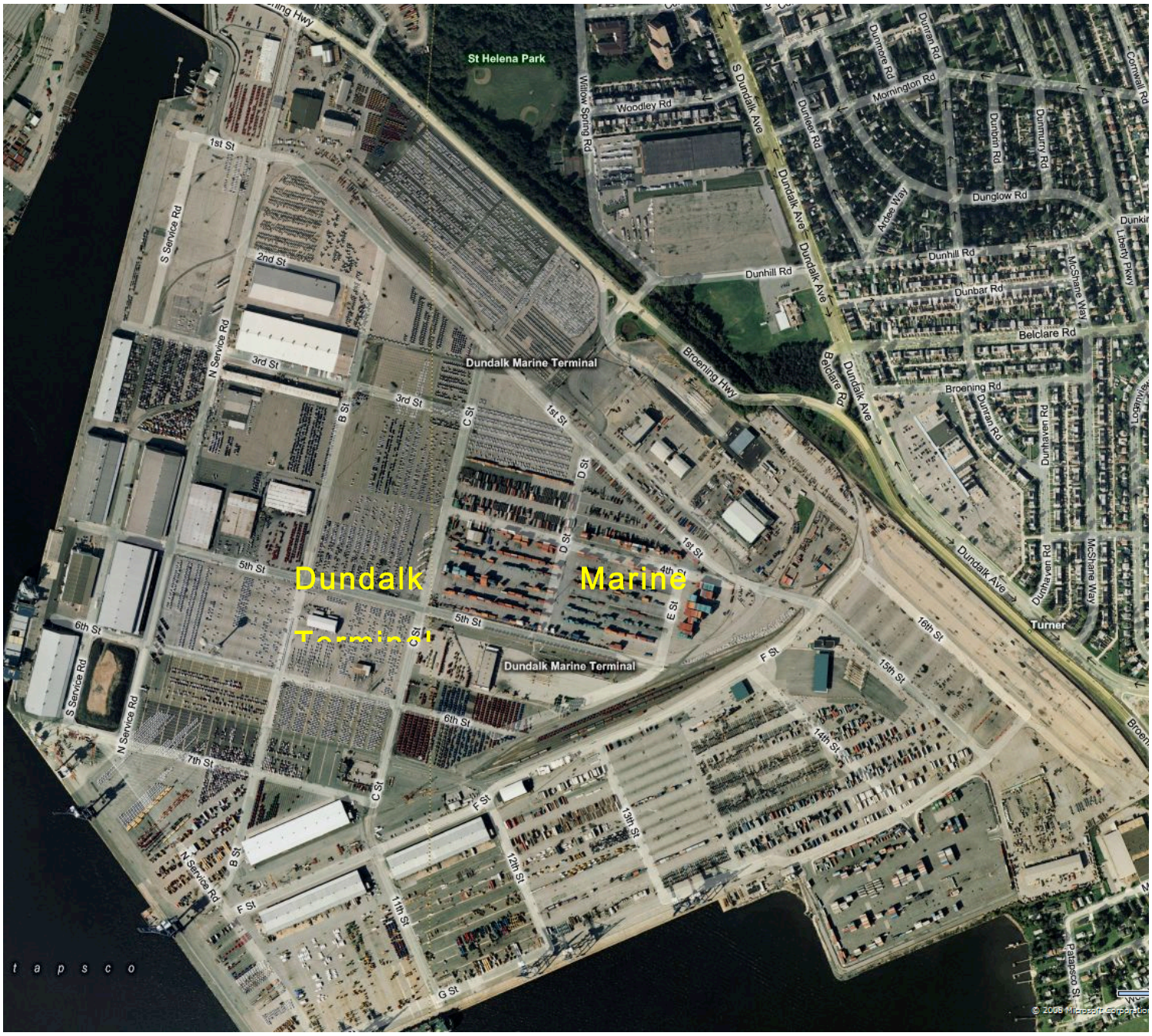
Dundalk Marine Terminal Evacuation Simulation Statement

To Maryland Port Administration

I. Simulation Areas

Figure-1 Google Map Satellite Image

Figure-2 Maps Live Satellite Image



II. Simulation Purpose

1. To see impact of an evacuation and provide a better understanding of the additional necessary resources
2. To evaluate the effectiveness of traffic network
3. To test the efficacy of the gate facility exit process
4. To test the ability to set up evacuation routes
5. To provide a training tool to MPA staff
6. To evaluate the impact of an evacuation on the connecting link (Broening Hwy) between the Dundalk Marine Terminal and the Seagirt Marine Terminal

Figure-3 Connecting link between Dundalk Marine Terminal and Seagirt Marine Terminal

III. Simulation Items

Simulation Items \ Simulation Software	Corsim	Vissim	Transmodeler
1. Toll booths	×	×	√
2. Security gates	×	×	×
3. Staging areas	×	√	√
4. Road sections closed or under construction	√	√	√
5. Trucks evacuation	√	√	√
6. Cars evacuation	√	√	√
7. Shuttles evacuation	√	√	√
8. Pedestrians evacuation (longshoreman and other port personnel)	√	√	√
9. Bottlenecks and choke-points visualizations	√	√	√
10. Evacuation routes set up	×	√	√
11. Traffic situation on connecting link (Broening Hwy) between Dundalk Marine Terminal and the Seagirt Marine Terminal	√	√	√
12. Evacuation 2D visualizations	√	√	√
13. Evacuation 3D animation visualizations	×	√	√

IV. Data needed

1. Detailed traffic network map, including:

- Road names
- Number of lanes
- One-way or two-way
- Road sections closed or under construction

2. Detailed terminal facilities layout map, including:

- Facility names
- Entrances and exits locations

3. Traffic organization, including:

- Entering and leaving routes
- Signal control

4. Initial traffic counts at each zone

5. Evacuation demand data

V. Evacuation Model

1. Input interface:

- Initial traffic counts
- Current entering and leaving routes
- Current signal controls
- Incident location and type
- Evacuation demand

2. Output results:

- MOE
- External control plan
- Additional necessary resource

VI. Simulation cost

Simulation Software / Simulation Items	Corsim	Vissim	Transmodeler
Background image screen shot Network building Links (about 200) and nodes (about 90)	30h	15h	15h
Demand input Turning fraction setting Lane alignment Signal setting Warning and error debugging	3h	1h	1h
Toll booths	-	-	1h
Security gates	-	-	-
Staging areas	1h	1h	1h
Trucks evacuation	1h	1h	1h
Cars evacuation	1h	1h	1h
Shuttles evacuation	1h	2h	2h
Pedestrians evacuation (longshoreman and other port personnel)	1h	3h	3h
Evacuation routes set up	-	2h	2h
Evacuation 2D visualizations	1h	1h	1h
Evacuation 3D animation visualizations	-	5h	5h
Total	**38h**	**32h**	**33h**