

# Harbor Community Monitoring Study

## Saturation Monitoring of Air Toxics

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# Harbor Community Monitoring Study

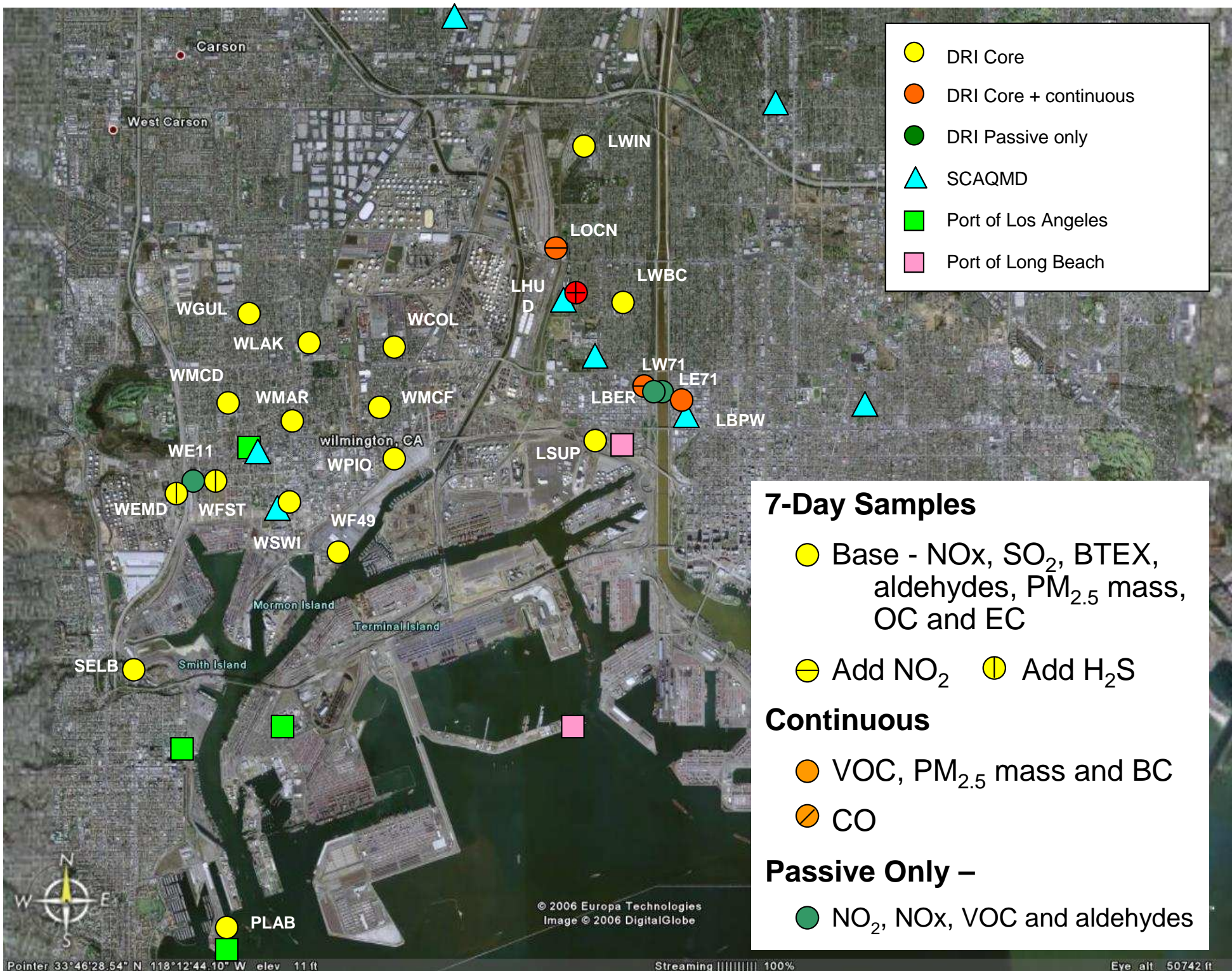
## Saturation Monitoring

- **Objectives**

- Characterize the spatial gradients in concentrations of air toxics within the community.
- Evaluate adequacy of existing routine air quality monitoring to characterize exposure concentrations within the community.
- Correlate ambient concentrations of black carbon with proximity to truck traffic and day-of-week variations in diesel truck traffic volume.
- Evaluate and compare passive monitoring methods to conventional monitoring methods.

- **Monitoring Periods**

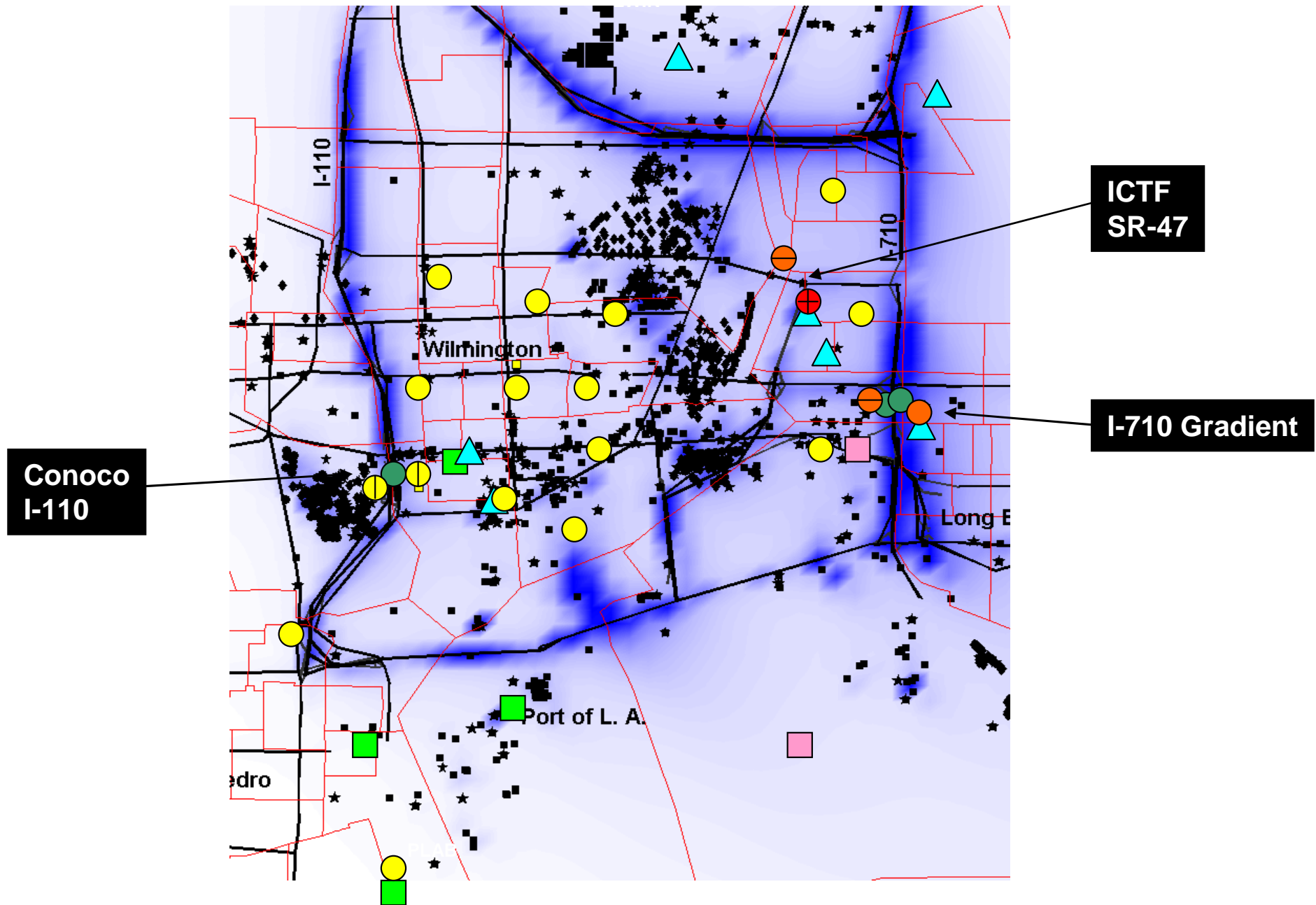
- 2/13/07 to 3/13/07 (winter)
- 5/15/07 to 6/12/07 (spring)
- 7/31/07 to 8/28/07 (summer)
- 11/13/07 to 12/11/07 (fall)



