325 Seventh Street Project

DEIR, Technical Appendix

SCH No. 200712205

Oakland, Ca 94604
Oct. 2010
City of Oakland
250 Frank Ogawa Plaza

LAMPHIER - GREGORY
URBAN PLANNING, ENVIRONMENTAL ANALYSIS & PROJECT MANAGEMENT | 510.535.6690

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APPENDIX A

NOTICE OF PREPARATION/INITIAL STUDY

CITY OF OAKLAND

250 FRANK H. OGAWA PLAZA, SUITE 2340 • OAKLAND, CALIFORNIA 94612-2031

Community and Economic Development Agency
Building Services Division

(510) 238-3102
FAX (510) 238-2959
TDD (510) 238-3691

NOTICE OF PREPARATION (NOP) OF A DRAFT ENVIRONMENTAL IMPACT REPORT (EIR) 325 SEVENTH STREET PROJECT

The Oakland Community and Economic Development Agency, Planning and Zoning Division, is preparing a Draft Environmental Impact Report (EIR) for the **325 Seventh Street Project** as identified below, and is requesting comments on the scope and content of the EIR. The EIR will address the potential physical, environmental effects for each of the environmental topics outlined in the California Environmental Quality Act (CEQA).

The City has prepared an Initial Study that identified areas of probable environmental effects. The Initial Study is available at the Planning Division office, City of Oakland, Community and Economic Development Agency, 250 Frank H. Ogawa Plaza, Suite 3315, Oakland, CA 94612. The Initial Study may also be reviewed at the following website: http://www.oaklandnet.com/government/ceda/revised/planningzoning/MajorProjectsSection/environmentaldocuments.html

The City of Oakland is the Lead Agency for the Project and is the public agency with the greatest responsibility for approving the Project or carrying it out. This notice is being sent to Responsible Agencies and other interested parties. Responsible Agencies are those public agencies, besides the City of Oakland, that also have a role in approving or carrying out the Project. When the Draft EIR is published, it will be sent to all Responsible Agencies and to others who respond to this NOP or who otherwise indicate that they would like to receive a copy. Responses to this NOP and any questions or comments should be directed in writing to: Heather Klein, Planner III, City of Oakland Community and Economic Development Agency, 250 Frank H. Ogawa Plaza, Suite 3315, Oakland, CA 94612, (510) 238-6284 (phone); (510) 238-6538 (fax); or e-mailed to hklein@oaklandnet.com. Comments on the NOP must be received at the above mailing or e-mail address **by 6:30 p.m. January 16, 2007**. Please reference case number **ER07-002; CMDV06-573** in all correspondence. In addition, comments may be provided at the EIR Scoping Meeting to be held before the City Planning Commission. Comments should focus on discussing possible impacts on the physical environment, ways in which potential adverse effects might be minimized, and alternatives to the project in light of the EIR's purpose to provide useful and accurate information about such factors.

PUBLIC HEARINGS: The City Planning Commission will conduct a public scoping hearing on the Draft EIR for the project on **January 9, 2007**, at **6:30 p.m.** in Hearing Room 1, City Hall, 1 Frank H. Ogawa Plaza.

PROJECT TITLE: 325 Seventh Street Project

PROJECT LOCATION: The Project site is located on an approximately 35,500-square-foot "S-shaped" collection of seven parcels in the Chinatown neighborhood of downtown Oakland. Portions of the project site front on Seventh Street, Harrison Street and Sixth Street.

PROJECT SPONSOR: BALCO Properties Ltd., LLC

EXISTING CONDITIONS: There are five existing buildings on the project site. Across Harrison Street to the east is the Chinese Garden Park. To the south is I-880, a multi-lane elevated freeway adjacent to Sixth Street. To the west and north of the site are several commercial establishments, some within the same block as the proposed project, and other across Seventh Street opposite the project site. No portion of the project site is identified on the current Department of Toxic Substances Control Hazardous Waste and Substances List (Cortese List). A portion of the Project site is located within the 7th Street Residential District Area of Primary Importance (API 7R).

PROJECT DESCRIPTION: The project applicant proposes to demolish all existing structures at the project site with the exception of the existing residential structure currently located at 617-621 Harrison Street. This building is proposed to be relocated to a lot in the vicinity of 14th Street and Peralta Street in the Oakland Point District in West Oakland. The project proposal is to redevelop the project site with construction of 382 condominium units and ground floor commercial space. Two towers would be situated on a four-story podium, each tower reaching a total height of 23 stories (approximately 237 feet to the top of the roofline, approximately 286 feet to the top of the tower feature on Tower 1, and approximately 280 feet to the top of the architectural feature on Tower 2). Commercial space would be provided at street level along the Harrison Street/Seventh Street corner (approximately 5,913 square feet of general retail space and approximately 2,999 square feet of office/administration space). On the fourth floor podium, three community rooms and a 6,619 square foot courtyard would be provided. On the twentieth floor of Tower 1, a 1,200 square foot courtyard would be provided. A total of 397 off-street parking spaces would be provided within a parking garage (one story underground and three stories above ground).

PROBABLE ENVIRONMENTAL EFFECTS:

The Initial Study screened out environmental factors that will not be further studied in the Draft EIR. These factors include: Agricultural Resources, Air Quality, Biological Resources, Cultural Resources, Geology/Soils, Hydrology/Water Quality, Land Use/Planning, Mineral Resources, Noise, Population/Housing, Public Services, Recreation, and Utilities/Service Systems. The Draft EIR will address the potential environmental effects for Aesthetics, Hazards/Hazardous Materials and Transportation/Traffic only. All other impacts would be mitigated to less than significant levels. The Draft EIR will also examine a reasonable range of alternatives to the Project, including the CEQA-mandated No Project Alternative, and other potential alternatives that may be capable or reducing or avoiding potential environmental effects.

December 18, 2007
File Number Enter ER07-002; CMDV06-573

Claudia Cappio
Development Director
Environmental Review Officer

Mailing Attachments:

Exhibit A - Vicinity Map
Exhibit B - Enlarged Site Plan
Exhibit C- 3D Visual Simulation: Seventh Street Frontage
Exhibit D-3D Visual Simulation: Sixth Street Frontage

Exhibit A
Vicinity Map

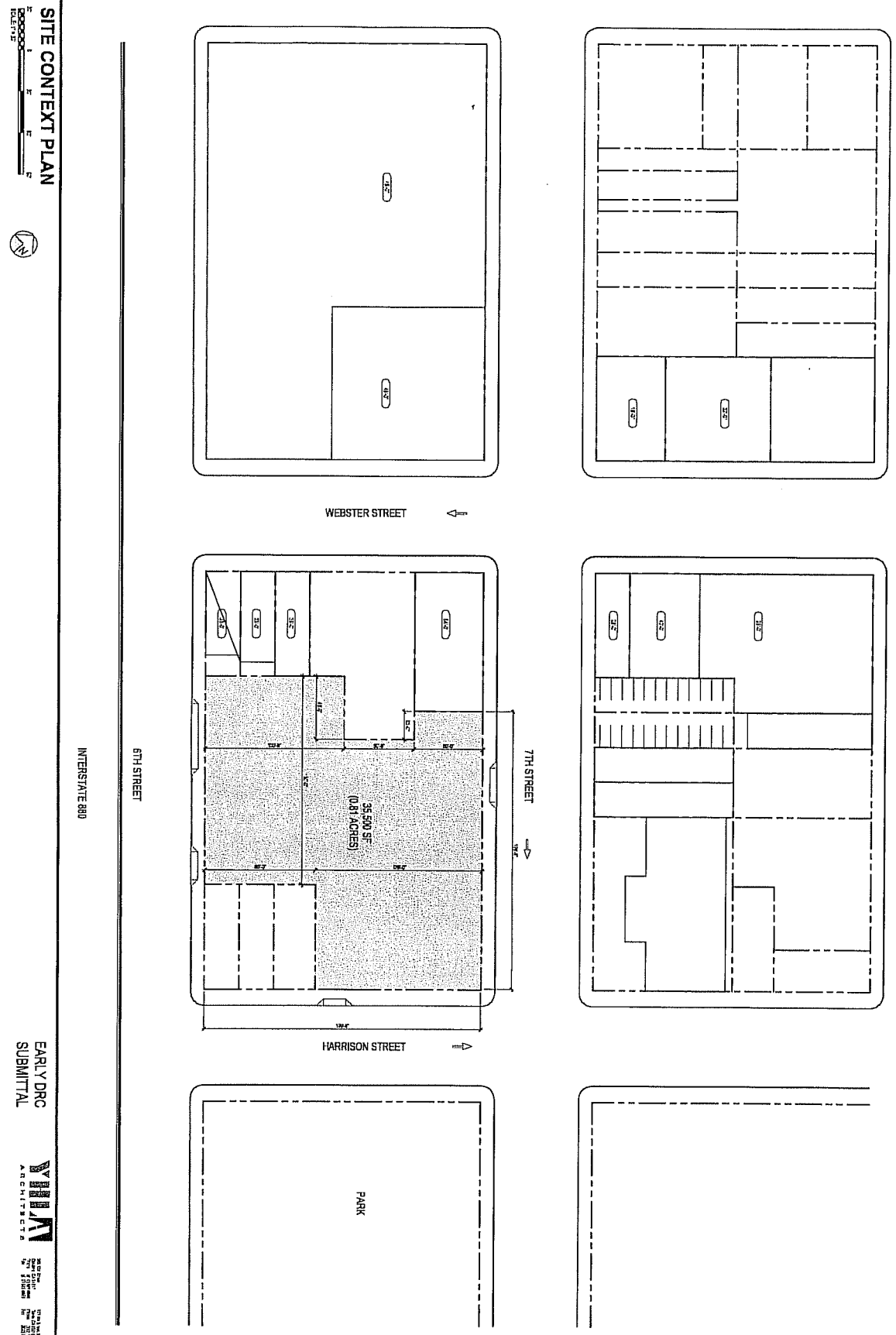
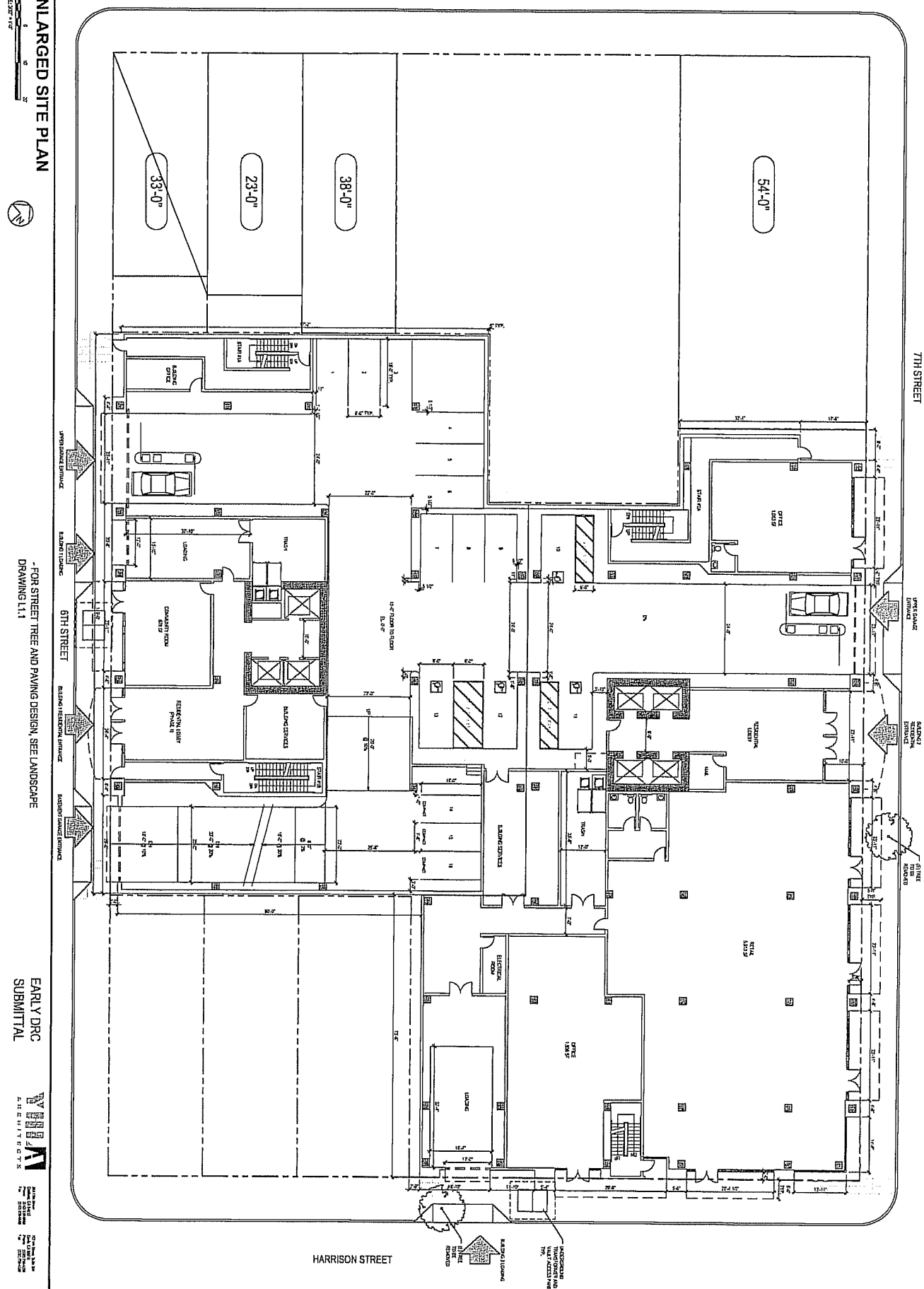


Exhibit B
Enlarged Site Plan



ENLARGED SITE PLAN

- FOR STREET TREE AND PAVING DESIGN, SEE LANDSCAPE DRAWING L1.1

EARLY DRC SUBMITTAL

325 SEVENTH STREET
OAKLAND, CALIFORNIA

Exhibit C
Visual Simulation: Seventh Street Frontage

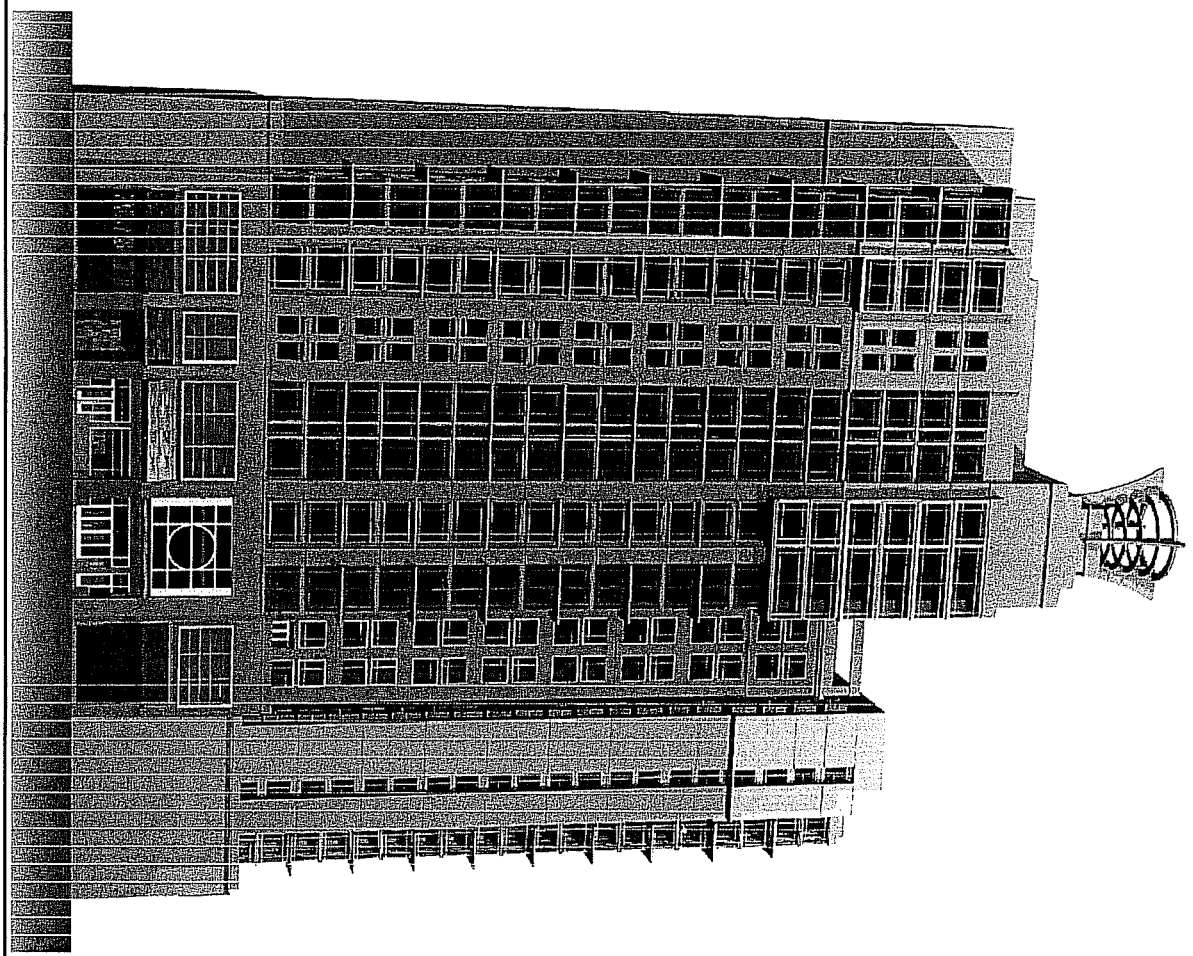
3D VISUALIZATIONS

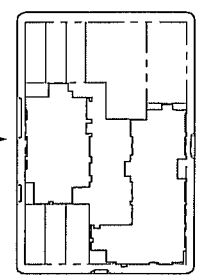
EARLY DRC SUBMITTAL

S2

325 SEVENTH STREET
OAKLAND, CALIFORNIA

Exhibit D
Visual Simulation: Sixth Street Frontage





6TH STREET FACADE

3D VISUALIZATIONS

EARLY DRC SUBMITTAL

325 SEVENTH STREET
OAKLAND, CALIFORNIA

S1

City of Oakland

File No. ER07-002

Reference No. CMDV06-573

INITIAL STUDY AND ENVIRONMENTAL REVIEW CHECKLIST

California Environmental Quality Act (CEQA)

1. Project Title:

   325 Seventh Street Project

2. Lead Agency Name and Address:

   City of Oakland
   Community and Economic Development Agency, Planning Division
   250 Frank H Ogawa Plaza, Suite 3315
   Oakland, CA 94612

3. Contact Person and Phone Number:

   Heather Klein, Planner III
   (510) 238-3659

4. Project Location:

   The 35,500 square-foot Project site is located at 325 Seventh Street in the Chinatown neighborhood of downtown Oakland. The Project site is irregularly shaped, extending from the corner of Seventh Street and Harrison Street to Sixth Street, forming the shape of an "S".

5. Project Sponsor's Name and Address:

   BALCO Properties Ltd., LLC
   1624 Franklin Street, Suite 310
   Oakland, CA 94612

6. General Plan Designation:

   The Project site is comprised of seven (7) parcels. All have a General Plan Land Use and Transportation Element (LUTE) designation of Central Business District (CBD).

7. Zoning:

The parcels have the following Zoning designations and current land use:

Assessor's Parcel Number	Zoning Designation	Land Use
001-018900500	C-40/S-17	Office Building
001-018900600	C-40/S-17	Commercial Lot
001-018900700	C-40/S-17	Parking Lot
001-018900800	C-40/S-17	Office Building
001-018900900	C-40/S-17	Residential
001-018901400	C-40/S-17	Warehouse
001-018901300	C-40/S-17	Warehouse

The C-40 or Community Thoroughfare Commercial Zone is intended to create, preserve, and enhance areas with a wide range of both retail and wholesale establishments serving both short and long term needs in convenient locations, and is typically appropriate along major thoroughfares. The S-17 or Downtown Open Space Combining Zone is an overlay zone applied to the site and is supplementary to the zone with which the S-17 zone is combined. The S-17 zone is intended to provide open space standards for residential developments that are appropriate to the unique density, urban character and historic character of the central business district.

8. Description of Project:

The Project site, located at 325 Seventh Street in Oakland, CA, is approximately 0.81 acre in size, comprised of seven (7) separate parcels. **Exhibit A** shows the Project location and vicinity. There are five (5) existing buildings on the Project site.

The Project Applicant, BALCO Properties Ltd., proposes to demolish all of the existing structures at the site, with the exception of the existing residential structure currently located at 617-621 Harrison Street. This residential structure would be relocated to a new site near 14th Street and Peralta Street.

The applicant would then redevelop the Project site with construction of 382 residential condominium units. The mix of residential units would be as follows:

- 39 studio units
- 158 one-bedroom units
- 145 two-bedroom units and
- 40 two bedroom plus units.

The building is designed as two tall towers situated on a four-story podium, each tower reaching a total height of 23 stories (approximately 237 feet at the top of the roof slab, approximately 286 feet at the top of the tower on Building 1, and approximately 280 feet at the top of the architectural feature on Building 2). The towers are entirely residential and include common open space.

Commercial space would be provided at street level along the Harrison Street/Seventh Street corner (approximately 5,913 square feet of general retail space and approximately 2,999 square feet of office/ administration space). On the fourth floor, three community rooms and a 6,619 square foot courtyard would be provided. On the twentieth floor of Tower #1, a 1,200 square foot courtyard would be provided. A total of

397 off-street parking spaces would be provided within a parking garage (one story underground and three stories above ground level). **Exhibit C**, **Exhibit D**, **Exhibit E**, **Exhibit F** and **Exhibit G** illustrate the proposed Project

Development of the Project site as proposed would result in the creation of approximately 7,819 square feet of group open space (courtyards on the fourth floor and the twentieth floor), and approximately 11,915 square feet of private open space (balconies and patios for some of the 382 units proposed). Under Section 17.126.020 of the Oakland Municipal Code for purposes of calculating open space requirements, 1 square foot of private open space is the equivalent of 2 square feet of group open space. Using this ratio, total group open space (or equivalent) provided at the Project site would be 27,675 square feet (11,915 square feet of private open space x 2 = 23,830 square feet of group open space, plus 7,819 square feet of group open space provided in two courtyards = 27,675 square feet of group open space or equivalent).

In order to ensure that residents living at the Project site will not be exposed to freeway emissions with excessive levels of diesel particulate matter (DPM) or particulates smaller than 10 microns (PM-10) in their homes, the Project will incorporate a centralized ventilation (filtration) system with a minimum efficiency reporting value (MERV) 13 and efficiency consistent with American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 52.2 standards. Intakes for the filtration system will be located at the proposed group open space area that is located on the side of the building opposite from the freeway so that the air intakes will be as far from the freeway source as possible. Residents will be provided with fresh, cool air through the air conditioning system, rather than opening windows.

A total of 397 off-street parking spaces would be provided within a parking garage (one story underground and three stories above ground). Access to the parking areas would be via one entrance located on Seventh Street and two entrances located on Sixth Street. No vehicle access to the proposed parking areas would be provided along Harrison Street.

9. Surrounding Land Uses and Setting:

The Project site is located in the Chinatown neighborhood of Downtown Oakland. Across Harrison Street from the Project site to the east is the Chinese Garden Park. To the south is I-880, a multi-lane elevated freeway adjacent to Sixth Street. To the west and north of the Project site are several commercial establishments, some within the same block as the proposed Project, and others across Seventh Street opposite the Project site (see **Exhibit B – Site Context Photographs**).

10. Actions/permits which may be required, and for which this document provides CEQA review, include without limitation:

- Major Interim Conditional Use Permit for Floor Area Ratio (FAR) that exceeds zoning
- Minor Variances for dimensions of parking spaces due to lift spaces, dimension of parking spaces against column or other obstruction, tandem parking spaces, and a rear yard setback
- Major Design Review (Oakland Planning Commission)
- Tentative Parcel Map for condominium units
- Demolition Permit
- Grading Permit

- Building Permit
- Tree Removal Permit

11. Other Public Agencies Interested in the Project:

Since the proposed structures would exceed a height of 200 feet (maximum height of the proposed design feature is approximately 286 feet), the Project Applicant will need to comply with all applicable Federal Aviation Administration notification/marking requirements (see discussion under Section **XV: TRANSPORTATION/TRAFFIC** d), below).

Groundwater contamination has been identified at the Project site, and required cleanup efforts will need to be coordinated with the City of Oakland, the County of Alameda, and the California Department of Toxic Substances Control.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors "checked" below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages, which will be further studied in the EIR. No other environmental factors will be further studied in the EIR.

✔ Aesthetics	☐ Agricultural Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
✔ Hazards/Hazardous Materials	☐ Hydrology/Water Quality	☐ Land Use/Planning
☐ Mineral Resources	☐ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	✔ Transportation/Traffic
☐ Utilities/Service Systems	✔ Mandatory Findings of Significance	

DETERMINATION:

On the basis of this initial evaluation:

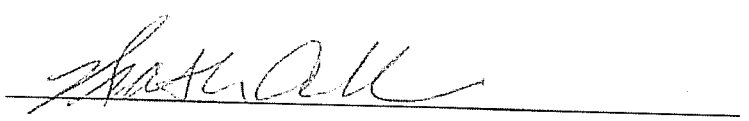
I find that the proposed project COULD NOT have a significant effect on the environment with Uniformly Applied Development Standards imposed as standard conditions of approval, and a NEGATIVE DECLARATION will be prepared.

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because mitigation measures and Uniformly Applied Development Standards have been imposed on the project. A MITIGATED NEGATIVE DECLARATION will be prepared.

I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required that will further study aesthetic and traffic/transportation impacts. No other environmental factors will be further studied.

I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Signature

Heather Klein
Planner III

12/18/07

Date

For Claudia Cappio
Development Director

EVALUATION OF ENVIRONMENTAL IMPACTS

CEQA requires that an explanation of all answers be provided along with this checklist, including a discussion of ways to mitigate any significant effects identified.

Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, less than significant with development standards, or less than significant. As defined here, a "Potentially Significant Impact" is appropriate if the significant effect is considered to have a substantial or potentially substantial adverse effect on the environment. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

A "Less than Significant with Mitigation" answer applies where incorporation of a mitigation measure that the applicant has already agreed to implement, would reduce an effect from a "Potentially Significant Impact to a "Less than Significant Impact" The lead agency must describe the mitigation measures, and briefly explain how it reduces the effect to a less than significant level.

A "Less than Significant with Development Standard" answer applies where incorporation of a development standard has reduced an effect from a "Potentially Significant Impact to a "Less than Significant Impact." The City's Uniformly Applied Development Standards are incorporated into projects as conditions of approval regardless of a project's environmental determination. As applicable, the Uniformly Applied Development Standards are adopted as requirements of an individual project when it is approved by the City and are designed to, and will, substantially mitigate environmental effects. In reviewing project applications, the City determines which of the standard conditions apply, based upon the zoning district, community plan, and the type(s) of permit(s)/approvals(s) required for the project. Depending on the specific characteristics of the project type and/or project site, the City will determine which Development Standards apply to each project; for example, Development Standards related to creek protection permits will only be applied to projects on creekside properties.

The Development Standards incorporate development policies and standards from various adopted plans, policies, and ordinances (such as the Oakland Planning and Municipal Codes, Oakland Creek Protection, Stormwater Water Management and Discharge Control Ordinance, Oakland Tree Protection Ordinance, Oakland Grading Regulations, National Pollutant Discharge Elimination System (NPDES) permit requirements, Housing Element-related mitigation measures, California Building Code, and Uniform Fire Code, among others), which have been found to substantially mitigate environmental effects. Where there are peculiar circumstances associated with a project or project site that will result in significant environmental impacts despite implementation of the Development Standards, the City will determine whether there are feasible mitigation measures to reduce the impact to less than significant levels in the course of appropriate CEQA review (mitigated negative declarations or EIRs).

A "Less than Significant Impact" answer applies where the project creates no significant or potentially significant adverse effect on the environment, based on the City's adopted environmental thresholds of significance.

A "No Impact" answer applies where a project does not create any impact in that category. A "No Impact" answer needs to be adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact answer is adequately supported if the referenced information sources show that the impact simply doesn't apply to projects like the one involved. A "No Impact" answer should be explained where it is based on project–specific factors as well as general standards.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
I. AESTHETICS -- Would the project:					
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☐	✔
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state or locally designated scenic highway?	☐	☐	☐	☐	✔
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☐	✔
d) Create a new source of substantial light or glare which would substantially and adversely affect day or nighttime views in the area?	☐	☐	✔	☐	☐
e) Introduce landscape that now or in the future cast substantial shadows on existing solar collectors (in conflict with California Public Resource Code Section 25980-25986)?	☐	☐	☐	☐	✔
f) Cast shadows that substantially impairs the function of a building using passive solar heat collection, solar collectors for hot water heating, or photovoltaic solar collectors?	✔	☐	☐	☐	☐
g) Cast shadow that substantially impairs the beneficial use of the any public or quasi-public park, lawn, garden, or open space?	✔	☐	☐	☐	☐
h) Cast shadow on an historic resource, as defined by CEQA Section 15064.5(a), such that the shadow would materially impair the resource's historic significance by materially altering those physical characteristics of the resource that convey its historical significance and that justify its inclusion on or eligibility for listing in the National Register of Historic Places, California Register of Historical Resources, Local Register of Historic Resources or a historical resource survey form (DPR Form 523) with a rating of 1-5?	✔	☐	☐	☐	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
i) Require an exception (variance) to the policies and regulations in the General Plan, Planning Code, or Uniform Building Code, and the exception causes a fundamental conflict with policies and regulations in the General Plan, Planning Code, and Uniform Building Code addressing the provision of adequate light related to appropriate uses?	☐	☐	☐	☐	✔
j) Create winds exceeding 36 mph for more than 1 hour during daylight hours during the year. The wind analysis only needs to be done if the project's height is 100 feet or greater (measured to the roof) and one of the following conditions exist: a) the project is located adjacent to a substantial water body (i.e., Oakland Estuary, Lake Merritt or San Francisco Bay); or b) the project is located in Downtown?	✔	☐	☐	☐	☐

Explanation:

a) The Project site is not located within a protected scenic vista or corridor. No scenic vistas have been formally identified in the vicinity of the Project site. The proposed Project would not adversely affect a scenic vista (*no impact*).

b) The Project site is located within a densely populated urban area. It is currently developed with existing structures and surface parking lots. There are no formally identified visual resources on, or in the vicinity of the Project site, including trees, rock outcroppings or any historic buildings within a state or locally designated scenic highway (per the List of Officially Designated State Highways [Caltrans] and the Scenic Highway Element of the Oakland General Plan [September 1974]). Development of the Project site as proposed would not result in a negative impact on a scenic resource (*no impact*).

c) Development of the Project site as proposed would result in the construction of two 23-story towers in an area where existing building heights are generally two- to three-stories (see **Exhibit B – Site Context Photographs**). The proposed structures would tower over surrounding buildings, and would replace several existing low-rise structures. This would represent a major change in the existing visual character of this portion of Oakland. However, the current General Plan encourages high-rise construction in downtown Oakland. The location, size, design and operating characteristics of the proposed Project will be subject to the City's Design Review process to ensure that the Project will be as attractive as the nature of the use and its location and setting warrant. Several high-rise structures have previously been built in the vicinity of the Project site. Viewed within the context of other new development in the area, the Project would not substantially degrade the existing character of the site or the surrounding area (*no impact*).

d) The development of two residential towers at the Project site as proposed would result in the creation of a new source of light or glare, since these towers would replace existing structures at the site that generate relatively little light or glare. Exterior lighting, windows that would be illuminated at night or reflect sunlight

during the day, and the use of building materials that may reflect sunlight during the day have the potential to create a new source of substantial light or glare. The Project would focus exterior lighting toward the buildings (rather than direct exterior lights to illuminate the sky above the buildings), and would employ low-reflective glass and building materials to reduce potential light and glare effects associated with the proposed structures. To ensure that no new source of substantial light or glare is introduced by the proposed Project, the following City of Oakland Standard Condition of Approval would apply:

Std. Cond. 1: The proposed lighting fixtures shall be adequately shielded to a point below the light bulb and reflector and that prevent unnecessary glare onto adjacent properties. Plans shall be submitted to the Planning and Zoning Division and the Electrical Services Division of the Public Works Agency for review and approval. All lighting shall be architecturally integrated into the site.

Compliance with the standard condition described above would ensure that adverse effects of light or glare on day or nighttime views in the area would be reduced to a level of *less than significant*.

e) Based on Project landscape plans for street level, the fourth floor level, and the twentieth floor level, there are no landscaping elements associated with the proposed development of the Project site that would cast any shadows on existing solar collectors (*no impact*).

f) The structures proposed at the Project site are considerably taller and more massive than surrounding structures, and would cast shadows over the surrounding area that could affect the ability of other buildings in the vicinity to collect solar energy, a ***potentially significant*** impact. The EIR will evaluate the extent of shadows generated by the Project structures on existing solar collectors.

g) The structures proposed at the Project site would cast shadows over the surrounding area, including the Chinese Garden Park located directly across Harrison Street from the Project site, a ***potentially significant*** impact. The EIR will evaluate the extent of shadows generated by the Project structures on the public park.

h) Given the height and mass of structures proposed at the Project site, it is possible that some buildings in the area that could be considered historic structures under CEQA could be shadowed at times, a ***potentially significant*** impact. The EIR will evaluate the extent of shadows generated by the Project structures on historic resources.

i) Development of the Project site as proposed would not require any exception (variance) to the policies and regulations in the General Plan, Planning Code, or Uniform Building Code addressing the provision of adequate light related to appropriate uses (*no impact*).

j) As the height of structures proposed at the Project site exceeds 200 feet, the Project may generate ground-level winds, which could represent a ***potentially significant*** impact. The EIR will present a wind analysis, as the Project site is located in Downtown Oakland and the height of proposed structures exceeds 100 feet.

Source:

Project Description and Plans

Field Survey

List of Officially Designated State Scenic Highways, Caltrans website, access July 12, 2007 at http://www.dot.ca.gov/hq/LandArch/scenic/schwy_1.html.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
II. AGRICULTURAL RESOURCES -- Would the project:					
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resource Agency, to non-agricultural use?	☐	☐	☐	☐	✔
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☐	✔
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☐	☐	✔

Explanation:

The Project site is located in a densely populated urban area (Downtown Oakland), and is currently developed, with portions of the site paved with blacktop. The Project site is designated as Central Business District (CBD) in the General Plan Land Use and Transportation Element (LUTE), and zoned C-40 (Community Thoroughfare Commercial Zone), designations not intended to support agricultural activity. There would be *no impact* to agricultural resources as a result of this Project.

Source:

Oakland General Plan, Land use and Transportation Element, March 1998.

Oakland General Plan, Open Space, Conservation and Recreation Element, June 1996.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
III. AIR QUALITY -- Would the project:					
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☐	✔
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	✔	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	✔	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	✔	☐
e) Frequently create substantial objectionable odors affecting a substantial number of people?	☐	☐	☐	☐	✔
f) Contribute to CO concentrations exceeding the State AAQS of 9 ppm averaged over 8 hours and 20 ppm for 1 hour Pursuant to BAAQMD, localized carbon monoxide concentrations should be estimated for projects in which (1) vehicle emissions of CO would exceed 550 lb/day; (2) intersections or roadway links would decline to LOS E or F; (3) intersections operating at LOS E or F will have reduced LOS; or (4) traffic volume increase on nearby roadways by 10% or more unless the increase in traffic volume is less than 100 vehicles per hour?	☐	☐	☐	✔	☐
g) Result in total emissions of ROG, NOx, or PM10 of 15 tons per year or greater or 80 pounds (36 kilograms) per day or greater?	☐	☐	☐	✔	☐
h) Result in potential to expose persons to substantial levels of Toxic Air Contaminants (TAC), such that the probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million?	☐	☐	☐	✔	☐
i) Result in ground level concentrations of non-carcinogenic TACs such that the Hazard Index would be greater than 1 for the MEI?	☐	☐	☐	☐	✔
j) Result in a substantial increase in diesel emissions?	☐	☐	✔	☐	☐

Cumulative Impacts

k) A project's contribution to cumulative impacts is considered "considerable" (i.e., significant) when the project results in any individually significant impact?	☐	☐	☐	☐	✔
l) Result in a fundamental conflict with the local general plan, when the general plan is consistent with the regional air quality plan? When the general plan fundamentally conflicts with the regional air quality plan, then if the contribution of the proposed project is cumulatively considerable, when analyzed the impact to air quality should be considered significant.	☐	☐	☐	☐	✔

Explanation:

a) The uses proposed at the Project site comply with the existing zoning and General Plan designation for the site. The City of Oakland General Plan is consistent with the BAAQMD's Air Quality Plan. Therefore, the proposed Project would not conflict with any applicable air quality management or clean air plans (*no impact*).

b) **Construction Impacts:**

During construction, the project would generate short-term emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. Project-related construction activities would include demolition, site preparation, earthmoving and general construction activities. Emissions generated from these activities include dust (including particles that are 10 microns or less in diameter [PM-10] and particles that are less than 2.5 microns in diameter [PM-2.5])primarily from "fugitive" sources, such as soil disturbance, combustion emissions of criteria pollutants (reactive organic gases[ROG], nitrogen oxides [NOx], carbon monoxide [CO], sulfur oxides [SO_x], and PM-10) primarily from operation of construction equipment and from worker vehicles; and evaporative emissions (ROG) from asphalt paving and architectural coating applications.

Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines recognize that construction equipment emits ozone precursors, but indicate that such emissions are included in the emission inventory that is the basis for regional air quality plans. Therefore, construction emissions of ROG and NOx are not expected to impede attainment or maintenance of ozone standards in the Bay Area. The impact of construction equipment exhaust emissions would, therefore, be *less than significant.*

Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. In the absence of mitigation, construction activities may result in significant quantities of dust, and as a result, local visibility and PM-10 and PM–2.5 concentrations may be adversely affected on a temporary and intermittent basis during the construction period. In addition, the fugitive dust generated by construction would include not only PM-10, but also larger particles, which would fall out of the atmosphere within several hundred feed of the site and could result in nuisance-type impacts. The BAAQMD's approach to analyses of fugitive dust emissions from construction is to emphasize implementation of effective and comprehensive dust control measures rather than detailed quantification of

emissions. The District considers any project's construction-related impacts to be less than significant if the required dust control measures are implemented. Without these measures, the impact is generally considered to be significant, particularly if sensitive land uses are located in the project vicinity. In the case of the Project, residential land uses are located adjacent to the Project site. The proposed Project would be subject to the measures approved by the BAAQMD (listed below), which are uniformly applied by the City as Standard Conditions of Approval, and which could reduce the impact of fugitive dust emissions to a level of less than significant.

Std. Cond. 2: During construction, the project applicant shall require the construction contractor to implement the following measures required as part of Bay Area Air Quality Management District's (BAAQMD) basic and enhanced dust control procedures required for construction sites. These include:

- Water all active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
- Sweep daily (with water sweepers using reclaimed water if possible) all paved access roads, parking areas and staging areas at construction sites.
- Sweep streets (with water sweepers using reclaimed water if possible) at the end of each day of visible soil material is carried onto adjacent paved roads.
- Limit the amount of disturbed area at any one time, where feasible.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.
- Pave all roadways, driveways, sidewalks, etc. as soon as feasible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Replant vegetation in disturbed areas as quickly as feasible.
- Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speed on unpaved roads to 15 miles per hour.
- Clean off the tires or tracks of all trucks and equipment leaving any unpaved construction areas.

Std. Cond. 3: To minimize construction equipment emissions during construction, the project applicant shall require the construction contractor to:

- Demonstrate compliance with Bay Area Air Quality Management District (BAAQMD) Regulation 2, Rule 1 (General Requirements) for all portable construction equipment subject to that rule. BAAQMD Regulation 2, Rule 1, provides the issuance of authorities to construct and permits to operate certain types of portable equipment used for construction purposes (e.g., gasoline or diesel-powered engines used in conjunction with power generation, pumps, compressors, and cranes) unless such equipment complies with all applicable requirements of

the "CAPCOA" Portable Equipment Registration Rule" or with all applicable requirements of the Statewide Portable Equipment Registration Program. This exemption is provided in BAAQMD Rule 2-1-105.

- Perform low-NOx tune-ups on all diesel-powered construction equipment greater than 50 horsepower (no more than 30 days prior to the start of use of that equipment). Periodic tune-ups (every 90 days) should be performed for such equipment used continuously during the construction period.

As required for all development projects involving demolition of existing buildings, the project applicant would be required to implement and comply with the following uniformly-applied Standard Condition of Approval, which would help reduce the potential for public health hazards associated with airborne asbestos fibers or lead dust to a level of less than significant:

Std. Cond. 4: If asbestos-containing materials (ACM) are found to be present in building materials to be removed, demolition and disposal, the project applicant shall submit specifications signed by a certified asbestos consultant for the removal, encapsulation, or enclosure of the identified ACM in accordance with all applicable laws and regulations, including, but not necessarily limited to: California Code of Regulations, Title 8; Business and Professions Code; Division 3; California Health & Safety Code 25915-25919.7; and Bay Area Air Quality Management District, Regulation 11, Rule 2, as may be amended.

Std. Cond. 5: If lead-based paint is present, the project applicant shall submit specifications to the Fire Prevention Bureau, Hazardous Materials Unit signed by a certified Lead Supervisor, Project Monitor, or Project Designer for the stabilization and/or removal of the identified lead-based paint in accordance with all applicable laws and regulations, including but not necessarily limited to: Cal/OSHA's Construction Lead Standard, 8 CCR1532.1 and DHS Regulation 17 CCR Sections 35001 through 36100, as may be amended.

Operational Impacts:

Once complete and occupied, the proposed Project would generate emissions of criteria pollutants primarily as a result of increased motor vehicle traffic. However, traffic associated with the Project would not be expected to generate emissions that would exceed the BAAQMD CEQA Guidelines screening threshold of significance for operational emissions, based on the number of residential units and area of non-residential space proposed at the site (Bay Area Air Quality Management District, BAAQMD CEQA Guidelines, December 1999, page 25, Table 6, which indicates that residential development that does not exceed 510 apartment units would not be likely to generate 80 pounds of oxides of nitrogen [NOx] per day). Because development of the Project site as proposed would generate more than 2,000 vehicle trips per day, however, additional analysis of emissions associated with Project-related traffic was conducted. Using the manual modeling procedures in the BAAQMD CEQA Guidelines, at Project completion the level of Project-related trip generation (estimated at 2,521 trips per day, minus 42 existing trips per day currently generated at the Project site = 2,479 trips per day) would generate approximately 17 pounds of Reactive Organic Gases (ROG) per day (BAAQMD threshold of significance = 80 pounds per day), approximately 40 pounds of NOx per day (BAAQMD threshold of significance = 80 pounds per day), approximately 18 pounds of particulate matter(PM-10) per day (BAAQMD threshold of significance = 80 pounds per day), and approximately 254 pounds of carbon monoxide (CO) per day (BAAQMD threshold of significance = 550 pounds per day). According to the BAAQMD CEQA Guidelines threshold of significance for operational emissions, these post-construction, traffic-related emissions associated with the Project would be considered *less than*

significant. The Air Quality Modeling Information attachment provides details on inputs used in the manual modeling of Project-related emissions.

Although the Project would not be expected to generate traffic levels that would result in emissions that would exceed the BAAQMD CEQA Guidelines threshold of significance for operational emissions, the Project would contribute traffic to intersections where the level of service would decline to LOS E or F, or have a reduced LOS. Manual calculations carried out using the CALINE4 modeling methodology in the BAAQMD CEQA Guidelines (December 1999) indicate that:

- Current one-hour carbon monoxide concentrations at the intersection of Sixth Street and Jackson Street during the AM peak hour are approximately 4.85 ppm, and current eight-hour concentrations of carbon monoxide at that intersection are approximately 5.19 ppm (the current ambient air quality standard for carbon monoxide is 20 ppm for the one-hour averaging time, and 9 ppm for the eight-hour averaging time).

- For year 2010 conditions with the Project at the same intersection during the AM peak hour, modeled carbon monoxide concentrations were 2.46 ppm for the one-hour averaging time and 2.36 ppm for the eight-hour averaging time.

The modeling indicates that development of the Project site as proposed would not result in an increase in carbon monoxide concentrations at congested intersections in the vicinity of the Project site, and the impact would be *less than significant.* The Air Quality Modeling Information attachment provides details on inputs used in the manual modeling of Project-related emissions.

Greenhouse Gas Emissions and Global Climate Change:

There is a general scientific consensus that global climate change is occurring, caused in whole or in part by increased emissions of greenhouse gases (GHGs) that keep the Earth's surface warm by trapping heat in the Earth's atmosphere, in much the same way as glass in a greenhouse. While many studies show evidence of warming over the last century, and predict future global warming, the causes of such warming and its potential effects are far less certain. In its" natural" condition, the greenhouse effect is responsible for maintaining a habitable climate on Earth, but human activity has caused increased concentrations of these gases in the atmosphere, thereby contributing to an increase in global temperatures. Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and water vapor (H_2O) are the principal GHGs, and when concentrations of these gases exceed the natural concentrations in the atmosphere, the greenhouse effect may be enhanced. Without these GHGs, Earth's temperature would be too cold for life to exist. CO_2, CH_4 and N_2O occur naturally as well as through human activity. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Man-made GHGs – with much greater heat-absorption potential than CO_2 – include fluorinated gases such as hydrofluorocarbons (HFCs), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6) which are byproducts of certain industrial processes.

In 2005, it was estimated that the emission of CO_2 equivalents (CO_2e) from all major sources totaled 2,200,000 tons, nearly half of which from transportation. From year 2005, emissions are forecast to increase by 12 percent by 2010 (to 2,500,000 tons of CO_2e), and 19.5 percent (to 2,700,000 tons of CO_2e) by 2020, assuming "business as usual" into the future.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order (EO) S-3-05, establishing statewide GHG emission reduction targets. This EO provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent of 1990 levels. On August 31, 2006, the California Assembly passed Bill 32 (AB 32 – signed into law on September 27, 2006), which commits California to reduce GHG emissions to 1990 levels and establishes a multi-year regulatory process under the jurisdiction of the California Air Resources Board (CARB) to establish regulations to achieve these goals. By January 1, 2008, CARB is also required to adopt a statewide GHG emissions limit equivalent to the statewide GHG emissions levels in 1990, which must be achieved by 2020. By January 1, 2011, CARB is required to adopt rules and regulations, which shall become operative on January 1, 2012, to achieve the maximum technologically feasible and cost-effective GHG emission reductions.

The construction and occupation of residential developments, such as the proposed Project, cause GHG emissions. GHG emissions occur in connection with many activities associated with development, including the use of construction equipment and building materials, vegetation clearing, natural gas usage, electrical usage (since electricity generation by conventional means is a major contributor to GHG emissions), water use (which relies on the use of electricity for pumping), and transportation. However, it is important to acknowledge that new development does not necessarily create entirely new GHG emissions, since most of the persons who will visit or occupy new development will come from other locations where they were already causing such GHG emissions. Further, it has not been demonstrated that even new GHG emissions caused by a local development project can affect global climate change, or that a project's net increase in GHG emissions, if any, when coupled with other activities in the region, would be cumulatively considerable.

As of preparation of this Initial Study, there are no statutes, regulations, guidelines, or case law decisions requiring analysis of climate change within a CEQA document. Under AB 32, the CARB (the sole agency in charge of regulating sources of emissions of GHG in California) has been tasked with adopting regulations for reduction of GHG emissions. As of the date of this analysis, no air district in California (including BAAQMD) is known to have identified a significance threshold for GHG emissions or a methodology for analyzing air quality impacts related to GHG emissions. In particular, there is no emission rate criterion for the purposed of identifying a significant contribution to global climate change in CEQA documents.

CEQA Guidelines and the CEQA Initial Study Checklist do not contain any provisions that specifically set forth requirements for analysis of global climate change impacts in an Initial Study or Categorical Exemption. As stated in Section 15064(b) of the State CEQA Guidelines, "The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data." Additionally, CEQA Guidelines Section 15145 states, "If, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should not its conclusion and terminate discussion of the impact".

Moreover, Governor Schwarzenegger signed SB 97 (Chapter 185, Statutes 2007) into law on August 24, 2007. The legislation provides partial guidance on how greenhouse gases should be addressed in certain CEQA documents.

SB 97 requires the Governor's Office of Planning and Research ("OPR") to prepare CEQA guidelines for the mitigation of GHG emissions, including, but not limited to, effects associated with transportation or energy consumption. OPR must prepare these guidelines and transmit them to the Resources Agency by July 1, 2009. The Resources Agency must then certify and adopt the guidelines by January 1, 2010. OPR and the

Resources Agency are required to periodically review the guidelines to incorporate new information or criteria adopted by ARB pursuant to the Global Warming Solutions Act, scheduled for 2012.

The second part of SB 97 codifies safe harbor for highways and flood control projects. It provides that the failure of a CEQA document for a project funded by Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or the Disaster Preparedness and Flood Prevention Bond Act of 2006 to adequately analyze the effects of GHG emission otherwise required to be reduced pursuant to the regulations adopted under the Global Warming Solutions Act (which are not slated for adoption until January 1, 2012), does not create a cause of action for a violation of CEQA. This portion of SB 97 has a sunset date of January 1, 2010.

The bill does not address the obligation to analyze GHGs in projects not protected by the safe harbor provision. One possible interpretation is that there is no duty until the guidelines are adopted, because CEQA Guidelines Section 15007 subdivision (b) provides that guideline amendments apply prospectively only.

The City of Oakland has determined, based upon the discussion above and the factors discussed previously and summarized below, that the Project's impact on global climate change is speculative, and cannot be evaluated at this time because of:

- Uncertainties regarding human activities and climate change and the potential human activities that may reverse global warming trends.
- Lack of guidance for analysis of climate change issues in CEQA documents.
- Lack of methodology for evaluating GHGs, specifically determining the incremental increase in GHG emissions for an individual project, the impacts of a particular development project on global climate change, and the significance of any such impacts under CEQA.
- Lack of methodology for determining whether GHG emissions from an individual project are significant.
- Lack of scientific basis to accurately project future climate trends, much less the likely adverse environmental impacts resulting from those trends in any specific location.

For all of the reasons summarized above, and pursuant to Section 15145 of the CEQA Guidelines, until such time as a sufficient scientific basis exists to 1) ascertain the incremental impact of an individual project on climate change, and to 2) accurately project future climate trends associated with that increment of change, and 3) guidance is provided by regulatory agencies on the control of GHG emissions and thresholds of significance, the significance of an individual project's contribution to global GHG emissions is too speculative to be determined. Therefore, further analysis and application of current emissions scenarios, climate models, and climate change projections to the proposed Project is also speculative.

While the preceding discussion outlines the speculative nature of determining the significance of an individual project's contribution to global GHG emissions at this time, the City of Oakland has provided a discussion of the proposed Project below, for consideration by decision makers. Discussed below are the Project-related activities that could contribute to the generation of increased GHG emissions, and Project design features that would avoid or minimize those emissions.

The approach employed is that, in lieu of an adopted significance threshold for GHG emissions, or a methodology for analyzing air quality impacts related to GHG emissions, the effects of a proposed project may be evaluated based not upon the quantity of emission, but rather on whether practicable available control measures are implemented, similar to construction-related dust emissions within the San Francisco Bay air basin. Theoretically, if a project implements reduction strategies identified in AB-32, the Governor's Executive Order S-3-05, or other strategies to help toward reducing GHGs to the level proposed by the Governor and targeted by the City of Oakland, it could reasonably follow that the project would not result in a significant contribution to the cumulative impact of global climate change. Alternatively, a project could reduce a potential cumulative contribution to GHG emissions through energy efficiency features, density and locale (e.g., compact development near transit and activity nodes of work or shopping).

Since the Project site is located in an area that would not be likely to be subject to coastal or other flooding resulting from climate change during the economic life of the Project, the potential effects of climate change on the proposed Project are not discussed in this Initial Study.

Although it is possible to generally estimate a project's contribution to CO_2 into the atmosphere, it is a matter of speculation whether that project increases existing levels of GHGs globally or in the State of California. Moreover, even if it is assumed that a project does create an incremental increase in those emissions, it is typically not possible to determine whether or how an individual project's relatively small incremental contribution might translate into physical effects on the environment, given the considerations discussed above.

The amount of increased GHG emissions that may be generated by the proposed Project would not, by itself, influence global climate change. It cannot currently be determined if the proposed Project would provide an incremental contribution to the cumulative increase in GHG emissions.

As previously noted, there are no published thresholds of significance, and no regulatory guidance available that evaluate climate change and GHG emissions in conjunction with individual development projects. In addition, the scientific and technical literature indicates that there is not yet a methodology for reflecting the impact of individual land use decisions in climate change models. Until such time that sufficient scientific basis exists to accurately project future climate trends and guidance is provided by regulatory agencies on the control of GHG emissions and thresholds of significance, the significance of the proposed Project's contribution to global GHG emissions, pursuant to CEQA, cannot be judged, but is likely less than significant.

As discussed above, the construction and operation of the proposed Project would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG) occurring during operation. Typically, more than 80 percent of total energy consumption takes place during the use of the buildings, and less than 20 percent is consumed during construction. As yet, there is no study that quantitatively assesses all of the GHG emissions associated with each phase of the construction and use of an individual residential development.

Overall, the following activities associated with a typical residential development could contribute to the generation of GHG emissions:

- Removal of Vegetation – The net removal of vegetation for construction results in a loss of carbon sequestration in plants. Alternately, planting of additional vegetation would result in additional carbon sequestration and lower carbon footprint of the Project.

- Construction Activities – Construction equipment typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as carbon dioxide, methane, and nitrous oxide. Furthermore, methane is emitted during the fueling of heavy equipment.

- Gas, Electricity and Water Use – Gas use results in the emissions of two GHGs: methane (the major component of natural gas) and carbon dioxide from the combustion of natural gas (as before a flame on a stove is sparked), and from small amounts of methane that is uncombusted in a natural gas flame. Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California's water conveyance system is energy-intensive, with electricity used to pump and treat water.

- Motor Vehicle Use – Transportation associated with the proposed Project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

While the proposed Project and all development of similar land use would generate GHG emissions as described above, the City of Oakland's ongoing implementation of its Sustainability Community Development Initiative and other programs/policies will collectively reduce the levels of GHG emissions and contributions to global climate change attributable to activities throughout Oakland.[1]

While no significant GHG emissions-related impacts have been identified, and no mitigation is required, Project characteristics and design features which have been included in the Project to reduce the amount of GHG emissions generated during construction and operation are provided below:

- City of Oakland- According the Pedestrian Master Plan, the City of Oakland has the highest walking rates for all cities in the nine-county San Francisco Bay Region. It is noted that these high pedestrian trips are likely because the neighborhoods are densely populated and well served by transit, including Bay Area Rapid Transit (BART), AC Transit, Amtrak, and the Alameda Ferry. As such, the Project would reduce transportation-related GHG emissions compared to emissions from the same level of development elsewhere in the outer Bay Area.

- Energy Efficiency – The proposed Project would be required to comply with all applicable local, state, and federal regulations associated with the generation of GHG emissions and energy conservation. In particular, construction of the proposed Project would also be required to meet California Energy Efficiency Standards for Residential and Nonresidential Buildings, and the requirements of pertinent City policies as identified in the City of Oakland General Plan, helping to reduce future energy demand as well as reduce the Project's contribution to regional GHG emissions.

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[1] The City of Oakland has adopted legislation related to sustainability and reduction of GHG Emission's which include: the Climate Protection Ordinance, Construction and Demolition Recycling Ordinance, Green Building Ordinance, Green Fleet Resolution, Waste Reduction Resolution, Chicago Climate Exchange Resolution, Zero Waste Resolution, and the Oil Independence Resolution. Current City of Oakland programs that reduce GHG Emissions include: California Youth Energy Services, Residential and Business Recycling, encouraging Transit Village Development Plans, implementation of the Pedestrian and Bicycle Master Plans.

- Construction Waste – The proposed Project will be required to comply with the Construction and Waste Reduction Ordinance and submit a Construction and Demolition Waster Reduction Plan for review and approval. As a result, construction-related truck traffic, which primarily have diesel fueled engines, would be reduced since demolition debris hauled off site would be reused on site. In addition, reuse of concrete, asphalt, and other debris will reduce the amount of material introduced to area landfills.

- Urban Infill near Multiple Transit Modes - The Project would develop high-density housing within ¼ mile of at least two modes of transit (BART and AC Transit routes) and within an area developed with pedestrian facilities. Therefore, the Project would facilitate walking and non-vehicular travel to a greater extent than would be the case for similar development in outlying areas without extensive transit availability. In addition, the high-density development would include a greater number of potential residents that could potentially utilize or engage in alternative modes of travel than in a lower density development on the Project site.

c) Routine emissions from the Project's future residential and commercial uses are not expected to rise to the level where they would contribute cumulatively considerable levels of criteria pollutants. Implementation of City of Oakland Standard Conditions of Approval related to construction-period emissions (see Item b, Standard Conditions 2-5 above) would reduce the Project's contribution of criteria pollutants to a level of less than cumulatively considerable (less than significant) during construction. Project-related operational emissions associated with additional motor vehicle trips would be considered less than significant under BAAQMD significance criteria, so would not contribute cumulatively considerable levels of criteria pollutants (a *less than significant* cumulative impact). Other potential air quality effects associated with the operation of the proposed structures could be related to the vehicle exhaust generated within the on-site parking areas and the day-to-day use of residential units (e.g., generation of fumes from cooking, smoking, maintenance activities, etc.). The provision of adequate venting in parking areas and installation of appropriate heating, ventilation and air conditioning equipment in compliance with current Building Code requirements would be expected to reduce any potentially adverse air quality effects associated with day-to-day use of the proposed structures themselves to a level of less than significant, and these operational emissions would not represent a cumulative considerable contribution to emissions of criteria pollutants in the area.

d) Routine emissions from future residential and commercial uses associated with the Project are not expected to rise to the level where they would expose sensitive receptors to substantial pollutant concentrations, as appropriate venting of parking areas within the structures and installation of HVAC equipment to comply with current Building Code requirements would reduce potential air quality effects associated with normal building operations to a level of less than significant.. Implementation of City of Oakland Standard Conditions of Approval related to construction-period emissions (see Item b, Standard Conditions 3-5 above) would reduce construction period impacts on sensitive receptors to a level of less than significant. The effect of Project operations vehicle emissions would have a *less than significant* impact on sensitive receptors.

