

Draft Health Risk Assessment for the BNSF Barstow Railyard



California Environmental Protection Agency

 Air Resources Board



Presentation Overview

- **Background**
- **Methodology**
- **Results**
- **Actions to Reduce Health Risks**
- **Next Steps**



Background

- **Part of our commitment to address pollution impacts on communities**
 - Implementation of the ARB Goods Movement Plan
 - 2005 Railroad Agreement between ARB/UP/BNSF
- **State's goals**
 - Reduce exposure to diesel PM as quickly as possible
 - Reduce risks by at least 85 percent by 2020
 - Obtain the emission reductions needed to attain air quality standards



Health Risk Assessment Timelines

Railyard Health Risk Assessments Completed in 2007

BNSF Commerce/Eastern
BNSF Hobart
BNSF Richmond
BNSF Stockton
BNSF Watson
UP Commerce
UP LATC
UP Mira Loma
UP Stockton

Railyard Health Risk Assessments Completed/Released in 2008

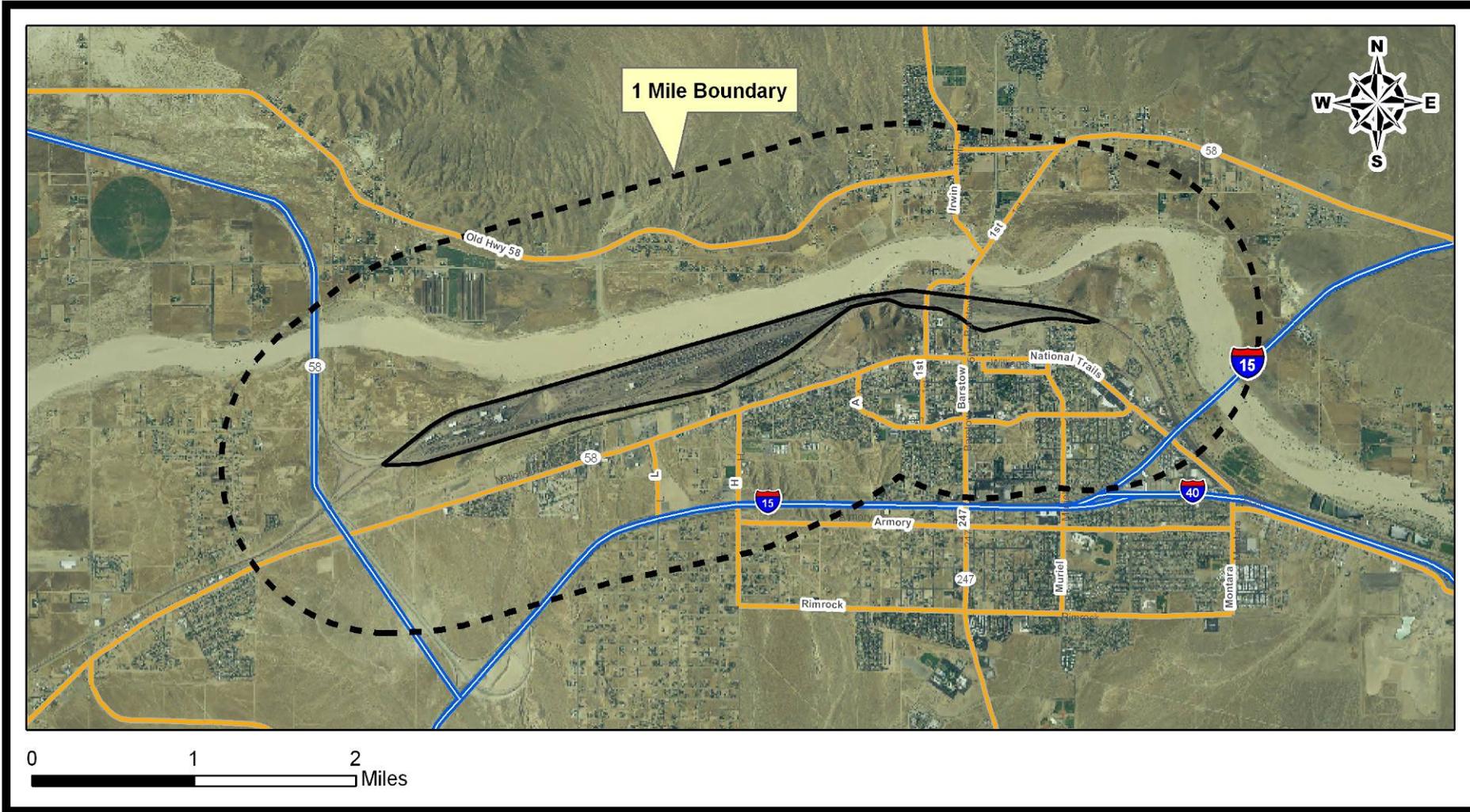
UP Colton
UP ICTF/Dolores
UP Industry
UP Oakland
BNSF Barstow (draft)
BNSF San Bernardino (draft)
BNSF San Diego (draft)