- DRI Core
- DRI Core + continuous
- DRI Passive only
- ▲ SCAQMD
- Port of Los Angeles
- Port of Long Beach

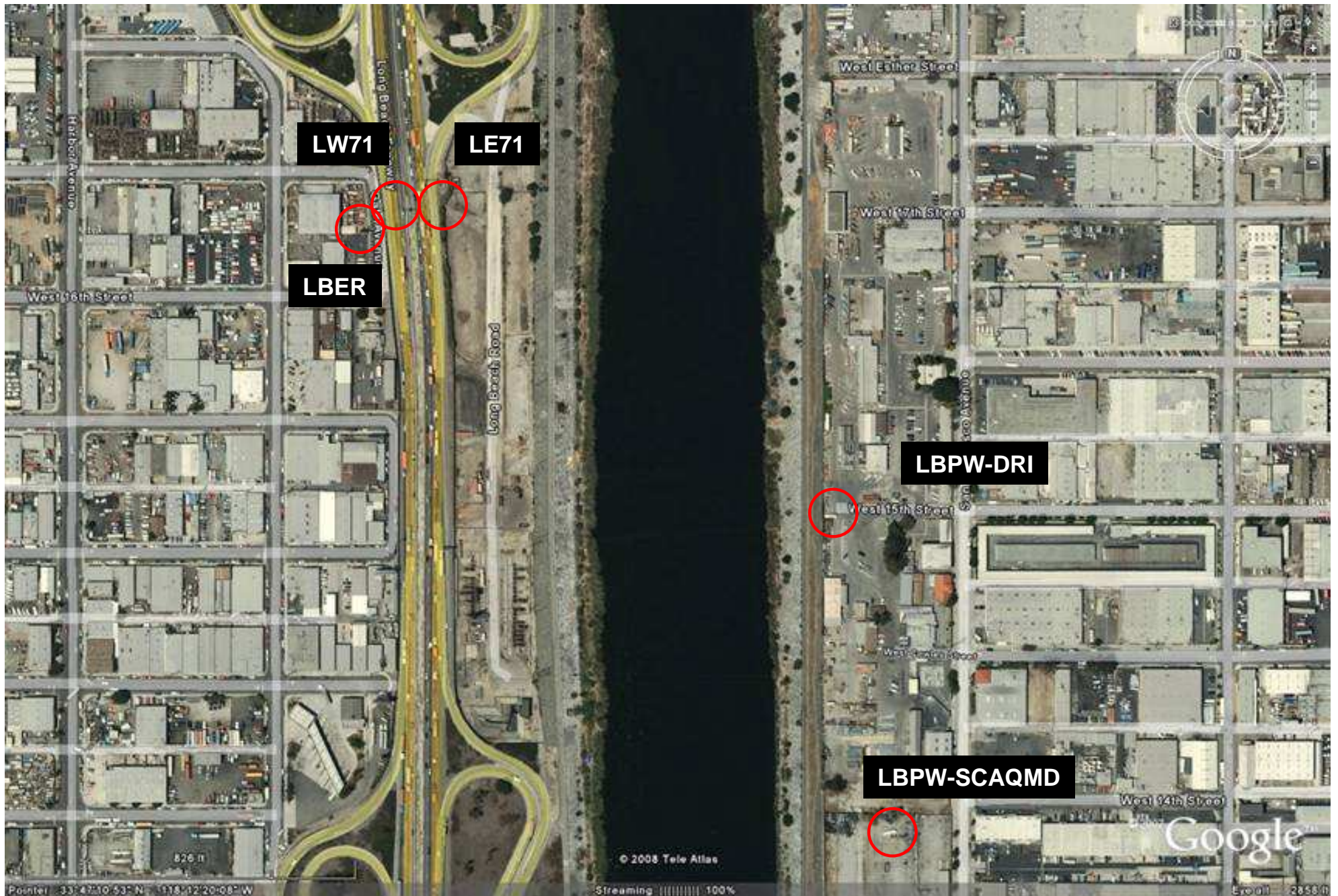
- ### 7-Day Samples
- Base - NO<sub>x</sub>, SO<sub>2</sub>, BTEX, aldehydes, PM<sub>2.5</sub> mass, OC and EC
  - ◐ Add NO<sub>2</sub>     ◑ Add H<sub>2</sub>S
- ### Continuous
- VOC, PM<sub>2.5</sub> mass and BC
  - ◐ CO
- ### Passive Only –
- NO<sub>2</sub>, NO<sub>x</sub>, VOC and aldehydes

