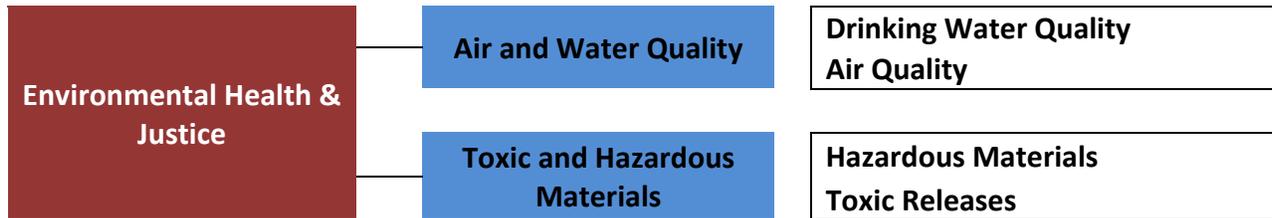


# Chapter 4 Environmental Health and Justice



The presence of major highways and industrial sites is a concern for the health of the people of Richmond. Pollutants affect both the outdoor and indoor air quality, increasing risk for chronic diseases. Improvements in state regulation of vehicle emissions and in the regulation of industrial emissions have a large impact on the quality of life and risk of Richmond residents. However, the historical presence of industrial sites with hazardous materials has led to land use restrictions in the city and continued clean-up processes.



The danger of hazardous and toxic materials and the air and water quality is assessed and monitored on a regular basis. With the passage of SB 535, a detailed assessment of risk by census tract is conducted by the California Office of Environmental Health Hazard Assessment (OEHHA). OEHHA carries out an assessment of vulnerability to environmental hazards using a tool called EnviroScreen<sup>1</sup>. In this tool, environmental hazards are modeled at the census tract level to determine the pollution burden, combined with population factors, and assigned a cumulative score to identify vulnerable census tracts in the state of California. For the purposes of this report, we examined select environmental indicators for the City of Richmond and West Contra Costa County.

<sup>1</sup> California Communities Environmental Health Screening Tool Report (CalEnviroScreen 2.0, updated October 2014)

# Air Quality

## Drinking Water Quality

East Bay Municipal Utility District (EBMUD) serves the City of Richmond. EBMUD sources its water from the Mokelumne River watershed in the Sierra Nevadas, but may pull from local watersheds and the Sacramento River during times of high water demand. Due to the drought, EBMUD used water supplies from the Sacramento River for the first time. The water that comes to Richmond is treated in the Orinda and Sobrante Treatment Plants. Water quality is rigorously and routinely tested. In the 2014 water quality report, the metrics tested surpassed every requirement set by the State Water Resources Control Board, Division of Drinking Water, and the US Environmental Protection Agency.<sup>2</sup>

## Outdoor air pollutants

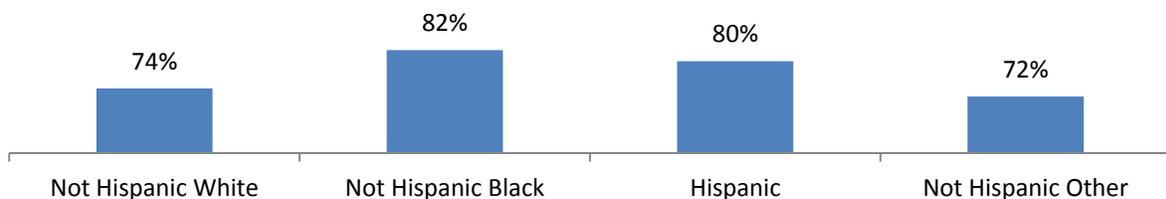
Diesel particulate matter (diesel PM) is generated by vehicle emissions and diesel fuel sources. The major sources are trucks, buses, cars, ships, trains, and heavy duty equipment. CalEnviroScreen uses California Air Resources Board (CARB) models diesel PM emissions from on road sources and forecasts off road sources using an emissions inventory forecasting system. The combined results were estimated at the census tract level (Map 1). Diesel PM sources in Richmond include the downtown area and many low income census tracts.

