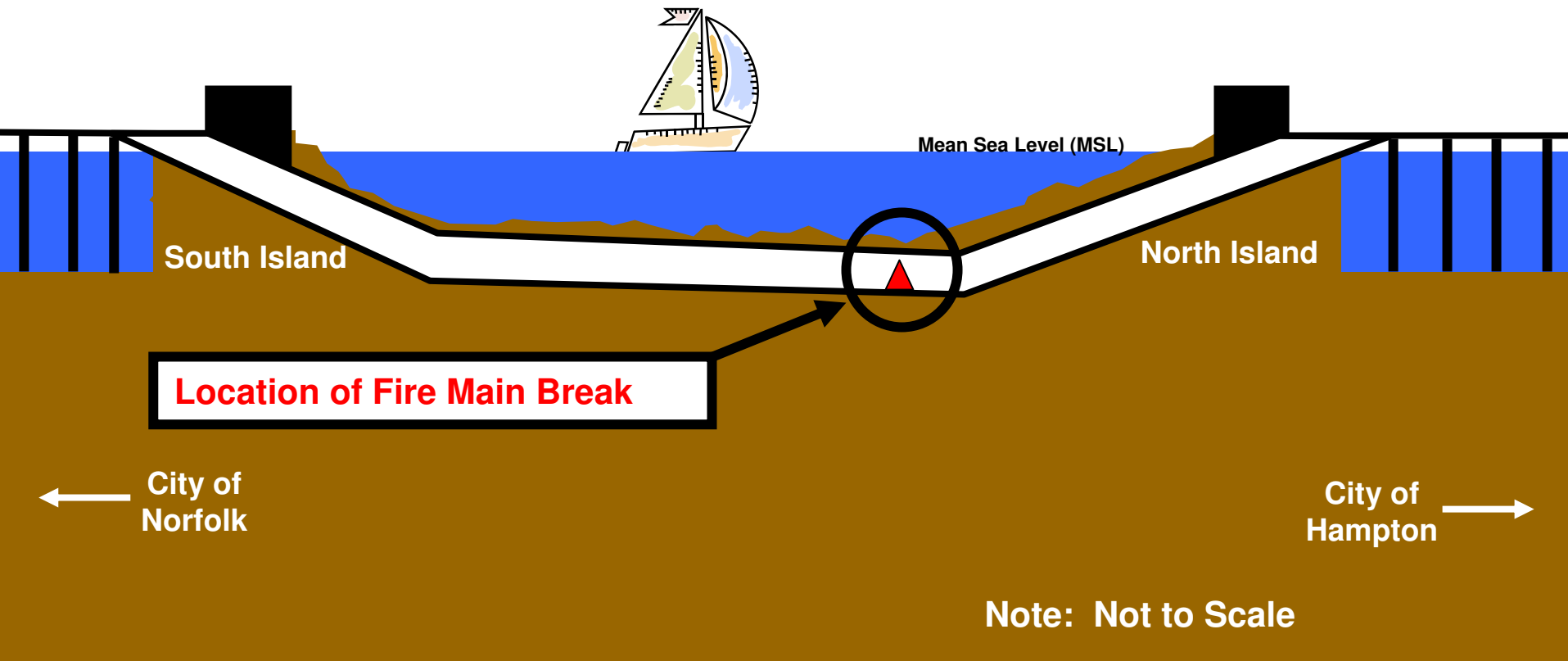


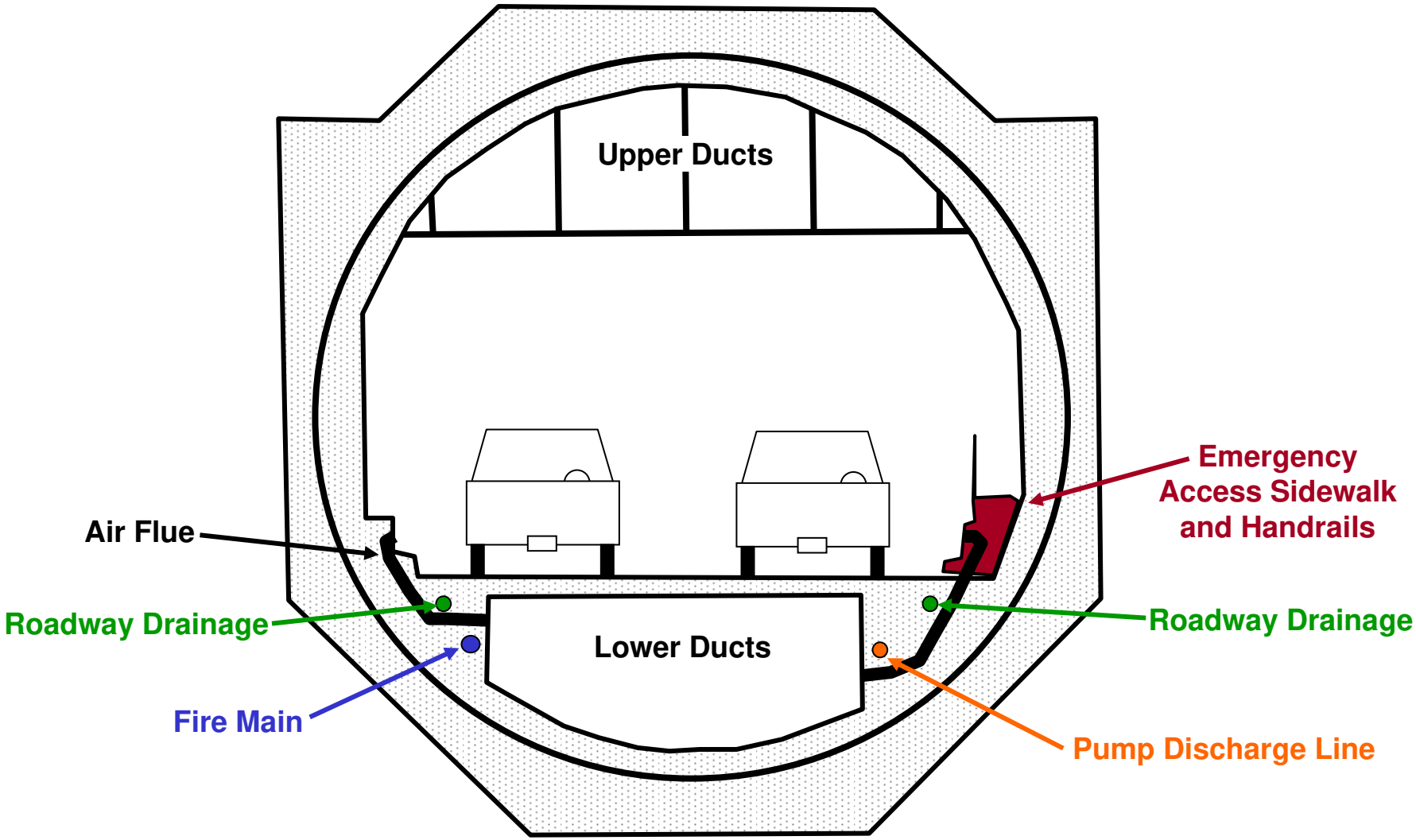
Hampton Roads Bridge-Tunnel Flooding Initial Review Presented to the CTB July 16, 2009