# Locations of HCMS Sites on Spatial Mapping of ARB's Modeling Estimate of Annual Average DPM Concentrations



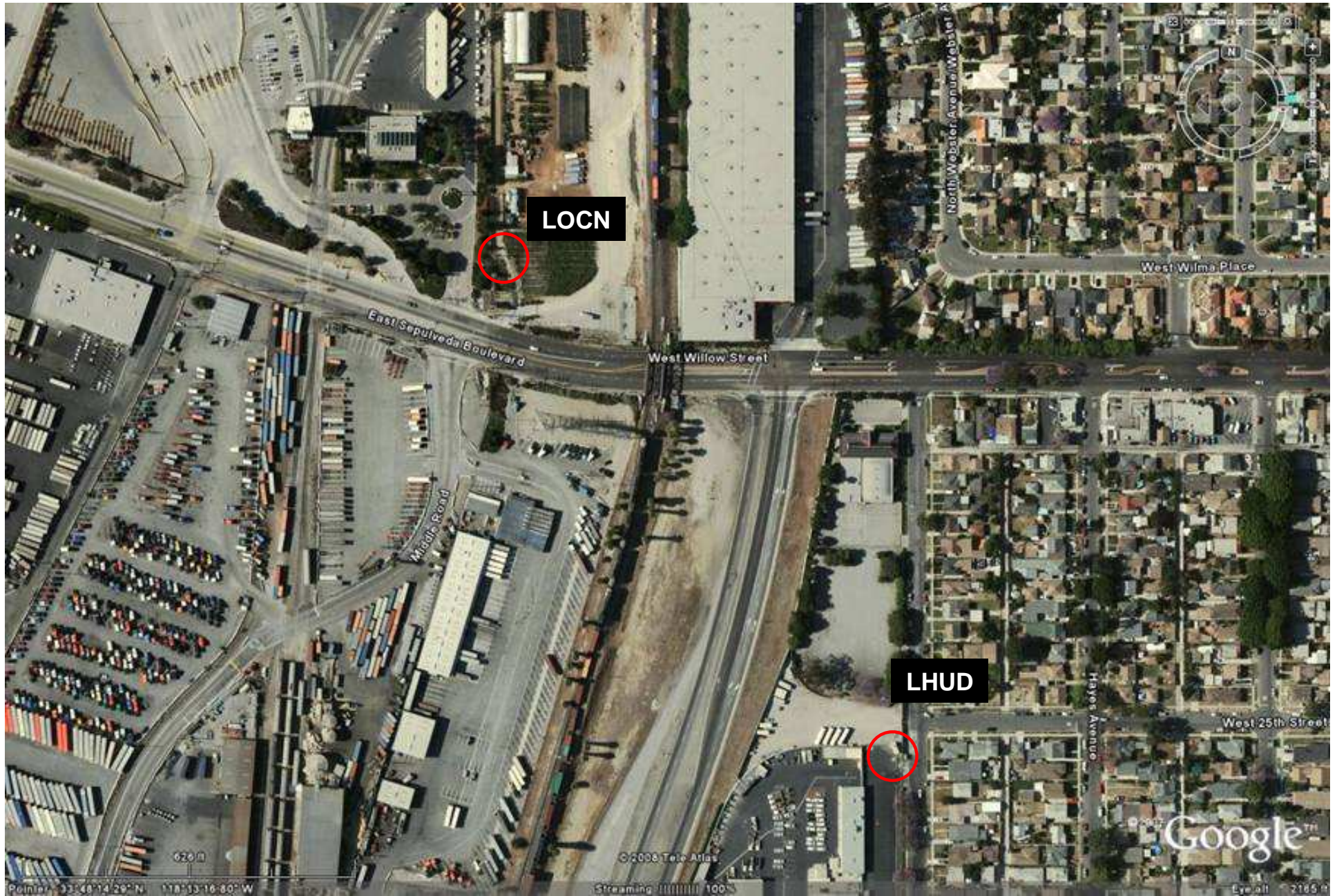
# I-710 Gradient

Pacific Coast Hwy