Traffic is a major source of air pollution in urban areas. Auto exhaust contains multiple pollutants, including toxic chemicals, nitrogen oxide, carbon monoxide and benzene. Residents who live near major roadways suffer health effects due to traffic density. CalEnviroScreen uses the traffic volume linkage tool and the Highway Performance Monitoring (HPMS) to measure model density within 500 feet of a census tract and then adjusts by road length to provide a traffic density metric (Map 2). As shown in the map, the major sources of traffic are centered on the Highway 80 corridor.

## Perceptions of Air Quality

Richmond city residents were asked how they would rate their air quality. In 2013 76% of Richmond residents reported that the air quality was fair or poor, this was not significantly different from the percent reporting fair or poor in 2007, 80%. The results did differ by race/ethnicity, with African Americans reporting the least confidence in air quality (82% fair or poor) and Whites reporting higher confidence (74% fair or poor) (Chart 1)

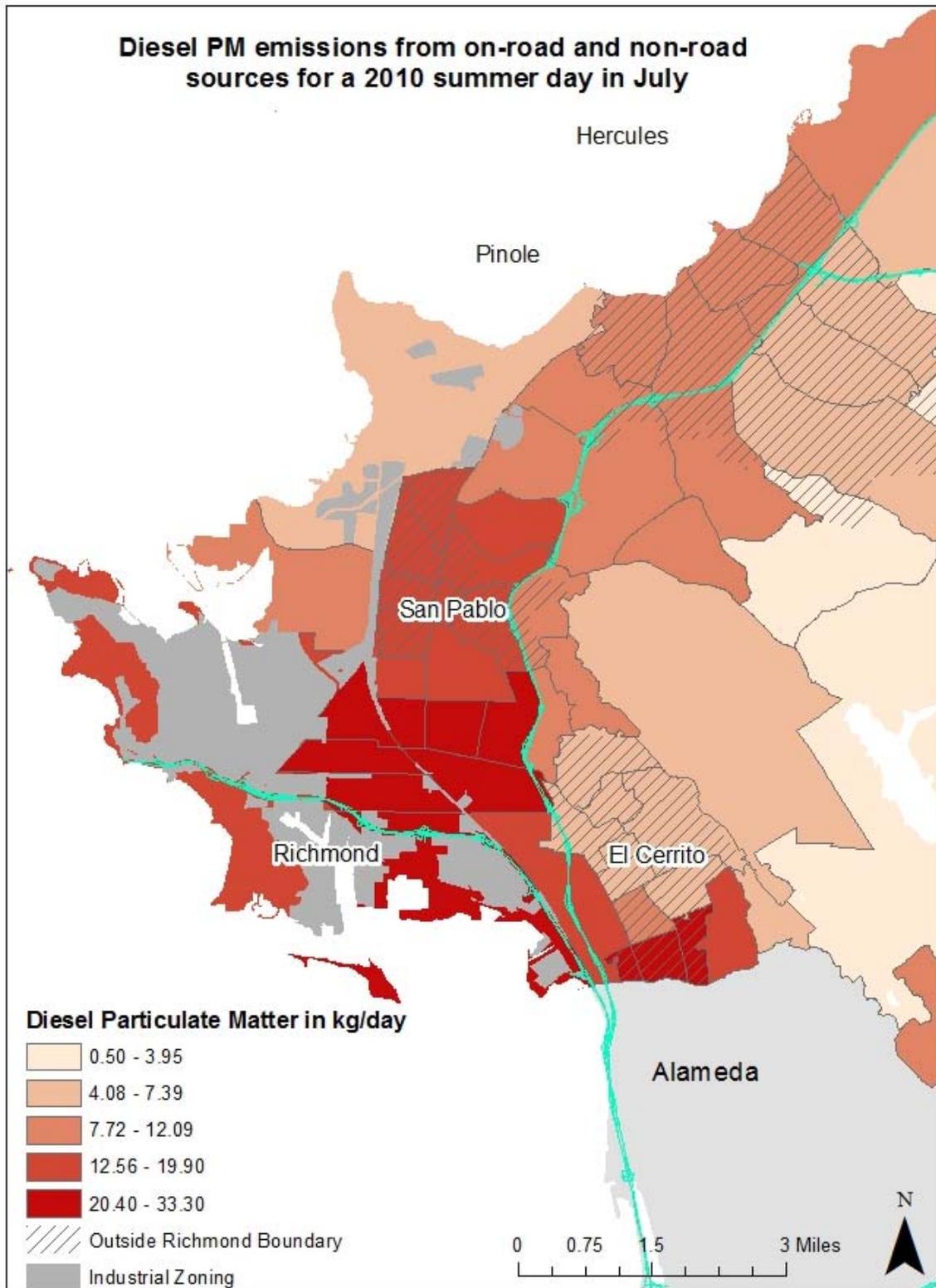
**CHART 1. PERCENT OF RICHMOND RESIDENTS REPORTING FAIR OR POOR AIR QUALITY BY RACE/ETHNICITY**