HRBT Tunnel Side Profile



Westbound Tunnel Cross Section

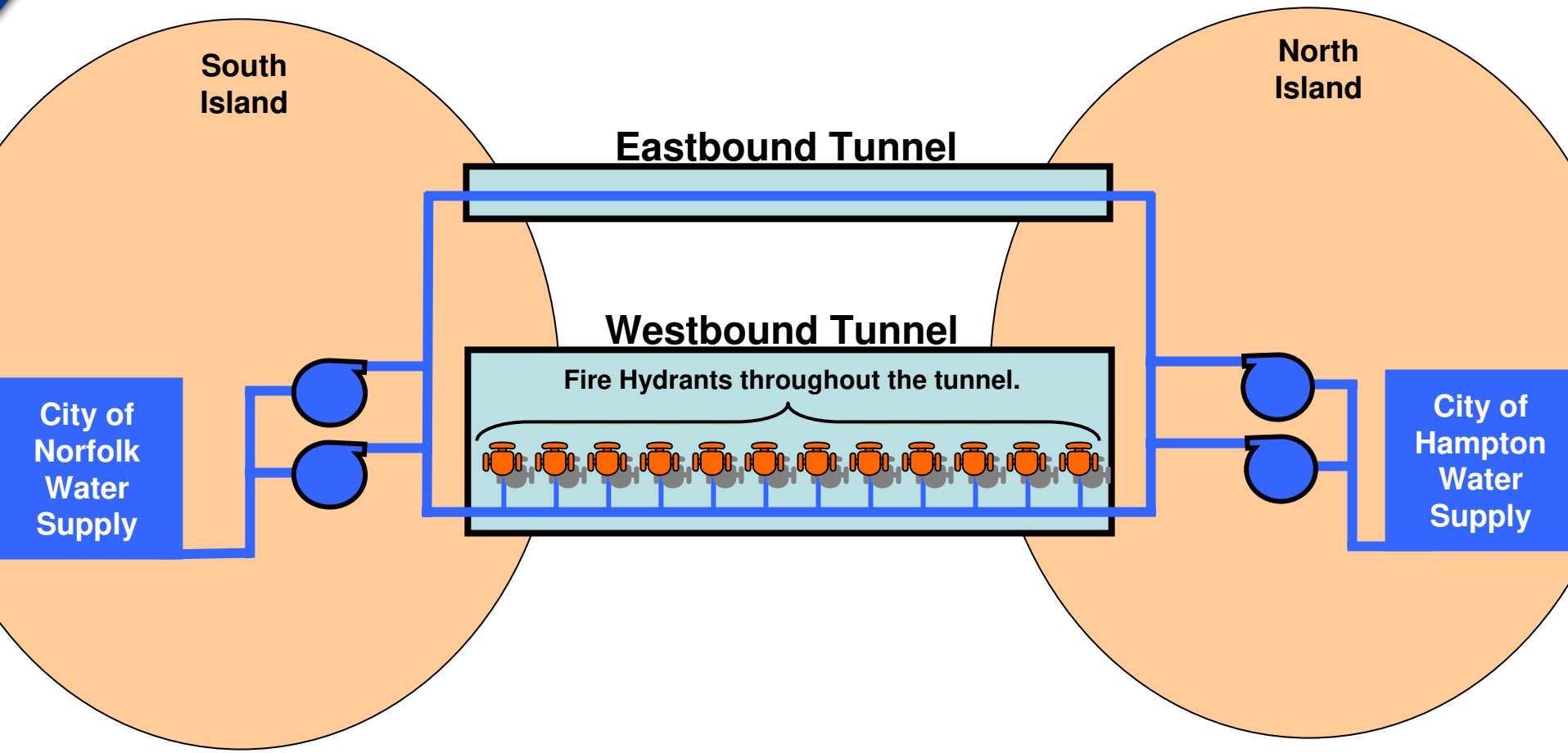
(Looking South towards Norfolk)