Methodology and Scope of the Study

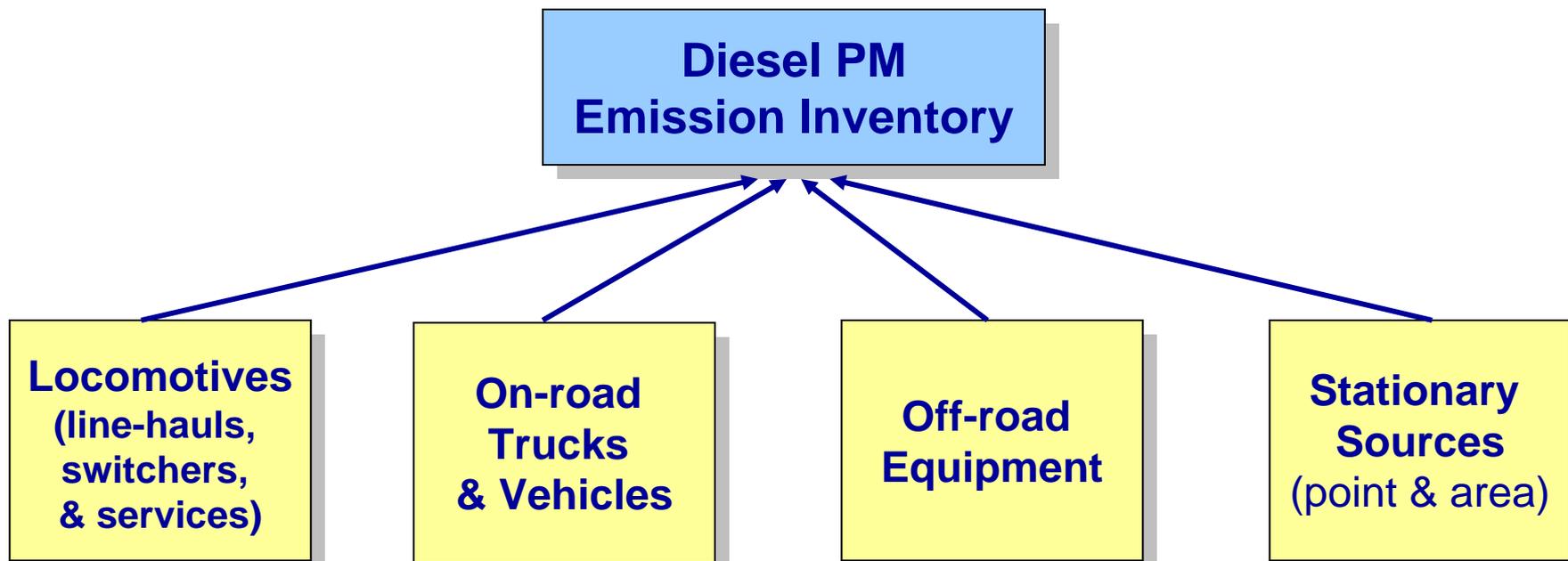
- **Two major parts:**
 - Estimation of diesel particulate matter air concentrations by computer modeling
 - Baseline emission inventory
 - Health risk assessment for significant diesel sources
- **Focus on diesel PM** - other toxics evaluated, small relative to diesel PM