Source: Richmond City Survey, Combined years 2009, 2011, 2013

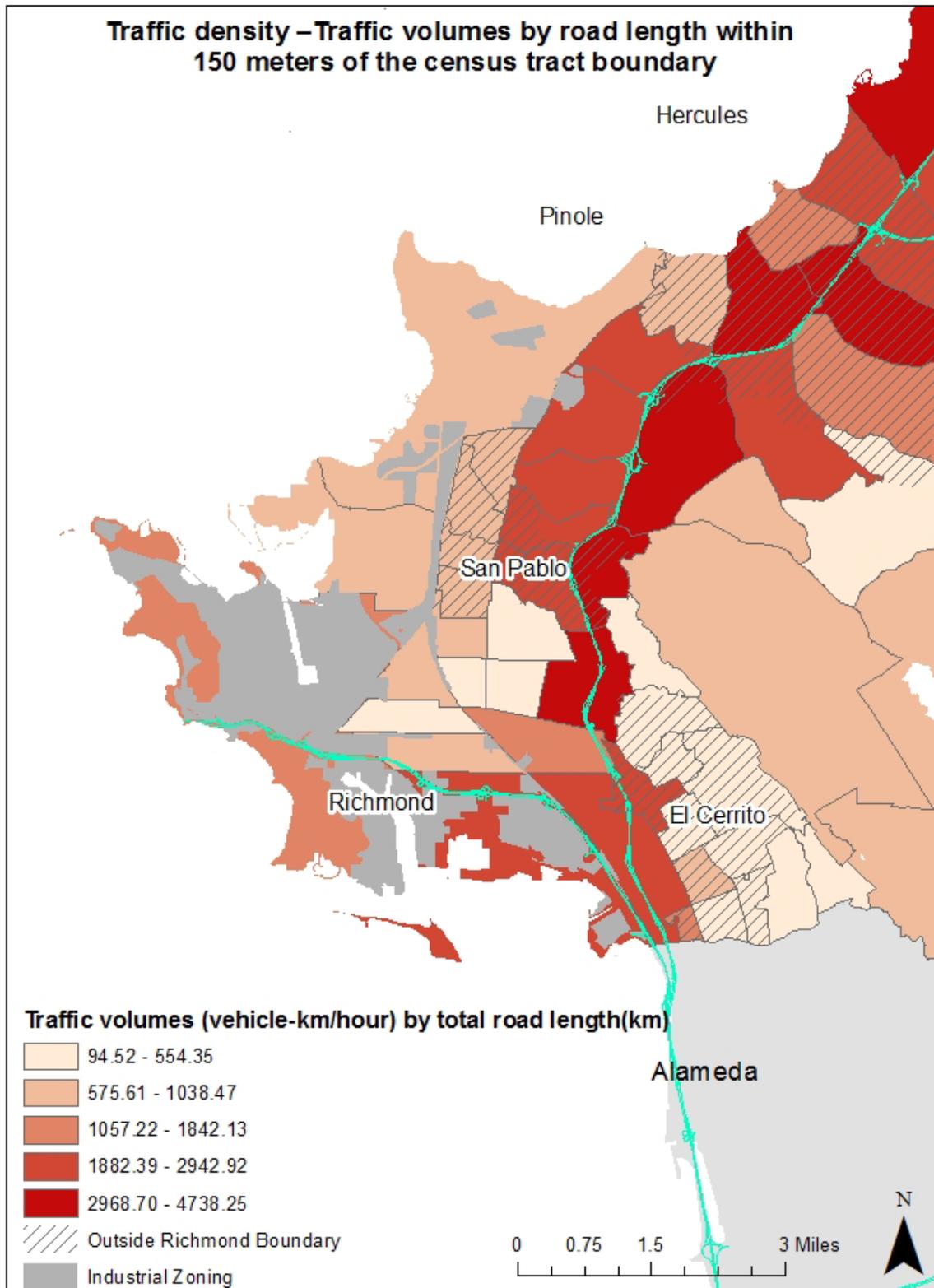
<sup>2</sup> EBMUD 2014 Annual Water Quality Report, <https://www.ebmud.com/customers/water-quality/>

