Martin County's Vulnerability Analysis of Florida East Coast Rail's Transportation of Liquefied Natural Gas (LNG)

Martin County Fire Rescue

December 2015

Historical

- May 2015, Fire Rescue Department (FRD) provided a presentation on our community's vulnerability to hazardous materials transported on the Florida East Coast Railway (FEC)
- Requests made to FEC and CSX for access to info on Emergency Response Plans and commodities transported along railways in Martin County
- Only provided with commodity info identifying what trains are transporting
- Nov 2015, FRD met with FEC reps about transport of LNG through Martin County

Liquefied Natural Gas

- LNG has increased in use in the U.S. Compared to conventional fuels, it is more readily available and is a cleaner fuel
- LNG requires only a third of the space of compressed natural gas
- LNG is a flammable and odorless gas
- LNG must be transported in cryogenic state at -260 degrees F
- Lighter than air

Transportation of LNG

- Rail transportation of LNG is brand new in the U.S.
- A Number of LNG accidents have already occurred
- LNG has never before been transported on same tracks as High Speed Rail
- FEC plans to begin transporting LNG through Martin County this month (pending regulatory approval)
  - Est 2-3 tank cars per day (10,000 gallons each)

LNG Trains Coming in 2016

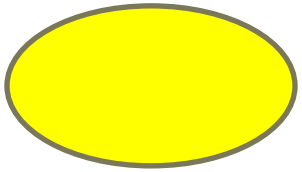
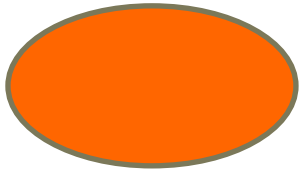
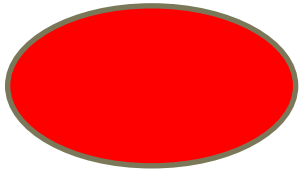
In 2016, in addition to transporting LNG as a commodity, FEC will also retrofit three trains to use LNG as an alternate fuel – increasing the transport of LNG through Martin County

Source: LNG Could Push Diesel Trains Into the History Books, April 2014 by GE Reports Staff
http://www.gereports.com/post/93343698908/lng-could-push-diesel-trains-into-history-books/