BNSF Barstow Railyard with One-mile Off-site Boundary



Prepare Railyard Emissions Inventory



Summary of BNSF Barstow Railyard 2005 Diesel PM Emissions

DIESEL PM EMISSIONSOURCES	On-site Emissions		Off-site Emissions	
	Tons/Year	Percentage	Tons/Year	Percentage
LOCOMOTIVES	27.1	97%	-	-
<i>Line Haul Locomotives</i>	19.1	68%	-	-
<i>Arriving and Departing Trains</i>	14.8	53%	-	-
<i>Freight Movement on Adjacent Line</i>	4.3	15%	-	-
<i>Adjacent Line Commuter Rail Operations</i>	0.03	<1%	-	-
<i>Switch Locomotives</i>	4.7	17%	-	-
<i>Service/Testing/Refueling</i>	3.4	12%	-	-
OFF-ROAD EQUIPMENT/VEHICLES	0.64	2%	-	-
STATIONARY SOURCES	0.11	<1%	-	-
ON-ROAD TRUCKS	0.04	<1%	-	-
CARGO HANDLING EQUIPMENT	0.03	<0.1	-	-
OFF-SITE MOBILE SOURCES	-	-	26.0	100%
OFF-SITE STATIONARY SOURCES	-	-	0	0%
TOTAL	27.9	100%	26.0	100%

Nearby Non-Railyards Diesel PM Emission from Mobile Sources at 26 Tons per Year



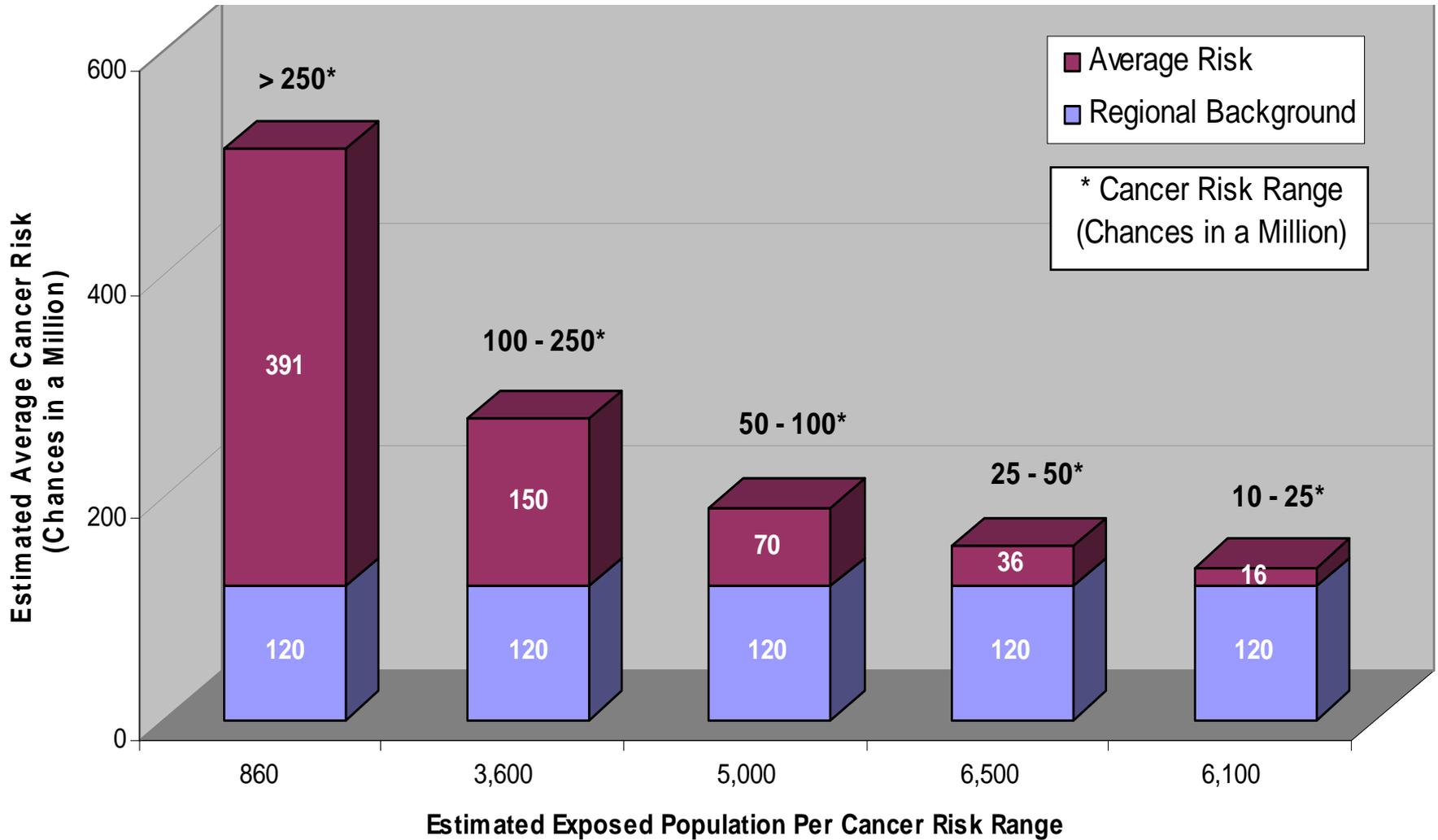
Comparison of Local Diesel PM Sources with Regional Sources

