

**Public Meeting:**  
***Discuss ARB Guidelines for***  
***Rail Yard Health Risk Assessments***

**August 28, 2006**  
**(Sacramento, CA)**

California Environmental Protection Agency

 **Air Resources Board**



# Overview of Presentations

- **Statewide Locomotive and Railyard Strategies**
- **Statewide Railyard Agreement**
- **Railyard Health Risk Assessments (HRAs)**
- **Guidelines for Railyard HRAs:**
  - **Emission Inventories**
  - **Air Dispersion Modelling**
  - **Health Risk Assessments**
- **Air District and Public Comments**
- **Summary and Next Steps**



# Statewide Locomotive and Railyard Strategies

- **South Coast Locomotive Agreement (1998)**
- **ARB Diesel Regulation - Intrastate Locomotives (2004)**
- **Statewide Railyard Agreement (2005)**
- **ARB Cargo Handling Equipment Regulation (2005)**
- **Element of California's Goods Movement Plan (2006)**
- **National rulemaking for Tier 3 locomotives (2007)**
- **Greater than 90% reduction in diesel PM and NOx by 2020 and localized risk reduction**



# Statewide Railyard Agreement

- **Limit non-essential idling to 60 minutes.**
- **Install anti-idling devices.**
- **Use ultra-low sulfur diesel fuel .**
- **Identify and repair smoking locomotives.**
- **Reduce locomotive diesel PM by 20% in and around rail yards.**



# **Statewide Railyard Agreement (cont'd)**

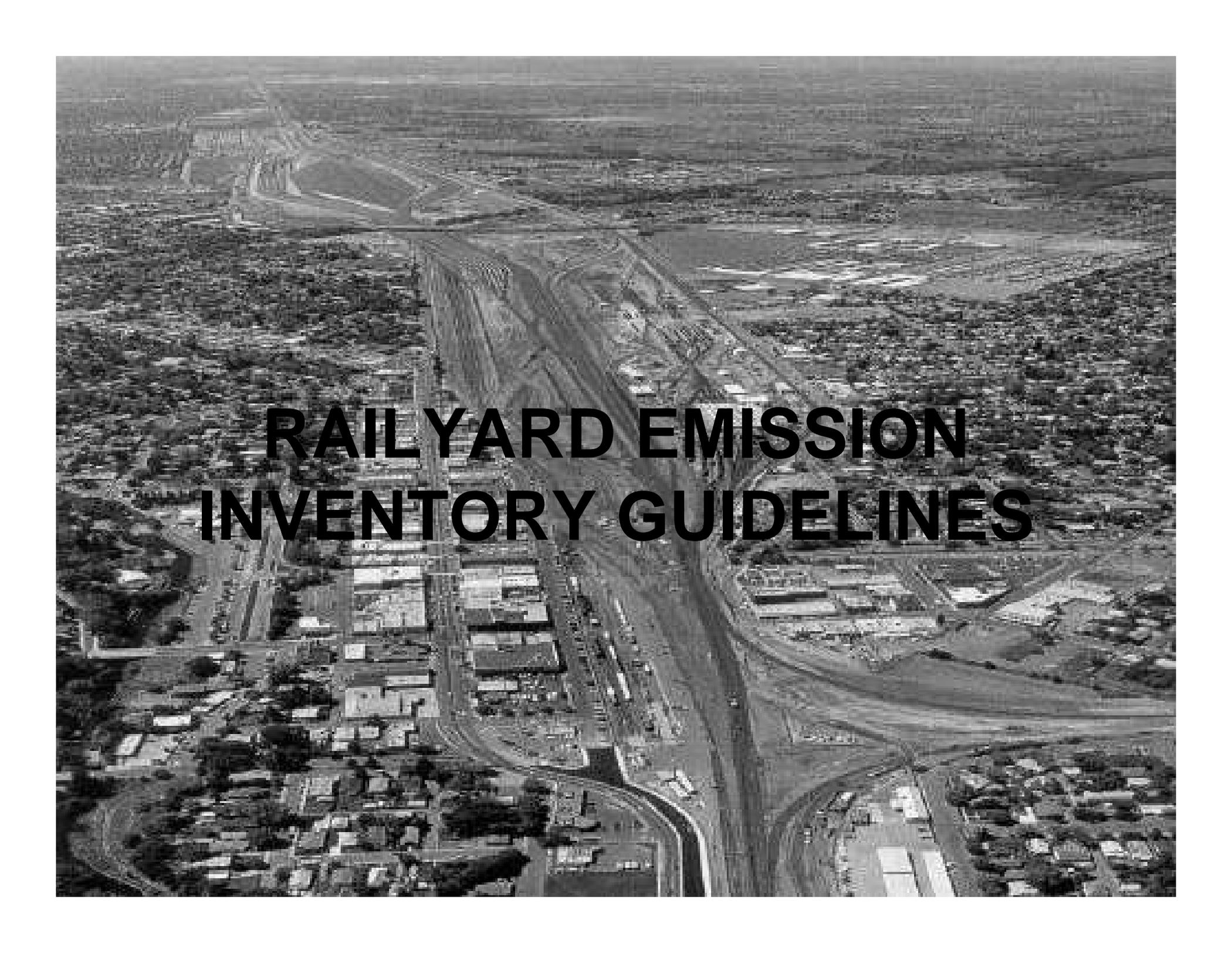
- **16 new railyard risk assessments by 2008.**
- **Additional mitigation measures in the future.**



