Pkwy., East of Underwood Dr., La Porte
Fairmont Pkwy., East of Bay Area Blvd., La Porte
Underwood Dr., South of Fairmont Pkwy., La Porte
Underwood Dr., North of Fairmont Pkwy., La Porte
Bay Area Blvd., South of Fairmont Pkwy., La Porte
Fairmont Pkwy., East of Powell Rd., La Porte
Powell Rd., South of Fairmont Pkwy., La Porte
Wharton Weems, West of SH 146, La Porte
Choate Road, West of SH 146, Shoreacres

Number of Trucks



Number of HM Trucks



Traffic Estimates per Study

- 2011
 - 9,775 trucks
 - 10.9% HazMat or 1,065 trucks
- 2015
 - 12,600 trucks
 - 9.5% HazMat or 1,200 trucks
- 2021
 - 14,000 trucks
 - 7.9% HazMat or 1,110 trucks

Results – Truck Traffic

Estimated Daytime Truck Traffic (8 a.m. to 5 p.m.)

Location	Estimated Daytime Trucks
SH 146, South of SH 225, La Porte	12,600
SH 225, West of SH 146, La Porte	14,600
Fairmont Pkwy., East of Underwood Dr., La Porte	1,650
Fairmont Pkwy., East of Bay Area Blvd., La Porte	2,350
Underwood Dr., South of Fairmont Pkwy., La Porte	1,225
Underwood Dr., North of Fairmont Pkwy., La Porte	925
Bay Area Blvd., South of Fairmont Pkwy., La Porte	1,000
Fairmont Pkwy., East of Powell Rd., La Porte	2,250
Powell Rd., South of Fairmont Pkwy., La Porte	800
Wharton Weems, West of SH 146, La Porte	1,050
Choate Road, West of SH 146, Shoreacres	975

Results – HazMat Percent

Percent of Trucks with Placards (8 a.m. to 5 p.m.)

Location	Estimated % Hazmat
SH 146, South of SH 225, La Porte	5.6%
SH 225, West of SH 146, La Porte	7.6%
Fairmont Pkwy., East of Underwood Dr., La Porte	6.8%
Fairmont Pkwy., East of Bay Area Blvd., La Porte	11.6%
Underwood Dr., South of Fairmont Pkwy., La Porte	7.5%
Underwood Dr., North of Fairmont Pkwy., La Porte	1.0%
Bay Area Blvd., South of Fairmont Pkwy., La Porte	9.9%
Fairmont Pkwy., East of Powell Rd., La Porte	2.5%
Powell Rd., South of Fairmont Pkwy., La Porte	33.9%
Wharton Weems, West of SH 146, La Porte	30.3%
Choate Road, West of SH 146, Shoreacres	20.6%

Results – La Porte HazMat Trucks

Estimated Daytime Placarded Trucks (8 a.m. to 5 p.m.)

Location	Estimated Daytime Trucks
SH 146, South of SH 225, La Porte	710
SH 225, West of SH 146, La Porte	1,110
Fairmont Pkwy., East of Underwood Dr., La Porte	110
Fairmont Pkwy., East of Bay Area Blvd., La Porte	270
Underwood Dr., South of Fairmont Pkwy., La Porte	95
Underwood Dr., North of Fairmont Pkwy., La Porte	10
Bay Area Blvd., South of Fairmont Pkwy., La Porte	100
Fairmont Pkwy., East of Powell Rd., La Porte	55
Powell Rd., South of Fairmont Pkwy., La Porte	270
Wharton Weems, West of SH 146, La Porte	315
Choate Road, West of SH 146, Shoreacres	200

2021 HazMat Placard Classes

Table 2. Placard Classes on Roadways in La Porte

Class	Description	Weighted Percent, 2021
Class 3	Flammable Liquids; Combustible Liquids	33%
Class 8	Corrosives	20%
Class 9	Miscellaneous	11%
Unknown	Unknown	11%
Class 2.2	Non-Flammable Gases	9%
Class 2.1	Flammable Gases	6%
Class 6	Toxic/Poisonous Substances; Infectious Substances	3%
Class 5	Oxidizers; Organic peroxides	2%
Class 4	Flammable solids; Spontaneously combustible materials; Water reactive/Dangerous when wet	2%
Class 2.3	Inhalation Hazard Gases	1%
Total		98%

2021 HazMat Placard IDs

Table 3. Most-Frequently Observed Placards in La Porte

Placard ID	% of Placards	Hazard Class	Description/Name
1993	10%	3	Flammable liquids, n.o.s.; Compounds, cleaning liquid; Compounds, tree killing, liquid or Compounds, weed killing, liquid; Diesel Fuel; Fuel Oil (No. 1, 2, 4, 5, or 6); Combustible liquid, n.o.s.
Marine pollutant	9%	Unk	Marine pollutant materials
3082	7%	9	Environmentally hazardous substance, liquid, n.o.s.; Hazardous waste, liquid, n.o.s.; Other regulated substances, liquid, n.o.s.
Corrosive	4%	8	Corrosive materials
1203	4%	3	Gasoline includes gasoline mixed with ethyl alcohol, with not more than 10% alcohol
Flammable	4%	3	Flammable liquids
Class 3	3%	3	Flammable or combustible liquids
1268	3%	3	Petroleum distillates, n.o.s. or Petroleum products, n.o.s.
Non-flammable gas	3%	2.2	Non-flammable gases
1977	3%	2.2	Nitrogen, refrigerated liquid cryogenic liquid
Flammable gas	3%	2.1	Flammable gases
1824	2%	8	Sodium hydroxide solution
1075	2%	2.1	Petroleum gases, liquefied or Liquefied petroleum gas