(tons per year in 2005)

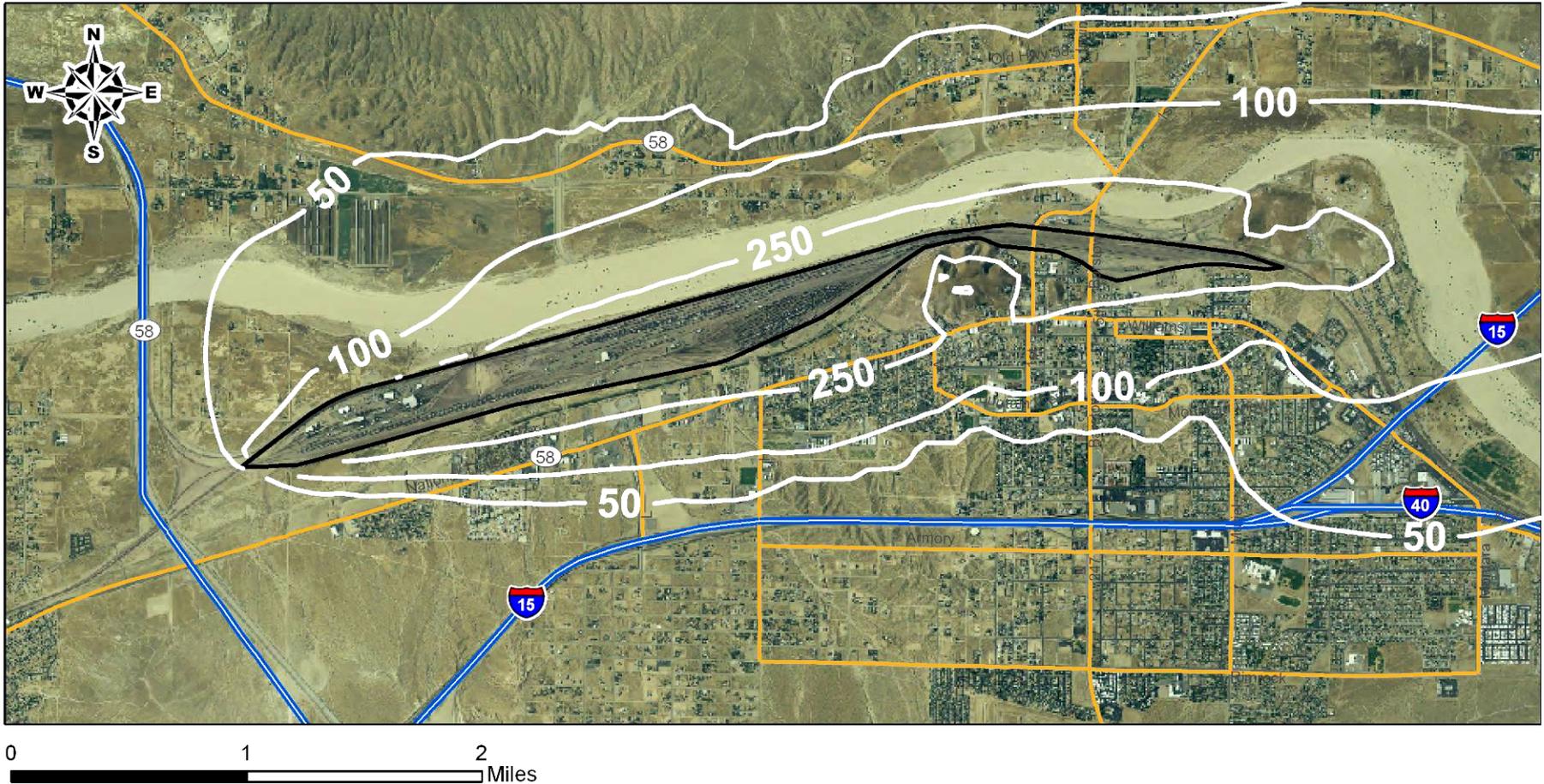
Sources	Locomotive	Cargo Handling Equipment	On-Road Trucks	Other (e.g. Ships, Refrig. Trailers)	Total
Mojave Desert AQMD					1,072
BNSF Barstow Railyard	27.1	0.03	0.04	0.75	27.9
Nearby Roadways	--	--	26	--	26