MAP 1. DIESEL PARTICULATE MATTER EMISSIONS FROM ON-ROAD AND NON-ROAD SOURCES



Source: CalEnviroScreen 2.0; <http://www.oehha.ca.gov/ej>

MAP 2. TRAFFIC DENSITY-TRAFFIC VOLUMES BY ROAD LENGTH WITHIN 150 METERS OF CENSUS TRACT BOUNDARY



Source: CalEnviroScreen 2.0; <http://www.oehha.ca.gov/ej>

# Hazardous and Toxic Materials

## Exposure to Hazardous Materials and Toxic Sites

THERE ARE MULTIPLE INDICATORS TO ASSESS THE VULNERABILITY TO TOXIC SITES. HAZARDOUS MATERIAL CLEAN-UP SITES ARE SITES REQUIRED TO UNDERGO CLEAN-UP ACTIONS, AS THESE SITES HAVE SUFFERED ENVIRONMENTAL DEGRADATION DUE TO THE PRESENCE OF HAZARDOUS MATERIALS (

Map 3). There are often land use restrictions for these “brownfield sites”. Data is collected for these sites by the CA Department of Toxic Substances Control (DTSC) and can be found in the EnviroStor Cleanup Sites Database. This includes Superfund Sites, under regulation by the US Environmental Protection Agency. The indicator analyzed here takes into account the magnitude of the threat and burden posed by hazardous substance, creating a weighted measure which is adjusted based on the proximity of the site to populated census blocks. The shoreline of Richmond demonstrates a higher threat due to the presence of nearby cleanup sites.

Hazardous waste facilities and generators are captured in the CalEnviroScreen tool, using data collected and maintained by EnviroStor and DTSC (Map 4). The sites included here are permitted facilities involved in the treatment, storage, disposal of hazardous waste as well as hazardous waste generators (sites were included if they produced over 1,000 kg of waste per month for one of three years or produced waste types under federal regulation)<sup>3</sup>. Facilities are scored and weighted based on the type and permit status of the facility and weights are adjusted based on their proximity to populated census blocks. Many facilities exist in the City of Richmond and those areas with the most potential exposure to hazardous waste facilities and generators are at the shoreline and in low income census tracts.

Toxic releases are of particular concern in areas with industrial activity. The US EPA analyzes toxic releases and models potential exposures using a tool called the Risk Screening Environmental Indicators (RSEI). In the CalEnviroScreen tool, toxic air releases were modeled by RSEI and weighted based on potential toxicity concentrations in air (Map 5). Areas of particular concern include the shoreline area and low income census tracts.