# Railyard HRA Responsibilities

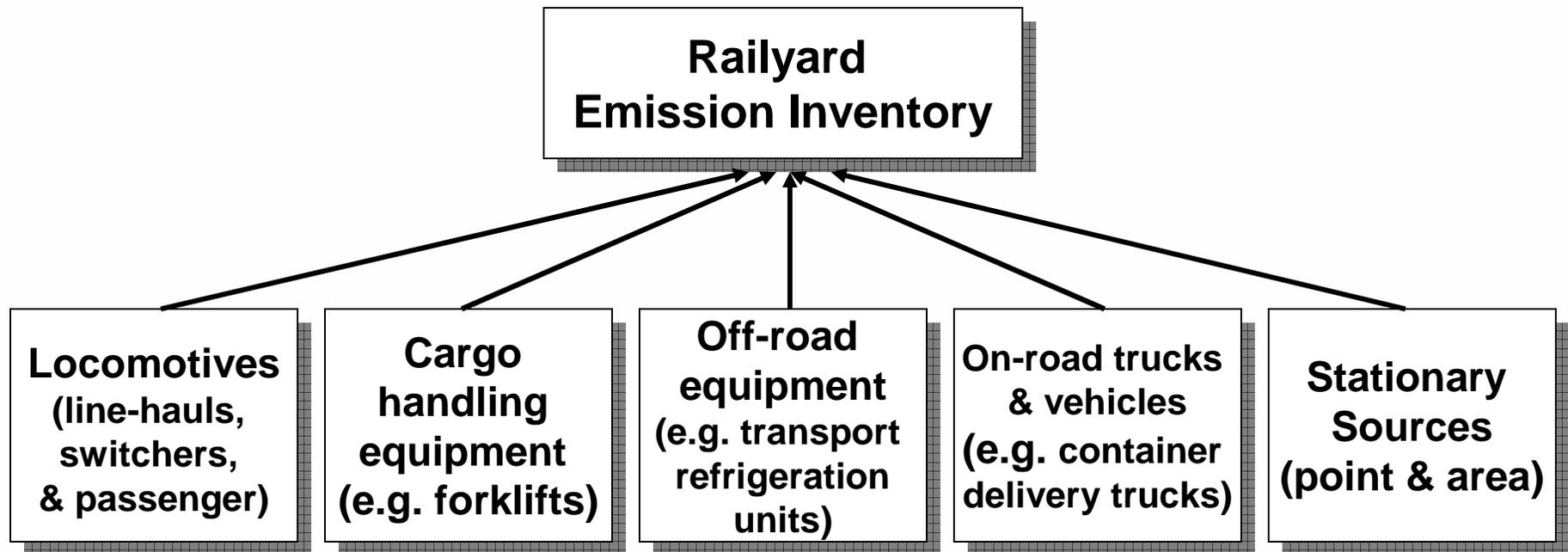
- **The Railroads (with their consultants)**
  - 80% work within yards
  - Railyard emission Inventory
  - Railyard air dispersion modeling
- **ARB**
  - Review of emissions and modeling
  - Emissions/Modeling outside of the yards
  - Risk assessments
  - Draft HRA reports



An aerial, black and white photograph of a large rail yard. The yard is filled with numerous parallel tracks that curve and cross each other. The surrounding area is a mix of urban development, including residential houses and commercial buildings, and open land. The text "RAIL YARD EMISSION INVENTORY GUIDELINES" is overlaid in the center of the image in a bold, black, sans-serif font.

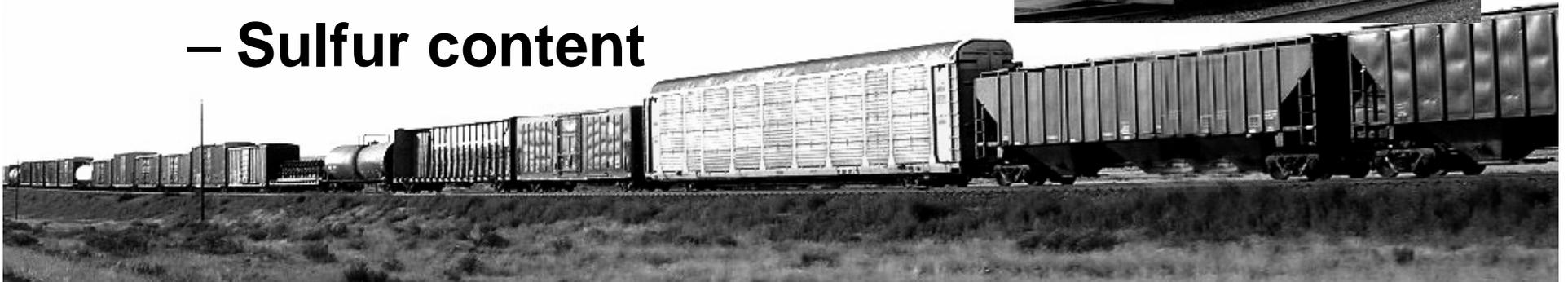
# **RAIL YARD EMISSION INVENTORY GUIDELINES**