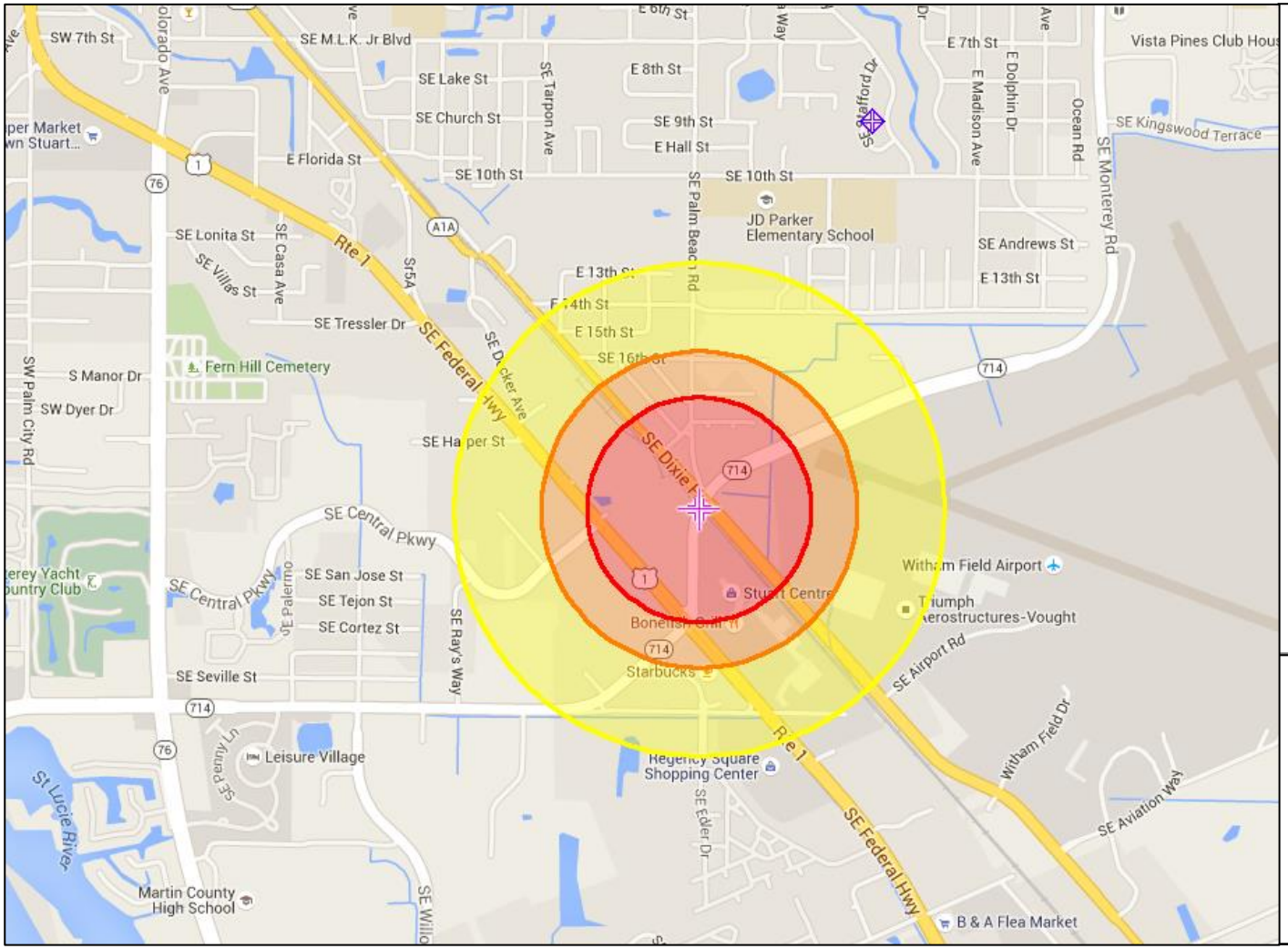
Vulnerability Analysis

- Uses EPA Software programs to predict chemical movement
  - Based on chemical properties, toxicity, weather conditions, and release rate
  - Population impacted according to 2010 Census Data
  - Does not identify critical facilities
  - Does not identify potential business or roadway population
- Scenario:
  - Train crash with a single chemical car release
  - Prevailing weather: temperature 85°F, winds SE at 11 mph, 50% cloud cover, 50% humidity
  - Release Point: 4” hole

Threat Zones

		
Yellow Zone notable discomfort, irritation or sensory effects, but effects are not disabling and are reversible	**Orange Zone** irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape	**Red Zone** experience life-threatening adverse health effects or death