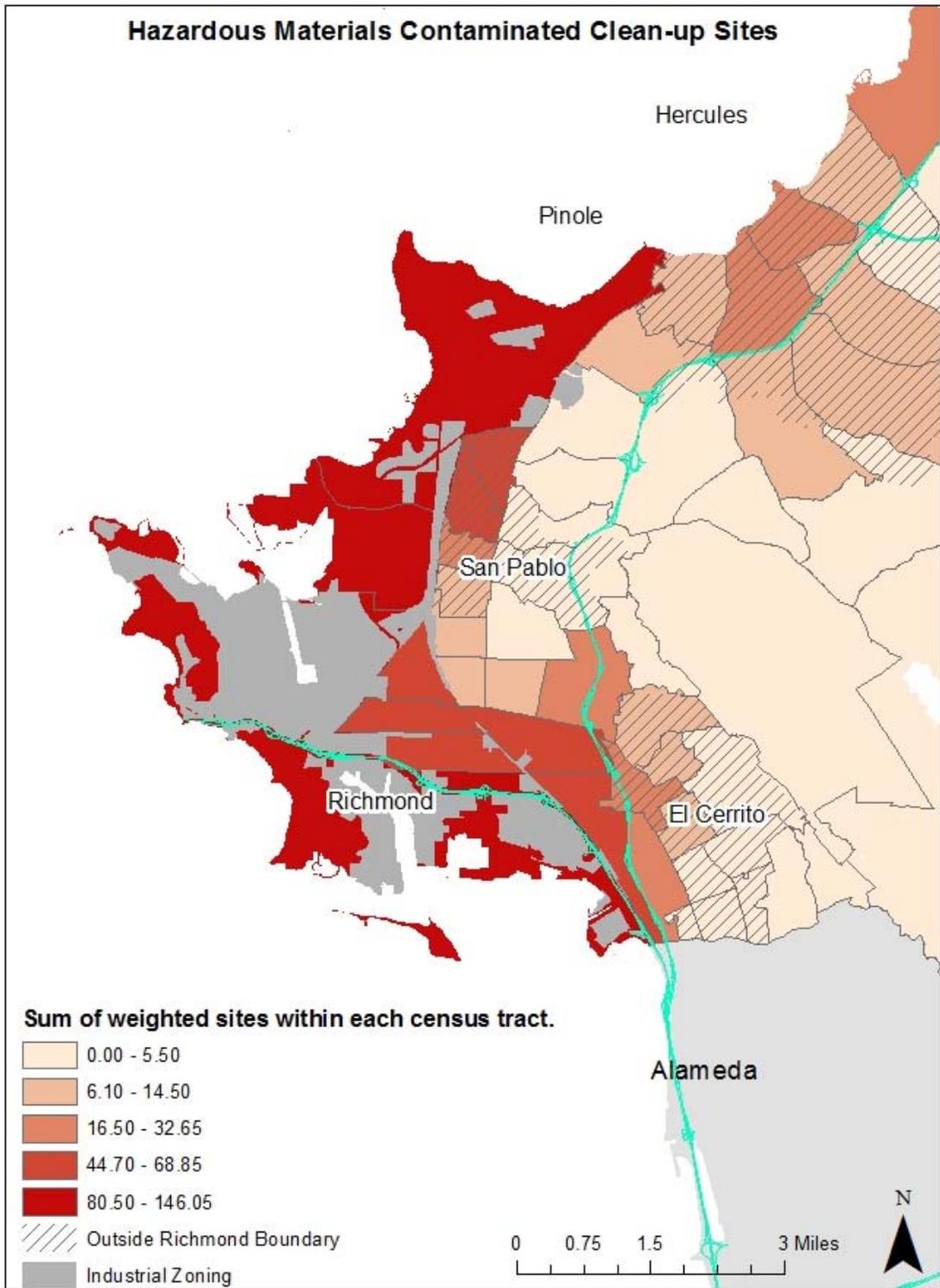
## Perceptions about Environmental Safety

Richmond city residents were asked how safe they felt about environmental hazards, including toxic waste. In 2013, 59% of Richmond residents reported they felt somewhat or very unsafe. We could not detect a difference from the response to the same question in 2007, where 61% of respondents reported feeling somewhat or very unsafe. The response to this question did not differ by race/ethnic group.

