

# East Oakland Diesel Truck Survey Report



Communities for a Better Environment



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Diesel Truck Study Report  
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Truck study participants: Youth from Mayor’s Summer Program through Youth Uprising, CBE staff and community members.

## INTRODUCTION

In 2007, Communities for a Better Environment (CBE) undertook a study<sup>1</sup> of cumulative impacts in East Oakland and found East Oakland residents are living in close proximity to toxic pollution and are disproportionately burdened by cumulative impacts.<sup>2</sup>

This community-based research found a higher concentration of sensitive receptors and hazards in East Oakland than the inventories maintained by regulatory agencies showed. The study found 216 hazards and 49 sensitive receptors

near homes in a small area of East Oakland. Based on their observations, CBE members next prioritized documenting and addressing the problem of the diesel trucks driving through residential areas, passing schools and recreation centers, parking and idling (leaving their engines on while parked) illegally in neighborhoods.

Diesel trucks that are used for industrial purposes and the movement of raw materials and consumer goods have environmental justice impacts in East Oakland. Diesel trucks emit cancer-causing air pollution. Emissions from diesel trucks include benzene, particulate matter, polycyclic aromatic hydrocarbons, heavy metals, and soot. In addition to being carcinogenic, these substances contribute

to increased risk of asthma, respiratory disease and cardiovascular disease. Children, elderly and people with pre-existing diseases are especially vulnerable to these risks. More research is showing the links between diesel pollution and the onset of respiratory and cardiovascular disease.

Diesel truck emissions – the cloud coming out of the smoke stack on the side of trucks – are a mixture of gases and solids, including organic and black carbon, particulate matter (PM), ozone precursors (volatile organic compounds such as formaldehyde and acrolein, and nitrogen oxides), toxic metals, carbon monoxide, and sulfur oxides. Of these substances, 40 are listed as toxic chemicals by the California



Trucks parked on San Leandro Street by 81<sup>st</sup> Ave in East Oakland.



American Container Storage on San Leandro St and 92<sup>nd</sup> Ave in East Oakland with Port containers stacked higher than homes at Pulte site.

<sup>1</sup> In collaboration with Rachel Morello-Frosch, Jim Sadd, and Manuel Pastor.

<sup>2</sup> Anna Yun Lee. 2008. *Cumulative Impacts in East Oakland: Findings from a community-based mapping study*. Available at: <http://cbeocal.org>

Environmental Protection Agency. Diesel Particulate Matter (PM) can be large enough to see (soot) or smaller than the human eye can see. These particles can penetrate deep into the lungs and enter the bloodstream. Diesel trucks that transport freight make up approximately 50% of total diesel PM in California<sup>3</sup>. Diesel soot reduces visibility and is a strong player involved in global warming.

Diesel pollution is linked to adverse health problems and is a human carcinogen (See Figure 1). Short-term exposure to diesel PM can aggravate allergies, induce and exacerbate asthma symptoms, bronchitis and other lung disease.<sup>4</sup> Long-term exposure to diesel PM greatly increases a person's chances of developing lung cancer, cardiopulmonary disease, cardiovascular disease, asthma and bronchial infections.<sup>5</sup> Long-term, chronic or everyday exposure to particle pollution has been linked to shorter life-spans, premature births, increased risk of death due to lung cancer and cardiovascular disease, reduced lung growth and function in children, significant damage to the airways deep in the lungs, and increased hospitalizations for asthma attacks for children living near roads with heavy truck or trailer traffic.<sup>6</sup> The exposure of expecting mothers to elevated levels of diesel emissions such as polycyclic aromatic hydrocarbons (PAHs) have been linked to negative effects on children as they grow older. Short-term exposure to high levels of diesel PM is especially dangerous to children, elderly and those with existing medical conditions.<sup>7</sup> Truck drivers often face the highest exposure to diesel exhaust and are undercompensated for health effects in the freight transport

Air pollutant	Health effects by inhalation
Particulate matter	Can trigger asthma attacks, aggravate other lung diseases, cause lung cancer, interferes with blood getting oxygen, increase risk of death from heart disease
Sulfur compounds	Constriction of the air ways (severe for asthma sufferers), bronchitis-like conditions
Nitrogen oxides (especially nitrogen dioxide)	Lung irritation, aggravated asthma or chronic bronchitis, bronchitis and emphysema-like conditions, increased susceptibility to respiratory infections
Volatile Organic Compounds (VOCs): benzene, PAHs, 1,3-butadiene, and formaldehyde	Genetic mutations, reproductive problems, or cancer
Toxic particulates like metals	Genetic mutations, reproductive problems, or cancer
Ozone (formed from diesel components)	Coughing, chest pain, shortness of breath, eye, nose, and throat irritation; aggravated asthma, bronchitis, emphysema, heart disease and reduced resistance to colds and pneumonia

Figure 1. Table of direct or secondary air pollutants that generally make up diesel emissions and related health effects by inhalation.

<sup>3</sup> Lin, J; S Prakash. August 2008. Taking a Toll: The High Cost of Health Environment & Worker Impacts of the Oakland Port Trucking System. East Bay Alliance for Sustainable Economy and Pacific Institute. Available: [http://www.pacinst.org/reports/taking\\_a\\_toll/taking\\_a\\_toll.pdf](http://www.pacinst.org/reports/taking_a_toll/taking_a_toll.pdf)

<sup>4</sup> California Environmental Protection Agency, California Air resources Board and the Office of Environmental Health Hazard Assessment. April/ May 1998. *Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant*.

<sup>5</sup> Lin, J; S Prakash. August 2008.

<sup>6</sup> American Lung Association. 2009. State of the Air Report 2009. Available at: <http://www.lungusa2.org/sota/2009/SOTA-2009-Full-Print.pdf>

<sup>7</sup> Lin, J; S Prakash. August 2008.

industry<sup>8</sup> and also have higher risks of dying from lung cancer and heart disease.<sup>9</sup>

The Port of Oakland is the fifth largest seaport in the nation, based on annual container traffic. It has facilities for railroad and trucking operations to transport cargo brought in from ships. The Port operates over 13 container terminals that received 1,965 cargo vessels in 2006. Over 2 million freight containers were moved via the Port of Oakland in 2009, an 8% decrease from 2008.<sup>10</sup> The Port of Oakland is located in West Oakland. In Oakland, trucks weighing over 4.5 tons (these are heavy-duty trucks) are prohibited on Interstate 580 and can only use Interstates 80 and 880. Interstates 80 and 880 are located in the flatlands of Oakland, which are predominantly low-income communities of color. In 2005, Alameda County accounted for almost a quarter of the Bay Area annual average particulate matter (PM) 2.5 emissions and heavy-duty diesel trucks emitted on average 1.0 ton/ day PM 2.5 in

Alameda County compared to 2.3 tons/ day PM 2.5 Bay Area-wide.<sup>11</sup> These communities are disproportionately burdened by diesel pollution and have some of the highest cancer risks in the Bay Area (See Figure 2). Diesel trucks have other impacts that also affect health outcomes. Trucks often idle – leaving engines on while stopped or parked– in neighborhoods like East Oakland and in the process emit significant amounts of diesel emissions.<sup>12</sup> Trucks often drive on residential streets or in close proximity to residential areas. Heavy-duty trucks and related businesses have impacts on residents from noise, vibrations, safety, and damage to

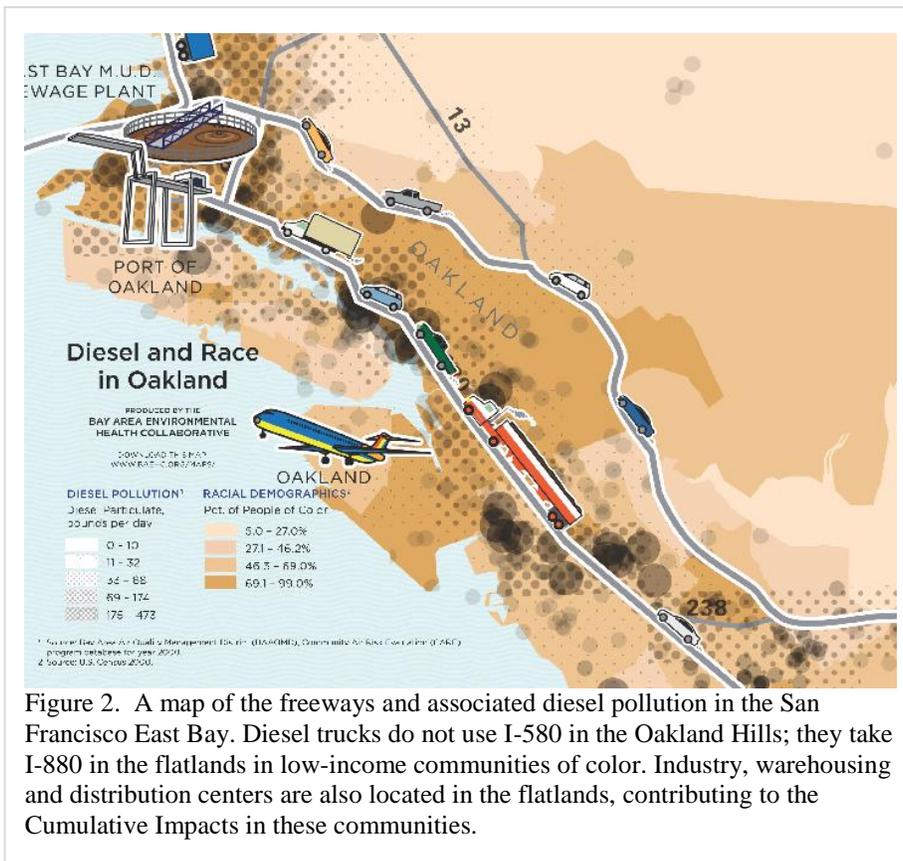


Figure 2. A map of the freeways and associated diesel pollution in the San Francisco East Bay. Diesel trucks do not use I-580 in the Oakland Hills; they take I-880 in the flatlands in low-income communities of color. Industry, warehousing and distribution centers are also located in the flatlands, contributing to the Cumulative Impacts in these communities.

<sup>8</sup> Palaniappan, M; S Prakash, D Bailey. November 2006. Paying With Our Health: The Real Cost of Freight Transport in California. Pacific Institute. Available: [http://www.pacinst.org/reports/freight\\_transport/PayingWithOurHealth\\_Web.pdf](http://www.pacinst.org/reports/freight_transport/PayingWithOurHealth_Web.pdf)

<sup>9</sup> American Lung Association. 2009. State of the Air Report 2009. Available at: <http://www.lungusa2.org/sota/2009/SOTA-2009-Full-Print.pdf>

<sup>10</sup> American Association of Port Authorities. North America Container Traffic 2009 Port Ranking by TEUs. Available at: <http://aapa.files.cms-plus.com/Statistics/NORTHAMERICANPORTCONTAINERTRAFFIC2009.pdf>

<sup>11</sup> Bay Area Air Quality Management District. Base Year 2005 Emissions Inventory Summary Report. December 2008. Available at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/Emission-Inventory-and-Air-Quality-Related/~media/A06B5C918A5F413B9BDBE0B63AC2340E.ashx>

<sup>12</sup> Palaniappan, M; S Prakash, D Bailey. November 2006.

roads.<sup>13</sup> These localized activities can have a significant impact on community health and safety from increased exposures and added chronic stress.

In the Bay Area:

Currently, reduction strategies are needed in the Bay Area to meet standards for PM 2.5 set by the U.S. Environmental Protection Agency. In the Bay Area in 2005, annual estimates of health impacts from Port (heavy-duty trucks) trucks alone add up to approximately \$153 million in health costs and include:<sup>14</sup>

- 18 premature deaths
- 284 cases of asthma and other lower respiratory symptoms
- 9 hospital admissions for respiratory reasons
- 4 hospital admissions for cardiovascular reasons
- 1,650 Work loss days
- 17,875 Minor restricted activity days
- 5,042 Missed school days

Alameda County's childhood asthma hospitalization rate is the second highest in California.<sup>15</sup>

Reducing diesel emissions in East Oakland is part of the solution to reducing the disproportionate health burdens for the most impacted communities and closing the health gap between flatland and Oakland Hills residents. The following excerpt from "Life and Death from Unnatural Causes" (2008) describes how the environment one grows up in – from the physical place where you live, your ethnicity, your income level, etc – are determinants of your health and how these health outcomes are astoundingly unequal between the Oakland Hills and the flatlands:

Compared with a White child in the Oakland Hills, an African American born in West Oakland is 1.5 times more likely to be born premature or low birth weight, seven times more likely to be born into poverty, twice as likely to live in a home that is rented, and four times more likely to have parents with only a high school education or less.

As a toddler, this child is 2.5 times more likely to be behind in vaccinations. By fourth grade, this child is four times less likely to read at grade level and is likely to live in a

## Bay Area Truckers: Don't Sit Idle

The California idling law says:

- It is illegal for any diesel-fueled truck over 10,000 lbs. to idle its primary engine for more than 5 minutes
- Big rigs with sleeper cabs may only use auxiliary power systems when they are more than 100 ft. from residential areas
- School buses must turn off engine upon arrival
- When not waiting for passengers to board, it is illegal for transit buses to idle for more than 5 minutes. When waiting for passengers to board, buses may idle for no more than 10 minutes. If passengers are on-board, buses have no idling limit.
- Port terminals may not keep truckers waiting longer than 30 minutes

Turn off your engines and save money on fuel and help the communities breathe cleaner air!

Violators face a \$300–\$1,000 fine or criminal charges.

### Report Violators:

- **Call Bay Area Air District: 1-800-EXHAUST**
- **Call Air Resources Board: 1-800-END-SMOG**
- **Go online:**  
<http://www.arb.ca.gov/enf/complaints/complaints.htm>

<sup>13</sup> Lin, J; S Prakash. August 2008.

<sup>14</sup> Lin, J; S Prakash. August 2008.

<sup>15</sup> Roberts EM, English PB, Wong M, Wolff C, Valdez S, Van den Eeden SK, et al. Progress in pediatric asthma surveillance II: geospatial patterns of asthma in Alameda County, California. *Prev Chronic Dis.* 2006 July. Available from: [http://www.cdc.gov/pcd/issues/2006/jul/05\\_0187.htm](http://www.cdc.gov/pcd/issues/2006/jul/05_0187.htm)

neighborhood with twice the concentration of liquor stores and more fast food outlets. Ultimately, this adolescent is 5.6 times more likely to drop out of school and less likely to attend a four-year college than a White adolescent.

As an adult, he will be five times more likely to be hospitalized for diabetes, twice as likely to be hospitalized for and to die of heart disease, three times more likely to die of stroke, and twice as likely to die of cancer. Born in West Oakland, this person can expect to die almost 15 years earlier than a White person born in the Oakland Hills.<sup>16</sup>

The accumulated environmental impacts are contributing to the enormous health disparities we see in East and West Oakland. East Oakland has a childhood asthma hospitalization rate 1.5 to 2 times higher than the Alameda County rate.<sup>17</sup> The childhood asthma rate for African American children is 2.5 times higher than the County rate; 12 times the Asian/ Pacific Islander rate and about 4 times the Latino and White rates.<sup>18</sup>

Retrofitting older truck engines, especially from heavy-duty trucks, by installing diesel filters helps to clean up diesel particulates. In 2004 and 2005 the California Air Resources Board (CARB) passed a 5-minute engine idling control regulation for heavy-duty diesel vehicles. Subsequently, in 2008, CARB passed a regulation to require all on-road heavy-duty diesel truck and bus engines travelling in California to have a 2010 year diesel engine or equivalent by 2023 with intermediary requirements starting in 2011. These regulations will significantly help to reduce pollution burdens so long as they are adequately implemented and enforced. However, they do not eliminate all health impacts from diesel trucks. Ports, freeways, truck routes and magnet sources are still located in low-income communities of color.



EBAYS youth counting a 3-axle Bobtail Port truck at 81<sup>st</sup> Avenue and San Leandro Street

<sup>16</sup> Alameda County Public Health Department. August 2008. Life and Death from Unnatural Causes: Health and Social Inequity in Alameda County. Available: [http://www.acphd.org/AXBYCZ/Admin/DataReports/00\\_2008\\_full\\_report.pdf](http://www.acphd.org/AXBYCZ/Admin/DataReports/00_2008_full_report.pdf)

<sup>17</sup> Alameda County Public Health Department. August 2008. Life and Death from Unnatural Causes: Health and Social Inequity in Alameda County. Available: [http://www.acphd.org/AXBYCZ/Admin/DataReports/00\\_2008\\_full\\_report.pdf](http://www.acphd.org/AXBYCZ/Admin/DataReports/00_2008_full_report.pdf)

<sup>18</sup> Alameda County Public Health Department. August 2008.

## CBE DIESEL TRUCK STUDY

We set out to examine one aspect of cumulative impacts – diesel trucks – in East Oakland. This East Oakland (EO) truck study is a community-based participatory research project completed in the summers of 2009 and 2010 to get more detailed data on the localized impacts of diesel trucks in East Oakland.

“My wish is that I am not constantly bombarded and over-ran on a daily basis in my residential community by 18-wheelers. There is no sharing of the road and residential streets with the 18-wheeler because he is King.”