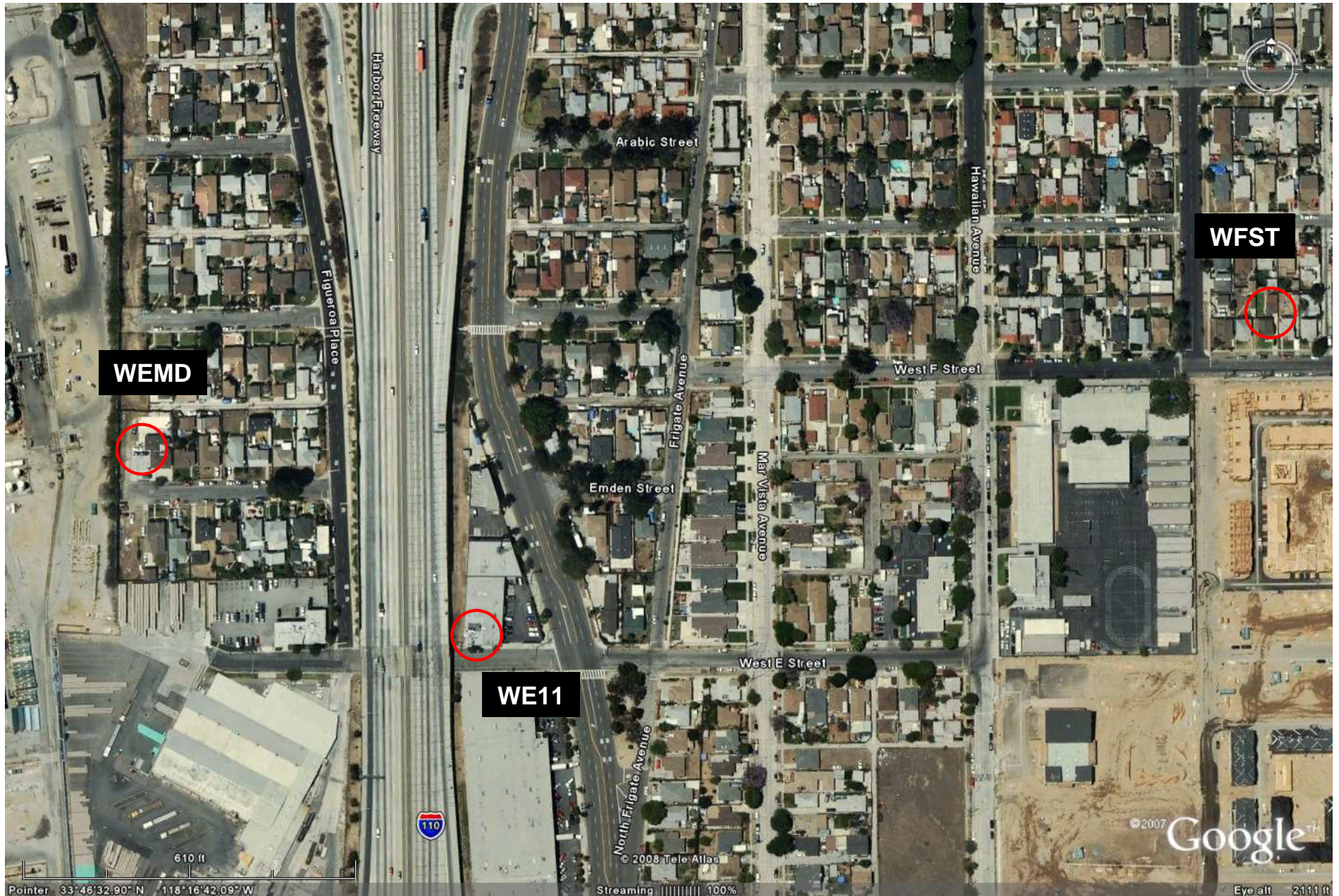
Anaheim Street

# HCMS Sites Near the ICTF & Terminal Island Fwy

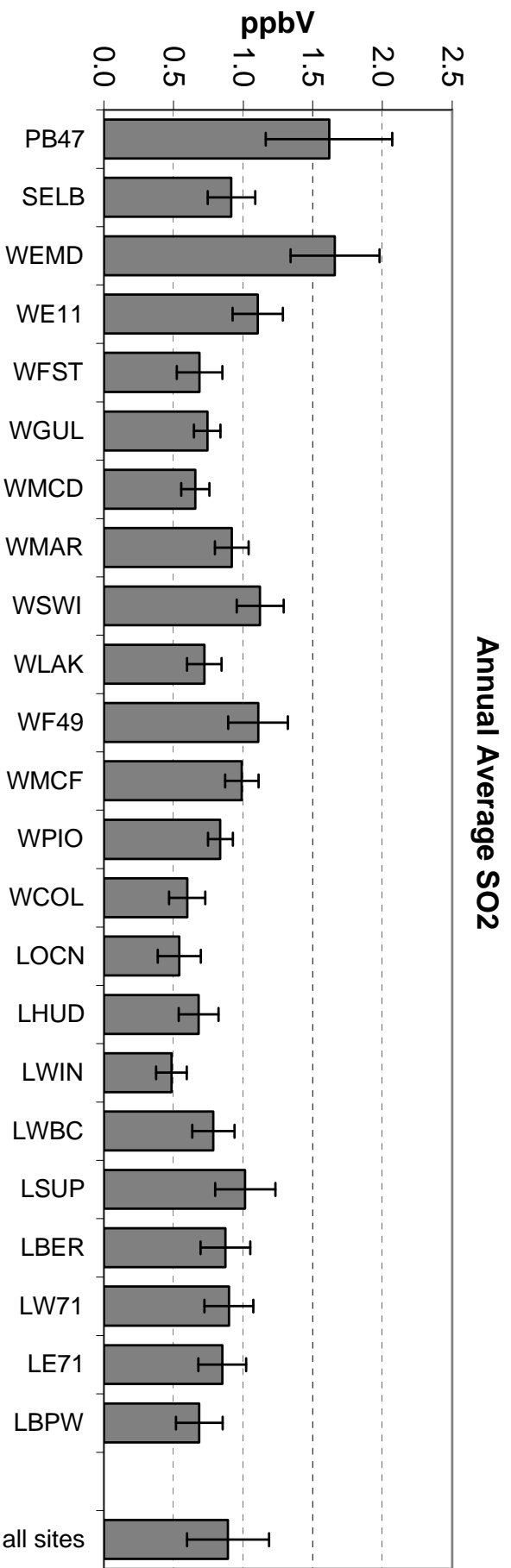
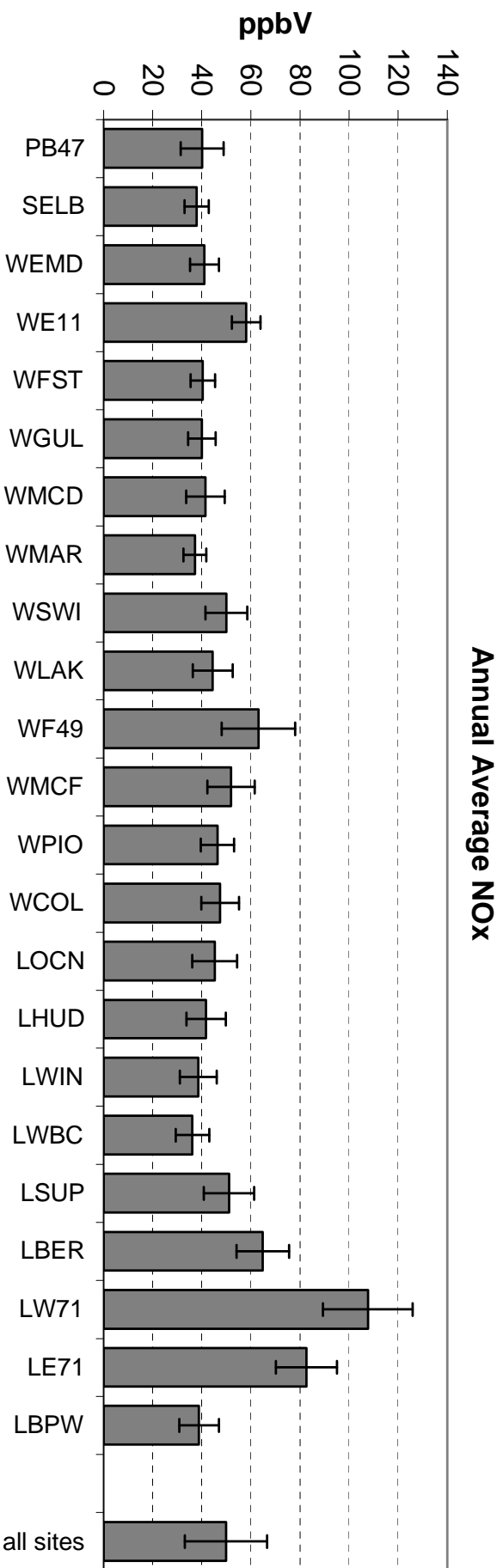


