

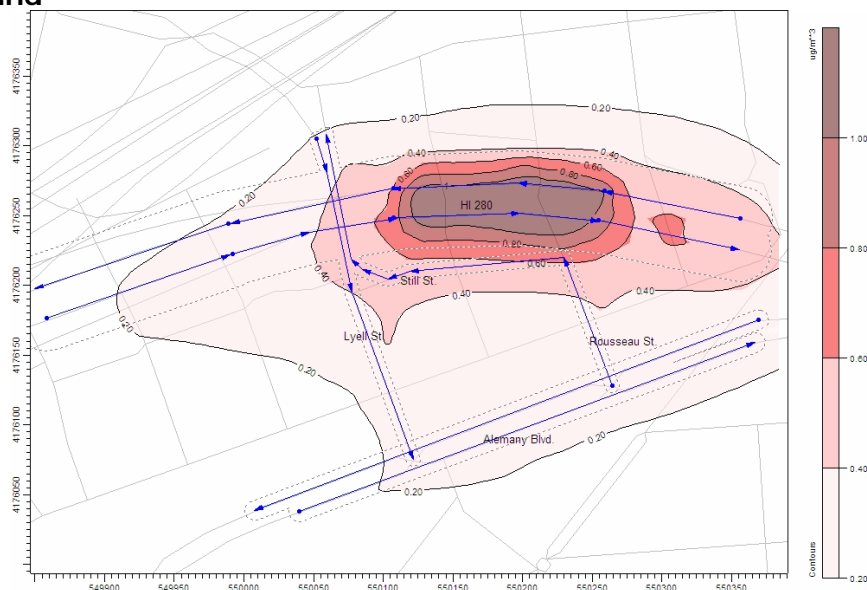
A Retroactive Health Impact Assessment of Traffic: *the Excelsior's Still/Lyell Freeway Channel*

Air Quality Analysis

The Excelsior study area is impacted by significant freeway and local traffic. The Lyell/Still interchange represents one of the major thoroughfares connecting San Francisco's southeast to the west. Heavy materials including concrete, asphalt, and building supplies are stored and processed in the southeast and then transported to the west through this interchange and its connections to Monterey and O'Shaughnessy Boulevards. Muni bus lines are directed through this channel further increasing traffic and associated air quality and noise emissions. The California Air Resources Board's *Air Quality and Land Use Handbook: A Community Health Perspective* (2005) recommends not locating sensitive land uses, including residential developments, within 500 feet of a highway with more than 100,000 vehicles per day.¹ The average annual daily traffic for Highway 280 at the Excelsior site is 180,000 vehicles. This highway traffic, coupled with intense local automobile, truck and bus traffic, creates an environment in which exhaust exposures can have a significant negative effect, especially on days with stagnant meteorology.

For the purpose of evaluating exposure in the study site area, the CALRoad View-CAL3QHCR model was used to determine both annual and highest day exposures. The model used hourly meteorological data from the San Francisco International Airport, emissions based upon the California Air Resources Board's EMFAC 2007 emissions model, traffic counts for Highway 280 conducted by California Department of Transportation, and local traffic counts conducted by PODER volunteers. All receptors were placed at 5 meters or approximately at the height of their dwellings. Figures 1 and 2, below, display the results of this modeling.

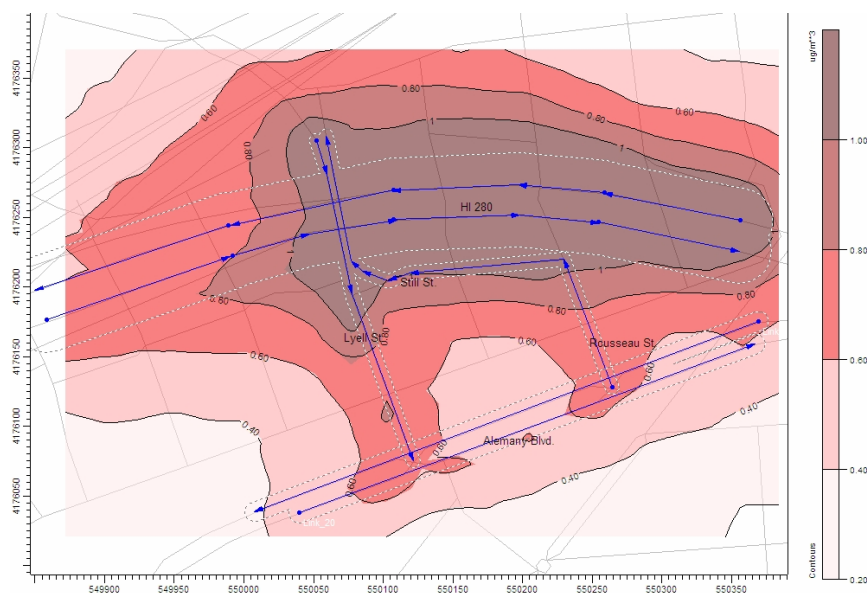
Figure 1: PM 2.5, Average Annual Exposure due exclusively to traffic, no background



1 California Environmental Protection Agency, California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005. Available at: <http://www.arb.ca.gov/ch/landuse.htm>

A Retroactive Health Impact Assessment of Traffic: *the Excelsior's Still/Lyell Freeway Channel*

Figure 2: PM 2.5, Highest Day exposure due exclusively to traffic, no background



Health Effects Analysis

There is not an established, health-based no effect level for PM 2.5 exposure. No federal or state agency has adopted a health-based standard for evaluating roadway-related pollution hot spots related to particulate matter. SFDPH therefore provides the following threshold to trigger action or mitigation.

0.2 ug /m3 of PM 2.5 with regards to the additional annual average contribution from roadway vehicles within a 500 ft buffer of a sensitive receptor.

The rationale for this threshold is enumerated below:

- A threshold of 0.2 ug / m3 represents about 8-10% of the range of PM 2.5 ambient concentration based on available and reliable monitoring data in San Francisco.
- Based on a recent study of intra-urban pollution in Los Angeles, a 0.2 ug /m3 increase in PM 2.5 would result in a 0.28% increase in non-injury mortality or an increase of about twenty-one excess deaths per 1,000,000 population per year from non-injury causes in San Francisco.²
- Applying the health effects assessment methodology and Concentration Response Functions in the CARB Staff Report on AAQS for PM published in 2002, a 0.2 ug /m3 increase in PM2.5 affecting a population of 100,000 adults would result in about 20 extra premature deaths per year.

² Jerrett M et al. Spatial Analysis of Air Pollution and Mortality in Los Angeles. Epidemiology. 2005; 16: 727-736

**A Retroactive Health Impact Assessment of Traffic:
*the Excelsior's Still/Lyell Freeway Channel***

- In the same adult population, a 0.2 ug /m³ increase in PM_{2.5} would also result in ~160 days per year with respiratory symptoms, 108 days with work limitations, and 577 days with minor activity limitations.

All of the study area is exposed above the 0.2 ug/m³ threshold and much of Lyell and Still Street are exposed at two times the threshold. These exposures represent the cumulative impact of exposures from freeway traffic, the informal diesel truck routes, the deployment of diesel bus lines, as well as neighborhood traffic volumes. These exposures are in addition to the background exposure levels experienced by all San Franciscans and impose additional health risk associated with neighborhood traffic volumes. These increased traffic volumes are the direct product of the decision to construct Highway 280 in this neighborhood, as well as other decisions made by public agencies affecting transportation and traffic in the area.