Future residential uses at the Project site are proposed within approximately 60 feet of the edge of the I-880 freeway, potentially exposing future residents to substantial levels of Toxic Air Contaminants (i.e., diesel emissions). The California Air Resources Board (CARB) has developed guidelines to be considered in the siting of new sensitive land uses (including residential uses) to protect keep vulnerable populations from the adverse health impacts of traffic-related emissions. These guidelines are not regulatory nor binding on local agencies. Specifically, CARB's advisory recommendation for sensitive land uses proposed near freeways and high-traffic roads is to "[a]void siting new sensitive land uses within 500 feet of a freeway, urban roads with

100,000 vehicles/day, or rural roads with 50,000 vehicles/day" Sensitive uses would include residences, day care centers, playgrounds or medical facilities. However, CARB also recognizes that there is no "one size fits all" solution to land use planning, and that in addressing housing and transportation needs, the benefits of urban infill, community economic development priorities and other quality of life issues are also important and these must be considered and weighed by local decision makers when siting projects.

The primary pollutant of concern for residents that would be living close to the adjacent freeway are diesel particulate matter (DPM) and particulate matter less than 10 microns in size (PM-10). It is important to note that the emissions generated by vehicles moving along the freeway are **not** the result of the proposed Project, but rather future residents could be exposed to emissions generated by these vehicles due to the proximity of their homes to the existing freeway. There are currently many other residences within 500 feet of I-880 in this portion of downtown Oakland, and many other sensitive uses within 500 feet of freeways throughout Oakland and other communities throughout California.

In order to ensure that residents living at the Project site will not be exposed to excessive levels of DPM or PM-10 in their homes, the Project will incorporate a centralized ventilation (filtration) system with a minimum efficiency reporting value (MERV) 13 and efficiency consistent with American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 52.2 standards. Studies have indicated that a MERV 13 filtration system consistent with ASHRAE 52.2 standards has the potential to remove between 75 percent and 90 percent of particulate emissions[2]. A MERV 13 filtration system is consistent with filtration systems used in hospitals and elementary schools to protect the most vulnerable populations from adverse air quality impacts. Intakes for the filtration system will be located in areas which are physically separated, and as far away as possible, from the freeway, in order to further reduce potential adverse air quality effects to Project residents.

Based on information provided by the Project applicant, each residential unit proposed will be supplied with outside air for ventilation, between 200-400 cubic feet per minute (CFM) of outside air per unit for ventilation (the volume would depend on the size of the unit and whether there is a re-circulating kitchen hood or a vented kitchen hood). Each residential unit will also have a way to relieve the outside air being introduced into it. This can be achieved through sound attenuated Z-ducts or continuously running scavenger fans. The proposed building will have two air handling units (AHU) rated at approximately 45,000 CFM each, with pre-filters, final filters and carbon panels for the removal of the diesel contaminants and PM-10. The filters will need to be changed two or three times each year.

Installation, operation, and on-going maintenance of a MERV 13 filtration system at the Project site consistent with that proposed by the Project would be expected to reduce the potential for exposure of those living in residential units at the Project site to substantial pollutant concentrations to a level of *less than significant.*

e) The proposed land uses (e.g., residential, retail, office) are consistent with the uses of the surrounding vicinity, and are not expected to generate objectionable odors affecting a substantial number of people. Although some heavy equipment involved in site preparation and construction activity at the Project site may emit diesel fumes, potential odor effects associated with these activities would be temporary and intermittent, and would end with completion of construction (*less than significant*).

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[2] HPAC Engineering, 2006

f) As indicated in b), above, the Project would not be expected to generate traffic levels that would result in emissions that would exceed the BAAQMD CEQA Guidelines screening threshold of significance for operational emissions.

g) As indicated in b), above, the Project would not be expected to generate traffic levels that would result in emissions that would exceed the BAAQMD CEQA Guidelines screening threshold of significance for operational emissions (*less than significant*).

h) As indicated in c), above, future residential uses at the Project site are proposed within approximately 60 feet of the edge of the I-880 freeway, potentially exposing future residents to substantial levels of Toxic Air Contaminants (i.e., diesel emissions). Installation, operation, and on-going maintenance of a MERV 13 filtration system at the Project site would reduce potential exposure of those living in residential units at the Project site to substantial pollutant concentrations to a level of *less than significant.*

Construction activities, which are discussed above, may result in some emission of Toxic Air Contaminants; however, implementation of City of Oakland Standard Conditions of Approval (see Item b, Standard Conditions 3-5 above), would ensure that construction emissions remain *less than significant.*

i) Uses proposed at the Project site (e.g., residential, retail, office) are not expected to result in significant ground level concentrations of Toxic Air Contaminants. The proposed Project is consistent with the current General Plan and zoning designation of the Project site. Construction activities, which are discussed above, may result in some emission of Toxic Air Contaminants; however, implementation of City of Oakland Standard Conditions of Approval (see Item b, Standard Conditions 2-5 above), would ensure that construction emissions remain *less than significant.*

j) The uses at the Project site are not anticipated to generate significant diesel emissions from operations. Commercial uses that might rely on diesel trucks for deliveries represent a minor component of the Project and would be unlikely to generate substantial diesel emissions. Construction activities, which are discussed above, would result in some diesel emissions; however, implementation of City of Oakland Standard Conditions of Approval (see Item b, Conditions 2-4 above), would ensure that construction period diesel emissions remain *less than significant.*

k) No air quality impacts associated with the Project as proposed have been identified as significant or potentially significant, above, so the Project would not have a cumulatively considerable adverse impact on air quality (*no impact*).

l) The Project as proposed would not result in any fundamental conflict with the City's General Plan, and the City's General Plan does not fundamentally conflict with the regional air quality plan (*no impact*).

Source:

Bay Area Air Quality Management District, CEQA Guidelines, December 1999.

City of Oakland, Jack London Square Residential Tower Initial Study and Environmental Review, March 27, 2006.

Heating Piping Air Conditioning (HPAC) Engineering, "Interpreting Filter Performance", 2006.

Project Description and Plans

Field Survey

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES - - Would the project:					
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☐	✔
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☐	✔
c) Have a substantial adverse effect on federally protected wetlands (as defined by Section 404 of the Clean Water Act) or state protected wetlands, through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☐	✔
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native or wildlife nursery sites?	☐	☐	☐	✔	☐
e) Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☐	✔
f) Fundamentally conflict with the City of Oakland Tree Preservation and Removal Ordinance (Oakland Municipal Code (OMC) Chapter 12.36) by removal of protected trees under certain circumstances. Factors to be considered in determining significance include: The number, type, size, location and condition of (a) the protected trees to be removed and/or impacted by construction and (b) the protected trees to remain, with special consideration given to native trees. Protected trees include the following: Quercus agrifolia (California or coast live oak) measuring four inches diameter at breast height (dbh) or larger, and any other tree measuring nine inches dbh or larger except eucalyptus and pinus radiata (Monterey pine); provided, however, that Monterey pine trees on City property and	☐	☐	✔	☐	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
in development-related situations where more than five Monterey pine trees per acre are proposed to be removed are considered to be Protected trees.					
g) Fundamentally conflict with the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect biological resources. Although there are no specific, numeric/quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of riparian and aquatic habitat through: a) discharging a substantial amount of pollutants into a creek; b) significantly modifying the natural flow of the water; c) depositing substantial amounts of new material into a creek ,or causing substantial bank erosion or instability; or d) adversely impacting the riparian corridor by significantly altering vegetation or wildlife habitat.	☐	☐	☐	☐	✔

Explanation:

a) The Project site is fully developed and nearly entirely covered with impervious surfaces (roofs, blacktop, etc.). Development of the Project site as proposed would have no impact on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service.

a) The Project site is currently developed with existing structures and surface parking lots. There are no identified riparian areas or other sensitive habitat on the Project site (*no impact*).

b) The Project would not have a substantial adverse effect on any protected wetlands as defined by Section 404 of the Clean Water Act, as there are no such wetlands at the Project site or in the vicinity of the Project site (*no impact*).

c) Development of the Project site as proposed would not interfere substantially with the movement of any native resident or migratory wildlife species, as it is located in a high-density urban area where such species are not commonly found. However, there is concern that the development of two relatively tall residential towers at the Project site could result in increased migratory bird mortality. Given the location of the Project site directly adjacent to a major freeway, and the existing level of motor vehicle traffic, the Project site is unlikely to be part of an established native resident or migratory wildlife corridor. As with any building (new or existing, single-story or multi-story), a possibility exists that birds may collide with the proposed residential towers at the Project site. However, substantial interference with the Pacific Flyway is not expected, given the existing built-up environment in the surrounding area and the distance of the Project site from Lake Merritt (approximately one-half mile).Landscaping proposed at the Project site is unlikely to provide a significant attraction for geese and other birds.

The Project site is located in a densely developed urban area with no habitat value to flora or fauna. The site is fully developed and nearly entirely covered with impervious surfaces (roofs, blacktop, etc.). There is one tree located along the Seventh Street frontage of the Project site, and one tree located along the Harrison Street frontage of the Project site that would be removed to enable development of the Project site as proposed. Although it is unlikely that these isolated trees located in an urban environment would support nesting raptors or other birds, the following City of Oakland Standard Condition of Approval would apply:

Std. Cond. 6: To the extent feasible, removal of any tree and/or other vegetation suitable for nesting of raptors shall not occur during the breeding season of March 15 and August 15. If tree removal must occur during the breeding season, all sites shall be surveyed to verify the presence or absence of nesting raptors or other birds. Pre-removal surveys shall be conducted within 15 days prior to start of work from March 15 through May 31, and within 30 days prior to the start of work from June 1 through August 15. The pre-removal surveys shall be submitted to the Planning and Zoning Division and the Tree Services Division of the Public Works Agency. If the survey indicates that potential presences of nesting raptors or other birds, the biologist shall determine an appropriately sized buffer around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer will be determined by a biologist in consultation with the CDFG, and will be based to a large extent on the nesting species and its sensitivity to disturbance. In general, buffer sizes of 200 feet for raptors and 50 feet for other birds should suffice to prevent disturbance to birds nesting in the urban environment, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest.

Implementation of the above Standard Condition would reduce potential impacts to nesting birds to a level of *less than significant.*

d) Development of the Project site as proposed would not conflict with any applicable habitat conservation plan or natural community conservation plan, as no such plans apply to the Project site (*no impact*). No adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan is currently in force at the Project site, and development of the Project site as proposed would not conflict with such plans (*no impact*).

e) Development of the Project site as proposed would not conflict with the City's Tree Preservation and Removal Ordinance, since the applicant would comply with the Tree Preservation and Removal Ordinance. There are two street trees that are proposed for removal to enable development. One is a liquid amber tree approximately 20 inches dbh along the Seventh Street frontage (which meets the definition of a protected tree due to its diameter) and the other is a Lophostemon confertus (formerly known as Tristania conferta, or Brisbane Box) approximately 8 inches dbh growing in a driveway along the Harrison Street frontage. Both trees are in good condition, although the larger tree has damaged the adjacent sidewalk. Given the size of these two trees, their proximity to construction activity that would be necessary to create the proposed underground parking area, and the City's current policy to remove large street trees that have the potential to damage sidewalks, curbs or streets, it is not practical to preserve these trees in place. The proposed Project would incorporate 10 new street trees along the frontages on Seventh Street, Harrison Street and Sixth Street, and such trees shall be selected and installed in accordance with the allowances prescribed by the Oakland Parks and Recreation Department, Tree Section. The following City of Oakland Standard Condition of Approval would apply:

Std. Cond. 7: Prior to removal of any protected trees, per the Protected Tree Ordinance, located on the project site or in the public right-of-way adjacent to the project, the project applicant must secure a tree removal permit from the Tree Division of the Public Works Agency, and abide by the conditions of that permit.

Replacement plantings shall be required for erosion control, groundwater replenishment, visual screening and wildlife habitat, and in order to prevent excessive loss of shade, in accordance with the following criteria:

1. No tree replacement shall be required for the removal of nonnative species, for the removal of trees which is required for the benefit of remaining trees, or where insufficient planting area exists for a mature tree of the species being considered.

2. Replacement tree species shall consist of Sequoia sempervirens (Coast Redwood), Quercus agrifolia (Coast Live Oak), Arbutus menziesii (Madrone), Aesculus californica (California Buckeye)or Umbelluiana californica (California Bay Laurel) or other tree species acceptable to the Tree Services Division.

3. Replacement trees shall be of at least twenty-four (24) inch box size, unless a smaller size is recommended by the arborist, except that three fifteen (15) gallon size trees may be substituted for each twenty-four (24) inch box size tree where appropriate.

4. Minimum planting areas must be available on site as follows:

- For Sequoia sempervirens, three hundred fifteen square feet per tree;
- For all other species listed in #2 above, seven hundred (700) square feet per tree.

5. In the event that replacement trees are required but cannot be planted due to site constraints, an in lieu fee as determined by the master fee schedule of the city may be substituted for required replacement plantings, with all such revenues applied toward tree planting in city parks, streets and medians.

6. Plantings shall be installed prior to the issuance of a final inspection of the building permit, subject to seasonal constraints, and shall be maintained by the project applicant until established. The Tree Reviewer of the Tree Division of the Public Works Agency may require a landscape plan showing the replacement planting and the method of irrigation. Any replacement planting which fails to become established within one year of planting shall be replanted at the project applicant's expense.

f) Implementation of the above Standard Conditions would reduce impacts associated with the removal of two trees (including one protected tree) at the Project site to a level of *less than significant*. Development of the Project site as proposed would not fundamentally conflict with the City of Oakland Creek Protection Ordinance, as there are no creeks that would be adversely affected by development at the Project site (*no impact*).

Source:

City of Oakland Tree Preservation and Removal Ordinance (OMC Chapter 12.36)

City of Oakland, Jack London Square Residential Tower Initial Study and Environmental Review, March 27, 2006.

U.S. Fish and Wildlife Service, "Migratory Bird Mortality", January 2002.

Project Description and Plans

Field Survey

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
V. CULTURAL RESOURCES -- Would the project?					
a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines δ15064.5. Specifically, a substantial adverse change includes physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be "materially impaired." The significance of an historical resource is "materially impaired" when a project demolishes or materially alters, in an adverse manner, those physical characteristics of the resource that convey its historical significance and that justify its inclusion on, or eligibility for inclusion on an historical resource list (including the California Register of Historical Resources, the National Register of Historical Resources, Local Register, or historical resources survey form (DPR Form 523) with a rating of 1-5)?	☐	☐	☐	✔	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to δ15064.5?	☐	☐	✔	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	✔	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	✔	☐	☐

Explanation:

a) Implementation of the Project as proposed would require demolition of existing buildings at the Project site, although one residential building located at the Project site which may be considered an historic resource would be relocated intact to another site in West Oakland. No buildings proposed for demolition are considered "historic resources" as defined in CEQA Guidelines Section 15064.5 nor are any of the buildings to be demolished at the Project site considered historic resources under City of Oakland definition.

The City of Oakland defines an historical resource under CEQA as one that meets the following criteria:

a. A resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources

b. A resource included in Oakland's Local Register of Historical Resources (which includes all Designated Historic Properties [Landmarks, Heritage Properties, Study List Properties, Preservation Districts, and S-7 and S-20 Preservation Combining Zone Properties], and those

Potential Designated Historic Properties that have an existing rating of "A" or "B" or are located within an Area of Primary Importance), unless the preponderance of evidence demonstrates that it is not historically or culturally significant;

c. A resource identified as significant (e.g., rated 1-5) in a historical resource survey recorded on Department of Parks and Recreation Form 523, unless the preponderance of evidence demonstrates that it is not historically or culturally significant;

d. Any object, building, structure, site area, place, record, or manuscript which the Oakland City Council determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered "historically significant" if it meets the criteria for listing on the California Register of Historical Resources CEQA Guidelines Section 15064.5; or

e. A resource that is determined by the City Council to be historically or culturally significant even though it does not meet the other four criteria listed here.

Historic Resources within the Project Site:

Conclusions regarding historic resources within the Project site are as follows:

- No structures at the Project site have been listed, or been determined to be eligible for listing in the California Register of Historical Resources.
- One structure at the Project site (currently located at 617-621 Harrison Street) has been identified as "C1+" (secondary importance, built before 1906) in the Oakland Cultural Heritage Survey, and identified as a "contributor" to the Area of Primary Importance Seventh Street Residential District (Area 7R). This structure would be included in Oakland's Local Register of Historical Resources under City of Oakland criteria, and is proposed for relocation, rather than demolition. None of the other structures are considered to be on the Local Register.
- No structure or other resource at the Project site has been identified by the Oakland City Council as historically significant, or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.

Impacts associated with the proposed demolition of the existing structures at the Project site, and the proposed relocation of the existing residential structure at 621 Harrison Street (which has been identified as an "historic resource" – see additional discussion, below), would be regarded as *less than significant.*

Potential Impacts to "Contributor" Building on the Project Site

Under CEQA Guidelines Section 15064.5 (b), a project with an effect that may cause a substantial adverse change in the significance of an historic resource is a project that may have a significant effect on the environment. Substantial adverse change in the significance of an historical resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. The significance of an historical resource is materially impaired when a project:

- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources.
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

The residential structure currently located at 621 Harrison Street would be moved to a location in West Oakland, in the vicinity of 14th Street and Peralta Street. Relocation of this structure as proposed would preserve the historical integrity of the building, and no direct impacts to this resource would occur. However, this building would be removed from the API where it has been identified as a "contributor" (see discussion below).

Potential Impacts to Adjacent Buildings

According to the Oakland Cultural Heritage Survey (OCHS), a portion of the Project site (an approximately 1-parcel depth along Harrison Street) is located in an "Area of Primary Importance" (Area 7R). One building adjacent to the Project site located along Harrison Street near Sixth Avenue (#611) has been listed on the OCHS as "C1" (secondary importance, built before 1906) and identified as a "contributor" to the API. A second building (#607) has been listed as "Dc" (minor importance) but also a "contributor (if restored)". Development of the Project site as proposed would leave these two structures (and a third at the corner of Harrison Street and Sixth Avenue that has not been rated under the OCHS), intact.

These two adjacent historic resources would generally retain the integrity of their location, design, materials, workmanship, and association from their period of significance. Although they would remain standing adjacent to a much more imposing modern structure (the Project), the historical significance of these structures would not be "materially impaired" as a result of Project development, since the physical characteristics of these resources that convey their historical significance and justify their listing on the OCHS would not be changed.

Since the Project would involve construction adjacent to a CEQA Historic Resource, the following Standard Condition of Approval would apply:

Std. Cond. 8: The project applicant shall retain a structural engineer or other appropriate professional to determine threshold levels of vibration and cracking that could damage the building at 611 Harrison Street and design means and methods of construction that shall be utilized to not exceed the thresholds.

Potential Impacts to the Surrounding Area of Primary Importance

The extent of the 7th Street Residential District Area of Primary Importance (API 7R) is approximately 2 blocks wide (between 6th Street and 8th Street) and approximately 5 blocks long (from Harrison Street to Fallon Street). Within this API (see Exhibit H: 7th Street Residential District), there are approximately eighty (80) separate properties that are identified as contributors, and two properties (including the Chinese Garden Park) identified as Primary Contributors. The most northerly edge of this API extends 1 parcel deep into the block on which the Project site is located, and includes 3 properties (#'s 607, 611 and 621 Harrison). Under the proposed Project, two of these properties would remain as continuing contributors to the API, and one property (621 Harrison) would be removed and relocated. Within the context of Section 106 of the National Historic Preservation Act, the Area of Potential Effect (APE) for a project is the area in which planned development may directly or indirectly affect the cultural resource, or may cause changes in the character or use of historic properties. In this instance, the Seventh Street API could be considered the APE for this Project, although this Project is, technically, not subject to Section 106 standards (since there are no federal funds involved in implementing the proposed Project). Given that the large majority (more than 98 percent) of the contributing structures located within the API would remain intact in their current locations following Project implementation (since only one of the eighty existing contributing structures within the API would be removed for preservation elsewhere), and that the one contributing structure to be removed is currently located at the outermost edge of the 7th Street API, relocating this residential structure as proposed would be regarded as a *less than significant* cumulative impact on the integrity of the API as an historic resource.

The area to which the residential building currently located at 621 Harrison Street would be relocated (in the vicinity of 14th Street and Peralta Street, in West Oakland) is part of the Oakland Point residential district, an area of about 47 city blocks. The Oakland Historic Resources Inventory indicates that this district includes 845 properties, of which about 750 are wood-framed buildings erected before 1910. The structure currently located at 621 Harrison Street is a wood-framed structure that was built during the same period as those buildings located within the Oakland Point District, and a similar residential structure was relocated from the Project site to a parcel in the same portion of the Oakland Point District earlier in 2007. The proposed relocation would place the structure currently located at 621 Harrison Street within an API comprised of similar structures, one of the most intact Victorian neighborhoods in Oakland. Therefore, the relocation of the structure at 621 Harrison Street to this historic district would result in a *less than significant* impact.

b) No archaeological resources are known to exist within the Project area. However, the possibility of discovery of buried archaeological resources during site preparation and construction activities exists. The following City of Oakland Standard Condition of Approval regarding the discovery of buried archaeological resources would apply to the Project. Compliance with this Condition would ensure that potential impacts to archaeological resources associated with the proposed Project would be reduced to a level of *less than significant*:

Std. Cond. 9: Pursuant to CEQA Guidelines 15064.5 (f), "provisions for historical or unique archaeological resources accidentally discovered during construction" should be instituted. Therefore, in the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing

activities, all work within 50 feet of the resources shall be halted and the project applicant and/or lead agency shall consult with a qualified archaeologist or paleontologist to assess the significance of the find. If any find is determined to be significant, representatives of the project proponent and/or lead agency and the qualified archaeologist would meet to determine the appropriate avoidance measures or other appropriate measure, with the ultimate determination to be made by the City of Oakland. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards.

In considering any suggested measure proposed by the consulting archaeologist in order to mitigate impacts to historical resources or unique archaeological resources, the project applicant shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while measure for historical resources or unique archaeological resources is carried out.

Should an archaeological artifact or feature be discovered on-site during project construction, all activities within a 50-foot radius of the find would be halted until the findings can be fully investigated by a qualified archaeologist to evaluate the find and assess the significance of the find according to the CEQA definition of a historical or unique archaeological resource. If the deposit is determined to be significant, the project applicant and the qualified archaeologist shall meet to determine the appropriate avoidance measures or other appropriate measure, subject to approval by the City of Oakland, which shall assure implementation of appropriate measures recommended by the archaeologist. Should archaeologically-significant materials be recovered, the qualified archaeologist would recommend appropriate analysis and treatment, and would prepare a report on the findings for submittal to the Northwest Information Center.

c) No paleontological resources are known to exist within the Project area. However, the possibility of discovery of buried paleontological resources during site preparation and construction activities exists. The following City of Oakland Standard Condition of Approval regarding the discovery of buried paleontological resources would apply to the Project. Compliance with this Condition would ensure that potential impacts to paleontological resources associated with the proposed Project would be reduced to a level of *less than significant*:

Std. Cond. 10: In the event of an unanticipated discovery of a paleontological resource during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards (SVP 1995,1996)). The qualified paleontologist shall document the discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in Section 15064.5 of the CEQA Guidelines. The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the City determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and such plan shall be implemented. The plan shall be submitted to the City for review and approval.

d) No human remains are known to exist within the Project area. However, the possibility of discovery of buried human remains during site preparation and construction activities exists. The following City of Oakland Standard Condition of Approval regarding the discovery of buried human remains would apply to the

Project. Compliance with this Condition would ensure that potential impacts to human remains associated with the proposed Project would be reduced to a level of *less than significant*:

Std. Cond. 11: In the event that human skeletal remains are uncovered at the project site during construction or ground-breaking activities, all work shall immediately halt and the Alameda County Coroner shall be contacted to evaluate the remains, and following the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the City shall contact the California Native American Heritage Commission (NAHC), pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease within a 50-foot radius of the find until appropriate arrangements are made. If the agencies determine that avoidance is not feasible, then an alternative plan shall be prepared with specific steps and timeframe required to resume construction activities. Monitoring, data recovery, determination of significance and avoidance measures (if applicable) shall be completed expeditiously.

Source:

Project Description and Plans

Field Survey

Oakland Cultural Heritage Survey, Seventh Street/Harrison Square Residential District, Historic Resources Inventory continuation pages 1 through 20 of 254

Oakland Cultural Heritage Survey, Historic Resources Inventory – Oakland Point District; also Prescott Neighborhood

City of Oakland Historic Preservation Programs – A Summary for Property Owners and Interested Citizens

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
VI. GEOLOGY AND SOILS – Would the project:					
a) Expose people or structures to substantial risk of loss, injury, or death involving:					
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map or Seismic Hazards Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publications 42 and 117 and PRC δ2690 et. Seq.)?	☐	☐	☐	☐	✔
ii) Strong seismic ground shaking?	☐	☐	✔	☐	☐
iii) Seismic-related ground failure, including liquefaction, lateral spreading, subsidence, collapse?	☐	☐	✔	☐	☐
iv) Landslides?	☐	☐	☐	☐	✔
b) Result in substantial soil erosion or the loss of topsoil, creating substantial risks to life, property, or creeks/waterways?	☐	☐	✔	☐	☐
c) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as it may be revised), creating substantial risks to life or property?	☐	☐	✔	☐	☐
d) Be located above a well, pit, swamp, mound, tank vault, or unmarked sewer line, creating substantial risks to life or property?	☐	☐	☐	☐	✔
e) Be located above landfills for which there is no approved closure and post-closure plan, or unknown fill soils, creating substantial risks to life or property?	☐	☐	☐	☐	✔
f) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☐	✔

Explanation:

a) The Project site is located in a seismically active region. The closest fault (the Hayward Fault), is approximately four miles from the Project site. The Project site is not located within an Alquist-Priolo Special Studies zone. However, according to the Association of Bay Area Government's (ABAG) online interactive hazards mapping website, the Project site would be subject to very strong seismic ground shaking, and according to the Phase I Environmental Site Assessment prepared by Schutze & Associates, Inc., the site has a high liquefaction hazard potential. The Project site is located in a topographically flat, densely populated urban area, and would not be subject to instability resulting from a landslide.

The Project structures would be designed and constructed to meet the 1997 Unified Building Code (UBC) standards which require a seismic evaluation and particular seismic design criteria to reduce ground-shaking effects in structures. Although the potential for injury and damage from seismic ground shaking cannot be eliminated, adherence to the recommendations in the required geotechnical investigation, the UBC and other applicable codes would reduce the potential impact to a level of less than significant.

In accordance with standard City procedures, complying with the UBC standards, and incorporating a foundation design intended to minimize ground shaking and seismically-related ground failures, the Project applicant shall be required to submit an engineering analysis along with detailed engineering drawings to the City of Oakland Building Services Division prior to excavation, grading, or construction activities on the site. This is consistent with standard City of Oakland practices to ensure that all buildings are designed and built in conformance with the seismic requirements of the City of Oakland Building Code. The Project sponsor will be required to submit an engineering analysis report, along with detailed engineering drawings and relevant grading or construction activities on the Project site, to address constrains and incorporate recommendations identified in the geotechnical investigations. In addition, the required submittals would ensure that the buildings are designed and constructed in conformance with the requirements of all applicable building code regulations, pursuant to standard City procedures. Considering that the proposed Project would be constructed in conformance with the UBC and the City of Oakland Building Code, the risks of injury and structural damage from a known earthquake fault, ground shaking, or seismic-related ground failure would be reduced and the impacts would be *less than significant.*

The Project Applicant would be required to satisfy the following City of Oakland Standard Condition of Approval:

Std. Cond. 12: a) A site-specific, design level, Landslide or Liquefaction geotechnical investigation for each construction site within the project area shall be required as part of this project and submitted for review and approval of the Building Services Division. Specifically:

- Each investigation shall include an analysis of expected ground motions at the site from identified faults. The analyses shall be in accordance with applicable City ordinances and policies, and consistent with the most recent version of the California Building Code, which requires structural design that can accommodate ground accelerations expected from identified faults.
- The investigation shall determine final design parameters for the walls, foundations, foundation slabs, and surrounding related improvements, and infrastructure (utilities, roadways, parking lots and sidewalks).

- The investigation shall be reviewed and approved by a registered geotechnical engineer. All recommendations by the project engineer, geotechnical engineer, will be included in the final design, as approved by the City of Oakland.
- The geotechnical report shall include a map prepared by a land surveyor or civil engineer that shows all field work and location of the "No Build" zone. The map shall include a statement that the locations and limitations of the geologic features are accurate representations of said features as they exist on the ground, were placed on this map by the surveyor, the civil engineer or under their supervision, and are accurate to the best of their knowledge.
- Recommendations that are applicable to foundation design, earthwork, and site preparation that were prepared prior to or during the projects design phase, shall be incorporated in the project.
- Final seismic considerations for the site shall be submitted to and approved by the City of Oakland Building Services Division prior to the commencement of the project.
- A peer review is required for the Geotechnical Report. Personnel reviewing the geologic report shall approve the report, reject it, or withhold approval pending submission by the applicant or subdivider of further geologic and engineering studies to more adequately define active fault traces.

b) Tentative Tract or Parcel Map approvals shall require, but not be limited to approval of the Geotechnical Report.

Verification by the City of Oakland that this condition has been met, following City review and approval of the required design-level geotechnical investigation, would result in a *less than significant* impact with respect to ground shaking, unstable soils, and liquefaction potential.

b) Although the Project site has been previously developed or paved, and there is little or no visible topsoil remaining, site preparation and construction activity associated with the proposed development could result in soil erosion or the loss of any remaining topsoil at the site. Potentially significant soil erosion could be reduced to a level of *less than significant* through the compliance with the following City of Oakland Standard Condition of Approval:

Std. Cond. 13: a) The project applicant shall obtain a grading permit if required by the Oakland Grading Regulations pursuant to Section 15.04.780 of the Oakland Municipal Code. The grading permit application shall include an erosion and sedimentation control plan for review and approval by the Building Services Division. The erosion and sedimentation control plan shall include all necessary measures to be taken to prevent excessive stormwater runoff or carrying by stormwater runoff of solid materials on to lands of adjacent property owners, public streets, or to creeks as a result of conditions created by grading operations. The plan shall include, but not be limited to, such measures as short-term erosion control planting, waterproof slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, devices to trap, store and filter out sediment, and stormwater retention basins. Off-site work by the project applicant may be necessary. The project applicant shall obtain permission or easements necessary for off-site work. There shall be a clear notation that the plan is subject to changes as changing conditions occur. Calculations of anticipated stormwater runoff and sediment volumes shall be included, if required by the Director of Development or designee. The plan shall specify that, after construction is complete, the project applicant shall ensure that the storm drain system shall be inspected and that the project applicant shall clear the system of any debris or sediment.

b) The project applicant shall implement the approved erosion and sedimentation plan. No grading shall occur during the wet weather season (October 15 through April 15) unless specifically authorized in writing by the Building Services Division.

c) Expansive soils may be present at the Project site. However, compliance with standard Conditions of Approval that require adherence to the Oakland Building Code would require an analysis of soil expansion potential and identification of appropriate remediation (e.g., compaction, removal/replacement, etc.) prior to using any expansive soils for foundation support. Compliance with the following City of Oakland Standard Condition of Approval would ensure that this potential impact would be reduced to a *level of less than significant*:

Std. Cond. 14: A preliminary soils report for each construction site within the project area shall be required as part of this project and submitted for review and approval by the Building Services Division. The soils report shall be based, at least in part, on information obtained from on-site testing. Specifically, he minimum contents of the report should include:

A. Logs of borings and/or profiles of test pits and trenches:

a) The minimum number of borings acceptable, when not used in combination with test pits or trenches, shall be two (2), when in the opinion of the Soils Engineer such borings shall be sufficient to establish a soils profile suitable for the design of all the footings, foundations, and retaining structures.

b) The depth of each boring shall be sufficient to provide adequate design criteria for all propose structures.

c) All boring logs shall be included in the soils report.

B. Test pits and trenches

a) Test pits and trenches shall be of sufficient length and depth to establish a suitable soils profile for the design of all proposed structures.

b) Soils profiles of all test pits and trenches shall be included in the soils report.

C. A plat shall be included which shows the relationship of all the borings, test pits, and trenches to the exterior boundary of the site. The plat shall also show the location of all proposed site improvements. All proposed improvements shall be labeled.

D. Copies of all data generated by the field and/or laboratory testing to determine allowable soil bearing pressures, sheer strength, active and passive pressures, maximum allowable slopes where applicable and any other information which may be required for the proper design of foundations, retaining walls, and other structures to be erected subsequent to or concurrent with work done under the grading permit.

E. Soils Report. A written report shall be submitted which shall include, but is not limited to, the following:

a) Site description

b) Local and site geology

c) Review of previous field and laboratory investigations for the site

d) Review of information on or in the vicinity of the site on file at the Information Counter, City of Oakland, Office of Planning and Building.

e) Site stability shall be addressed with particular attention to existing conditions and proposed corrective attention to existing conditions and proposed corrective actions at locations where land stability problems exist.

f) Conclusions and recommendations for foundations and retaining structures, resistance to lateral loading, slopes, and specifications, for fills, and pavement design as required.

g) Conclusions and recommendations for temporary and permanent erosion control and drainage. If not provided in a separate report they shall be appended to the required soils report.

h) All other items which a Soils Engineer deems necessary.

i) The signature and registration number of the Civil Engineer preparing the report.

F. The Director of Planning and Building may reject a report that she/he believes is not sufficient. The Director of Planning and Building may refuse to accept a soils report if the certification date of the responsible soils engineer on said document is more than three years old. In this instance, the Director may require that the old soils report be recertified, that an addendum to the soils report be submitted, or that a new soils report be provided.

d) The Project site has been previously developed, and according to the Phase I Environmental Site Assessment and the Phase II Subsurface Investigation, there are no known wells, pits, swamps, mounds, tank vaults or unmarked sewer lines located below the surface of the site that would be disturbed as a result of the proposed development (*no impact*).

e) The Project site has been previously developed, and there is no evidence to suggest that the site had been previously used as a landfill. Development of the Project site as proposed would not result in the placement of any structures above landfills (*no impact*).

f) The Project site is currently served by municipal sewage systems, and development as proposed would continue to be served by these systems. The use of septic systems is not anticipated (*no impact*).

Source:

Project Description and Plans

Field Survey

City of Oakland, Jack London Square Residential Tower Initial Study and Environmental Review, March 27, 2006.

Schutze & Associates, Inc., Phase I Environmental Site Assessment and Phase II Subsurface Investigation – 325 Seventh Street, Oakland, California, May 23, 2006

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
VII. HAZARDS AND HAZARDOUS MATERIALS - Would the project:					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	✔	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	✔	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☐	✔
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?	☐	☐	☐	☐	✔
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and would result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☐	✔
f) Be located within the vicinity of a private airstrip, and would result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☐	✔
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	✔	☐	☐	☐	☐
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☐	✔

Explanation:

a) Construction workers and future commercial tenants and visitors occupying newly constructed retail and office at the Project site facilities may be exposed to hazardous materials such as small quantities of gasoline, solvents, diesel fuel, oil and grease, hydraulic fluid, ethylene glycol, welding gases, and paint routinely used in construction or commercial operations. Improper management of hazardous materials or accidental release could pose a substantial hazard to human health and the environment. However, management of hazardous materials during construction and operations shall comply with applicable laws; therefore, this impact is considered *less than significant* with no mitigation warranted. The Project Applicant will also be required to comply with the following City of Oakland Standard Condition of Approval related to the handling of hazardous materials during construction activity to further reduce this potential effect:

Std. Cond. 15: The project applicant and construction contractor shall ensure that construction best management practices are implemented as part of construction to minimize the potential negative effects to groundwater and soils. These shall include the following:

a) Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction;

b) Avoid overtopping construction equipment fuel gas tanks;

c) During routine maintenance of construction equipment, properly contain and remove grease and oils;

d) Properly dispose of discarded containers of fuels and other chemicals;

e) Ensure that construction would not have a significant impact on the environment or pose a substantial health risk to construction workers and occupants of the proposed development. Soil sampling and chemical analyses of samples shall be performed to determine the extent of potential contamination beneath all USTs, elevator shafts, clarifiers, and subsurface hydraulic lifts when on-site demolition, or construction activities would potentially affect a particular development or building.

f) If soil, groundwater or other environmental medium with suspected contamination is encountered unexpectedly during construction activities (e.g., identified by odor or visual staining, or if any underground storage tanks, abandoned drums or other hazardous materials or wastes are encountered), the applicant shall cease work in the vicinity of the suspect material, the area shall be secured as necessary, and the applicant shall take all appropriate measures to protect human health and the environment. Appropriate measures shall include notification of regulatory agency(ies) and implementation of the actions described in Standard Condition of Approval #19 (in this instance, the applicant has already submitted a Phase I and Phase II report, so the Standard Condition of Approval requiring the development of these reports would not apply), as necessary, to identify the nature and extent of contamination. Work shall not resume in the area(s) affected until the measures have been implemented under the oversight of the City or regulatory agency, as appropriate.

b) As indicated in a), above, hazardous materials such as small quantities of gasoline, solvents, diesel fuel, oil and grease, hydraulic fluid, ethylene glycol, welding gases, and paint routinely used in construction or commercial operations may be present at the Project site. Improper management of hazardous materials or accidental release could pose a substantial hazard to human health and the environment. However, management of hazardous materials during construction and operations shall comply with applicable laws

(including Standard Condition of Approval #16, identified above); therefore, this impact is considered *less than significant* with no mitigation warranted.

c) Although the Project site is located within one-quarter mile of Lincoln Elementary School, there is no known component of the Project that is anticipated to emit hazardous emissions or to result in the need to handle hazardous or acutely hazardous materials, substances, or waste (*no impact*).

d) No portion of the Project site is included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (*no impact*).

The Phase I Environmental Site Assessment and the Phase II Subsurface Investigation prepared by Schutze & Associates, Inc. (May 23, 2006) indicates that groundwater contaminated with diesel and motor oil from off-site leaking underground storage tanks has migrated to the site. Likely sources of this contamination are the former junkyard and/or the current Erik Auto tech shop at 332 Sixth Street. Concentrations of 1.1 - DCE and 1.1.1 - TCA were detected at levels that exceed the Groundwater Screening Levels for these compounds at a portion of the site. The Phase II report recommended reporting the results of the Phase II Subsurface Investigation as required by city, county and state regulations, and also recommended a follow-up subsurface investigation to investigate the lateral and vertical extent of the two areas of groundwater contamination. No remediation activities were recommended.

Until the recommended follow-up subsurface investigation to determine the lateral and vertical extent of groundwater contamination at the Project site has been completed, it is uncertain whether or not remediation will be necessary. For this reason, the following Standard Conditions should be applied to the Project:

Std. Cond. 16: The project applicant shall submit plans for site review and approval to the Fire Prevention Bureau hazardous Materials Unit. Property owners may be required to obtain or perform a Phase II hazard assessment.

Std. Cond. 17: Prior to issuance of demolition, grading, or building permits the project applicant shall submit to the Fire Prevention Bureau, Hazardous Materials Unit, a Phase 1 environmental assessment report, and a Phase II report if warranted by the Phase I report for the project site. The reports shall make recommendations for remedial action, if appropriate, and should be signed by a Registered Environmental Assessor, Professional Geologist, or Professional Engineer.

If, after completion of the follow-up investigation recommended in the Phase II Subsurface Investigation prepared by Schutze & Associates, Inc., it is recommended that remedial action be taken to address groundwater contamination at the Project site, the following Standard Condition would be applicable:

Std. Cond. 18: If the environmental site assessment reports recommend remedial action, the project applicant shall:

- Consult with the appropriate local, State, and federal environmental regulatory agencies to ensure sufficient minimization of risks to human health and environmental resources, both during and after construction, posed by soil contamination, groundwater contamination, or other surface hazards including, but not limited to, underground storage tanks, fuel distribution lines, waste pits and sumps.
- Obtain and submit written evidence of approval for any remedial action if require by local, State, or federal environmental regulatory agency.

- Submit a copy of all applicable documentation required by local, State, and federal environmental regulatory agencies, including but not limited to: permit applications, Phase I and II environmental site assessment, human health and ecological risk assessments, remedial action plans, risk management plans, soil management plans, and groundwater management plans.

Compliance with these Standard Conditions would reduce risks associated with possible exposure to contaminated groundwater at the Project site to a level of *less than significant*.

In order to reduce the risk of exposure to other hazardous materials that may currently be present at the Project site, the Project will be required to comply City of Oakland Standard Condition of Approval #4 (related to asbestos-containing materials, above, in Section **III. Air Quality**), City of Oakland Standard Condition of Approval #5 (related to lead-based paints, above, in Section **III. Air Quality**), City of Oakland Standard Condition of Approval #16 (as it relates to encountering contaminated groundwater, above), and with the following City of Oakland Standard Conditions of Approval:

Std. Cond. 19: The project applicant shall submit a comprehensive assessment report to the Fire Prevention Bureau, hazardous Materials Unit, signed by a qualified environmental professional, documenting the presence or lack thereof of asbestos-containing materials (ACM), lead-based paint, and any other building materials or stored materials classified as hazardous waste by State or federal law.

Std. Cond. 20: If other materials classified as hazardous waste by State or federal law are present, the project applicant shall submit written confirmation to Fire Prevention Bureau, Hazardous Materials Unit that all State and federal laws and regulations shall be followed when profiling, handling, treating, transporting and/or disposing of such materials.

Std. Cond. 21: If the required lead-based paint/coatings, asbestos, or PCB assessment finds presence of such materials, the project applicant shall create and implement a health and safety plan to protect workers from risks associated with hazardous materials during demolition, renovation of affected structures, and transport and disposal.

e) The Project site is not near a public airport or within an airport plan area (*no impact*).

f) The Project site is not near any private airstrip (*no impact*).

g) Development of the Project site as proposed would not impair implementation of, or physically interfere with, any adopted emergency response plan or emergency evacuation plan. The Oakland Fire Department is the first responder in an emergency. Standard notification procedures required by the City are designed to ensure that the Fire Department is notified if construction traffic would block any City streets. Specifically, the job site supervisor is required to call the Fire Department's dispatch center any day construction vehicles would partially or completely block a City street during construction. Therefore, assuming compliance with the City's notification requirements, Project construction would not significantly interfere with emergency response plans (e.g., the City of Oakland's Multi-Hazard Functional Plan, etc.). The portion of Harrison Street adjacent to the Project site has been identified as part of an evacuation route in the Safety Element map of the Central District. The volume of motor vehicle traffic generated from the Project site following development as proposed may affect the functioning of this evacuation route when in use, which could represent a ***potentially significant*** impact.

h) There are no wildlands on site or adjacent that could pose a risk of wildland fires (*no impact*).

Source:

Project Description and Plans

Field Survey

City of Oakland, Jack London Square Residential Tower Initial Study and Environmental Review, March 27, 2006

City of Oakland, DRAFT Multi-Hazard Functional Plan, 1993

Schutze & Associates, Inc., Phase I Environmental Site Assessment and Phase II Subsurface Investigation – 325 Seventh Street, Oakland, California, May 23, 2006

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
VIII. HYDROLOGY AND WATER QUALITY – Would the project:					
a) Violate any water quality standards or waste discharge requirements?	☐	☐	✔	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☐	✔
c) Result in substantial erosion or siltation on- or off-site that would affect the quality of receiving waters?	☐	☐	✔	☐	☐
d) Result in substantial flooding on- or off-site?	☐	☐	☐	☐	✔
e) Create or contribute substantial runoff which would exceed the capacity of existing or planned stormwater drainage systems?	☐	☐	☐	☐	✔
f) Create or contribute substantial runoff which would be an additional source of polluted runoff?	☐	☐	✔	☐	☐
g) Otherwise substantially degrade water quality?	☐	☐	☐	☐	✔
h) Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map that would impede or redirect flood flows?	☐	☐	☐	☐	✔
i) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☐	✔
j) Expose people or structures to a substantial risk of loss, injury or death involving flooding?	☐	☐	☐	☐	✔
k) Result in inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☐	✔
l) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course, or increasing the rate or amount of flow, of a Creek, river or					

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
stream in a manner that would result in substantial erosion, siltation, or flooding, both on- or off-site?	☐	☐	☐	☐	✔
m) Fundamentally conflict with elements of the City of Oakland Creek Protection (OMC Chapter 13.16) ordinance intended to protect hydrologic resources. Although there are no specific, numeric/quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of water quality through (a) discharging a substantial amount of pollutants into a creek; (b) significantly modifying the natural flow of the water or capacity; (c) depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability; or (d) substantially endangering public or private property or threatening public health or safety?	☐	☐	☐	☐	✔

Explanation:

a) The proposed Project would not increase the amount of impervious surface, since the site is currently entirely covered with existing structures or pavement. Hazardous materials associated with construction activities are likely to involve minor quantities of paint, solvents, oil and grease, and petroleum hydrocarbons. As indicated in Section **VII. Hazards and Hazardous Materials**, above, the Phase I Environmental Site Assessment and the Phase II Subsurface Investigation prepared by Schutze & Associates, Inc (May 23, 2006) indicate that groundwater contaminated with diesel and motor oil from leaking underground storage tanks off-site has migrated to the site, and that concentrations of 1,1 – DCE and 1,1,1 – TCA were detected at levels that exceed the Groundwater Screening Levels for these compounds at a portion of the site (likely sources of this contamination are the former junkyard and/or the current Erik Auto tech shop at 332 Sixth Street).If, after completion of the follow-up investigation recommended in the Phase II report, remediation of groundwater contamination is recommended, Standard Condition of Approval #18(addressed in Section **VII. Hazards and Hazardous Materials**, above) would be applied to reduce risk of exposure to contaminated groundwater to a level of *less than significant*. Storage and use of hazardous materials at the Project site during construction activities would comply with best management practices (BMPs) as specified in the required Stormwater Pollution Prevention Plan (SWPPP), which would reduce potential impacts to stormwater quality associated with spills or leaks of hazardous materials during construction to a level of *less than significant*.

Additionally, future residents of the project could contribute pollutants into the stormwater runoff as a result of vehicular use, landscaping maintenance and other operational characteristics. Pesticides and herbicides related to landscape maintenance are potential sources of stormwater pollution. However, on-site landscaping would be minimal, and the proposed Project would not significantly increase the use of pesticides or herbicides, compared to existing conditions. The proposed Project would be required to comply with the City

of Oakland and Alameda County stormwater quality protection requirements. Potential stormwater quality impacts associated with the proposed Project are, therefore, considered *less than significant.*

Potentially significant Project-related stormwater contamination would be reduced to a level of *less than significant* through the effective implementation of City of Oakland Standard Conditions of Approval (#14, above, and the following):

Std. Cond. 22: The applicant shall comply with the requirements of Provision C.3 of the National Pollutant Discharge Elimination System (NPDES) permit issued by the Alameda Countywide Clean Water Program. The applicant shall submit with the application for a building permit (or other construction-related permit) a completed Stormwater Supplemental Form for the Building Services Division. The project drawings submitted for the building permit (or other construction-related permit) shall contain a stormwater pollution management plan for review and approval by the City, to limit the discharge of pollutants in stormwater after construction of the project to the maximum extent practicable.

a) The post-construction stormwater pollution management plan shall include and identify the following:

- All proposed impervious surface on the site;
- Anticipated directional flows of on-site stormwater runoff;
- Site design measures to reduce the amount of impervious surface area and directly connected impervious surfaces;
- Source control measures to limit the potential for stormwater pollution; and
- Stormwater treatment measures to remove pollutants from stormwater runoff.

b) The following additional information shall be submitted with the post-construction stormwater pollution management plan:

- Detailed hydraulic sizing calculations for each stormwater treatment measure proposed; and
- Pollutant removal information demonstrating that any proposed manufactured/mechanical (i.e., non-landscape-based) stormwater treatment measure, when not used in combination with a landscape-based treatment measure, is capable of removing the range of pollutants typically removed by landscape-based treatment measures.
- All proposed stormwater treatment measures shall incorporate appropriate planting materials for stormwater treatment (for landscape-based treatment measures) and shall be designed with considerations for vector/mosquito control. Proposed planting materials for all proposed landscape-based stormwater treatment measures shall be included on the landscape and irrigation plan for the project. The applicant is not required to include on-site stormwater treatment measures in the post-construction stormwater pollution management plan if he or she secures approval from Planning and Zoning of a proposal that demonstrates compliance with the requirements of the City's Alternative Compliance Program.

(Prior to Final Permit Inspection) The applicant shall implement the approved stormwater pollution management plan.

Std. Cond. 23: For projects incorporating stormwater treatment measures, the applicant shall enter into the "Standard City of Oakland Stormwater Treatment Measures Maintenance Agreement", in accordance with Provision C.3 of the NPDES permit, which provides, in part, for the following:

- The applicant accepting responsibility for the adequate installation/construction, operation, maintenance, inspection, and reporting of any on-site stormwater treatment measures being incorporated into the project until the responsibility is legally transferred to another entity; and
- Legal access to the on-site stormwater treatment measures for representatives of the City, the local vector control district, and staff of the Regional Water Quality Control Board, San Francisco Region, for the purpose of verifying the implementation, operation, and maintenance of the on-site stormwater treatment measures and to take corrective action if necessary. The agreement shall be recorded at the County Recorder's Office at the applicant's expense.

b) As the Project site is already fully developed and/or paved and is served with water from the East Bay Municipal Utility District, development of the Project site as proposed would not result in any change in existing groundwater recharge, and would not deplete groundwater. The shallow groundwater is not considered potable, and is not used as a public drinking water supply. If dewatering is required, the Phase I Environmental Site Assessment and the Phase II Subsurface Investigation prepared by Schutze & Associates, Inc (May 23, 2006) suggests that the water generated may contain petroleum contaminants (e.g., diesel and motor oil from leaking underground storage tanks off-site) and concentrations of 1,1 – DCE and 1,1,1 – TCA. If, after completion of the follow-up investigation recommended in the Phase II report, remediation of groundwater contamination is recommended, Standard Condition of Approval #18 (addressed in Section **VII. Hazards and Hazardous Materials**, above) would be applied to reduce risk of exposure to contaminated groundwater during any dewatering. In addition, compliance with the provisions of Standard Condition of Approval #16 relating to exposure to contaminated groundwater (addressed in Section **VII. Hazards and Hazardous Materials**, above) would prevent the Project from violating any water quality or waste discharge standards associated with contaminated groundwater at the site (*no impact*).

c) Although the Project site has been previously developed or paved, and there is little or no visible topsoil remaining, site preparation and construction activity associated with the proposed development could result in soil erosion or the loss of any remaining topsoil at the site, which could have adverse effects on water quality. During site preparation and construction activity at the site, potentially significant soil erosion would be reduced to a level of *less than significant* through the effective implementation of City of Oakland Standard Condition of Approval #14, as described above in b) in Section **VI: Geology and Soils**, above.

d) The Project site is already fully developed and/or paved, and development of the Project site as proposed would not substantially alter any existing drainage patterns at the site or in the local area. The proposed Project would be connected to the City of Oakland's stormwater drainage system. The Project site is not subject to potential flooding (*no impact*).

e) The Project site is located in an urban area already served by utilities and service systems. It is located within the 14th Avenue Creek, San Antonio and Damon Slough Watershed. The City's Storm Drainage Design Guidelines require a net reduction of 25 percent in the peak stormwater runoff rate from the site to the extent possible. This may be incorporated into the C.3 stormwater quality control requirements and measures (see a), above). The existing physical condition of the City's storm drainage system is unknown, and presently there is no capital improvement project planned for the storm drainage system in the vicinity of the Project site. The Project will be required to comply with City of Oakland Standard Conditions of Approval related to public utilities (see Section **XVI: Utilities**, item b) regarding impacts to the City's stormwater system).

f) Site preparation and construction activity associated with the proposed development could result in adverse stormwater quality effects unless effective mitigation measures are employed. During site preparation and construction activity at the site, potentially significant soil erosion would be reduced to a level of *less than significant* through the effective implementation of City of Oakland Standard Condition #14, as described above in b) in Section VI: Geology and Soils, above.

g) Other than as indicated above regarding stormwater runoff (in a), above) or dewatering (I b), above), there would be no other Project elements that would cause significant degradation of water quality (*no impact*).

h) No portion of the Project site is located within a 100-year flood hazard area, and no housing would be placed within such an area (*no impact*).

i) Development of the Project site as proposed would not place any structures within a 100-year flood hazard area (*no impact*).

j) Development of the Project site as proposed would not expose people or structures to hazards associated with flooding (*no impact*).

k) The Project site is not located in an area subject to tsunami, seiche or mudslides (*no impact*).

l) There are no creeks flowing through the Project site, and development of the Project site as proposed would not substantially alter existing drainage patterns at the site or in the vicinity (*no impact*).

m) No portion of the Project site is located adjacent to a creek, and the Project would not conflict with the City of Oakland Creek Protection Ordinance (*no impact*).

Source:

Project Description and Plans

City of Oakland, Oakland General Plan, Open Space, Conservation, and Recreation Element, June 1996

City of Oakland, Community Service Analysis, Technical Report #5, October 1995

Schutze & Associates, Inc., Phase I Environmental Site Assessment and Phase II Subsurface Investigation – 325 Seventh Street, Oakland, California, May 23, 2006

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
IX. LAND USE AND PLANNING -- Would the project:					
a) Physically divide an established community?	☐	☐	☐	☐	✔
b) Result in a fundamental conflict between adjacent or nearby land uses?	☐	☐	☐	☐	✔
c) Fundamentally conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect and actually result in a physical change in the environment?	☐	☐	☐	☐	✔
d) Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☐	✔

Explanation:

a) The Project site is located on the edge of the busy Chinatown neighborhood of Downtown Oakland, and has already been fully developed and/or paved. This portion of downtown Oakland is already physically divided in a major way by the presence of the I-880 freeway, located just west of the Project site. Development of the Project site as proposed would not represent a physical division of that existing community (*no impact*).

b) The Chinatown neighborhood in Downtown Oakland supports a wide range of urban uses, including high-density residential units and commercial activities. Examples of high-rise projects which have already been completed in the area include the East Bay Municipal Utility District headquarters building, the mixed-use Pacific Renaissance Plaza, and the Eight Orchids residential tower. These are the same types of uses that are now proposed at the Project site, and development of the Project site as proposed would not result in any fundamental conflict with any existing land uses in the vicinity (*no impact*).

c) The *General Plan*, by its comprehensive nature, contains a number of competing policies. City decision-makers must determine whether a Project is consistent with the *General Plan*. All projects must be consistent with the *General Plan*, even if the City determines that it may not be fully consistent with all specific *General Plan* policies.

Conflicts with a *General Plan* do not inherently result in a significant effect on the environment within the context of CEQA. As stated in Section 15358(b) of the CEQA Guidelines, "[e]ffects analyzed under CEQA must be related to a physical change." Section 15125(d) of the Guidelines states that EIRs shall discuss any inconsistencies between the proposed project and applicable *General Plans* in the Setting section of the document (not under Impacts).

Further, Appendix G of the Guidelines (Environmental Checklist Form) makes explicit the focus on *environmental* policies and plans, asking if the project would "conflict with any applicable land use plan, policy, or regulation . . . *adopted for the purpose of avoiding or mitigating an environmental effect*" (emphasis added). Even a response in the affirmative, however, does not necessarily indicate the project would have a significant effect, unless a physical change would occur. To the extent that physical impacts may result from such conflicts, such physical impacts are analyzed elsewhere in this Initial Study.

Regarding a project's consistency with the *General Plan* in the context of CEQA, the Oakland *General Plan* states the following:

> "*The General Plan contains many policies which may in some cases address different goals, policies and objectives and thus some policies may compete with each other. The Planning Commission and City Council, in deciding whether to approve a proposed project, must decide whether, on balance, the project is consistent (i.e., in general harmony) with the General Plan. The fact that a specific project does not meet all General Plan goals, policies and objectives does not inherently result in a significant effect on the environment within the context of the California Environmental Quality Act (CEQA).*" (City Council Resolution No. 79312 C.M.S.; adopted June 2005)

The Project site has a General Plan Land Use and Transportation Element (LUTE) designation of Central Business District (CBD). The following are the City of Oakland *General Plan* policies and zoning requirements that apply to the proposed Project site:

Land Use and Transportation Element (LUTE):

Suitability of the Site for Development:

- Construction on vacant land or to replace surface parking lots should be encouraged throughout the downtown, where possible (*LUTE Policy D 6.1 Developing Vacant Lots*).

The Project site contains underutilized land, including a surface parking lot. The site presents an opportunity for appropriate new urban development.