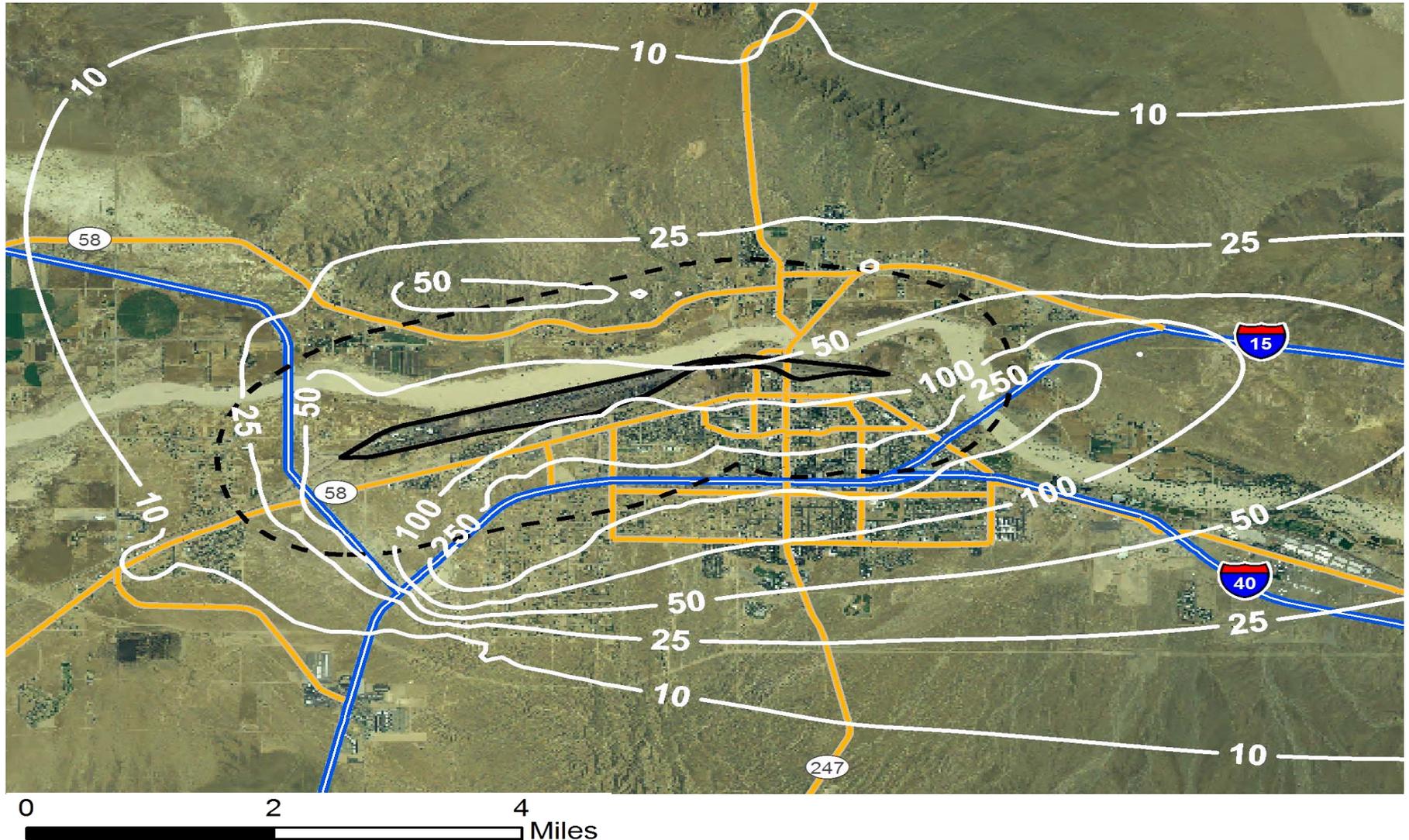
BNSF Barstow Railyard



Estimated Potential Cancer Risks for BNSF Barstow Railyard



Estimated Potential Cancer Risks for Non-Railyard Sources (Off-Site)



Actions to Reduce Health Risks



Approach to Reduce Emissions

- **ARB regulations**
 - Fuels (CARB diesel fuel)
 - Cargo handling equipment
 - Transport refrigeration units
 - Heavy-duty diesel on-road trucks and off-road vehicles
- **U.S. EPA regulation**
 - Locomotives
- **Voluntary agreements**
 - 1998 South Coast Fleet Average
 - 2005 Statewide
- **Railyard locomotive replacement program**
- **Funding programs**
 - Carl Moyer Incentives
 - Prop. 1B: Goods movement emission reduction program



Benefits of California Railyard Diesel PM Emission Reduction Measures

➤ 2005-2007

- CARB diesel fuel for intrastate locomotives