# Railyard Emission Sources



# Methodology of Emission Inventory

- **Fleet/Equipment population**
- **Operation activities**
  - **Operation hours**
  - **Vehicle mileage traveled**
  - **Daily activity hours**
- **Emission factors**
- **Fuel characteristics**
  - **Fuel usage**
  - **Sulfur content**



# Locomotive Emissions

- **Population of locomotives by classes or groups**
- **Notch or power settings & idling**
- **Emission factors**
- **Hours of operation**
- **Fuel consumption and correction**



# Cargo Handling and Off-Road Equipment Emissions

- Population of equipment
- Emission factors by size and model year
- Activity hours



# On-Road Truck/Vehicle Emissions

- **Number of trucks and vehicles**
- **Emission factor per mileage traveled**
- **Vehicle mileage**
- **Idling emission and hours**

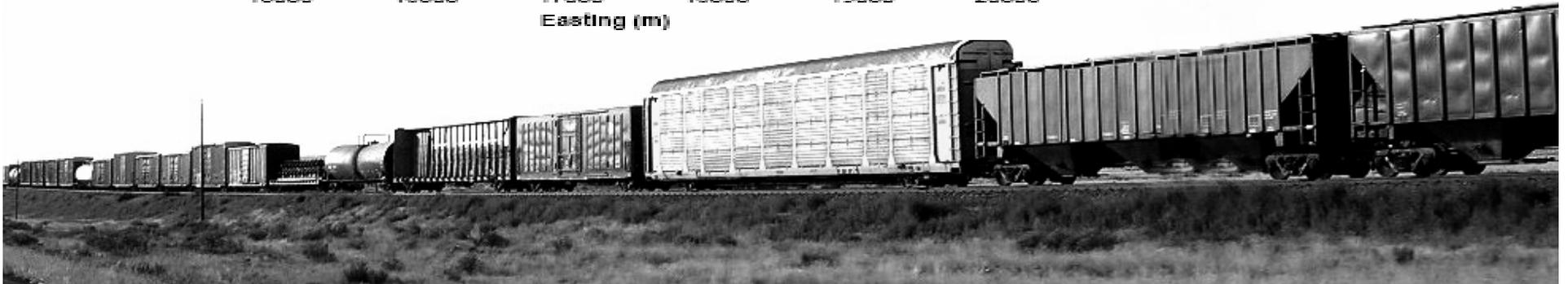
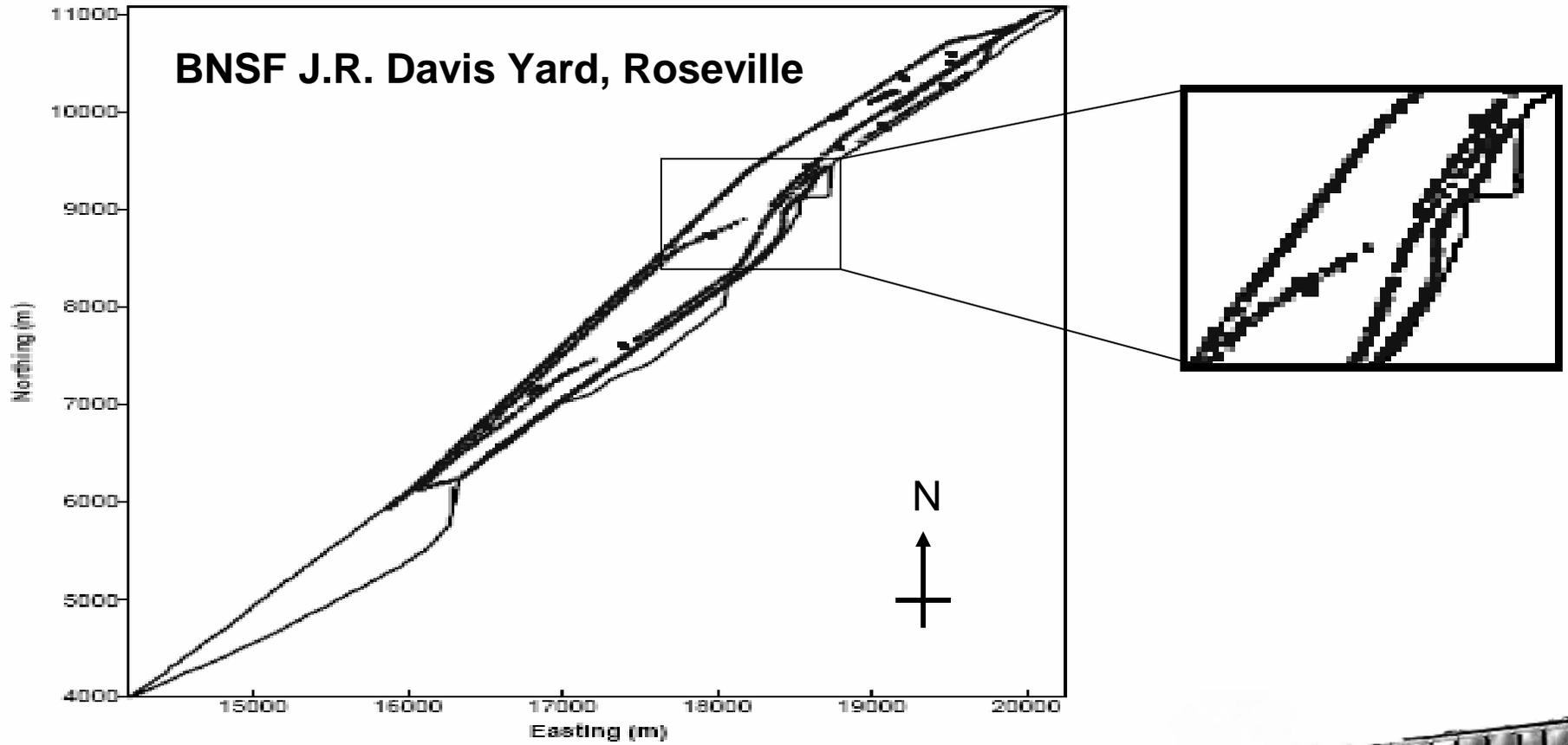