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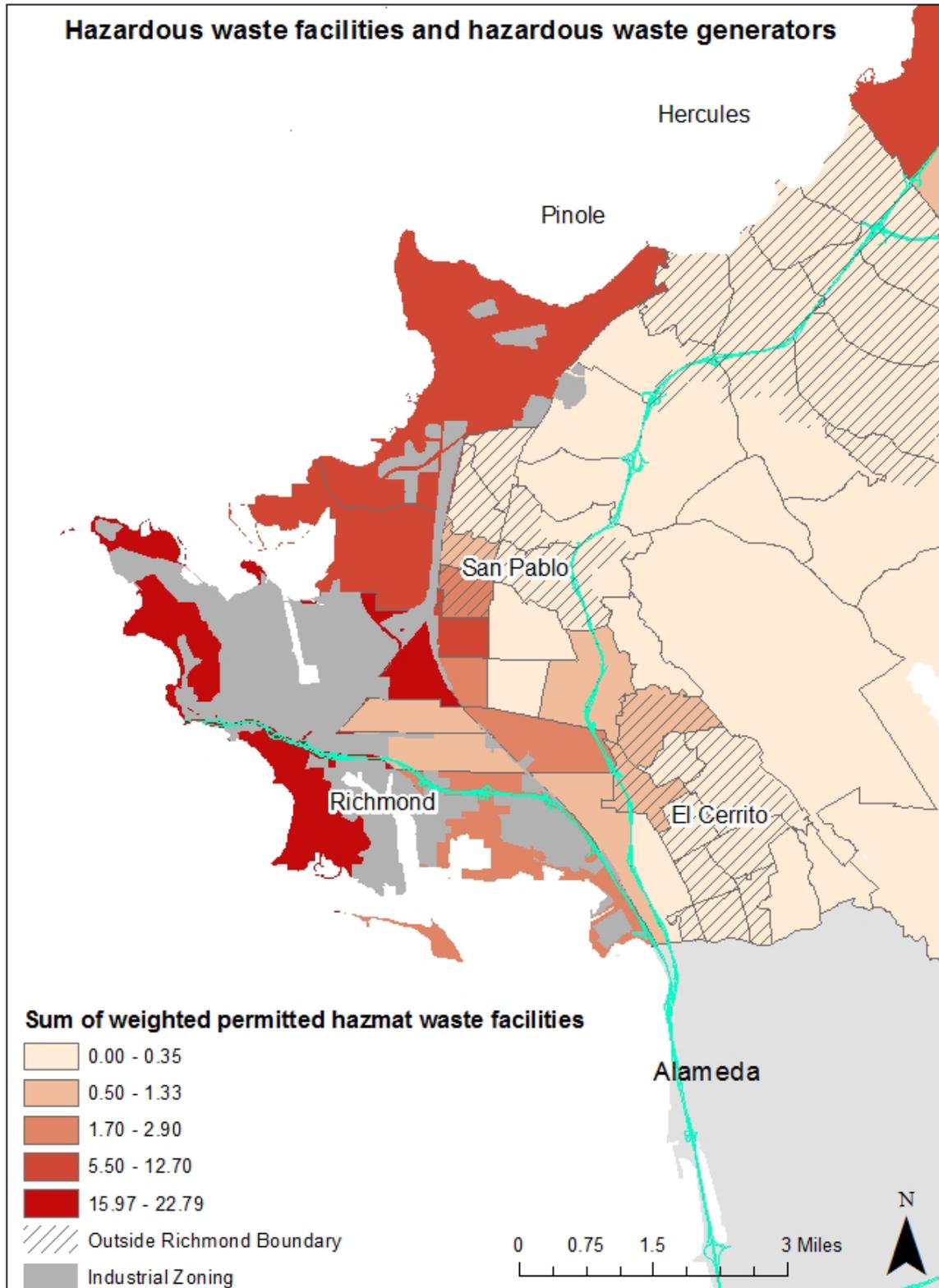
<sup>3</sup> Corresponds to over 13.1 tons per year; Federally regulated under RCRA: Resource Conservation and Recovery Act (List of RCRA waste: [http://www.epa.gov/osw/inforesources/data/br91/na\\_apb-p.pdf](http://www.epa.gov/osw/inforesources/data/br91/na_apb-p.pdf))