- 2005 railyard agreement

≈15-20%

➤ 2005-2010 (Additional Measures)

- 1998 NOx locomotive fleet average agreement (in South Coast Air Basin)
- ARB cargo handling equipment regulation
- ARB on-road heavy-duty truck regulation
- ARB transport refrigeration unit regulation
- ARB port and intermodal railyard drayage truck regulation

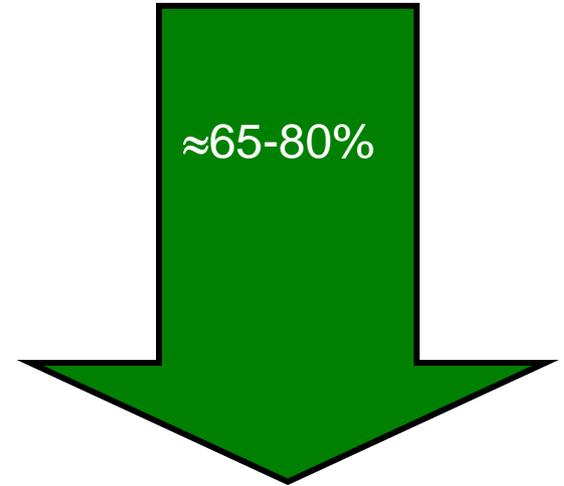
≈50-65%



Possible Additional Measures

➤ 2005-2020:

- U.S. EPA locomotive rulemaking (March 14, 2008)
- California replacement of switch locomotives



Next Steps

- **Begin public comment period**
- **Submit written comments to ARB**
- **Meet with interested stakeholders**
- **Evaluate any additional feasible mitigation measures**

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- <http://www.arb.ca.gov/railyard/hra/hra.htm>