-- Maxine Oliver-Benson, CBE member

We set out to determine the number of diesel trucks traveling through major and minor intersections in the area of East Oakland where major industry is adjacent to residential areas; identify the routes the truckers are using in comparison to the City truck route (See Figure 3); and obtain information about truck pollution.

This truck study methodology relies heavily on the study conducted in West Oakland by West Oakland Environmental Indicators Project with the Bay Area Air Quality Management District and consultants. Participants included: community members, CBE staff, an Oakland High Environmental Science student, youth

interns from Youth Uprising, students from the East Bay Academy of Young Scientists, and interns from UC Berkeley and Los Angeles. CBE hired Zuri Maunder, an experienced truck surveyor from the West Oakland Truck Survey, to help provide oversight and quality assurance. CBE staff conducted the training, created materials and supplies and coordination. Staff at the Bay Area Air Quality Management District (BAAQMD) reviewed plans and obtained truck engine ages from license plate information.

### How We Did It

CBE conducted the diesel truck survey from July 27 through August 6 and on October 26, 2009 at 13 locations. Counting locations were chosen on main arterials to entrances or exits for Interstate 880 and where the entrances and exits were in close proximity to schools, parks, and recreation centers (See Table 1 and Figure 4). Truck data was collected during the busiest days of the week – Monday through Thursday.

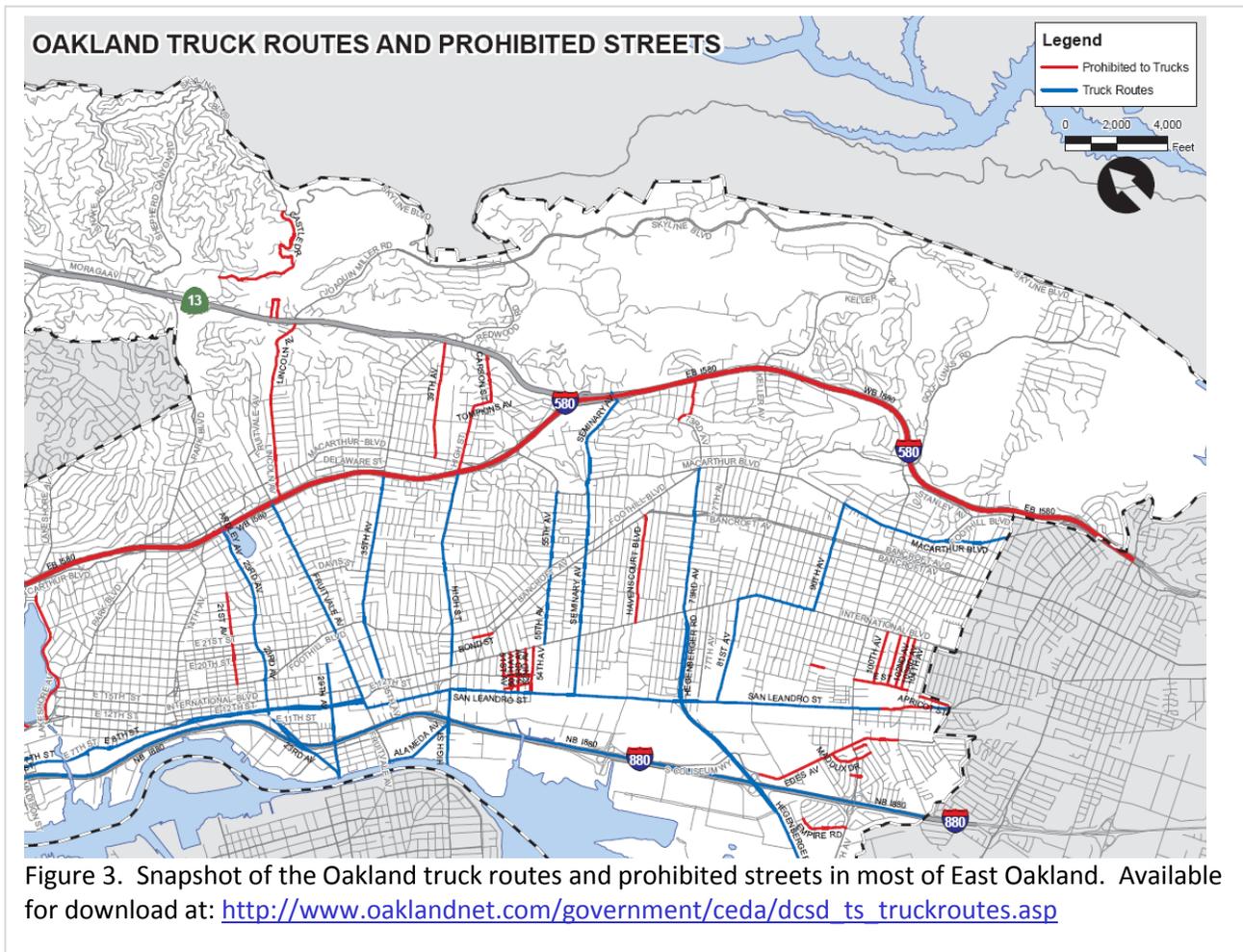
Teams were trained to count and classify trucks (in particular distinguishing between Port container trucks, non-drayage container trucks, and other trucks) and to collect license information (See Appendix for Operating Protocol). Surveyors counted trucks during 4 hour shifts – a morning shift from 9:30am – 1pm and an afternoon shift 1pm – 5pm. At each of the survey locations, teams recorded the number of axles on each passing truck,



UC Intern and youth working together to count a 5-axle non-Port truck at 98<sup>th</sup> Avenue and San Leandro Street.

identified whether the truck was a Port truck, direction of travel and license plate data (See Appendix, Table 4)<sup>19</sup>.

Surveyors were trained to determine locations to safely and efficiently count trucks. Frequency varied. Busy intersections were surveyed two 8-hour days total, while less busy intersections were surveyed only one 4-hour day. While counting trucks, survey teams also collected truck license plate data (about 10 licenses per hour) in order to gauge the engine year distribution of the diesel engines. This information was compiled by BAAQMD staff from Department of Motor Vehicles records.



<sup>19</sup> One caveat: A small portion of container trucks are attributed to local businesses that may not necessarily be Port-related and destined for transport via ship or train.

Table 1. Truck Study Locations

Intersection	Significance	Visits	Observation location	Surveyors
1.) 66 <sup>th</sup> Ave @ International	Truck route; residences, schools	2 weekdays	Near schools	2-3
2.) 66 <sup>th</sup> Ave @ San Leandro Street (SLS)	Truck route; residences, school	4 dates- 2 mornings, 2 afternoons	Sidewalk corners closer to residences	4
3.) Hegenberger Road @ Baldwin	Roadway from I-880 to heavy industry	4 dates- 2 mornings, 2 afternoons	Grassy area under tree	4
4.) 73 <sup>rd</sup> Ave @ International Blvd	Truck route	Half-day	Empty lot corner	4
5.) 73 <sup>rd</sup> Ave @ SLS	Roadway to I-880	1 morning, 1 afternoon	Across from BART station	2
6.) 75 <sup>th</sup> Ave @ SLS	Truck route	4 dates- 2 mornings, 2 afternoons	Near BART tracks	2
7.) 81 <sup>st</sup> Ave @ International	Truck route	Half-day	Near housing	4
8.) 81st Ave @ SLS (unique log sheet)	Truck route; schools and future library	4 dates- 2 mornings, 2 afternoons	Near BART tracks	2
9.) 85 <sup>th</sup> @ Baldwin Ave	Roadway to I-880	2 mornings	Corner opposite Enterprise Ctr	2
10.) 85 <sup>th</sup> Ave @ Edes Ave	I-880 exit, USPS, FedEx; residences	2 afternoons	SE corner closest to USPS property	2
11.) 85 <sup>th</sup> Ave @ SLS	Truck route; recreation center	4 dates- 2 mornings, 2 afternoons	Corners closer to residences	4
12.) 90 <sup>th</sup> Ave @ International	Truck route	Half-day	Parking lot corner	4
13.) 98 <sup>th</sup> Ave @ SLS	Truck route	4 dates- 2 mornings, 2 afternoons	Corner opposite BART tracks	4

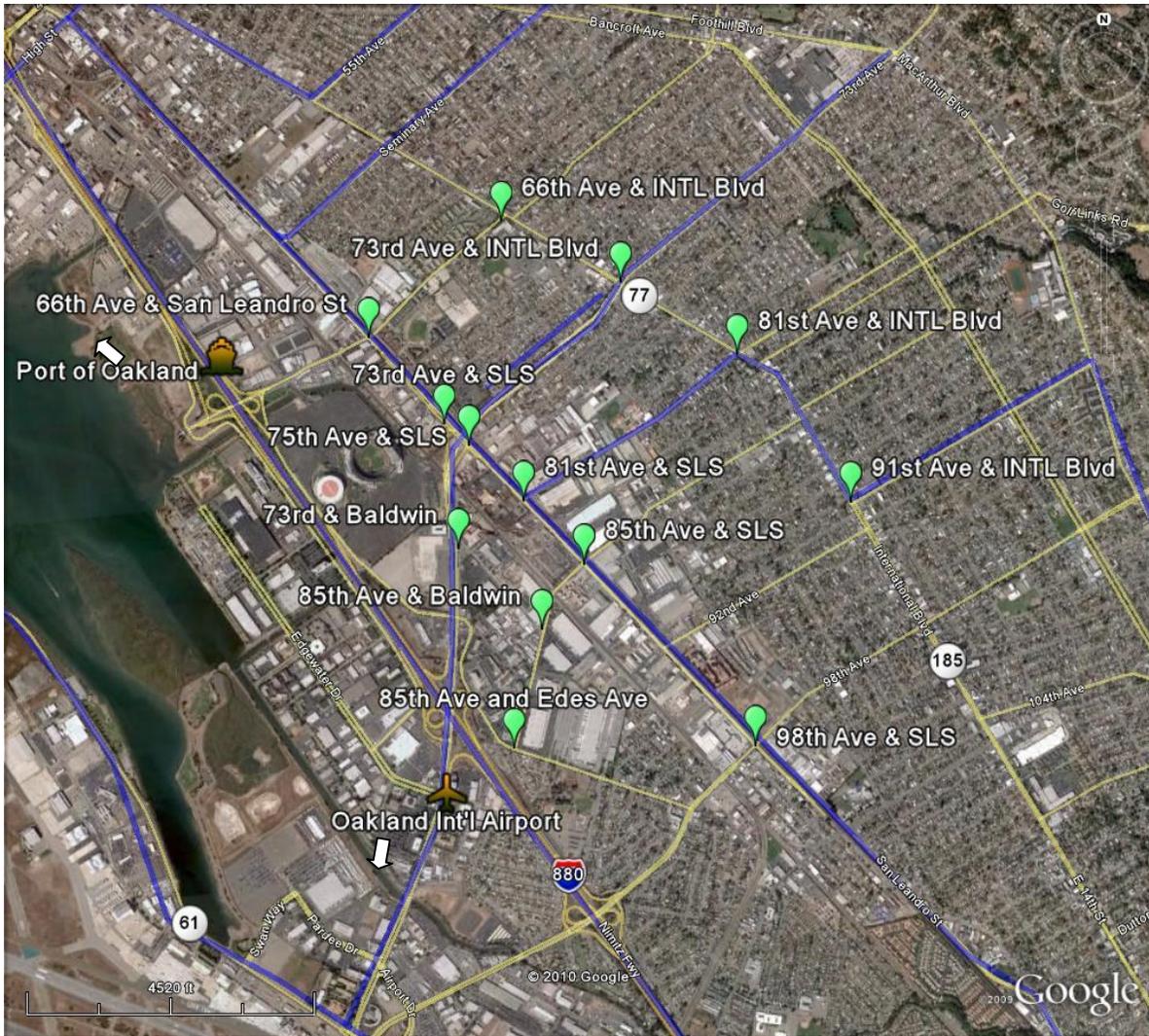


Figure 4. Map of truck survey locations (green markers) and City of Oakland designated truck routes (blue lines).

Number of truck axles is used to classify trucks because bigger and more polluting trucks such as freight trucks have more axles to support heavier loads. Truck axles are the supporting shaft/ beam that holds the tires in place on either side of a vehicle. The number of axles corresponds to the number of visible tires from a side-view of a truck. One axle holds two tires, one on each side of a vehicle. A single axle is counted even in cases where more than two tires are positioned on a single axle. Teams recorded the number of trucks based on the number of axles (See Appendix for more details on truck classification). Port trucks were categorized into three types depending on axle, tractor and trailer articulation with and without a container. The three types were bobtail, chassis and container trucks.

## What We Found

CBE counted a total of 11,664 diesel trucks over eight 4-hour days in the Summer of 2009 with additional counting (See Table 2).

INTERSECTION	TOTAL TRUCKS	TOTAL TRUCKS, A.M.	TOTAL TRUCKS, P.M.	A.M. #1	A.M. #2	P.M. #1	P.M. #2	NO. OF A.M. VISITS	NO. OF P.M. VISITS
66TH, INTL	646							2	2
73RD, INTL	179	0	179	0	0	179	0	0	1
81ST, INTL	222	0	222	0	0	222	0	0	1
90TH, INTL	119	0	119	0	0	119	0	0	1
85TH, EDES	311	0	311	0	0	168	143	0	2
HEGENBERGER, BALDWIN	2146	1016	1130	515	501	453	677	2	2
85TH, BALDWIN	484	484	0	235	249	0	0	2	0
66TH, SLS	1592	805	787	374	431	364	423	2	2
73RD, SLS	586	400	186	400	0	186	0	1	1
75TH, SLS	1386	711	675	381	330	287	388	2	2
81ST, SLS	759	284	475	284	0	234	241	1	2
85TH, SLS	1218	697	521	296	401	241	280	2	2
98TH, SLS	2016	923	1093	449	474	492	601	2	2
TOTAL: 11664									

Average daily truck volume was highest at Hegenberger Road at Baldwin; then 98<sup>th</sup> Ave at San Leandro Street; and lowest at 66<sup>th</sup> Ave at International Blvd (See Figure 5). The average morning truck volume was highest at Hegenberger Road at Baldwin; then 98<sup>th</sup> Ave at San Leandro Street; and lowest at 85<sup>th</sup> Ave at Baldwin (See Figure 5). The average afternoon truck volume was highest at Hegenberger Road at Baldwin; then 98<sup>th</sup> Ave at San Leandro Street; and lowest at 90<sup>th</sup> Ave at International Blvd (See Figure 5). The excluded intersections were not surveyed in the morning or afternoon or did not have data organized by time of day.

Generally, the intersections along International Blvd had lower afternoon truck counts compared to the average afternoon counts at the intersections along San Leandro Street. Morning averages were either the same or higher than afternoon averages at the respective intersections along San Leandro Street except for Hegenberger Road at Baldwin and 98<sup>th</sup> Ave at San Leandro Street, which had a higher afternoon average.

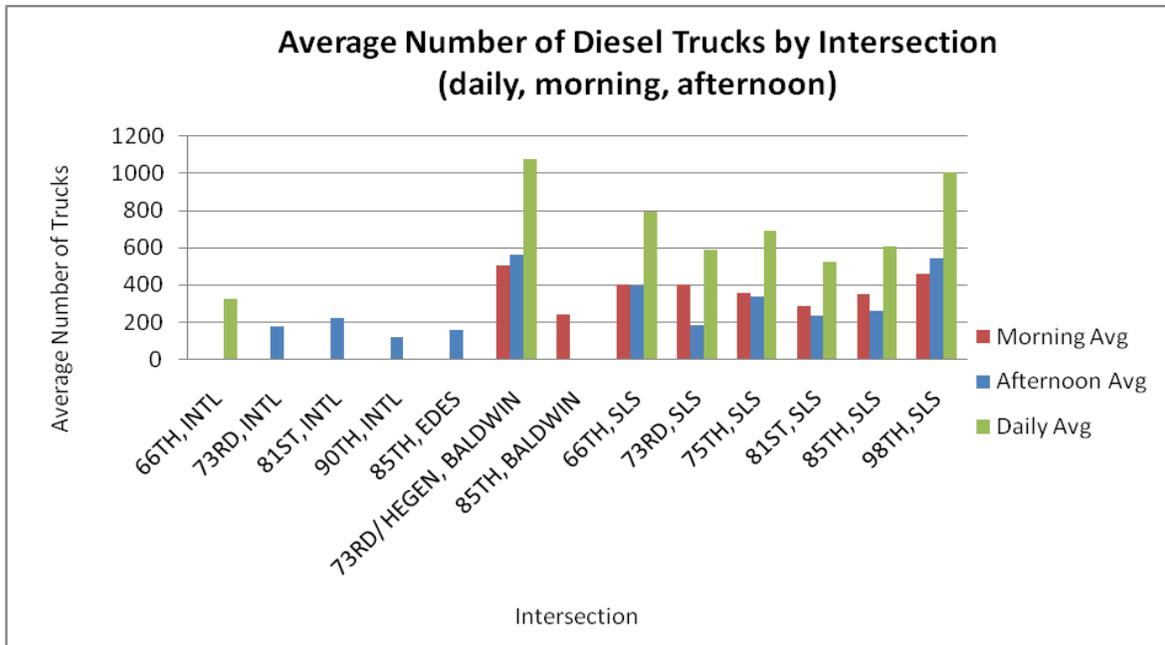


Figure 5. Average number of diesel trucks by intersection daily and for mornings (9:30am - 1pm) and afternoons (1pm- 5pm). Morning data was not collected along International Blvd and for 85<sup>th</sup> Avenue at Edes Avenue. The actual totals are shown for 73<sup>rd</sup> Avenue at San Leandro Street and the intersections along International Blvd; for the morning count for 81<sup>st</sup> Avenue at San Leandro Street; and daily counts for 73<sup>rd</sup> Avenue and 81<sup>st</sup> Avenue at San Leandro Street. SLS = San Leandro Street.