Encouraging Housing:

- Housing in the downtown should be encouraged as a vital component of a 24-hour community presence (*LUTE Policy D 10.1 Encouraging Housing*).

- Housing in the downtown should be encouraged in identifiable districts, within walking distance of the 12th Street, 19th Street, City Center, and Lake Merritt BART stations to encourage transit use, and in other locations where compatible with surrounding uses (*LUTE Policy D 10.2 Locating Housing*).

- Downtown residential areas should generally be within the Urban Density Residential and Central Business District density range where not otherwise specified. The height and bulk should reflect existing and desired district character, the overall city skyline, and the existence of historic structures or areas (*LUTE Policy D 10.3 Framework for Housing Densities*).

- Facilitating the construction of housing units should be considered a high priority for the City of Oakland (*LUTE Policy N 3.1 Facilitating Housing Construction*).

- In order to facilitate the construction of needed housing units, infill development that is consistent with the General Plan should take place throughout the City of Oakland (*LUTE Policy N 3.2 Encouraging Infill Development*).

The proposed project is primarily a residential project that would provide up to 382 units of new housing within the downtown area. The site is immediate accessible to various transit facilities. Development of the Project site as proposed would be generally consistent with LUTE policies intended to promote high-density residential development in Downtown Oakland. The Project's density, at 471 units per net acre (382 units on 0.81 acres), is within the density range prescribed for the Central Business District (up to 500 units per net acre).

Historic Preservation Element:

Oakland General Plan Historic Preservation Element (HPE) policies that are relevant to the proposed Project and its effect on the physical environment are:

- For any project involving complete demolition of Heritage Properties or Potential Designated Historic Properties requiring discretionary City permits, the City will make a finding that: (1) the design quality of the proposed project is at least equal to that of the original structure and is compatible with the character of the neighborhood; or (2) the public benefits of the proposed project outweigh the benefit of retaining the original structure; or (3) the existing design is undistinguished and does not warrant retention and the proposed design is compatible with the character of the neighborhood (*HPE Policy 3.5 Historic Preservation and Discretionary Permit Approvals*).

- To protect significant archeological resources, the City will take special measures for discretionary projects involving ground disturbances located in archeologically sensitive areas (*HPE Policy 4.1: Archeological Resources*).

Development of the Project site as proposed would generally be consistent with HPE policies, as it would not result in the demolition of any historic structures. One structure at the Project site identified as a historic resource would be relocated to a new site in West Oakland. Compliance with City of Oakland Standard Condition of Approval #10 (addressed in Section **V. Cultural Resources**, above) would provide sufficient protection for any archaeological resources that may be uncovered during construction activity at the Project site.

Open Space, Conservation and Recreation Element (OSCAR):

Oakland General Plan Open Space, Conservation and Recreation Element (OSCAR) policies that are relevant to the proposed Project and its effect on the physical environment are:

Outdoor Open Space and Views:

- Continue to require new multi-family development to provide useable outdoor open space for its residents (*OSCAR Policy OS-4.1: Provision of Useable Open Space*).

- On an on-going basis, the office of Planning and Building will require visual analysis for new developments which could significantly impact views and vistas (*OSCAR ACTION OS-10.2.1: Visual Analysis for New Development*).

The OSCAR also indicates on page 5-12 that access improvements across 7th Street are now needed to ensure pedestrian safety and the usefulness of Harrison Square Park (now Chinese Garden Park). The project would provide the equivalent of 27,675 square feet of group open space as courtyards on the fourth floor and the twentieth floor, and balconies and patios for many of the units. The tall building would overlook the Jack London District with views out to the Oakland Estuary and San Francisco Bay.

Street Trees and Streetscape Vegetation:

- Incorporate a broad and varied range of tree species which is reflected on a city-maintained list of approved trees. Street tree selection should respond to the general environmental conditions at the planting site, including climate and micro-climate, soil types, topography, existing tree planting, maintenance of adequate distance between street trees and other features, the character of existing development, and the size and context of the tree planting area (*OSCAR Policy OS-12.1: Street Tree Selection*).

- Discourage the removal of large trees on already developed sites unless removal is required for biological, public safety, or public works reasons (*OSCAR Policy CO-7.4: Tree Removal*).

Two street trees are proposed for removal to enable development. Given the size of these two trees and their proximity to construction activity that would be necessary to create the proposed underground parking area, it is not practical to preserve these trees in place. The proposed Project would incorporate 10 new street trees along the frontages on Seventh Street, Harrison Street and Sixth Street, and such trees shall be selected and installed in accordance with the allowances prescribed by the Oakland Parks and Recreation Department, Tree Section.

Sustainability:

- Require that development projects be designed in a manner which reduces potential adverse air quality impacts. This may include: (a) the use of vegetation and landscaping to absorb carbon monoxide and to buffer sensitive receptors; (b) the use of low-polluting energy sources and energy conservation measures; (c) designs which encourage transit use and facilitate bicycle and pedestrian travel (*OSCAR Policy CO-12.4: Design of Development to Minimize Air Quality Impacts*).

- Encourage the use of energy-efficient construction and building materials. Encourage site plans for new development which maximize energy efficiency (*OSCAR Policy CO-13.3: Construction Methods and Materials*).

As noted in the discussion under Greenhouse Gas Emissions (Air Quality Section), the project is located in a neighborhood that is densely populated and well served by transit, including Bay Area Rapid Transit (BART), AC Transit, Amtrak, and the Alameda Ferry. As such, the Project would facilitate walking and non-vehicular travel to a greater extent than would be the case for similar development in outlying areas without extensive transit availability. In addition, the high-density development would include a greater number of potential residents that could potentially utilize or engage in alternative modes of travel than in a lower density development on the Project site. The proposed Project would be required to comply with all applicable local, state, and federal regulations associated with the generation of GHG emissions and energy conservation. The proposed Project will be required to comply with the Construction and Waste Reduction Ordinance and submit a Construction and Demolition Waster Reduction Plan for review and approval. The Project would also be a Transit Oriented Development, developing high-density housing in the central area of

Oakland near transit stations, including Bay Area Rapid Transit [BART] stations, AC Transit centers, and other transportation nodes. The Project would develop high-density housing within ¼ mile of at least two modes of transit (BART and AC Transit routes) and within an area developed with pedestrian facilities.

Safety Element:

Oakland General Plan Safety Element policies that are relevant to the proposed Project and its effect on the physical environment are:

- Develop and continue to enforce and carry out regulations and programs to reduce seismic hazards and hazards from seismically triggered phenomena (*Safety Policy GE-1*).
- Continue, enhance or develop regulations and programs designed to minimize seismically related structural hazards from new and existing buildings (*Safety Policy GE-3*).
- Minimize the potential risks to human and environmental health and safety associated with the past and present use, handling, storage and disposal of hazardous materials (*Safety Policy HM-1*).

Development of the Project site as proposed would generally be consistent with Safety Element policies, as compliance with City of Oakland Standard Condition of Approval regarding hazards and hazardous materials and site-specific, design level geotechnical investigation would reduce the risk of potential exposure to contaminated groundwater and seismic hazards at the Project site to acceptable levels.

Housing Element

The following policy from the Oakland General Plan Housing Element would apply to the Project:

- Continue to direct development toward existing communities and encourage infill development at densities consistent with the surrounding communities (*Housing Element Policy 7.3: Infill Development*).

Development of the Project site as proposed would represent infill development, and would be generally consistent with this policy, although proposed residential density at the site is higher than existing residential density in the surrounding area.

Noise Element:

Oakland General Plan Noise Element policies that are relevant to the proposed Project and its effect on the physical environment are:

- Protect the noise environment by controlling the generation of noise by both stationary and mobile noise sources (*Noise Policy 2*).
- Reduce the community's exposure to noise by minimizing the noise levels that are *received* by Oakland residents and others in the City. (This policy addresses the *reception* of noise whereas Policy 2 addresses the *generation* of noise) (*Noise Policy 3*).

Development of the Project site as proposed would place new multi-family housing in an area which is exposed to very high ambient noise levels generated by traffic moving along the adjacent I-880 freeway, but the Project will be required to comply with Title 24 noise standards which require interior noise levels to be reduced to 45 dBA or less prior to issuance of a Certificate of Occupancy (see discussion in Section **XI. Noise**, below).

Pedestrian Master Plan:

Oakland Pedestrian Master Plan policies that are relevant to the proposed Project and its effects on the physical environment are:

- Streetscaping: Encourage the inclusion of street furniture, landscaping, and art in pedestrian improvement projects (*PMP Policy 3.1*).
- Land Use: Promote land uses and site designs that make walking convenient and enjoyable (*PMP Policy 3.2*).

Streetscaping proposed at the Project site would incorporate sidewalks and street trees, consistent with these PMP policies.

Zoning:

All parcels within the project site are zoned C-40 with an S-17 design Overlay. The C-40: Community Thoroughfare Commercial zone is intended to create, preserve, and enhance areas with a wide range of both retail and wholesale establishments serving both short and long term needs in convenient locations, and is typically appropriate along major thoroughfares. The C-40 zoning district also allows residential development consistent with the R-70 High Density Residential designation.

Height and Density:

The R-70 zone has a density limitation of 1 unit per 450 square feet of site area (approximately 78 units per acre), and height limitations of 40 feet with setback requirements for building heights exceeding 40 feet. City approval of the requested Major Conditional Use Permit would be required to enable the Project to exceed these zoning limits.

Open Space:

The S-17 or Downtown Open Space Combining Zone is an overlay zone applied to the site and is supplementary to the zone with which the S-17 zone is combined. The S-17 zone is intended to provide open space standards for residential developments that are appropriate to the unique density, urban character and historic character of the central business district. The S-17 overlay zone requires common open space to be provided at a ratio of 75 square feet per unit and 50 square feet per efficiency unit. At 382 units (of which 39 units are efficiency/studio units, this translates to a requirement for 27,675 square feet of open space, which is precisely what the project proposes in a combination of courtyards, patios and balconies.

d) There are no on-site or adjacent habitat areas that would be affected by the development of the Project site as proposed. No portion of the Project site is located adjacent to a creek, and the Project would not conflict with the City of Oakland Creek Protection Ordinance. The City of Oakland does not have a habitat conservation plan or natural community preservation plan (*no impact*).

Source:

Oakland General Plan, Land Use and Transportation Element, March 1998

Oakland General Plan, Open Space, Conservation and Recreation Element, June 1996

Project Description and Plans

Field Survey

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
X – MINERAL RESOURCES -- Would the project:					
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☐	✔
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☐	✔

Explanation:

a) There are no known mineral resources at the Project site (*no impact*).

b) Development of the Project site as proposed would not result in the loss of availability of any known mineral resource recovery site (*no impact*).

Source:

Oakland General Plan, Open Space, Conservation and Recreation Element, June 1996

Project Description and Plans

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
XI. NOISE -- Would the project result in:					
a) Exposure of persons to or generate noise levels in excess of standards established in the Oakland General Plan or applicable standards of other agencies (e.g., OSHA)?	☐	☐	☐	✔	☐
b) Violate the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise?	☐	☐	☐	✔	☐
c) Violate the City of Oakland Noise Ordinance (Oakland Planning Section 17.120.050) regarding construction noise, except if an acoustical analysis is preformed and all noise-related Standard Conditions of Approval imposed: During the hours of 7 p.m. to 7 a.m. on weekdays and 8 p.m. to 9 a.m. on weekends and federal holidays, will noise levels received by any land use from construction or demolition exceed the applicable nighttime operational noise level standard?	☐	☐	✔	☐	☐
d) Violates the City of Oakland Noise Ordinance (Oakland Municipal Code Section 8.18.020) regarding nuisance of persistent construction-related noise?	☐	☐	✔	☐	☐
e) Create a vibration which is perceptible without instruments by the average person at or beyond any lot line containing vibration-causing activities not associated with motor vehicles, trains, and temporary construction or demolition work, except activities located within the (a) M-40 zone or (b) M-30 zone more than 400 feet from any legally occupied residential property (Oakland Planning Code Section 17.120.060)?	☐	☐	☐	☐	✔
f) Generate interior Ldn or CNEL greater than 45 dBA for multi-family dwellings, hotels, motels, dormitories and long-term care facilities (and may be extended by local legislative action to include single family dwellings) per California Noise Insulation Standards (CCR Part 2, Title 24):	☐	☐	☐	☐	✔
g) Result in a 5 dBA permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☐	✔

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
h) Conflicts with state land use compatibility guidelines for all specified land uses for determination of acceptability of noise (Source: State of California, Governor's Office of Planning and Research, General Plan Guidelines, 2003)?	☐	☐	✔	☐	☐
i) Be located within an airport land use plan and would expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐	✔
j) Be located within the vicinity of a private airstrip, and would expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐	✔

Explanation:

Noise Standards:

Sound pressure is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 dB to 140 dB corresponding to the threshold of pain. Because sound pressure can vary by over one trillion times within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level. Owing to the variation in sensitivity of the human ear to various frequencies, sound is "weighted" to emphasize frequencies to which the ear is more sensitive, in a method known as A-weighting, and expressed in units of A-weighted decibels (dBA). The L_{eq} is the constant sound level, which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period). The day-night noise level (L_{dn}) is an average 24-hour noise level that accounts for the greater sensitivity of most people to nighttime noise by giving greater weight to nighttime noise.

City of Oakland noise guidelines recognizes the variable sensitivity of certain activities to noise, and establish noise exposure criteria defining acceptable noise levels. For residential land use, these guidelines indicate that noise levels of up to 60 to 65 dBA L_{dn} are normally acceptable, noise levels up to 70 dBA are considered conditionally acceptable, up to 75 dBA are normally unacceptable, and above 75 dBA are considered clearly unacceptable.

Existing Noise Levels:

Existing noise levels in the Project vicinity are primarily the result of motor vehicle traffic on the adjacent freeway and surrounding streets The City of Oakland Noise Element Update Environmental Noise Background Report indicates that existing ambient noise levels in the vicinity of the Project site (calculated for the segment along I-

880 between Oak Street and Madison Street) are approximately 83 dBA L_{dn}.[3] Projected noise contours for 2025 show the Project site within an area that would be expected to have ambient noise levels exceeding 70 dBA L_{dn} (since the 70 dBA L_{dn} contour is the highest value shown, it is not possible to determine how much higher than 70 dBA L_{dn} the 2025 ambient noise levels might be in this location).

a) The Project site is within approximately 60 feet of the edge of the elevated portion of I-880 freeway. This location results in a noise environment that exceeds the City's acceptable noise level standard for multi-family residential land uses. The noise exposure of 83 dBA L_{dn} falls in the "clearly unacceptable" category set forth in the City's noise and land use compatibility guidelines. The definition for this category is "new construction or development should generally not be undertaken." This is a severe noise environment which could expose those persons living in the nearest adjacent units to noise level in excess of standards established in the Oakland General Plan or applicable state standards.

Although there are no specified noise levels for non-park outdoor areas, the proposed Project would not have outdoor activity areas directly situated in this noise exposure. None of the proposed balconies are located on the southern wall of Building 1 adjacent to the freeway, the proposed courtyard area on the fourth floor is located between the two proposed structures, and the proposed courtyard on the 20th floor of Building 1 is more than 100 feet above the surface of the freeway. Taking into account future shielding provided by the buildings, noise levels in courtyards and balconies would be substantially reduced, with the amount of noise reduction varying depending upon the varying degree of shielding.

The interior noise level standard is a maximum of 45 dBA L_{dn}. Typical residential construction with windows open for ventilation provides approximately 15 dBA of outdoor-to-indoor noise reduction. Standard construction with windows closed provides approximately 20-25 dBA of outdoor-to-indoor noise reduction. Special sound rated windows are normally required in order to provide adequate outdoor-to-indoor noise reduction where noise levels exceed 70 dBA L_{dn}. High performance sound rated windows, and the walls of the buildings may also need special treatment in order to achieve satisfactory outdoor-to-indoor noise reduction where the noise exposure is 80 dBA L_{dn}. Such high-performance sound rated windows would preclude those living in units on that side of the building from direct access to balconies, thus limiting their exposure to freeway noise.

Compliance with the following City of Oakland Standard Condition of Approval and the building design requirements of Title 24 (to be demonstrated by the Project applicant to the satisfaction of the City of Oakland prior to the issuance of any certificate of occupancy), would reduce noise impacts to *less than significant*.

Std. Cond. 24: If necessary to comply with the interior noise requirements of the City of Oakland's General Plan Noise Element and achieve an acceptable interior noise level, noise reduction in the form of sound-rated assemblies (i.e., windows, exterior doors, and walls) shall be incorporated into project building design, based upon recommendations of a qualified acoustical engineer. Final recommendations for sound-rated assemblies will depend on the specific building designs and layout of buildings on the site and shall be determined during the design phase.

b) Although there would be some noise generated through routine activity in the commercial space and residential units proposed at the Project site, this development would be unlikely to generate noise in

[3] Illingworth & Rodkin, December 16, 2004

violation of the City's Noise Ordinance. The routine operation of generators, exhaust fans and other mechanical equipment at the Project site during building operations would not be expected to result in unusual or noticeably loud noises. In terms of Project-generated traffic noise, generally, traffic must double in volume to produce a noticeable increase in noise levels. Traffic associated with the development of 382 new residential units at the Project site (which is located in an area which already supports extensive vehicle traffic, and is adjacent to a major freeway) would not be expected to result in a doubling of existing traffic volumes on any roadway in the vicinity of the Project site (*less than significant*).

c) Construction activity at the Project site would be expected to generate noise which, if not mitigated, could affect those living and working nearby. Construction noise levels are related to the types of equipment used:

Typical Construction Noise Levels (Source: U.S. Environmental Protection Agency, 1971)

Equipment	Leq Noise Level (dBA) @ 50 Feet	With Feasible Noise Controls*
Earthmoving:		
Front Loader	79	75
Backhoe	85	75
Dozer	80	75
Tractor	80	75
Scraper	88	80
Grader	85	75
Paver	89	80
Materials Handling:		
Concrete Mixer	85	75
Concrete Pump	82	75
Crane	83	75
Stationary:		
Pump	76	75
Generator	78	75
Compressors	81	75
Impact:		
Jack Hammer	*88*	*75*
Pneumatic Tools	*86*	*80*
Other:		
Saw	78	75
Vibrator	76	75

* Estimated levels obtainable by selecting quieter procedures or machines and implementing noise-control features requiring no major redesign or extreme cost.

Construction noise associated with development of the Project site as proposed will be reduced to a level of less than significant through compliance with the following City of Oakland Standard Condition of Approval:

Std. Cond. 25: The project applicant shall require construction contractors to limit standard construction activities as follows:

a) Construction activities are limited to between 7:00 AM and 7:00 PM Monday through Friday, except that pile driving and/or other extreme noise generating activities greater than 90 dBA shall be limited to between 8:00 a.m. and 4:00 p.m. Monday through Friday.

b) Any construction activity proposed to occur outside of the standard hours of 7:00 am. to 7:00 pm Monday through Friday for special activities (such as concrete pouring which may require more continuous amounts of time) shall be evaluated on a case by case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened and such construction activities shall only be allowed with the prior written authorization of the Building Services Division.

c) Construction activity shall not occur on Saturdays, with the following possible exceptions:

- Prior to the building being enclosed, requests for Saturday construction for special activities (such as concrete pouring which may require more continuous amounts of time), shall be evaluated on a case by case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened. Such construction activities shall only be allowed on Saturdays with the prior written authorization of the Building Services Division.
- After the building is enclosed, requests for Saturday construction activities shall only be allowed on Saturdays with the prior written authorization of the Building Services Division, and only then within the interior of the building with the doors and windows closed.

d) No extreme noise generating activities (greater than 90 dBA) shall be allowed on Saturdays, with no exceptions.

e) No construction activity shall take place on Sundays or Federal holidays.

f) Construction activities include but are not limited to: truck idling, moving equipment (including trucks, elevators, etc) or materials, deliveries, and construction meetings held on-site in a non-enclosed area.

g) Applicant shall use temporary power poles instead of generators where feasible.

Std. Cond. 26: To reduce noise impacts due to construction, the project applicant shall require construction contractors to implement a site-specific noise reduction program, subject to the Planning and Zoning Division and the Building Services Division review and approval, which includes the following measures:

a) Equipment and trucks used for project construction shall utilize beast available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds), wherever feasible.

b) Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with

compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, and exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible.

c) Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.

d) If feasible, the noisiest phases of construction shall be limited to less than 10 days at a time.

Although the foundations will be constructed using drill piles instead of pile driving, site preparation and construction activity at the Project site is likely to generate noise levels that would temporarily exceed City standards, a potentially significant environmental impact. Such extreme noise impacts would be reduced to a level of *less than significant* through compliance with the following City of Oakland Standard Conditions of Approval:

Std. Cond. 27: To further reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90 dBA, a set of site-specific noise attenuation measures shall be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures shall be submitted for review and approval by the Planning and Zoning Division and the Building Services Division to ensure that maximum feasible noise attenuation will be achieved. This plan shall be based on the final design of the project. A third-party peer review, paid for by the project applicant, shall be required to assist the City in evaluating the feasibility and effectiveness of the noise reduction plan submitted by the project applicant. A special inspection deposit is required to ensure compliance with the noise reduction plan. The amount of the deposit shall be determined by the Building Official, and the deposit shall be submitted by the project applicant concurrent with submittal of the noise reduction plan. The noise reduction plan shall include, but not be limited to, an evaluation of the following measures. These attenuation measures shall include as many of the following control strategies as feasible:

a) Erect temporary plywood noise barriers around the construction site, particularly along sites adjacent to residential buildings;

b) Implement "quiet" pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;

c) Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site;

d) Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example; and

e) Monitor the effectiveness of noise attenuation measures by taking noise measurements.

Compliance with this Standard Condition would reduce construction noise impacts to a level of *less than significant*.

d) As indicated in c), above, site preparation and construction activity at the Project site is likely to generate noise levels that would temporarily exceed City standards. Persistent construction-related noise impacts could be considered a nuisance. Implementation of the following City of Oakland Standard Condition of Approval would reduce this impact to a level of *less than significant*.

Std. Cond. 28: Prior to the issuance of each building permit, along with the submission of construction documents, the project applicant shall submit to the Building Services Division a list of measures to respond to and track complaints pertaining to construction noise. These measures shall include:

a) A procedure and phone numbers for notifying the Building Services Division staff and Oakland Police Department; (during regular construction hours and off-hours);

b) A sign posted on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem. The sign shall also include a listing of both the City and construction contractor's telephone numbers (during regular construction hours and off-hours);

c) The designation of an on-site construction complaint and enforcement manager for the project;

d) Notification of neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of extreme noise generating activities about the estimated duration of the activity; and

e) A preconstruction meeting shall be held with job inspectors and the general contractor/on-site project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.

e) Other than during the construction period (see items c) and d) above) the Project would not include any elements that would create or cause a significant vibration (*no impact*).

f) As indicated in a), above, although the site is located within approximately 60 feet of the I-880 freeway, the Project will be required to employ building design elements to enable the proposed structures to meet all Title 24 requirements related to maintaining noise levels below 45 dBA in residential units. The Project would not include any elements that would generate interior noise levels in excess of 45 dBA within residential units at the site (*no impact*).

g) As indicated above, there would be some noise generated through routine activity in the commercial space and residential units proposed at the Project site. However, given the high ambient noise levels already present in the vicinity of the Project site (due to proximity to a major freeway), it is unlikely that post-construction activity at the site would result in a permanent 5 dBA increase in ambient noise (*no impact*).

h) As indicated in a) above, in the absence of effective noise abatement design features development of the residential project immediately adjacent to an elevated portion of I-880 freeway could result in the exposure of those persons living in the nearest adjacent units to noise levels well in excess of standards established in the Oakland General Plan (Land Use Compatibility Guidelines) or applicable state standards (45 dBA interior). However, the Project will be required to employ building design elements to enable the proposed structures to meet all Title 24 requirements related to maintaining noise levels below 45 dBA in residential units, thereby reducing impacts to levels of *less than significant (see interior noise level discussion in a), above)* ..

i) The Project site is not near a public airport or within an airport plan area (*no impact*). The Metropolitan Oakland International Airport is located approximately six miles south of the Project site, and the San Francisco International Airport is located approximately 20 miles southwest of the Project site. Therefore, the Project would not expose persons residing at the Project site to excessive noise levels as a result of proximity to an airport.

j) The Project site is not near any private airstrip (*no impact*).

Source:

Oakland Noise Ordinance

Project Description and Plans

Field Survey

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
XII. POPULATION AND HOUSING -- Would the project:					
a) Induce substantial population growth in a manner not contemplated in the General Plan either directly (for example by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure), such that additional infrastructure is required but the impacts of such were not previously considered or analyzed?	☐	☐	☐	✔	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element?	☐	☐	☐	☐	✔
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element?	☐	☐	☐	☐	✔

Explanation:

a) Development of 382 apartments at the Project site would induce substantial population growth (an estimated 753 persons, at the 2000 Census tract residential density of 1.97 persons per dwelling unit) in the area. This would represent an approximately a 22% increase in the total population of Census tract #403000 in which the Project site is located, up from a 2000 Census population of 2,602 residents living in 1,498 dwelling units). However, the proposed high-density residential development and ground-floor commercial uses are consistent with the City of Oakland's land use policies directing future growth in Downtown Oakland, and the impact would be regarded as *less than significant*. The Project would be consistent with the City's Housing Element objectives for Downtown Oakland, which include increasing housing opportunities Downtown so as to create a better sense of community, to provide for a range of housing types and densities, to provide added support for retail shopping, and to encourage housing as a vital component of a 24-hour Downtown. The Project site is located in an area of Downtown Oakland where the urban infrastructure necessary to support the proposed development is already in place. As indicated in Section **XVI. Utilities and Service Systems**, below, the Project will comply with the City of Oakland Standard Condition of Approval that requires confirmation of the City's surrounding stormwater and sanitary sewer system capacity and state of repair, with the Project applicant responsible for any necessary stormwater and sanitary sewer infrastructure improvements to accommodate the proposed Project.

b) There is one residential structure currently located at the Project site (621 Harrison Street), which is to be relocated to a site in West Oakland for long-term protection of what has been identified as an "historic resource", so there would be no loss of existing housing units within Oakland as a result of Project development (although the three residential units in this structure would be displaced from the Project site). Development of the Project site as proposed would result in construction of a substantial number of new

housing units (an increase from 1,498 dwelling units within the Census tract in 2000 to 1,880 dwelling units with the addition of 382 new dwelling units at the Project site) within a portion of Downtown Oakland where new growth and change is anticipated (*no impact*).

c) Those currently living in the three units in the one residential structure located at the Project site (621 Harrison Street) would likely be displaced when that structure is relocated to a site in West Oakland. Development of the Project site as proposed would not result in the displacement of a substantial number of people, or necessitate construction of replacement housing for displaced persons (*no impact*).

Source:

City of Oakland, Housing Element, June 2004

U.S. Census 2000 information for Tract #403000

Project Description and Plans

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
XIII. PUBLIC SERVICES - - Would the project :					
Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:					
a) Fire protection?	☐	☐	✔	☐	☐
b) Police protection?	☐	☐	☐	✔	☐
c) Schools?	☐	☐	✔	☐	☐
d) Other public facilities?	☐	☐	☐	✔	☐

Explanation:

a) Fire Protection:

The Project site is located in an urban area where public services are already provided. The Community Services Analysis prepared for the Land Use and Transportation Element of the General Plan stated that future in-fill development through the General Plan horizon year of 2015 would not be likely to impose a burden on existing public services.

Fire protection and emergency medical response services would be provided by the Oakland Fire Department. The Fire Department has 25 engine companies and 7 truck companies, each generally staffed with four personnel (some trucks carry five firefighters). The Department does not provide medical transport, which is handled under contract to Alameda County by American Medical Response. The fire station nearest to the Project site is located at 822 Alice Street (Station 12), and the response time to the Project site would normally be less than the 90 percent response goal of seven minutes established by the City of Oakland. In accordance with standard City practices, the proposed Project would be designed in compliance with Oakland's Building Code, and the Fire Department would review the Project plans at the time of building permit issuance to ensure adequate fire and life safety measures are designed into the Project, and that it is in compliance with all applicable state and city fire safety requirements. In particular, as a residential high-rise structure, the Project would be required to be of fire-resistive construction and fully sprinklered, and to have a firefighter's control room to allow responding crews to monitor building alarms and override elevator controls. The increased population at the Project site as a result of the proposed development would be expected to result in an incremental increase in the number of emergency calls at the Project site. The

Project-generated increase in traffic to and from the site could also incrementally increase the number of motor vehicle accidents requiring Fire Department response. However, neither increase would be anticipated to be substantial in the context of existing development in the area and current response patterns, because the Project would result in relatively little growth within the context of greater downtown Oakland. Assuming compliance with building codes, the number of fire responses could be expected to show a slight, but not substantial, increase. Therefore, there would not be any significant impacts on fire protection services, and implementation of the following City of Oakland Standard Conditions of Approval would further reduce the incremental Project-related increase in the demand for fire protection services:

Std. Cond. 29: a) The project applicant shall comply with all other applicable federal, state, regional and/or local codes, requirements, regulations, and guidelines, including but not limited to those imposed by the City's Building Services Division, the City's Fire Marshal, and the City's Public Works Agency.

b) The applicant shall submit approved building plans for project-specific needs related to fire protection to the Fire Services Division for review and approval, including, but not limited to automatic extinguishing systems, water supply improvements and hydrants, fire department access, and vegetation management for preventing fires and soil erosion.

b) Police Protection:

Police protection services would be provided at the Project site by the Oakland Police Department, which is headquartered in downtown Oakland at 455 Seventh Street, about three blocks from the Project site. The Police Department has more than 700 officers and more than 300 civilian staff. As with fire protection and emergency medical response services, the proposed Project could incrementally increase the demand for police services, but the increased demand generated by 382 new residential units within the context of greater downtown Oakland would not be substantial. Therefore, the Project is not anticipated to affect police response time or result in a significant impact on police services. The Police Department recommends that preventative design measures, such as landscaping, lighting, and security alarms and door locks be incorporated into the final designs for new development projects. As part of standard development practices, Project plans would be reviewed by the Police Department, and the Project applicant would be required to incorporate the Department's recommendations into the final Project design. To ensure that the Project would not adversely affect the ability of the Oakland Police department to deliver services to the Project area and vicinity, the Project sponsor would incorporate a number of design features and standards (in addition to compliance with the Uniform Building Code) into Project plans. These would include appropriate security lighting for buildings, walkways, and parking facilities, as well as a construction-period security plan. These features and standards would be required as part of the City's conditions of approval for the Project, and would require review and approval by the Oakland Police Department prior to construction.

c) Schools:

The Oakland Unified School District (OUSD) operates public schools within the vicinity of the Project site. The Project site lies within the boundaries serviced by Lincoln Elementary School (current enrollment approximately 583 students, maximum capacity approximately 587 students), Westlake Middle School (current enrollment approximately 610 students, maximum capacity approximately 650 students) and Oakland Technical High School (current enrollment approximately 1,800 students, operating at capacity). At a student generation rate of 0.7 students per housing unit used by the Oakland Unified School District, the development of 382 residential units at the Project site as proposed could be expected to add a total of approximately 268 new students to local enrollment in public schools. However, given the character and location of the residential units proposed, there may be a smaller number of families with children at the

Project site than would be the case for development projects with larger, detached units (although 145 two bedroom units and 40 "two bedroom plus" units would be provided at the Project site). Prior to the issuance of building permits, the Project applicant would be required to pay all school impact fees (currently $2.14 per square foot for residential space and $0.34 per square foot of commercial space) to offset any impacts to school facilities associated with the proposed Project. In accordance with SB 50, this payment of all current school impact fees would be deemed full and complete mitigation of any Project-related school impacts, reducing these potential impacts to a level of *less than significant*.

d) Parks:

The Project site is located in an urbanized portion of downtown Oakland that is served by a number of existing parks, including the Chinese Garden Park (located directly across Harrison Street from the Project site), and the extensive Lakeside Park (located along the shoreline of Lake Merritt, approximately one-half mile from the Project site at it's nearest point). In addition, the recreational opportunities of the Jack London Square area are within less than one-half mile of the Project site. The proposed Project incorporates limited recreational facilities for residents, including two courtyards and three community rooms), and development of the Project site as proposed would not be expected to result in significant impacts on existing park and recreational facilities.

The Community Services Analysis prepared for the Land Use and Transportation Element of the General Plan stated that future infill development through the General Plan horizon year of 2015 would not be likely to impose a burden on existing public services. Thus, the proposed Project is not anticipated to result in significant impacts on public services.

Source:

City of Oakland, Jack London Square Residential Tower Initial Study and Environmental Review, March 27, 2006

City of Oakland CEDA, Mandela Grand Mixed Use Development Project DRAFT EIR, December 2006

City of Oakland, Oakland Community Services Analysis, Technical Report #5, October 1995.

Oakland Unified School District website, August 2007 (http://webportal.ousd.k12.ca.us/)

Project Description and Plans

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
XIV. RECREATION - - Would the project:					
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	✔	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☐	✔

Explanation:

a) The Project site is located in an urban area already served by existing parks and urban open space areas, including the City's 1.4-acre Chinese Garden Park located directly east of Harrison Street across from the Project site. The Hall of Pioneers located in the park hosts the Hong Lok Senior Center (operated by Family Bridges, a non-profit social service agency based in Chinatown that serves low-income seniors). An average of approximately 110 seniors per day utilize the Hong Lok Senior Center Monday through Friday from 9:00 A.M to 3:00 P.M., although they are not all there at the same time. Most of them are either inside the building or in the Chinese Zodiac Garden while they are using the park, and there is generally limited use of the park outside of these areas during Program Hours. Although some increase in the use of local parks and recreational facilities can be anticipated with development of the Project site as proposed, the proposed Project will not increase the use of existing parks and recreational facilities such that substantial deterioration would occur or be accelerated, nor would existing facilities need expansion (*less than significant*).

b) The Project as proposed would provide approximately 6,619 square feet of open space at the courtyard on the fourth floor, approximately 1,200 square feet of open space at the courtyard on the twentieth floor, and approximately 11,915 square feet of private open space in balconies for some of the 382 residential units. The provision of these recreational/open space elements of the proposed Project are not anticipated to result in any significant environmental effect (*no impact*).

Source:

Project Description and Plans

Field Survey

Family Bridges, Inc. at http://www.fambridges.org/7_street.hmtl, and telephone conversation 7/31/07

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC - - Would the project:					
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections), or change the condition of an existing street (i.e., street closures, changing direction of travel) in a manner that would substantially impact access or traffic load capacity of the street system, Specifically:					
i. At a study signalized intersection which is located outside the Downtown area, the project would cause the level of service (LOS) to degrade to worse than LOS D (i.e., E)?	✔	☐	☐	☐	☐
ii. At a study signalized intersection which is located within the Downtown area, the project would cause the LOS to degrade to worse than LOS E (i.e., F)?	✔	☐	☐	☐	☐
iii. At a study signalized intersection outside the Downtown area where the level of service is LOS E, the project would cause the total intersection average vehicle delay to increase by four (4) or more seconds, or degrade to worse than LOS E (i.e., F)?	✔	☐	☐	☐	☐
iv. At a study signalized intersection for all areas where the level of service is LOS E, the project would cause an increase in the average delay for any of the critical movements of six (6) seconds or more, or degrade to worse than LOS E (i.e., F),	✔	☐	☐	☐	☐
v. At a study signalized intersection for all areas where the level of service is LOS F, the project would cause (a) the total intersection average vehicle delay to increase by two (2) or more seconds, or (b) an increase in average delay for any of the critical movements of four (4) seconds or more; or (c) the volume-to-capacity ("V/C") ratio exceeds three (3) percent (but only if the	✔	☐	☐	☐	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
delay values cannot be measured accurately)?					
vi. At a study, unsignalized intersection, the project would add ten (10) or more vehicles and after project completion satisfy the Caltrans peak hour volume warrant?	✔	☐	☐	☐	☐
b) A project's contribution to cumulative impacts is considered "considerable" (i.e., significant) when the project contributes five (5) percent or more of the cumulative traffic increase as measured by the difference between "Existing" conditions and the year 2015 (or Year 2030) with "Project" ***and*** results in a substantial increase in traffic. More specifically, the project must contribute five (5) percent or more of the incremental growth **and** exceed at least one of the intersection-related thresholds listed above in threshold #i through #vi, above.	✔	☐	☐	☐	☐
c) Cause a roadway segment on the Metropolitan Transportation System to operate at LOS F or increase the V/C ratio by more than 3% for a roadway segment that would operate at LOS F without the project?	✔	☐	☐	☐	☐
d) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☐	✔
e) Substantially increase traffic hazards to motor vehicles, bicycles, or pedestrians due to a design feature (e.g., sharp curves or dangerous intersections) that does not comply with Caltrans design standards or incompatible uses (e.g., farm equipment)?	✔	☐	☐	☐	☐
f) Result in less than two emergency access routes for streets exceeding 600 feet in length?	✔	☐	☐	☐	☐
g) Fundamentally conflict with adopted policies, plans, programs supporting alternative transportation (e.g. bus turnouts, bicycle routes)?	✔	☐	☐	☐	☐
h) Generate added transit ridership that would either;					
i. Increase the average ridership on AC Transit lines by three (3) percent at bus stops where the average	✔	☐	☐	☐	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
load factor with the project in place would exceed 125% over a peak thirty minute period;					
ii. Increase the peak hour average ridership on BART by three (3) percent where the passenger volume would exceed the standing capacity of BART trains; or	✔	☐	☐	☐	☐
iii. Increase the peak hour average ridership at a BART station by three (3) percent where average waiting time at fare gates would exceed one minute?	✔	☐	☐	☐	☐

Explanation:

a) b), and c) The EIR will include an analysis of the traffic and circulation effects associated with the Project as proposed.

d) Since the height of the proposed structures at the Project site will exceed 200 feet (maximum height of the proposed design feature is 280 feet), under Federal Aviation Regulations 77 the Project Applicant will need to notify the FAA using FAA Form 7560-1: Notice of Proposed Construction or Alteration, prior to initiating construction activity. Notification provides the FAA with the basis for: a) evaluating the effect of the construction on operating procedures; b) determining the potential hazardous effect of the proposed construction on air navigation; c) identifying mitigation measures to enhance safe air navigation; and d) charting of new objects. After reviewing the form and completing an aeronautical study, the FAA will normally make one of three responses: 1) No Objection – The subject construction did not exceed obstruction standards and marking/lighting is not required; 2) Conditional Determination – The proposed construction would be acceptable contingent upon implementing mitigation measures (e.g., marking and lighting, etc.); and 3) Objectionable – The proposed construction is determined to be a hazard and is thus objectionable. If at any time during the aeronautical survey the proposed project is determined to be a hazard, the study is halted with no further consideration and an objectionable determination is issued. Depending on the outcome of the aeronautical study, it may be necessary to install markings or lighting on the proposed structure to enhance air navigation safety (as directed by the FAA), and the air navigation charts for the area may need to be updated to show the height of the proposed structures. However, given the distance between the Project site and the Oakland International Airport (approximately six miles south of the Project site) and the San Francisco International Airport (approximately fourteen miles southwest of the Project site), it is unlikely that development of the Project site as proposed would result in a change in air traffic patterns or any increase in aviation safety risks (*no impact*).

e) The EIR will include an analysis of the circulation design and potential traffic safety hazard effects associated with the Project as proposed. This will include an evaluation of circulation and access to the Chinese Garden Park located directly east of Harrison Street across from the Project site as per the OSCAR park recommendation (Note: The Revive Chinatown program includes improvements to the intersection of

Harrison Street and Seventh Street – conversion to pedestrian countdown signal heads and installation of high-visibility crosswalk striping.)

f) Vehicular access to the Project site would be via entrances on Sixth Street and Seventh Street. The EIR will evaluate whether these entrances to the parking garage at the site would be adequate to ensure access to the site in emergencies.

g) The EIR will include an assessment as to whether development of the Project site as proposed would support (and not conflict with) City of Oakland policies directed toward increasing residential densities in Downtown Oakland in locations with easy access to public transit as a way to support the use of transportation alternatives to the private motor vehicle.

h) The development of 382 residential units at the Project site would be expected to result in increased transit ridership on the AC Transit system (Routes #11, #62, #19, #51, #63 and "O" pass through the intersection of Harrison Street and Seventh Street adjacent to the Project site) and on BART, most of which would occur at the Lake Merritt BART Station in downtown Oakland. The EIR will include an analysis of Project-related effects on AC Transit service and BART service, including an evaluation of the expected increase of use at the Lake Merritt BART station to determine if the Project will increase average ridership on BART such as to exceed the standing capacity of BART trains; or increase the peak hour average ridership at this station such that average waiting time at fare gates would exceed one minute.

Parking

The Court of Appeals has held that parking is not part of the permanent physical environment, that parking conditions change over time as people change their travel patterns, and that unmet parking demand created by a project need not be considered a significant environmental impact under CEQA unless it would cause significant secondary effects. Parking supply/demand varies by time of day, day of week, and seasonally. As parking demand increases faster than the supply, parking prices rise to reach equilibrium between supply and demand. Decreased availability and increased costs result in changes to people's mode and pattern of travel. However, the City of Oakland, in its review of the proposed project, wants to ensure that the project's provision of additional parking spaces along with measures to lessen parking demand (by encouraging the use of non-auto travel modes) would result in minimal adverse effects to project occupants and visitors, and that any secondary effects (such as on air quality due to drivers searching for parking spaces) would be minimized. As such, although not required by CEQA, parking conditions will be evaluated in the EIR.

Source:

Project Description and Plans

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
XVI. UTILITIES AND SERVICE SYSTEMS - - Would the project:					
a) Exceed wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board?	☐	☐	☐	☐	✔
b) Require or result in construction of new storm water drainage facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	☐	☐	✔	☐	☐
c) Exceed water supplies available to serve the project from existing entitlements and resources, and require or result in construction of water facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	☐	☐	✔	☐	☐
d) Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the providers' existing commitments and require or result in construction of new wastewater treatment facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	☐	☐	✔	☐	☐
e) Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs and require or result in construction of landfill facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	☐	☐	☐	✔	☐
f) Violate applicable federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☐	✔
g) Violate applicable federal, state and local statutes and regulations relating to energy standards?	☐	☐	☐	☐	✔
h) Result in a determination by the energy provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the providers' existing commitments and require or result in construction of new energy facilities					

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
or expansion of existing facilities, construction of which could cause significant environmental effects?	☐	☐	☐	☐	✔

Explanation:

a) Development of the Project site as proposed would be completed in compliance with all Regional Water Quality Control Board requirements and no impacts related to wastewater treatment standards or requirements of the RWQCB would occur (*no impact*).

b) The Project site is located in an urban area already served by utilities and service systems. The Project site is part of the 14th Avenue Creek, San Antonio and Damen Slough watershed. The City's Storm Drainage Design Guidelines require a net reduction of 25 percent in the peak stormwater runoff rate from the site to the extent possible. This may be incorporated into the C.3 stormwater quality control requirements and measures (e-mail from Gus Amirzehni, Engineering and ROW Management, CEDA, City of Oakland to Heather Klein, Planner III, CEDA, City of Oakland, July 11, 2007). Although the existing physical condition of the City's storm drainage system is unknown (and there is presently no capital improvement project planned for the storm drainage system in the area), development of the Project site as proposed would not be expected to require the construction of new or expanded stormwater drainage infrastructure off-site. However, as indicated above, stormwater control infrastructure may need to be included in Project design in order to comply with Regional Water Quality Control Board requirements (*less than significant*). The Project will be required to comply with the following City of Oakland Standard Condition of Approval to ensure no significant impact to the City's stormwater system:

Std. Cond. 30: Confirmation of the capacity of the City's surrounding stormwater and sanitary sewer system and state of repair shall be completed by a qualified civil engineer with funding from the project applicant. The project applicant shall be responsible for the necessary stormwater and sanitary sewer infrastructure improvements to accommodate the proposed project. In addition, the applicant shall be required to pay additional fees to improve sanitary sewer infrastructure if required by the Sewer and Stormwater Division. Improvements to the existing sanitary sewer collection system shall specifically include, but are not limited to, mechanisms to control or minimize increases in infiltration/inflow to offset sanitary sewer increases associated with the proposed project. To the maximum extent practicable, the applicant will be required to implement Best Management Practices to reduce the peak stormwater runoff from the project site. Additionally, the project applicant shall be responsible for payment of the required installation or hook-up fees to affected service providers.

c) The Project site is located in an urban area already served by utilities and service systems. Development of the Project site as proposed would result in an increased demand for water relative to that associated with current uses at the site. Based on 150 gallons per day for each new residential unit, 0.12 gallons per day for each square foot of retail space, and 0.15 gallons per day for each square foot of office space, development of the Project site as proposed would result in an estimated Project-related water demand of approximately 58,

445 gallons per day.[4] The Community Services Analysis prepared for the Land Use and Transportation Element of the General Plan stated that future in-fill development through the General Plan horizon year of 2015 would not be likely to impose a burden on existing utilities and service systems. Under CEQA Guidelines Section 15083.5, a Water Supply Assessment must be prepared for residential development projects that exceed 500 dwelling units. Since the total number of residential units proposed at the Project site is 382, a Water Supply Assessment is not required.

d) The Project site is located in an urban area already served by utilities and service systems. The Project site is situated on Sub-basin 64-02, which has enough capacity to handle proposed sewer discharge flow associated with the Project as proposed, but the Project Applicant will be required to show proposed sewer discharge calculations at the final design stage (e-mail from Gus Amirzehni, Engineering and ROW Management, CEDA, City of Oakland to Heather Klein, Planner III, CEDA, City of Oakland, July 11, 2007). Although development of the Project site as proposed would result in an increased demand for wastewater treatment relative to that associated with current uses at the site, the Community Services Analysis prepared for the Land Use and Transportation Element of the General Plan stated that future in-fill development through the General Plan horizon year of 2015 would not be likely to impose a burden on existing utilities and service systems. Implementation of the City of Oakland Standard Condition of Approval (see Standard Condition 30, above) would reduce such potential impacts to a level of *less than significant.*

e) The Project site is located in an urban area already served by utilities and service systems. Although development of the Project site as proposed would result in an increased demand for solid waste collection and disposal relative to that associated with current uses at the site, the Community Services Analysis prepared for the Land use and Transportation Element of the General Plan stated that future in-fill development through the General Plan horizon year of 2015 would not be likely to impose a burden on existing utilities and service systems (*less than significant). The Project will be required to comply with the following City of Oakland Standard Condition of Approval related to waste reduction and recycling:*

Std. Cond. 31: The project applicant will submit a Construction & Demolition Waste Reduction and Recycling Plan (WRRP) and an Operational Diversion Plan (ODP) for review and approval by the Public Works Agency.

- Chapter 15.34 of the Oakland Municipal Code outlines requirements for reducing waste and optimizing construction and demolition (C&D) recycling. Affected projects include all new construction, renovations/alterations/modifications with construction values of $50,000 or more (except R-3), and all demolition (including soft demo). The WRRP must specify the methods by which the development will divert C&D debris waste generated by the proposed project from landfill disposal in accordance with current City requirements. Current standards, FAQs, and forms are available at www.oaklandpw.com/Page39.aspx or in the Green Building Resource Center. After approval of the plan, the project applicant shall implement the plan.
- The ODP will identify how the project complies with the Recycling Space Allocation Ordinance (Chapter 17.118 of the Oakland Municipal Code), including capacity calculations, and specify the methods by which the development will meet the current diversion of solid waste generated by operation of the proposed project from landfill disposal in accordance with current City requirements. The proposed program shall be implemented and maintained for the duration of

[4] Rate estimates from 200-228 Broadway Mixed-Use Project Draft Environmental Impact Report, February 2002

the proposed activity or facility. Changes in the plan may be re-submitted to the Environmental Services Division of the Public Works Agency for review and approval. Any incentive programs shall remain fully operational as long as residents and businesses exist at the project site.

f) Although development of the Project site as proposed would result in an increased demand for solid waste collection and disposal relative to that associated with current uses at the site, the proposed Project will be required to comply with all applicable regulations related to solid waste pursuant to City of Oakland standard conditions of project approval and would thus have *no impact*.

g) Although development of the Project site as proposed would result in an increased demand for energy relative to that associated with current uses at the site, the proposed Project will be required to comply with all applicable energy standards pursuant to City of Oakland standard conditions of project approval and would thus have *no impact*.

h) The Project site is located in an urban area already served by utilities and service systems. Although development of the Project site as proposed would result in an increased demand for energy relative to that associated with current uses at the site, the Community Services Analysis prepared for the Land use and Transportation Element of the General Plan stated that future in-fill development through the General Plan horizon year of 2015 would not be likely to impose a burden on existing utilities and service systems and thus would have *no impact*.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant with Development Standards	Less than Significant Impact	No Impact
XVII. MANDATORY FINDINGS OF SIGNIFICANCE					
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	✔	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	✔	☐	☐	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	✔	☐

Explanation:

a) This Initial Study does not indicate that there are any significant biology, hydrology or water quality impacts associated with the proposed Project that would substantially degrade the quality of the environment. There is no evidence to indicate that there are any fish or wildlife populations that would be significantly affected by the proposed Project. Implementation of the Project as proposed would not threaten to eliminate a plant or animal, nor reduce the number nor restrict the range of a rare or endangered plant or animal species. Implementation of the Project as proposed would require demolition of all but one of the existing buildings at the Project site. However, no buildings proposed for demolition have been formally identified as "historic resources" as defined in CEQA Guidelines Section 15064.5 and none represent important examples of the major periods of California history or prehistory. Although the residential structure located at 621 Harrison Street has been identified as a historic resource by the City of Oakland and is presently located is within an Area of Primary Importance, this building would be relocated prior to development of the Project site. The historic integrity of this building would be preserved and relocation would be considered a less than significant environmental impact.

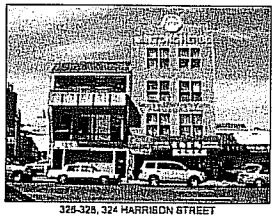
b) Development of the Project site as proposed would result in increased vehicle traffic along local roadways and at intersections in the vicinity of the Project site. Where Project-related traffic increases may result in congestion beyond acceptable levels, these impacts would be regarded as ***potentially significant*** in the absence of appropriate mitigation, and these may also represent cumulative Project-related impacts. The EIR will include an analysis of the traffic and circulation effects associated with the Project as proposed.

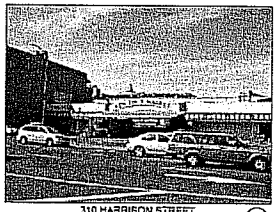
c) As indicated in the related discussions above, given the proximity of the Project site to I-880, in the absence of appropriate measures to address air quality and noise levels related to freeway traffic, development of the Project site as proposed could result in the exposure of those living in some of the proposed apartments or using the commercial space to diesel emissions and noise levels well in excess of 45 dBA. In terms of the open space provided at the Project site, none of the proposed balconies overlook the freeway on the Sixth Avenue side of Building 1 (nearest the freeway), the fourth floor courtyard is somewhat sheltered from the freeway by Building 1, and the twentieth floor courtyard is well above the surface of the freeway, which could be expected to limit exposure of those residents wishing to use the open space provided to freeway-related air pollutants and noise. However, the Project incorporates air filtration devices, the appropriate placement of air intakes, and the use of noise abatement technology to reduce any potential adverse effects on human health to those living in residential units or using commercial space at the site to a level of *less than significant*.

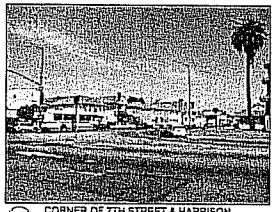
Exhibit A
Vicinity Map

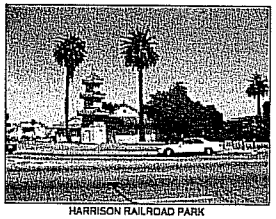
Exhibit B
Site Context Photographs

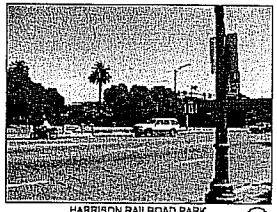
6A 348-348 HARRISON STREET


328-328, 324 HARRISON STREET


310 HARRISON STREET 6B


7A CORNER OF 7TH STREET & HARRISON STREET


HARRISON RAILROAD PARK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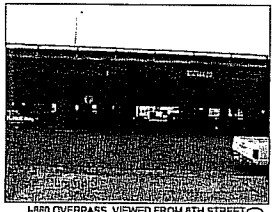
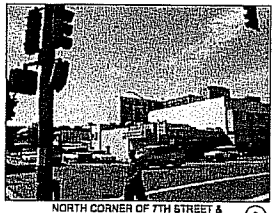
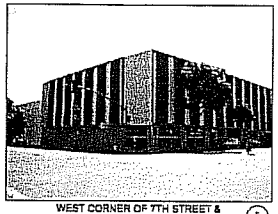
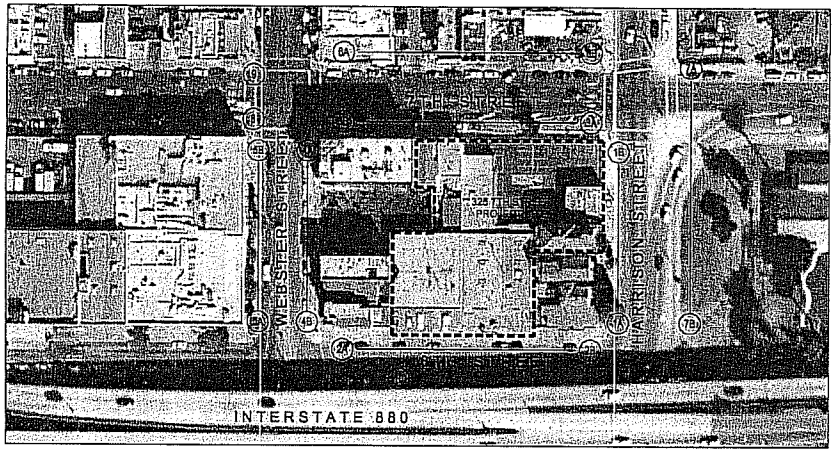
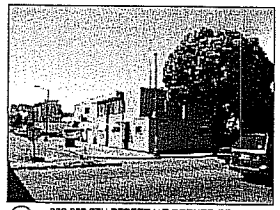
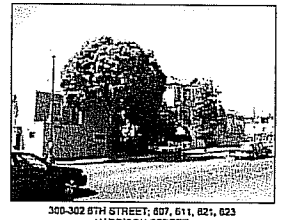

I-880 OVERPASS, VIEWED FROM 6TH STREET 10

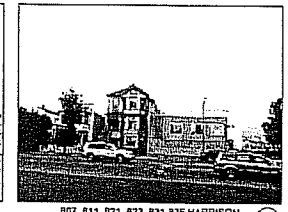

NORTH CORNER OF 7TH STREET & WEBSTER STREET 9

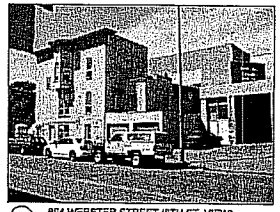

WEST CORNER OF 7TH STREET & WEBSTER STREET 8

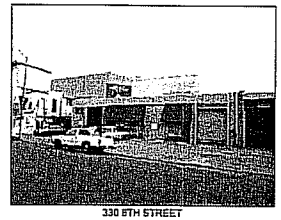


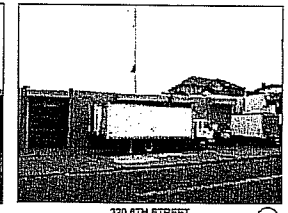

1A 300-302 6TH STREET (AT CORNER OF HARRISON ST.)