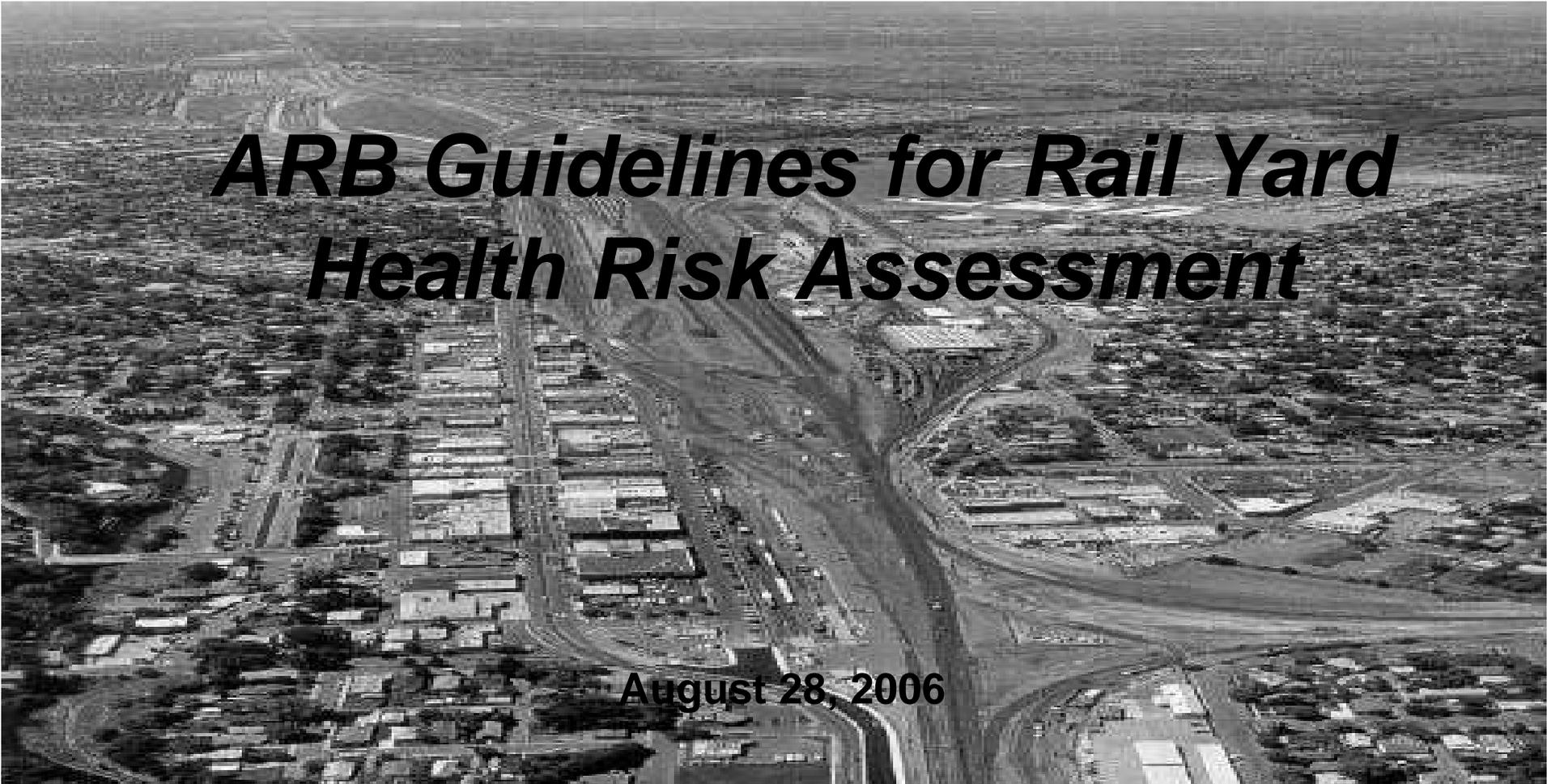
# Stationary Source Emissions

- **Number of sources (point and area)**
- **Emission factor**
- **Fuel consumption**