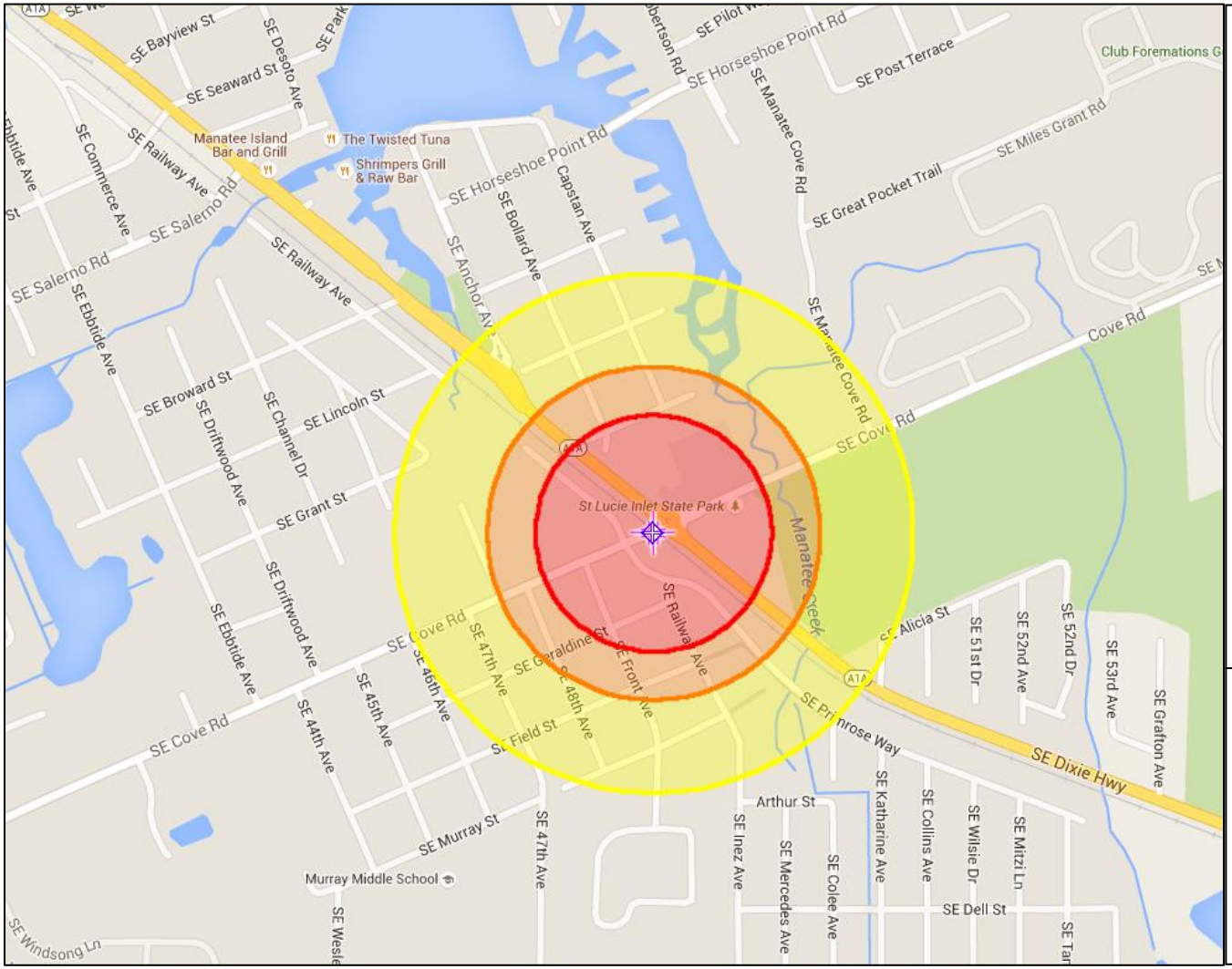
Liquefied Natural Gas (LNG) Railcar Explosion
SE Monterey Rd and SE Dixie Hwy



Container:
10,000 gallon Container
Red Zone:
People: 1
Homes: 1
Orange Zone:
People: 166
Homes: 61
Yellow Zone:
People: 716
Homes: 320