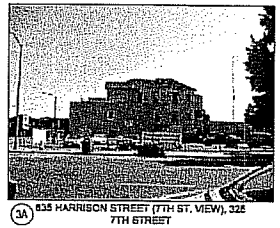

300-302 6TH STREET; 807, 811, 821, 823 HARRISON STREET

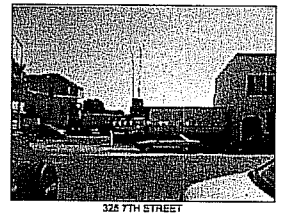

807, 811, 821, 823, 831-835 HARRISON STREET 1B

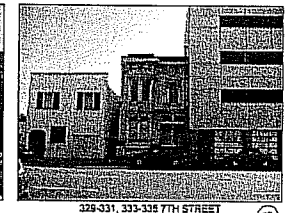

2A 804 WEBSTER STREET (6TH ST. VIEW)


330 6TH STREET

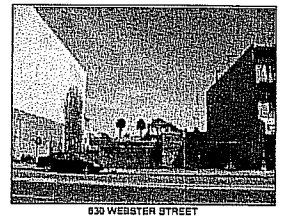

320 6TH STREET 2B


3A 835 HARRISON STREET (7TH ST. VIEW); 325 7TH STREET

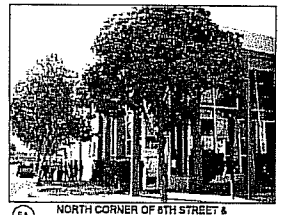

325 7TH STREET

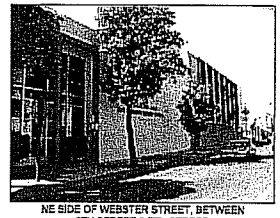

329-331, 333-335 7TH STREET 3B

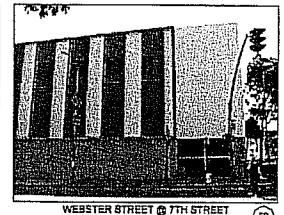
4A 838 WEBSTER STREET


830 WEBSTER STREET

814, 808, 804 WEBSTER STREET 4B


5A NORTH CORNER OF 8TH STREET & WEBSTER STREET


NE SIDE OF WEBSTER STREET, BETWEEN 8TH STREET & 7TH STREET


WEBSTER STREET @ 7TH STREET 5B

SITE CONTEXT PHOTOGRAPHS

EARLY DRC SUBMITTAL

YHLA ARCHITECTS

325 SEVENTH STREET
OAKLAND, CALIFORNIA

A

Exhibit C
Enlarged Site Plan

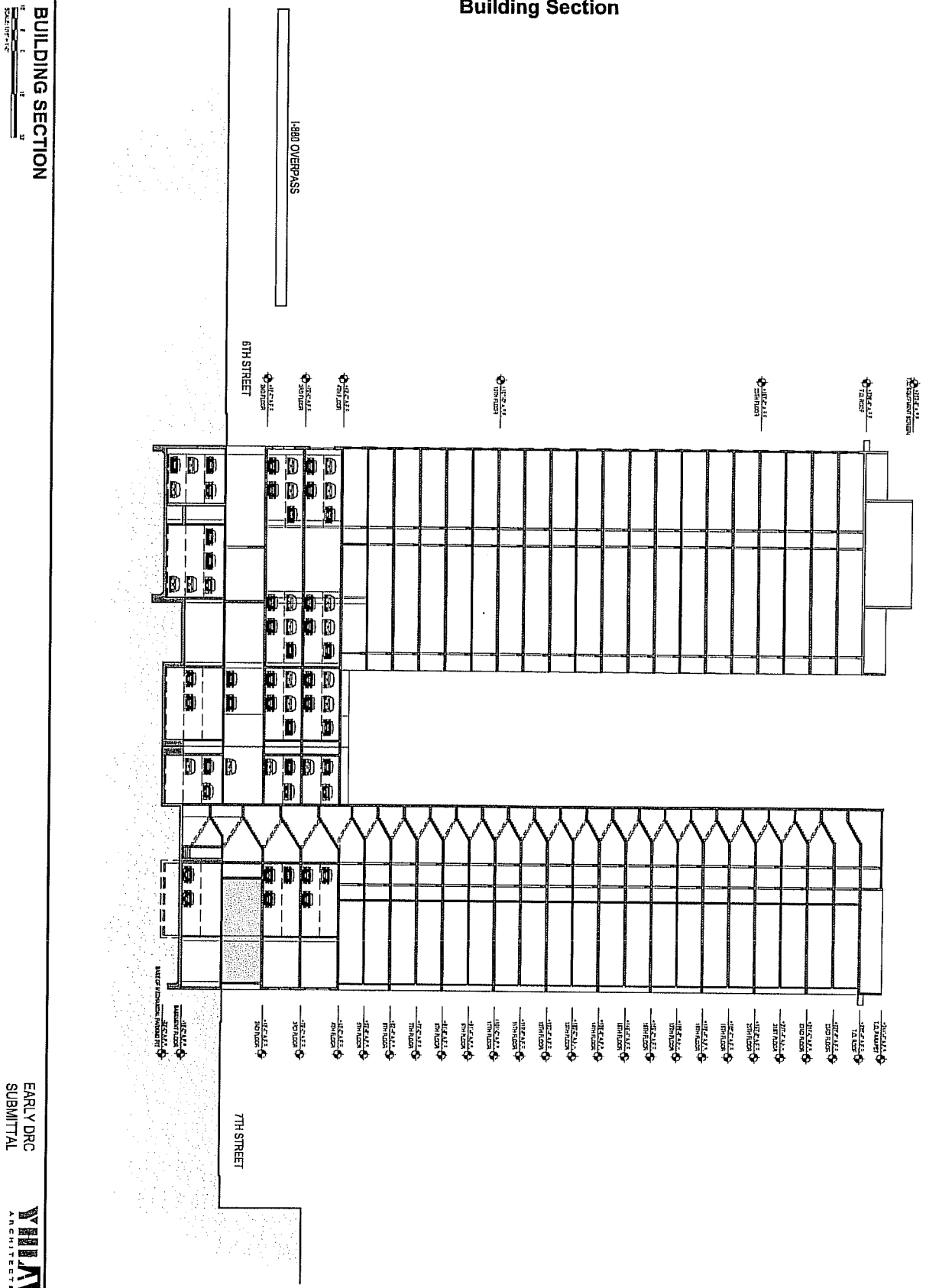
ENLARGED SITE PLAN

- FOR STREET TREE AND PAVING DESIGN, SEE LANDSCAPE DRAWING L1.1

EARLY DRC SUBMITTAL

325 SEVENTH STREET
OAKLAND, CALIFORNIA

Exhibit D
Building Section



BUILDING SECTION

EARLY DRC SUBMITTAL

VMA ARCHITECTS

20

325 SEVENTH STREET
OAKLAND, CALIFORNIA

Exhibit E
3D Visual Simulation: Seventh Street Frontage

3D VISUALIZATIONS

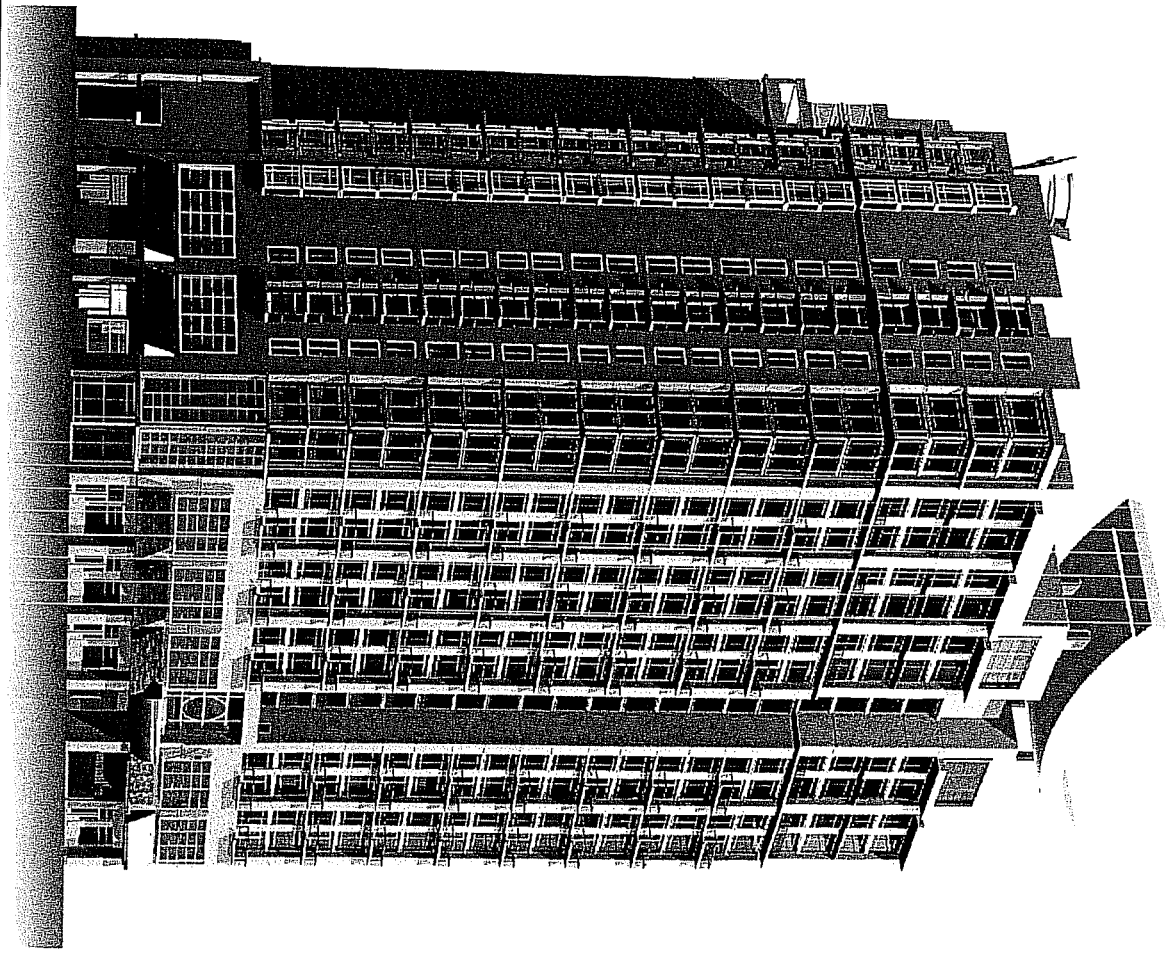
EARLY DRC SUBMITTAL

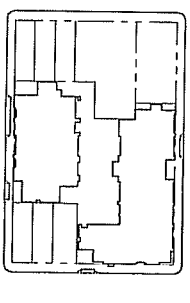
VIGA ARCHITECTS

S2

325 SEVENTH STREET
OAKLAND, CALIFORNIA

Exhibit F
3D Visual Simulation: Corner of Seventh Street and Harrison Street





CORNER OF 7TH STREET & HARRISON STREET

3D VISUALIZATIONS

EARLY DRC SUBMITTAL

VIA ARCHITECTS

S4

325 SEVENTH STREET
OAKLAND, CALIFORNIA

APPENDIX B

RESPONSES TO NOTICE OF PREPARATION

STATE OF CALIFORNIA
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

Notice of Preparation

December 18, 2007

To: Reviewing Agencies

Re: 325 Seventh Street Project
SCH# 2007122056

Attached for your review and comment is the Notice of Preparation (NOP) for the 325 Seventh Street Project draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Heather Klein
City of Oakland
250 Frank H. Ogawa Plaza, Suite 3330
Oakland, CA 94612

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH# 2007122056
Project Title 325 Seventh Street Project
Lead Agency Oakland, City of

Type NOP Notice of Preparation

Description The project applicant proposes to demolish all existing structures at the project site with the exception of the existing residential structure currently located at 621 Harrison Street. This building is proposed to be relocated to a lot in the vicinity of 14th Street and Peralta Street in the Oakland Point District in West Oakland. The project proposal is to redevelop the project site with construction of 382 condominium units and ground floor commercial space. Two towers would be situated on a four-story podium, each tower reaching a total height of 23 stories (approximately 237 feet to the top of the roofline, approximately 286 feet to the top of the tower feature on Tower 1, and approximately 280 feet to the top of architectural feature on Tower 2). Commercial space would be provided at street level along the Harrison Street/Seventh Street corner (approximately 5,913 square feet of general retail space and approximately 2,999 square feet of office/administration space). On the fourth floor podium, three community rooms and a 6,619 square foot courtyard would be provided. On the twentieth floor of Tower 1, a 1,200 square foot courtyard would be provided. A total of 397 off-street parking spaces would be provided within a parking garage (one story underground and three stories above ground).

Lead Agency Contact

Name Heather Klein
Agency City of Oakland
Phone (510) 238-6284 **Fax**
email
Address 250 Frank H. Ogawa Plaza, Suite 3330
City Oakland **State** CA **Zip** 94612

Project Location

County Alameda
City Oakland
Region
Cross Streets Seventh Street and Harrison Street
Parcel No. 001-018900500,001-018900600,001-018900700,001-018900800,001-018900900,001-018901400,001
Township -01890130 **Range** **Section** **Base**

Proximity to:

Highways I-880,I-980,I-580
Airports
Railways
Waterways SF Bay, Oakland Estuary
Schools
Land Use There are five existing structures at the site, including a residential building, automotive repair buildings and office buildings, in addition to a surface parking lot. General Plan Land Use and Transportation Element (LUTE) designation is Central Business District (CBD) and Zoning is C-40/S-17 (Community Thoroughfare Commercial Zone/Downtown Open Space Combining Zone).

Project Issues Aesthetic/Visual; Traffic/Circulation; Other Issues

Reviewing Agencies Resources Agency; Department of Conservation; Office of Historic Preservation; Department of Parks and Recreation; San Francisco Bay Conservation and Development Commission; Department of Water Resources; Department of Fish and Game, Region 3; Department of Health Services; Native American Heritage Commission; California Highway Patrol; Department of Housing and Community Development; Caltrans, District 4; Regional Water Quality Control Board, Region 2

Note: Blanks in data fields result from insufficient information provided by lead agency.

Document Details Report
State Clearinghouse Data Base

Date Received 12/18/2007 ***Start of Review*** 12/18/2007 ***End of Review*** 01/16/2008

Note: Blanks in data fields result from insufficient information provided by lead agency.

Resources Agency

- [ ] Resources Agency
  Nadell Gayou
- [ ] Dept. of Boating & Waterways
  David Johnson
- [ ] California Coastal Commission
  Elizabeth A. Fuchs
- [ ] Colorado River Board
  Gerald R. Zimmerman
- [ ] Dept. of Conservation
  Sharon Howell
- [ ] California Energy Commission
  Paul Richins
- [ ] Cal Fire
  Allen Robertson
- [ ] Office of Historic Preservation
  Wayne Donaldson
- [ ] Dept of Parks & Recreation
  Environmental Stewardship Section
- [ ] Reclamation Board
  DeeDee Jones
- [ ] S.F. Bay Conservation & Dev't. Comm.
  Steve McAdam
- [ ] Dept. of Water Resources
  Resources Agency
  Nadell Gayou
- [ ] _____
  Conservancy

h and Game

- Depart. of Fish & Game
  Scott Flint
  Environmental Services Division
- Fish & Game Region 1
  Donald Koch
- Fish & Game Region 1E
  Laurie Harnsberger
- [ ] Fish & Game Region 2
  Banky Curtis
- [ ] Fish & Game Region 3
  Robert Floerke
- [ ] Fish & Game Region 4
  Julie Vance
- [ ] Fish & Game Region 5
  Don Chadwick
  Habitat Conservation Program
- [ ] Fish & Game Region 6
  Gabrina Gatchel
  Habitat Conservation Program
- [ ] Fish & Game Region 6 I/M
  Gabrina Getchel
  Inyo/Mono, Habitat Conservation Program
- [ ] Dept. of Fish & Game M
  George Isaac
  Marine Region

Other Departments

- [ ] Food & Agriculture
  Steve Shaffer
  Dept. of Food and Agriculture
- [ ] Depart. of General Services
  Public School Construction
- [ ] Dept. of General Services
  Robert Sleppy
  Environmental Services Section
- [ ] Dept. of Health Services
  Veronica Malloy
  Dept. of Health/Drinking Water

Independent Commissions,Boards

- [ ] Delta Protection Commission
  Debby Eddy
- [ ] Office of Emergency Services
  Dennis Castrillo
- [ ] Governor's Office of Planning & Research
  State Clearinghouse
- [ ] Native American Heritage Comm.
  Debbie Treadway
- [ ] Public Utilities Commission
  Ken Lewis
- [ ] Santa Monica Bay Restoration
  Guangyu Wang
- [ ] State Lands Commission
  Jean Sarino
- [ ] Tahoe Regional Planning Agency (TRPA)
  Cherry Jacques

Business, Trans & Housing

- [ ] Caltrans - Division of Aeronautics
  Sandy Hesnard
- [ ] Caltrans - Planning
  Terri Pencovic
- [ ] California Highway Patrol
  Shirley Kelly
  Office of Special Projects
- [ ] Housing & Community Development
  Lisa Nichols
  Housing Policy Division

Dept. of Transportation

- [ ] Caltrans, District 1
  Rex Jackman
- [ ] Caltrans, District 2
  Marcelino Gonzalez
- [ ] Caltrans, District 3
  Jeff Pulverman
- [ ] Caltrans, District 4
  Tim Sable
- [ ] Caltrans, District 5
  David Murray
- [ ] Caltrans, District 6
  Marc Birnbaum
- [ ] Caltrans, District 7
  Cheryl J. Powell
- [ ] Caltrans, District 8
  Dan Kopulsky
- [ ] Caltrans, District 9
  Gayle Rosander
- [ ] Caltrans, District 10
  Tom Dumas
- [ ] Caltrans, District 11
  Mario Orso
- [ ] Caltrans, District 12
  Ryan P. Chamberlain

Cal EPA

Air Resources Board

- [ ] Airport Projects
  Jim Lerner
  - [ ] Transportation Projects
    Ravi Ramalingam
  - [ ] Industrial Projects
    Mike Tollstrup

- [ ] California Integrated Waste Management Board
  Sue O'Leary
- [ ] State Water Resources Control Board
  Regional Programs Unit
  Division of Financial Assistance

- [ ] State Water Resources Control Board
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [ ] State Water Resouces Control Board
  Steven Herrera
  Division of Water Rights
- [ ] Dept. of Toxic Substances Control
  CEQA Tracking Center
- [ ] Department of Pesticide Regulation

SCH# [illegible]

Regional Water Quality Control Board (RWQCB)

- [ ] RWQCB 1
  Cathleen Hudson
  North Coast Region (1)
- [ ] RWQCB 2
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] RWQCB 3
  Central Coast Region (3)
- [ ] RWQCB 4
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] RWQCB 5S
  Central Valley Region (5)
  - [ ] RWQCB 5F
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] RWQCB 5R
    Central Valley Region (5)
    Redding Branch Office
- [ ] RWQCB 6
  Lahontan Region (6)
  - [ ] RWQCB 6V
    Lahontan Region (6)
    Victorville Branch Office
- [ ] RWQCB 7
  Colorado River Basin Region (7)
- [ ] RWQCB 8
  Santa Ana Region (8)
- [ ] RWQCB 9
  San Diego Region (9)

- [ ] Other _____
  _____
  _____

Last Updated on 09/11/07

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5505
FAX (510) 286-5559
TTY 711

Flex your power!
Be energy efficient!

January 10, 2008

Ms. Heather Klein
City of Oakland
Community and Economic Development Agency
Planning Division
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612

ALA880681
ALA-880-31.23
SCH#2007122056

Dear Ms. Klein:

File Number ER07-002: 325 Seventh Street Project – Notice of Preparation (NOP)

Thank you for including the California Department of Transportation (Department) in the early stages of the environmental review process for the proposed project. The comments presented below are based on the NOP of a Draft Environmental Impact Report (DEIR) for the 325 Seventh Street Project. As lead agency, the City of Oakland is responsible for all project mitigation, including improvements to state highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures in the DEIR. Any required roadway improvements should be completed prior to the issuance of a certificate of occupancy. While an encroachment permit is only required when the project involves work in the State Right of Way (ROW), the Department will not issue an encroachment permit until our concerns are adequately addressed. Therefore, we strongly recommend that the lead agency ensures resolution of the Department's concerns prior to submittal of an encroachment permit application. Further comments will be provided during the encroachment permit process; see the end of this letter for more information regarding encroachment permits.

Traffic Impact Study

Our primary concern with the project is the potentially significant impact it may have to traffic volume and congestion on the State Highway System. We recommend a traffic impact analysis be prepared. The traffic impact analysis should include, but not be limited to the following:

1. Information on the project's traffic impacts in terms of trip generation, distribution, and assignment. The assumptions and methodologies used in compiling this information should be addressed.

2. Average Daily Traffic (ADT) and AM and PM peak hour volumes on all significantly affected streets and highways, including crossroads and controlling intersections.

3. Schematic illustration of the traffic conditions for: 1) existing, 2) existing plus project, and 3) cumulative for the intersections in the project area.

4. Calculation of cumulative traffic volumes should consider all traffic-generating developments, both existing and future, that would affect the State Highway facilities being evaluated.

5. Mitigation measures should consider highway and non-highway improvements and services. Special attention should be given to the development of alternate solutions to circulation problems that do not rely on increased highway construction.

6. All mitigation measures proposed should be fully discussed, including financing, scheduling, implementation responsibilities, and lead agency monitoring.

We encourage the City of Oakland to coordinate preparation of the study with our office, and we would appreciate the opportunity to review the scope of work. Please see the Caltrans' *"Guide for the Preparation of Traffic Impact Studies"* at the following website for more information:
http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

We look forward to reviewing the traffic impact study, including Technical Appendices, and DEIR for this project. Please send two copies to the address at the top of this letterhead, marked ATTN: Lisa Carboni, Mail Stop #10D.

Community Planning
Consider developing and applying pedestrian and bicycling performance measures as a means of evaluating project impacts on pedestrians and bicyclists. These could include sidewalk crowding, intersection crossing distances, and speed of traffic. Also, consider modeling pedestrian and bicycle trips that your project will generate, or applying a pedestrian and bicycle subset of the countywide model, so that impacts can be quantified. Mitigations resulting from this analysis could improve pedestrian and bicycle access to transit, thereby reducing traffic impacts on state highways. In addition, please analyze secondary impacts on pedestrians and bicyclists that may result from any mitigations for traffic impacts. Please describe any pedestrian and bicycle mitigations that would in turn be needed as a means of maintaining and improving access to transit and reducing traffic impacts on state highways (for example, pedestrian treatments to counteract impacts from widening intersections to accommodate more traffic).

Encroachment Permit
Any work or traffic control within the State ROW requires an encroachment permit that is issued by the Department. Traffic-related mitigation measures will be incorporated into the

construction plans during the encroachment permit process. See the following website link for more information: http://www.dot.ca.gov/hq/traffops/developserv/permits/

To apply for an encroachment permit, submit a completed encroachment permit application, environmental documentation, and five (5) sets of plans which clearly indicate State ROW to the address at the top of this letterhead, marked ATTN: Michael Condie, Mail Stop #5E.

Should you have any questions regarding this letter, please call Lisa Carboni at (510) 622-5491.

Sincerely,

TIMOTHY C. SABLE
District Branch Chief
IGR/CEQA

c: State Clearinghouse

STATE OF CALIFORNIA
PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 10, 2008

Heather Klein
City of Oakland
250 Frank H. Ogawa Plaza, Suite 3330
Oakland, CA 94612

RE: 325 Seventh Street Project, SCH# 2007122056

Dear Ms. Klein:

As the state agency responsible for rail safety within California, we recommend that any development projects planned adjacent to or near the rail corridor in the City be planned with the safety of the rail corridor in mind. New developments may increase traffic volumes not only on streets and at intersections, but also at at-grade highway-rail crossings.

Of specific concern is the cumulative impact from increased traffic from this and the numerous other projects occurring in the area on the existing at-grade highway-rail crossings on the Union Pacific Railroad mainline located southwest of the project site.

If you have any questions in this matter, please call me at (415) 703-2795.

Very truly yours,

Kevin Boles
Environmental Specialist
Rail Crossings Engineering Section
Consumer Protection and Safety Division

cc: Terrel Anderson, Union Pacific Railroad

Linda S. Adams
Secretary for
Environmental Protection

Department of Toxic Substances Control

Maureen F. Gorsen, Director
700 Heinz Avenue
Berkeley, California 94710-2721

Arnold Schwarzenegger
Governor

January 7, 2008

Ms. Heather Klein, Planner III
City of Oakland Community and Economic Develoopment Agency
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, California 94804

Dear Ms Klein:

Thank you for the opportunity to comment on the Notice of Preparation ("NOP") and Initial Study for the draft Environmental Impact Report ("EIR") for the 325 Seventh Street Project ("Project") in Oakland. As you may be aware, the California Department of Toxic Substances Control (DTSC) oversees the cleanup of sites where hazardous substances have been released pursuant to the California Health and Safety Code, Division 20, Chapter 6.8. As a Responsible Agency, DTSC is submitting comments to ensure that the environmental documentation prepared for this project under the California Environmental Quality Act (CEQA) adequately addresses any remediation activities pertaining to releases of hazardous substances.

According to the NOP, there are five existing buildings at the Project site. The buildings border on 7th Street, Harrison, Street and 8th Street. The Project would involve demolition of existing structures at the site except for a residential structure located at 617-621 Harrison Street. The site would be redeveloped into a mixed use structure consisting of a four-story podium with ground floor commercial space, and two residential condominium towers, each 23 stories tall. Parking would consist of one underground parking level and three aboveground levels.

The Initial Study indicates that a combined Phase I Environmental Site Assessment (ESA) and Phase II Subsurface Investigation were conducted for the Project site. The Phase I reported former leaking underground storage tanks (UST), past and current auto repair and storage operations, and a former junkyard. Based on these findings, soil and groundwater samples (Phase II investigation) were collected to be analyzed for petroleum hydrocarbons and volatile organic compounds (VOC). Soil samples were not analyzed because there was no visual evidence of contamination. Groundwater was found to be contaminated with diesel- and motor oil-range petroleum hydrocarbons and some volatile organic compounds (VOCs). The groundwater results indicated that contamination from the former on-site USTs had become commingled with contamination migrating from off-site sources. The Initial Study states that a follow up

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subsurface investigation will be conducted to determine the lateral and vertical extent of groundwater contamination.

DTSC review of the Phase I/Phase II report finds that there are information gaps in the subsurface investigation because: (1) no soil samples were analyzed (lack of visual evidence does not necessarily mean an absence of contamination); (2) metals were not included in the analyses (metals are potential contaminants from auto repair and storage operations), and (3) other chemical contaminants may have been released due to junkyard operations. DTSC strongly recommends that the follow up investigation include sampling and analyses to address these information gaps.

If hazardous substances have been released, they will need to be addressed as part of this project. For example, if remediation activities at the Site include the need for soil excavation, the CEQA compliance document should include: (1) an assessment of air impacts and health impacts associated with the excavation activities; (2) identification of any applicable local standards which may be exceeded by the excavation activities, including dust levels and noise; (3) transportation impacts from the removal or remedial activities; and (4) risk of public upset should be there an accident at the Site.

If you have any questions, please contact Allan Fone of my staff at (510) 540-3836. Thank you in advance for your cooperation in this matter.

Sincerely,

Denise M. Tsuji, Unit Chief
North Coast Cleanup
Operations Branch

cc: Governor's Office of Planning and Research
State Clearinghouse
P. O. Box 3044
Sacramento, CA 95812-3044

Guenther Moskat
CEQA Tracking Center
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

EAST BAY
MUNICIPAL UTILITY DISTRICT

January 11, 2008

Heather Klein, Planner III
City of Oakland Community and Economic Development Agency
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612

Re: Notice of Preparation of an Environmental Impact Report – 325 Seventh Street Project, Oakland (ER07-002)

Dear Ms. Klein:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Notice of Preparation of an Environmental Impact Report for the 325 Seventh Street Project located in the City of Oakland. EBMUD has the following comments.

WATER SERVICE

EBMUD's Central Pressure Zone, with a service elevation between 0 and 100 feet, will serve the proposed development. Off-site pipeline improvements, at the project sponsor's expense, may be required to serve the proposed development depending on EBMUD's metering requirements and fire flow requirements set by the local fire department. Off-site pipeline improvements include, but are not limited to, replacement of existing water mains to the project site. When the development plans are finalized, the project sponsor should contact EBMUD's New Business Office and request a water service estimate to determine costs and conditions for providing water service to the proposed development. Engineering and installation of off-site pipeline improvements and services requires substantial lead-time, which should be provided for in the project sponsor's development schedule.

WASTEWATER

EBMUD's Main Wastewater Treatment Plant, located at 2020 Wake Avenue in the City of Oakland, is anticipated to have adequate dry weather capacity to treat the proposed wastewater flow from this project, provided this wastewater meets the standards of EBMUD's Environmental Services Division. However, the City of Oakland's Infiltration/Inflow (I/I) Correction Program set a maximum allowable peak wastewater flow from each subbasin within the City and EBMUD agreed to design and construct wet weather conveyance and treatment facilities to accommodate these flows. EBMUD prohibits discharge of wastewater flows above the allocated peak flow for a subbasin because conveyance and treatment capacity for wet weather flows may be adversely impacted by flows above this agreed limit. The developer for this project needs to

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confirm with the City of Oakland Public Works Department that there is available capacity within the subbasin flow allocation and that it has not been allocated to other developments. The projected peak wet weather flows from this project need to be determined to assess the available capacity within the subbasin and confirmation included in the EIR. Suggested language to include in the EIR is as follows: "The City of Oakland Public Works Department has confirmed that there is available wastewater capacity within Subbasin 60-2 that is reserved for this project."

In general, the project should address the replacement or rehabilitation of the existing sanitary sewer collection system to prevent an increase in I/I. Please include a provision to control or reduce the amount of I/I in the environmental documentation for this project. The main concern is the increase in total wet weather flows, which could have an adverse impact if the flows are greater than the maximum allowable flows from this subbasin.

WATER CONSERVATION

The proposed project presents an opportunity to incorporate water conservation measures. EBMUD would request that the City of Oakland include in its conditions of approval a requirement that the project sponsor comply with the Landscape Water Conservation Section of the Municipal Code of the Landscape Water Conservation Section, Article 10 of Chapter 7 of the Oakland Municipal Code. EBMUD staff would appreciate the opportunity to meet with the project sponsor to discuss water conservation programs and best management practices applicable to the integrated projects. A key objective of this discussion will be to explore timely opportunities to expand water conservation via early consideration of EBMUD's conservation programs and best management practices applicable to the project.

If you have any questions concerning this response, please contact David J. Rehnstrom, Senior Civil Engineer, Water Service Planning at (510) 287-1365.

Sincerely,

William R. Kirkpatrick
Manager of Water Distribution Planning

WRK:TNS:sb
sb08_018.doc

cc: BALCO Properties Ltd., LLC
1624 Franklin Street, Suite 310
Oakland, CA 94612

City of Alameda • California

January 14, 2008

Ms. Heather A. Klein
Planner III – Major Development Projects
Planning and Zoning Division
City of Oakland Community & Economic Development Agency
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612-2032

Re: City of Alameda's Formal Comments on the Initial Study for the Proposed Development at 325 7th Street in Oakland, Project No. ACTIA 10B

Dear Ms. Klein:

The City of Alameda has contracted out the preparation of a Project Study Report (PSR) for the I-880/Broadway/Jackson Interchange project to the Alameda County Transportation Improvement Authority (ACTIA). The I-880/Broadway/Jackson Project is one of the major projects listed in ACTIA's 20-year Expenditure Plan. The PSR is a cooperative effort between the City of Oakland, the City of Alameda, ACTIA, and Caltrans. Approval is anticipated during the summer of 2008.

The "Harrison Street to Northbound 6th Street Left-Turn" alternative in the draft PSR includes a left turn from Harrison Street onto 6th Street. Traffic would then travel north along a one-way 6th Street to downtown Oakland, Jack London Square, or to a proposed northbound I-880 on-ramp at Market & 6th Street.

Preliminary engineering concepts show that the proposed left-turn lane will eliminate existing and proposed access along 6th Street to all properties between Harrison Street and Webster Street, including the proposed development at 325 7th Street. The geometry and storage requirements of the left-turn lane would also necessitate partial right-of-way acquisition from the property owners along 6th Street. The goal of the "Harrison Street to Northbound 6th Street Left-Turn" alternative is to reduce traffic at the intersection of 7th Street and Harrison Street. In particular, it should eliminate the majority of traffic in the far right lane along 7th Street, thereby reducing the demand on 7th Street. The reduction of demand on 7th Street may allow for the excess capacity to be used for ingress and-egress from 7th Street to 325 7th Street rather than access the project from 6th Street.

Public Works Department
950 West Mall Square, Room 110
Alameda, California 94501-7575
510.749.5840 • Fax 510.749.5867 • TDD 510.522.7538

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We, therefore, respectfully request that any further design endeavors on the development at 325 7th Street take into consideration the proposed "Harrison Street to Northbound 6th Street Left-Turn" alternative. In the meantime, please feel free to contact me at (510) 749-5863 or Andrew Thomas in our Planning Department at 747-5881 if you have any questions, or need additional information.

Sincerely,

Matthew T. Naclerio
Public Works Director

Barbara Hawkins
City Engineer

BH:gc

cc Andrew Thomas, Planning Department -City of Alameda
Wlad Wlassowsky, PW - City of Oakland
Art Dao, ACTIA
Eric Cordoba, ACTIA – PCT

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ALAMEDA COUNTY TRANSPORTATION IMPROVEMENT AUTHORITY

1333 Broadway
Suite 300
Oakland, CA 94612

Telephone:
510/893-3347

Facsimile:
510/893-6489

Webpage:
www.ACTIA2022.com

Henry Chang, Jr., Chair
Vice Mayor, City of Oakland

Alice Lai-Bitker, Vice-Chair
Supervisor, District 3

Keith Carson
Supervisor, District 5

Nora Davis
Mayor, City of Emeryville

Mark Green
Mayor, City of Union City

Scott Haggerty
Supervisor, District 1

Marshall Kamena
Mayor, City of Livermore

Janet Lockhart
Mayor, City of Dublin

Nate Miley
Supervisor, District 4

Anthony Santos
Mayor, City of San Leandro

Gail Steele
Supervisor, District 2

Christine Monsen
Executive Director

January 14, 2008

Ms. Heather A. Klein
Planner III – Major Development Projects
Planning and Zoning Division
City of Oakland Community & Economic Development Agency
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612-2032

Subject: Initial Study for the Proposed Development at 325 7th Street in Oakland

Dear Ms. Klein,

The Alameda County Transportation Improvement Authority (ACTIA) is currently preparing a Project Study Report (PSR) for the I-880 Broadway/Jackson Interchange Project. The I-880/Broadway-Jackson Project is one of the major projects listed in ACTIA's 20-year Expenditure Plan. The project's goal is to develop a set of fundable phased alternatives to improve access between I-880, the Posey and Webster Tubes, Downtown Oakland, and the City of Alameda. This PSR will serve as a project initiation document to establish the scope and secure funding for the proposed transportation project. The PSR is a cooperative effort between the cities of Oakland and Alameda, ACTIA and Caltrans, and is expected to be approved in the summer of 2008.

One of the access alternatives that is being studied as part of this project is the "Harrison Street to Northbound 6th Street Left-Turn" concept. This left-turn concept would allow traffic originating from Alameda, and exiting the Posey Tube, to make a left-turn from Harrison Street onto 6th Street. Traffic would then travel north along a one-way 6th Street to downtown Oakland, Jack London Square, or to a proposed Northbound I-880 on-ramp at Market & 6th.

Caltrans design standards require that the path for this left-turn lane meet minimum turning speed, radius and width requirements. Preliminary engineering concepts show that the proposed left-turn lane will eliminate existing and proposed access along 6th Street to all properties between Harrison and Webster Streets, including the proposed development at 325 7th Street. The geometry and storage requirements of the left-turn lane would also necessitate partial right-of-way acquisition from the property owners along 6th Street.

We, therefore, request that any further design endeavors on the development at 325 7th Street take into consideration the proposed "Harrison Street to Northbound 6th Street Left-Turn" alternative being studied as part of the PSR.

We will provide you copies of the appropriate pertinent technical studies associated with the PSR when they are available. In the meantime, please feel free to contact Eric Cordoba, Project manager at (925) 408-8585 if you have any questions, or need additional information.

Sincerely,

ARTHUR L. DAO
Deputy Director

cc Barbara Hawkins, City of Alameda
Wlad Wlassowsky, City of Oakland
Eric Cordoba, ACTIA – PCT
ACTIA 10B File
Chron. file

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT
SINCE 1955

January 17, 2008

Heather Klein, Planner II
City of Oakland
Community and Economic Development Agency
250 Frank H. Ogawa Plaza Suite 3315
Oakland, CA 94612

Subject: Notice of Preparation of a Draft Environmental Impact Report for 325 Seventh Street Project

Dear Ms. Klein:

Bay Area Air Quality Management District (District) staff have reviewed the Initial Study (IS) and Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the 325 Seventh Street Project (Project). We understand that the proposed Project, located in downtown Oakland, will result in the construction of 382 condominium units with commercial uses on the ground floor. We have the following comments on the NOP.

Toxic Air Contaminants

The California Air Resources Board (ARB) has identified diesel exhaust particulate matter (DPM) as a Toxic Air Contaminant (TAC) and known carcinogen. The IS states that residential uses at the Project site are proposed within 60 feet of I-880 which carries a high volume of heavy duty trucks emitting DPM (IS, page 21). The initial study concludes that installation, operation and on-going maintenance of a ventilation/filtration system for the Project will reduce potential adverse health impacts to residents from TAC exposure, reducing this impact to a less than significant level. However, without quantifying the level of TAC concentrations in the Project area and the emission reductions achieved by the proposed ventilation system, this conclusion is not substantiated. Furthermore, the proposed ventilation system may reduce indoor TAC concentrations but will not reduce TAC impacts to outdoor areas. The California Environmental Quality Act (CEQA) requires that an EIR analyze any significant environmental effects a project might cause by bringing people into an area and exposing them to the hazards found there (State CEQA Guidelines § 15126.2(a)). We recommend that the DEIR identify existing sources of TAC emissions (i.e., major roadways, existing industrial operations, train operations) within a quarter mile of the Project and quantify anticipated outdoor and indoor TAC concentrations at the Project site.

ALAMEDA COUNTY
Tom Bates
Scott Haggerty
Janet Lockhart
Nate Miley

CONTRA COSTA COUNTY
John Gioia
Mark Ross
Michael Shimansky
Gayle B. Uilkema

MARIN COUNTY
Harold C. Brown, Jr.

NAPA COUNTY
Brad Wagenknecht
(Secretary)

SAN FRANCISCO COUNTY
Chris Daly
Jake McGoldrick
Gavin Newsom

SAN MATEO COUNTY
Jerry Hill
(Chair)
Carol Klatt

SANTA CLARA COUNTY
Erin Garner
Yoriko Kishimoto
Liz Kniss

SOLANO COUNTY
John F. Silva

SONOMA COUNTY
Tim Smith
Pamela Torliatt
(Vice-Chair)

Jack P. Broadbent
EXECUTIVE OFFICER/APCO

Greenhouse Gases (GHG)
The Initial Study concludes that the Project's impact on global climate change is too speculative and cannot be evaluated at this time due to "uncertainties regarding human activities and climate change" and a lack of analytical methodologies and "guidance for analysis of climate change" (IS, page 18). While the District has not established significance thresholds for GHG emissions, analytical methodologies and tools do exist to quantify the GHG emissions associated with this project.

We recommend that the DEIR quantify GHG emissions from the Project and that Project sponsors minimize the Project's contribution to climate change by implementing all feasible mitigation measures to reduce GHG emissions. In quantifying GHG emissions and identifying appropriate mitigation measures, we recommend that the City refer to the California Air Pollution Control Officers Association's resource guide to addressing GHG emissions from projects subject to CEQA, *CEQA and Climate Change*, which can be found at http://www.capcoa.org/.

Please contact Nadine Wilmot, Environmental Planner, at (415) 749-5074 or nwilmot@baaqmd.gov, if you have any questions regarding these comments.

Sincerely,

Jean Roggenkamp
Deputy Air Pollution Control Officer

cc: BAAQMD Director Tom Bates
BAAQMD Director Janet Lockhart
BAAQMD Director Nate Miley
BAAQMD Director Scott Haggerty

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APPENDIX C

PEDESTRIAN WIND ASSESSMENT, ROWAN WILLIAMS DAVIES AND IRWIN, INC.

PEDESTRIAN WIND ASSESSMENT
325 7TH STREET
OAKLAND, CALIFORNIA

Project Number: 07-1584 **September 20, 2007**

SUBMITTED TO: **Howai Lai**
YHLA Architects
1617 Clay Street
Oakland, California

Email: howai@yhla.net
Courier: 510-836-6688 x 106

SUBMITTED BY: **Rowan Williams Davies & Irwin Inc.**
Consulting Engineers & Scientists
650 Woodlawn Road West
Guelph, Ontario N1K 1B8

P: (519) 823-1311
F: (519) 823-1316

Technical Coordinator: Roman Stangl
Project Manager: Jordan Gilmour, P.Eng.
Project Director: Bill Waechter, C.E.T.

1. INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by YHLA Architects to conduct a Pedestrian Wind Assessment for the proposed 325 7th Street Development in Oakland, California. The proposed development is mixed-use consisting of two residential towers on top of a podium with retail space located at grade level. The objective of this qualitative analysis is to estimate the pedestrian wind conditions on and around the proposed development. Using the design drawings received on July 3, July 27, and August 7, 2007, the current assessment is based on:

- a review of long-term meteorological data and surrounding information;
- our experience[1] with wind-tunnel tested projects in Oakland and other cities around the world;
- our engineering judgement and knowledge of wind flows around buildings;
- use of software developed by RWDI (*WindEstimator*[2]) for estimating the potential wind comfort conditions around generalized building forms; and,
- use of RWDI's proprietary Computational Fluid Dynamics (CFD) software *Virtualwind*™, for visualizing wind flow patterns.

This assessment was conducted for the following two building configurations:

- **Existing** - Existing surroundings around 325 7th Street with the existing development on the study site; and,
- **Proposed** - Existing surroundings around 325 7th Street with the proposed development.

This desktop approach provides a screening-level estimation of the pedestrian wind conditions. To quantify the results of this qualitative analysis and refine any required design mitigation, physical model tests in a boundary-layer wind tunnel facility would be required.

---

[1]C.J. Williams, H. Wu, W.F. Waechter, and H.A. Baker (1999). "Experiences with Remedial Solutions to Control Pedestrian Wind Problems". 10th International Conference on Wind Engineering, Copenhagen, Denmark.

[2]H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004). "Knowledge-based Desk-top Analysis of Pedestrian Wind Conditions". ASCE Structure Congress 2004, Nashville, Tennessee.

2. SITE INFORMATION

The images in Figure 1 show the 3D rendered views of the two building configurations used for this assessment. Figure 2 is the site plan with the proposed development in place. In the following discussion, references to building locations relate to the "Project North" shown in Figure 2, whereas wind directions refer to "True North".

The development consists of two 20 storey towers on a three storey podium (approximately 45 feet high). The podium has a partially square shaped footprint, covering an area of approximately 200 ft by 225 ft. The north tower is "L-shaped" and is approximately 200 ft by 70 ft in plan, and the south tower is roughly 150 ft by 80 ft. As shown in the site plan in Figure 2, the proposed development is situated at the southwest corner of the intersection of 7th Street and Harrison Street. To the west of the development is Webster Street and to the south is 6th Street. Pedestrian areas on and around the study site include entrances to the proposed development and sidewalks along 6th Street, 7th Street, and Harrison Street, and a sidewalk along Webster Street. A pedestrian accessible courtyard is included at the fourth floor of the proposed development. Presently, on the site there is a one storey building with a parking lot at the northeast corner.

Buildings in the immediate vicinity of the development site are lower than the proposed tower, including a 90 ft high existing building directly west of the proposed towers. Increased density of tall buildings is located in downtown Oakland, to the northwest of the site. A few taller building are present to the west, and buildings in all other directions are relatively low. Lake Merritt is located to the northeast of the development site. Further topographic features include San Francisco Bay to the west and a mountain range to the east, both of which have a significant influence on the wind climate in the Oakland area.

3. METEOROLOGICAL DATA

Wind statistics recorded at the Alameda Naval Air Station between 1945 and 1997 were analysed for the summer (May through October) and winter (November through April) seasons. Figure 3 graphically depicts the distributions of wind frequency and directionality for these two seasons. The upper-left wind rose identifies the summer wind data, indicating the predominance of west winds, when all winds are considered. The lower-left wind rose shows the winter data, and illustrates the predominance of winds from the west, southeast, and northwest, during this season. Calm winds occur for 6.9% of the time in the summer and 11.7% of the time in the winter.

Figure 3 also depicts the directionality of strong winds (winds greater than 20 mph) at the airport. Strong winds occur for 7.2% and 7.8% of the time during the summer and winter seasons, respectively. Strong winds from the west are prevalent during the summer and winter seasons, along with strong winds from the southeast in the winter season, as indicated by the right side wind roses. Strong winds have greater potential to cause uncomfortable or even severe wind conditions. The *Virtualwind* computer simulations will focus on winds from the west and southeast directions. However, the wind comfort assessment using the *WindEstimator* analysis technique considers all wind directions.

4. RWDI WIND COMFORT CRITERIA

The wind conditions around the proposed development are assessed by use of pedestrian wind comfort criteria developed at RWDI. The four comfort categories used for this review are described in general terms as follows:

- **Sitting:** Low wind speeds during which one can read a newspaper without having it blown away. These wind speeds are appropriate for outdoor cafes and other amenity spaces that promote sitting.

- **Standing:** Slightly higher wind speeds that are strong enough to rustle leaves. These wind speeds are appropriate at major building entrances, bus stops or other areas, such as a bench along a sidewalk, where people may want to linger but not necessarily sit for extended periods of time.

- **Walking:** Winds that would lift leaves, move litter, hair and loose clothing. Appropriate for sidewalks, intersections, plazas, parks or playing fields where people are more likely to be active and receptive to some wind activity.

- **Uncomfortable**: The effects of wind speeds at this level would range from small trees swaying and wind force being felt on the body to whole trees being in motion and inconvenience being felt when walking. Wind of this magnitude would be considered a nuisance for most activities.

Wind conditions are considered acceptable for sitting, standing or walking if the wind speeds are within their specified ranges at least 80% of the time, or four in five days. An **uncomfortable** designation means that the 80% criterion is not satisfied for any of the above activities.

Safety is also considered by the criteria and is associated with excessive wind speeds that can adversely affect a pedestrian's balance and footing. If winds sufficient to affect a person's balance occur more than two times per summer or winter season, the wind conditions are considered severe. Wind control measures are typically required at locations where winds are rated as uncomfortable or they exceed the wind safety criterion.

For the purposes of this study, The City of Oakland considers a significant wind impact to occur if a project were to "Create winds exceeding 36 mph for more than one hour during daylight hours during the year". A wind analysis only needs to be done if the project's height is 100 feet or greater (measured to the roof) and one of the following conditions exists: (a) the project is located adjacent to a substantial water body (i.e., Oakland Estuary, Lake Merritt, or San Francisco Bay); or (b) the project is located in the downtown. Since the proposed project exceeds 100 feet in height and is located downtown, it is subject to the thresholds of significance (Thresholds/Criteria of Significance Guidelines, August 17, 2004).

In the City of Oakland significant wind impact criterion, an "Equivalent Wind Speed" (*EWS*) is used to account for the impact of gusty winds. At a point where the Turbulence Intensity (*TI*) is less than 15%, EWS is equivalent to the mean hourly wind speed (V_m). For *TI* greater than 15%, *EWS* is calculated by multiplying the mean speed by a weighting factor according to the following formula:

$$EWS = V_m\,(2 \times TI + 0.7)$$

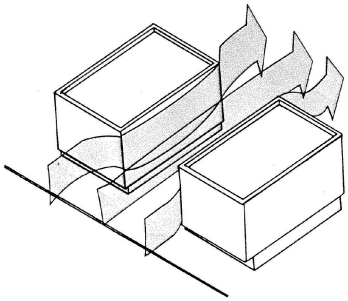
A previous comparison indicated that the City of Oakland significant wind impact criterion is generally comparable to the RWDI wind safety criterion, when applied for the daylight hours with the specific wind climate, urbanized setting and surrounding terrain of the City of Oakland.

5. WIND COMFORT ASSESSMENT

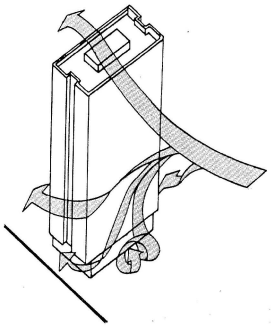
5.1 General

Predicting wind speeds and occurrence frequencies is complicated, involving building geometry, dimensions, orientation, surrounding buildings, upstream terrain and local wind climate. Over the years, RWDI has conducted more than 1500 wind tunnel model studies on pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge allows, in many situations, for a screening-level numerical estimation of pedestrian wind conditions without wind tunnel testing.

In our discussion of anticipated wind conditions, reference will be made to the following generalized wind flows. Large buildings tend to intercept the stronger winds at higher elevations and redirect them down to the grade level. Such a *Downwashing Flow* is the main cause for wind acceleration at the pedestrian-level around tall buildings. There is generally an increased wind acceleration around corners of tall buildings as the downwashed wind accelerates around the edge of the building. Also, when two buildings are situated side-by-side, wind flows tend to accelerate through the gap between the buildings due to the *Channelling Effect*. If these building/wind combinations occur for prevailing winds, there is an increased potential for even higher wind speeds.



Channelling Effect



Downwashing Flow

Generally, wind conditions suitable for walking are appropriate for sidewalks and secondary entrances; lower wind speeds comfortable for standing are preferred for major building entrances and drop-off areas where pedestrians are more apt to linger; and, low wind speeds comfortable for sitting or standing are desired for outdoor seating areas such as upper level recreational spaces and courtyards, especially during the summer season when these areas will typically be in use.

To confirm and visualize the qualitative wind conditions predicted by *WindEstimator*, a Computational Fluid Dynamics (CFD) technique, *Virtualwind* was used to analyze wind flows from the west and southeast directions for the proposed development. The results of these analyses are presented as contours of wind speed or wind velocity vectors showing wind flow patterns (Figures 4 to 10) at grade and at upper levels of the proposed development. These figures represent the average wind speed from the selected directions; however, actual wind flows will fluctuate and approach from different directions. In these figures, the colour blue represents low wind speed areas, green indicates low to moderate wind speeds, yellow depicts a moderate wind speed area, and red indicates areas of high wind speeds, as illustrated on the colour legend in the figures. Animations of the wind conditions can be used to better understand the turbulent nature of the wind flows. Animations of wind speed contours and smoke visualization will be posted on the RWDI ftp site.

The following discussion describes in detail the anticipated wind conditions at notable areas on and around the proposed development. Figures 4 through 10 show the average wind speed contours and velocity vectors for the prevailing west and southeast wind directions for both the Existing and Proposed building Configurations.

5.2 Predicted Wind Conditions

5.2.1 Overview of Wind Conditions

In this study, no red regions were predicted at grade level or at the Level 4 courtyard (see Figures 4 through 10). This result is consistent with the results obtained from *WindEstimator*.

The drawings used for this review indicate recessed main entrances (Residential Lobby entrances), along 6th Street and 7th Street. Canopies were also provided at both entrances. These are positive wind control features that we recommend be retained in the final design to enhance wind comfort at these areas. Note that the canopies were not modeled in our assessment.

Other positive design features include the in-direct angle of the tower facades in relation to the predominant wind directions, resulting in reduced volumes of downwashing wind flows. The 90 ft tall existing building located directly to the west of the 45 ft high proposed podium has a positive affect on wind control for the proposed development. The existing building, being taller than its immediate surroundings, re-directs some of the westerly wind flows, which reduced the occurrence of strong winds at the proposed courtyard (see Figure 6). Also, the orientation of the "L-shaped" tower reduces wind speeds between the towers of the proposed development by disrupting the path of channeling wind flows.

Given the building geometry and location, as well as the local wind climate, it is our opinion that the wind conditions in pedestrian areas on and around the proposed development will meet both the City of Oakland significant wind impact criterion and the RWDI wind safety criterion. The following discussions focus on the wind comfort levels by areas keyed with corresponding letters as shown in the reference plan in Figure 2.

5.2.2 Existing

Generally, the existing wind conditions on and around the site are expected to be suitable for sitting or standing throughout the year (see Figure 4).

5.2.3 Proposed

5.2.3.1 Main Entrances

The Residential Lobby entrances are located along 6th Street and 7th Street (Locations A_1 and A_2 in Figure 2), are recessed from the facade of the podium, and have canopies above. As a result, wind conditions are expected to be comfortable for standing throughout the year, which is considered suitable for a main entrance.

5.2.3.2 Entrances and Sidewalks Adjacent to the Proposed Development

As the proposed tower is much taller than the immediate surroundings, it will intercept winds at higher elevations and redirect them down towards grade level. However, as discussed above, this effect is reduced as a result of the orientation of the tower to the predominant wind directions. The immediate surrounding lower buildings cover the majority of exposed tower corners at grade level, further reducing the effects of downwashing flows at grade. This is demonstrated by the limited size of the green/yellow areas to the north and south of the proposed development, along 6th Street and 7th Street (see Figures 5 and 8). The higher wind speeds are re-directed towards the street and away from sidewalk areas at the building facade (Area B in Figure 2). The downwashing of southeast winds around the north tower does create localized accelerations at the northeast corner of the development (see Figures 8 and 10).

Overall, wind conditions at entrances and sidewalks adjacent to the proposed 325 7th Street Development are expected to be appropriate for standing in the summer and standing or walking in the winter. Slightly elevated wind conditions may occur and will tend to remain along streets, not affecting pedestrian areas. These wind speeds are expected to be generally comfortable for walking.

5.2.3.3 Entrances and Sidewalks Adjacent to Existing Buildings

The existing building on the west side of the proposed towers, being taller than surroundings to the west, redirects some of the westerly wind flow to grade level. As a result, increased wind speeds are expected along Webster Street and at the northwest corner of the existing buildings (see Figure 5 and Location C_1 in Figure 2) Wind conditions in the range of standing to walking are expected, which is appropriate for the area.. This effect is also visible in the Existing Configuration (see Figure 4). The existing low-rise buildings at the southeast corner of the site are not exposed to this wind flow and therefore wind conditions are expected to be suitable for standing (see Figures 5 and 8). Slightly elevated wind speeds are expected along 6th Street, due to downwashing wind flows of the south tower.

In general, suitable wind conditions are expected around existing buildings adjacent to the proposed study site, throughout the year. Slightly higher wind speeds are expected along the streets; however ,wind conditions are expected to be comfortable for walking or better in these areas.

5.2.3.4 Level 4 - Courtyard

As illustrated in the images in Figures 6 and 7, the open courtyard is protected from westerly wind flows by the adjacent tall building, and the "L-shaped" north tower disrupts the channeling wind flow that would typically occur with two towers configured next to each other (see Figures 6 and 9). Therefore, wind conditions in the courtyard are generally expected to be comfortable for standing in the summer and walking in the winter (Location D_1). Slightly higher wind speeds are expected at Locations D_2 and D_3, as a result of the narrowing geometry of the towers that will create a stronger channeling effect.

The design includes a canopy over the pedestrian walkway that connects the north and south towers. This is a positive wind control feature that could be enhanced to shelter pedestrians on windier days. Depending upon the activity, lower wind speeds could be desired in seating areas at the courtyard level.. Localized features around seating areas, such as wind screens, dense landscaping, trellises, etc. should be considered. The installation of a full height wind screen (from floor level to the underside of the canopy) could be investigated along the west edge of the pedestrian

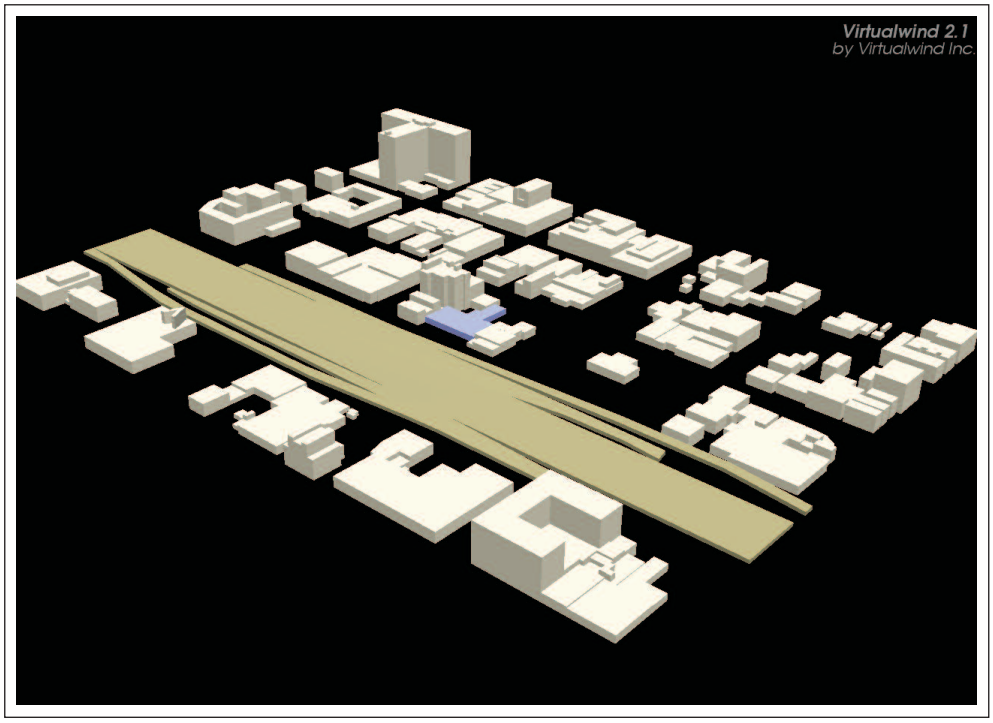
walkway**.** Any vertical wind control measures considered should face perpendicular to the local wind flow (i.e., at the point to be wind sheltered), for the dominant west winds to be most effective (see Figures 3 and 6).