**MAP 3. HAZARDOUS MATERIALS CONTAMINATED CLEAN-UP SITES**



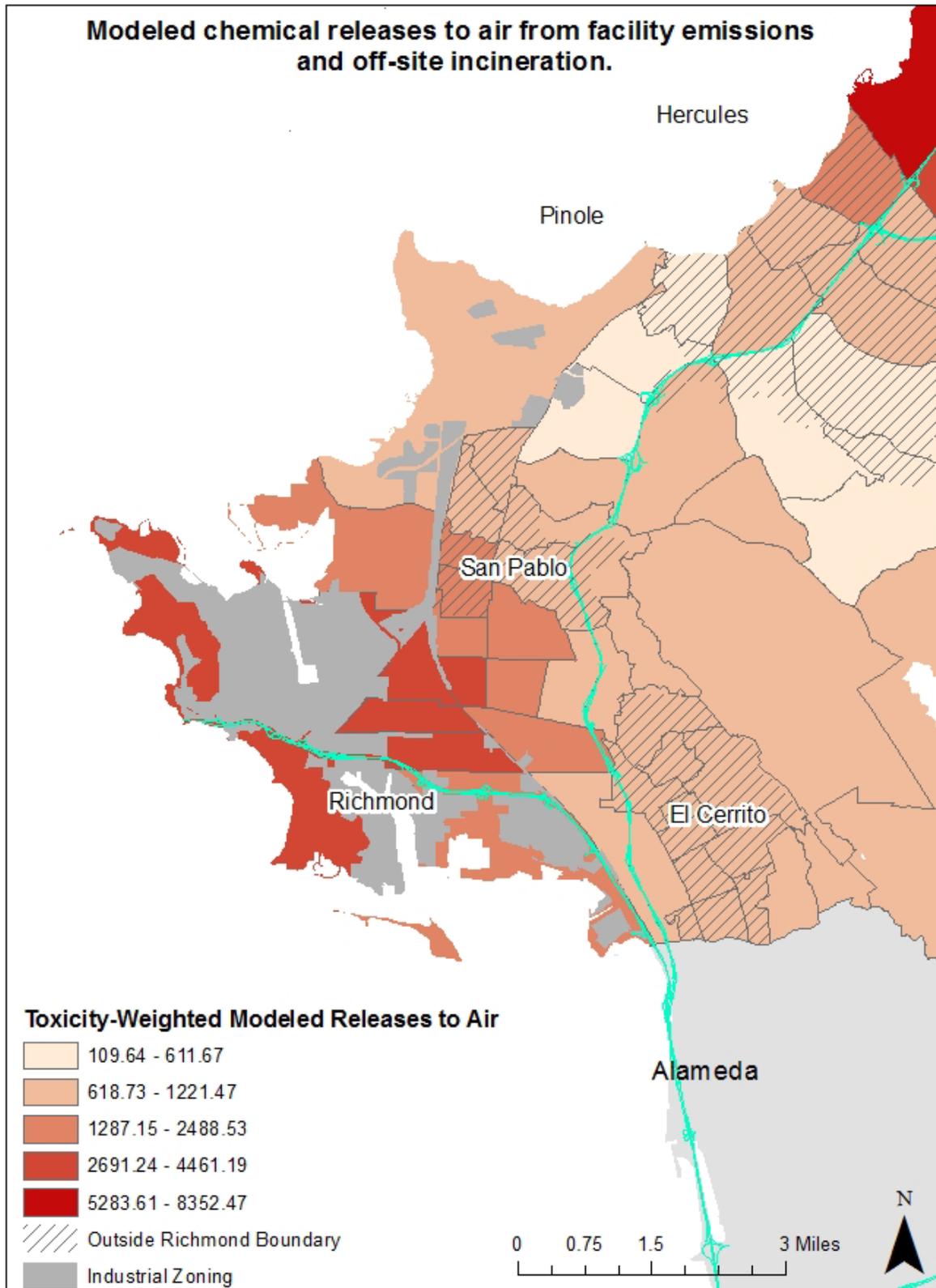
Source: CalEnviroScreen 2.0; <http://www.oehha.ca.gov/ej>

MAP 4. HAZARDOUS WASTE FACILITIES AND HAZARDOUS WASTE GENERATORS



Source: CalEnviroScreen 2.0; <http://www.oehha.ca.gov/ej>

MAP 5. TOXIC RELEASES-MODELED CHEMICAL RELEASES TO AIR FROM EMISSIONS AND INCINERATION



Source: CalEnviroScreen 2.0; <http://www.oehha.ca.gov/ei>