# HCMS Sites Near Conoco Refinery & I-110

Anaheim Street

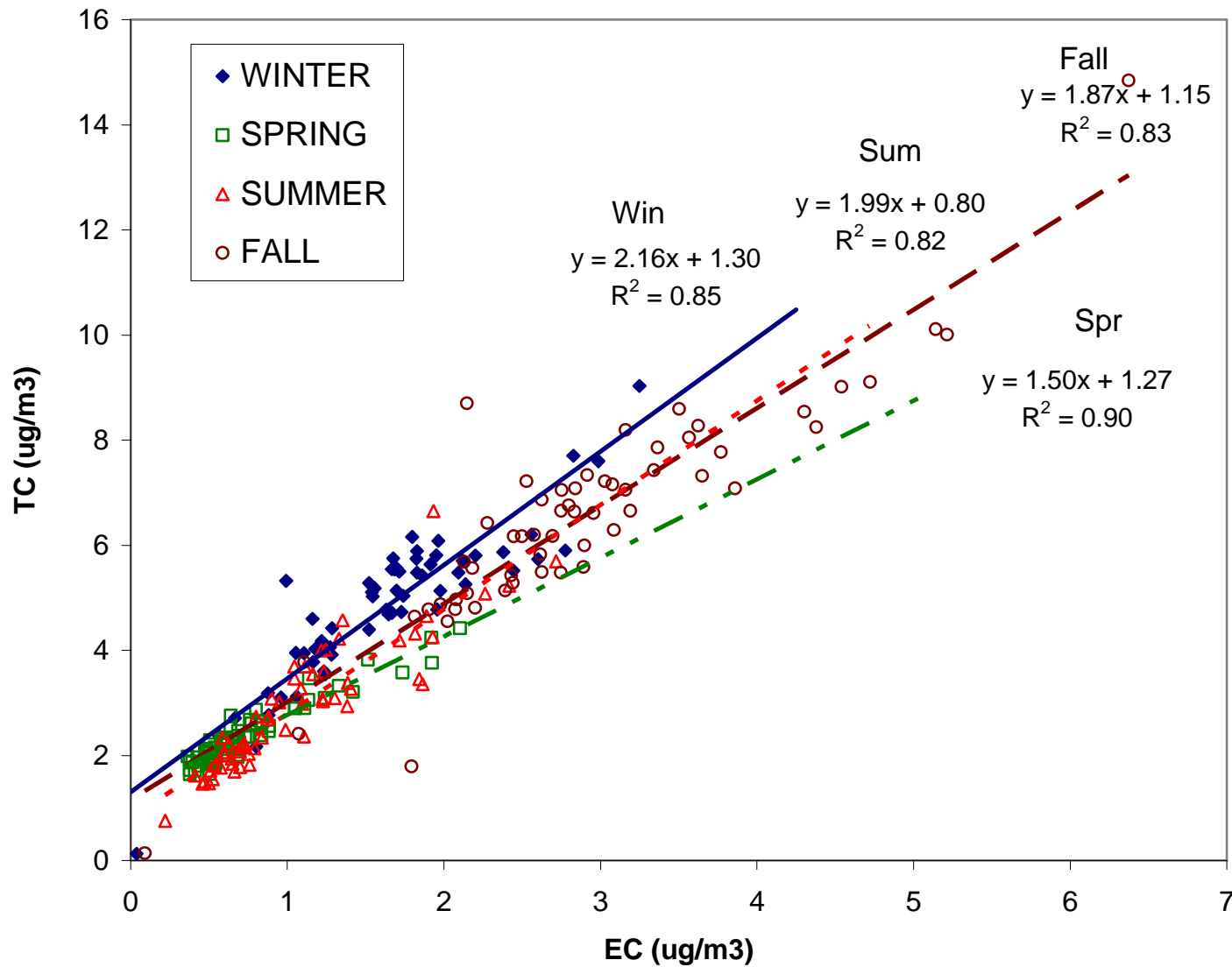


# 2007 HCMS Annual Average NOx and SO<sub>2</sub>





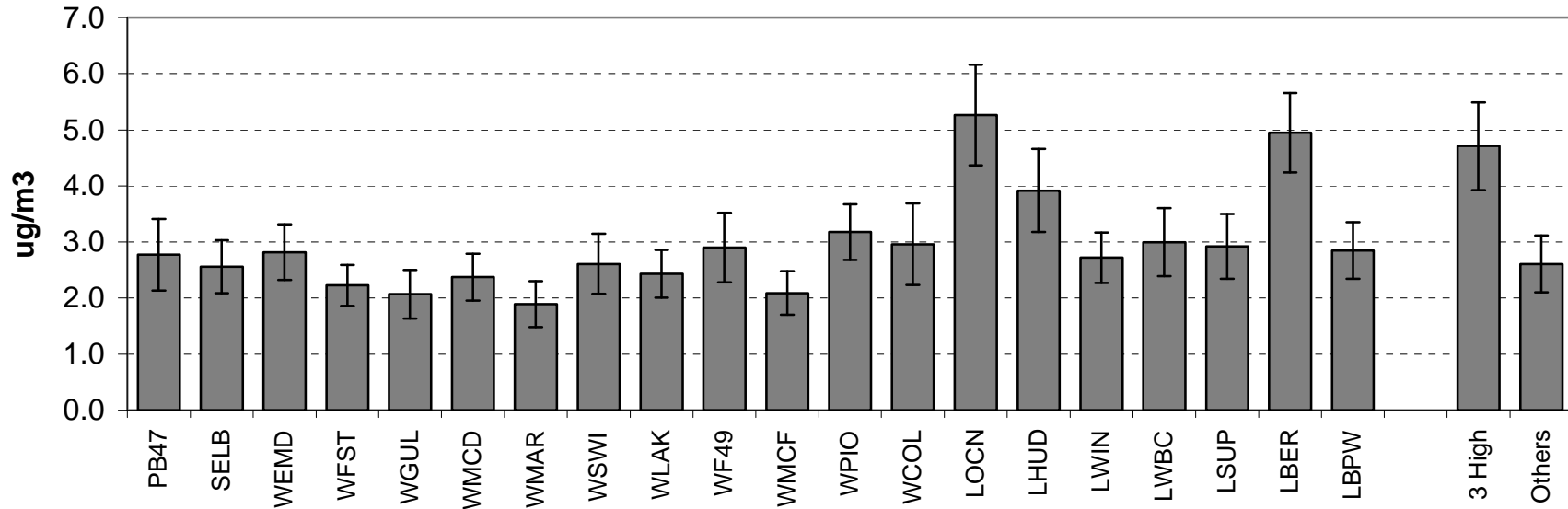
# Correlation of TC and EC by Season



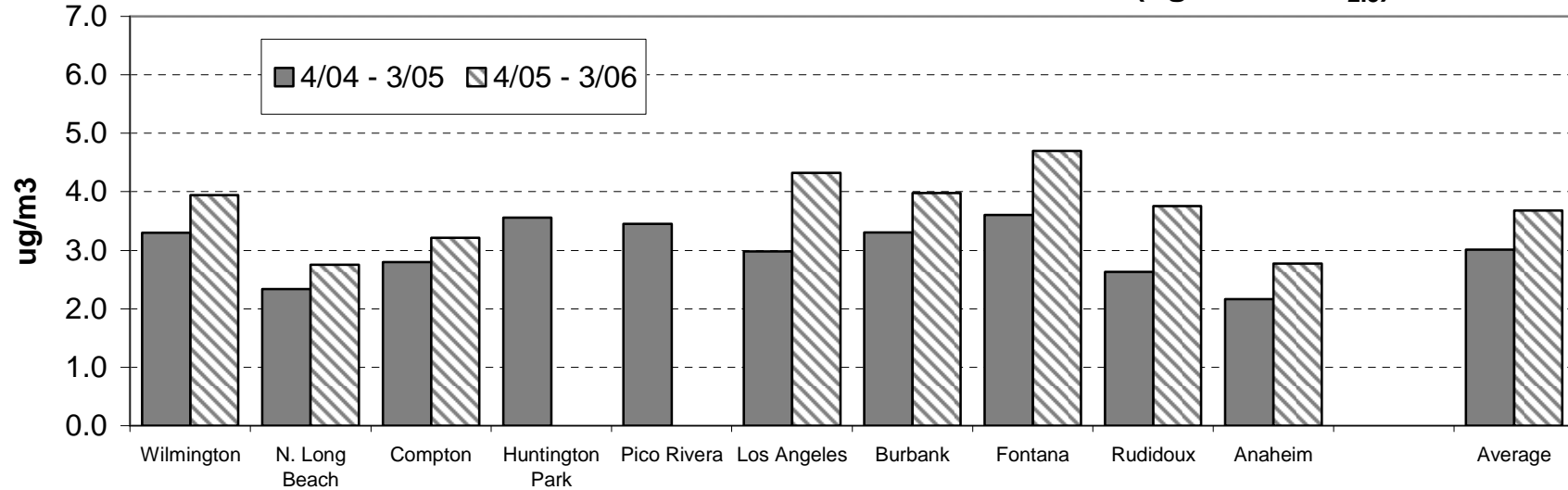
DPM (as TC) = measured EC \* slope of TC versus EC correlation