Note: Not to Scale

Fire System Plan View

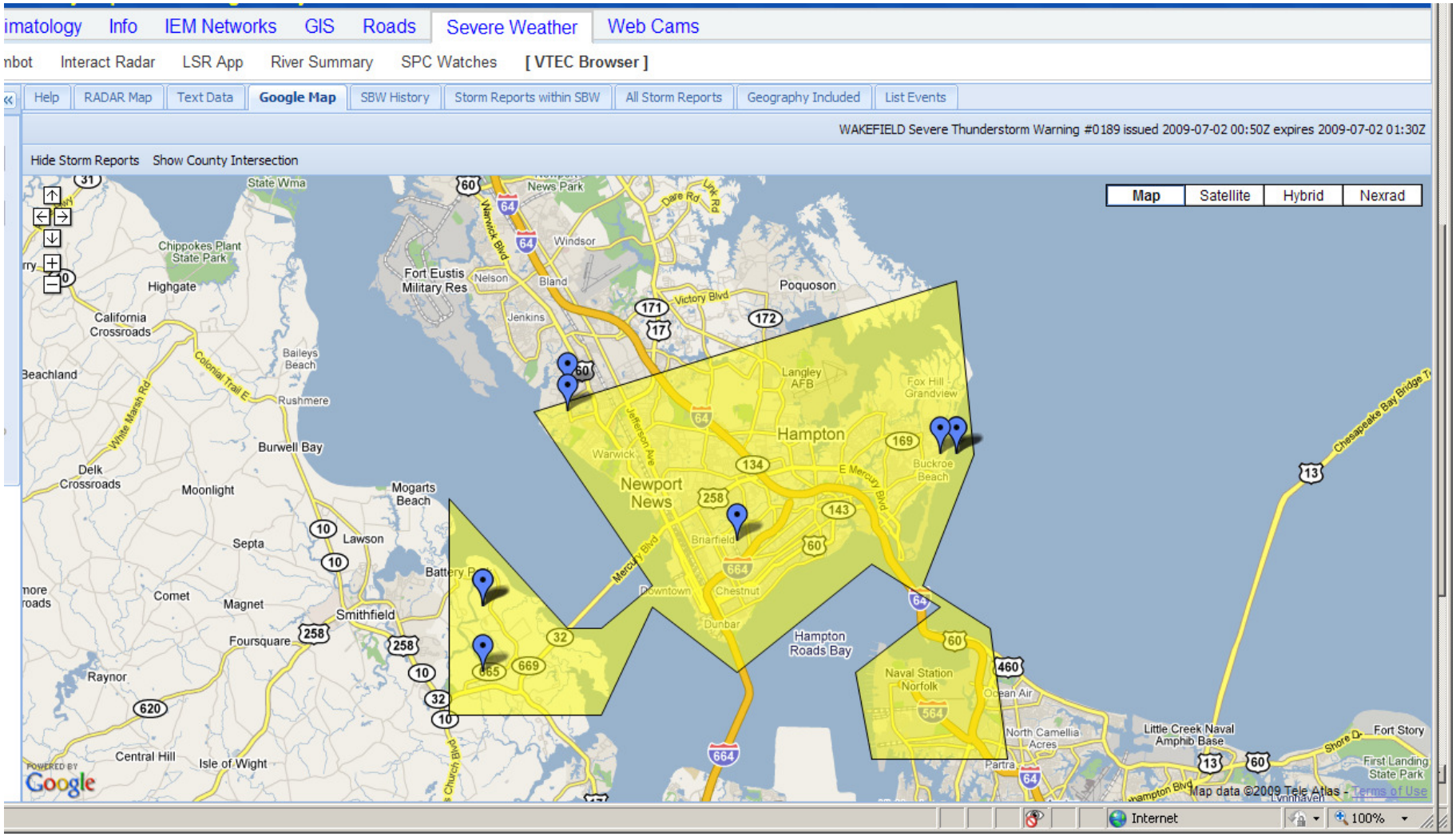
(Simplified Schematic)