2021 Violent Polymer Placards

Table 4. Violent Polymerization Placards on Roadways in La Porte, Texas

Placard	Material Description	Class	2012 ERG #	Weighted Percentage	Weighted Daytime Count
2218	Acrylic acid, stabilized	8 (3)	132P	0.4-0.8%	11-20
1010	Butadienes, stabilized or Butadienes and Hydrocarbon mixture, stabilized containing more than 40% butadienes	2.1	116P	0.4-0.8%	11-20
1247	Methyl methacrylate monomer, stabilized	3	129P	0.4%-0.8%	11-20
2348	Butyl acrylates, stabilized	3	129P	0.2-0.3%	6-10
1301	Vinyl acetate, stabilized	3	129P	0.2-0.3%	6-10
2055	Styrene monomer, stabilized	3	128P	0.2-0.3%	6-10
2531	Methacrylic acid, stabilized	8	153P	0.2-0.3%	6-10
1218	Isoprene, stabilized	3	130P	<0.2%	1-5
2527	Isobutyl acrylate, stabilized	3	129P	<0.2%	1-5
2227	n-Butyl methacrylate, stabilized	3	130P	<0.2%	1-5
1917	Ethyl acrylate, stabilized	3	129P	<0.2%	1-5
1919	Methyl acrylate, stabilized	3	129P	<0.2%	1-5

2021 Toxic Placards

Table 5. Toxic Material Hazard Placards on Roadways in La Porte, Texas

Placard	Material Description	Class	ERG #	Weighted Percentage	Weighted Daytime Count
1230	Methanol	3 (6.1)	131	0.9-2.0%	21-50
Inhalation hazard 2.3	Toxic gases	2.3	123	0.4-0.8%	11-20
Class 6.1	Toxic/poison liquids	6.1	153	0.2-0.3%	6-10
2922	Corrosive liquids, toxic, n.o.s.	8 (6.1)#	154	0.2-0.3%	6-10
Toxic	Toxic materials	6.1	153	0.2-0.3%	6-10
Poison	Poison materials	6.1	153	0.2-0.3%	6-10
2929	Toxic liquids, flammable, organic, n.o.s.	6.1 (3)	131	0.2-0.3%	6-10
2810	Toxic, liquids, organic, n.o.s.; Compounds, tree killing, liquid or Compounds, weed killing, liquid	6.1	153	<0.2%	3-5
1992	Flammable liquids, toxic, n.o.s.	3 (6.1)	131	<0.2%	3-5
2261	Xylenols, solid	6.1	153	<0.2%	3-5
1050	Hydrogen chloride, anhydrous	2.3 (8)	125	<0.2%	3-5
1838	Titanium tetrachloride	6.1 (8)	137	<0.2%	3-5
2281	Hexamethylene diisocyanate	6.1	156	<0.2%	3-5
1016	Carbon monoxide, compressed	2.3	119	<0.2%	3-5
3048	Aluminum phosphide pesticides	6.1	157	<0.2%	3-5
3304	Compressed gas, toxic, corrosive, n.o.s. Inhalation Hazard Zone A, B, C, or D	2.3	123	<0.2%	3-5

Placarded Truck Stopping Behavior At Railroad Crossing

- Full Stop 60%
- Slow Roll 18%
- Moderate Roll 16%
- Fast Roll 6%



Key Findings

- Compared with 2015
 - Overall truck traffic levels were around 15-30% higher
 - HazMat Truck Traffic levels were around 10-30% lower
 - Higher percentages of Marine Pollutant and Flammable Liquid
 - Lower percentages of Petroleum Crude
 - Percent of violent polymerization (3%) and toxic inhalation hazard materials (2%) placards were similar

Key Finds Details

Table 9. Estimated Weekday, Daytime (8 am to 5 pm) Truck Traffic Volumes and Percent of Trucks with Hazmat Placards

Segment	Directions	Weekday, Daytime (8 a.m.-5 p.m.) Traffic Level Estimates					
		# Trucks Total 2015	# Trucks Total 2021	% Placarded 2015	% Placarded 2021	# Placarded Trucks 2015	# Placarded Trucks 2021
1	NB & SB	8500	12600	9.6%	5.6%	815	710
2	EB & WB	12600	14600	9.5%	7.6%	1200	1110
3	EB & WB	1300	1650	12.3%	6.8%	160	110
4	EB & WB	2000	2350	16.7%	11.6%	365	270
5	NB & SB	950	1225	9.8%	7.5%	95	95
6	NB & SB	750	925	5.4%	1.0%	40	10
7	NB & SB	950	1000	11.4%	9.9%	110	100

1. SH 146, South of SH 225, La Porte
2. SH 225, West of SH 146, La Porte
3. Fairmont Pkwy., East of Underwood Dr., La Porte
4. Fairmont Pkwy., East of Bay Area Blvd., La Porte
5. Underwood Dr., South of Fairmont Pkwy., La Porte
6. Underwood Dr., North of Fairmont Pkwy., La Porte
7. Bay Area Blvd., South of Fairmont Pkwy., La Porte

Questions?

Thank you for your time.