6. SUMMARY

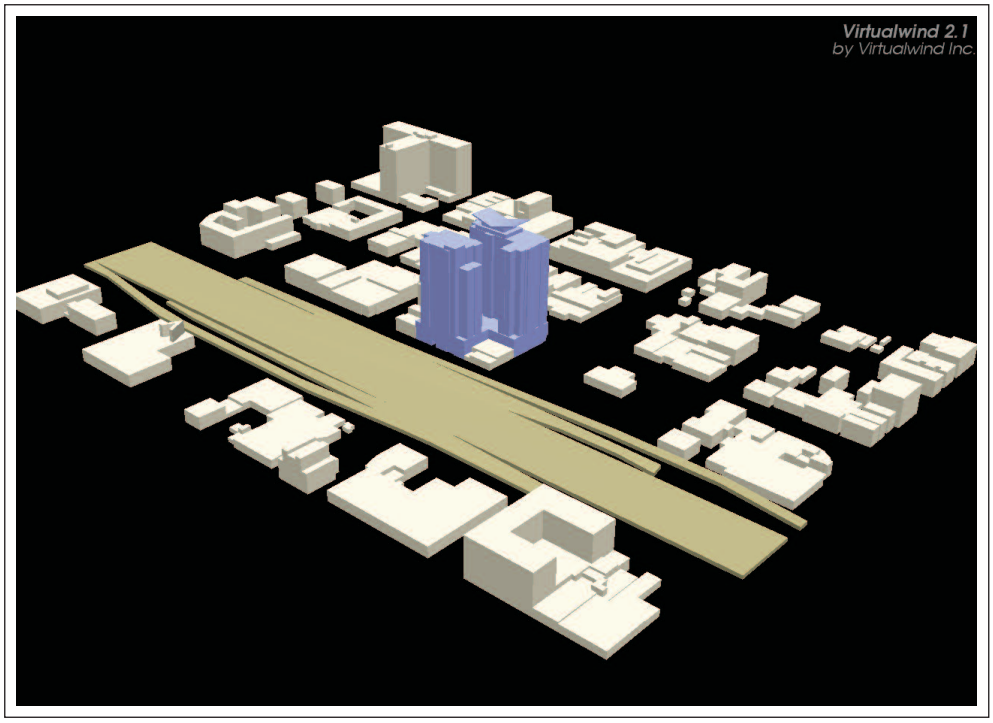
In summary, the proposed 325 7th Street Development includes several positive design features for wind control. In addition, adjacent existing buildings located to the east and west of the proposed development are expected to assist with wind shelter for pedestrian areas at grade and on the podium from the prevailing winds. As a result, the grade level wind conditions are predicted to be comfortable for the intended usage of entrances and sidewalks around the proposed development site. It is our opinion that the wind conditions at pedestrian areas around the proposed development will meet both the City of Oakland significant wind impact criterion and the RWDI wind safety criterion.

While the courtyard at Level 4 is somewhat sheltered from the prevailing west and southeast winds, wind conditions are not expected to be comfortable for sitting. Conceptual wind control measures have been described to improve the wind conditions in this amenity space. These conceptual wind control measures are based on the qualitative predictions of potential wind conditions. Given the generally positive outcome of the qualitative assessment, it is our opinion that wind tunnel testing of the physical model of the proposed 325 7th Street Development is not necessary to quantify the wind conditions. However, if desired, wind tunnel tests could be used to refine the conceptual wind control measures.

FIGURES

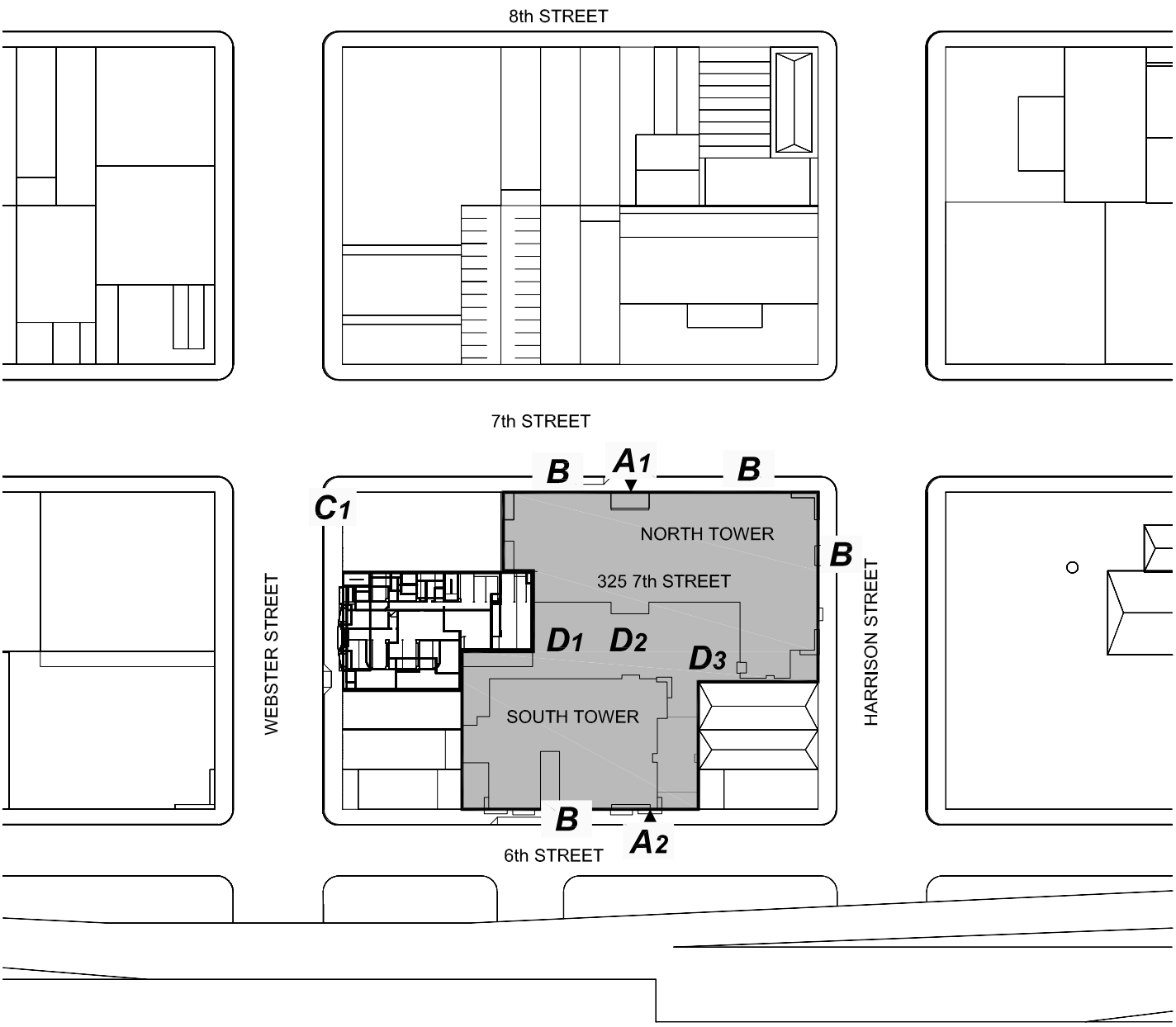


Existing Configuration



Proposed Configuration

3D View of Wind Simulation Model		Figure: 1	RWDI
325 7th Street - Oakland, California	Project #07-1584	Date: September 4, 2007	



LEGEND

► Grade Level Main Entrances

0 50 100ft

Site Plan

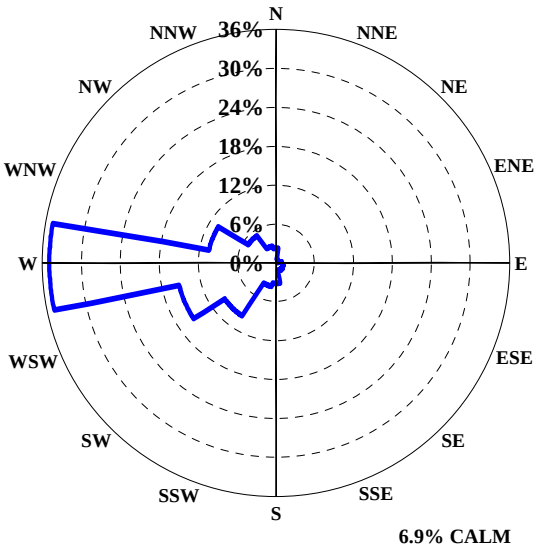
Project North True North

325 7th Street - Oakland, California

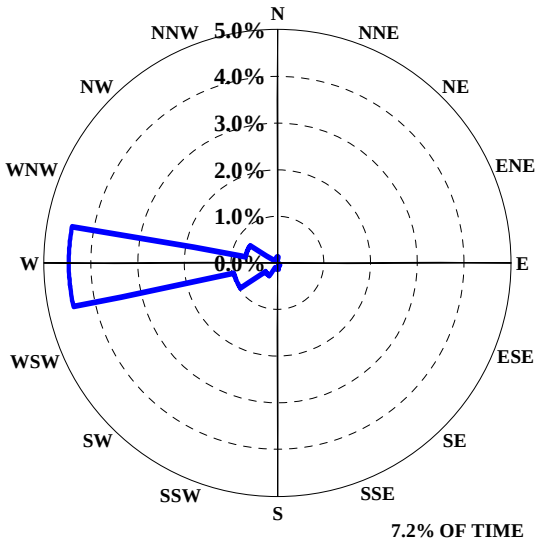
Project #07-1584

Drawn by:	DJT	Figure:	2
Approx. Scale:		1"=100'	
Date Revised:		Sept. 6, 2007	

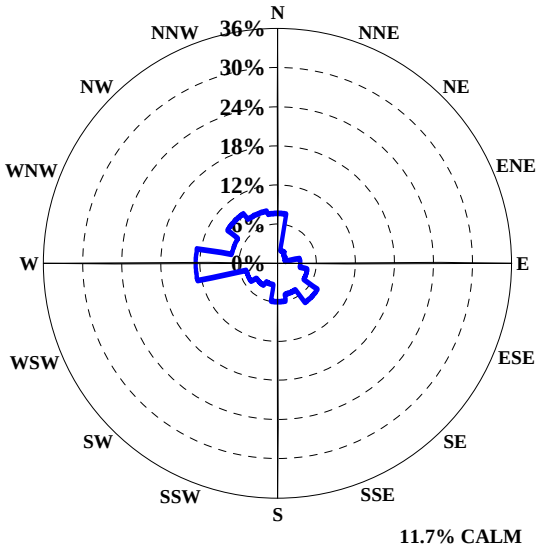
RWDI



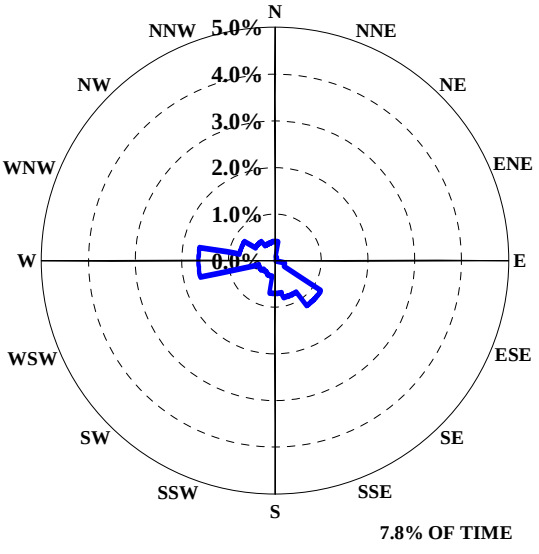
ALL SUMMER WINDS



SUMMER WINDS EXCEEDING 20 mph



ALL WINTER WINDS



WINTER WINDS EXCEEDING 20 mph

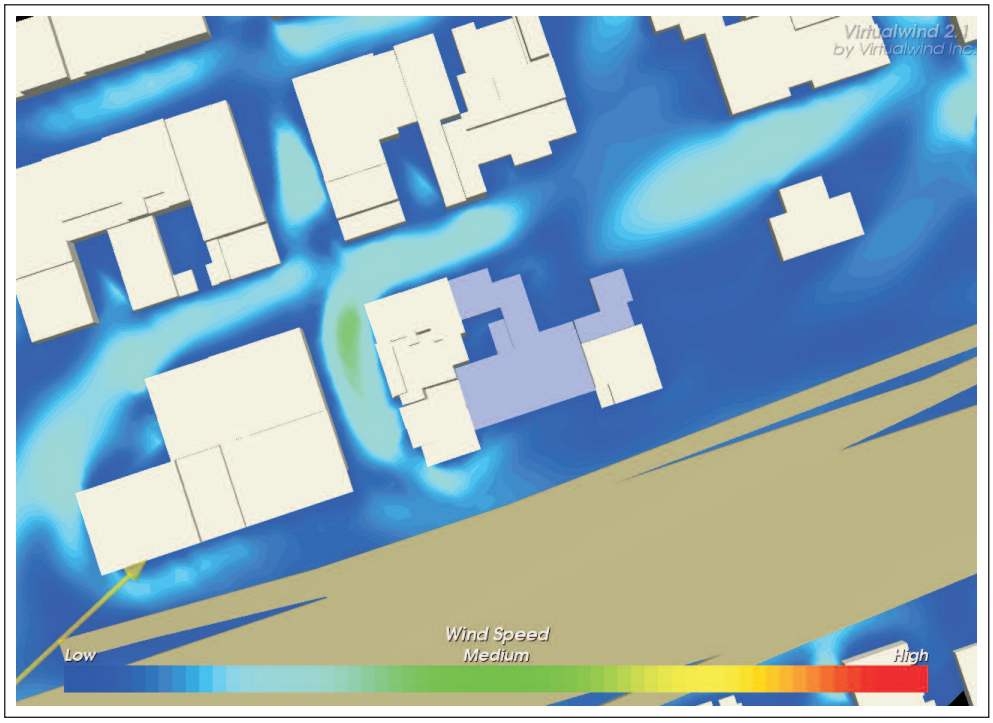
Directional Distribution (%) of Winds (Blowing From)
Station: Alameda Naval Air Station, CA (1945 - 1997)

325 7th Street - Oakland, California Project #: 07-1584

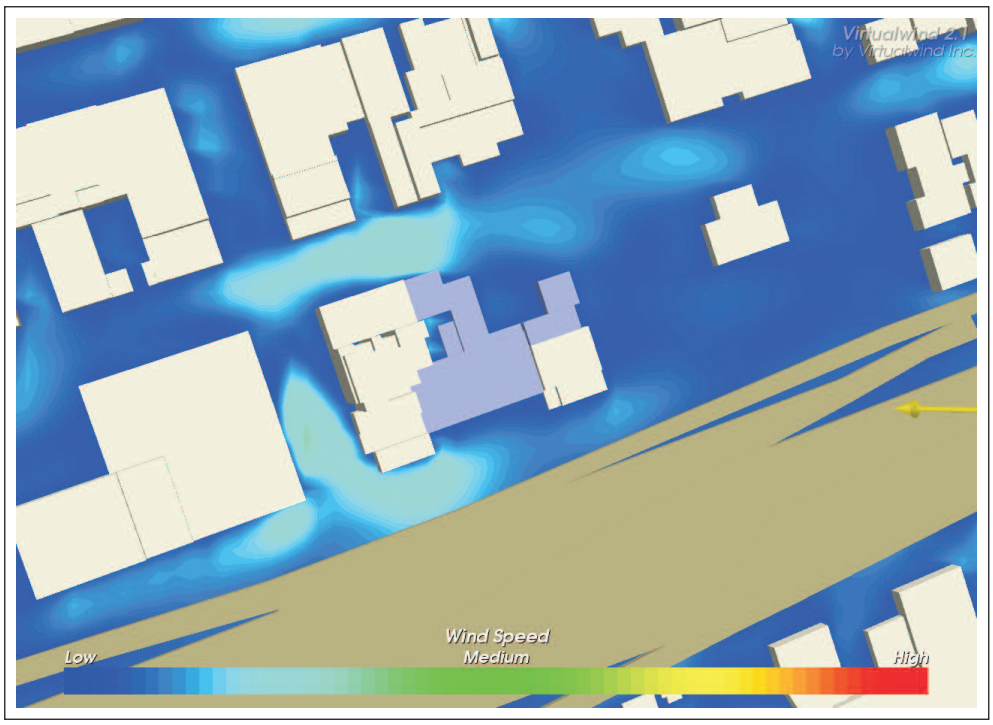
Figure No. **3**

September 5, 2007

RWDI

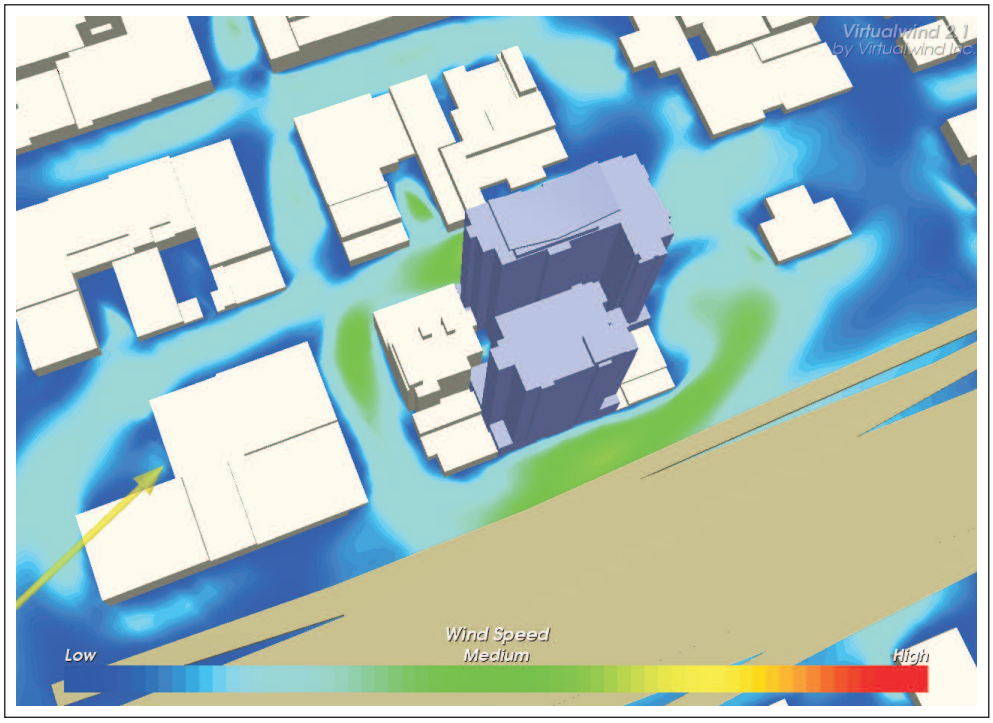


West Winds

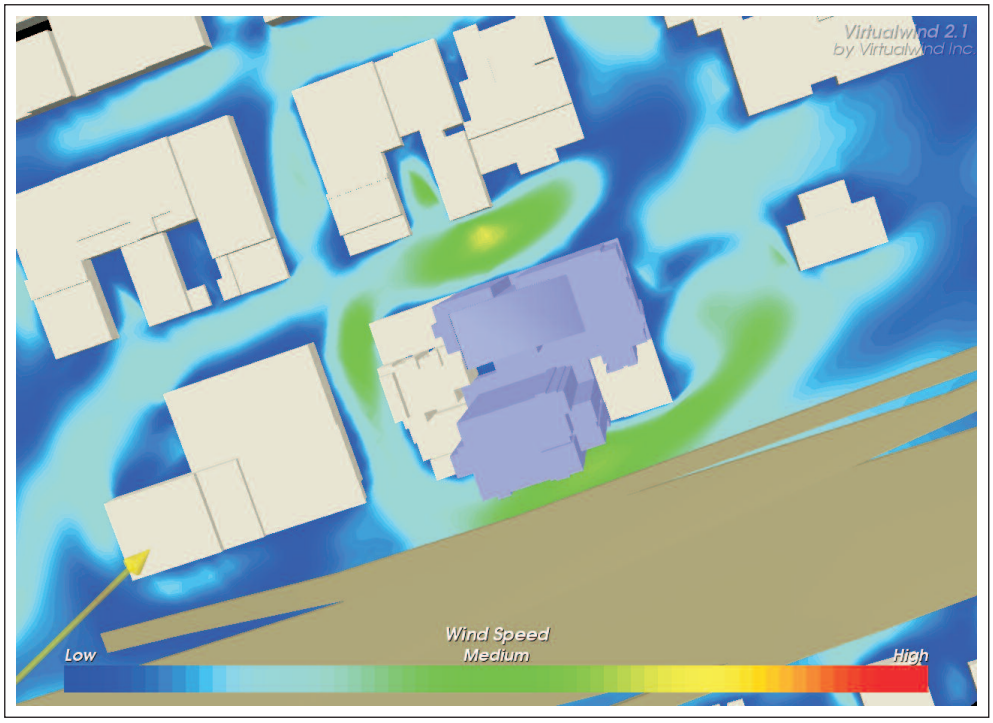


Southeast Winds

Wind Simulation Results Existing Configuration - Grade Level 325 7th Street - Oakland, California	Project #07-1584	Figure: 4 Date: September 4, 2007	RWDI

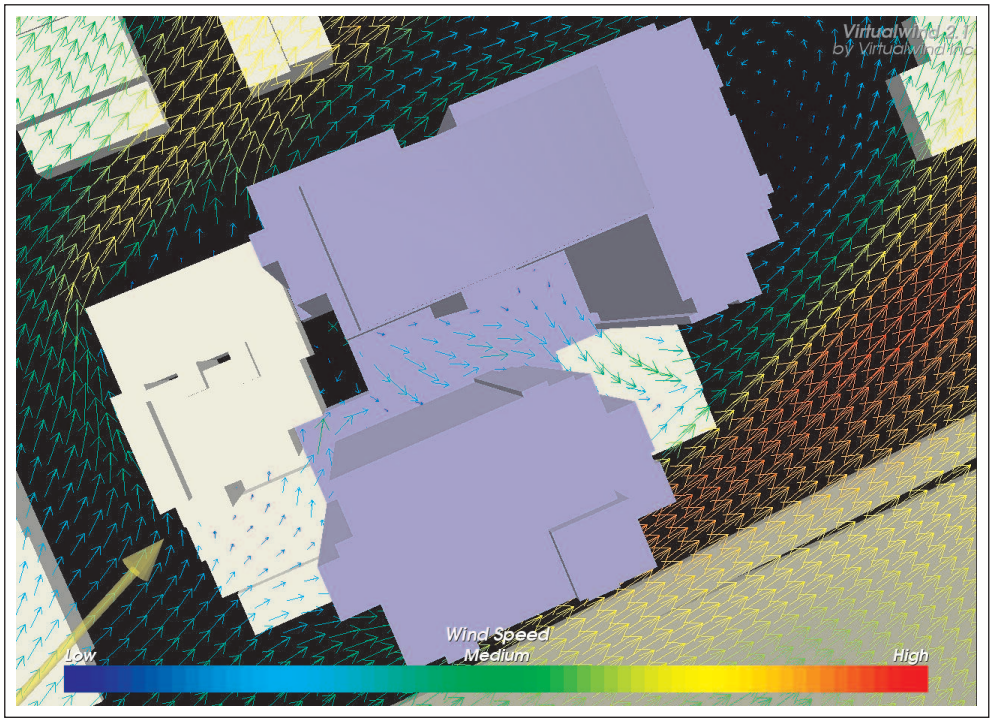


View 1 - West Winds

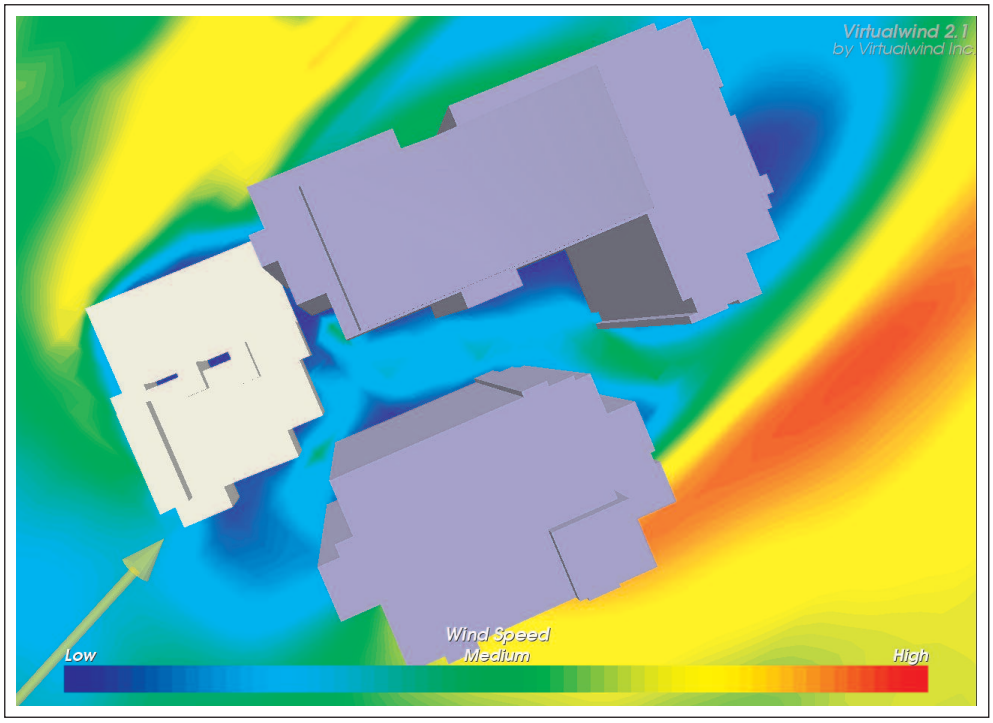


View 2 - West Winds

Wind Simulation Results Proposed Configuration - Grade Level 325 7th Street - Oakland, California	Project #07-1584	Figure: 5 Date: September 4, 2007	RWDI

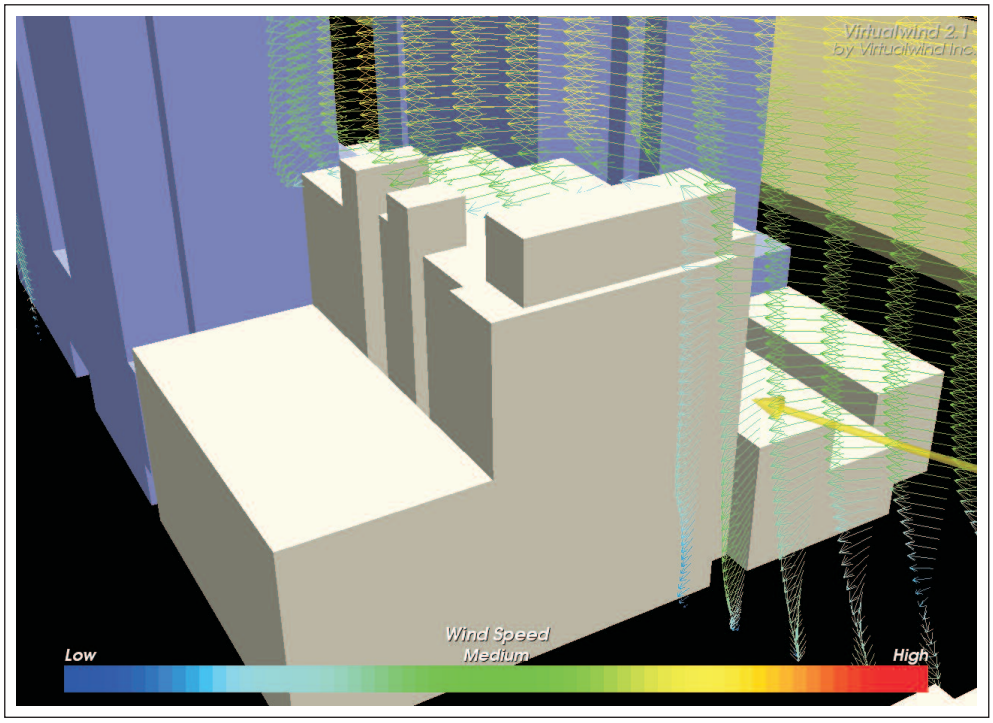


View 1 - West Winds

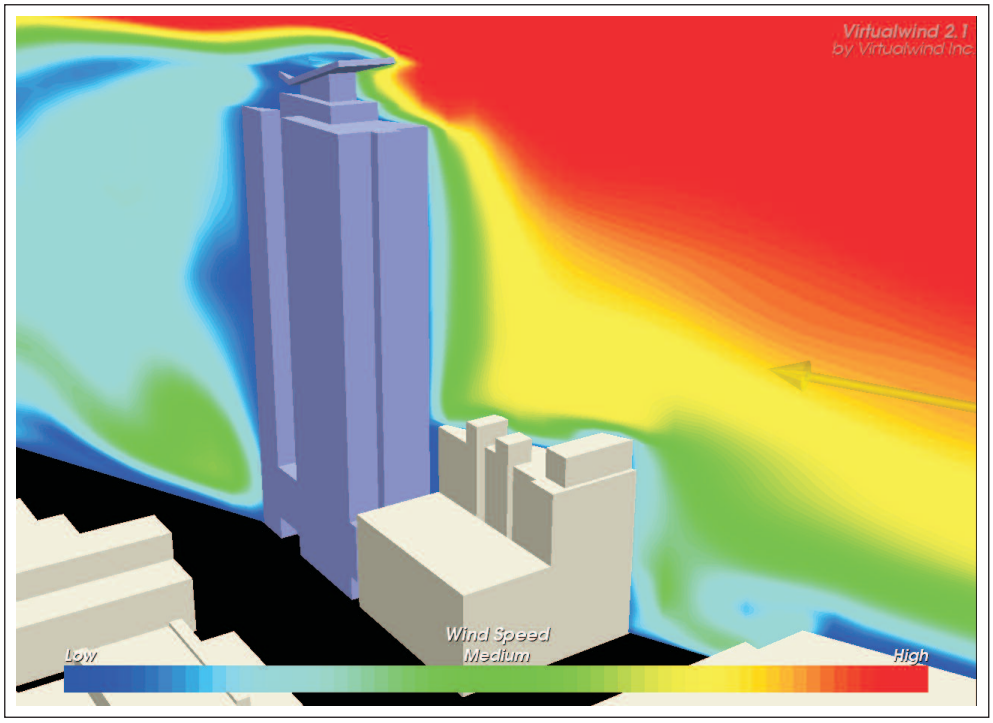


View 2 - West Winds

Wind Simulation Results Proposed Configuration - Podium Level 325 7th Street - Oakland, California	Project #07-1584	Figure: 6 Date: September 4, 2007	RWDI

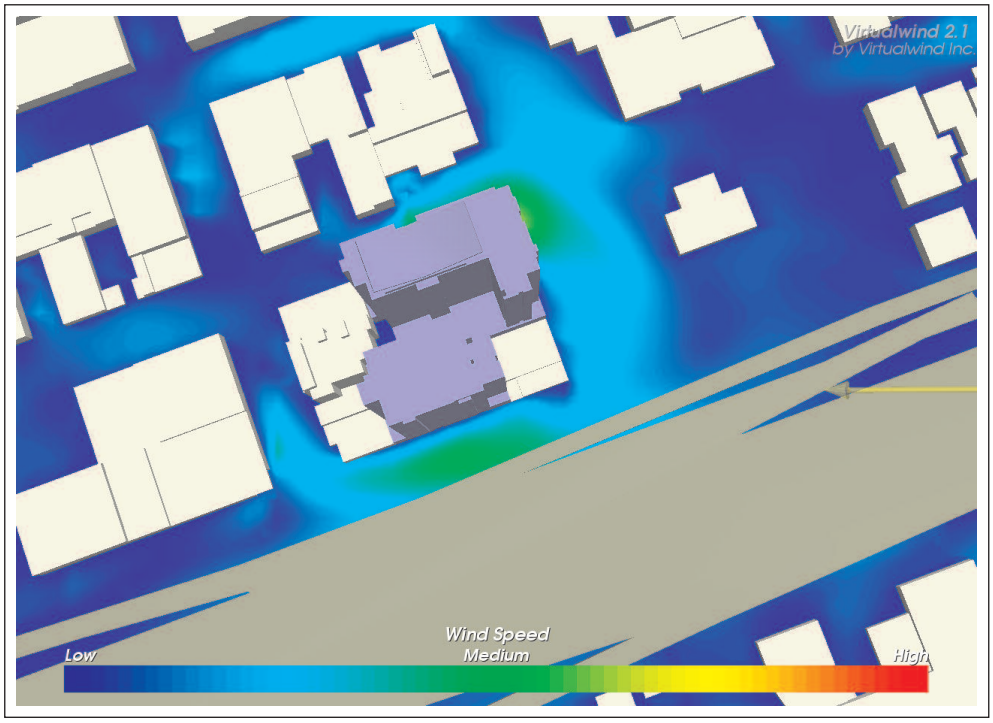


View 1 - West Winds

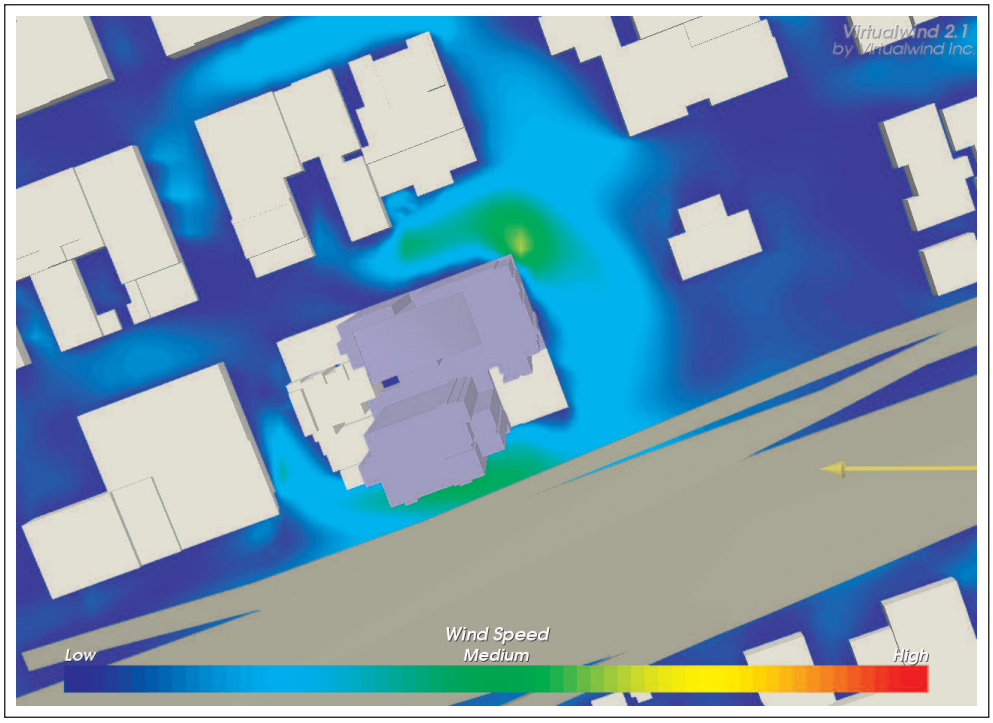


View 2 - West Winds

Wind Simulation Results Proposed Configuration - Vertical Section 325 7th Street - Oakland, California	Project #07-1584	Figure: 7 Date: September 4, 2007	RWDI

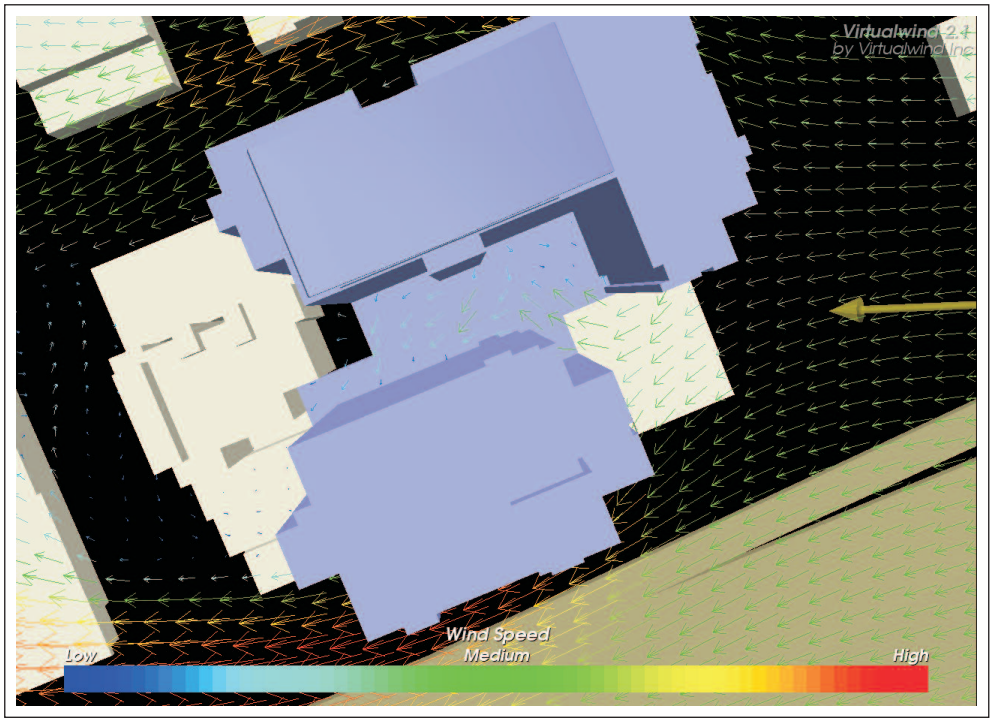


View 1 - Southeast Winds

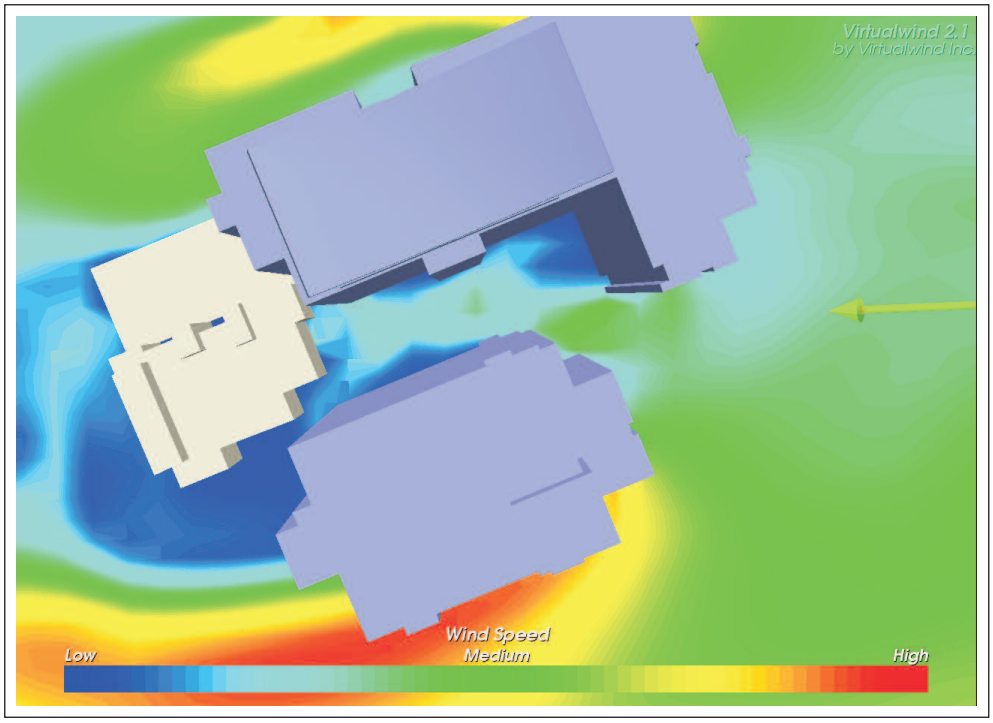


View 2 - Southeast Winds

Wind Simulation Results Proposed Configuration - Grade Level 325 7th Street - Oakland, California	Project #07-1584	Figure: 8 Date: September 4, 2007	RWDI



View 1 - Southeast Winds



View 2 - Southeast Winds

APPENDIX D

NOVEMBER 21, 2008 RWDI SUPPLEMENTAL MEMO

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph, Ontario, Canada N1K 1B8
Tel: (519) 823-1311 E-mail: info@rwdi.com
Fax: (519) 823-1316 Web: www.rwdi.com

Date: November 21, 2008 RWDI Reference #: 0910118A

To: Howai Lai E-Mail: howai@yhla.net

Company: YHLA Architects

From: Jordan Gilmour, P.Eng. E-Mail: Jordan.gilmour@rwdi.com

RE: **325 7th Street – Oakland, California**
Review of Pedestrian Wind Conditions

Dear Howai,

As per your request, Rowan Williams Davies & Irwin Inc. (RWDI) has prepared this memo summarizing the pedestrian wind conditions around the proposed 325 7th Street development in Oakland, California. This memo describes our qualitative predictions of the pedestrian wind conditions in the vicinity, which are based on RWDI's previous pedestrian wind assessment[1], updated massing information received by RWDI on October 7, 2008, and our engineering experience.

Building Information

The massing of the proposed development has been revised recently. As indicated in the attached elevation (received by RWDI on October 7, 2008) the building heights for both Building 1 and Building 2 have changed. Building 1 (South Tower) is now 27 storeys high (approximately 280 ft), while Building 2 (North Tower) is now 20 storeys high (approximately 210 ft). The total height in storeys includes the three storey podium. In RWDI's original analysis, both towers were 23 storeys high (approximately 235 ft).

No other changes, either to the overall massing or the location of pedestrian areas, were noted by the design team.

Pedestrian Wind Assessment

Overall, the revised design is expected to create wind conditions similar to the predictions of our September 20, 2007 report. As a result, the grade level wind conditions are predicted to be comfortable for the intended usage of the entrances and sidewalks around the site. It is our opinion that the wind conditions at grade level pedestrian areas around the proposed development will meet both the City of Oakland significant wind impact criterion and the RWDI wind safety criterion. For the Level 4 courtyard, our previous recommendations for conceptual wind control measures are still valid and should be considered by the design team.

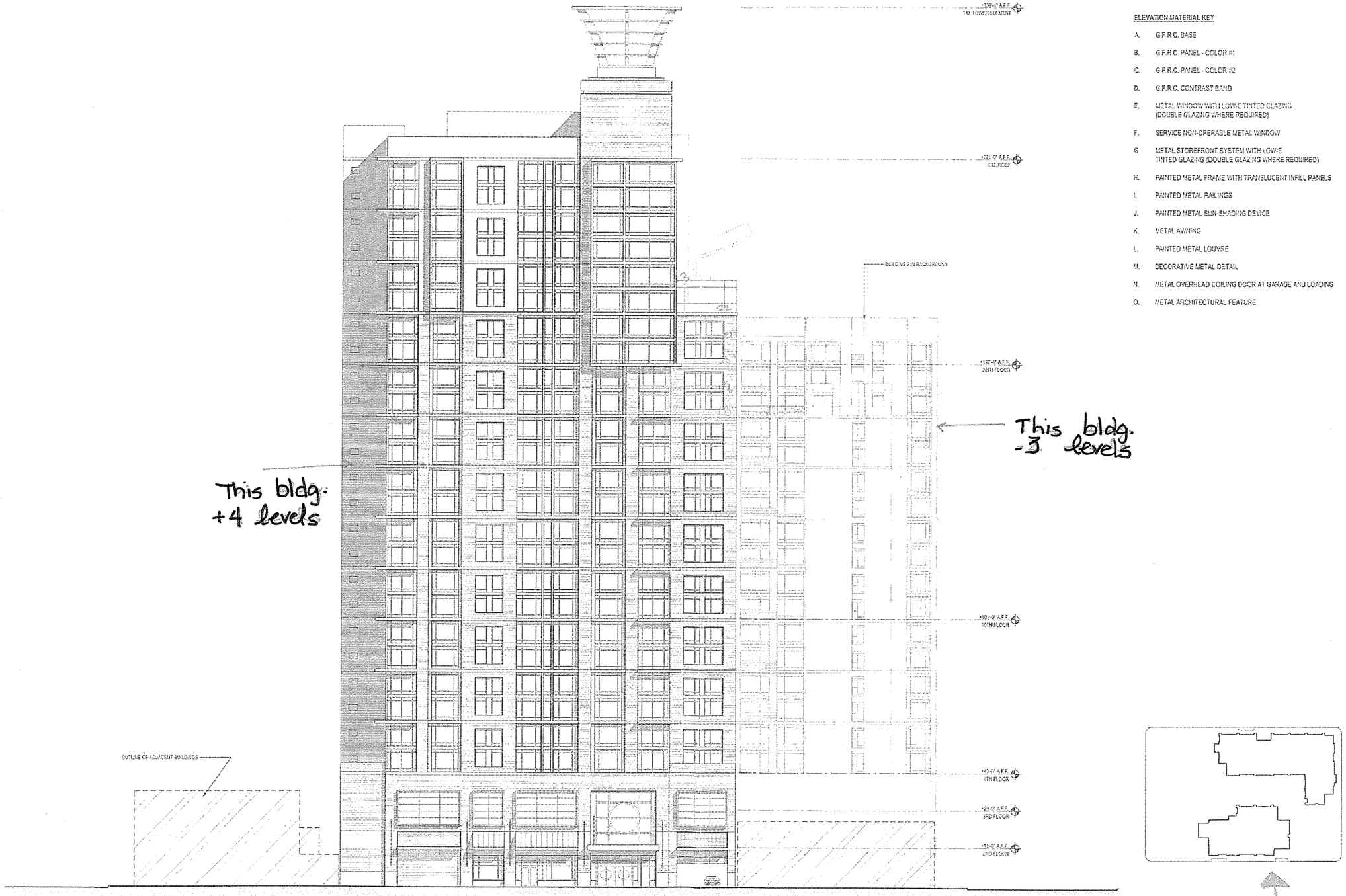
We trust this letter satisfies your current need. If you have any other questions, please do not hesitate to contact us.

Yours very truly,

Rowan Williams Davies & Irwin Inc.

Jordan Gilmour, P.Eng.
Project Manager

JWG/kpk



ELEVATION MATERIAL KEY

A. G.F.R.C. BASE

B. G.F.R.C. PANEL - COLOR #1

C. G.F.R.C. PANEL - COLOR #2

D. G.F.R.C. CONTRAST BAND

E. METAL WINDOW WITH LOW-E TINTED GLAZING (DOUBLE GLAZING WHERE REQUIRED)

F. SERVICE NON-OPERABLE METAL WINDOW

G. METAL STOREFRONT SYSTEM WITH LOW-E TINTED GLAZING (DOUBLE GLAZING WHERE REQUIRED)

H. PAINTED METAL FRAME WITH TRANSLUCENT INFILL PANELS

I. PAINTED METAL RAILINGS

J. PAINTED METAL SUN-SHADING DEVICE

K. METAL AWNING

L. PAINTED METAL LOUVRE

M. DECORATIVE METAL DETAIL

N. METAL OVERHEAD COILING DOOR AT GARAGE AND LOADING

O. METAL ARCHITECTURAL FEATURE

BUILDING 1 - SOUTH ELEVATION (FACING FREEWAY)

DEVELOPMENT SUBMITTAL

325 Eighth Street, Oakland, CA 94607
Phone (510) 839-0888 Fax (510) 834-9195
707 4th Street, Suite 204, Davis, CA 95616
Phone (530) 758-4268 Fax (530) 758-4288

325 SEVENTH STREET
OAKLAND, CALIFORNIA

Date: 03.12.2008

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APPENDIX E

TRAFFIC ANALYSIS MODELING RESULTS AND INTERSECTION MOVEMENT CALCULATIONS

APPENDIX E-1

EXISTING TRAFFIC COUNTS

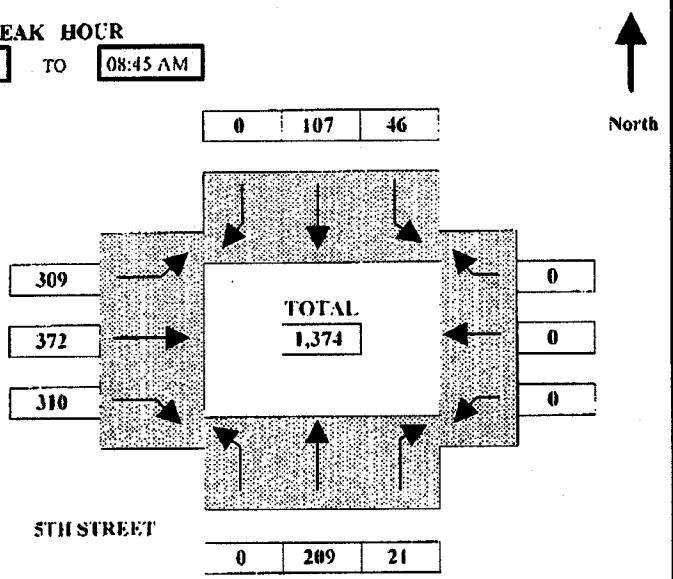
BAYMETRICS TRAFFIC RESOURCES

INTERSECTION TURNING MOVEMENT SUMMARY

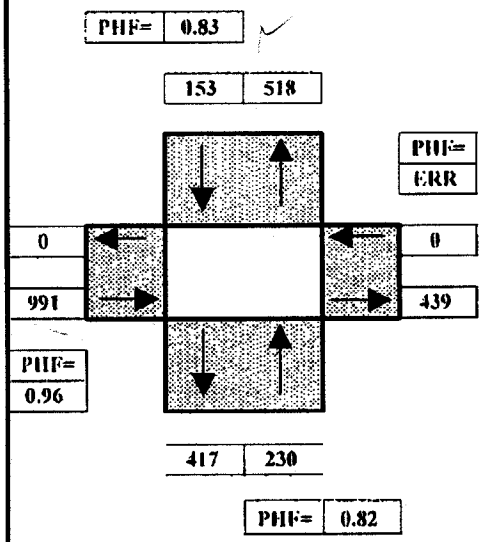
PROJECT:	**OAKLAND TMC**	**SURVEY DATE:**	**10 / 25 / 2006** **DAY: TUESDAY**
N-S Approach:	**JACKSON**	**SURVEY TIME:**	**7:00 AM** **TO** **9:00 AM**
E-W Approach:	**5TH STREET**	**CITY:**	**OAKLAND** **FILE: JS05OLAM**

PEAK HOUR

07:45 AM TO 08:45 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
07:00 AM	---	07:15 AM	0	28	5	15	12	0	59	45	58	0	0	0	*222*
07:15 AM	---	07:30 AM	0	74	12	27	29	0	131	117	130	0	0	0	*520*
07:30 AM	---	07:45 AM	0	129	16	44	42	0	227	206	196	0	0	0	*860*
07:45 AM	---	08:00 AM	0	193	22	53	62	0	310	310	267	0	0	0	*1,217*
08:00 AM	---	08:15 AM	0	243	25	66	95	0	391	398	351	0	0	0	*1,569*
08:15 AM	---	08:30 AM	0	286	33	76	123	0	466	484	423	0	0	0	*1,891*
08:30 AM	---	08:45 AM	0	338	37	90	149	0	536	578	506	0	0	0	*2,234*
08:45 AM	---	09:00 AM	0	390	43	98	180	0	615	683	571	0	0	0	*2,580*
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	0	28	5	15	12	0	59	45	58	0	0	0	*222*
07:15 AM	---	07:30 AM	0	46	7	12	17	0	72	72	72	0	0	0	*298*
07:30 AM	---	07:45 AM	0	55	4	17	13	0	96	89	66	0	0	0	*340*
07:45 AM	---	08:00 AM	0	64	6	9	20	0	83	104	71	0	0	0	*357*
08:00 AM	---	08:15 AM	0	50	3	13	33	0	81	88	84	0	0	0	*352*
08:15 AM	---	08:30 AM	0	43	8	10	28	0	75	86	72	0	0	0	*322*
08:30 AM	---	08:45 AM	0	52	4	14	26	0	70	94	83	0	0	0	*343*
08:45 AM	---	09:00 AM	0	52	6	8	31	0	79	105	65	0	0	0	*346*
HOURLY TOTALS															
07:00 AM	---	08:00 AM	0	193	22	53	62	0	310	310	267	0	0	0	*1,217*
07:15 AM	---	08:15 AM	0	215	20	51	83	0	332	353	293	0	0	0	*1,347*
07:30 AM	---	08:30 AM	0	212	21	49	94	0	335	367	293	0	0	0	*1,371*
07:45 AM	---	08:45 AM	0	209	21	46	107	0	309	372	310	0	0	0	*1,374*
08:00 AM	---	09:00 AM	0	197	21	45	118	0	305	373	304	0	0	0	*1,363*

Tel : (510) 232-1271 *Fax: (510) 232-1272*

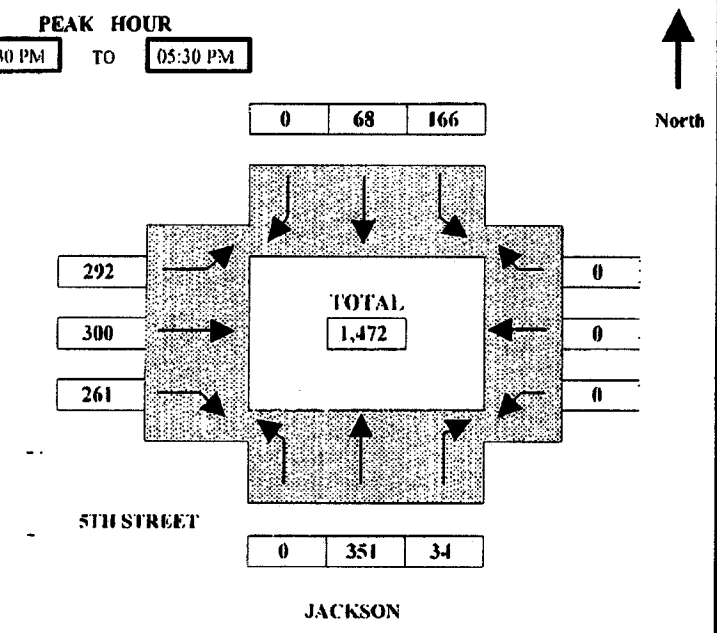
Oct 25 06 11:43a Baymetrics 5102321272 p.9

BAYMETRICS TRAFFIC RESOURCES

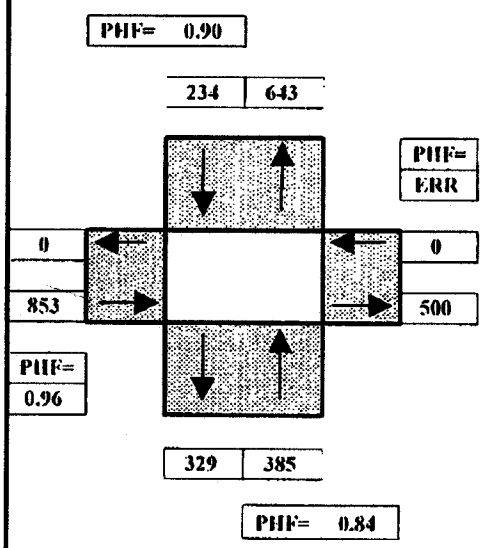
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**OAKLAND TMC**	**SURVEY DATE:** 10 / 25 / 2006	**DAY:** TUESDAY
N-S Approach:	**JACKSON**	**SURVEY TIME:** 4:00 PM	**TO** 6:00 PM
E-W Approach:	**5TH STREET**	**CITY:** OAKLAND	**FILE:** JS05OLPM

PEAK HOUR
04:30 PM TO 05:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
04:00 PM	---	04:15 PM	0	61	10	38	15	0	66	68	45	0	0	0	*303*
04:15 PM	---	04:30 PM	0	131	24	80	27	0	136	139	97	0	0	0	*634*
04:30 PM	---	04:45 PM	0	211	32	125	47	0	214	214	160	0	0	0	*1,003*
04:45 PM	---	05:00 PM	0	286	41	165	64	0	286	286	232	0	0	0	*1,360*
05:00 PM	---	05:15 PM	0	390	51	208	80	0	363	366	297	0	0	0	*1,755*
05:15 PM	---	05:30 PM	0	482	58	246	95	0	428	439	358	0	0	0	*2,106*
05:30 PM	---	05:45 PM	0	564	70	281	116	0	502	508	430	0	0	0	*2,471*
05:45 PM	---	06:00 PM	0	643	76	314	129	0	565	588	488	0	0	0	*2,803*
TOTAL BY PERIOD															
04:00 PM	---	04:15 PM	0	61	10	38	15	0	66	68	45	0	0	0	*303*
04:15 PM	---	04:30 PM	0	70	14	42	12	0	70	71	52	0	0	0	*331*
04:30 PM	---	04:45 PM	0	80	8	45	20	0	78	75	63	0	0	0	*369*
04:45 PM	---	05:00 PM	0	75	9	40	17	0	72	72	72	0	0	0	*357*
05:00 PM	---	05:15 PM	0	104	10	43	16	0	77	80	65	0	0	0	*395*
05:15 PM	---	05:30 PM	0	92	7	38	15	0	65	73	61	0	0	0	*351*
05:30 PM	---	05:45 PM	0	82	12	35	21	0	74	69	72	0	0	0	*365*
05:45 PM	---	06:00 PM	0	79	6	33	13	0	63	80	58	0	0	0	*332*
HOURLY TOTALS															
04:00 PM	---	05:00 PM	0	286	41	165	64	0	286	286	232	0	0	0	*1,360*
04:15 PM	---	05:15 PM	0	329	41	170	65	0	297	298	252	0	0	0	*1,452*
04:30 PM	---	05:30 PM	0	351	34	166	68	0	292	300	261	0	0	0	*1,472*
04:45 PM	---	05:45 PM	0	353	38	156	69	0	288	294	270	0	0	0	*1,468*
05:00 PM	---	06:00 PM	0	357	35	149	65	0	279	302	256	0	0	0	*1,443*