# Spatial Distribution of Emissions





# ***ARB Guidelines for Rail Yard Health Risk Assessment***

**August 28, 2006**

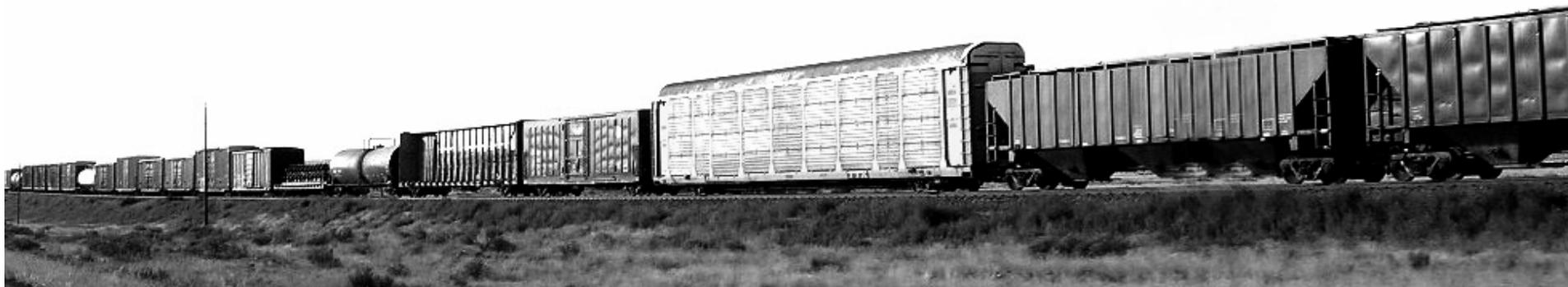
California Environmental Protection Agency

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# Introduction

- **Rail Yard Health Risk Assessment (HRA) Guidelines**
- **Identify the risks associated with toxic air contaminants (TACs), especially diesel particulate matter (DPM)**