THREAT ZONE:
Red: 372 yards
Orange: 525 yards
Yellow: 817 yards

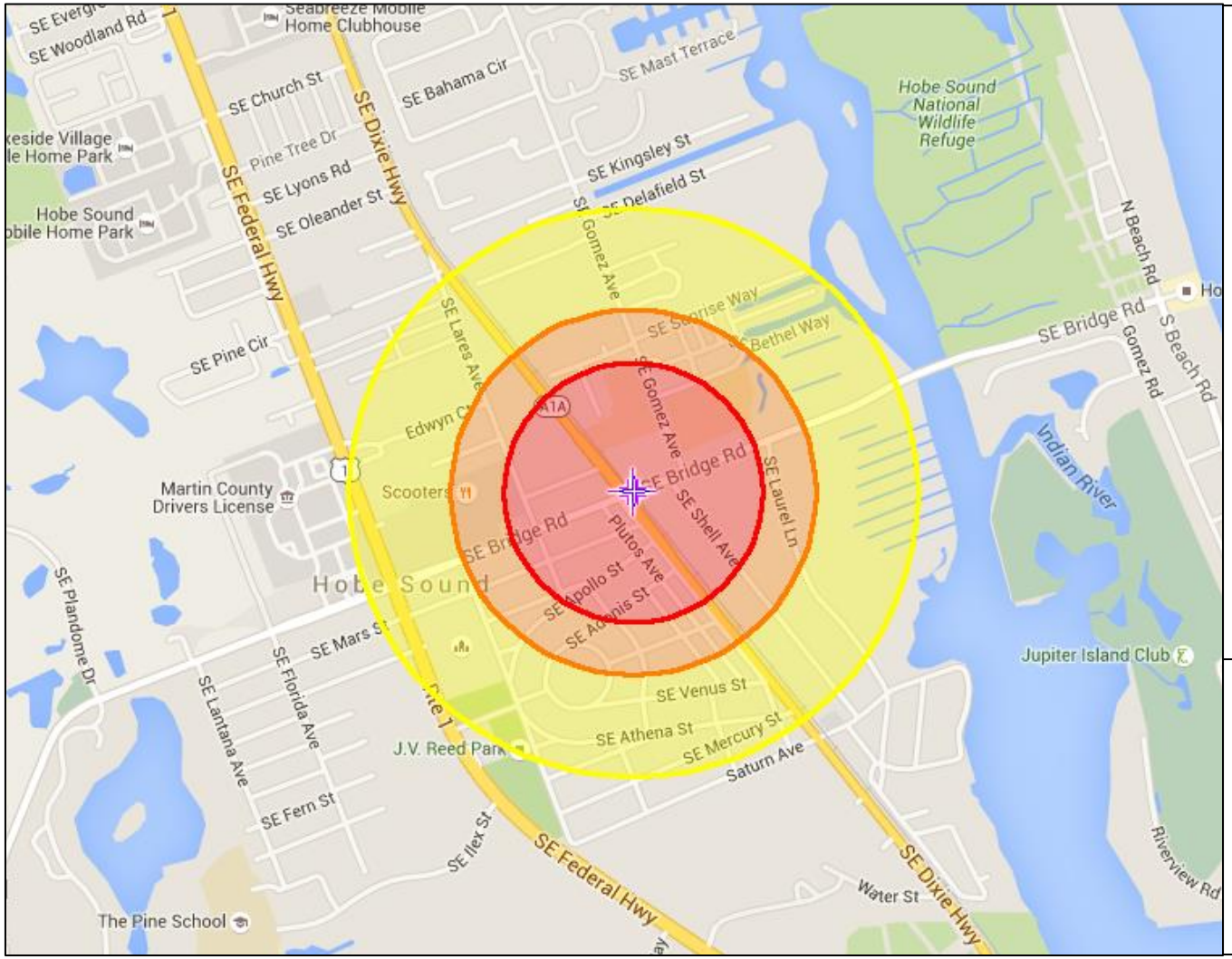
Liquefied Natural Gas (LNG) Railcar Explosion
SE Cove Rd and SE Dixie Hwy



Container:
10,000 gallon Container
Red Zone:
People: 396
Homes: 164
Orange Zone:
People: 521
Homes: 243
Yellow Zone:
People: 1,493
Homes: 658

THREAT ZONE:
Red: 372 yards
Orange: 525 yards
Yellow: 817 yards

Liquefied Natural Gas (LNG) Railcar Explosion
SE Bridge Road and SE Dixie Highway



Container:
10,000 gallon Container

Red Zone:
People: 228
Homes: 73

Orange Zone:
People: 231
Homes: 126

Yellow Zone:
People: 833
Homes: 401

THREAT ZONE:
Red: 372 yards
Orange: 525 yds
Yellow: 817 yds

Summary

- LNG is a new hazardous chemical being added to rail transportation
- Population centers, neighborhoods are close to these railway corridors
- Risk increases as the amount and frequency of hazardous materials are transported through our community
- LNG along same rail lines as high-speed passenger rail increases risk of accidents
- Increase in potential for accidents to occur = unquantifiable
- Such emergencies can exceed local response capabilities
- Need for training and preparedness plans to respond to such emergencies