Tel : (510) 232-1271 *Fax: (510) 232-1272*

Oct 25 06 11:41a Baymetrics 5102321272 p.6

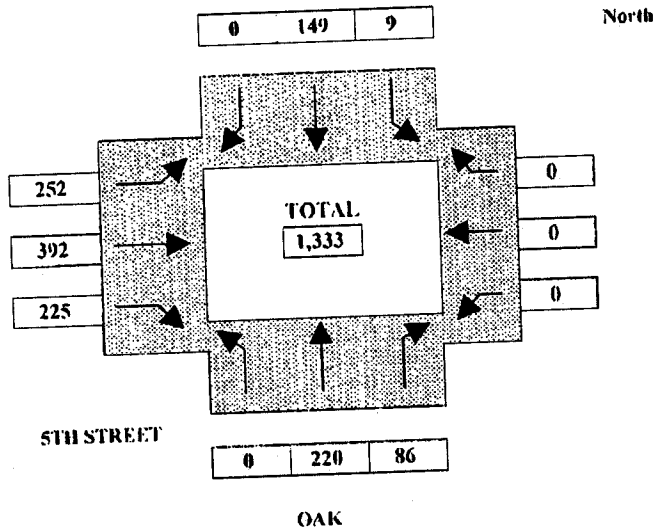
BAYMETRICS TRAFFIC RESOURCES

INTERSECTION TURNING MOVEMENT SUMMARY

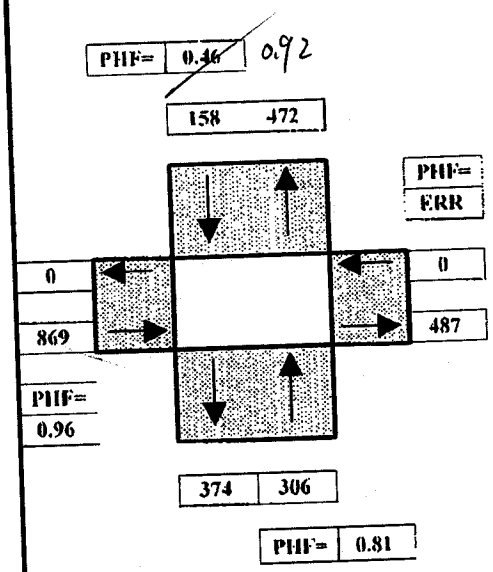
PROJECT:	**OAKLAND TMC**	**SURVEY DATE:** 10/25/2006	**DAY:** TUESDAY
N-S Approach:	**OAK**	**SURVEY TIME:** 7:00 AM	**TO** 9:00 AM
E-W Approach:	**5TH STREET**	**CITY:** OAKLAND	**FILE:** OA05OLAM

PEAK HOUR

07:30 AM TO 08:30 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
07:00 AM	---	07:15 AM	0	52	14	2	28	0	30	146	18	0	0	0	*290*
07:15 AM	---	07:30 AM	0	119	33	3	61	0	72	265	48	0	0	0	*601*
07:30 AM	---	07:45 AM	0	168	58	7	100	0	131	371	90	0	0	0	*925*
07:45 AM	---	08:00 AM	0	213	76	10	132	0	196	465	150	0	0	0	*1,242*
08:00 AM	---	08:15 AM	0	281	102	10	175	0	254	572	202	0	0	0	*1,596*
08:15 AM	---	08:30 AM	0	339	119	12	210	0	324	657	273	0	0	0	*1,934*
08:30 AM	---	08:45 AM	0	387	142	12	238	0	383	766	327	0	0	0	*2,255*
08:45 AM	---	09:00 AM	0	446	161	15	272	0	440	860	379	0	0	0	*2,573*
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	0	52	14	2	28	0	30	146	18	0	0	0	*290*
07:15 AM	---	07:30 AM	0	67	19	1	33	0	42	119	30	0	0	0	*311*
07:30 AM	---	07:45 AM	0	49	25	4	39	0	59	106	42	0	0	0	*324*
07:45 AM	---	08:00 AM	0	45	18	3	32	0	65	94	60	0	0	0	*317*
08:00 AM	---	08:15 AM	0	68	26	0	43	0	58	107	52	0	0	0	*354*
08:15 AM	---	08:30 AM	0	58	17	2	35	0	70	85	71	0	0	0	*338*
08:30 AM	---	08:45 AM	0	48	23	0	28	0	59	109	54	0	0	0	*321*
08:45 AM	---	09:00 AM	0	59	19	3	34	0	57	94	52	0	0	0	*318*
HOURLY TOTALS															
07:00 AM	---	08:00 AM	0	213	76	10	132	0	196	465	150	0	0	0	*1,242*
07:15 AM	---	08:15 AM	0	229	88	8	147	0	224	426	184	0	0	0	*1,306*
07:30 AM	---	08:30 AM	0	220	86	9	149	0	252	392	225	0	0	0	*1,333*
07:45 AM	---	08:45 AM	0	219	84	5	138	0	252	395	237	0	0	0	*1,330*
08:00 AM	---	09:00 AM	0	233	85	5	140	0	244	395	229	0	0	0	*1,331*

Tel : (510) 232-1271 *Fax: (510) 232-1272*

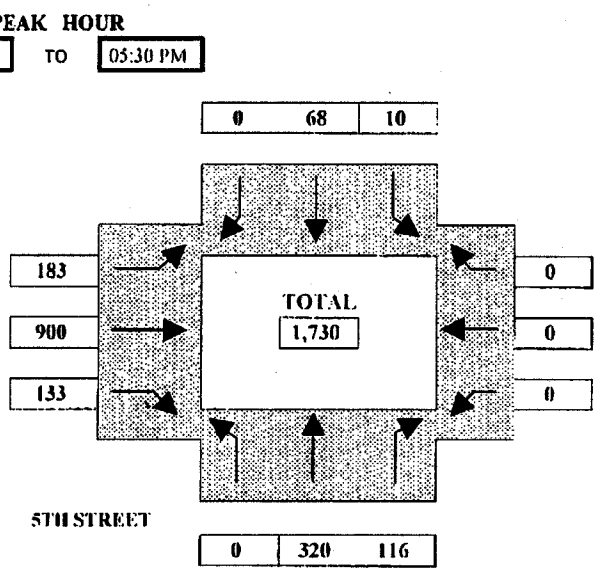
Oct 25 06 11:42a Baymetrics 5102321272 p.8

BAYMETRICS TRAFFIC RESOURCES

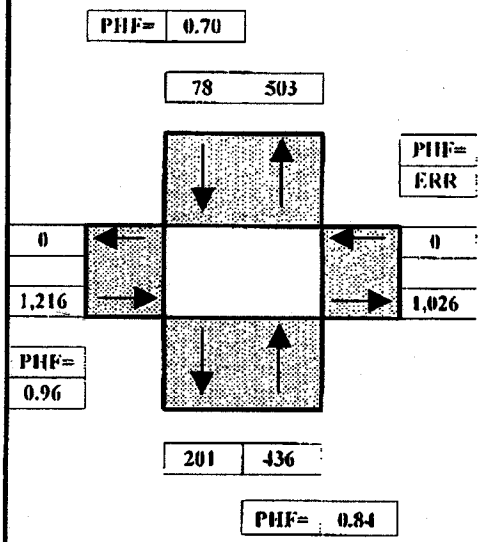
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**OAKLAND TMC**	**SURVEY DATE:**	**10 / 25 / 2006** **DAY: TUESDAY**
N-S Approach:	**OAK**	**SURVEY TIME:**	**4:00 PM** **TO** **6:00 PM**
E-W Approach:	**5TH STREET**	**CITY:**	**OAKLAND** **FILE: OA05OLPM**

PEAK HOUR
04:30 PM TO 05:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
04:00 PM	—	04:15 PM	0	68	25	2	18	0	37	206	34	0	0	0	*390*
04:15 PM	—	04:30 PM	0	145	56	5	43	0	78	423	66	0	0	0	*816*
04:30 PM	—	04:45 PM	0	236	94	9	62	0	114	633	106	0	0	0	*1,254*
04:45 PM	—	05:00 PM	0	309	123	10	79	0	156	872	141	0	0	0	*1,690*
05:00 PM	—	05:15 PM	0	389	148	11	94	0	204	1,093	169	0	0	0	*2,108*
05:15 PM	—	05:30 PM	0	465	172	15	111	0	261	1,323	199	0	0	0	*2,546*
05:30 PM	—	05:45 PM	0	549	198	16	124	0	310	1,537	224	0	0	0	*2,958*
05:45 PM	—	06:00 PM	0	621	217	17	141	0	364	1,760	255	0	0	0	*3,375*
TOTAL BY PERIOD															
04:00 PM	—	04:15 PM	0	68	25	2	18	0	37	206	34	0	0	0	*390*
04:15 PM	—	04:30 PM	0	77	31	3	25	0	41	217	32	0	0	0	*426*
04:30 PM	—	04:45 PM	0	91	38	4	19	0	36	210	40	0	0	0	*438*
04:45 PM	—	05:00 PM	0	73	29	1	17	0	42	239	35	0	0	0	*436*
05:00 PM	—	05:15 PM	0	80	25	1	15	0	48	221	28	0	0	0	*418*
05:15 PM	—	05:30 PM	0	76	24	4	17	0	57	230	30	0	0	0	*438*
05:30 PM	—	05:45 PM	0	84	26	1	13	0	49	214	25	0	0	0	*412*
05:45 PM	—	06:00 PM	0	72	19	1	17	0	54	223	31	0	0	0	*417*
HOURLY TOTALS															
04:00 PM	—	05:00 PM	0	309	123	10	79	0	156	872	141	0	0	0	*1,690*
04:15 PM	—	05:15 PM	0	321	123	9	76	0	167	887	135	0	0	0	*1,718*
04:30 PM	—	05:30 PM	0	320	116	10	68	0	183	900	133	0	0	0	*1,730*
04:45 PM	—	05:45 PM	0	313	104	7	62	0	196	904	118	0	0	0	*1,704*
05:00 PM	—	06:00 PM	0	312	94	7	62	0	208	888	114	0	0	0	*1,685*

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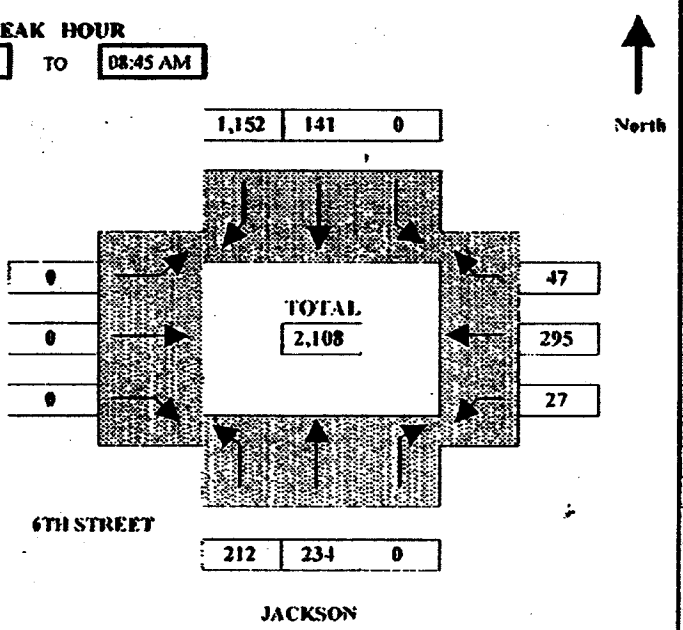
Oct 25 06 11:41a Baymetrics 5102321272 p.7

BAYMETRICS TRAFFIC RESOURCES

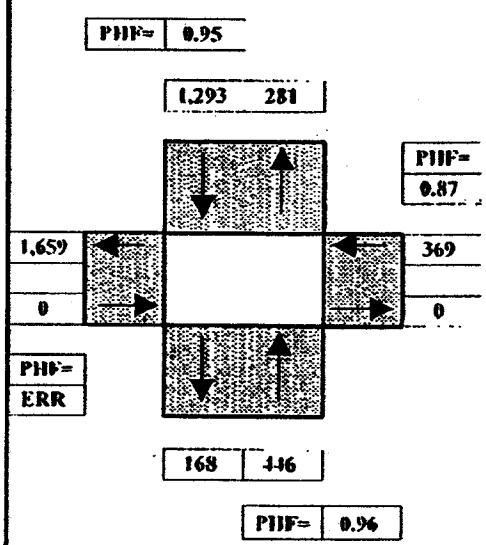
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	OAKLAND TMC	**SURVEY DATE:** 4/18/2006	**DAY:** TUESDAY
N-S Approach:	JACKSON	**SURVEY TIME:** 7:00 AM	**TO** 9:00 AM
E-W Approach:	6TH STREET	**CITY:** OAKLAND	**FILE:** JS06OLAM

PEAK HOUR 07:45 AM TO 08:45 AM



ARRIVAL / DEPARTURE VOLUMES



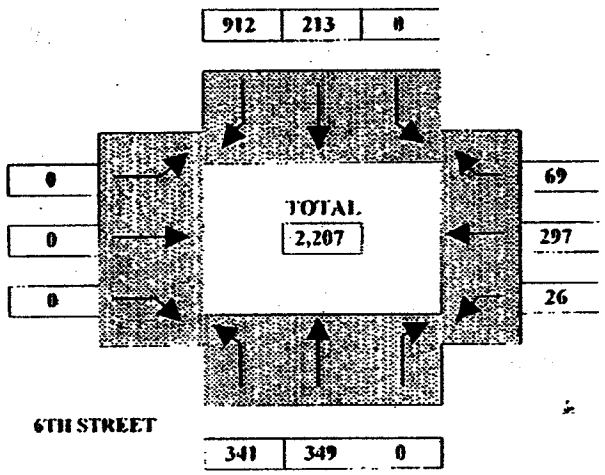
TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
07:00 AM	—	07:15 AM	33	19	0	0	41	245	0	0	0	4	52	3	*397*
07:15 AM	—	07:30 AM	75	44	0	0	78	521	0	0	0	6	113	8	*845*
07:30 AM	—	07:45 AM	125	82	0	0	113	826	0	0	0	12	166	14	*1,338*
07:45 AM	—	08:00 AM	188	127	0	0	155	1,120	0	0	0	15	236	24	*1,865*
08:00 AM	—	08:15 AM	240	189	0	0	189	1,423	0	0	0	20	321	40	*2,422*
08:15 AM	—	08:30 AM	291	246	0	0	219	1,693	0	0	0	31	397	52	*2,929*
08:30 AM	—	08:45 AM	337	316	0	0	254	1,978	0	0	0	39	461	61	*3,446*
08:45 AM	—	09:00 AM	390	367	0	0	280	2,238	0	0	0	51	531	76	*3,933*
TOTAL BY PERIOD															
07:00 AM	—	07:15 AM	33	19	0	0	41	245	0	0	0	4	52	3	*397*
07:15 AM	—	07:30 AM	42	25	0	0	37	276	0	0	0	2	61	5	*448*
07:30 AM	—	07:45 AM	50	38	0	0	35	305	0	0	0	6	53	6	*493*
07:45 AM	—	08:00 AM	63	45	0	0	42	294	0	0	0	3	70	10	*527*
08:00 AM	—	08:15 AM	52	62	0	0	34	303	0	0	0	5	85	16	*557*
08:15 AM	—	08:30 AM	51	57	0	0	30	270	0	0	0	11	76	12	*507*
08:30 AM	—	08:45 AM	46	70	0	0	35	285	0	0	0	8	64	9	*517*
08:45 AM	—	09:00 AM	53	51	0	0	26	260	0	0	0	12	70	15	*487*
HOURLY TOTALS															
07:00 AM	—	08:00 AM	188	127	0	0	155	1,120	0	0	0	15	236	24	*1,865*
07:15 AM	—	08:15 AM	207	170	0	0	148	1,178	0	0	0	16	269	37	*2,025*
07:30 AM	—	08:30 AM	216	202	0	0	141	1,172	0	0	0	25	284	44	*2,084*
07:45 AM	—	08:45 AM	212	234	0	0	141	1,152	0	0	0	27	295	47	*2,108*
08:00 AM	—	09:00 AM	202	240	0	0	125	1,118	0	0	0	36	295	52	*2,068*

BAYMETRICS TRAFFIC RESOURCES

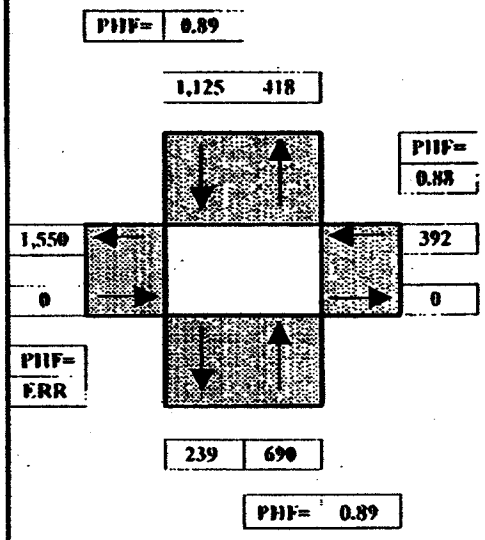
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	OAKLAND TMC	**SURVEY DATE:** 4/18/2006	**DAY:** TUESDAY
N-S Approach:	JACKSON	**SURVEY TIME:** 4:00 PM	**TO** 6:00 PM
E-W Approach:	6TH STREET	**CITY:** OAKLAND	**FILE:** JS06OLPM

PEAK HOUR 04:15 PM TO 05:15 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA														
04:00 PM	04:15 PM	62	52	0	0	39	240	0	0	0	10	68	16	487
04:15 PM	04:30 PM	133	128	0	0	90	506	0	0	0	17	140	29	1,043
04:30 PM	04:45 PM	225	209	0	0	152	737	0	0	0	23	221	50	1,617
04:45 PM	05:00 PM	300	311	0	0	199	931	0	0	0	31	290	68	2,130
05:00 PM	05:15 PM	403	401	0	0	252	1,152	0	0	0	36	365	85	2,694
05:15 PM	05:30 PM	484	476	0	0	312	1,357	0	0	0	45	437	99	3,210
05:30 PM	05:45 PM	574	560	0	0	364	1,545	0	0	0	52	521	119	3,735
05:45 PM	06:00 PM	651	632	0	0	419	1,738	0	0	0	64	587	135	4,226
TOTAL BY PERIOD														
04:00 PM	04:15 PM	62	52	0	0	39	240	0	0	0	10	68	16	487
04:15 PM	04:30 PM	71	76	0	0	51	266	0	0	0	7	72	13	556
04:30 PM	04:45 PM	92	81	0	0	62	231	0	0	0	6	81	21	574
04:45 PM	05:00 PM	75	102	0	0	47	194	0	0	0	8	69	18	513
05:00 PM	05:15 PM	103	90	0	0	53	221	0	0	0	5	75	17	564
05:15 PM	05:30 PM	81	75	0	0	60	205	0	0	0	9	72	14	516
05:30 PM	05:45 PM	90	84	0	0	52	188	0	0	0	7	84	20	525
05:45 PM	06:00 PM	77	72	0	0	55	193	0	0	0	12	66	16	491
HOURLY TOTALS														
04:00 PM	05:00 PM	300	311	0	0	199	931	0	0	0	31	290	68	2,130
04:15 PM	05:15 PM	341	349	0	0	213	943	0	0	0	26	297	69	2,207
04:30 PM	05:30 PM	351	348	0	0	222	851	0	0	0	28	297	70	2,167
04:45 PM	05:45 PM	349	351	0	0	212	808	0	0	0	29	300	69	2,118
05:00 PM	06:00 PM	351	321	0	0	220	807	0	0	0	33	297	67	2,096

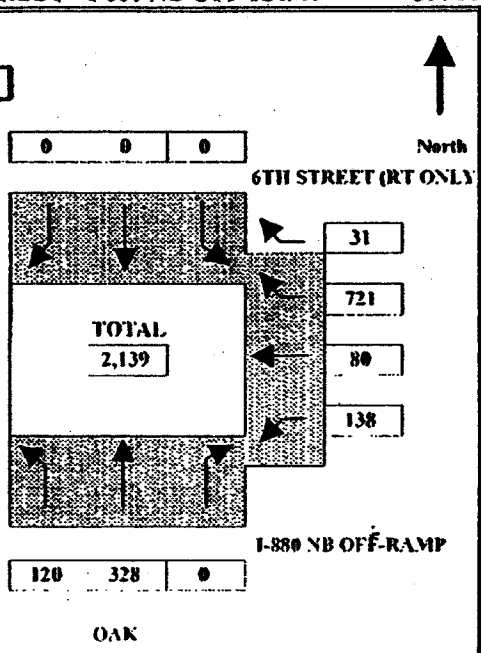
$\frac{690}{193\times4} = 0.89$ $\frac{1125}{317\times4} = 0.89$ $\frac{392}{111\times4} = 0.88$

BAYMETRICS TRAFFIC RESOURCES

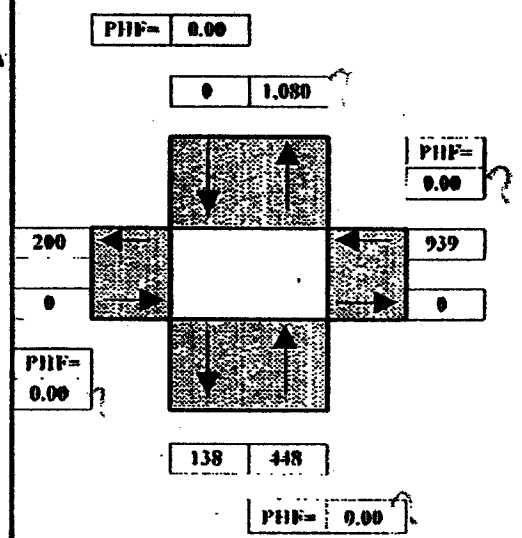
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT: OAKLAND TMC **SURVEY DATE:** 4/18/2006 **DAY:** TUESDAY
N-S Approach: OAK **SURVEY TIME:** 7:00 AM **TO** 9:00 AM
E-W Approach: 6TH STREET - I-880 NB OFF-RAMP **CITY:** OAKLAND **FILE:** OA06OLAM

PEAK HOUR 07:30 AM TO 08:30 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	WB FROM 6TH ST. Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
07:00 AM	---	07:15 AM	38	29	0	0	0	0	0	0	7	33	20	85	*212*
07:15 AM	---	07:30 AM	62	68	0	0	0	0	0	0	13	58	33	189	*423*
07:30 AM	---	07:45 AM	85	155	0	0	0	0	0	0	17	94	48	349	*748*
07:45 AM	---	08:00 AM	119	246	0	0	0	0	0	0	26	126	68	539	*1,124*
08:00 AM	---	08:15 AM	151	301	0	0	0	0	0	0	35	151	87	731	*1,456*
08:15 AM	---	08:30 AM	182	396	0	0	0	0	0	0	44	196	113	910	*1,841*
08:30 AM	---	08:45 AM	211	475	0	0	0	0	0	0	52	221	123	1,035	*2,117*
08:45 AM	---	09:00 AM	243	586	0	0	0	0	0	0	63	243	152	1,130	*2,417*
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	38	29	0	0	0	0	0	0	7	33	20	85	*212*
07:15 AM	---	07:30 AM	24	39	0	0	0	0	0	0	6	25	13	104	*211*
07:30 AM	---	07:45 AM	23	87	0	0	0	0	0	0	4	36	15	160	*325*
07:45 AM	---	08:00 AM	34	91	0	0	0	0	0	0	9	32	20	190	*376*
08:00 AM	---	08:15 AM	32	55	0	0	0	0	0	0	9	25	19	192	*332*
08:15 AM	---	08:30 AM	31	95	0	0	0	0	0	0	9	45	26	179	*385*
08:30 AM	---	08:45 AM	29	79	0	0	0	0	0	0	8	25	10	125	*276*
08:45 AM	---	09:00 AM	32	111	0	0	0	0	0	0	11	22	29	95	*300*
HOURLY TOTALS															
07:00 AM	---	08:00 AM	119	246	0	0	0	0	0	0	26	126	68	539	*1,124*
07:15 AM	---	08:15 AM	113	272	0	0	0	0	0	0	28	118	67	646	*1,244*
07:30 AM	---	08:30 AM	120	328	0	0	0	0	0	0	31	138	80	724	*1,418*
07:45 AM	---	08:45 AM	126	320	0	0	0	0	0	0	35	127	75	686	*1,369*
08:00 AM	---	09:00 AM	124	340	0	0	0	0	0	0	37	117	84	591	*1,293*

292
236
250

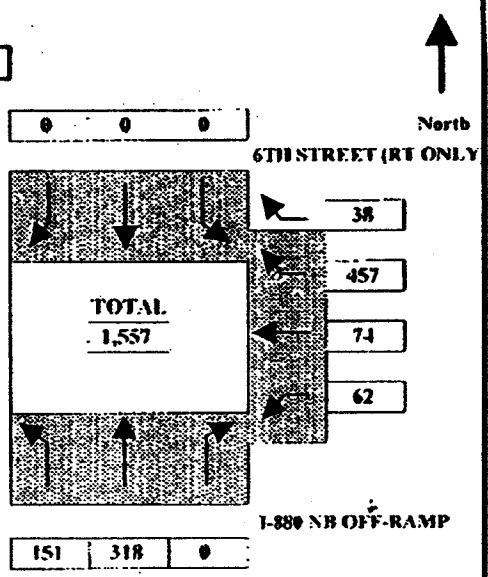
0.78
0.92
0.94

BAYMETRICS TRAFFIC RESOURCES

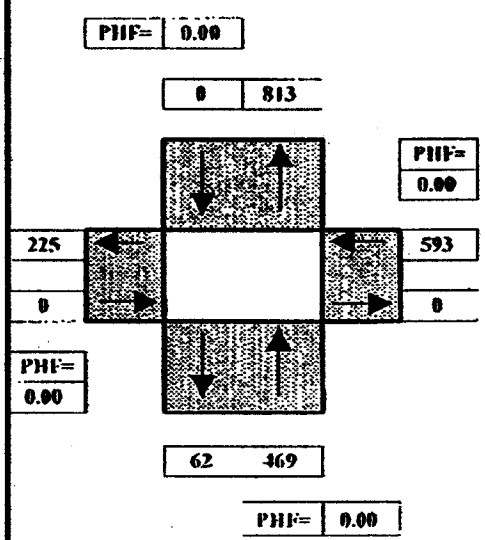
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	OAKLAND TMC	**SURVEY DATE:** 4/18/2006	**DAY:** TUESDAY
N-S Approach:	OAK	**SURVEY TIME:** 4:00 PM	**TO** 6:00 PM
E-W Approach:	6TH STREET - I-880 NB OFF-RAMP	**CITY:** OAKLAND	**FILE:** OA06OLPM

PEAK HOUR 04:45 PM TO 05:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	WB FROM 6TH ST. Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
04:00 PM	—	04:15 PM	50	58	0	0	0	0	0	0	5	20	16	78	227
04:15 PM	—	04:30 PM	87	128	0	0	0	0	0	0	10	37	41	183	486
04:30 PM	—	04:45 PM	115	191	0	0	0	0	0	0	17	50	62	276	711
04:45 PM	—	05:00 PM	157	272	0	0	0	0	0	0	28	72	81	400	1,010
05:00 PM	—	05:15 PM	192	366	0	0	0	0	0	0	36	86	114	505	1,299
05:15 PM	—	05:30 PM	226	441	0	0	0	0	0	0	49	97	128	639	1,580
05:30 PM	—	05:45 PM	266	509	0	0	0	0	0	0	55	112	136	733	1,811
05:45 PM	—	06:00 PM	302	585	0	0	0	0	0	0	63	124	156	843	2,073
TOTAL BY PERIOD															
04:00 PM	—	04:15 PM	50	58	0	0	0	0	0	0	5	20	16	78	227
04:15 PM	—	04:30 PM	37	70	0	0	0	0	0	0	5	17	25	105	259
04:30 PM	—	04:45 PM	28	63	0	0	0	0	0	0	7	13	21	93	225
04:45 PM	—	05:00 PM	42	81	0	0	0	0	0	0	11	22	19	124	299
05:00 PM	—	05:15 PM	35	94	0	0	0	0	0	0	8	14	33	105	289
05:15 PM	—	05:30 PM	34	75	0	0	0	0	0	0	13	11	14	134	281
05:30 PM	—	05:45 PM	40	68	0	0	0	0	0	0	6	15	8	94	231
05:45 PM	—	06:00 PM	36	76	0	0	0	0	0	0	8	12	20	110	262
HOURLY TOTALS															
04:00 PM	—	05:00 PM	157	272	0	0	0	0	0	0	28	72	81	400	1,010
04:15 PM	—	05:15 PM	142	308	0	0	0	0	0	0	31	66	98	427	1,072
04:30 PM	—	05:30 PM	139	313	0	0	0	0	0	0	39	60	87	456	1,094
04:45 PM	—	05:45 PM	151	318	0	0	0	0	0	0	38	62	74	457	1,100
05:00 PM	—	06:00 PM	145	313	0	0	0	0	0	0	35	52	75	443	1,063

East Bay : (510) 232-1271 *SF/Peninsula: (415) 750-1317*

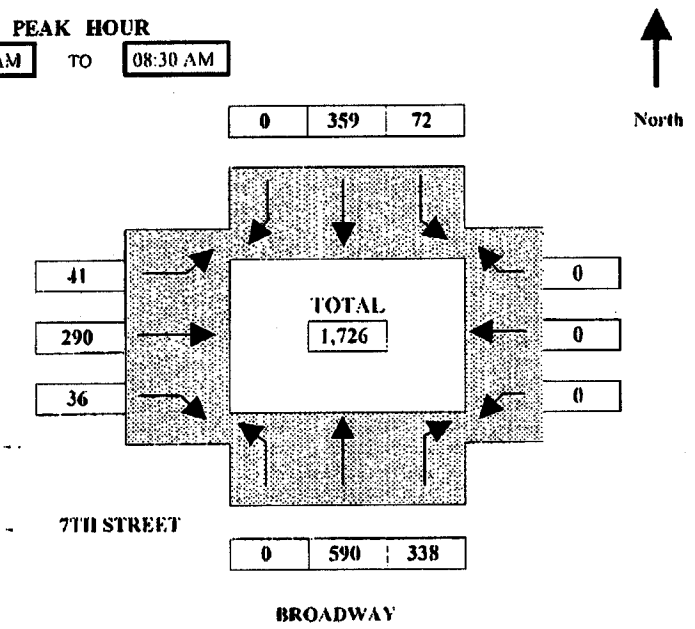
$\frac{469}{4 \times 129} = 0.91$ $\frac{39}{4 \times 13} = 0.73$ $\frac{593}{4 \times 165} = 0.90$

BAYMETRICS TRAFFIC RESOURCES

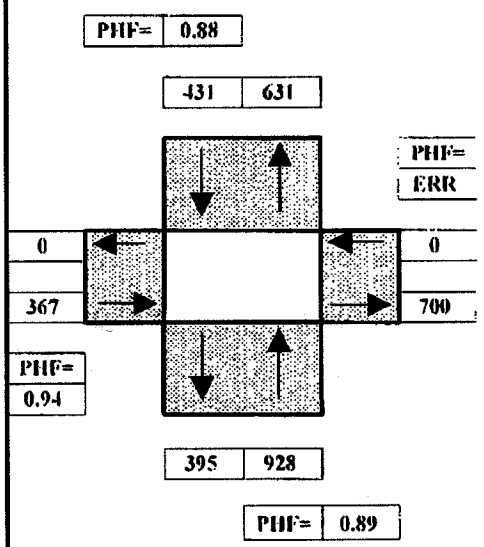
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**OAKLAND TMC**	**SURVEY DATE:** 10 / 25 / 2006	**DAY:** TUESDAY
N-S Approach:	**BROADWAY**	**SURVEY TIME:** 7:00 AM	**TO** 9:00 AM
E-W Approach:	**7TH STREET**	**CITY:** OAKLAND	**FILE:** BW07OLAM

PEAK HOUR
07:30 AM TO 08:30 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
07:00 AM	---	07:15 AM	0	112	75	5	61	0	5	52	10	0	0	0	*320*
07:15 AM	---	07:30 AM	0	257	157	15	153	0	12	114	18	0	0	0	*726*
07:30 AM	---	07:45 AM	0	425	251	27	231	0	25	187	30	0	0	0	*1,176*
07:45 AM	---	08:00 AM	0	578	334	47	333	0	34	267	37	0	0	0	*1,630*
08:00 AM	---	08:15 AM	0	707	410	63	417	0	46	339	43	0	0	0	*2,025*
08:15 AM	---	08:30 AM	0	847	495	87	512	0	53	404	54	0	0	0	*2,452*
08:30 AM	---	08:45 AM	0	973	567	106	614	0	63	479	62	0	0	0	*2,864*
08:45 AM	---	09:00 AM	0	1,086	650	131	702	0	75	549	74	0	0	0	*3,267*
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	0	112	75	5	61	0	5	52	10	0	0	0	*320*
07:15 AM	---	07:30 AM	0	145	82	10	92	0	7	62	8	0	0	0	*406*
07:30 AM	---	07:45 AM	0	168	94	12	78	0	13	73	12	0	0	0	*450*
07:45 AM	---	08:00 AM	0	153	83	20	102	0	9	80	7	0	0	0	*454*
08:00 AM	---	08:15 AM	0	129	76	16	84	0	12	72	6	0	0	0	*395*
08:15 AM	---	08:30 AM	0	140	85	24	95	0	7	65	11	0	0	0	*427*
08:30 AM	---	08:45 AM	0	126	72	19	102	0	10	75	8	0	0	0	*412*
08:45 AM	---	09:00 AM	0	113	83	25	88	0	12	70	12	0	0	0	*403*
HOURLY TOTALS															
07:00 AM	---	08:00 AM	0	578	334	47	333	0	34	267	37	0	0	0	*1,630*
07:15 AM	---	08:15 AM	0	595	335	58	356	0	41	287	33	0	0	0	*1,705*
07:30 AM	---	08:30 AM	0	590	338	72	359	0	41	290	36	0	0	0	*1,726*
07:45 AM	---	08:45 AM	0	548	316	79	383	0	38	292	32	0	0	0	*1,688*
08:00 AM	---	09:00 AM	0	508	316	84	369	0	41	282	37	0	0	0	*1,637*

Tel : (510) 232-1271 *Fax: (510) 232-1272*

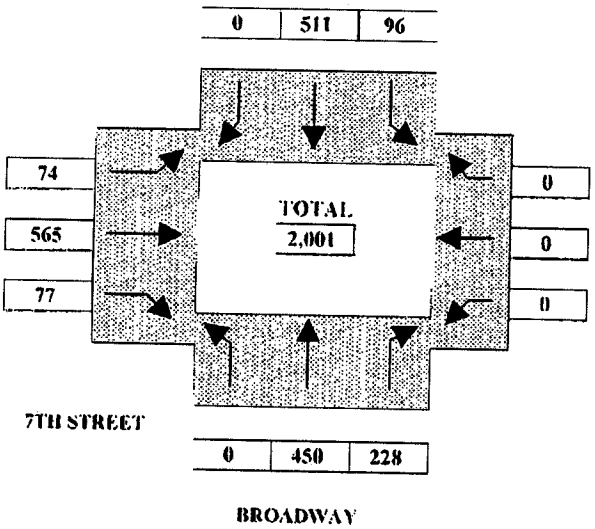
Oct 25 06 11:43a Baymetrics 5102321272 p.10

BAYMETRICS TRAFFIC RESOURCES

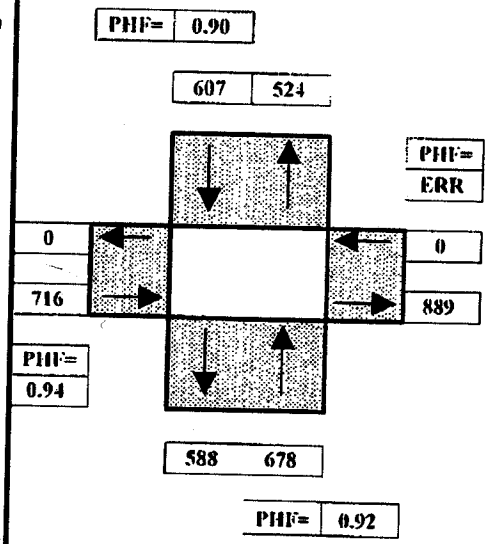
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**OAKLAND TMC**	**SURVEY DATE:** 10 / 25 / 2006	**DAY:** TUESDAY
N-S Approach:	**BROADWAY**	**SURVEY TIME:** 4:00 PM	**TO** 6:00 PM
E-W Approach:	**7TH STREET**	**CITY:** OAKLAND	**FILE:** BW07OLPM

PEAK HOUR 04:45 PM TO 05:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA														
04:00 PM	04:15 PM	0	87	51	21	116	0	12	98	22	0	0	0	*407*
04:15 PM	04:30 PM	0	193	97	51	246	0	27	214	47	0	0	0	*875*
04:30 PM	04:45 PM	0	315	139	75	391	0	47	344	65	0	0	0	*1,376*
04:45 PM	05:00 PM	0	420	199	103	519	0	61	489	89	0	0	0	*1,880*
05:00 PM	05:15 PM	0	534	252	125	636	0	74	617	109	0	0	0	*2,347*
05:15 PM	05:30 PM	0	660	300	144	762	0	96	769	126	0	0	0	*2,857*
05:30 PM	05:45 PM	0	765	367	171	902	0	121	909	142	0	0	0	*3,377*
05:45 PM	06:00 PM	0	888	429	195	1,020	0	140	1,041	156	0	0	0	*3,869*
TOTAL BY PERIOD														
04:00 PM	04:15 PM	0	87	51	21	116	0	12	98	22	0	0	0	*407*
04:15 PM	04:30 PM	0	106	46	30	130	0	15	116	25	0	0	0	*468*
04:30 PM	04:45 PM	0	122	42	24	145	0	20	130	18	0	0	0	*501*
04:45 PM	05:00 PM	0	105	60	28	128	0	14	145	24	0	0	0	*504*
05:00 PM	05:15 PM	0	114	53	22	117	0	13	128	20	0	0	0	*467*
05:15 PM	05:30 PM	0	126	48	19	126	0	22	152	17	0	0	0	*510*
05:30 PM	05:45 PM	0	105	67	27	140	0	25	140	16	0	0	0	*520*
05:45 PM	06:00 PM	0	123	62	24	118	0	19	132	14	0	0	0	*492*
HOURLY TOTALS														
04:00 PM	05:00 PM	0	420	199	103	519	0	61	489	89	0	0	0	*1,880*
04:15 PM	05:15 PM	0	447	201	104	520	0	62	519	87	0	0	0	*1,940*
04:30 PM	05:30 PM	0	467	203	93	516	0	69	555	79	0	0	0	*1,982*
04:45 PM	05:45 PM	0	450	228	96	511	0	74	565	77	0	0	0	*2,001*
05:00 PM	06:00 PM	0	468	230	92	501	0	79	552	67	0	0	0	*1,989*

Tel : (510) 232-1271 *Fax: (510) 232-1272*

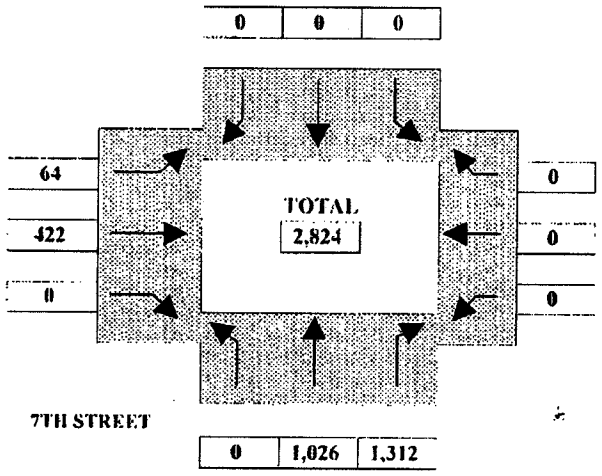
Oct 25 06 11:40a Baymetrics 5102321272 p.5

BAYMETRICS TRAFFIC RESOURCES

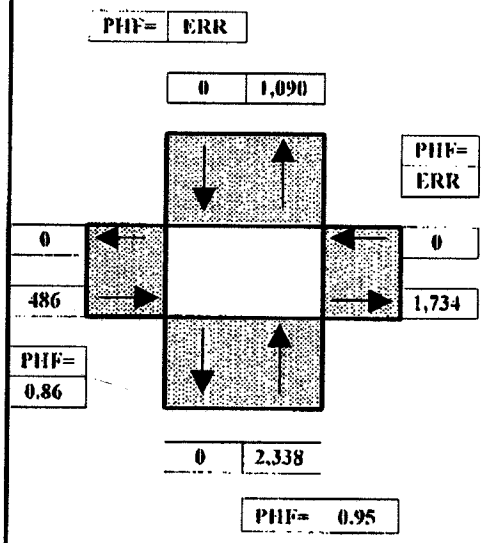
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT: OAKLAND TMC | **SURVEY DATE:** 4/19/2006 | **DAY:** WEDNESDAY
N-S Approach: HARRISON | **SURVEY TIME:** 7:00 AM TO 9:00 AM
E-W Approach: 7TH STREET | **CITY:** OAKLAND | **FILE:** HR07OLAM

PEAK HOUR 07:45 AM TO 08:45 AM



ARRIVAL / DEPARTURE VOLUMES



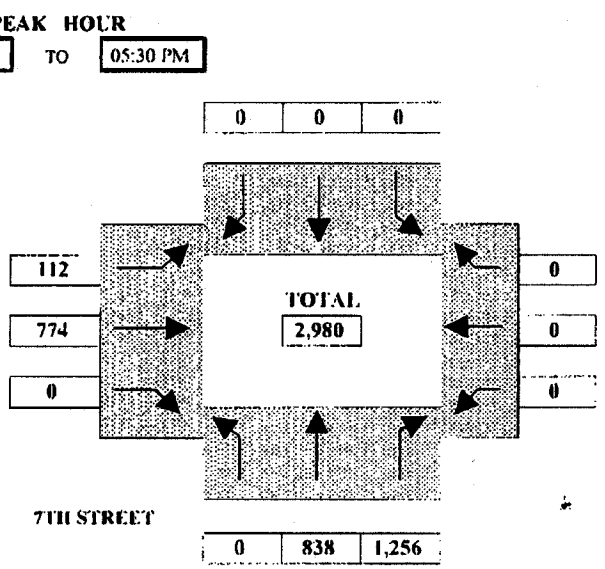
TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
07:00 AM	---	07:15 AM	0	93	221	0	0	0	10	35	0	0	0	0	359
07:15 AM	---	07:30 AM	0	205	497	0	0	0	19	83	0	0	0	0	804
07:30 AM	---	07:45 AM	0	365	816	0	0	0	33	155	0	0	0	0	1,369
07:45 AM	---	08:00 AM	0	589	1,176	0	0	0	41	261	0	0	0	0	2,067
08:00 AM	---	08:15 AM	0	852	1,486	0	0	0	61	355	0	0	0	0	2,754
08:15 AM	---	08:30 AM	0	1,122	1,834	0	0	0	78	479	0	0	0	0	3,513
08:30 AM	---	08:45 AM	0	1,391	2,128	0	0	0	97	577	0	0	0	0	4,193
08:45 AM	---	09:00 AM	0	1,645	2,390	0	0	0	122	668	0	0	0	0	4,825
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	0	93	221	0	0	0	10	35	0	0	0	0	359
07:15 AM	---	07:30 AM	0	112	276	0	0	0	9	48	0	0	0	0	445
07:30 AM	---	07:45 AM	0	160	319	0	0	0	14	72	0	0	0	0	565
07:45 AM	---	08:00 AM	0	224	360	0	0	0	8	106	0	0	0	0	698
08:00 AM	---	08:15 AM	0	263	310	0	0	0	20	94	0	0	0	0	687
08:15 AM	---	08:30 AM	0	270	348	0	0	0	17	124	0	0	0	0	759
08:30 AM	---	08:45 AM	0	269	294	0	0	0	19	98	0	0	0	0	680
08:45 AM	---	09:00 AM	0	254	262	0	0	0	25	91	0	0	0	0	632
HOURLY TOTALS															
07:00 AM	---	08:00 AM	0	589	1,176	0	0	0	41	261	0	0	0	0	2,067
07:15 AM	---	08:15 AM	0	759	1,265	0	0	0	51	320	0	0	0	0	2,395
07:30 AM	---	08:30 AM	0	917	1,337	0	0	0	59	396	0	0	0	0	2,709
07:45 AM	---	08:45 AM	0	1,026	1,312	0	0	0	64	422	0	0	0	0	2,824
08:00 AM	---	09:00 AM	0	1,056	1,214	0	0	0	81	407	0	0	0	0	2,758

BAYMETRICS TRAFFIC RESOURCES

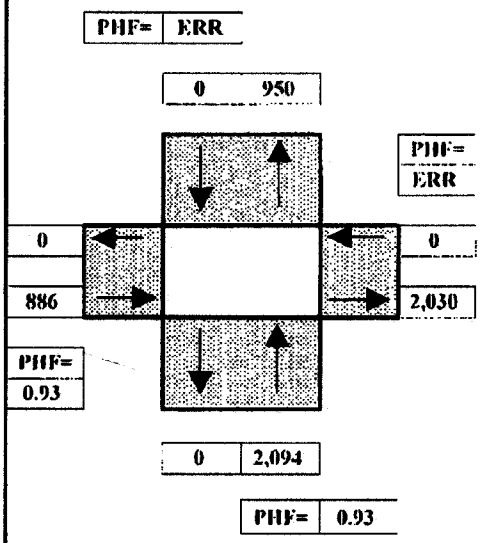
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**OAKLAND TMC**	**SURVEY DATE:** 4/19/2006	**DAY:** WEDNESDAY
N-S Approach:	**HARRISON**	**SURVEY TIME:** 4:00 PM	**TO** 6:00 PM
E-W Approach:	**7TH STREET**	**CITY:** OAKLAND	**FILE:** HR07OLPM

PEAK HOUR
04:30 PM TO 05:30 PM



ARRIVAL / DEPARTURE VOLUMES



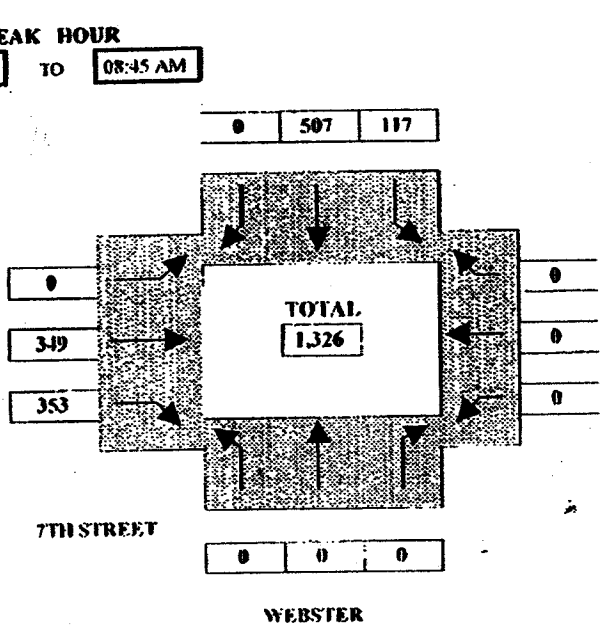
TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
04:00 PM	---	04:15 PM	0	205	242	0	0	0	22	169	0	0	0	0	*638*
04:15 PM	---	04:30 PM	0	388	538	0	0	0	50	315	0	0	0	0	*1,291*
04:30 PM	---	04:45 PM	0	608	879	0	0	0	76	520	0	0	0	0	*2,083*
04:45 PM	---	05:00 PM	0	805	1,178	0	0	0	107	705	0	0	0	0	*2,795*
05:00 PM	---	05:15 PM	0	1,030	1,479	0	0	0	130	882	0	0	0	0	*3,521*
05:15 PM	---	05:30 PM	0	1,226	1,794	0	0	0	162	1,089	0	0	0	0	*4,271*
05:30 PM	---	05:45 PM	0	1,400	2,101	0	0	0	184	1,201	0	0	0	0	*4,886*
05:45 PM	---	06:00 PM	0	1,579	2,384	0	0	0	204	1,361	0	0	0	0	*5,528*
TOTAL BY PERIOD															
04:00 PM	---	04:15 PM	0	205	242	0	0	0	22	169	0	0	0	0	*638*
04:15 PM	---	04:30 PM	0	183	296	0	0	0	28	146	0	0	0	0	*653*
04:30 PM	---	04:45 PM	0	220	341	0	0	0	26	205	0	0	0	0	*792*
04:45 PM	---	05:00 PM	0	197	299	0	0	0	31	185	0	0	0	0	*712*
05:00 PM	---	05:15 PM	0	225	301	0	0	0	23	177	0	0	0	0	*726*
05:15 PM	---	05:30 PM	0	196	315	0	0	0	32	207	0	0	0	0	*750*
05:30 PM	---	05:45 PM	0	174	307	0	0	0	22	112	0	0	0	0	*615*
05:45 PM	---	06:00 PM	0	179	283	0	0	0	20	160	0	0	0	0	*642*
HOURLY TOTALS															
04:00 PM	---	05:00 PM	0	805	1,178	0	0	0	107	705	0	0	0	0	*2,795*
04:15 PM	---	05:15 PM	0	825	1,237	0	0	0	108	713	0	0	0	0	*2,883*
04:30 PM	---	05:30 PM	0	838	1,256	0	0	0	112	774	0	0	0	0	*2,980*
04:45 PM	---	05:45 PM	0	792	1,222	0	0	0	108	681	0	0	0	0	*2,803*
05:00 PM	---	06:00 PM	0	774	1,206	0	0	0	97	656	0	0	0	0	*2,733*

BAYMETRICS TRAFFIC RESOURCES

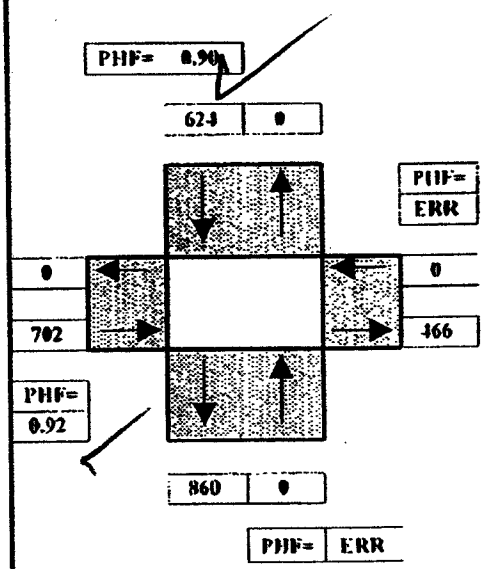
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	OAKLAND TMC	**SURVEY DATE:** 7/11/2006	**DAY:** TUESDAY
N-S Approach:	WEBSTER	**SURVEY TIME:** 7:00 AM	**TO** 9:00 AM
E-W Approach:	7TH STREET	**CITY:** OAKLAND	**FILE:** WT07OLAM

PEAK HOUR
07:45 AM TO 08:45 AM



ARRIVAL / DEPARTURE VOLUMES



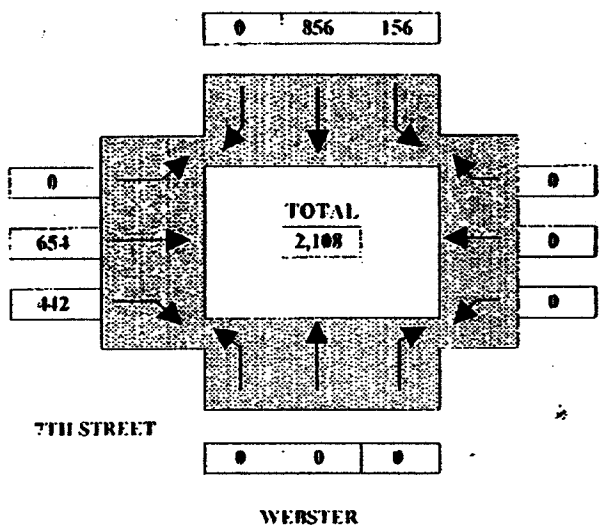
TIME PERIOD From	To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA														
07:00 AM	07:15 AM	0	0	0	9	56	0	0	40	52	0	0	0	157
07:15 AM	07:30 AM	0	0	0	23	119	0	0	92	115	0	0	0	349
07:30 AM	07:45 AM	0	0	0	42	204	0	0	164	191	0	0	0	601
07:45 AM	08:00 AM	0	0	0	68	310	0	0	259	286	0	0	0	923
08:00 AM	08:15 AM	0	0	0	102	450	0	0	350	374	0	0	0	1,276
08:15 AM	08:30 AM	0	0	0	134	575	0	0	434	466	0	0	0	1,609
08:30 AM	08:45 AM	0	0	0	159	711	0	0	513	544	0	0	0	1,927
08:45 AM	09:00 AM	0	0	0	187	833	0	0	583	620	0	0	0	2,223
TOTAL BY PERIOD														
07:00 AM	07:15 AM	0	0	0	9	56	0	0	40	52	0	0	0	157
07:15 AM	07:30 AM	0	0	0	14	63	0	0	52	63	0	0	0	192
07:30 AM	07:45 AM	0	0	0	19	85	0	0	72	76	0	0	0	252
07:45 AM	08:00 AM	0	0	0	26	106	0	0	95	95	0	0	0	322
08:00 AM	08:15 AM	0	0	0	34	140	0	0	91	88	0	0	0	353
08:15 AM	08:30 AM	0	0	0	32	125	0	0	84	92	0	0	0	333
08:30 AM	08:45 AM	0	0	0	25	136	0	0	79	78	0	0	0	318
08:45 AM	09:00 AM	0	0	0	28	122	0	0	70	76	0	0	0	296
HOURLY TOTALS														
07:00 AM	08:00 AM	0	0	0	68	310	0	0	259	286	0	0	0	923
07:15 AM	08:15 AM	0	0	0	93	394	0	0	310	322	0	0	0	1,119
07:30 AM	08:30 AM	0	0	0	111	456	0	0	342	351	0	0	0	1,260
07:45 AM	08:45 AM	0	0	0	117	507	0	0	349	353	0	0	0	1,326
08:00 AM	09:00 AM	0	0	0	119	523	0	0	324	334	0	0	0	1,300

BAYMETRICS TRAFFIC RESOURCES

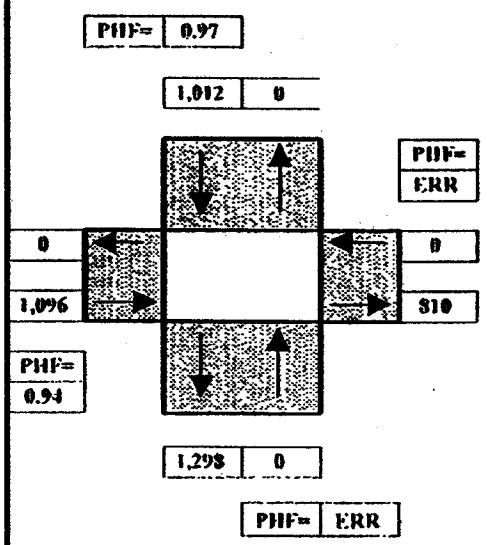
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	OAKLAND TMC	**SURVEY DATE:** 7/11/2006	**DAY:** TUESDAY
N-S Approach:	WEBSTER	**SURVEY TIME:** 4:00 PM	**TO** 6:00 PM
E-W Approach:	7TH STREET	**CITY:** OAKLAND	**FILE:** WT07OLPM

PEAK HOUR
04:45 PM TO 05:45 PM



ARRIVAL/DEPARTURE VOLUMES



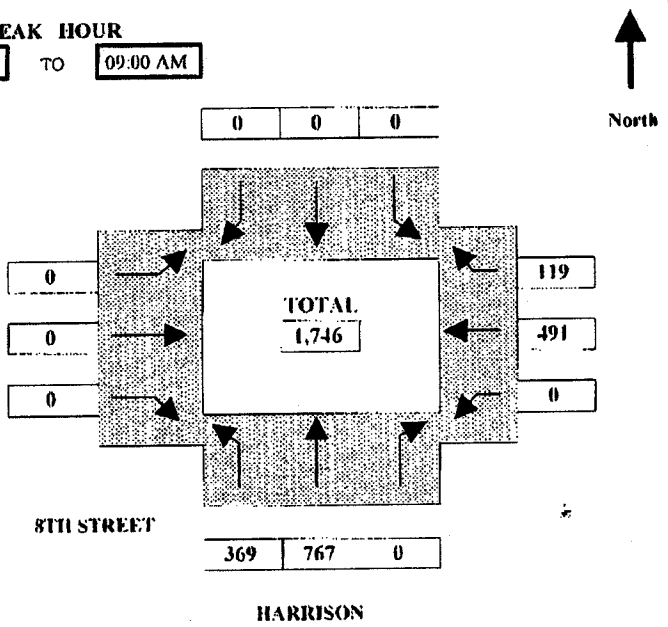
TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
04:00 PM	—	04:15 PM	0	0	0	34	163	0	0	106	113	0	0	0	*416*
04:15 PM	—	04:30 PM	0	0	0	64	345	0	0	221	211	0	0	0	*841*
04:30 PM	—	04:45 PM	0	0	0	106	540	0	0	360	331	0	0	0	*1,337*
04:45 PM	—	05:00 PM	0	0	0	141	761	0	0	516	427	0	0	0	*1,845*
05:00 PM	—	05:15 PM	0	0	0	179	959	0	0	678	557	0	0	0	*2,373*
05:15 PM	—	05:30 PM	0	0	0	221	1,176	0	0	857	667	0	0	0	*2,921*
05:30 PM	—	05:45 PM	0	0	0	262	1,396	0	0	1,014	773	0	0	0	*3,445*
05:45 PM	—	06:00 PM	0	0	0	299	1,590	0	0	1,173	883	0	0	0	*3,945*
TOTAL BY PERIOD															
04:00 PM	—	04:15 PM	0	0	0	34	163	0	0	106	113	0	0	0	*416*
04:15 PM	—	04:30 PM	0	0	0	30	182	0	0	115	98	0	0	0	*425*
04:30 PM	—	04:45 PM	0	0	0	42	195	0	0	139	120	0	0	0	*496*
04:45 PM	—	05:00 PM	0	0	0	35	221	0	0	156	96	0	0	0	*508*
05:00 PM	—	05:15 PM	0	0	0	38	198	0	0	162	130	0	0	0	*528*
05:15 PM	—	05:30 PM	0	0	0	42	217	0	0	179	110	0	0	0	*548*
05:30 PM	—	05:45 PM	0	0	0	41	220	0	0	157	106	0	0	0	*524*
05:45 PM	—	06:00 PM	0	0	0	37	194	0	0	159	110	0	0	0	*500*
HOURLY TOTALS															
04:00 PM	—	05:00 PM	0	0	0	141	761	0	0	516	427	0	0	0	*1,845*
04:15 PM	—	05:15 PM	0	0	0	145	796	0	0	572	444	0	0	0	*1,957*
04:30 PM	—	05:30 PM	0	0	0	157	831	0	0	636	456	0	0	0	*2,080*
04:45 PM	—	05:45 PM	0	0	0	156	856	0	0	654	442	0	0	0	*2,108*
05:00 PM	—	06:00 PM	0	0	0	158	829	0	0	657	456	0	0	0	*2,100*