Note: Not to Scale

Weather – NWS Wakefield

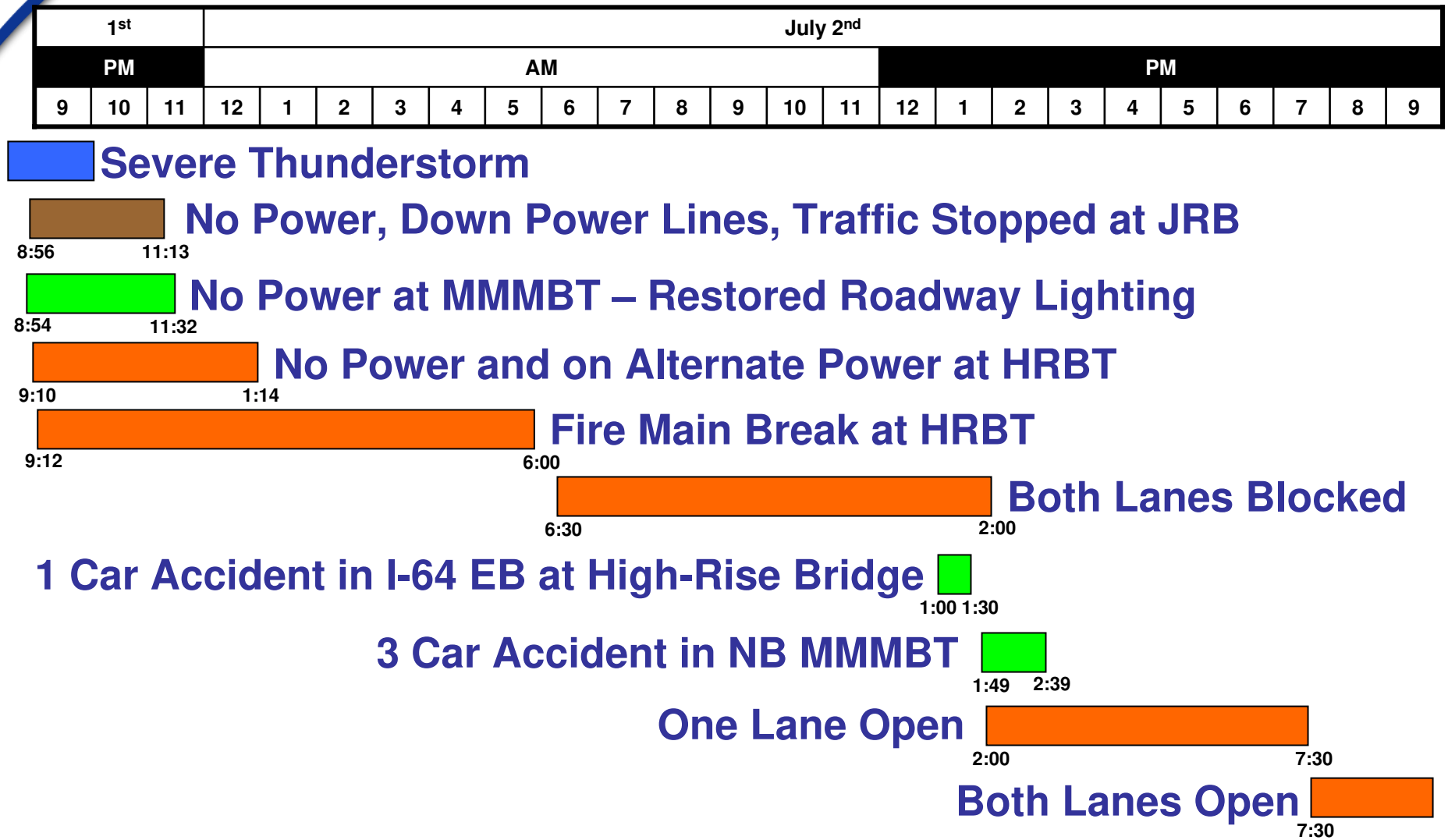
Severe Thunderstorm Warning Area and Impacts Reported to NWS



Simultaneous Events

- **James River Bridge (Route 17)**
  - Power Lines Down
  - All Traffic Stopped
- **Monitor-Merrimac Memorial Bridge-Tunnel**
  - Loss of Electrical Power
- **Hampton Roads Bridge-Tunnel**
  - Loss of Electrical Power
- **Chesapeake Bay Bridge-Tunnel**
  - Tractor Trailer overturned

Regional Overview Timeline



HRBT Response Timeline

Wednesday July 1, 2009

9:10 PM	Power failure at HRBT / Maintenance Notified 9:15 PM / Power switched to Norfolk
9:24 PM	HRBT Fire Pump # 4 on / Maintenance Notified
9:25 PM	Maintenance at James River Bridge for downed power lines, cannot respond to HRBT
11:34 PM	Maintenance reports to HRBT Control Room
11:39 PM	Maintenance checks Fire Pump # 4
11:45 PM	Fire Pump # 4 turned off by Maintenance