The largest category of trucks counted were 2-axle trucks. 3-axle or more trucks made up 50% of the trucks counted (See Figure 6). 5-axle non-Port trucks as well as 3-axle non-Port trucks made up large categories of trucks. Port trucks (3-axle bobtail, 5-axle I-beam and 5-axle Port container trucks added together) were a significant category of trucks and made up about 14% of the trucks counted.

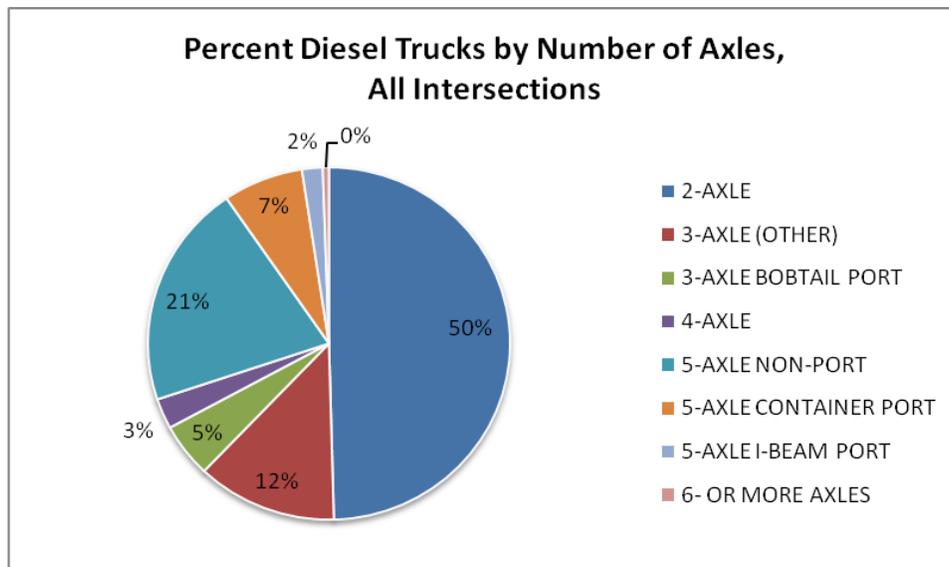


Figure 6. Percentage of diesel trucks by number of axles. Port trucks (3-axle bobtail, 5-axle container and 5-axle I-Beam diesel trucks added together) made up approximately 14% of total trucks counted.

The intersections along International Blvd had more 2-axle diesel trucks (65% and up) than the overall percentage with 3-axle Non-Port trucks and 5-axle Non-Port trucks making up the next largest types (See Table 3). The intersections along San Leandro Street had lower percentages of 2-axle trucks and more Port trucks (3-axle Bobtail, 5-axle Port Container and 5-axle I-beam), 5-axle non-Port and 6-axle trucks than intersections along International Blvd.

66<sup>th</sup> Ave at San Leandro Street had the highest percentage of 3-axle non-Port and 3-axle Bobtail trucks. 85<sup>th</sup> Ave at Baldwin Ave had the highest percentage of 4-axle and 5-axle non-Port trucks. Hegenberger Road at Baldwin also had a high percentage of 5-axle non-Port trucks. 66<sup>th</sup> Ave at International Blvd had the largest percentage of 5-axle Non-Port trucks (20%) of the intersections along International Blvd. Hegenberger Road at Baldwin Ave and 66<sup>th</sup> Ave at San Leandro Street had the highest percentages of 5-axle Port container trucks. 75<sup>th</sup> Ave at San Leandro Street had the highest percentage of 5-axle I-beam trucks. 81<sup>st</sup> Ave at San Leandro Street had the highest percentage of 6-axle or more trucks. 66<sup>th</sup> Ave at San Leandro Street had the highest percentage of Port trucks inclusive (20.42%).

Table 3. Percent Diesel Trucks at Intersections by Axle Type

INTERSECTION	TOTAL TRUCKS, ALL TIMES	2-axle	3-axle Non-Port	3-axle Port Bobtail	4-axle	5-axle Non-Port	5-axle Port Container Truck	5-axle Port I-Beam Chassis	6- or more axle
66TH, INTL	646	64.55	11.15	2.32	1.24	19.97	0.62	0.15	0
73RD, INTL	179	81.01	11.17	0.56	1.12	6.15	0	0	0
81ST, INTL	222	91.44	5.41	0.45	0.90	1.80	0	0	0
90TH, INTL	119	87.39	5.04	0.84	1.69	5.04	0	0	0
85TH, EDES	311	59.81	12.86	4.50	3.54	12.86	3.54	2.57	0.32
HEGENBERGER, Baldwin	2146	37.74	13.65	3.87	3.26	29.92	10.72	0.51	0.33
85 <sup>TH</sup> , Baldwin	484	37.81	11.57	5.58	4.13	31.82	5.17	3.51	0.41
66TH, SLS	1592	47.36	14.51	7.54	2.32	15.01	10.68	2.20	0.38
73RD, SLS	586	56.31	12.29	3.58	1.88	18.09	7.17	0.34	0.34
75TH, SLS	1386	48.12	13.20	5.56	1.95	16.96	8.73	5.05	0.43
81ST, SLS	759	45.32	11.59	7.25	3.82	21.61	6.32	1.71	2.37
85TH, SLS	1218	50.99	10.34	6.32	2.87	18.39	8.21	2.05	0.82
98TH, SLS	2016	50.50	12.95	4.37	3.52	22.27	4.17	1.64	0.60

Averages for 4-axle or more truck volumes varied among the intersections. The highest daily, morning and afternoon 4-axle+ truck averages was at Hegenberger Boulevard and Baldwin Avenue (See Figure 7).

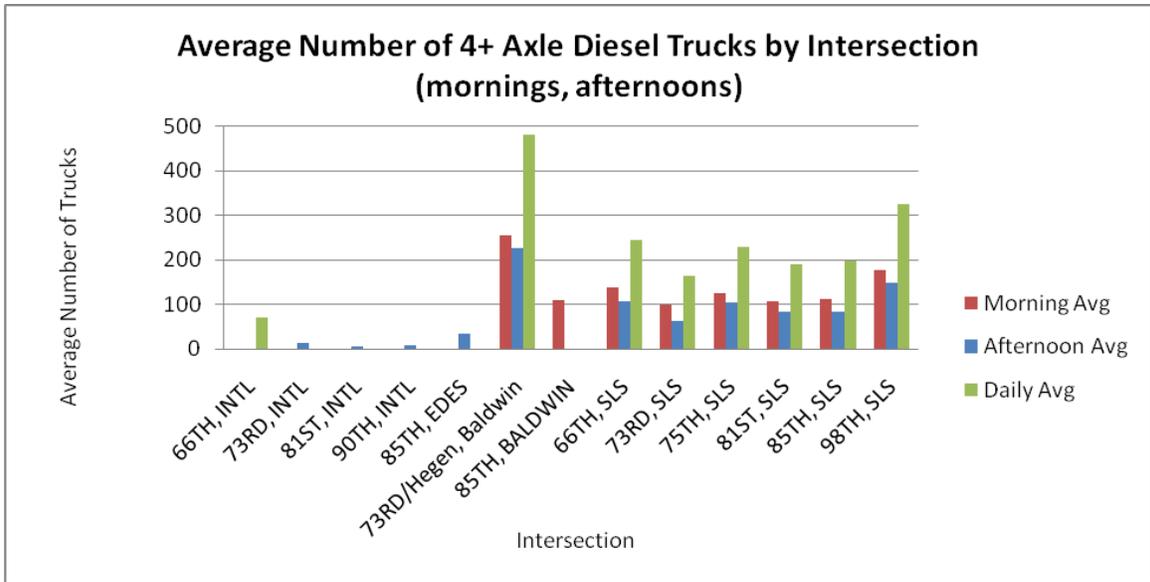


Figure 7. Average 4- axle+ diesel truck volumes by intersection (daily; mornings (9:30am-1pm); and afternoons (1pm-5pm). Morning data was not collected at 73<sup>rd</sup>, 81<sup>st</sup>, 90<sup>th</sup> and 85<sup>th</sup> and Edes Avenues. Afternoon data was not collected at 85<sup>th</sup> Avenue at Baldwin Avenue.

Truck engine years varied from 1951 to 2009 (see Figure 8). The median year was 2000. Out of the list of 1790 truck license numbers collected, 1163 trucks were available with engine year information in the DMV database.

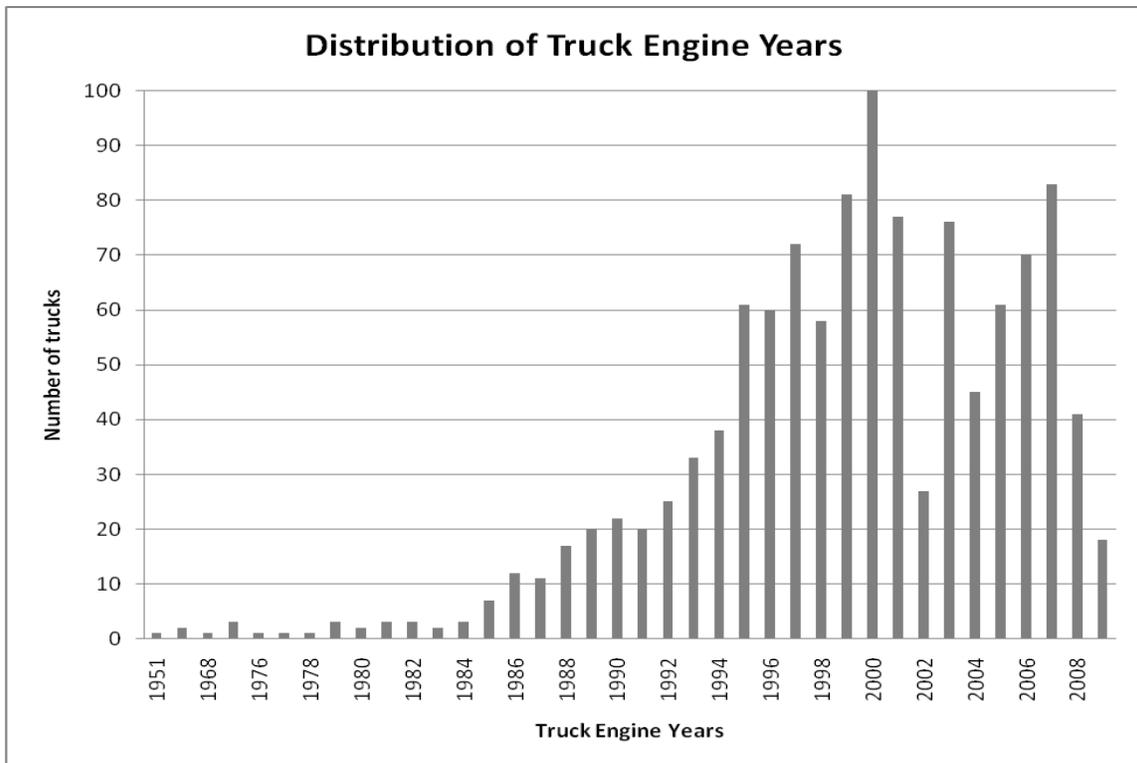


Figure 8. Distribution of truck engine years from available license plate information collected. Total license plate numbers recorded was 1790. The number of trucks found in DMV database was 1163 trucks.

The following figures (9 through 20) are in order of intersections with the highest total number of trucks observed, to the lowest. The arrows indicate direction and their color represent the range of number of trucks observed. Arrows were not included when trucks observed were 50 trucks or less only to reduce clutter in the images. All totals for trucks observed are in the tables.

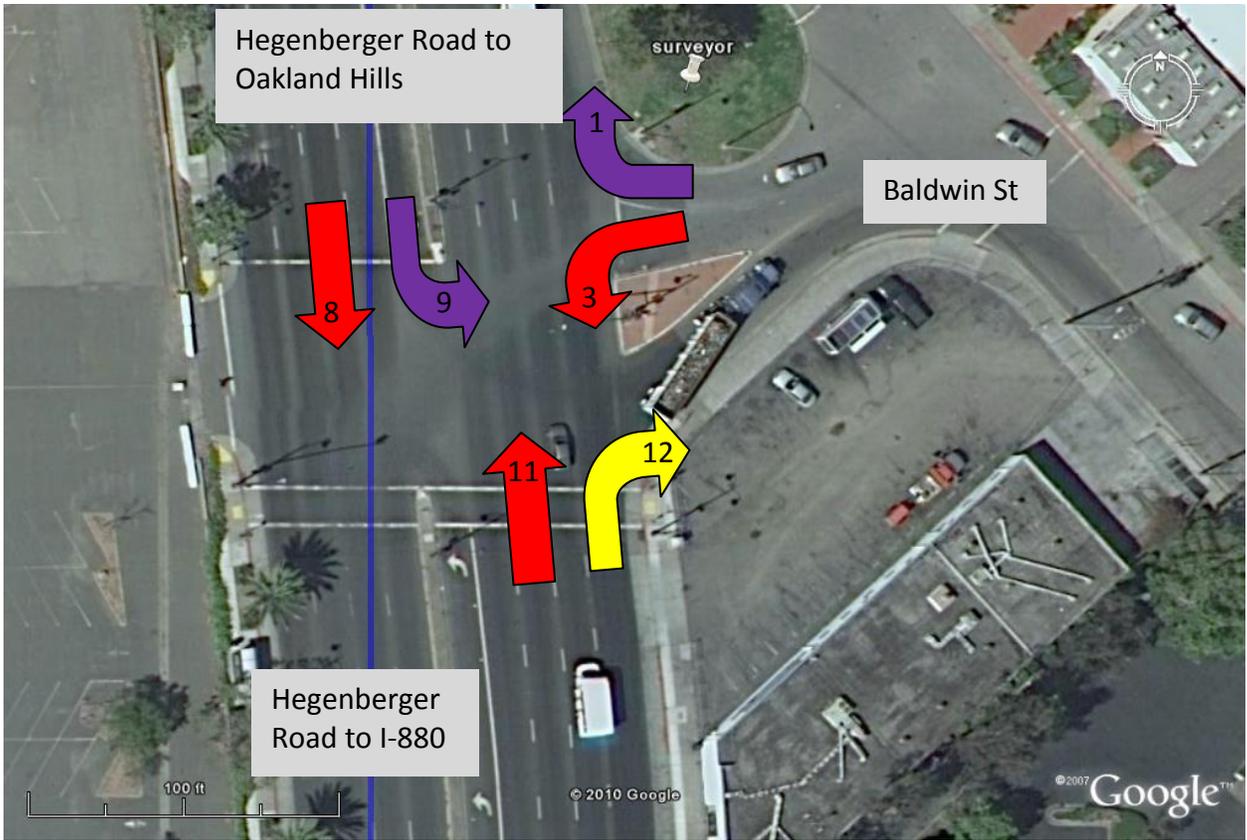


Figure 9. Hegenberger Road and Baldwin Street. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 2 weekdays of counting, approximately 9:30-5pm. Blue line indicates the Oakland truck route.

Arrow	Direction of travel	Total Trucks
1	Baldwin Street turning right on Hegenberger Road towards Oakland Hills; west to north	40
2 (not shown)	Baldwin Street towards Coliseum; west	1
3	Baldwin Street turning left on Hegenberger Road towards I-880; west to south	503
7 (not shown)	73 <sup>rd</sup> turning right towards Coliseum; south to west	0
8	73 <sup>rd</sup> towards I-880; south	540
9	73 <sup>rd</sup> turning left on Baldwin; south to east	56
10 (not shown)	73 <sup>rd</sup> turning left towards Coliseum; north to west	7
11	73 <sup>rd</sup> towards Oakland Hills; north	623
12	73 <sup>rd</sup> turning right on Baldwin; north to east	376

Hegenberger Road was the busiest intersection (2146 trucks total). Most trucks were using Hegenberger Road to and from I-880 and to Baldwin Ave; from Baldwin Ave towards I-880 (Figure 9). Baldwin connects 73<sup>rd</sup> Ave and 85<sup>th</sup> Ave where there are businesses such as Golden Gate Truck Co., World PAC and container storage.