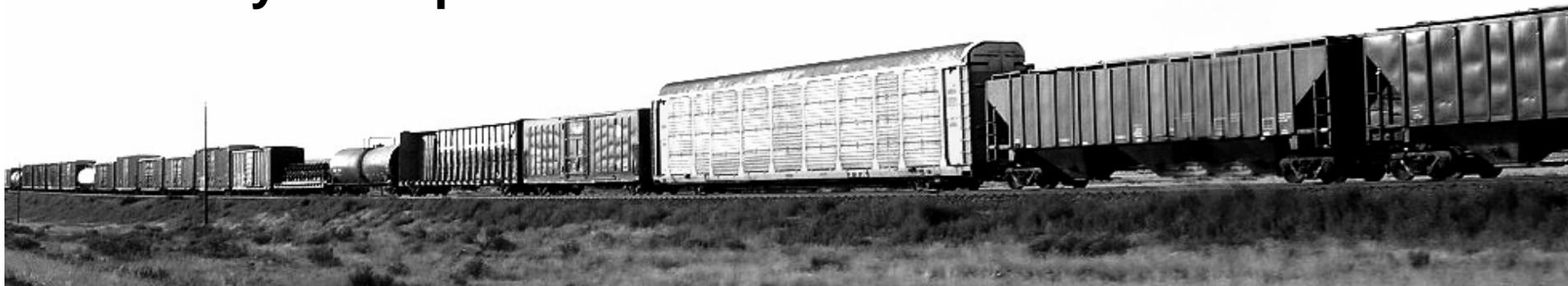
# Introduction

## ➤ Air Dispersion Modeling

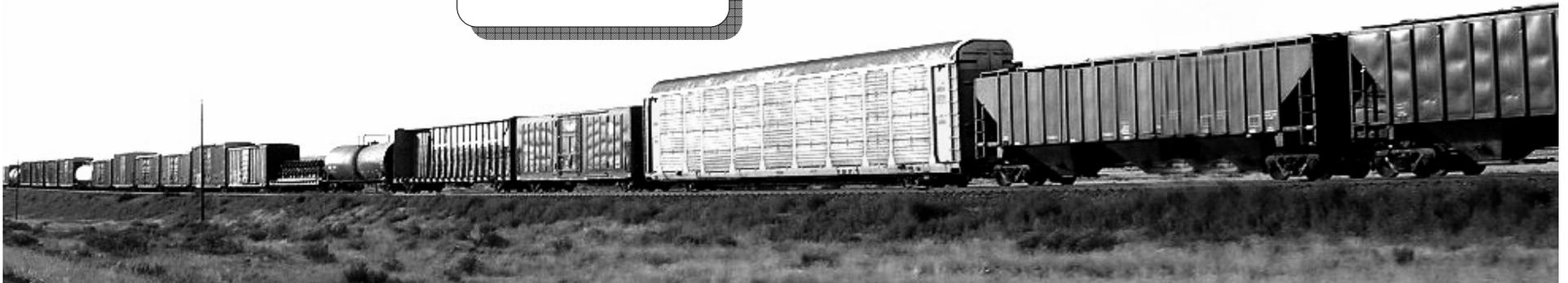
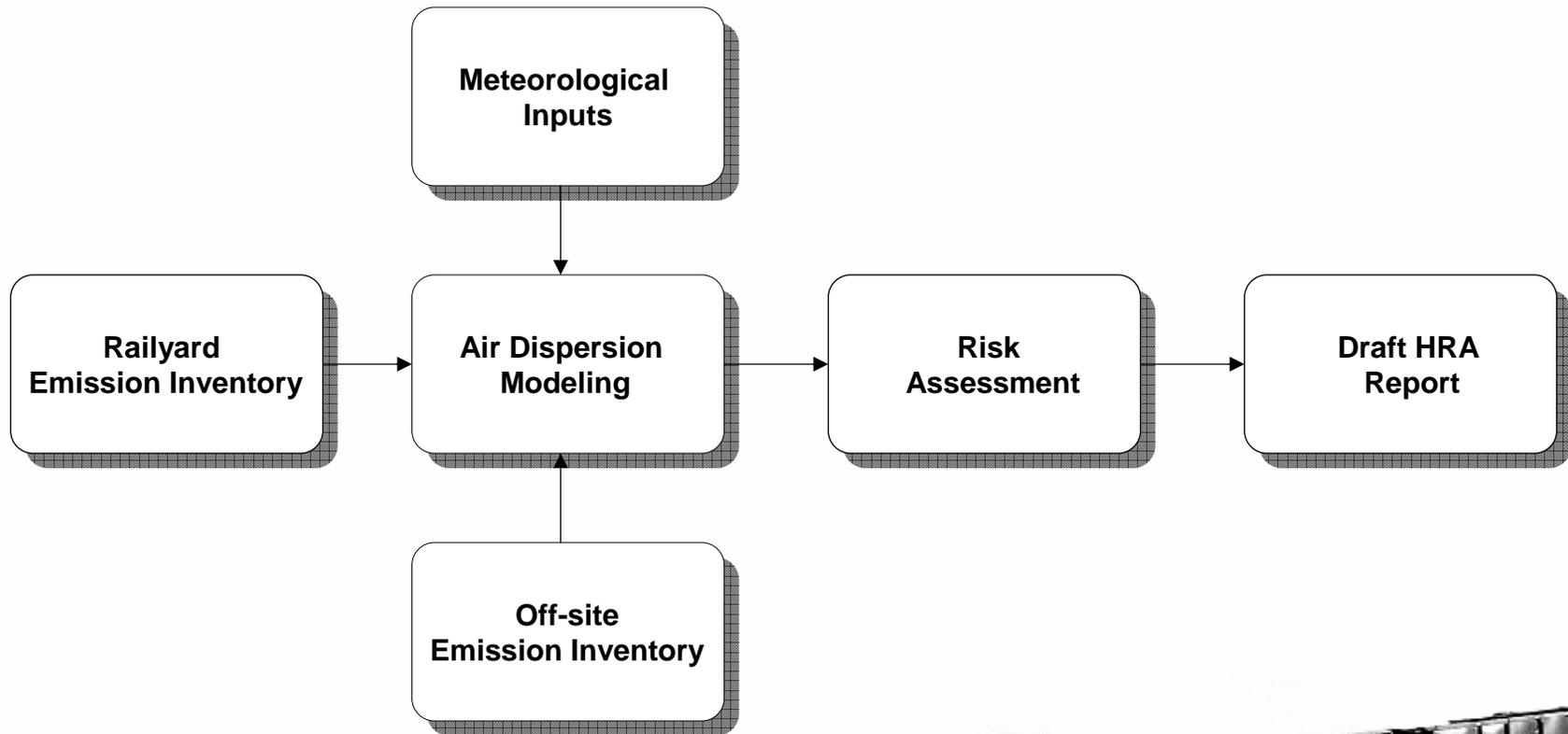
- Emission inventory inputs
- Meteorological inputs
- Computer model → TAC concentration distributions