# Annual Average Diesel PM Concentrations

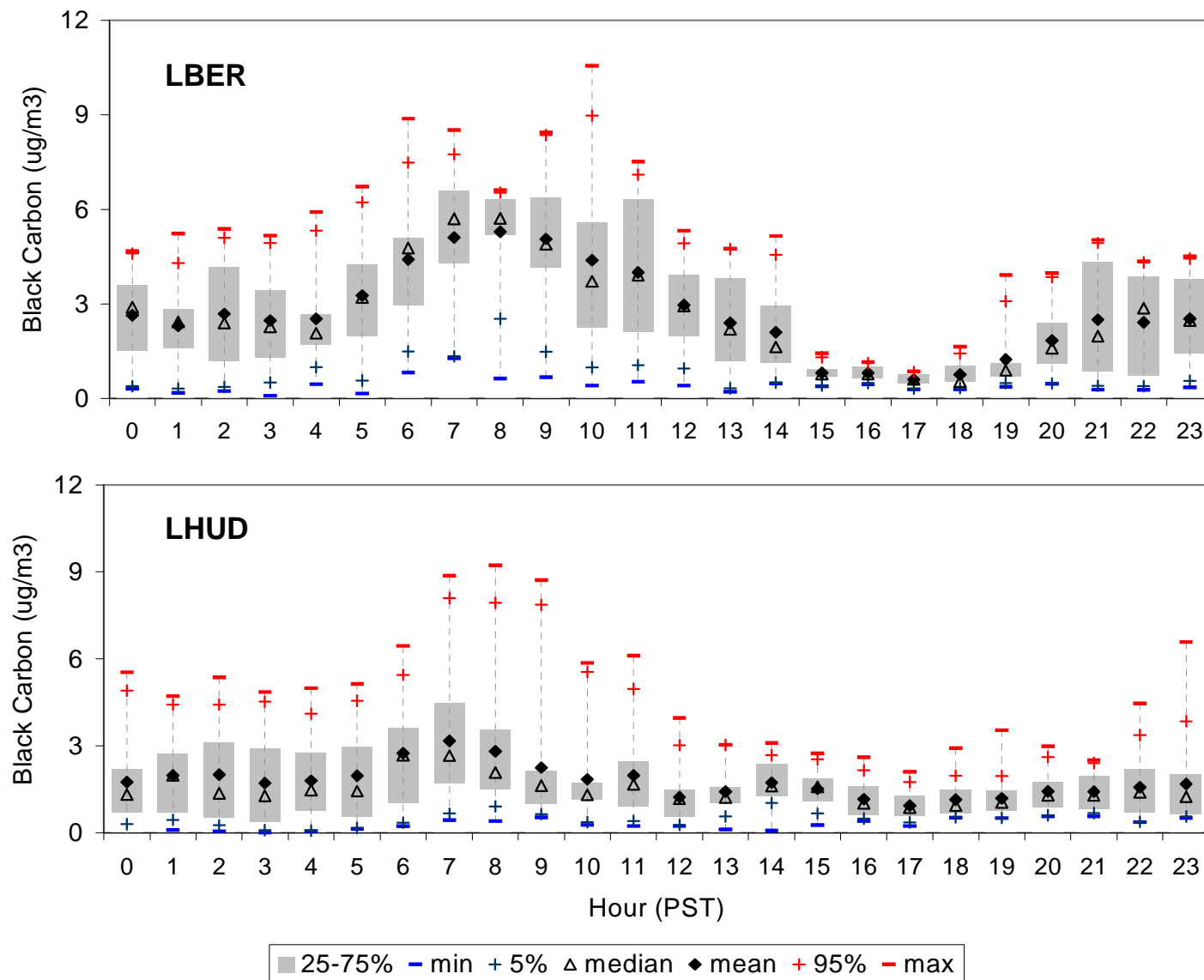
2007 HCMS Estimated from TC vs EC Correlations ( $\mu\text{g}/\text{m}^3$  of TC)



2004-2006 MATES-III from Chemical Mass Balance ( $\mu\text{g}/\text{m}^3$  of  $\text{PM}_{2.5}$ )