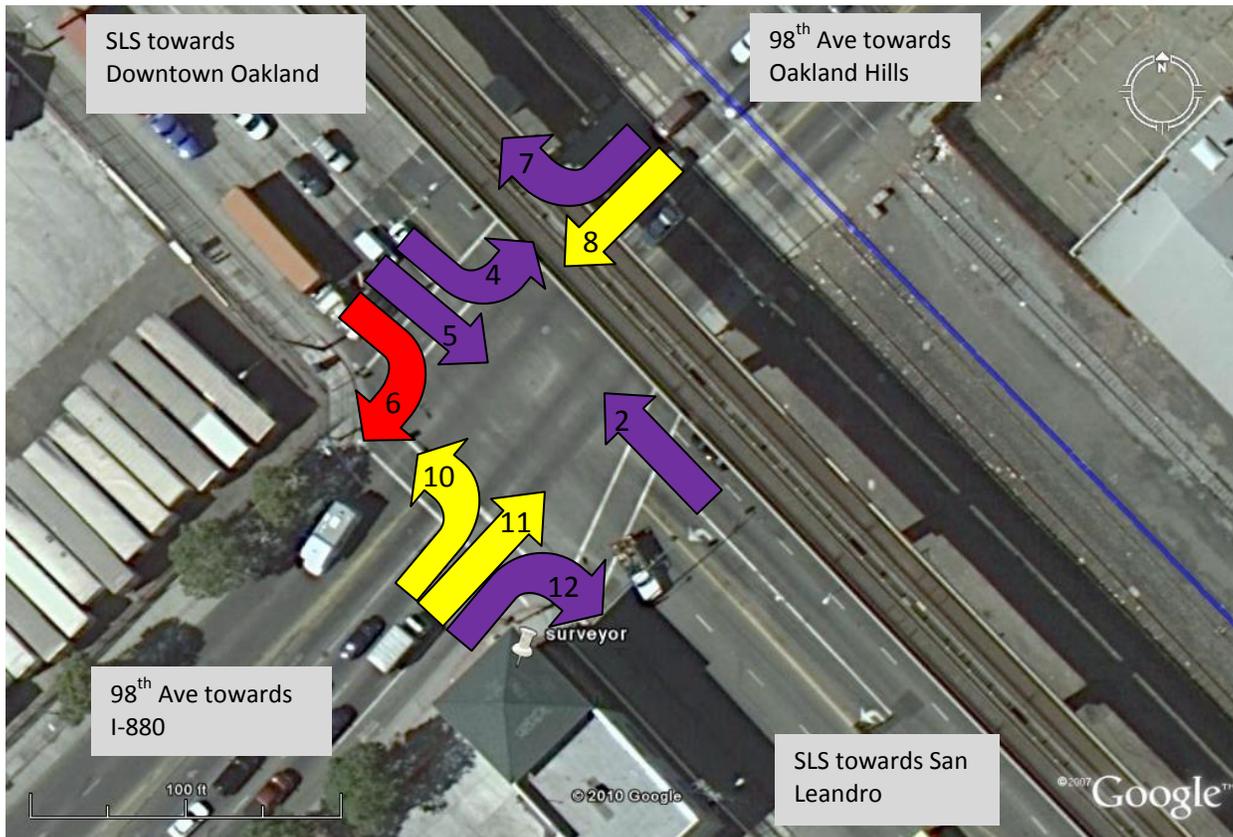


Figure 10. 98<sup>th</sup> Ave and San Leandro St. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 2 weekdays of counting, approximately 9:30-5pm. Blue line indicates the Oakland truck route.

Arrow	Direction of travel	Total Trucks
1 (not shown)	San Leandro Street (SLS) turning right on 98 <sup>th</sup> towards Oakland Hills; northwest to northeast	10
2	SLS towards downtown Oakland; northwest	90
3 (not shown)	SLS turning left on 98 <sup>th</sup> towards I-880; northwest to southwest	43
4	SLS towards San Leandro turning left on 98 <sup>th</sup> ; southeast to northeast	68
5	SLS towards San Leandro; southeast	91
6	SLS towards San Leandro turning right on 98 <sup>th</sup> towards I-880; southeast to southwest	421
7	98 <sup>th</sup> Ave turning right on SLS towards downtown; southwest to northwest	63
8	98 <sup>th</sup> Ave towards I-880; southwest	387
9 (not shown)	98 <sup>th</sup> Ave turning left on SLS towards San Leandro; southwest to southeast	18
10	98 <sup>th</sup> Ave turning left on SLS towards downtown; northeast to northwest	364
11	98 <sup>th</sup> Ave towards Oakland Hills; northeast	389
12	98 <sup>th</sup> Ave turning right on SLS towards San Leandro; northeast to southeast	72

98<sup>th</sup> Ave and San Leandro St (SLS) was the second busiest intersection (2016 trucks total). Although there were many trucks moving in all directions, most trucks were using 98<sup>th</sup> Ave to and from I-880 and to SLS (Figure 10 and table above). The most were observed coming from SLS and turning onto 98<sup>th</sup> Ave; many were Port trucks. PACAM Foreign Trade Zone is at 98<sup>th</sup> and SLS.

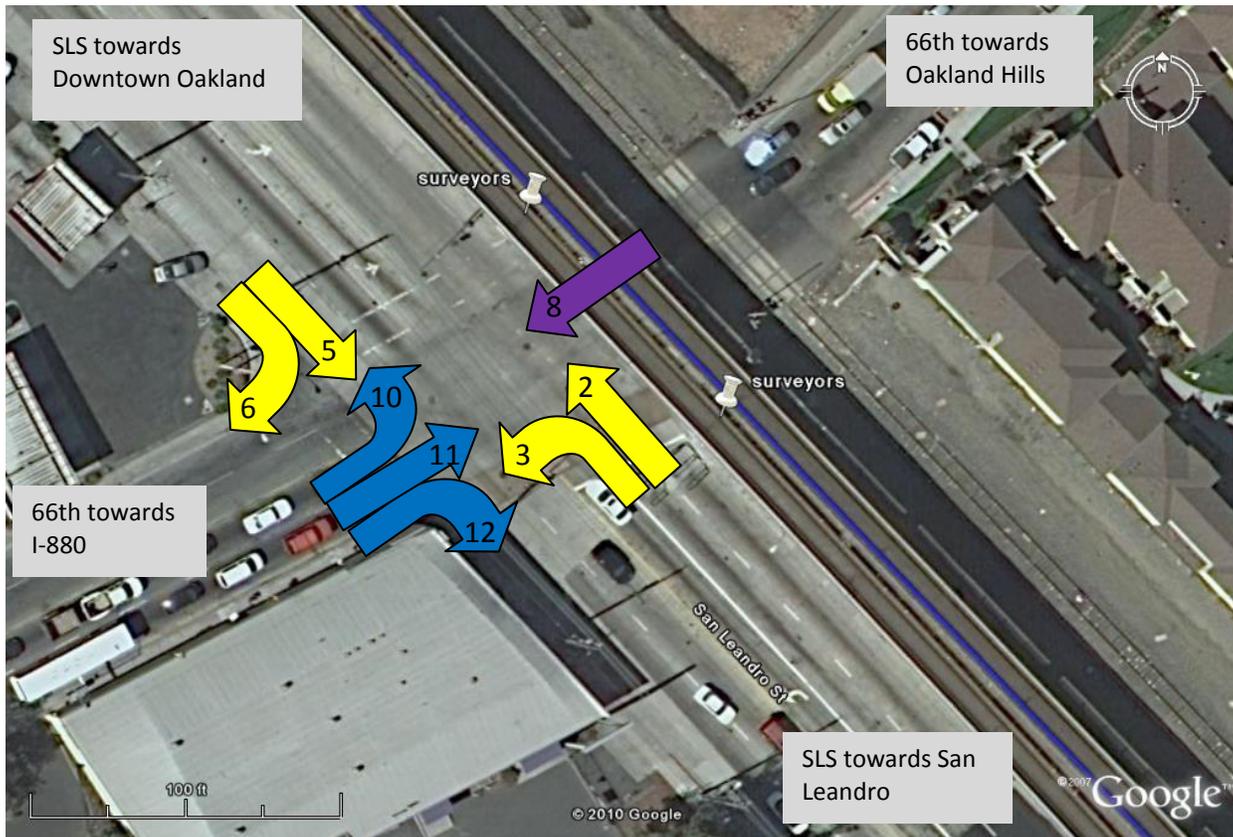


Figure 11. 66<sup>th</sup> Ave and San Leandro St. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 2 weekdays of counting, approximately 9:30-5pm. Blue line indicates the Oakland truck route.

Arrow	Direction of travel	Total Trucks
1 (not shown)	San Leandro Street (SLS) turning right on 66 <sup>th</sup> towards Oakland Hills; northwest to northeast	27
2	SLS towards downtown Oakland; northwest	213
3	SLS turning left on 66 <sup>th</sup> towards I-880; northwest to southeast	201
4 (not shown)	SLS towards San Leandro turning left on 66 <sup>th</sup> ; southeast to northeast	45
5	SLS towards San Leandro; southeast	242
6	SLS towards San Leandro turning right on 66 <sup>th</sup> towards I-880; southeast to southwest	242
7 (not shown)	66 <sup>th</sup> Ave turning right on SLS towards downtown; southwest to northwest	14
8	66 <sup>th</sup> Ave towards I-880; southwest	89
9 (not shown)	66 <sup>th</sup> Ave turning left on SLS towards San Leandro; southwest to southeast	20
10	66 <sup>th</sup> Ave turning left on SLS towards downtown; northeast to northwest	189
11	66 <sup>th</sup> Ave towards Oakland Hills; northeast	129
12	66 <sup>th</sup> Ave turning right on SLS towards San Leandro; northeast to southeast	181

CBE counted 1592 trucks total at 66<sup>th</sup> Ave and SLS. Most trucks were using 66<sup>th</sup> Ave to I-880 from San Leandro Street (SLS), using SLS in both directions; and using 66<sup>th</sup> Ave from I-880 to turn onto SLS (Figure 11 and table above). 66<sup>th</sup> Ave is not an Oakland truck route. There is a gas station, Gateway Logistics, and Coliseum Gardens at the intersection and East Bay Truck and Auto Repair and Futures Elementary nearby.

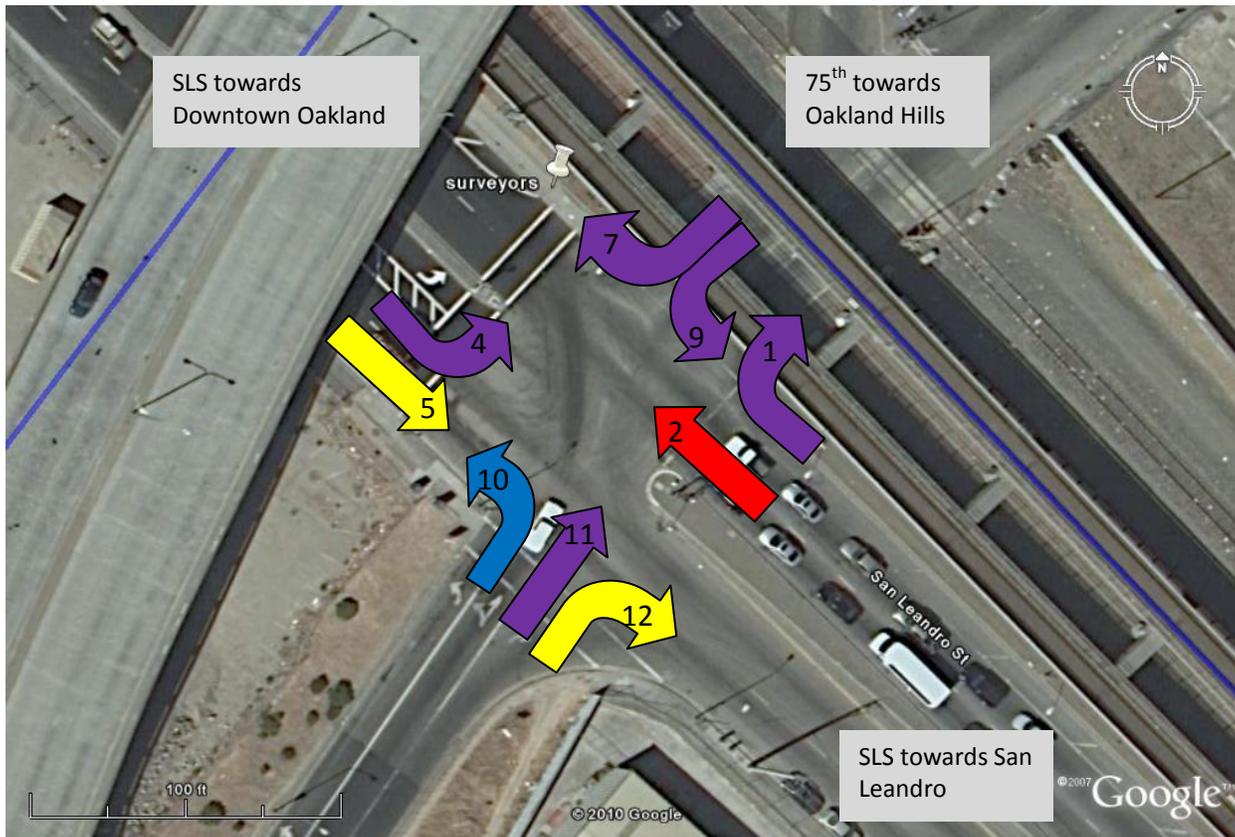


Figure 12. 75<sup>th</sup> Ave and San Leandro St. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 2 weekdays of counting, approximately 9:30-5pm. Blue line indicates the Oakland truck route.

Arrow	Direction of travel	Total Trucks
1	San Leandro Street (SLS) turning right on 75 <sup>th</sup> towards Oakland Hills; northwest to northeast	52
2	SLS towards downtown Oakland; northwest	442
4	SLS towards San Leandro turning left on 75 <sup>th</sup> ; southeast to northeast	48
5	SLS towards San Leandro; southeast	232
7	75 <sup>th</sup> Ave turning right on SLS towards downtown; southwest to northwest	95
9	75 <sup>th</sup> Ave turning left on SLS towards San Leandro; southwest to southeast	62
10	75 <sup>th</sup> Ave turning left on SLS towards downtown; northeast to northwest	158
11	75 <sup>th</sup> Ave towards Oakland Hills; northeast	76
12	75 <sup>th</sup> Ave turning right on SLS towards San Leandro; northeast to southeast	221

CBE counted 1386 trucks total at 75<sup>th</sup> Ave and San Leandro (SLS). Most trucks were using SLS towards Downtown Oakland, but many were also using SLS towards San Leandro and turning onto SLS from Hegenberger Road off-ramp in both directions (Figure 12 and table above). Many trucks taking 75<sup>th</sup> Ave towards the residential areas were going to the businesses at and around R&A Trucking and Jefferson Smurfit-Stone; many take the 73<sup>rd</sup> Ave on-ramp to get to I-880 from SLS; and the SF-Oakland Truck Stop is on SLS.

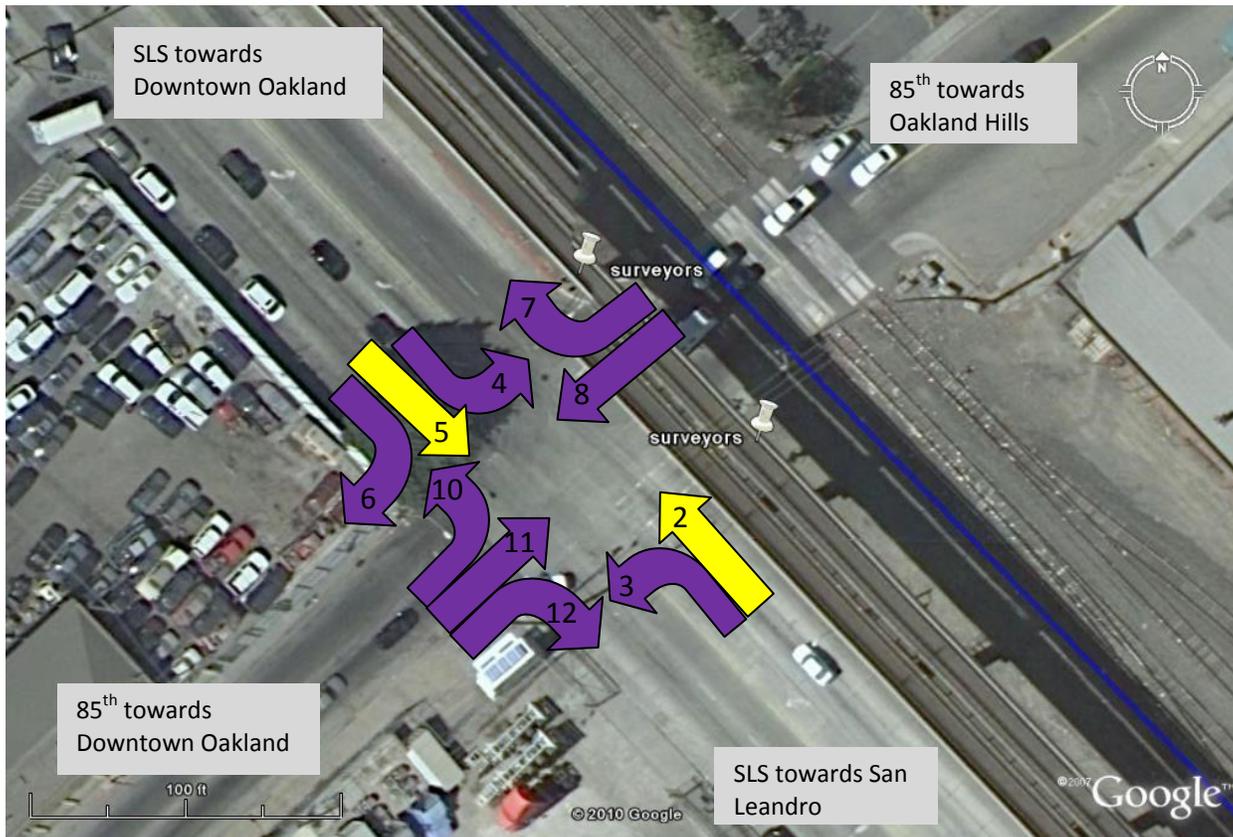


Figure 13. 85<sup>th</sup> Ave and San Leandro St. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 2 weekdays of counting, approximately 9:30-5pm. Blue line indicates truck route in Municipal Code.