## ➤ Health risk Assessment

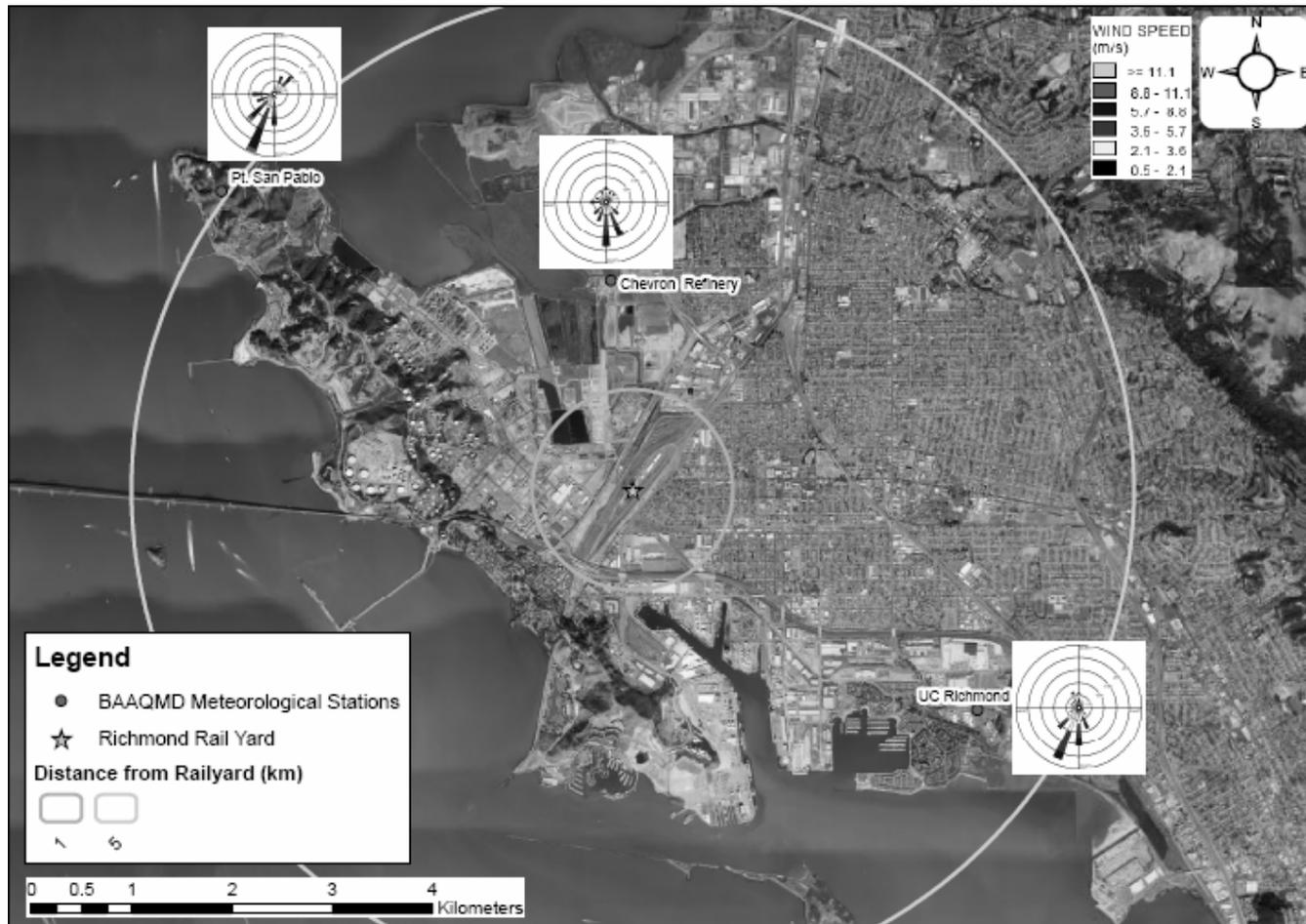
- Concentration distributions → health impacts
- 70-year-exposure for residents
- 40-year-exposure for workers



# Flow Chart of Railyard HRA



# Meteorological Inputs



# Air Dispersion Modeling

- **Recommended model: AERMOD**
- **Other acceptable models: ISCST3, CALPUFF, etc., on a case by case basis.**