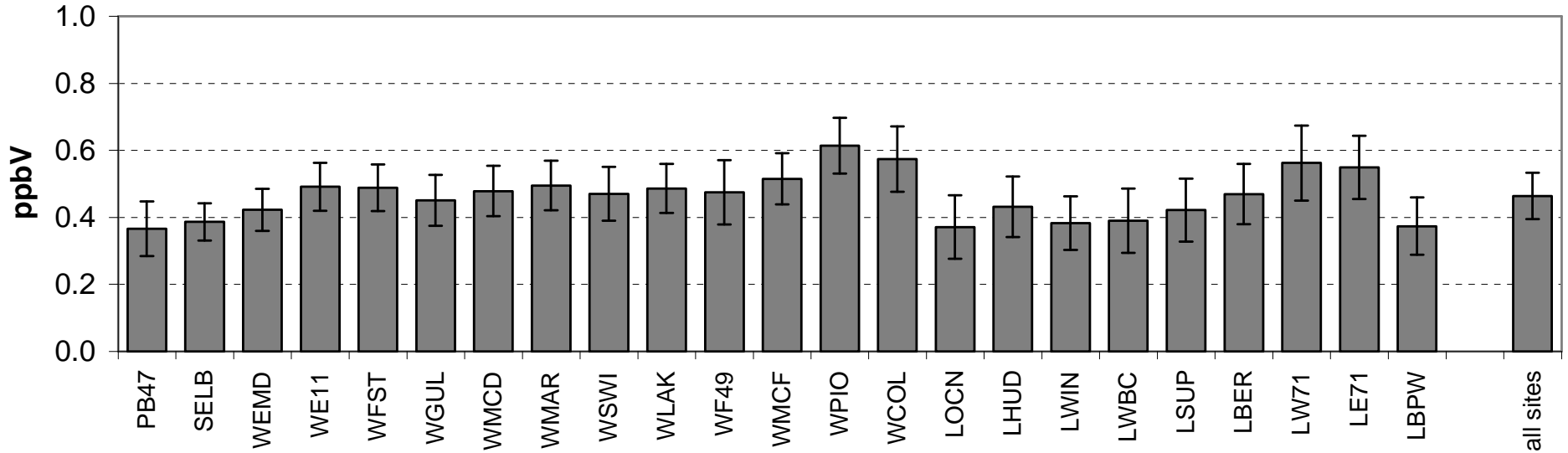


# Diurnal Variations in Black Carbon, 2/13/07 to 3/13/07

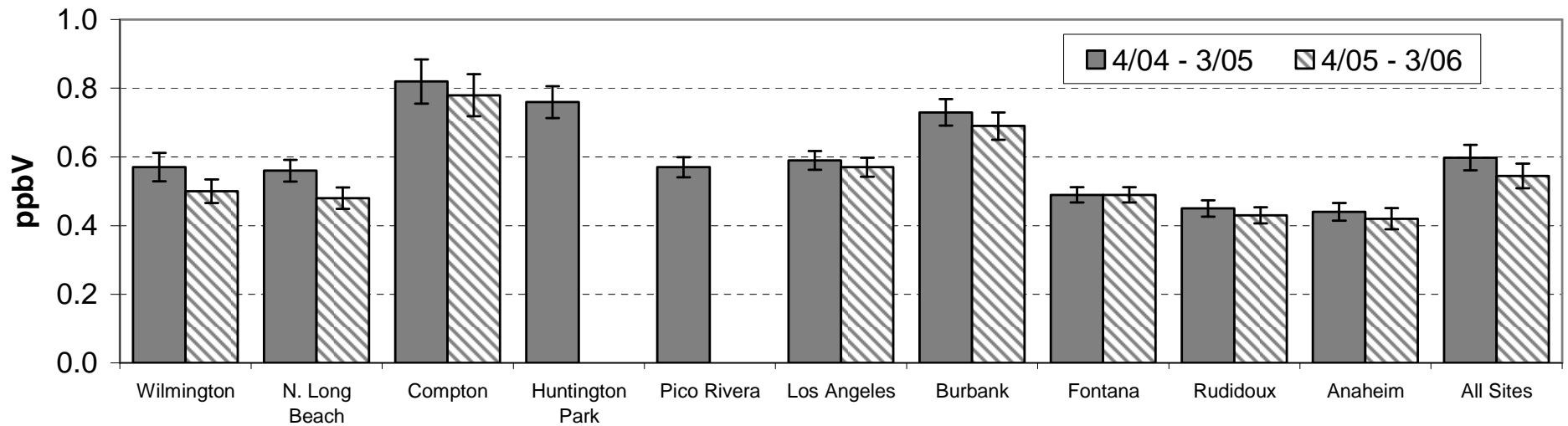


# Annual Average Benzene (ppbv)

## 2007 HCMS

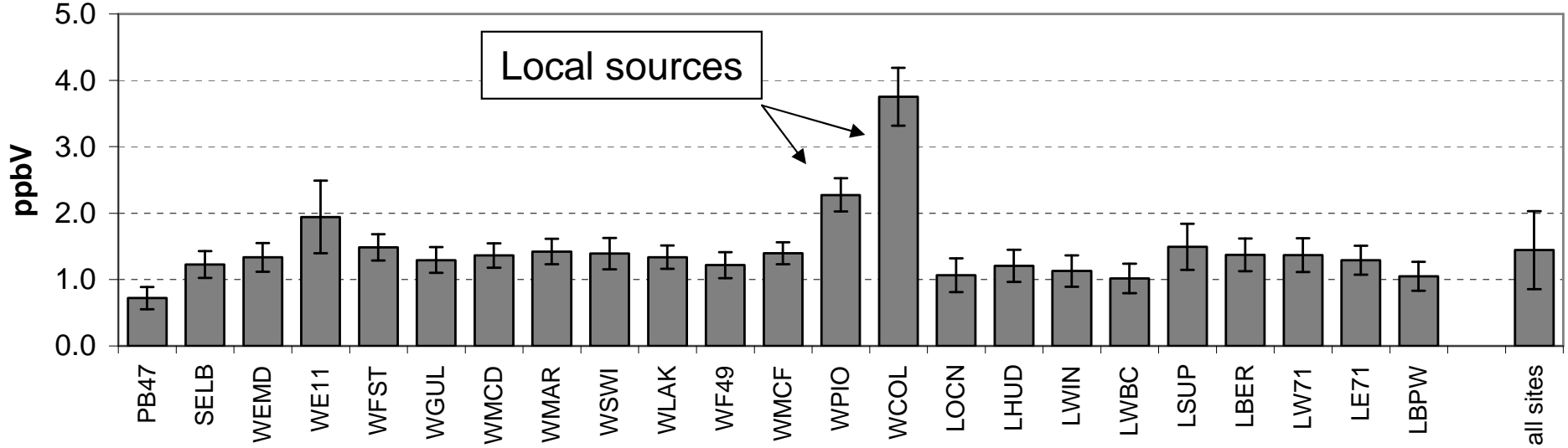


## 2004-2006 MATES-III

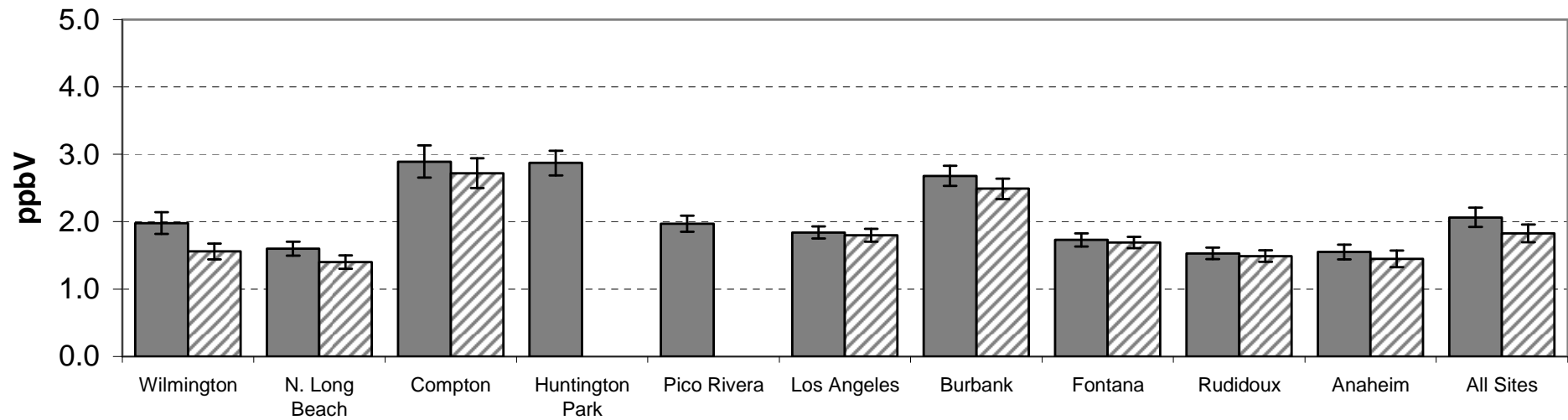


# Annual Average Toluene (ppbv)

2007 Harbor Communities Monitoring Study (HCMS)

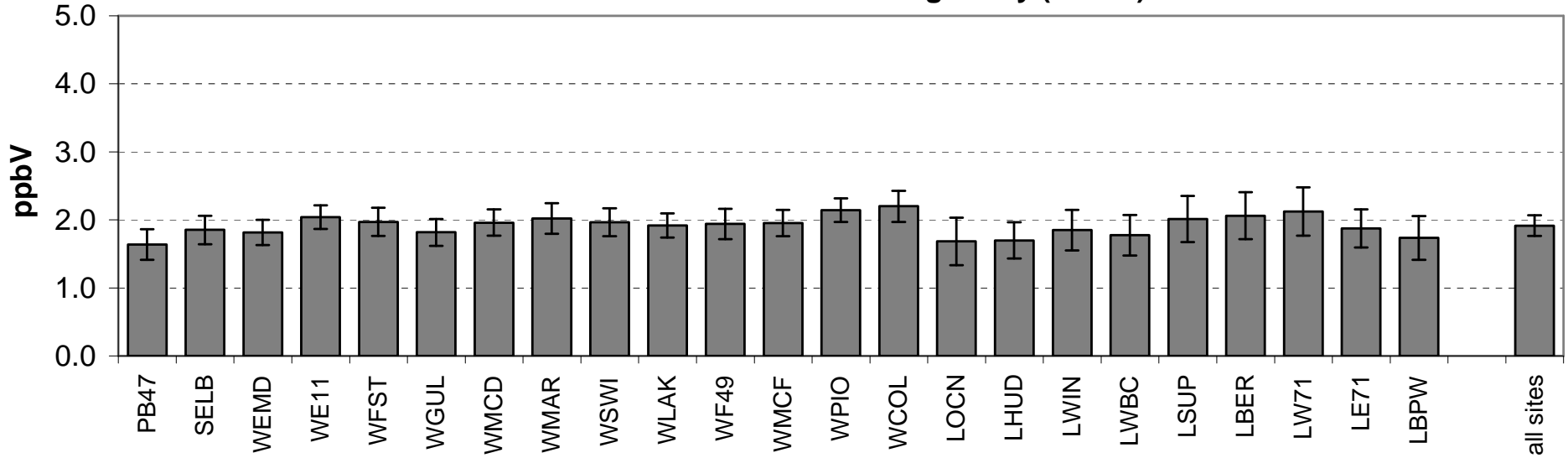


2004-2006 MATES-III

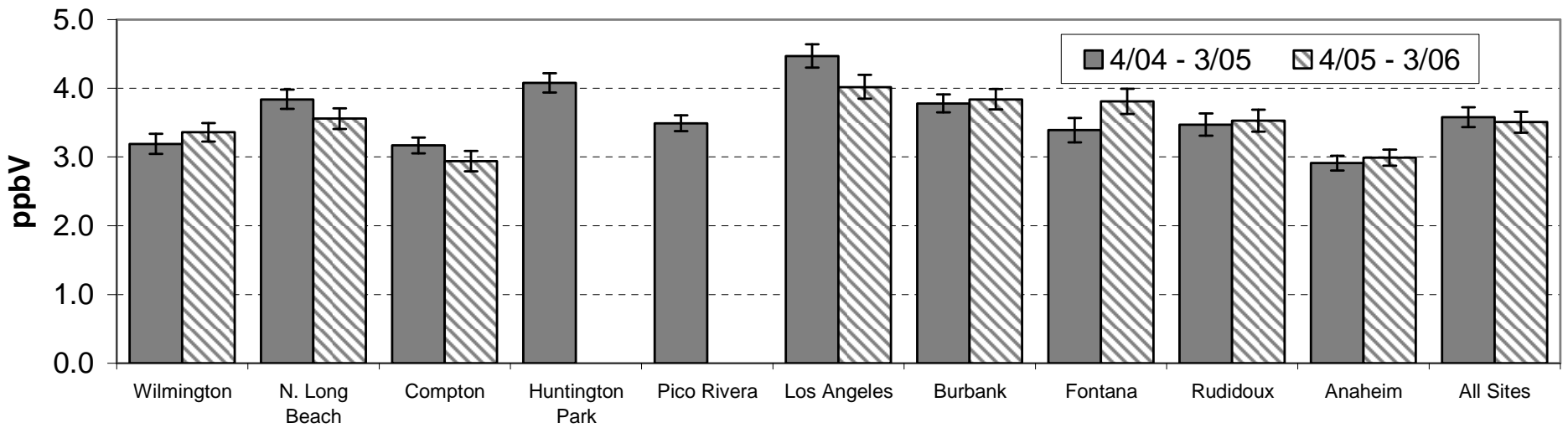


# Annual Average Formaldehyde (ppbv)

## 2007 Harbor Communitites Monitoring Study (HCMS)



## 2004-2006 MATES-III



# Summary

- Annual average DPM concentrations were higher near diesel truck traffic and were comparable to the rest of the basin at locations 300 m or more from traffic. Results are qualitatively consistent with the ARB's modeling estimates of DPM concentrations.
- Concentrations of DPM are higher for shorter time averages.
- Higher average SO<sub>2</sub> levels were measured at the east boundary of the Conoco Refinery and in the port area. However corresponding increases in BTEX were not observed near the refinery.
- Average BTEX levels in the Harbor Communities were generally comparable or less than at other air monitoring locations in the basin. Toluene levels were higher at two locations due to use of solvent in the immediate area.
- Formaldehyde and other carbonyl compounds that are formed in the atmosphere were lower in the Harbor Communities than inland areas of the basin.

# Acknowledgments

- **Sponsors**

- California Air Resources Board
- South Coast Air Quality Management District

- **Support**

- DRI Organic Analytical Laboratory: Barbara Zielinska, Brooks Mason, and Anna Cunningham
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- Mr. Jesse Marquez
- Mr. John Cross
- South Coast Air Quality Management District
- City of Long Beach
- Port of Los Angeles