Arrow	Direction of travel	Total Trucks
1 (not shown)	San Leandro Street (SLS) turning right on 85 <sup>th</sup> towards Oakland Hills; northwest to northeast	45
2	SLS towards downtown Oakland; northwest	283
3	SLS turning left on 85 <sup>th</sup> towards I-880; northwest to southwest	72
4	SLS towards San Leandro turning left on 85 <sup>th</sup> ; southeast to northeast	93
5	SLS towards San Leandro; southeast	273
6	SLS towards San Leandro turning right on 85 <sup>th</sup> towards I-880; southeast to southwest	59
7	85 <sup>th</sup> Ave turning right on SLS towards downtown; southwest to northwest	63
8	85 <sup>th</sup> Ave towards I-880; southwest	77
9 (not shown)	85 <sup>th</sup> Ave turning left on SLS towards San Leandro; southwest to southeast	43
10	85 <sup>th</sup> Ave turning left on SLS towards downtown; northeast to northwest	60
11	85 <sup>th</sup> Ave towards Oakland Hills; northeast	65
12	85 <sup>th</sup> Ave turning right on SLS towards San Leandro; northeast to southeast	85

CBE counted 1218 trucks total at 85<sup>th</sup> Ave and SLS. Most trucks were using SLS towards Downtown Oakland and towards San Leandro and turning onto 85<sup>th</sup> Ave (Figure 13 and table above). 85<sup>th</sup> Ave connects to I-880 via Edes Ave and towards Tassafaronga Village, Benefit Cosmetics and other distribution companies, and Longview Fiber in the other direction. The SF-Oakland Truck Stop is on SLS.

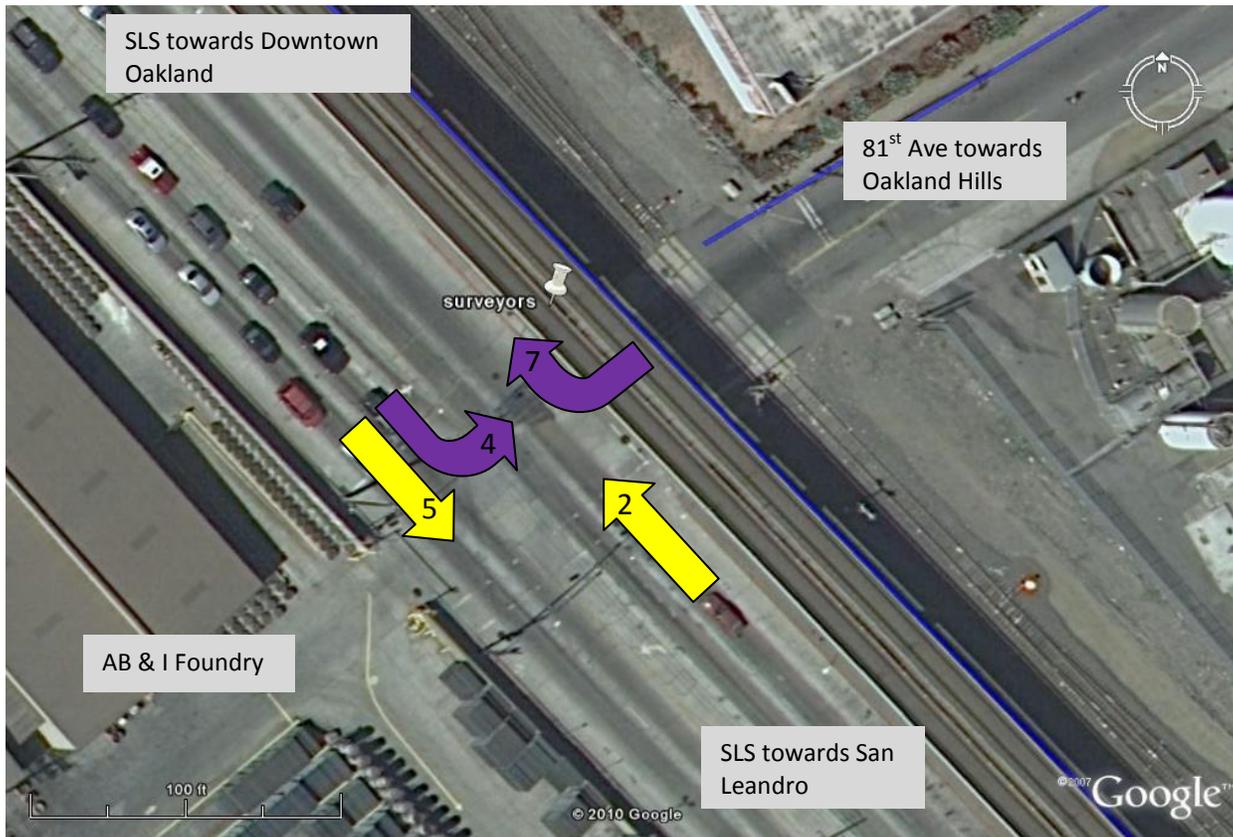


Figure 14. 81<sup>st</sup> Ave and San Leandro St. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. The total consists of 1 weekday morning, 9:30am-1pm and 2 weekday afternoons of counting, approximately 2-5pm. Blue line indicates the Oakland truck route.

Arrow	Direction of travel	Total Trucks
1 (not shown)	San Leandro Street (SLS) turning right on 81 <sup>st</sup> towards Oakland Hills; northwest to northeast	25
2	SLS towards downtown Oakland; northwest	295
3 (not shown)	SLS turning left on 81 <sup>st</sup> to AB & I Foundry; northwest to southwest	1
4	SLS towards San Leandro turning left on 81 <sup>st</sup> ; southeast to northeast	57
5	SLS towards San Leandro; southeast	303
6 (not shown)	SLS towards San Leandro turning right to AB & I Foundry; southeast to southwest	5
7	81 <sup>st</sup> Ave turning right on SLS towards downtown; southwest to northwest	37
8 (not shown)	81 <sup>st</sup> Ave towards AB&I Foundry/ I-880; southwest	0
9 (not shown)	81 <sup>st</sup> Ave turning left on SLS towards San Leandro; southwest to southeast	36

CBE counted 759 trucks total at 85<sup>h</sup> Ave and SLS. This total was recorded in 1 weekday morning, not 2 like other SLS intersections. Most trucks were using SLS towards Downtown Oakland, San Leandro and to a lesser extent to and from 81<sup>st</sup> Ave (Figure 14 and table above). Former Mothers Cookies (Coliseum Industrial), Mission Clay, former Sconza Candies, and Dobake Inc. are on 81<sup>st</sup> Ave as well as ACORN Woodland Elementary, Encompass Academy, and the future Public Library. The SF-Oakland Truck Stop is on SLS.

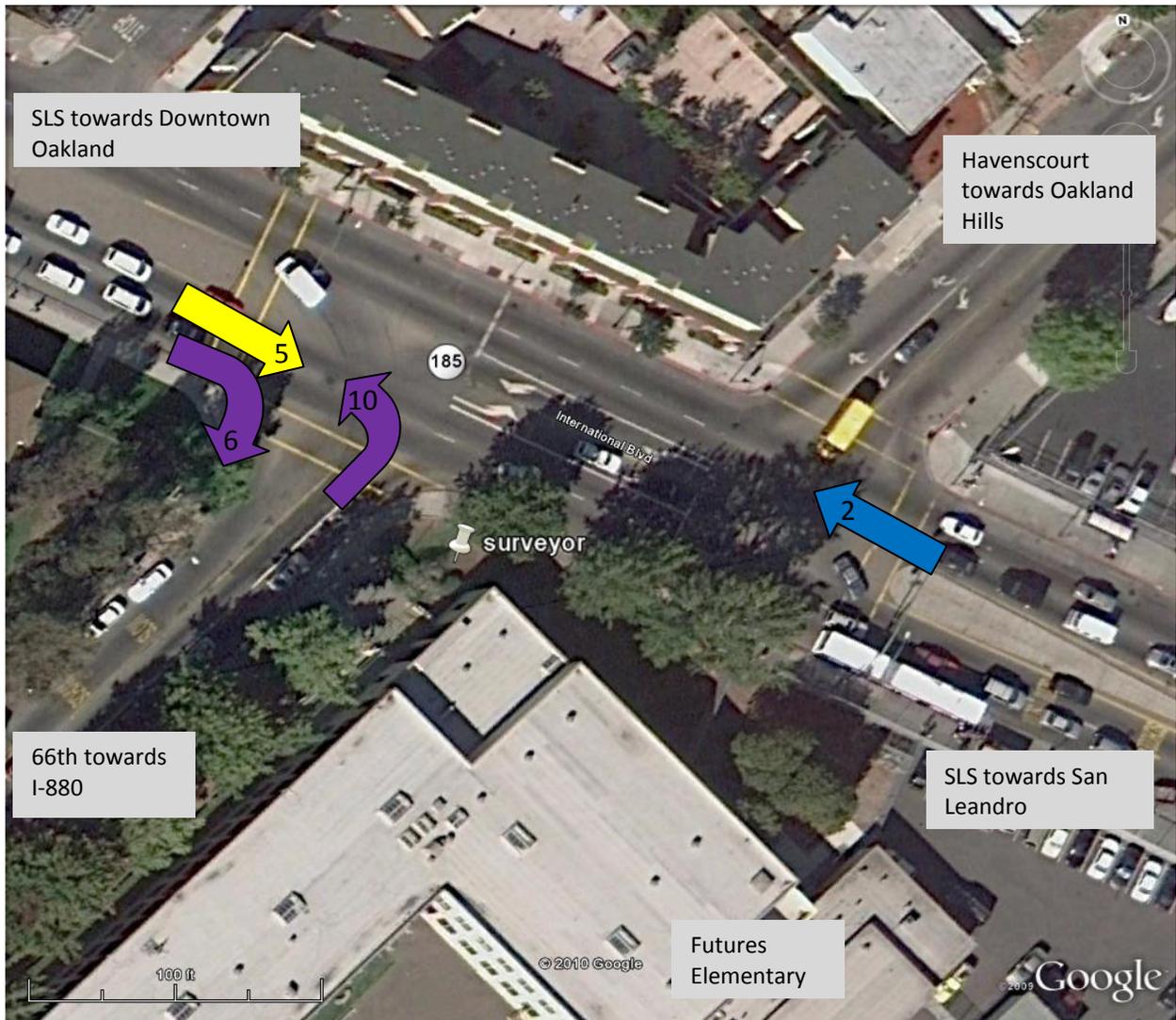


Figure 15. 66<sup>th</sup> Avenue and International Boulevard. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 2 weekdays of counting, approximately 9:30-4pm.

Arrow	Direction of travel	Total Trucks
1 (not shown)	San Leandro Street (SLS) turning right on Havenscourt towards Oakland Hills; northwest to northeast	4
2	SLS towards downtown Oakland; northwest	150
3 (not shown)	SLS turning left on 66 <sup>th</sup> towards I-880; northwest to southeast	33
4 (not shown)	SLS towards San Leandro turning left on Havenscourt; southeast to northeast	5
5	SLS towards San Leandro; southeast	227
6	SLS towards San Leandro turning right on 66 <sup>th</sup> towards I-880; southeast to southwest	57
7 (not shown)	Havenscourt turning right on SLS towards downtown; southwest to northwest	14
8 (not shown)	Havenscourt towards I-880; southwest	33
9 (not shown)	Havenscourt turning left on SLS towards San Leandro; southwest to southeast	16
10	66 <sup>th</sup> Ave turning left on SLS towards downtown; northeast to northwest	63
11 (not shown)	66 <sup>th</sup> Ave to Havenscourt towards I-580/Oakland Hills; northeast	18
12 (not shown)	66 <sup>th</sup> Ave turning right on SLS towards San Leandro; northeast to southeast	26

CBE observed 646 trucks total at 66<sup>th</sup> Avenue and International Boulevard in 2 weekdays. 66<sup>th</sup> Avenue is not on the Oakland truck route and Havenscourt Boulevard is a prohibited truck route.

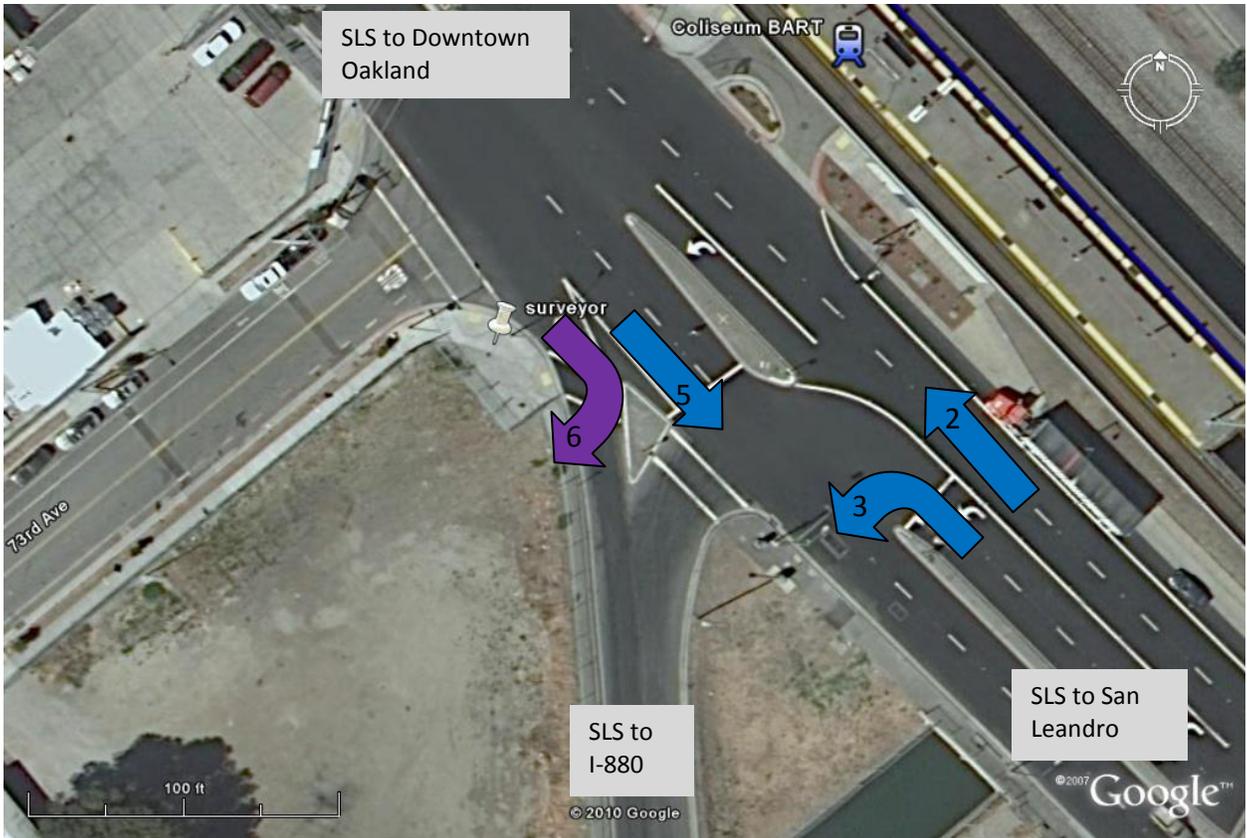


Figure 16. 73<sup>rd</sup> Ave and San Leandro St. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 1 weekday of counting, approximately 9:30-5pm. Blue line indicates the Oakland truck route.

Arrow	Direction of travel	Total Trucks
2	SLS towards downtown Oakland; northwest	198
3	SLS turning left on ramp to 73 <sup>rd</sup> / Hegenberger towards I-880; northwest to southwest	145
5	SLS towards San Leandro; southeast	181
6	SLS towards San Leandro turning right on ramp to 73 <sup>rd</sup> / Hegenberger towards I-880; southeast to southwest	62

CBE counted 586 trucks total at 73<sup>rd</sup> Ave and SLS in 1 weekday.