Fire Main Wall Rupture



HRBT Response Timeline

Thursday July 2, 2009

12:01AM	Maintenance notes no water supply to the HRBT Facility
1:14 AM	HRBT split power to Hampton and Norfolk side – power restored
1:53 AM	Still no water at HRBT Facility (North and South Island)
6:15 AM	HRBT Control Room notified Maintenance of standing water at Station 7 (lowest point) of westbound tunnel
6:26 AM	All WB traffic stopped due to standing water / Control Room started making notifications
6:45 AM	Maintenance arrive at HRBT
6:57 AM	Maintenance enters the tunnel – water bubbling up from manhole cover in roadway
7:03 AM	HRBT Major Incident VaTraffic / 511 alert system – bridge tunnel stoppage
7:17 AM	HRBT turned into high profile by TEOC; new VaTraffic entry made
7:22 AM	Vacuum truck requested by HRBT to TOC
7:42 AM	Maintenance secures water main and shuts off supply
7:55 AM	2 Vacuum trucks in WB tunnel
8:15 AM	Environmental notified about water discharge
8:29 AM	Hampton Fire Department en route to assist with pumping

HRBT Response Timeline

Thursday July 2, 2009

8:30 AM	Began water discharge from vacuum trucks into upper holding tank of North Island
9:15 AM	Environmental permits water discharge. VSP requests Hampton Fire Department to pump water into bay
9:26 AM	VDOT maintenance enters lower duct system
9:44 AM	Hampton Fire Dept. enters Westbound HRBT
2:13 PM	I - 64 West right lane open to traffic at 25 MPH
2:20 PM	VSP remains in tunnel for traffic control
5:00 PM	Hampton Fire Dept. concludes pumping
6:03 PM	Traffic stopped for Fire Dept. to exit
6:08 PM	VDOT preparing to open left lane of HRBT
7:37 PM	Right and Left Lanes open I-64 West bound at 55 MPH

Public Communications Timeline

1st			July 2nd																			
PM			AM											PM								
9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9

Traffic Impacting Event

Two Lanes Closed — 6:30

One Lane Closed — 2:00 to 7:30

PIO Communications

Hourly Media Pages, Press Releases and Internet Updates — 6:35 to 9:30

PIO Media Interviews

Over 40 Phone and In-person Interviews — 6:45 to 6:00

On the Go Info

- Changeable Message Boards
- Highway Advisory Radio

56 CMS and HAR updated every 5 - 8 minutes — 6:30 to 8:00

"511 Alerts"

Phone & E-mail 511 Alerts Updated every 3 - 5 minutes — 7:00 to 8:00

SSP Routine Patrols — 6 Patrols are 24 / 7 / 365

SSP Augmented Patrols

2 Additional SSP Patrols added — 10:00 to 8:00

Action Plan

July 1st to 8th

- **July 1st to 2nd :**
  - **Restore traffic – Completed at 7:30 PM, July 2nd**
  - **Conducted Emergency Response – Completed**
- **July 2nd to 8th:**
  - **Initiated Emergency Recovery Operations – On-going**
  - **Pump out water – Completed**
  - **Dry out Mid-River Pump Room – Completed**
  - **Dry out lower tunnel ducts – Completed**
  - **Remove two motors and one pump – Completed**

Action Plan

Current and Future Milestones

- **July 9th:**
  - Replace the two motors and one pump-Completed
  - Remove second pump-Completed
- **July 10th:**
  - Repair and replace second pump-Completed
  - Complete Emergency Recovery Operations-Completed
- **Near Term:**
  - Process Stand Down-Underway
  - Repair and pressure test Fire Main
  - Establish an Independent Review Panel

Action Plan

Current and Future Milestones

- **Independent Review Panel**
  - **Membership**
    - Office of Commonwealth Preparedness
    - Virginia Department of Emergency Management
    - Virginia State Police
    - Cities of Hampton & Norfolk
    - Federal Highway Administration
    - Johns Hopkins University
    - Port Authority of NY/NJ
    - Chesapeake Bay Bridge Tunnel
    - Parsons Brinckerhoff
    - VDOT

Action Plan

Current and Future Milestones

- **Independent Review Panel**
  - **Mission**
    - **Review existing policies and procedures relating to tunnel operations**
      - **Maintenance and operations**
      - **Communicating systems**
      - **Traffic Management**
      - **Technology**
    - **Develop Recommendations**
  - **Schedule**
    - **3 Meetings starting 1st Week of August**
    - **Final Report in Mid-September**



Questions?