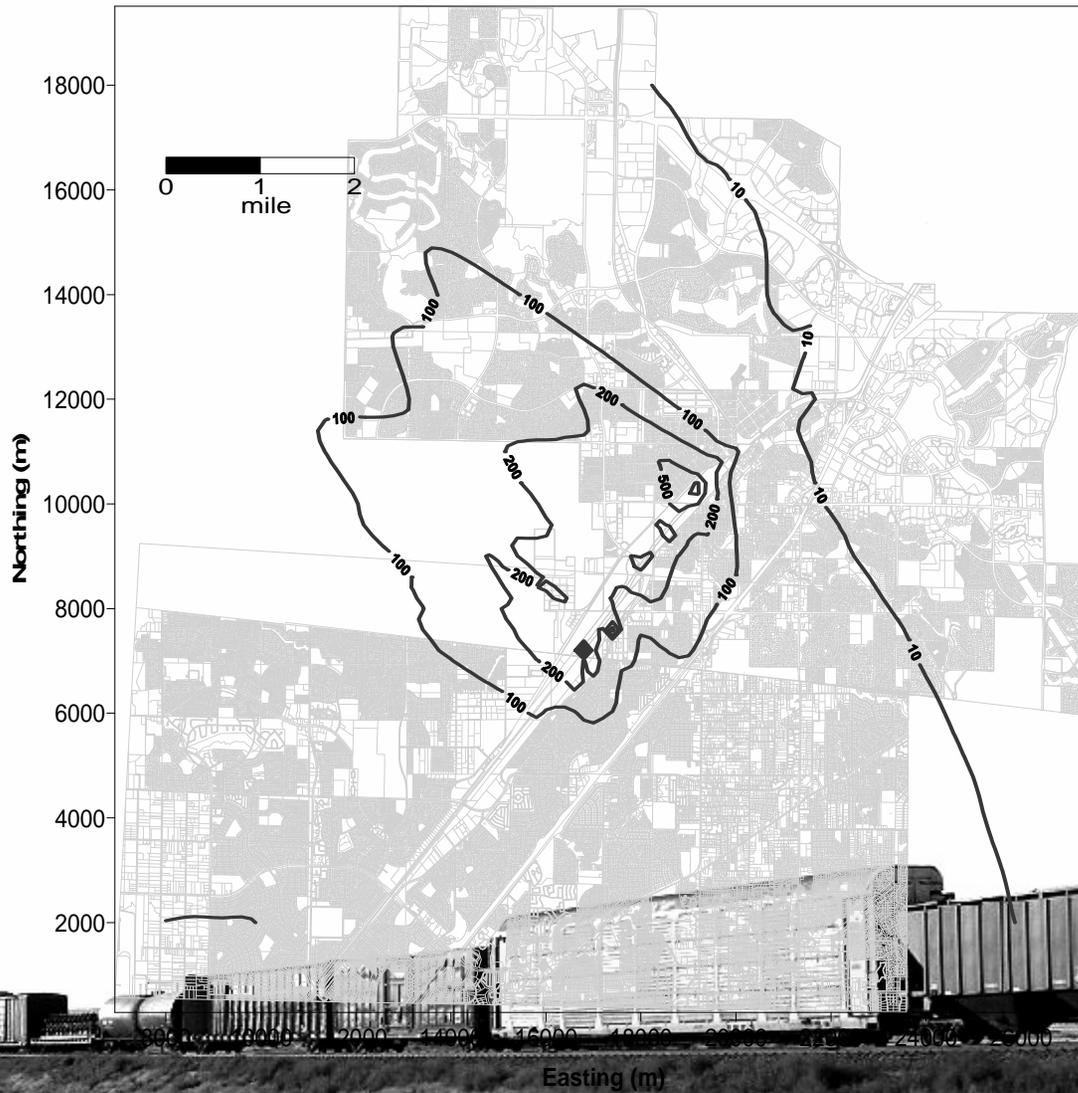


# Risk Assessment

- **Consistent with OEHHA HRA Guidelines and ARB Roseville Railyard Study.**
- **Estimate cancer risk, non-cancer chronic and acute health impacts.**

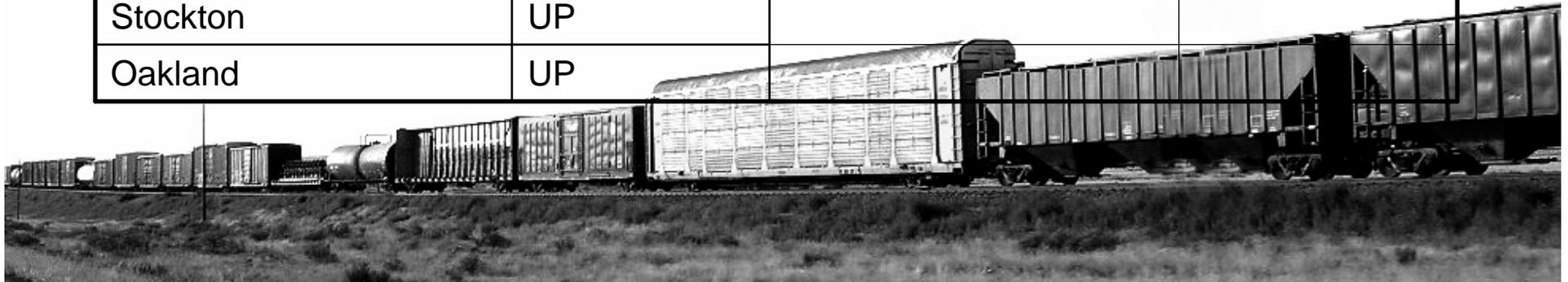


# Risk Assessment



# Railyard Health Risk Assessment Schedules

Draft Health Risk Assessments to be Completed by <u>December 31, 2006</u>		Draft Health Risk Assessments to be Completed by <u>December 31, 2007</u>	
Railyard	Company	Railyard	Company
Commerce/Eastern	BNSF	Barstow	BNSF
Hobart	BNSF	San Bernardino	BNSF
Richmond	BNSF	San Diego	BNSF
Stockton	BNSF	Colton	UP
Watson	BNSF	Dolores/ICTF	UP
Commerce	UP	Industry	UP
LATC	UP		
Mira Loma	UP		
Stockton	UP		
Oakland	UP		



# Community Involvement

- **Public workshops on Draft ARB Railyard Health Risk Assessment Guidelines:**
  - Northern California: 8/28/2006 (Sacramento)
  - Southern California: 8/30/2006 (Commerce)
- **Community meetings to discuss draft findings at each designated railyard:**
  - Early 2007 (first set of railyard HRAs)
  - Early 2008 (second set of railyard HRAs)
- **Additional discussions on mitigation measures for each designated railyard**



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- **ARB Railyard HRA Website:**
  - <http://www.arb.ca.gov/railyard/hra/hra.htm>