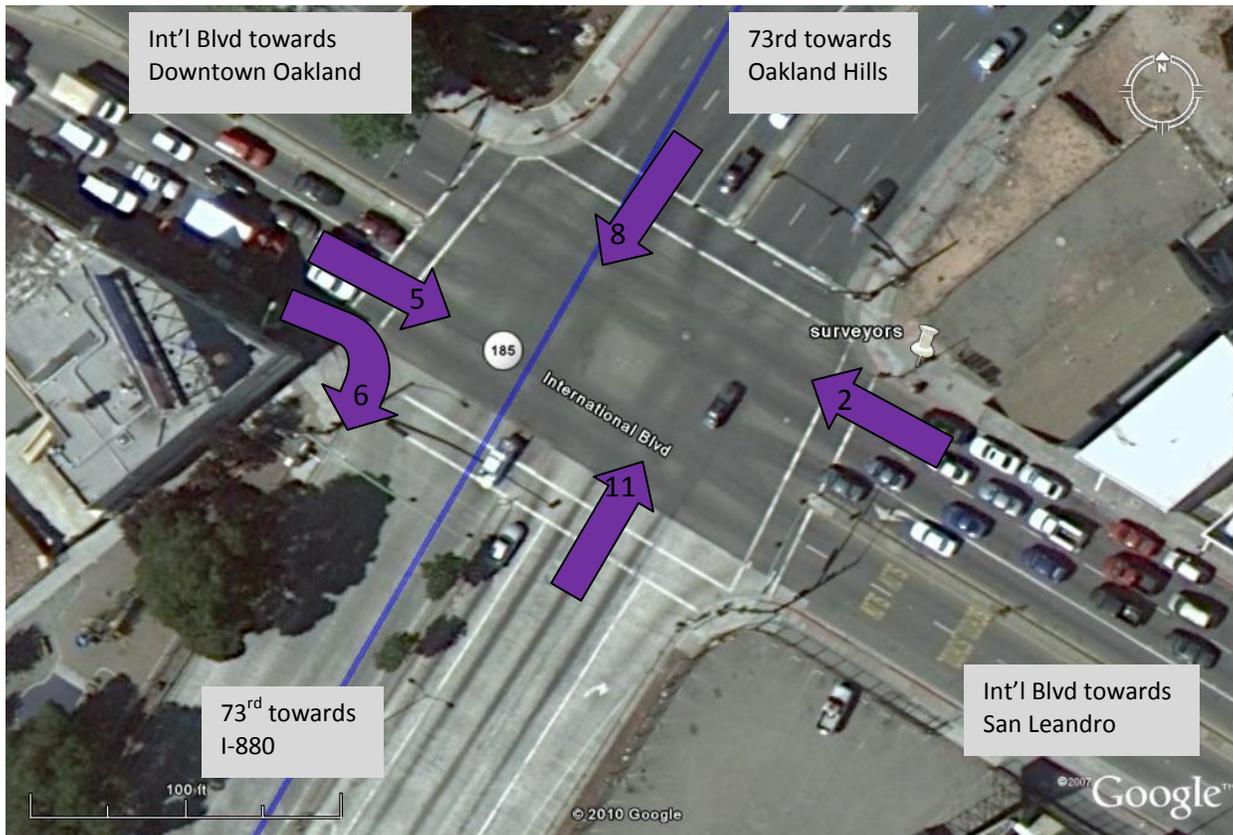


Figure 17. 73<sup>rd</sup> Ave and International Blvd. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 1 weekday afternoon of counting, approximately 1pm-5pm. Blue line indicates the Oakland truck route.

Arrow	Direction of travel	Total Trucks
1 (not shown)	San Leandro Street (SLS) turning right on 73 <sup>rd</sup> towards Oakland Hills; northwest to northeast	10
2	SLS towards downtown Oakland; northwest	33
3 (not shown)	SLS turning left on 73 <sup>rd</sup> towards I-880; northwest to southwest	10
4 (not shown)	SLS towards San Leandro turning left on 73 <sup>rd</sup> ; southeast to northeast	7
5	SLS towards San Leandro; southeast	42
6	SLS towards San Leandro turning right on 73 <sup>rd</sup> towards I-880; southeast to southwest	20
7 (not shown)	73 <sup>rd</sup> turning right on SLS towards downtown; southwest to northwest	3
8	73 <sup>rd</sup> towards I-880; southwest	24
9 (not shown)	73 <sup>rd</sup> turning left on SLS towards San Leandro; southwest to southeast	1
10 (not shown)	73 <sup>rd</sup> turning left on SLS towards downtown; northeast to northwest	11
11	73 <sup>rd</sup> towards Oakland Hills; northeast	16
12 (not shown)	73 <sup>rd</sup> turning right on SLS towards San Leandro; northeast to southeast	2

CBE counted 179 trucks total at 73<sup>rd</sup> Avenue and International Blvd in one visit on a weekday afternoon.



Figure 18. 81<sup>st</sup> Ave and International Blvd. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 1 weekday afternoon of counting, approximately 1pm-5pm. Blue line indicates the Oakland truck route.

Arrow	Direction of travel	Total Trucks
1 (not shown)	International Blvd (Int'l) turning right on 81 <sup>st</sup> towards Oakland Hills; northwest to northeast	4
2	Int'l towards downtown Oakland; northwest	90
3 (not shown)	Int'l turning left on 81 <sup>st</sup> towards I-880; northwest to southwest	5
4 (not shown)	Int'l towards San Leandro turning left on 81 <sup>st</sup> ; southeast to northeast	8
5	Int'l towards San Leandro; southeast	90
6 (not shown)	Int'l towards San Leandro turning right on 81 <sup>st</sup> towards I-880; southeast to southwest	6
7 (not shown)	81 <sup>st</sup> Ave turning right on Int'l towards downtown; southwest to northwest	9
8 (not shown)	81 <sup>st</sup> Ave towards I-880; southwest	1
9 (not shown)	81 <sup>st</sup> Ave turning left on Int'l towards San Leandro; southwest to southeast	1
10 (not shown)	81 <sup>st</sup> Ave turning left on Int'l towards downtown; northeast to northwest	1
11 (not shown)	81 <sup>st</sup> Ave towards Oakland Hills; northeast	1
12 (not shown)	81 <sup>st</sup> Ave turning right on Int'l towards San Leandro; northeast to southeast	6

CBE counted 222 trucks total at 81st Ave and International in one visit on a weekday afternoon.

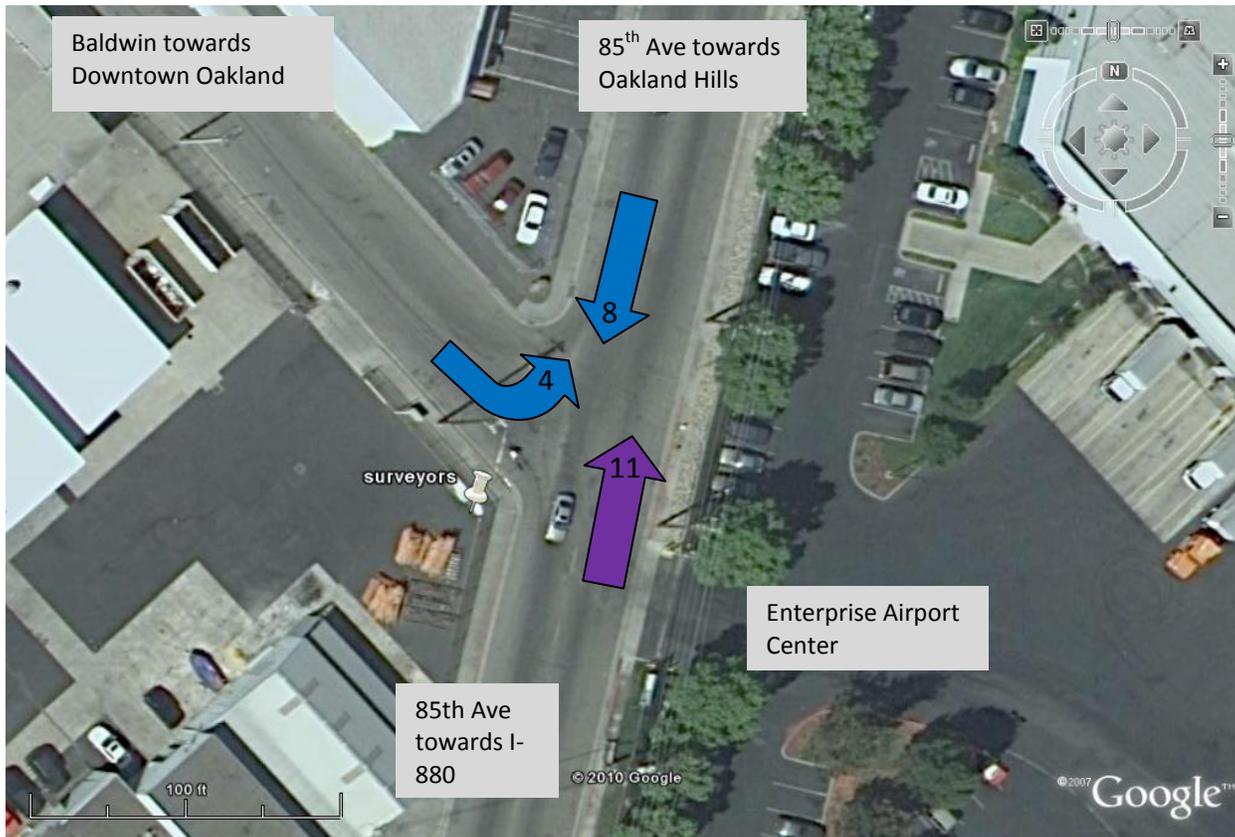


Figure 19. 85<sup>th</sup> Ave and Baldwin Ave. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 2 weekday mornings of counting, approximately 10am-1pm.

Arrow	Direction of travel	Total Trucks
1 (not shown)	From Enterprise Airport Center turning right on 85 <sup>th</sup> towards Oakland Hills; northwest to northeast	4
2 (not shown)	From Enterprise Airport Center on Baldwin towards downtown Oakland; northwest	3
3 (not shown)	From Enterprise Airport Center turning left on 85 <sup>th</sup> towards I-880; northwest to southwest	4
4	Baldwin towards San Leandro turning left on 85 <sup>th</sup> ; southeast to northeast	171
5 (not shown)	Baldwin towards San Leandro to Enterprise Airport Center; southeast	7
6 (not shown)	Baldwin towards San Leandro turning right on 85 <sup>th</sup> towards I-880; southeast to southwest	37
7 (not shown)	85 <sup>th</sup> Ave turning right on Baldwin towards downtown; southwest to northwest	12
8	85 <sup>th</sup> Ave towards I-880; southwest	105
9 (not shown)	85 <sup>th</sup> Ave turning left on Baldwin to Enterprise Airport Center; southwest to southeast	19
10 (not shown)	85 <sup>th</sup> Ave turning left on Baldwin towards downtown; northeast to northwest	3
11	85 <sup>th</sup> Ave towards Oakland Hills; northeast	87
12 (not shown)	85 <sup>th</sup> Ave turning right on Baldwin to Enterprise Airport Center; northeast to southeast	32

CBE counted 484 trucks total at 85<sup>th</sup> Avenue and Baldwin Avenue in two visits on weekday mornings. 85<sup>th</sup> Avenue and Baldwin Avenue are not on the Oakland Truck Route.



Figure 20. 85<sup>th</sup> Ave and Edes Ave. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 2 weekday afternoons of counting, approximately 1pm-5pm.

Arrow	Direction of travel	Total Trucks
1 (not shown)	Edes Ave turning right on 85 <sup>th</sup> towards Oakland Hills; northwest to northeast	22
2	Edes Ave towards downtown Oakland and I-880 ramp; northwest	35
3 (not shown)	Edes Ave turning left on 85 <sup>th</sup> towards homes; northwest to southwest	0
4	Edes Ave towards San Leandro turning left on 85 <sup>th</sup> ; southeast to northeast	86
5	Edes Ave towards San Leandro; southeast	58
6 (not shown)	Edes Ave towards San Leandro turning right on 85 <sup>th</sup> towards homes; southeast to southwest	0
7	85 <sup>th</sup> Ave turning right on Edes Ave towards downtown; southwest to northwest	75
8 (not shown)	85 <sup>th</sup> Ave towards homes; southwest	2
9 (not shown)	85 <sup>th</sup> Ave turning left on Edes Ave towards San Leandro; southwest to southeast	33

CBE counted 311 trucks total at 85<sup>th</sup> Avenue and Edes Avenue in two visits on weekday afternoons. 85<sup>th</sup> Avenue is not on the Oakland Truck Route and Edes Avenue is a prohibited truck route.

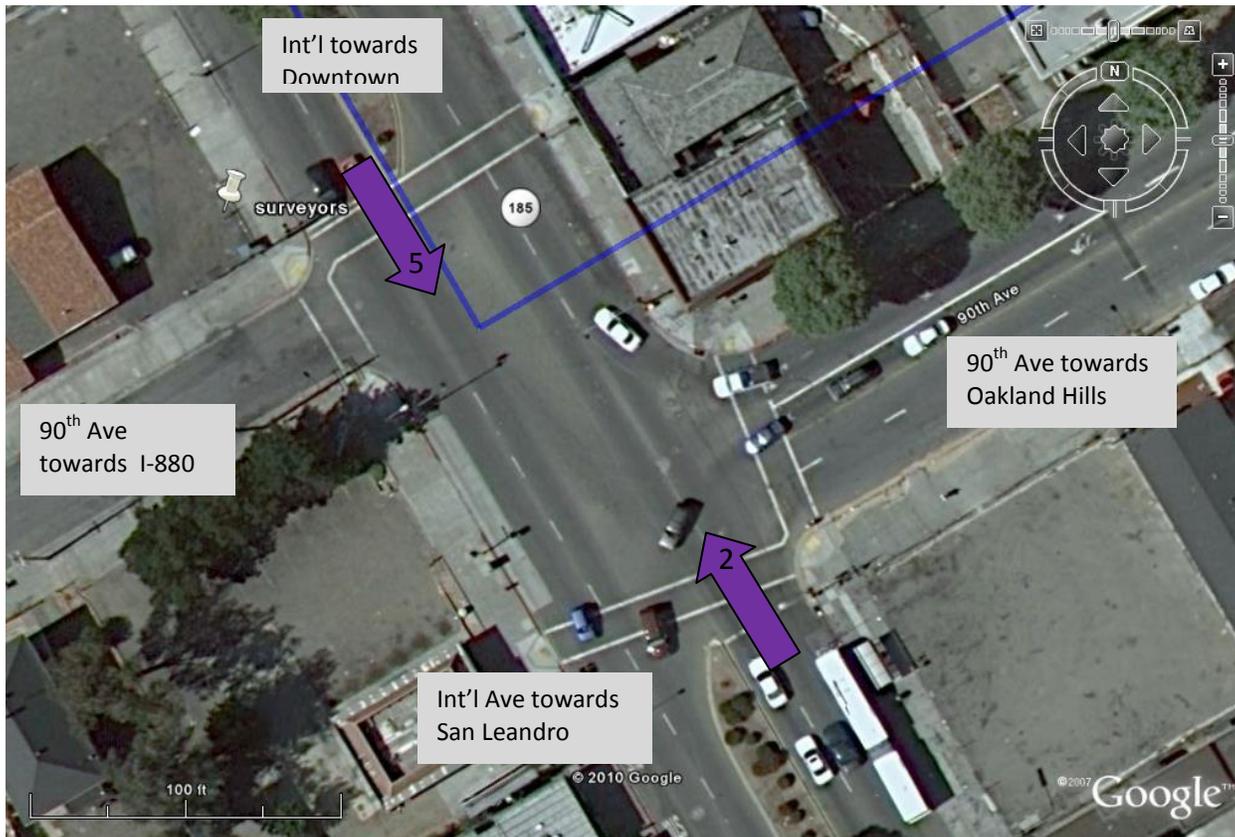


Figure 21. 90<sup>th</sup> Ave and International Blvd. Red arrow: >400 trucks; yellow arrow: 200-400 trucks; blue arrow: 100-200 trucks; purple arrow: <100 trucks. The table below shows the truck volumes for each direction of movement. Total consists of 1 weekday afternoon of counting, approximately 1pm-5pm. Blue line indicates truck route in Municipal Code.

Arrow	Direction of travel	Total Trucks
1 (not shown)	San Leandro Street (SLS) turning right on 90 <sup>th</sup> towards Oakland Hills; northwest to northeast	8
2	SLS towards downtown Oakland; northwest	40
3 (not shown)	SLS turning left on 90 <sup>th</sup> towards I-880; northwest to southwest	0
4 (not shown)	SLS towards San Leandro turning left on 90 <sup>th</sup> ; southeast to northeast	3
5	SLS towards San Leandro; southeast	56
6 (not shown)	SLS towards San Leandro turning right on 90 <sup>th</sup> towards I-880; southeast to southwest	1
7 (not shown)	90 <sup>th</sup> Ave turning right on SLS towards downtown; southwest to northwest	4
8 (not shown)	90 <sup>th</sup> Ave towards I-880; southwest	0
9 (not shown)	90 <sup>th</sup> Ave turning left on SLS towards San Leandro; southwest to southeast	3
10 (not shown)	90 <sup>th</sup> Ave turning left on SLS towards downtown; northeast to northwest	1
11 (not shown)	90 <sup>th</sup> Ave towards Oakland Hills; northeast	1
12 (not shown)	90 <sup>th</sup> Ave turning right on SLS towards San Leandro; northeast to southeast	2

CBE counted 119 trucks total at 90<sup>th</sup> Avenue and International Blvd in one visit on a weekday afternoon.