BAYMETRICS TRAFFIC RESOURCES

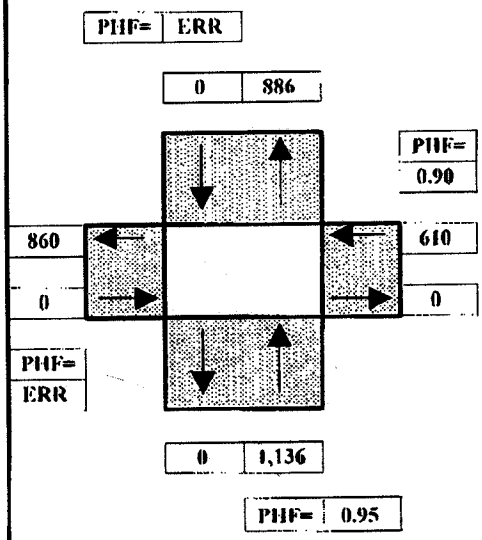
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	OAKLAND TMC	**SURVEY DATE:** 4/19/2006	**DAY:** WEDNESDAY
N-S Approach:	HARRISON	**SURVEY TIME:** 7:00 AM	**TO** 9:00 AM
E-W Approach:	8TH STREET	**CITY:** OAKLAND	**FILE:** HR07OLAM

PEAK HOUR
08:00 AM TO 09:00 AM



ARRIVAL / DEPARTURE VOLUMES



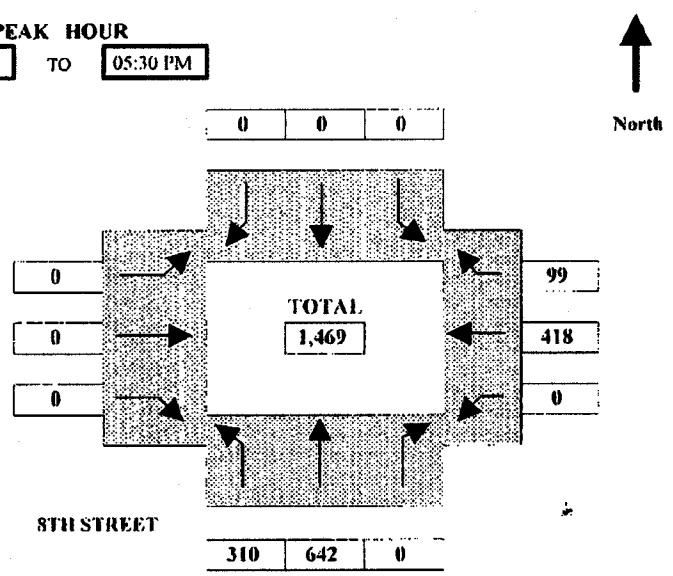
TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
07:00 AM	---	07:15 AM	40	50	0	0	0	0	0	0	0	0	52	8	*150*
07:15 AM	---	07:30 AM	112	121	0	0	0	0	0	0	0	0	120	18	*371*
07:30 AM	---	07:45 AM	216	188	0	0	0	0	0	0	0	0	211	33	*648*
07:45 AM	---	08:00 AM	297	338	0	0	0	0	0	0	0	0	330	54	*1,019*
08:00 AM	---	08:15 AM	400	522	0	0	0	0	0	0	0	0	473	80	*1,475*
08:15 AM	---	08:30 AM	486	718	0	0	0	0	0	0	0	0	588	117	*1,909*
08:30 AM	---	08:45 AM	584	920	0	0	0	0	0	0	0	0	720	149	*2,373*
08:45 AM	---	09:00 AM	666	1,105	0	0	0	0	0	0	0	0	821	173	*2,765*
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	40	50	0	0	0	0	0	0	0	0	52	8	*150*
07:15 AM	---	07:30 AM	72	71	0	0	0	0	0	0	0	0	68	10	*221*
07:30 AM	---	07:45 AM	104	67	0	0	0	0	0	0	0	0	91	15	*277*
07:45 AM	---	08:00 AM	81	150	0	0	0	0	0	0	0	0	119	21	*371*
08:00 AM	---	08:15 AM	103	184	0	0	0	0	0	0	0	0	143	26	*456*
08:15 AM	---	08:30 AM	86	196	0	0	0	0	0	0	0	0	115	37	*434*
08:30 AM	---	08:45 AM	98	202	0	0	0	0	0	0	0	0	132	32	*464*
08:45 AM	---	09:00 AM	82	185	0	0	0	0	0	0	0	0	101	24	*392*
HOURLY TOTALS															
07:00 AM	---	08:00 AM	297	338	0	0	0	0	0	0	0	0	330	54	*1,019*
07:15 AM	---	08:15 AM	360	472	0	0	0	0	0	0	0	0	421	72	*1,325*
07:30 AM	---	08:30 AM	374	597	0	0	0	0	0	0	0	0	468	99	*1,538*
07:45 AM	---	08:45 AM	368	732	0	0	0	0	0	0	0	0	509	116	*1,725*
08:00 AM	---	09:00 AM	369	767	0	0	0	0	0	0	0	0	491	119	*1,746*

BAYMETRICS TRAFFIC RESOURCES

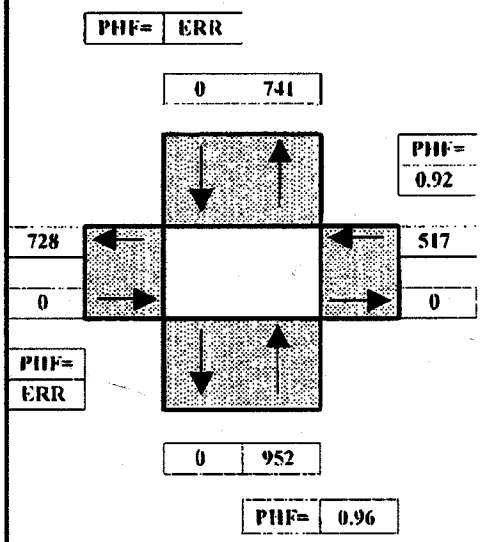
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	OAKLAND TMC	**SURVEY DATE:** 4/19/2006	**DAY:** WEDNESDAY
N-S Approach:	HARRISON	**SURVEY TIME:** 4:00 PM **TO**	6:00 PM
E-W Approach:	8TH STREET	**CITY:** OAKLAND	**FILE:** HR07OLPM

PEAK HOUR
04:30 PM TO 05:30 PM



ARRIVAL / DEPARTURE VOLUMES



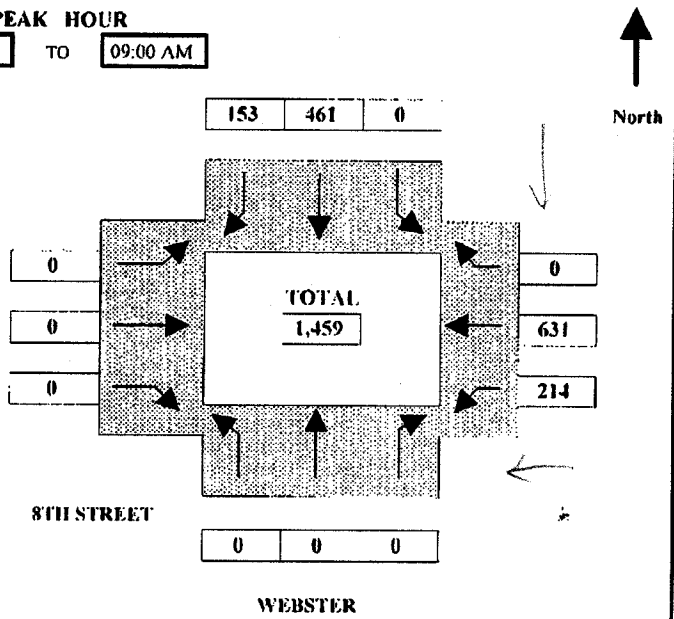
TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
04:00 PM	---	04:15 PM	56	162	0	0	0	0	0	0	0	0	75	25	*318*
04:15 PM	---	04:30 PM	107	319	0	0	0	0	0	0	0	0	163	47	*636*
04:30 PM	---	04:45 PM	170	504	0	0	0	0	0	0	0	0	267	65	*1,006*
04:45 PM	---	05:00 PM	252	651	0	0	0	0	0	0	0	0	384	89	*1,376*
05:00 PM	---	05:15 PM	341	811	0	0	0	0	0	0	0	0	479	120	*1,751*
05:15 PM	---	05:30 PM	417	961	0	0	0	0	0	0	0	0	581	146	*2,105*
05:30 PM	---	05:45 PM	502	1,095	0	0	0	0	0	0	0	0	702	165	*2,464*
05:45 PM	---	06:00 PM	578	1,208	0	0	0	0	0	0	0	0	819	187	*2,792*
TOTAL BY PERIOD															
04:00 PM	---	04:15 PM	56	162	0	0	0	0	0	0	0	0	75	25	*318*
04:15 PM	---	04:30 PM	51	157	0	0	0	0	0	0	0	0	88	22	*318*
04:30 PM	---	04:45 PM	63	185	0	0	0	0	0	0	0	0	104	18	*370*
04:45 PM	---	05:00 PM	82	147	0	0	0	0	0	0	0	0	117	24	*370*
05:00 PM	---	05:15 PM	89	160	0	0	0	0	0	0	0	0	95	31	*375*
05:15 PM	---	05:30 PM	76	150	0	0	0	0	0	0	0	0	102	26	*354*
05:30 PM	---	05:45 PM	85	134	0	0	0	0	0	0	0	0	121	19	*359*
05:45 PM	---	06:00 PM	76	113	0	0	0	0	0	0	0	0	117	22	*328*
HOURLY TOTALS															
04:00 PM	---	05:00 PM	252	651	0	0	0	0	0	0	0	0	384	89	*1,376*
04:15 PM	---	05:15 PM	285	649	0	0	0	0	0	0	0	0	404	95	*1,433*
04:30 PM	---	05:30 PM	310	642	0	0	0	0	0	0	0	0	418	99	*1,469*
04:45 PM	---	05:45 PM	332	591	0	0	0	0	0	0	0	0	435	100	*1,458*
05:00 PM	---	06:00 PM	326	557	0	0	0	0	0	0	0	0	435	98	*1,416*

BAYMETRICS TRAFFIC RESOURCES

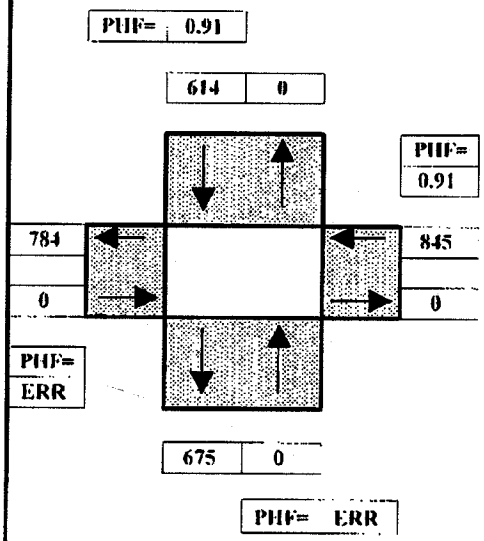
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**OAKLAND TMC**	**SURVEY DATE:** 4/19/2006	**DAY:** WEDNESDAY
N-S Approach:	**WEBSTER**	**SURVEY TIME:** 7:00 AM	**TO** 9:00 AM
E-W Approach:	**8TH STREET**	**CITY:** OAKLAND	**FILE:** WT08OLAM

PEAK HOUR
08:00 AM TO 09:00 AM



ARRIVAL / DEPARTURE VOLUMES



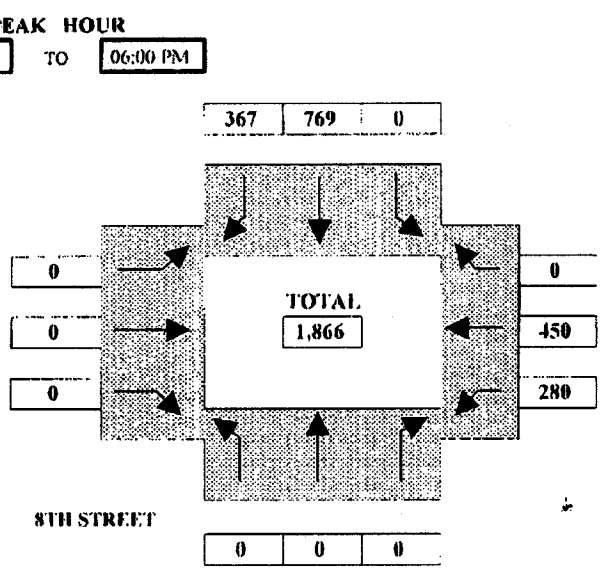
TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
07:00 AM	---	07:15 AM	0	0	0	0	47	22	0	0	0	28	64	0	*161*
07:15 AM	---	07:30 AM	0	0	0	0	108	56	0	0	0	68	171	0	*403*
07:30 AM	---	07:45 AM	0	0	0	0	187	96	0	0	0	115	303	0	*701*
07:45 AM	---	08:00 AM	0	0	0	0	269	133	0	0	0	164	469	0	*1,035*
08:00 AM	---	08:15 AM	0	0	0	0	375	178	0	0	0	217	648	0	*1,418*
08:15 AM	---	08:30 AM	0	0	0	0	484	215	0	0	0	266	813	0	*1,778*
08:30 AM	---	08:45 AM	0	0	0	0	601	246	0	0	0	328	966	0	*2,141*
08:45 AM	---	09:00 AM	0	0	0	0	730	286	0	0	0	378	1,100	0	*2,494*
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	0	0	0	0	47	22	0	0	0	28	64	0	*161*
07:15 AM	---	07:30 AM	0	0	0	0	61	34	0	0	0	40	107	0	*242*
07:30 AM	---	07:45 AM	0	0	0	0	79	40	0	0	0	47	132	0	*298*
07:45 AM	---	08:00 AM	0	0	0	0	82	37	0	0	0	49	166	0	*334*
08:00 AM	---	08:15 AM	0	0	0	0	106	45	0	0	0	53	179	0	*383*
08:15 AM	---	08:30 AM	0	0	0	0	109	37	0	0	0	49	165	0	*360*
08:30 AM	---	08:45 AM	0	0	0	0	117	31	0	0	0	62	153	0	*363*
08:45 AM	---	09:00 AM	0	0	0	0	129	40	0	0	0	50	134	0	*353*
HOURLY TOTALS															
07:00 AM	---	08:00 AM	0	0	0	0	269	133	0	0	0	164	469	0	*1,035*
07:15 AM	---	08:15 AM	0	0	0	0	328	156	0	0	0	189	584	0	*1,257*
07:30 AM	---	08:30 AM	0	0	0	0	376	159	0	0	0	198	642	0	*1,375*
07:45 AM	---	08:45 AM	0	0	0	0	414	150	0	0	0	213	663	0	*1,440*
08:00 AM	---	09:00 AM	0	0	0	0	461	153	0	0	0	214	631	0	*1,459*

BAYMETRICS TRAFFIC RESOURCES

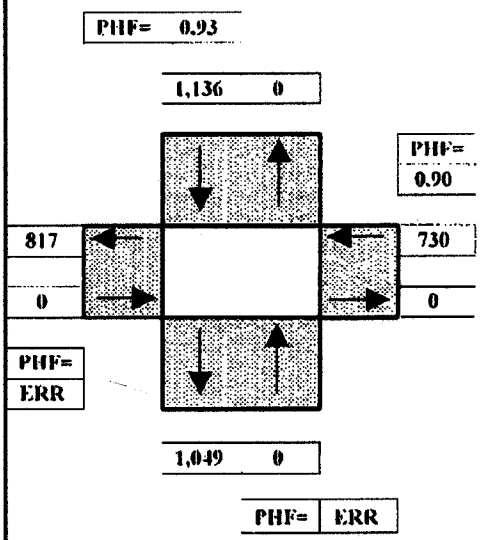
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**OAKLAND TMC**	**SURVEY DATE:** 4/19/2006	**DAY:** WEDNESDAY
N-S Approach:	**WEBSTER**	**SURVEY TIME:** 4:00 PM **TO** 6:00 PM	
E-W Approach:	**8TH STREET**	**CITY:** OAKLAND	**FILE:** WT08OLPM

PEAK HOUR
05:00 PM TO 06:00 PM



ARRIVAL / DEPARTURE VOLUMES



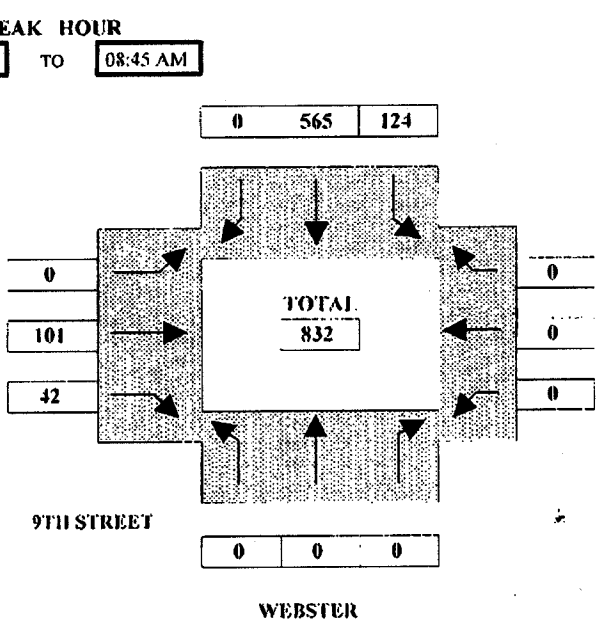
TIME PERIOD From	To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA														
04:00 PM	04:15 PM	0	0	0	0	163	69	0	0	0	50	102	0	*384*
04:15 PM	04:30 PM	0	0	0	0	340	144	0	0	0	95	225	0	*804*
04:30 PM	04:45 PM	0	0	0	0	535	253	0	0	0	156	316	0	*1,260*
04:45 PM	05:00 PM	0	0	0	0	719	335	0	0	0	228	421	0	*1,703*
05:00 PM	05:15 PM	0	0	0	0	930	429	0	0	0	291	538	0	*2,188*
05:15 PM	05:30 PM	0	0	0	0	1,123	507	0	0	0	371	630	0	*2,631*
05:30 PM	05:45 PM	0	0	0	0	1,300	610	0	0	0	445	758	0	*3,113*
05:45 PM	06:00 PM	0	0	0	0	1,488	702	0	0	0	508	871	0	*3,569*
TOTAL BY PERIOD														
04:00 PM	04:15 PM	0	0	0	0	163	69	0	0	0	50	102	0	*384*
04:15 PM	04:30 PM	0	0	0	0	177	75	0	0	0	45	123	0	*420*
04:30 PM	04:45 PM	0	0	0	0	195	109	0	0	0	61	91	0	*456*
04:45 PM	05:00 PM	0	0	0	0	184	82	0	0	0	72	105	0	*443*
05:00 PM	05:15 PM	0	0	0	0	211	94	0	0	0	63	117	0	*485*
05:15 PM	05:30 PM	0	0	0	0	193	78	0	0	0	80	92	0	*443*
05:30 PM	05:45 PM	0	0	0	0	177	103	0	0	0	74	128	0	*482*
05:45 PM	06:00 PM	0	0	0	0	188	92	0	0	0	63	113	0	*456*
HOURLY TOTALS														
04:00 PM	05:00 PM	0	0	0	0	719	335	0	0	0	228	421	0	*1,703*
04:15 PM	05:15 PM	0	0	0	0	767	360	0	0	0	241	436	0	*1,804*
04:30 PM	05:30 PM	0	0	0	0	783	363	0	0	0	276	405	0	*1,827*
04:45 PM	05:45 PM	0	0	0	0	765	357	0	0	0	289	442	0	*1,853*
05:00 PM	06:00 PM	0	0	0	0	769	367	0	0	0	280	450	0	*1,866*

BAYMETRICS TRAFFIC RESOURCES

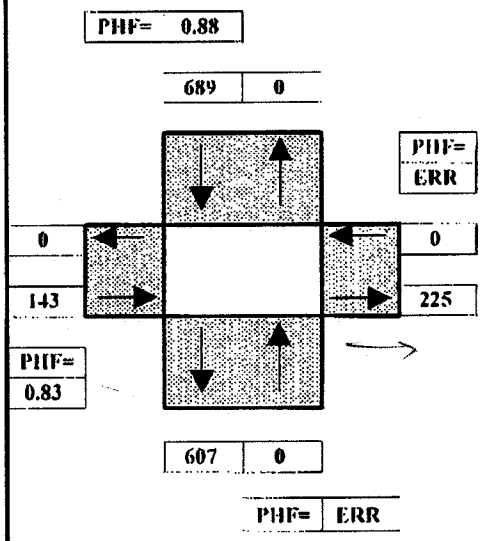
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**OAKLAND TMC**	**SURVEY DATE:** 4 / 19 / 2006	**DAY:** WEDNESDAY
N-S Approach:	**WEBSTER**	**SURVEY TIME:** 7:00 AM	**TO** 9:00 AM
E-W Approach:	**9TH STREET**	**CITY:** OAKLAND	**FILE:** WT09OLAM

PEAK HOUR
07:45 AM TO 08:45 AM



ARRIVAL / DEPARTURE VOLUMES



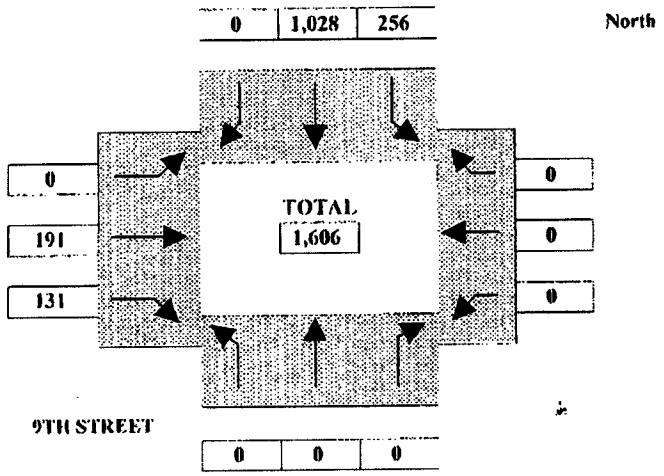
TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
07:00 AM	---	07:15 AM	0	0	0	10	66	0	0	18	8	0	0	0	*102*
07:15 AM	---	07:30 AM	0	0	0	30	152	0	0	38	22	0	0	0	*242*
07:30 AM	---	07:45 AM	0	0	0	55	228	0	0	60	33	0	0	0	*376*
07:45 AM	---	08:00 AM	0	0	0	76	364	0	0	90	46	0	0	0	*576*
08:00 AM	---	08:15 AM	0	0	0	110	494	0	0	115	55	0	0	0	*774*
08:15 AM	---	08:30 AM	0	0	0	138	639	0	0	137	67	0	0	0	*981*
08:30 AM	---	08:45 AM	0	0	0	179	793	0	0	161	75	0	0	0	*1,208*
08:45 AM	---	09:00 AM	0	0	0	208	926	0	0	179	85	0	0	0	*1,398*
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	0	0	0	10	66	0	0	18	8	0	0	0	*102*
07:15 AM	---	07:30 AM	0	0	0	20	86	0	0	20	14	0	0	0	*140*
07:30 AM	---	07:45 AM	0	0	0	25	76	0	0	22	11	0	0	0	*134*
07:45 AM	---	08:00 AM	0	0	0	21	136	0	0	30	13	0	0	0	*200*
08:00 AM	---	08:15 AM	0	0	0	34	130	0	0	25	9	0	0	0	*198*
08:15 AM	---	08:30 AM	0	0	0	28	145	0	0	22	12	0	0	0	*207*
08:30 AM	---	08:45 AM	0	0	0	41	154	0	0	24	8	0	0	0	*227*
08:45 AM	---	09:00 AM	0	0	0	29	133	0	0	18	10	0	0	0	*190*
HOURLY TOTALS															
07:00 AM	---	08:00 AM	0	0	0	76	364	0	0	90	46	0	0	0	*576*
07:15 AM	---	08:15 AM	0	0	0	100	428	0	0	97	47	0	0	0	*672*
07:30 AM	---	08:30 AM	0	0	0	108	487	0	0	99	45	0	0	0	*739*
07:45 AM	---	08:45 AM	0	0	0	124	565	0	0	101	42	0	0	0	*832*
08:00 AM	---	09:00 AM	0	0	0	132	562	0	0	89	39	0	0	0	*822*

BAYMETRICS TRAFFIC RESOURCES

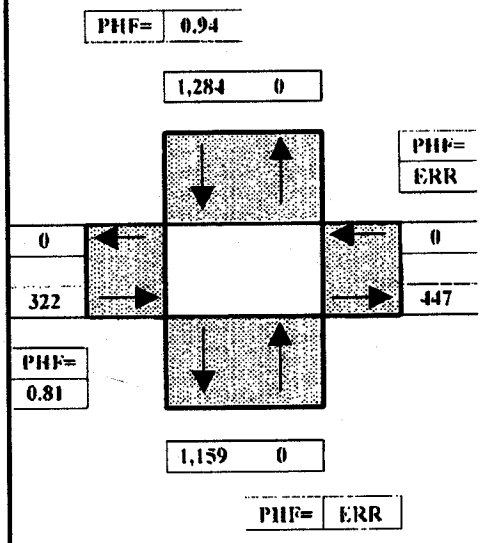
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	OAKLAND TMC	**SURVEY DATE:** 4/19/2006	**DAY:** WEDNESDAY
N-S Approach:	WEBSTER	**SURVEY TIME:** 4:00 PM	**TO** 6:00 PM
E-W Approach:	9TH STREET	**CITY:** OAKLAND	**FILE:** WT09OLPM

PEAK HOUR
05:00 PM TO 06:00 PM



ARRIVAL / DEPARTURE VOLUMES



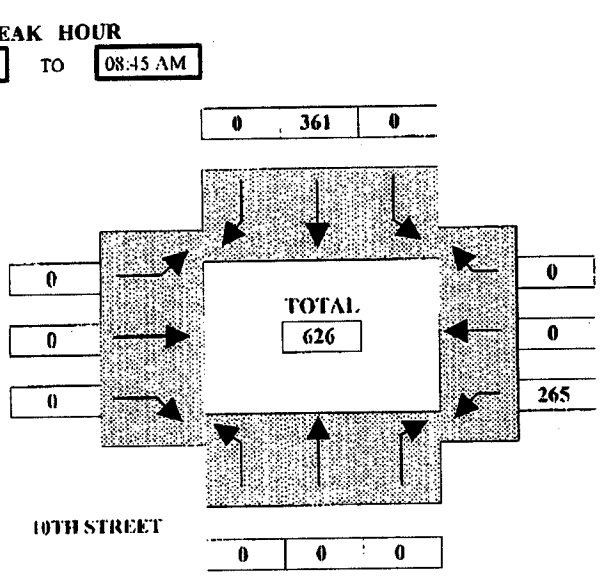
TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
04:00 PM	---	04:15 PM	0	0	0	42	205	0	0	51	16	0	0	0	*314*
04:15 PM	---	04:30 PM	0	0	0	95	428	0	0	94	39	0	0	0	*656*
04:30 PM	---	04:45 PM	0	0	0	155	673	0	0	150	57	0	0	0	*1,035*
04:45 PM	---	05:00 PM	0	0	0	206	903	0	0	216	91	0	0	0	*1,416*
05:00 PM	---	05:15 PM	0	0	0	268	1,164	0	0	269	117	0	0	0	*1,818*
05:15 PM	---	05:30 PM	0	0	0	338	1,436	0	0	314	157	0	0	0	*2,245*
05:30 PM	---	05:45 PM	0	0	0	399	1,678	0	0	364	189	0	0	0	*2,630*
05:45 PM	---	06:00 PM	0	0	0	462	1,931	0	0	407	222	0	0	0	*3,022*
TOTAL BY PERIOD															
04:00 PM	---	04:15 PM	0	0	0	42	205	0	0	51	16	0	0	0	*314*
04:15 PM	---	04:30 PM	0	0	0	53	223	0	0	43	23	0	0	0	*342*
04:30 PM	---	04:45 PM	0	0	0	60	245	0	0	56	18	0	0	0	*379*
04:45 PM	---	05:00 PM	0	0	0	51	230	0	0	66	34	0	0	0	*381*
05:00 PM	---	05:15 PM	0	0	0	62	261	0	0	53	26	0	0	0	*402*
05:15 PM	---	05:30 PM	0	0	0	70	272	0	0	45	40	0	0	0	*427*
05:30 PM	---	05:45 PM	0	0	0	61	242	0	0	50	32	0	0	0	*385*
05:45 PM	---	06:00 PM	0	0	0	63	253	0	0	43	33	0	0	0	*392*
HOURLY TOTALS															
04:00 PM	---	05:00 PM	0	0	0	206	903	0	0	216	91	0	0	0	*1,416*
04:15 PM	---	05:15 PM	0	0	0	226	959	0	0	218	101	0	0	0	*1,504*
04:30 PM	---	05:30 PM	0	0	0	243	1,008	0	0	220	118	0	0	0	*1,589*
04:45 PM	---	05:45 PM	0	0	0	244	1,005	0	0	214	132	0	0	0	*1,595*
05:00 PM	---	06:00 PM	0	0	0	256	1,028	0	0	191	131	0	0	0	*1,606*

BAYMETRICS TRAFFIC RESOURCES

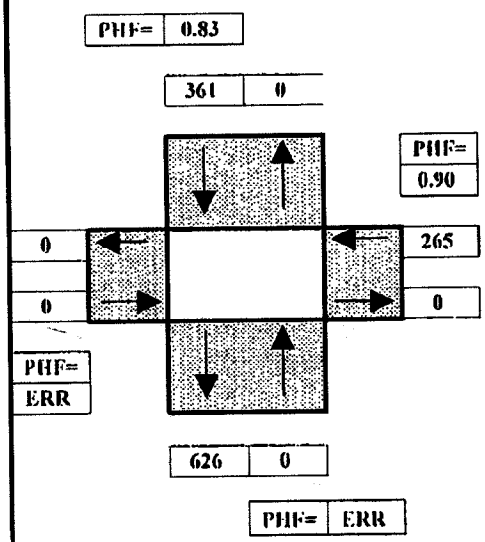
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT: OAKLAND TMC | **SURVEY DATE:** 10/25/2006 | **DAY:** TUESDAY
N-S Approach: WEBSTER | **SURVEY TIME:** 7:00 AM TO 9:00 AM
E-W Approach: 10TH STREET | **CITY:** OAKLAND | **FILE:** WT10OLAM

PEAK HOUR
07:45 AM TO 08:45 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
07:00 AM	---	07:15 AM	0	0	0	0	52	0	0	0	0	18	0	0	*70*
07:15 AM	---	07:30 AM	0	0	0	0	121	0	0	0	0	51	0	0	*172*
07:30 AM	---	07:45 AM	0	0	0	0	205	0	0	0	0	103	0	0	*308*
07:45 AM	---	08:00 AM	0	0	0	0	314	0	0	0	0	177	0	0	*491*
08:00 AM	---	08:15 AM	0	0	0	0	399	0	0	0	0	233	0	0	*632*
08:15 AM	---	08:30 AM	0	0	0	0	489	0	0	0	0	299	0	0	*788*
08:30 AM	---	08:45 AM	0	0	0	0	566	0	0	0	0	368	0	0	*934*
08:45 AM	---	09:00 AM	0	0	0	0	647	0	0	0	0	426	0	0	*1,073*
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	0	0	0	0	52	0	0	0	0	18	0	0	*70*
07:15 AM	---	07:30 AM	0	0	0	0	69	0	0	0	0	33	0	0	*102*
07:30 AM	---	07:45 AM	0	0	0	0	84	0	0	0	0	52	0	0	*136*
07:45 AM	---	08:00 AM	0	0	0	0	109	0	0	0	0	74	0	0	*183*
08:00 AM	---	08:15 AM	0	0	0	0	85	0	0	0	0	56	0	0	*141*
08:15 AM	---	08:30 AM	0	0	0	0	90	0	0	0	0	66	0	0	*156*
08:30 AM	---	08:45 AM	0	0	0	0	77	0	0	0	0	69	0	0	*146*
08:45 AM	---	09:00 AM	0	0	0	0	81	0	0	0	0	58	0	0	*139*
HOURLY TOTALS															
07:00 AM	---	08:00 AM	0	0	0	0	314	0	0	0	0	177	0	0	*491*
07:15 AM	---	08:15 AM	0	0	0	0	347	0	0	0	0	215	0	0	*562*
07:30 AM	---	08:30 AM	0	0	0	0	368	0	0	0	0	248	0	0	*616*
07:45 AM	---	08:45 AM	0	0	0	0	361	0	0	0	0	265	0	0	*626*
08:00 AM	---	09:00 AM	0	0	0	0	333	0	0	0	0	249	0	0	*582*

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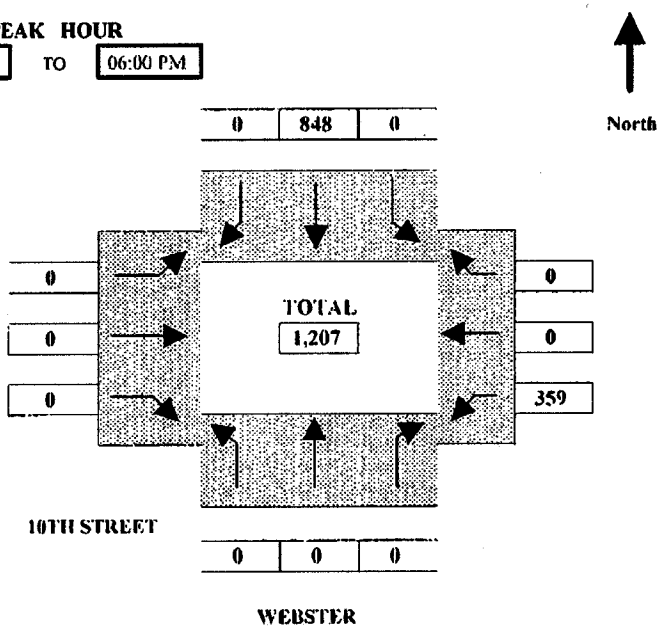
Oct 25 06 11:44a Baymetrics 5102321272 p.11

BAYMETRICS TRAFFIC RESOURCES

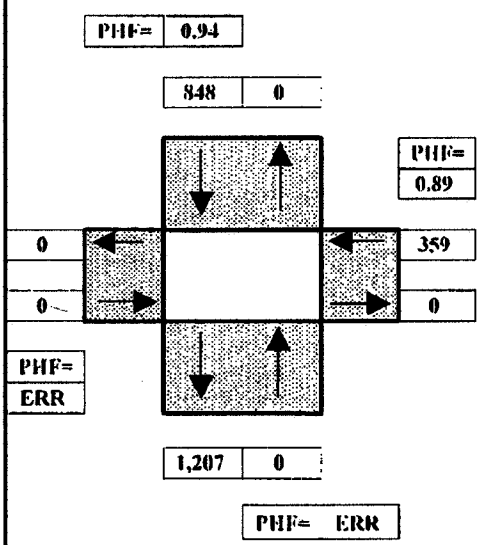
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**OAKLAND TMC**	**SURVEY DATE:**	**10 / 25 / 2006** **DAY: TUESDAY**
N-S Approach:	**WEBSTER**	**SURVEY TIME:**	**4:00 PM** **TO 6:00 PM**
E-W Approach:	**10TH STREET**	**CITY:**	**OAKLAND** **FILE: WT10OLPM**

PEAK HOUR
05:00 PM TO 06:00 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
04:00 PM	—	04:15 PM	0	0	0	0	143	0	0	0	0	81	0	0	*224*
04:15 PM	—	04:30 PM	0	0	0	0	299	0	0	0	0	160	0	0	*459*
04:30 PM	—	04:45 PM	0	0	0	0	473	0	0	0	0	238	0	0	*711*
04:45 PM	—	05:00 PM	0	0	0	0	675	0	0	0	0	331	0	0	*1,006*
05:00 PM	—	05:15 PM	0	0	0	0	901	0	0	0	0	432	0	0	*1,333*
05:15 PM	—	05:30 PM	0	0	0	0	1,113	0	0	0	0	520	0	0	*1,633*
05:30 PM	—	05:45 PM	0	0	0	0	1,312	0	0	0	0	601	0	0	*1,913*
05:45 PM	—	06:00 PM	0	0	0	0	1,523	0	0	0	0	690	0	0	*2,213*
TOTAL BY PERIOD															
04:00 PM	—	04:15 PM	0	0	0	0	143	0	0	0	0	81	0	0	*224*
04:15 PM	—	04:30 PM	0	0	0	0	156	0	0	0	0	79	0	0	*235*
04:30 PM	—	04:45 PM	0	0	0	0	174	0	0	0	0	78	0	0	*252*
04:45 PM	—	05:00 PM	0	0	0	0	202	0	0	0	0	93	0	0	*295*
05:00 PM	—	05:15 PM	0	0	0	0	226	0	0	0	0	101	0	0	*327*
05:15 PM	—	05:30 PM	0	0	0	0	212	0	0	0	0	88	0	0	*300*
05:30 PM	—	05:45 PM	0	0	0	0	199	0	0	0	0	81	0	0	*280*
05:45 PM	—	06:00 PM	0	0	0	0	211	0	0	0	0	89	0	0	*300*
HOURLY TOTALS															
04:00 PM	—	05:00 PM	0	0	0	0	675	0	0	0	0	331	0	0	*1,006*
04:15 PM	—	05:15 PM	0	0	0	0	758	0	0	0	0	351	0	0	*1,109*
04:30 PM	—	05:30 PM	0	0	0	0	814	0	0	0	0	360	0	0	*1,174*
04:45 PM	—	05:45 PM	0	0	0	0	839	0	0	0	0	363	0	0	*1,202*
05:00 PM	—	06:00 PM	0	0	0	0	848	0	0	0	0	359	0	0	*1,207*

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Oct 25 06 11:40a Baymetrics 5102321272 p.4

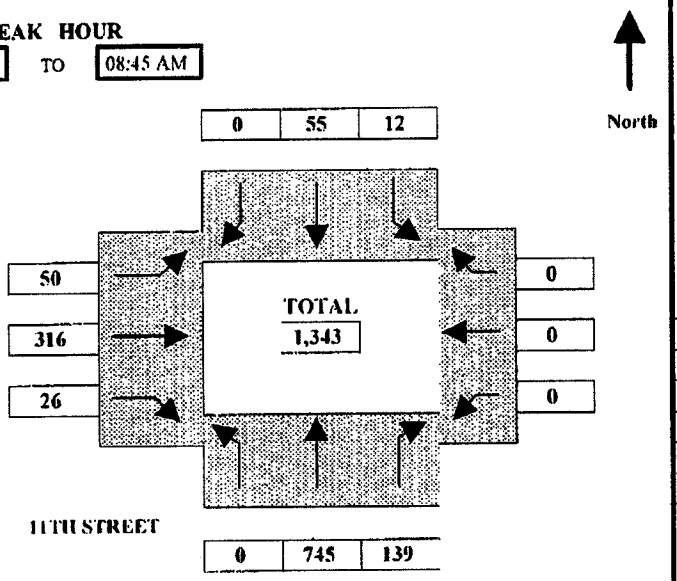
BAYMETRICS TRAFFIC RESOURCES

INTERSECTION TURNING MOVEMENT SUMMARY

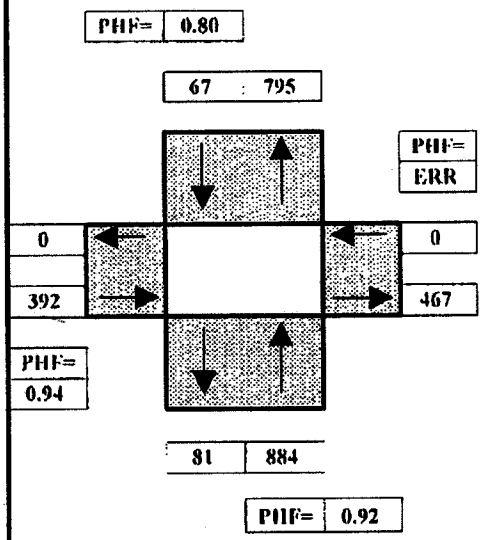
PROJECT:	**OAKLAND TMC**	**SURVEY DATE:** 10 / 25 / 2006	**DAY:** TUESDAY
N-S Approach:	**HARRISON**	**SURVEY TIME:** 7:00 AM	**TO** 9:00 AM
E-W Approach:	**11TH STREET**	**CITY:** OAKLAND	**FILE:** HR11OLAM

PEAK HOUR

07:45 AM TO 08:45 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
07:00 AM	---	07:15 AM	0	77	6	0	6	0	5	28	2	0	0	0	*124*
07:15 AM	---	07:30 AM	0	219	17	2	16	0	14	70	3	0	0	0	*341*
07:30 AM	---	07:45 AM	0	384	39	3	28	0	25	125	7	0	0	0	*611*
07:45 AM	---	08:00 AM	0	556	81	3	44	0	40	201	14	0	0	0	*939*
08:00 AM	---	08:15 AM	0	754	115	7	55	0	54	286	19	0	0	0	*1,290*
08:15 AM	---	08:30 AM	0	924	144	10	73	0	62	359	25	0	0	0	*1,597*
08:30 AM	---	08:45 AM	0	1,129	178	15	83	0	75	441	33	0	0	0	*1,954*
08:45 AM	---	09:00 AM	0	1,304	208	18	98	0	85	517	40	0	0	0	*2,270*
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	0	77	6	0	6	0	5	28	2	0	0	0	*124*
07:15 AM	---	07:30 AM	0	142	11	2	10	0	9	42	1	0	0	0	*217*
07:30 AM	---	07:45 AM	0	165	22	1	12	0	11	55	4	0	0	0	*270*
07:45 AM	---	08:00 AM	0	172	42	0	16	0	15	76	7	0	0	0	*328*
08:00 AM	---	08:15 AM	0	198	34	4	11	0	14	85	5	0	0	0	*351*
08:15 AM	---	08:30 AM	0	170	29	3	18	0	8	73	6	0	0	0	*307*
08:30 AM	---	08:45 AM	0	205	34	5	10	0	13	82	8	0	0	0	*357*
08:45 AM	---	09:00 AM	0	175	30	3	15	0	10	76	7	0	0	0	*316*
HOURLY TOTALS															
07:00 AM	---	08:00 AM	0	556	81	3	44	0	40	201	14	0	0	0	*939*
07:15 AM	---	08:15 AM	0	677	109	7	49	0	49	258	17	0	0	0	*1,166*
07:30 AM	---	08:30 AM	0	705	127	8	57	0	48	289	22	0	0	0	*1,256*
07:45 AM	---	08:45 AM	0	745	139	12	55	0	50	316	26	0	0	0	*1,343*
08:00 AM	---	09:00 AM	0	748	127	15	54	0	45	316	26	0	0	0	*1,331*

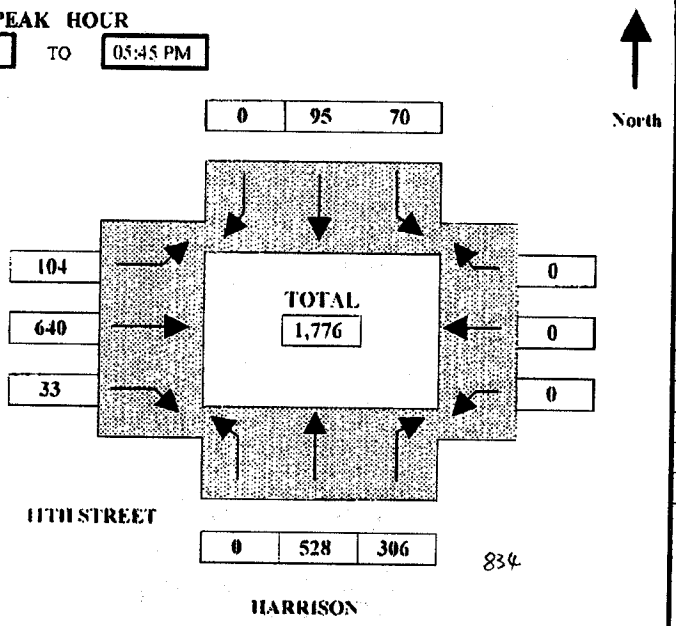
Tel : (510) 232-1271 *Fax: (510) 232-1272*

BAYMETRICS TRAFFIC RESOURCES

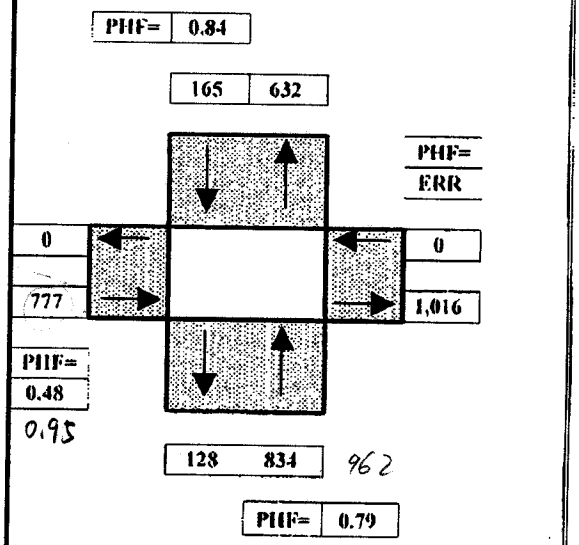
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**OAKLAND TMC**	**SURVEY DATE:** 10 / 25 / 2006	**DAY:** TUESDAY
N-S Approach:	**HARRISON**	**SURVEY TIME:** 4:00 PM	**TO** 6:00 PM
E-W Approach:	**11TH STREET**	**CITY:** OAKLAND	**FILE:** HR11OLPM

PEAK HOUR 04:45 PM TO 05:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
04:00 PM	---	04:15 PM	0	109	42	10	17	0	18	115	10	0	0	0	*321*
04:15 PM	---	04:30 PM	0	235	94	19	31	0	42	249	18	0	0	0	*688*
04:30 PM	---	04:45 PM	0	366	164	31	48	0	63	401	30	0	0	0	*1,103*
04:45 PM	---	05:00 PM	0	483	217	47	73	0	93	568	37	0	0	0	*1,518*
05:00 PM	---	05:15 PM	0	622	277	64	91	0	118	716	43	0	0	0	*1,931*
05:15 PM	---	05:30 PM	0	770	329	85	119	0	140	886	55	0	0	0	*2,384*
05:30 PM	---	05:45 PM	0	894	470	101	143	0	167	1,041	63	0	0	0	*2,879*
05:45 PM	---	06:00 PM	0	1,031	520	114	163	0	190	1,204	70	0	0	0	*3,292*
TOTAL BY PERIOD															
04:00 PM	---	04:15 PM	0	109	42	10	17	0	18	115	10	0	0	0	*321*
04:15 PM	---	04:30 PM	0	126	52	9	14	0	24	134	8	0	0	0	*367*
04:30 PM	---	04:45 PM	0	131	70	12	17	0	21	152	12	0	0	0	*415*
04:45 PM	---	05:00 PM	0	117	53	16	25	0	30	167	7	0	0	0	*415*
05:00 PM	---	05:15 PM	0	139	60	17	18	0	25	148	6	0	0	0	*413*
05:15 PM	---	05:30 PM	0	148	52	21	28	0	22	170	12	0	0	0	*453*
05:30 PM	---	05:45 PM	0	124	141	16	24	0	27	155	8	0	0	0	*495*
05:45 PM	---	06:00 PM	0	137	50	13	20	0	23	163	7	0	0	0	*413*
HOURLY TOTALS															
04:00 PM	---	05:00 PM	0	483	217	47	73	0	93	568	37	0	0	0	*1,518*
04:15 PM	---	05:15 PM	0	513	235	54	74	0	100	601	33	0	0	0	*1,610*
04:30 PM	---	05:30 PM	0	535	235	66	88	0	98	637	37	0	0	0	*1,696*
04:45 PM	---	05:45 PM	0	528	306	70	95	0	104	640	33	0	0	0	*1,776*
05:00 PM	---	06:00 PM	0	548	303	67	90	0	97	636	33	0	0	0	*1,774*

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Oct 25 06 11:40a Baymetrics 5102321272 p.3

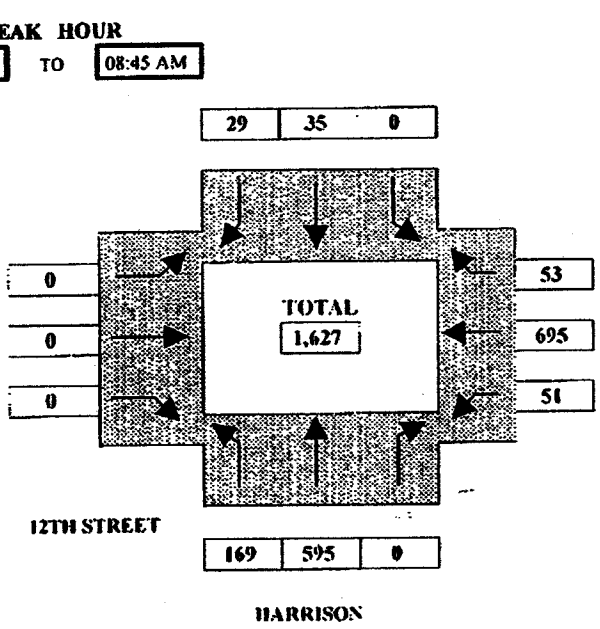
BAYMETRICS TRAFFIC RESOURCES

INTERSECTION TURNING MOVEMENT SUMMARY

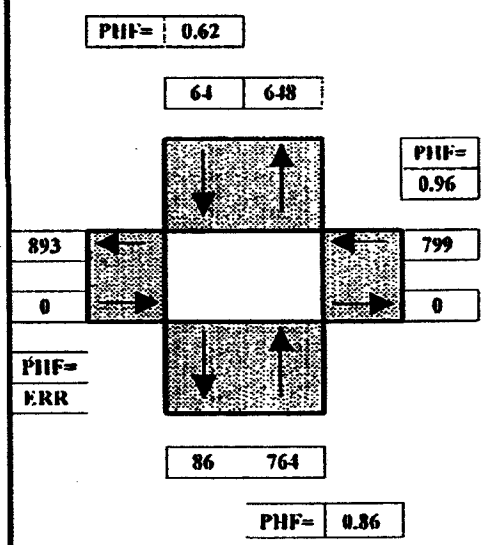
PROJECT:	**OAKLAND TMC**	**SURVEY DATE:** 10/25/2006	**DAY:** TUESDAY
N-S Approach:	**HARRISON**	**SURVEY TIME:** 7:00 AM	**TO** 9:00 AM
E-W Approach:	**12TH STREET**	**CITY:** OAKLAND	**FILE:** HR12OLAM

PEAK HOUR

07:45 AM TO 08:45 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA														
07:00 AM	07:15 AM	21	61	0	0	3	4	0	0	0	5	95	11	*200*
07:15 AM	07:30 AM	47	177	0	0	13	11	0	0	0	12	217	19	*496*
07:30 AM	07:45 AM	84	301	0	0	28	17	0	0	0	18	380	25	*853*
07:45 AM	08:00 AM	116	433	0	0	37	27	0	0	0	29	569	33	*1,244*
08:00 AM	08:15 AM	168	602	0	0	40	35	0	0	0	44	745	46	*1,680*
08:15 AM	08:30 AM	216	729	0	0	57	44	0	0	0	56	917	67	*2,086*
08:30 AM	08:45 AM	253	896	0	0	63	46	0	0	0	69	1,075	78	*2,480*
08:45 AM	09:00 AM	287	1,039	0	0	78	48	0	0	0	79	1,243	91	*2,865*
TOTAL BY PERIOD														
07:00 AM	07:15 AM	21	61	0	0	3	4	0	0	0	5	95	11	*200*
07:15 AM	07:30 AM	26	116	0	0	10	7	0	0	0	7	122	8	*296*
07:30 AM	07:45 AM	37	124	0	0	15	6	0	0	0	6	163	6	*357*
07:45 AM	08:00 AM	32	132	0	0	9	10	0	0	0	11	189	8	*391*
08:00 AM	08:15 AM	52	169	0	0	3	8	0	0	0	15	176	13	*436*
08:15 AM	08:30 AM	48	127	0	0	17	9	0	0	0	12	172	21	*406*
08:30 AM	08:45 AM	37	167	0	0	6	2	0	0	0	13	158	11	*394*
08:45 AM	09:00 AM	34	143	0	0	15	2	0	0	0	10	168	13	*385*
HOURLY TOTALS														
07:00 AM	08:00 AM	116	433	0	0	37	27	0	0	0	29	569	33	*1,244*
07:15 AM	08:15 AM	147	541	0	0	37	31	0	0	0	39	650	35	*1,480*
07:30 AM	08:30 AM	169	552	0	0	44	33	0	0	0	44	700	48	*1,590*
07:45 AM	08:45 AM	169	595	0	0	35	29	0	0	0	51	695	53	*1,627*
08:00 AM	09:00 AM	171	606	0	0	41	21	0	0	0	50	674	58	*1,621*

Tel : (510) 232-1271 *Fax: (510) 232-1272*

Oct 25 06 11:45a Baymetrics 5102321272 p.13

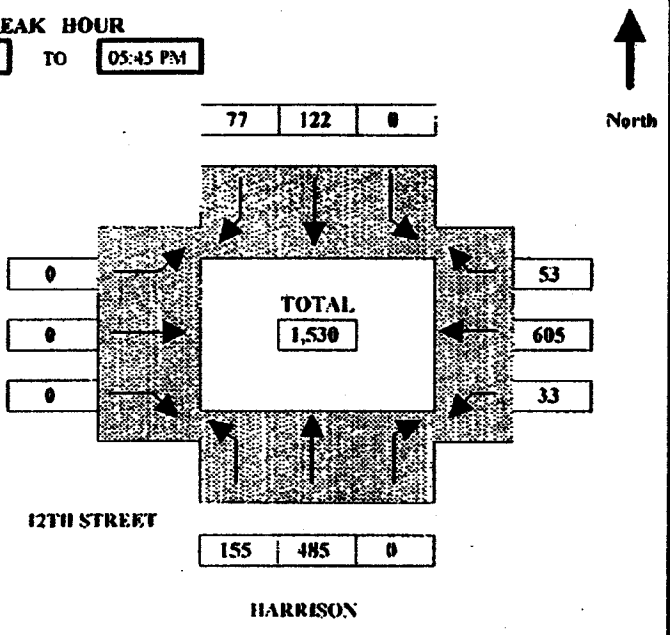
BAYMETRICS TRAFFIC RESOURCES

INTERSECTION TURNING MOVEMENT SUMMARY

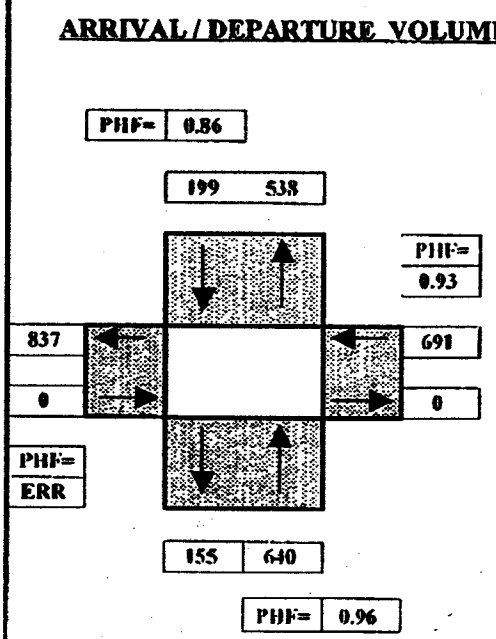
PROJECT:	**OAKLAND TMC**	**SURVEY DATE:**	**10/25/2006** **DAY: TUESDAY**
N-S Approach:	**HARRISON**	**SURVEY TIME:**	**4:00 PM** **TO** **6:00 PM**
E-W Approach:	**12TH STREET**	**CITY:**	**OAKLAND** **FILE: HR12OLPM**