## Conclusions and Solutions

This study confirms that this area of East Oakland is heavily travelled by diesel trucks. This area is a predominantly low-income, African American and Latino community of over 11,000 people<sup>20</sup>. Because of the close proximity to neighborhoods and the high childhood asthma rates, diesel particulate matter is a major health concern for children, seniors and other sensitive populations in this community. One study showed that proximity to local heavy traffic corridors, particularly heavy duty diesel trucks from cargo distribution centers, is possibly responsible for a significant burden of childhood asthma, and is often not recognized in traditional risk assessment.<sup>21</sup>

### **Solution 1: Examine and Revise Truck Routes and Zoning to Protect Community Health**

Incompatible land uses are causes for concern not only because of the volume of trucks, but also because they are adjacent to sensitive receptors such as homes, schools, senior housing and recreation centers. The zoning laws allow major industries near residential areas. This results in pollution impacts from truck traffic in addition to pollution from operations at the stationary sources.

In CBE's mapping study, members found over 210 sources of pollution in the "Hegenberger Corridor," including American Brass and Iron Foundry, a truck stop, Foreign Trade Zone, Fed Ex, US Postal Service, American Storage, Jefferson-Smurfit, Longview Fiber, warehousing, truck repair businesses, and distribution centers (See Appendix, Table 5). These businesses that bring truck traffic to the area are called "magnet sources".

In the same area, CBE also identified over 45 "sensitive receptors," such as schools, churches, recreation centers, including: 66<sup>th</sup> Avenue next to Futures Elementary (and other schools); 81<sup>st</sup> Avenue next to ACORN Woodland Elementary and Encompass Academy and a future Oakland Public Library; Brookfield Recreation and Senior Center and Ira Jinkins Recreation Center; and 85<sup>th</sup> Avenue near Tassafaronga Village and Recreation Center (See Appendix, Table 6).

Since heavy-duty diesel trucks have been prohibited on the 580 freeway since the 1960's, all the streets that are entrances to the 880 freeway – 66<sup>th</sup> Avenue, Hegenberger Road, 85<sup>th</sup> Avenue, 98<sup>th</sup>



Nehanda, East Oakland Community Organizer, giving a tour at the Encompass Academy and ACORN Woodland Elementary garden with a magnet source, the former Sunshine Biscuits facility, in the background.

<sup>20</sup> Anna Yun Lee. 2008. *Cumulative Impacts in East Oakland: Findings from a community-based mapping study*. Available at: <http://cbeocal.org>

<sup>21</sup> Perez, Laura; N. Künzli; E. Avol; A. Hricko; F. Lumann; E. Nicholas; F. Gilliland; J. Peters; R. McConnell. 2009. *American Journal of Public Health*. 99 (S3): S622-S628.

Avenue – are important arterial roads to businesses for truckers, especially Hegenberger Road and 98<sup>th</sup> Avenue. San Leandro Street and Hegenberger Road are on the City of Oakland designated truck route, but 66<sup>th</sup> Avenue, 81<sup>st</sup> Avenue, 85<sup>th</sup> Avenue, and 98<sup>th</sup> Avenue are neither on the truck route nor prohibited to trucks. 75<sup>th</sup> Avenue and 85<sup>th</sup> Avenue are also not on the route or prohibited. Edes Avenue at 85<sup>th</sup> Avenue is prohibited to trucks, but a significant number of trucks pass by, mostly to use 85<sup>th</sup> Avenue. There are also a lot of trucks at 85<sup>th</sup> Avenue and Baldwin and it is very frequently congested at this intersection.

The truck route needs to be reviewed and revised, where possible to make prohibitions that reduce impacts on residents, including congestion, safety hazards and noise impacts. The truck route should be clearly marked from the 880 freeway into the industrial area to show truckers which streets are permitted and which are prohibited. These streets should be monitored and routinely repaired.

### **Solution 2: Post ‘No Idling’ Signs and Educate Truckers**

The State passed an idling law in 2008 to limit diesel engine idling to 5-minutes. Truckers can save money on fuel by reducing engine idling time, while helping improve air quality. CBE members voiced the need for education on San Leandro Street where many trucks park. Posting signage could also aid in educating community and truckers.

### **Solution 3: Support Community-Based Truck Studies and Ongoing Monitoring**

Ongoing community-based truck studies are needed to paint an accurate picture of truck traffic over time. Though the study shows that there are a significant number of trucks in East Oakland, the number could be affected by the economy, the fluctuations in the shipping industry and time of day. So there may be fewer trucks on the road compared to other years when the state of the economy was much better, such as 2005. This may explain why freight containers were observed to be stored (or not in use) as high as six containers high by community members over the past couple of years. Conversely, there may have been more trucks on the road since July through September is when stores are stocking up for back-to-school shopping and the holidays. Based on the recent truck survey conducted at the Port of Long Beach by California Air Resources Board, cargo movement was most active during the weekday with the busiest days falling on Tuesday, Wednesday, and Thursday. Interviews with individuals working in the trucking industry indicated that truck volume highest Monday through Thursday and in the early morning from 5am – 12pm. Additional truck studies would help give a clearer picture about truck volumes in East Oakland. Furthermore, as state diesel engine regulations are implemented, there may be



CBE member and youth counting a 2-axle truck at 85<sup>th</sup> Avenue and San Leandro Street

additional fluctuations in truck volumes in the future as thousands of truckers (there are about 2200 truck drivers in Oakland) retrofit or get new engines.<sup>22</sup>

#### **Solution 4: Agency Reliance on Modeling Should be Adjusted to Reflect More Accurate, Neighborhood-level Data**

Comparing this study to MTC modeling of 4+axle truck traffic indicates that there may be a significant underestimation of modeling of truck traffic by agencies and of the nearby residents' health risks. Consequently, agencies may be unknowingly underplaying the need to prioritize diesel reductions in East Oakland. This would pose a significant public health concern because the impacts of transportation on health occur on neighborhood levels where people live in close proximity. By supporting community-based truck studies and making agency data more readily accessible, residents can be engaged in the public process early on and bring their knowledge to the stakeholder table.

#### **Solution 5: Inform Planning and Redevelopment Activities with Truck Impacts and Improve Community Participation**

Comprehensive land use planning to address diesel truck traffic would help to protect the health of residents by reducing the overall cumulative health impacts in East Oakland. Updating the designated truck routes can be a first step. Buffers between residential areas and “magnet sources,” which are businesses that attract diesel truck activity, and heavy truck corridors can help to reduce exposures. Putting in place stronger protections now for new sensitive receptors like new residential buildings by installing air filters and considering the impact of construction phase pollution from equipment, vehicles, increased truck traffic and congestion may help to prevent and mitigate the impacts of diesel pollution.

“There are laws on the books that need to be enforced. If they were enforced, it would help clean up the air in East Oakland. If there is not an existing law, new laws need to be put in place to protect people’s health.”

-- Myrtle Washington, CBE member

Developing a process to hear and address community concerns that would give residents a direct line to the City to address their concerns is an important aspect to enforcement. Currently, there is not a clear process to make complaints about truck traffic and businesses with lots of trucks or to make a safety complaint about height limits on Port container storage next to Pulte homes. The City of Oakland can take leadership in investing in low-emissions diesel vehicles for the City’s fleet of trucks and equipment to meet “clean construction” standards or low-emissions standards. It can also pass a clean construction ordinance like other cities such as San Francisco.

Community input, education to truck drivers, adequate signage, clear accountability, equitable distribution of pollution and enforcement of idling regulations and truck routes are necessary for ensuring the effectiveness of these policies. This is a pollution source that needs more attention and regulation as plans for development and climate protection are being developed.

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<sup>22</sup> For more information about the state’s requirements for diesel vehicles: <http://www.arb.ca.gov/msprog/truckstop/truckstop.htm>

## Appendix

### Operating Protocol

#### Truck Counting.

1. Counters should be prepared to be in the field counting trucks for 4-hour shifts.
2. Meeting place: Tassafaronga Recreation Center, 975 - 85<sup>th</sup> Ave, Oakland, CA.
3. “Home Base” for bathroom and post-count meeting place: Tassafaronga Recreation Center, 975 - 85<sup>th</sup> Ave.
4. Fill out truck survey log sheets, including location and direction of traffic counting, counters’ name, date, day of week, and start time.
5. At each intersection, there will be at least one team of two people, one log sheet per team. The team will observe and use the following information to tally on the log sheets every truck passing through their designated intersection:
  - a. the direction the truck driver is going as it approaches the intersection using the number system;
  - b. the movement of those trucks – left turn, right turn or straight depending on which direction the truck is coming from using the number system;
  - c. counting the number of axles on the trucks that pass by – Port Container truck, Port Chassis Truck, 6 or more axles, 5-axle, 4-axle, 3-axle bobtail, 3-axles other types of trucks, and 2-axle trucks;
  - d. 10 unique license plate numbers per hour and direction using the number system;
  - e. and other notes and observations.
6. In one day, each team will complete one 4-hour shift of counting and monitoring trucks. At the end of each shift, the participants will ensure they filled out the name, date, time, and location properly on all data sheets, tally and turn-in to survey coordinators or site supervisor.
7. Busy intersections will have 2 teams, each team watching two directions of traffic, i.e. one team will count north-south and the other team will count east-west traffic. The exception is 81<sup>st</sup> Ave @ San Leandro St, where the team will observe 3-way traffic.
8. Keep observations, like of parked trucks, places where trucks are idling, damaged roads, etc.
9. Frequency. For major streets that enter/exit the freeway, counting locations will be monitored for 2-full weekdays and 1 weekend if time permits. Because diesel trucks are a health and safety hazard, shifts will be 4 hours and no one can exceed 4 hours of counting per day. Shifts will consist of mornings (9:30am-1:30pm) and afternoons (1-5pm).
10. Quality control: CBE staff and study coordinator will oversee truck study data collectors to ensure consistency. If there is not enough CBE staff to have one CBE staff person at each intersection, CBE staff will float between counting stations spending one hour with each team of truck study data collectors.

#### Truck Idling Monitoring

1. Monitors will count number of trucks parked and record license plate numbers.
2. Monitors will also use watches to monitor idling start and end time.

#### Data Analysis

1. At the end of each shift, teams will total the tallies and mark log sheets with totals.

2. CBE will double-check totals and collect all log sheets. CBE will create spreadsheets and analyze data for total counts, daily counts, weekly counts, counts by truck type, volume by intersection, time-of-day analysis, day-of-week analysis, and a comparison utilization of City of Oakland designated truck routes versus non-truck routes.
3. CBE will analyze truck idling times and survey data collected from truck-based businesses that participate in survey.
4. CBE will collect license plate information and send to staff at the BAAQMD. Staff at the BAAQMD will assist with accessing Department of Motor Vehicle data for truck ages.

#### Materials

- Safety vests
- Ear plugs
- Dust masks
- Disposable or digital cameras
- Clip boards
- Mechanical pencils
- Program business cards with contact info
- Rental van or other transportation
- ID Cards
- Truck study info card
- Diesel truck factsheet

Survey teams are recommended to arrive at their designated survey locations 15 minutes earlier than the actual survey start hour. Prior to conducting the survey, teams should locate the **MOST SAFE** area that is the closest to their designated survey locations and that offers the best viewing (CBE has already identified these locations). If teams are not able to find a safe area to conduct the survey, teams should contact the survey manager such that an alternative survey location may be assigned. If an event occurs that impacts the survey (e.g. an accident blocking traffic), the teams should contact the study coordinator and make note of the incident as well as the time period it impacts on the log sheets. If an emergency or safety issue occurs, the study coordinator will follow the safety plan to ensure the participants' safety.

#### Things to Remember

The following policies are meant to keep participants safe, comfortable, reduce attention from people passing by, and ensure we are always able to continuously count trucks. Non-compliance with these policies may mean the field supervisor and/or coordinators have to send participants home.

#### Dress Code

- Wear clothes that can get dirty and dusty
- Must wear provided safety vest while on duty
- You will need a hat
- Only wear closed-toed shoes with shoe strings
- No shorts or skirts above the knees

### Electronics Policy

- No un-needed telephone conversations while on duty. You may only use it to contact the field supervisor and coordinators for bathroom breaks and other needs and for emergencies ONLY
- No text-messaging or music listening that interrupts your ability to see and count trucks

### Safety

- Make sure you are set-up with your chair a few feet from the curb since trucks often ride up onto the curbs. The Site Supervisor and/or Study Coordinators will designate safest locations to sit at each intersection.
- If you are approached by people who want to know more, try to not talk to them. Instead, give them the truck study info sheet and the diesel truck factsheet. There is contact information on both of them. Because you are continuously counting, you cannot talk. Talking will distract you and you may miss a truck driving by.

### Setting up and take down

- Check log sheets and make sure you labeled your name, date, time, accurate location. Turn-in to survey coordinators or site supervisor. They will give you the “OK” to leave
- Clear the area where you are posted. You should not leave anything behind, including trash.
- Turn-in all supplies or equipment at the work shift.

Table 4. Truck Classification by number of axles and type <sup>23</sup>			
No. of Axles	Type of truck	Examples	Notes
2-axles	Box truck, courier van, small fire trucks		Two-axle trucks have two tires when viewed from the side. These include box delivery trucks, courier vans, UPS and Fed Ex trucks, small fire trucks and paratransit buses. For this study, we are not counting AC Transit buses.
3-axles	Bobtail Port truck		Three-axle trucks can be divided into two categories – Port trucks and Non-Port trucks – and teams will differentiate between these <sup>24</sup> . The 3-axle bobtail trucks are Port trucks and they are 3-axle tractors that do not have the trailer attached.
	Non-Port: Cement trucks, Package delivery trucks, Moving van trucks		Non-Port 3-axle trucks include cement trucks, large delivery vans, moving vans, and large fire trucks.
4-axles	Delivery trucks, Car-carrier, Tractor/ trailer		Four-axle trucks are Non-Port trucks and include car-carriers, flatbed chassis trucks, and tractor / trailer type trucks. These are large Fed Ex or UPS trucks, grocery store trucks, like Safeway or Pac 'N Save trucks. They have smooth containers without vertical ridges/ ribbing.
5-axles	I-Beam Chassis Port truck		Five-axle trucks can also be divided into Port and Non-Port trucks and Port trucks can be divided into 5-axle I-beam chassis and 5-axle container trucks. Port I-beam Chassis Trucks are tractors with an attached I-shaped (when viewed from above) chassis trailer that are used to secure either a 20-foot or 40-foot ribbed containers that are unloaded from cargo ships. The trailer has a long beam in the middle with two perpendicular beams at the top and bottom, giving it the shape of an “I” when viewed from above. The I-Beams Chassis is typically black or orange in color and makes the Port containers appear elevated from the side view.

<sup>23</sup> Adapted from *Protocol for the West Oakland Diesel Truck Survey*. March 2008. Sonoma Technology, Inc. and the Bay Area Air Quality Management District.

<sup>24</sup> With one caveat: A small portion of container trucks are attributed to local businesses that may not necessarily be Port-related and destined for transport via ship or train.

	Port container truck		<p>The most common type of drayage trucks are Port Container Trucks. The container trucks are typically five axles with a container loaded on an I-Beam chassis trailer. An easy cue that a truck is a port container truck is the 20 feet or 40 feet long container with the characteristic vertical ribbing, although there are a few exceptions when a Port container truck will have a smooth container. These containers usually have vertical ridges. They are also often labeled with a shipping company name, such as: APL, CSX, China Shipping, Cosco, Evergreen, Geseaco, Hamburg Sud, Hanjin, Hapag-Lloyd, Hyundai, Ivara, "K" Line, MAERSK and Maersk Sea Land, Matson, Mitsui O.S.K. Lines, MOL, NYK log, OOCL, P &amp; K, Pivan, TEX, TRITON, Wan Hai, and Yang Ming.</p>
	Non-Port: Flatbed chassis truck, container truck, gasoline tanker truck		<p>Non-Port 5-axle trucks appear as a flatbed chassis or with a smooth container stacked on top of a flatbed chassis (as opposed to the I-beam). The Non-Port Flatbed Chassis Truck does not have the "I" shape; instead these have a flatbed or platform to support a variety of materials. Non-Port Container Trucks do not have the typical ribbing that a Port container truck has. Non-Port Container Trucks are typically 53 feet long with the container built on the chassis as a single unit.</p>
6 or more axles	Tandem tractor/trailer		<p>Six-axle trucks are rare at these sites. These may be a Port truck with two Port containers trailing behind, or a construction truck used for carrying large quantities of gravel.</p>

CBE East Oakland Diesel Truck and Bus Classification Log Sheets  
 (Adapted from *Protocol for the West Oakland Diesel Truck Survey*)

Survey Date (MM/DD/Year): \_\_\_\_\_

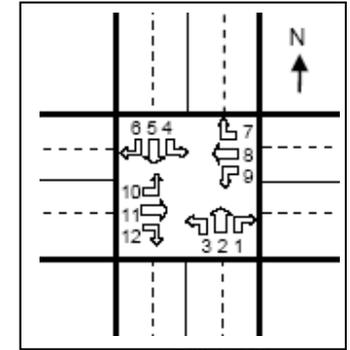
Surveyor: \_\_\_\_\_

Location:

Cross Street:

Direction: North-South East-West

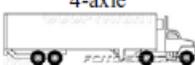
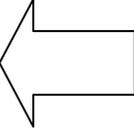
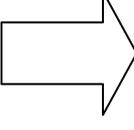
Label the diagram to the right with street names and label your location with a star



Day of the Week (circle one): Mon Tue Wed Thu Fri Sat

Start Time: \_\_\_\_\_ AM / PM

End Time: \_\_\_\_\_ AM / PM

Circle direction entering intersection	Label direction leaving intersection	2-axle 	3-axle (other) 	3-axle Bobtail  (Port truck)	4-axle 	5-axle  (Flatbed Chassis/ Non-Port truck)	5-axle Port Container Truck 	5-axle I-Beam Chassis/Empty Port Chassis Truck 	6 or more axle 
North or West 									
									
									
South or East 									
									
									

CBE East Oakland Diesel Truck and Bus License Plate Log Sheets

(Adapted from *Protocol for the West Oakland Diesel Truck Survey*)

Survey Date (MM/DD/Year): \_\_\_\_\_ Surveyor: \_\_\_\_\_

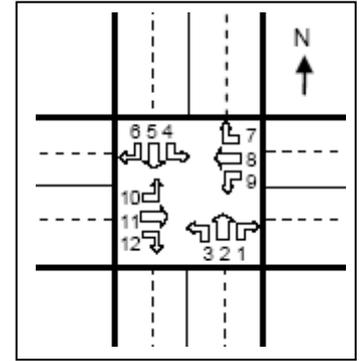
Location: \_\_\_\_\_

Day of the Week (circle one): Mon Tue Wed Thu Fri Sat

Start Time: \_\_\_\_\_ AM / PM End Time: \_\_\_\_\_ AM / PM

Instructions:

- Record about 10 license plate numbers and direction (**using the numbering system in the diagram**) per hour while counting trucks
- Record only license number of the front (tractor portion) of each truck
- Draw a line through zeros so that they are not confused for letters.



- |      |      |      |      |
|------|------|------|------|
| 1.)  | 15.) | 29.) | 43.) |
| 2.)  | 16.) | 30.) | 44.) |
| 3.)  | 17.) | 31.) | 45.) |
| 4.)  | 18.) | 32.) | 46.) |
| 5.)  | 19.) | 33.) | 47.) |
| 6.)  | 20.) | 34.) | 48.) |
| 7.)  | 21.) | 35.) | 49.) |
| 8.)  | 22.) | 36.) | 50.) |
| 9.)  | 23.) | 37.) | 51.) |
| 10.) | 24.) | 38.) | 52.) |
| 11.) | 25.) | 39.) | 53.) |
| 12.) | 26.) | 40.) | 54.) |
| 13.) | 27.) | 41.) | 55.) |
| 14.) | 28.) | 42.) | 56.) |

CBE East Oakland Diesel Truck and Bus Survey Log Sheets—**Three-way Intersection**  
 (Adapted from *Protocol for the West Oakland Diesel Truck Survey*)

Survey Date (MM/DD/Year): \_\_\_\_\_

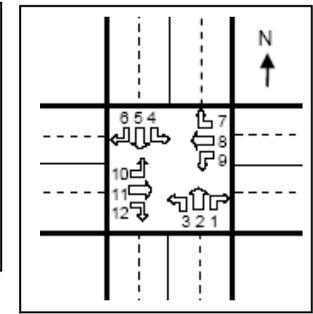
Surveyor: \_\_\_\_\_

Day of the Week (circle one): Mon Tue Wed Thu Fri Sat

Start Time: \_\_\_\_\_ AM / PM

End Time: \_\_\_\_\_ AM / PM

Location: \_\_\_\_\_  
 Cross Street: \_\_\_\_\_  
 Direction:      North-South      East-West  
 Label the diagram to the right with street names and label your location with a star



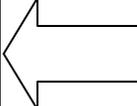
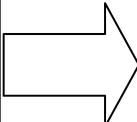
Label direction entering intersection	Label direction leaving intersection	2-axle 	3-axle (other) 	3-axle Bobtail  (Port truck)	4-axle 	5-axle  (Flatbed or Flatbed Chassis/ Non-Port truck)	5-axle Port Container Truck 	5-axle I-Beam Chassis/Empty Port Chassis Truck 	6 or more axle 
									
									
									
									
									
									
									
									
									

Table 5. Logistics and Truck-Attracting Businesses from CBE Community-Based Mapping Study<sup>25</sup>

Facility Name	Address	Zip code	Intersection	Notes and Concerns
Wells Industrial Complex	850 92nd Ave	94621	San Leandro St and 92nd Ave	Durham Schools Pacer Cartage Ace Iron Ink C.R. Windows Dairy Fresh Fast Lane (intermodal)
? Unmarked active facility	1067 77th Ave.	94621	Hamilton St. and 77th Ave.	Trucks_ non-trailer truck loading bay.
No name	955 87th Ave	94621	87th Ave and E St	Food import
R & A Trucking	1050 77th Ave	94621	77th Ave and Rudsdale St	Distribution; truck repair; huge. Takes up 1 block of 77th Ave.
Corn Joes Appliances	1361 92nd Ave	94621	1 block off International Ave	Big Riggs deliver appliances.
UPS/ Fed-Ex_ DHL	9525 96th Ave	94621	96th Ave and International Blvd	Large building; pick-up/ parking lot (on the corner).
Post office	9201 International Blvd	94621	92nd Ave and International Blvd	Postal service department.
Benefit	725 Amelia St.	94621	Amelia St @ 85th Ave	Receiving and shipping docks for diesel trucks.
Shed Works/D & J International	8402 Amelia St.	94621	Amelia St @ 85th Ave	Office_ shipping and receiving dock for diesel trucks.
The Community Closet Thrift Store	8430 Amelia St.	94621	Amelia St @ 85th Ave	Shipping and receiving.
Mothers Cookies	836 81st Ave.	94621	81st Ave. and San Leandro St.	Possibly unoccupied. Sub-divided industrial space.
No name	860 81st Ave.	94621	81st Ave. and San Leandro St.	Shipping and receiving.
Coliseum Industrial	910 81st Ave.	94621	81st Ave. and San Leandro St.	One space leased to Mercedes Benz Workshop. Non-trailer truck traffic.
Dean's Services	940 81st Ave.	94621	Rudsdale St. and 81st Ave.	Diesel truck traffic; noxious odors in the air. Logistics services for the food industry
GY	91005 G Street	94621	G St and 88th Ave?	Is this supposed to be 9015 G St? If so, it's a warehouse; general industrial/ transp; M-30
88th Ave Complex Rental	940 88th Ave	94621	88th Ave and G St	Trucks
No name	8541 Amelia St	94621	Amelia St and 85th Ave	Lots of trucks parked
Bay Area Warehouse Co	8707 San Leandro St	94621	San Leandro St and 85th Ave	
US Imports	9009 San Leandro St	94621	San Leandro St and 92nd Ave	
Studios	9029 San Leandro St	94621	San Leandro St and 92nd Ave	Warehouse; General Industrial/ Transp; M-40
Oakland Foreign Trade Zone/ PAC AM	9401 San Leandro St	94621	San Leandro St and Industrial St	
Sayfee Hardware Trucks & Trailer Rentals	10226 International Blvd	94621	Intl Blvd and 102nd Ave	568-1137
Penn Logistics	691 85th Ave	94621	85th Ave and Railroad Ave	High concern. Since 7/2007. Diesel truck traffic at 85th and Railroad blocking the street and idling.
AMS	700 Blenheim St	94621	Blenheim St and Pearmain St	High concern. 925-288-9606; warehousing
Golden Gate Truck Co.	8200 Baldwin St	94621	Baldwin St and McClary Ave	
Service West (Furniture Installation)	9201 San Leandro St	94621	San Leandro St and 92nd Ave	430-1752; office furniture industry--warehousing, commercial moving services
Experience Autobody and Paint/ Micki's Towing and Storage	973 86th Ave.	94621	E St. and 86th Ave.	Diesel towing trucks have a driveway across the street from Tassafaronga. Headstart on 85 <sup>th</sup> Ave.
A & B Auto Co	87117 G Street	94621	88 <sup>th</sup> Ave and G St	Across from a lot of diesel truck cabs
Redwood Coast Petroleum Gas and Truck Stop	8119 San Leandro St	94621	San Leandro St and 81 <sup>st</sup> Ave	Gas station, truck wash and repair, store, propane
Lane Stanton Vance Lumber Co.	745 Amelia St.	94621	Amelia St @ 85 <sup>th</sup> Ave	Many businesses Receiving and shipping docks for diesel trucks.
Kares Construction?	810 81 <sup>st</sup> Ave.	94621	81 <sup>st</sup> Ave. and San Leandro St.	Industrial site. SAIA.com truck logo entering the company property.
AJW Construction_ Paving & Grading	966 81 <sup>st</sup> Ave.	94621	Rudsdale St. and 81 <sup>st</sup> Ave.	Materials storage; truck traffic; noxious odors in the air.

<sup>25</sup> Anna Yun Lee. 2008. *Cumulative Impacts in East Oakland: Findings from a community-based mapping study*. Available at: <http://cbeal.org>

Smurfit-Stone Oakland Recycling Plant	800 77 <sup>th</sup> Ave	94621	77 <sup>th</sup> Ave at San Leandro St.	Papers recycling; trucks line around the corner; idling.
Accent Umbrellas	950 77 <sup>th</sup> Ave.	94621	Hawley St. and 77 <sup>th</sup> Ave.	One loading dock for non-trailer trucks.
Ismy's Towing Company	8630 87 <sup>th</sup> Ave	94621	87 <sup>th</sup> Ave and E St	Towing and storage, 24 hrs.

Table 6. Sensitive Receptors Identified from CBE Community-Based Mapping Study <sup>26</sup> and Truck Study

Name	Address	Zip Code	Intersection	Notes
Allen Temple Community Outreach Center	709 International Blvd	94621	72 <sup>nd</sup> Ave and International Blvd	Community outreach services.
Bethlehem Family Ministry	8721 International Blvd	94621	87 <sup>th</sup> Ave and International Blvd	Church.
United Outreach Church	1200 75 <sup>th</sup> Ave	94621	75 <sup>th</sup> Ave and Rudsdale St	Church.
Kingdom Hall Jehovah Witness	1057 98 <sup>th</sup> Ave	94621	98 <sup>th</sup> Ave and E St	Church
Allen Temple Baptist Church	8501 International Blvd	94621	International Blvd and 85 <sup>th</sup> -86 <sup>th</sup> Ave	Church.
Lily of the Valley	1010 91 <sup>st</sup> Ave	94621	91 <sup>st</sup> Ave and E St	Church
Cosmopolitan Baptist Church	988 85 <sup>th</sup> Ave.	94621	85 <sup>th</sup> Ave and E St	Church 569-6441
Tassafaronga Head Start	975 85 <sup>th</sup> Ave.	94621	E St. and 85 <sup>th</sup> Ave.	
Tassafaronga Recreation Center	971 85 <sup>th</sup> Ave.	94621	E St. and 85 <sup>th</sup> Ave.	City of Oakland_ Parks and Recreation Department.
Allen Temple Children Center	1285 86 <sup>th</sup> Ave	94621	International Blvd and 86 <sup>th</sup> Ave	Child care center.
Highland Elementary	8621 A Street	94621	Between 84 <sup>th</sup> / 85 <sup>th</sup> Ave on A St	School.
ACORN Elementary	1025 81 <sup>st</sup> Ave	94621	Between 80 <sup>th</sup> / 81 <sup>st</sup> Ave	School.
Riley Chapel CME Church	1302 80 <sup>th</sup> Ave	94621	On 80 <sup>th</sup> Ave at the corner of B St	Church.
Kiddieland Childcare Center	1268 78 <sup>th</sup> Ave	94621	Middle of block and Rudsdale St	Dirty-looking center that looks cluttered.
East Oakland Health Care Center	7450 International Blvd	94621	74 <sup>th</sup> Ave and International Blvd	Two buildings on the left side of International Blvd.
City of Oakland Head Start	9202 International Blvd	94621	92 <sup>nd</sup> Ave and International Blvd	Head start for children.
Community Service Ministry	9440 International Blvd	94621	95 <sup>th</sup> Ave and International Blvd	Community service organization.
Mt Zion Prayer Tower Mission	8615 International Blvd	94621	96 <sup>th</sup> Ave and International Blvd	Church.
Abundant New Life Generation	9711 International Blvd	94621	97 <sup>th</sup> Ave and International Blvd	Church.
Pentecostal Church Latino	8909 International Blvd	94621	89 <sup>th</sup> Ave and International Blvd	Church.
Resurrection Concord Christian Church	8901 International Blvd	94621	89 <sup>th</sup> Ave and International Blvd	Church.
House of Truth	8835 International Blvd	94621	89 <sup>th</sup> Ave and International Blvd	Church.
New Hope Church of God in Christ	9248 International Blvd	94621	89 <sup>th</sup> Ave and International Blvd	Church.
EnCompass Academy	1025 81 <sup>st</sup> Ave.	94621	Rudsdale St. and 81 <sup>st</sup> Ave.	Elementary-age school; noxious odors in the air.
Allen Temple Gardens	10121 International Blvd	94621	Intl Blvd and 101 <sup>st</sup> Ave	383-9190; Senior Housing
Foothill Square Early Head Start	10700 MacArthur Blvd	94621	MacArthur Blvd and 107 <sup>th</sup> Ave	553-9926
Oland Daycare Services	10938 Reposo Drive	94621	Reposo Dr and Bergedo Dr	562-6635
1234 Tots Family Day Care	1234 82 <sup>nd</sup> Ave	94621	82 <sup>nd</sup> Ave and A St	562-6200
Show Me Love Daycare	1279 79 <sup>th</sup> Ave	94621	79 <sup>th</sup> Ave and International Blvd	777-2983
Allen Temple Baptist Church Nursery	1321 86 <sup>th</sup> Ave	94621	86 <sup>th</sup> Ave and A St	562-8421
Barbara Jackson Daycare	1449 74 <sup>th</sup> Ave	94621	74 <sup>th</sup> Ave and International Blvd	638-4560
Little People	1535 92 <sup>nd</sup> Ave	94621	92 <sup>nd</sup> Ave and Holly St	569-2208
Parent Child Development Center	1643 90 <sup>th</sup> Ave	94621	90 <sup>th</sup> Ave and Walnut St	635-1690

<sup>26</sup> Anna Yun Lee. 2008. *Cumulative Impacts in East Oakland: Findings from a community-based mapping study*. Available at: <http://cbeal.org>

Rosalie's Little Sunshine Day Care	2017 83 <sup>rd</sup> Ave	94621	83 <sup>rd</sup> Ave and Olive St	639-7512
Loni's Day Care	2628 90 <sup>th</sup> Ave	94621	90 <sup>th</sup> Ave and Thermal St	638-7334
House of Many Children	284 Cairo Rd	94621	Cairo Rd and Coral Rd	635-1376
Little Angels	2975 Parker Ave	94621	Parker Ave and Outlook Ave	632-2028
Crumb Snatchers	7426 Hillmont Drive	94621	Hillmont Dr and 75 <sup>th</sup> Ave	568-8038
Arroyo Viejo Recreation Center	7701 Krause Ave	94621	Krause Ave and 77 <sup>th</sup> Ave	615-5755
Color Me Children Preschool & Kindergarten	8115 Fontaine St	94621	Fontaine St and Holmes Ave	430-1322
Lossiland Preschool	8130 Plymouth St	94621	Plymouth St and 81 <sup>st</sup> Ave	569-8150
Allen Temple Arms	8135 International Blvd	94621	Intl Blvd and 81 <sup>st</sup> Ave	562-2771; Senior Housing
East Oakland Youth Development Center	8200 International Blvd	94621	International Blvd and 82 <sup>nd</sup> Ave	569-8088
Ossian Carr Boys and Girls Club	8530 International Blvd	94621	International Blvd and 85 <sup>th</sup>	638-1532
YMCA of the East Bay	8711 MacArthur Blvd	94621	MacArthur Blvd and 88 <sup>th</sup> Ave	635-1534
Kids of the Kingdom	8800 Fontaine St	94621	Fontaine St and Crest Ave	569-0900
Ira Jinkins Recreation Center	9175 Edes Ave	94621	Edes Ave and Jones Ave	615-5959
Verdese Carter Park	9600 Sunnyside St	94621	Sunnyside St and 96 <sup>th</sup> Ave	615-5758
Futures Elementary, Roots, Coliseum College Prep and other schools	6701 International Blvd	94621	66 <sup>th</sup> Ave and International Blvd	school
Acts Full Gospel Church of God In Christ and Academy	1034 66 <sup>th</sup> Ave	94621	66 <sup>th</sup> Ave and International Blvd	Church and school
Greenman Field	66 <sup>th</sup> Ave	94621	66 <sup>th</sup> Ave and International Blvd	Recreation area/ open space
Brookfield Village Elementary School	401 Jones Avenue	94603	Jones and Edes Ave	School
Brookfield Branch Library	9255 Edes Ave	94603	Jones and Edes Ave	Library