PEAK HOUR

04:45 PM TO 05:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
04:00 PM	—	04:15 PM	29	119	0	0	22	9	0	0	0	7	133	13	*332*
04:15 PM	—	04:30 PM	62	243	0	0	47	23	0	0	0	17	279	30	*701*
04:30 PM	—	04:45 PM	103	349	0	0	66	45	0	0	0	32	429	51	*1,075*
04:45 PM	—	05:00 PM	136	482	0	0	100	53	0	0	0	41	567	65	*1,444*
05:00 PM	—	05:15 PM	181	604	0	0	128	70	0	0	0	47	737	74	*1,841*
05:15 PM	—	05:30 PM	221	709	0	0	161	95	0	0	0	57	881	86	*2,210*
05:30 PM	—	05:45 PM	258	834	0	0	188	122	0	0	0	65	1,034	104	*2,605*
05:45 PM	—	06:00 PM	301	940	0	0	220	144	0	0	0	72	1,169	119	*2,965*
TOTAL BY PERIOD															
04:00 PM	—	04:15 PM	29	119	0	0	22	9	0	0	0	7	133	13	*332*
04:15 PM	—	04:30 PM	33	124	0	0	25	14	0	0	0	10	146	17	*369*
04:30 PM	—	04:45 PM	41	106	0	0	19	22	0	0	0	15	150	21	*374*
04:45 PM	—	05:00 PM	33	133	0	0	34	8	0	0	0	9	138	14	*369*
05:00 PM	—	05:15 PM	45	122	0	0	28	17	0	0	0	6	170	9	*397*
05:15 PM	—	05:30 PM	40	105	0	0	33	25	0	0	0	10	144	12	*369*
05:30 PM	—	05:45 PM	37	125	0	0	27	27	0	0	0	8	153	18	*395*
05:45 PM	—	06:00 PM	43	106	0	0	32	22	0	0	0	7	135	15	*360*
HOURLY TOTALS															
04:00 PM	—	05:00 PM	136	482	0	0	100	53	0	0	0	41	567	65	*1,444*
04:15 PM	—	05:15 PM	152	485	0	0	106	61	0	0	0	40	604	61	*1,509*
04:30 PM	—	05:30 PM	159	466	0	0	114	72	0	0	0	40	602	56	*1,509*
04:45 PM	—	05:45 PM	155	485	0	0	122	77	0	0	0	33	605	53	*1,530*
05:00 PM	—	06:00 PM	165	458	0	0	120	91	0	0	0	31	602	54	*1,521*

Tel: (510) 232-1271 *Fax: (510) 232-1272*

APPENDIX E-2

EXISTING PEDESTRIAN COUNTS

PEDESTRIAN CROSSWALK COUNT

Date 5/17/2007

Start Time 7:30, 16:30

End Time 8:30, 17:30

Intersectior 6th Street/Oak Street

AM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	11	17	12	10

PM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	13	15	13	15

Intersectior 6th Street/Jackson Street

AM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	17	18	16	N/A

PM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	20	16	14	N/A

Intersectior 7th Street/Webster Street

AM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	42	31	26	13

PM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	86	52	43	41

Intersectior 11th Street/Alice Street

AM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	115	N/A	135	57

PM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	61	N/A	71	42

PEDESTRIAN CROSSWALK COUNT

Date 5/17/2007

Start Time 7:30, 16:30

End Time 8:30, 17:30

Intersection 12th Street/Alice Street

AM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	93	101	75	74

PM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	83	74	64	61

Intersection 13th Street/Alice Street

AM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	91	93	73	71

PM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	85	78	65	67

Intersection 14th Street/Harrison Street

AM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	131	121	94	85

PM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	128	135	81	93

PEDESTRIAN CROSSWALK COUNT

Date 5/17/2007

Start Time 7:30, 16:30

End Time 8:30, 17:30

Intersectior 11th Street/Bush Street

AM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	5	N/A	N/A	21

PM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	7	N/A	N/A	25

Intersectior 12th Street/Harrison

AM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	73	86	51	43

PM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	78	93	79	56

Intersectior 12th Street/Castro Street

AM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	N/A	7	17	N/A

PM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	N/A	8	25	N/A

Intersectior 13th Street/Harrison Street

AM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	73	69	83	67

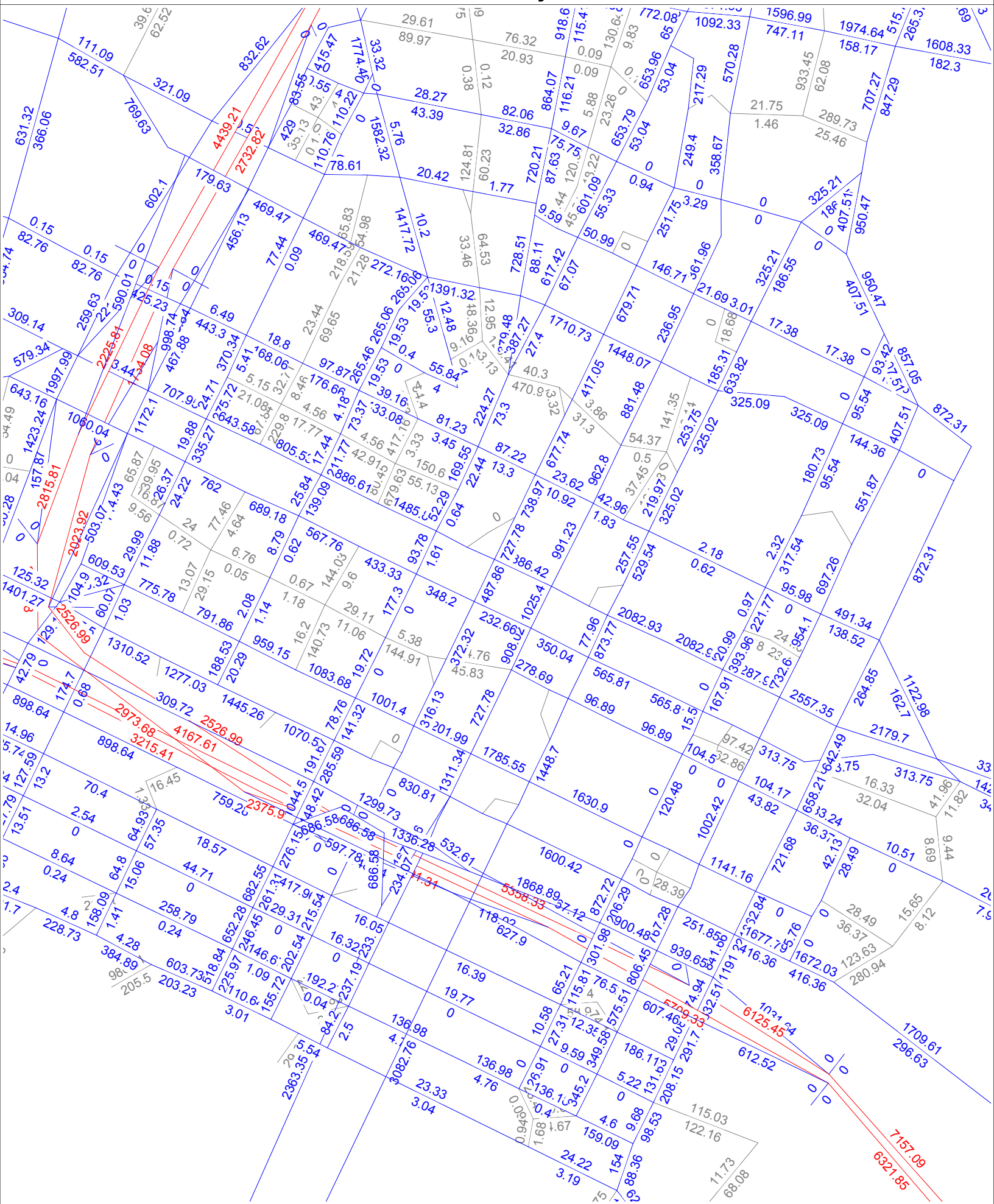
PM Peak

	NORTH	SOUTH	EAST	WEST
Peak Hour	63	81	107	73

APPENDIX E-3

ALAMEDA COUNTY CMA FORECASTING MODEL

2015 Alameda County CMA Model



Traffic Volume - AM Peak 1 Hour

viper

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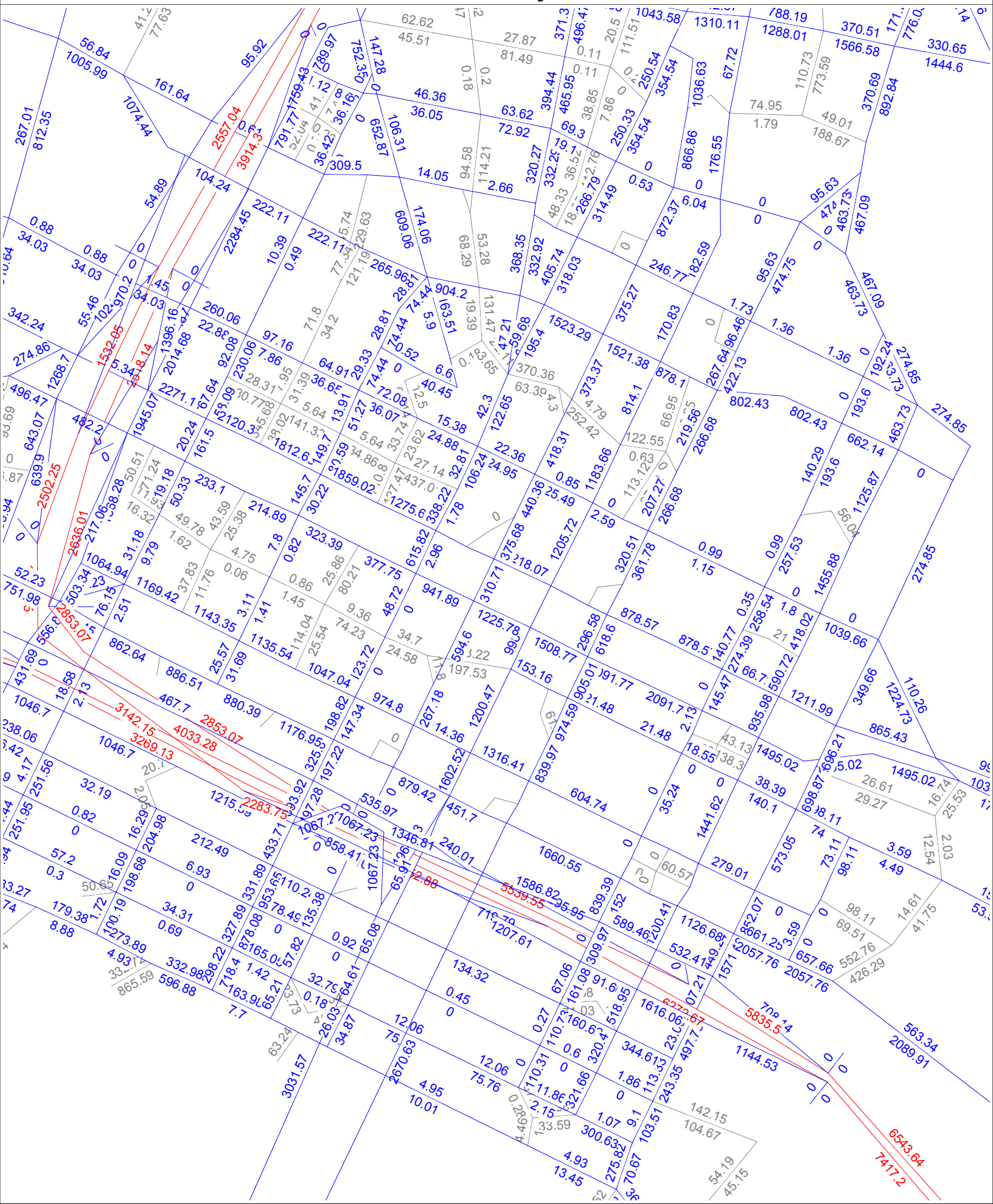
2015 Alameda County CMA Model



Traffic Volume - PM Peak 1 Hour

viper

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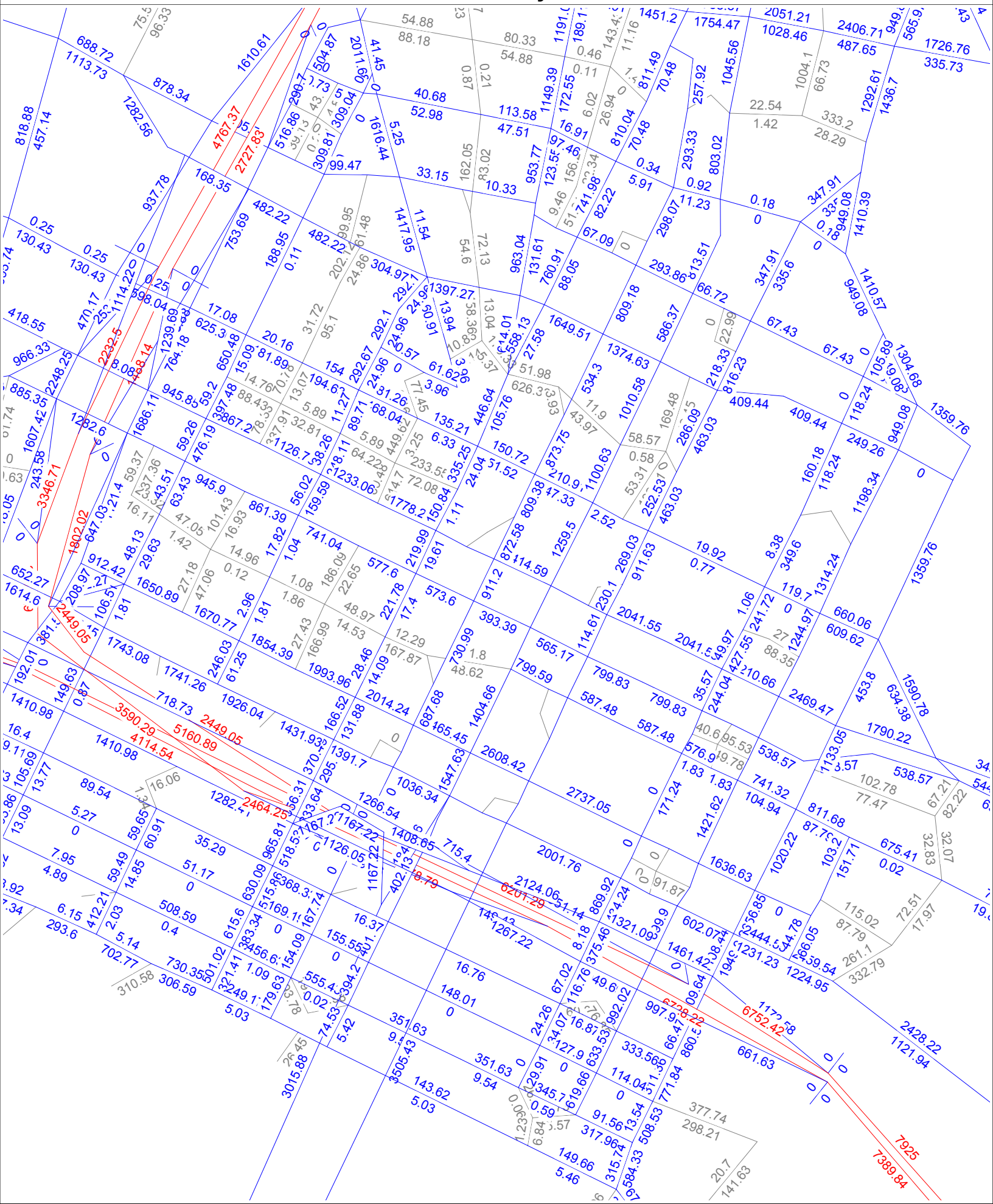
2030 Alameda County CMA Model



Traffic Volume - AM Peak 1 Hour

viper

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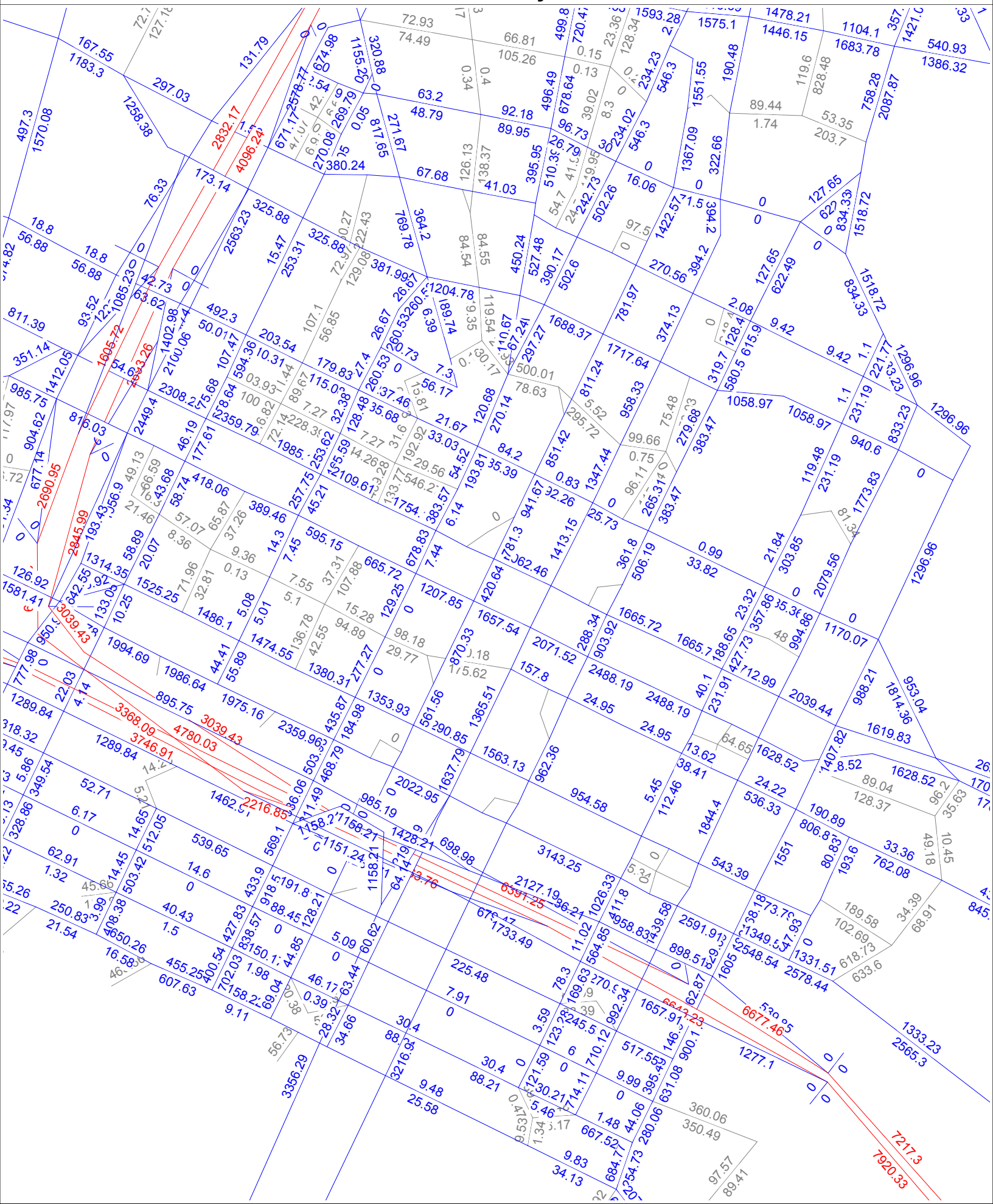
2030 Alameda County CMA Model



Traffic Volume - PM Peak 1 Hour

viper

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APPENDIX E-4

LEVEL OF SERVICE CALCULATIONS

Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	303	551	152	0	0	0	0	230	68	3	117	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.97						0.97			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4837						2026			1625	
Flt Permitted		0.99						1.00			0.98	
Satd. Flow (perm)		2000						2026			1597	
Peak-hour factor, PHF	0.95	0.89	0.81	1.00	1.00	1.00	0.81	0.82	0.74	0.38	0.77	0.92
Adj. Flow (vph)	319	619	188	0	0	0	0	280	92	8	152	0
RTOR Reduction (vph)	0	67	0	0	0	0	0	26	0	0	0	0
Lane Group Flow (vph)	0	1059	0	0	0	0	0	346	0	0	160	0
Confl. Peds. (#/hr)	9		17				7		15	15		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)									5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		1000						698			550	
v/s Ratio Prot								c0.17				
v/s Ratio Perm		c0.53									0.10	
v/c Ratio		1.06						0.50			0.29	
Uniform Delay, d1		11.2						11.7			10.7	
Progression Factor		1.00						1.00			1.47	
Incremental Delay, d2		45.4						2.5			1.3	
Delay (s)		56.7						14.2			17.1	
Level of Service		E						B			B	
Approach Delay (s)		56.7			0.0			14.2			17.1	
Approach LOS		E			A			B			B	

Intersection Summary				
HCM Average Control Delay	43.3	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	43.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	309	372	310	0	0	0	0	209	21	46	107	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.98						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.95						0.99			1.00	
Flt Protected		0.98						1.00			0.99	
Satd. Flow (prot)		4677						1834			1603	
Flt Permitted		0.98						1.00			0.86	
Satd. Flow (perm)		4677						1834			1402	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.82	0.82	0.82	0.83	0.83	0.83
Adj. Flow (vph)	322	388	323	0	0	0	0	255	26	55	129	0
RTOR Reduction (vph)	0	182	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	851	0	0	0	0	0	273	0	0	184	0
Confl. Peds. (#/hr)	8		11	11		8	7		9	9		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			5						5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1299						958			732	
v/s Ratio Prot								c0.15				
v/s Ratio Perm		0.18									0.13	
v/c Ratio		0.66						0.28			0.25	
Uniform Delay, d1		14.3						6.0			5.9	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.6						0.7			0.8	
Delay (s)		16.9						6.8			6.7	
Level of Service		B						A			A	
Approach Delay (s)		16.9			0.0			6.8			6.7	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM Average Control Delay	13.8	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	74.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	31	123	429	120	48	737
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.82		1.00		0.98	0.98
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.90	0.85
Flt Protected	1.00		0.99		0.98	1.00
Satd. Flow (prot)	1314		3239		3126	1406
Flt Permitted	1.00		0.99		0.98	1.00
Satd. Flow (perm)	1314		3239		3126	1406
Peak-hour factor, PHF	0.92	0.75	0.96	0.77	0.86	0.89
Adj. Flow (vph)	34	164	447	156	56	828
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	34	0	611	0	626	414
Confl. Peds. (#/hr)	51	10		17		11
Confl. Bikes (#/hr)	2					8
Parking (#/hr)			8			
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	117		1173		1542	694
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.19		0.20	c0.29
v/c Ratio	0.29		0.52		0.41	0.60
Uniform Delay, d1	19.2		11.3		7.2	8.2
Progression Factor	1.00		0.75		1.00	1.00
Incremental Delay, d2	6.2		1.0		0.8	3.8
Delay (s)	25.4		9.5		8.0	11.9
Level of Service	C		A		A	B
Approach Delay (s)			9.5		9.6	
Approach LOS			A		A	

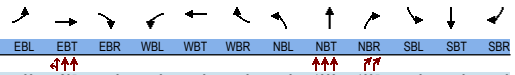
Intersection Summary				
HCM Average Control Delay	9.9	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	62.9%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	296	45	192	240	0	0	142	1510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.98
Flpb, ped/bikes				0.96	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.65
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1704	1863	1478		1806			1748	1133
Flt Permitted				0.95	1.00	1.00		0.70			1.00	1.00
Satd. Flow (perm)				1704	1863	1478		1293			1748	1133
Peak-hour factor, PHF	0.92	0.92	0.92	0.71	0.96	0.87	0.84	0.87	0.96	0.95	0.81	0.95
Adj. Flow (vph)	0	0	0	28	308	52	229	276	0	0	175	1589
RTOR Reduction (vph)	0	0	0	0	0	39	0	0	0	0	72	72
Lane Group Flow (vph)	0	0	0	28	308	13	0	505	0	0	818	802
Confl. Peds. (#/hr)				18		17			16	16		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								5				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	34.5
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.58
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				412	450	357		743			1005	651
v/s Ratio Prot					c0.17						0.47	
v/s Ratio Perm				0.02		0.01		0.39				c0.71
v/c Ratio				0.07	0.68	0.04		0.68			0.81	1.23
Uniform Delay, d1				17.5	20.7	17.4		8.9			10.2	12.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.3	8.2	0.2		5.0			7.2	117.3
Delay (s)				17.9	28.9	17.6		13.9			17.4	130.0
Level of Service				B	C	B		B			B	F
Approach Delay (s)		0.0			26.6			13.9			73.2	
Approach LOS		A			C			B			E	

Intersection Summary				
HCM Average Control Delay	55.1	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.07			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	120.4%	ICU Level of Service	H	
Analysis Period (min)	15			

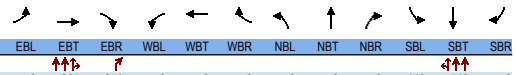
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	295	0	0	0	0	0	1083	1895	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	9.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.96			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4986						5085	2677			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4986						5085	1750			
Peak-hour factor, PHF	0.72	0.72	1.00	0.92	0.92	0.92	0.95	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	88	410	0	0	0	0	0	1128	1974	0	0	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	489	0	0	0	0	0	1128	1974	0	0	0
Confl. Peds. (#/hr)	25		11				27		13			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		27.0						23.0	60.0			
Effective Green, g (s)		27.0						23.0	60.0			
Actuated g/C Ratio		0.45						0.38	1.00			
Clearance Time (s)		5.0						5.0	25.0			
Lane Grp Cap (vph)		2244						1949	1750			
v/s Ratio Prot								0.22				
v/s Ratio Perm		0.10							c1.13			
v/c Ratio		0.22						0.58	1.13			
Uniform Delay, d1		10.1						14.7	30.0			
Progression Factor		1.34						1.00	1.00			
Incremental Delay, d2		0.2						1.3	65.6			
Delay (s)		13.7						15.9	95.6			
Level of Service		B						B	F			
Approach Delay (s)		13.7			0.0			66.6			0.0	
Approach LOS		B			A			E			A	

Intersection Summary				
HCM Average Control Delay	59.3	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.13			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	101.8%	ICU Level of Service	G	
Analysis Period (min)	15			

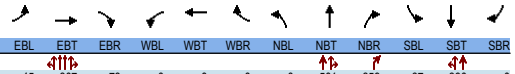
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	365	354	0	0	0	0	0	0	140	542	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.99	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		0.95	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4329	1150								4084	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4329	1150								4084	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	376	365	0	0	0	0	0	0	149	577	0
RTOR Reduction (vph)	0	80	80	0	0	0	0	0	0	0	76	0
Lane Group Flow (vph)	0	479	102	0	0	0	0	0	0	0	650	0
Confl. Peds. (#/hr)	42		31							26		13
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		28.0	28.0								24.0	
Effective Green, g (s)		28.0	28.0								24.0	
Actuated g/C Ratio		0.47	0.47								0.40	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		2020	537								1634	
v/s Ratio Prot		c0.11										
v/s Ratio Perm			0.09								0.16	
v/c Ratio		0.24	0.19								0.40	
Uniform Delay, d1		9.6	9.4								12.8	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.3	0.8								0.7	
Delay (s)		9.9	10.1								13.6	
Level of Service		A	B								B	
Approach Delay (s)		9.9			0.0				0.0		13.6	
Approach LOS		A			A				A		B	

Intersection Summary				
HCM Average Control Delay	11.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.31			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	307	78	0	0	0	0	501	359	67	390	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.99	0.91		1.00	
Flpb, ped/bikes		0.99						1.00	1.00		1.00	
Frt		0.97						0.98	0.85		1.00	
Flt Protected		0.99						1.00	1.00		0.99	
Satd. Flow (prot)		5495						2877	1184		3089	
Flt Permitted		0.99						1.00	1.00		0.78	
Satd. Flow (perm)		5495						2877	1184		2431	
Peak-hour factor, PHF	0.79	0.79	0.79	1.00	1.00	1.00	1.00	0.92	0.92	0.96	0.96	1.00
Adj. Flow (vph)	57	389	99	0	0	0	0	545	390	70	406	0
RTOR Reduction (vph)	0	49	0	0	0	0	0	18	114	0	0	0
Lane Group Flow (vph)	0	496	0	0	0	0	0	632	171	0	476	0
Confl. Peds. (#/hr)	28		34				43		26	26		43
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	5		5									5
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2111						1456	599		1230	
v/s Ratio Prot								c0.22				
v/s Ratio Perm		0.09							0.14		0.20	
v/c Ratio		0.24						0.43	0.29		0.39	
Uniform Delay, d1		17.1						12.8	11.7		12.4	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		0.3						0.9	1.2		0.9	
Delay (s)		17.4						13.8	12.9		13.4	
Level of Service		B						B	B		B	
Approach Delay (s)		17.4			0.0			13.5			13.4	
Approach LOS		B			A			B			B	

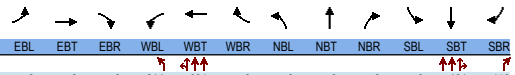
Intersection Summary				
HCM Average Control Delay	14.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	63.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	491	119	369	767	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	1.00				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5258		1329	4110				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5258		1329	4110				
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	546	132	388	807	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	72	0	35	23	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	606	0	256	881	0	0	0	0
Confl. Peds. (#/hr)				42		52	53		38			
Confl. Bikes (#/hr)						8						
Bus Blockages (#/hr)	0	0	0	0	18	0	0	0	0	0	0	0
Parking (#/hr)					5			5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					19.0		32.5	32.5				
Effective Green, g (s)					19.0		32.5	32.5				
Actuated g/C Ratio					0.32		0.54	0.54				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					1665		720	2226				
v/s Ratio Prot					c0.12							
v/s Ratio Perm							0.19	0.21				
v/c Ratio					0.36		0.36	0.40				
Uniform Delay, d1					15.8		7.8	8.0				
Progression Factor					1.00		3.31	2.79				
Incremental Delay, d2					0.6		1.2	0.4				
Delay (s)					16.4		26.9	22.8				
Level of Service					B		C	C				
Approach Delay (s)		0.0			16.4			23.8			0.0	
Approach LOS		A			B			C			A	

Intersection Summary				
HCM Average Control Delay	21.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

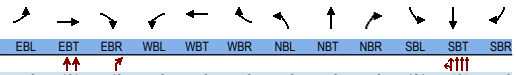
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	214	631	0	0	0	0	0	461	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						0.99	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4138						2350	1054
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4138						2350	1054
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	235	693	0	0	0	0	0	507	168
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	211	717	0	0	0	0	0	525	150
Confl. Bikes (#/hr)												8
Parking (#/hr)				5	5							5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1241						757	340
v/s Ratio Prot											c0.22	
v/s Ratio Perm				c0.18	0.17							0.14
v/c Ratio				0.59	0.58						0.69	0.44
Uniform Delay, d1				26.8	26.7						26.6	24.1
Progression Factor				1.00	1.00						0.28	0.21
Incremental Delay, d2				6.9	2.0						4.4	3.5
Delay (s)				33.7	28.6						12.0	8.5
Level of Service				C	C						B	A
Approach Delay (s)		0.0			29.8			0.0			11.2	
Approach LOS		A			C			A			B	

Intersection Summary					
HCM Average Control Delay	22.0	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.64				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service		A	
Analysis Period (min)	15				

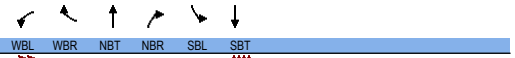
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	101	42	0	0	0	0	0	0	124	565	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1425	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frpb, ped/bikes		1.00	0.91								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1136								4100	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1136								4100	
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	122	51	0	0	0	0	0	0	141	642	0
RTOR Reduction (vph)	0	0	36	0	0	0	0	0	0	0	44	0
Lane Group Flow (vph)	0	122	15	0	0	0	0	0	0	0	739	0
Confl. Peds. (#/hr)	67		73							76		52
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	341								1321	
v/s Ratio Prot		c0.04										
v/s Ratio Perm			0.01								0.18	
v/c Ratio		0.14	0.04								0.56	
Uniform Delay, d1		23.0	22.4								25.2	
Progression Factor		1.00	1.00								1.04	
Incremental Delay, d2		0.3	0.2								1.7	
Delay (s)		23.3	22.6								28.0	
Level of Service		C	C								C	
Approach Delay (s)		23.1			0.0			0.0			28.0	
Approach LOS		C			A			A			C	

Intersection Summary					
HCM Average Control Delay	27.1	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.36				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	34.9%	ICU Level of Service		A	
Analysis Period (min)	15				

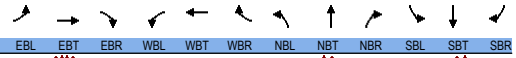
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	265	0	0	0	0	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2897					5587
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2897					5587
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.83	0.83
Adj. Flow (vph)	294	0	0	0	0	435
RTOR Reduction (vph)	189	0	0	0	0	0
Lane Group Flow (vph)	105	0	0	0	0	435
Confl. Peds. (#/hr)	57				63	
Parking (#/hr)	5					5
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1030					2856
v/s Ratio Prot	c0.04					c0.08
v/s Ratio Perm						
v/c Ratio	0.10					0.15
Uniform Delay, d1	9.7					5.8
Progression Factor	1.00					1.00
Incremental Delay, d2	0.2					0.1
Delay (s)	9.9					5.9
Level of Service	A					A
Approach Delay (s)	9.9		0.0			5.9
Approach LOS	A		A			A

Intersection Summary					
HCM Average Control Delay	7.5	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.13				
Actuated Cycle Length (s)	45.0	Sum of lost time (s)		6.0	
Intersection Capacity Utilization	20.9%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	316	26	0	0	0	0	745	139	12	55	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.98			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.99						1.00			0.99	
Satd. Flow (prot)		6094						3401			3280	
Flt Permitted		0.99						1.00			0.84	
Satd. Flow (perm)		6094						3401			2784	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	53	336	28	0	0	0	0	810	151	15	69	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	26	0	0	0	0
Lane Group Flow (vph)	0	403	0	0	0	0	0	935	0	0	84	0
Confl. Peds. (#/hr)	63		91				56		87	87		56
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5		5						5		5	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3149						1219			998	
v/s Ratio Prot								c0.28				
v/s Ratio Perm		0.07									0.03	
v/c Ratio		0.13						0.77			0.08	
Uniform Delay, d1		7.5						17.0			12.7	
Progression Factor		1.00						1.00			1.32	
Incremental Delay, d2		0.1						4.7			0.2	
Delay (s)		7.6						21.7			17.0	
Level of Service		A						C			B	
Approach Delay (s)		7.6			0.0			21.7			17.0	
Approach LOS		A			A			C			B	

Intersection Summary					
HCM Average Control Delay	17.4	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.39				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		7.5	
Intersection Capacity Utilization	45.9%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	51	695	53	169	595	0	0	35	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.98	
Flpb, ped/bikes					0.99			0.99			1.00	
Frt					0.99			1.00			0.93	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					6119			3255			3216	
Flt Permitted					1.00			0.85			1.00	
Satd. Flow (perm)					6119			2800			3216	
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.86	0.86	0.86	0.62	0.62	0.62
Adj. Flow (vph)	0	0	0	53	724	55	197	692	0	0	56	47
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	0	0	30	0
Lane Group Flow (vph)	0	0	0	0	814	0	0	889	0	0	73	0
Confl. Peds. (#/hr)				86		73	43		51	51		43
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				5		5		5				5
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3212			1003			1152	
v/s Ratio Prot											0.02	
v/s Ratio Perm					0.13			c0.32				
v/c Ratio					0.25			0.89			0.06	
Uniform Delay, d1					7.8			18.1			12.6	
Progression Factor					1.00			1.30			1.00	
Incremental Delay, d2					0.2			8.3			0.1	
Delay (s)					8.0			31.8			12.7	
Level of Service					A			C			B	
Approach Delay (s)		0.0			8.0			31.8			12.7	
Approach LOS		A			A			C			B	

Intersection Summary				
HCM Average Control Delay	19.9	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	45.5%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: 5th St & Oak St

Existing PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	476	69	0	0	0	0	446	62	1	58	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.98						0.98			1.00	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		4867						2066			1579	
Flt Permitted		0.98						1.00			0.71	
Satd. Flow (perm)		1100						2066			1118	
Peak-hour factor, PHF	0.86	0.93	0.72	1.00	1.00	1.00	0.84	0.75	0.70	0.25	0.76	0.70
Adj. Flow (vph)	283	512	96	0	0	0	0	595	89	4	76	0
RTOR Reduction (vph)	0	34	0	0	0	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	858	0	0	0	0	0	672	0	0	80	0
Confl. Peds. (#/hr)	22		23				16		14	14		16
Confl. Bikes (#/hr)									8			
Parking (#/hr)									10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		550						712			385	
v/s Ratio Prot								c0.33				
v/s Ratio Perm		c0.78									0.07	
v/c Ratio		1.56						0.94			0.21	
Uniform Delay, d1		11.2						14.3			10.4	
Progression Factor		1.00						1.00			0.50	
Incremental Delay, d2		260.4						22.5			1.2	
Delay (s)		271.7						36.9			6.4	
Level of Service		F						D			A	
Approach Delay (s)		271.7			0.0			36.9			6.4	
Approach LOS		F			A			D			A	

Intersection Summary				
HCM Average Control Delay	161.8	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.31			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	49.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: 5th St & Jackson St

Existing PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	292	300	261	0	0	0	0	351	34	166	68	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.98						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.95						0.99			1.00	
Flt Protected		0.98						1.00			0.97	
Satd. Flow (prot)		4657						1835			1523	
Flt Permitted		0.98						1.00			0.52	
Satd. Flow (perm)		4657						1835			815	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.84	0.84	0.84	0.90	0.90	0.90
Adj. Flow (vph)	304	312	272	0	0	0	0	418	40	184	76	0
RTOR Reduction (vph)	0	177	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	711	0	0	0	0	0	450	0	0	260	0
Confl. Peds. (#/hr)	12		13	13		12	11		12	12		11
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			10						10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1294						958			426	
v/s Ratio Prot								0.25				
v/s Ratio Perm		0.15									c0.32	
v/c Ratio		0.55						0.47			0.61	
Uniform Delay, d1		13.9						6.8			7.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		1.7						1.7			6.4	
Delay (s)		15.5						8.5			13.9	
Level of Service		B						A			B	
Approach Delay (s)		15.5			0.0			8.5			13.9	
Approach LOS		B			A			A			B	

Intersection Summary				
HCM Average Control Delay	13.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	74.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: 6th St & Oak St

Existing PM
325 7th St Project

Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	38	154	524	55	47	608
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.93		1.00		0.98	0.97
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.90	0.85
Flt Protected	1.00		0.99		0.98	1.00
Satd. Flow (prot)	1493		3490		3116	1404
Flt Permitted	1.00		0.99		0.98	1.00
Satd. Flow (perm)	1493		3490		3116	1404
Peak-hour factor, PHF	0.73	0.90	0.86	0.60	0.84	0.94
Adj. Flow (vph)	52	171	609	92	56	647
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	52	0	780	0	472	323
Confl. Peds. (#/hr)	13	15		15		13
Confl. Bikes (#/hr)	8					8
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	133		1264		1537	693
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.22		0.15	c0.23
v/c Ratio	0.39		0.62		0.31	0.47
Uniform Delay, d1	19.4		11.8		6.8	7.5
Progression Factor	1.00		0.70		1.00	1.00
Incremental Delay, d2	8.4		0.2		0.5	2.2
Delay (s)	27.8		8.4		7.3	9.7
Level of Service	C		A		A	A
Approach Delay (s)			8.4		8.3	
Approach LOS			A		A	

Intersection Summary				
HCM Average Control Delay	9.0	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	59.0%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

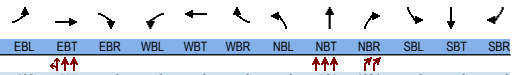
HCM Signalized Intersection Capacity Analysis
4: I-880 NB Onramp & Jackson St

Existing PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	6	308	47	293	294	0	0	180	1360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.98
Flpb, ped/bikes				0.97	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.60
Flt Protected				0.95	1.00	1.00		0.97			1.00	1.00
Satd. Flow (prot)				1711	1863	1469		1749			1749	1046
Flt Permitted				0.95	1.00	1.00		0.70			1.00	1.00
Satd. Flow (perm)				1711	1863	1469		1256			1749	1046
Peak-hour factor, PHF	0.92	0.92	0.92	0.50	0.78	0.84	0.84	0.90	0.96	0.95	0.92	0.98
Adj. Flow (vph)	0	0	0	12	395	56	349	327	0	0	196	1388
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	43	43
Lane Group Flow (vph)	0	0	0	12	395	14	0	676	0	0	765	735
Confl. Peds. (#/hr)				16		20			14	14		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								10				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	34.5
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.58
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				413	450	355		722			1006	601
v/s Ratio Prot					c0.21						0.44	
v/s Ratio Perm				0.01		0.01		0.54				c0.70
v/c Ratio				0.03	0.88	0.04		0.94			0.76	1.22
Uniform Delay, d1				17.4	21.9	17.4		11.7			9.6	12.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.1	20.8	0.2		21.1			5.4	114.4
Delay (s)				17.5	42.7	17.6		32.8			15.0	127.1
Level of Service				B	D	B		C			B	F
Approach Delay (s)		0.0			39.0			32.8			70.0	
Approach LOS		A			D			C			E	

Intersection Summary				
HCM Average Control Delay	55.5	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.12			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	117.8%	ICU Level of Service	H	
Analysis Period (min)	15			

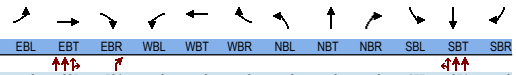
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	555	0	0	0	0	0	721	1624	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	16.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.94			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4981						5085	2607			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4981						5085	1600			
Peak-hour factor, PHF	0.91	0.91	1.00	0.92	0.92	0.92	0.93	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	116	610	0	0	0	0	0	767	1728	0	0	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	720	0	0	0	0	0	767	1728	0	0	0
Confl. Peds. (#/hr)	56		32				41		26			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		34.0						16.0	60.0			
Effective Green, g (s)		34.0						16.0	60.0			
Actuated g/C Ratio		0.57						0.27	1.00			
Clearance Time (s)		5.0						5.0	26.0			
Lane Grp Cap (vph)		2823						1356	1600			
v/s Ratio Prot								0.15				
v/s Ratio Perm		0.14							c1.08			
v/c Ratio		0.26						0.57	1.08			
Uniform Delay, d1		6.6						19.0	30.0			
Progression Factor		1.04						1.00	1.00			
Incremental Delay, d2		0.2						1.7	47.5			
Delay (s)		7.0						20.7	77.5			
Level of Service		A						C	E			
Approach Delay (s)		7.0			0.0			60.0			0.0	
Approach LOS		A			A			E			A	

Intersection Summary				
HCM Average Control Delay	48.1	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.08			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	105.1%	ICU Level of Service	G	
Analysis Period (min)	15			

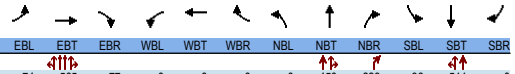
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	695	534	0	0	0	0	0	0	157	871	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.99	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		0.96	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4333	1107								4051	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4333	1107								4051	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	0	716	551	0	0	0	0	0	0	164	907	0
RTOR Reduction (vph)	0	9	9	0	0	0	0	0	0	0	43	0
Lane Group Flow (vph)	0	966	283	0	0	0	0	0	0	0	1028	0
Confl. Peds. (#/hr)	86		52							43		41
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		32.0	32.0								20.0	
Effective Green, g (s)		32.0	32.0								20.0	
Actuated g/C Ratio		0.53	0.53								0.33	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		2311	590								1350	
v/s Ratio Prot		0.22										
v/s Ratio Perm			c0.26								0.25	
v/c Ratio		0.42	0.48								0.76	
Uniform Delay, d1		8.4	8.8								17.9	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.6	2.8								4.1	
Delay (s)		9.0	11.6								22.0	
Level of Service		A	B								C	
Approach Delay (s)		9.6			0.0			0.0			22.0	
Approach LOS		A			A			A			C	

Intersection Summary				
HCM Average Control Delay	15.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	56.9%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	565	77	0	0	0	0	450	228	96	511	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.99	0.87		1.00	
Flpb, ped/bikes		0.99						1.00	1.00		0.99	
Frt		0.98						0.99	0.85		1.00	
Flt Protected		0.99						1.00	1.00		0.99	
Satd. Flow (prot)		5569						2946	1126		3073	
Flt Permitted		0.99						1.00	1.00		0.77	
Satd. Flow (perm)		5569						2946	1126		2399	
Peak-hour factor, PHF	0.94	0.94	0.94	1.00	1.00	1.00	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	79	601	82	0	0	0	0	489	248	107	568	0
RTOR Reduction (vph)	0	26	0	0	0	0	0	4	53	0	0	0
Lane Group Flow (vph)	0	736	0	0	0	0	0	512	168	0	675	0
Confl. Peds. (#/hr)	37		36				52		45	45		52
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	10		10									10
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2139						1491	570		1214	
v/s Ratio Prot								0.17				
v/s Ratio Perm		0.13							0.15		c0.28	
v/c Ratio		0.34						0.34	0.30		0.56	
Uniform Delay, d1		17.9						12.1	11.8		13.9	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		0.4						0.6	1.3		1.8	
Delay (s)		18.4						12.7	13.1		15.8	
Level of Service		B						B	B		B	
Approach Delay (s)		18.4			0.0			12.8			15.8	
Approach LOS		B			A			B			B	

Intersection Summary				
HCM Average Control Delay	15.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	65.0%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

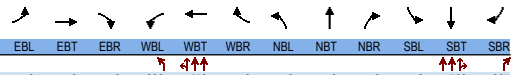
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	418	99	310	642	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	1.00				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5236		1324	4071				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5236		1324	4071				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	454	108	323	669	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	67	0	85	24	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	495	0	154	729	0	0	0	0
Confl. Peds. (#/hr)				52		67	53		46			
Confl. Bikes (#/hr)						8						
Bus Blockages (#/hr)	0	0	0	0	16	0	0	0	0	0	0	0
Parking (#/hr)					10			10				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					23.0		28.5	28.5				
Effective Green, g (s)					23.0		28.5	28.5				
Actuated g/C Ratio					0.38		0.48	0.48				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					2007		629	1934				
v/s Ratio Prot					c0.09							
v/s Ratio Perm							0.12	0.18				
v/c Ratio					0.25		0.25	0.38				
Uniform Delay, d1					12.6		9.4	10.1				
Progression Factor					1.00		4.64	2.52				
Incremental Delay, d2					0.3		0.8	0.5				
Delay (s)					12.9		44.2	25.9				
Level of Service					B		D	C				
Approach Delay (s)	0.0				12.9			30.3			0.0	
Approach LOS	A				B			C			A	

Intersection Summary				
HCM Average Control Delay	24.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.32			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
9: 8th St & Webster St

Existing PM
325 7th St Project

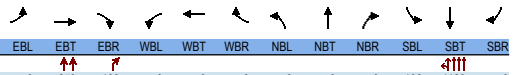


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	280	450	0	0	0	0	0	769	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						0.98	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1164	4071						2197	1084
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1164	4071						2197	1084
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	311	500	0	0	0	0	0	827	395
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	196	615	0	0	0	0	0	949	273
Confl. Bikes (#/hr)												8
Parking (#/hr)				10	10						10	0
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				349	1221						708	349
v/s Ratio Prot											c0.43	
v/s Ratio Perm				c0.17	0.15							0.25
v/c Ratio				0.56	0.50						1.34	0.78
Uniform Delay, d1				26.5	26.0						30.5	27.6
Progression Factor				1.00	1.00						0.22	0.16
Incremental Delay, d2				6.4	1.5						157.3	7.3
Delay (s)				32.9	27.5						163.9	11.7
Level of Service				C	C						F	B
Approach Delay (s)		0.0			28.8			0.0			129.9	
Approach LOS		A			C			A			F	

Intersection Summary					
HCM Average Control Delay	89.6	HCM Level of Service		F	
HCM Volume to Capacity ratio	0.96				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

HCM Signalized Intersection Capacity Analysis
10: 9th St & Webster St

Existing PM
325 7th St Project

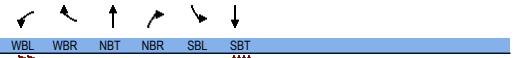


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	259	106	0	0	0	0	0	0	192	1123	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								*0.75	
Frpb, ped/bikes		1.00	0.88								1.00	
Flpb, ped/bikes		1.00	1.00								0.98	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2946	1071								4715	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2946	1071								4715	
Peak-hour factor, PHF	1.00	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.94
Adj. Flow (vph)	0	308	126	0	0	0	0	0	0	216	1262	0
RTOR Reduction (vph)	0	0	88	0	0	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	308	38	0	0	0	0	0	0	0	1447	0
Confl. Peds. (#/hr)	110		101							139		91
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		884	321								1519	
v/s Ratio Prot		c0.10										
v/s Ratio Perm			0.04								0.31	
v/c Ratio		0.35	0.12								0.95	
Uniform Delay, d1		24.6	22.9								29.8	
Progression Factor		1.00	1.00								0.98	
Incremental Delay, d2		1.1	0.7								13.9	
Delay (s)		25.7	23.6								43.3	
Level of Service		C	C								D	
Approach Delay (s)		25.1			0.0			0.0			43.3	
Approach LOS		C			A			A			D	

Intersection Summary					
HCM Average Control Delay	39.1	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.66				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	41.3%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

HCM Signalized Intersection Capacity Analysis
11: 10th St & Webster St

Existing PM
325 7th St Project

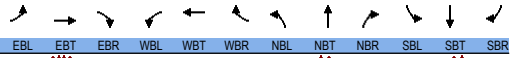


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	359	0	0	0	0	848
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2858					5551
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2858					5551
Peak-hour factor, PHF	0.89	0.89	0.92	0.92	0.94	0.94
Adj. Flow (vph)	403	0	0	0	0	902
RTOR Reduction (vph)	68	0	0	0	0	0
Lane Group Flow (vph)	335	0	0	0	0	902
Confl. Peds. (#/hr)	113				121	
Parking (#/hr)	10					10
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1016					2837
v/s Ratio Prot	c0.12					c0.16
v/s Ratio Perm						
v/c Ratio	0.33					0.32
Uniform Delay, d1	10.6					6.4
Progression Factor	1.00					1.00
Incremental Delay, d2	0.9					0.3
Delay (s)	11.5					6.7
Level of Service	B					A
Approach Delay (s)	11.5		0.0			6.7
Approach LOS	B		A			A

Intersection Summary					
HCM Average Control Delay	8.2	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.32				
Actuated Cycle Length (s)	45.0	Sum of lost time (s)		6.0	
Intersection Capacity Utilization	31.7%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

HCM Signalized Intersection Capacity Analysis
12: 11th St & Harrison St

Existing PM
325 7th St Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	666	24	0	0	0	0	495	215	39	79	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.96			1.00	
Flpb, ped/bikes		0.99						1.00			0.99	
Frt		1.00						0.95			1.00	
Flt Protected		0.99						1.00			0.98	
Satd. Flow (prot)		6160						3249			3184	
Flt Permitted		0.99						1.00			0.74	
Satd. Flow (perm)		6160						3249			2405	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	1.00	0.99	0.99	0.80	0.80	0.84
Adj. Flow (vph)	99	793	29	0	0	0	0	500	217	49	99	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	46	0	0	0	0
Lane Group Flow (vph)	0	914	0	0	0	0	0	671	0	0	148	0
Confl. Peds. (#/hr)	73		131				76		113	113		76
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10		10						10		10	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3183						1164			862	
v/s Ratio Prot								c0.21				
v/s Ratio Perm		0.15									0.06	
v/c Ratio		0.29						0.58			0.17	
Uniform Delay, d1		8.2						15.6			13.2	
Progression Factor		1.00						1.00			0.76	
Incremental Delay, d2		0.2						2.1			0.4	
Delay (s)		8.5						17.6			10.4	
Level of Service		A						B			B	
Approach Delay (s)		8.5			0.0			17.6			10.4	
Approach LOS		A			A			B			B	

Intersection Summary					
HCM Average Control Delay	12.3	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.41				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		7.5	
Intersection Capacity Utilization	52.9%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	37	647	108	137	421	0	0	74	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.98	
Flpb, ped/bikes					1.00			0.99			1.00	
Frt					0.98			1.00			0.95	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					6022			3199			3281	
Flt Permitted					1.00			0.82			1.00	
Satd. Flow (perm)					6022			2662			3281	
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.91	0.91	0.91	0.86	0.63	0.63
Adj. Flow (vph)	0	0	0	43	752	126	151	463	0	0	117	59
RTOR Reduction (vph)	0	0	0	0	48	0	0	0	0	0	38	0
Lane Group Flow (vph)	0	0	0	0	874	0	0	614	0	0	138	0
Confl. Peds. (#/hr)				93		78	56		79	79		56
Confl. Bikes (#/hr)						8						8
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				10		10		10				10
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3162			954			1176	
v/s Ratio Prot											0.04	
v/s Ratio Perm					0.15			c0.23				
v/c Ratio					0.28			0.64			0.12	
Uniform Delay, d1					7.9			16.1			12.9	
Progression Factor					1.00			1.90			1.00	
Incremental Delay, d2					0.2			2.9			0.2	
Delay (s)					8.1			33.5			13.1	
Level of Service					A			C			B	
Approach Delay (s)		0.0			8.1			33.5			13.1	
Approach LOS		A			A			C			B	

Intersection Summary				
HCM Average Control Delay	17.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	39.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Existing plus Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	304	577	152	0	0	0	0	231	68	3	117	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.97			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4843						2026			1625	
Flt Permitted		0.99						1.00			0.98	
Satd. Flow (perm)		2000						2026			1597	
Peak-hour factor, PHF	0.95	0.89	0.81	1.00	1.00	1.00	0.81	0.82	0.74	0.38	0.77	0.92
Adj. Flow (vph)	320	648	188	0	0	0	0	282	92	8	152	0
RTOR Reduction (vph)	0	64	0	0	0	0	0	26	0	0	0	0
Lane Group Flow (vph)	0	1092	0	0	0	0	0	348	0	0	160	0
Confl. Peds. (#/hr)	9		17				7		15	15		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)									5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		1000						698			550	
v/s Ratio Prot								c0.17				
v/s Ratio Perm		c0.55									0.10	
v/c Ratio		1.09						0.50			0.29	
Uniform Delay, d1		11.2						11.7			10.7	
Progression Factor		1.00						1.00			1.47	
Incremental Delay, d2		56.9						2.5			1.2	
Delay (s)		68.2						14.2			17.0	
Level of Service		E						B			B	
Approach Delay (s)		68.2			0.0			14.2			17.0	
Approach LOS		E			A			B			B	

Intersection Summary				
HCM Average Control Delay	51.4	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	44.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	329	384	310	0	0	0	0	209	21	46	107	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.98						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.95						0.99			1.00	
Flt Protected		0.98						1.00			0.99	
Satd. Flow (prot)		4683						1834			1603	
Flt Permitted		0.98						1.00			0.86	
Satd. Flow (perm)		4683						1834			1402	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.82	0.82	0.82	0.83	0.83	0.83
Adj. Flow (vph)	343	400	323	0	0	0	0	255	26	55	129	0
RTOR Reduction (vph)	0	175	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	891	0	0	0	0	0	273	0	0	184	0
Confl. Peds. (#/hr)	8		11	11		8	7		9	9		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			5						5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1301						958			732	
v/s Ratio Prot								c0.15				
v/s Ratio Perm		0.19									0.13	
v/c Ratio		0.69						0.28			0.25	
Uniform Delay, d1		14.5						6.0			5.9	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.9						0.7			0.8	
Delay (s)		17.4						6.8			6.7	
Level of Service		B						A			A	
Approach Delay (s)		17.4			0.0			6.8			6.7	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM Average Control Delay	14.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	75.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	31	123	431	120	48	743
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.82		1.00		0.98	0.98
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.90	0.85
Flt Protected	1.00		0.99		0.98	1.00
Satd. Flow (prot)	1314		3240		3126	1406
Flt Permitted	1.00		0.99		0.98	1.00
Satd. Flow (perm)	1314		3240		3126	1406
Peak-hour factor, PHF	0.92	0.75	0.96	0.77	0.86	0.89
Adj. Flow (vph)	34	164	449	156	56	835
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	34	0	613	0	630	417
Confl. Peds. (#/hr)	51	10		17		11
Confl. Bikes (#/hr)	2					8
Parking (#/hr)			8			
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	117		1174		1542	694
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.19		0.20	c0.30
v/c Ratio	0.29		0.52		0.41	0.60
Uniform Delay, d1	19.2		11.3		7.2	8.2
Progression Factor	1.00		0.75		1.00	1.00
Incremental Delay, d2	6.2		0.9		0.8	3.8
Delay (s)	25.4		9.4		8.0	12.0
Level of Service	C		A		A	B
Approach Delay (s)			9.4		9.6	
Approach LOS			A		A	

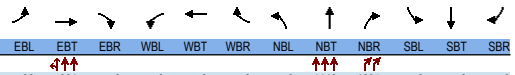
Intersection Summary				
HCM Average Control Delay	9.9	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	63.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	301	45	203	248	0	0	142	1522
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.98
Flpb, ped/bikes				0.96	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.65
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1704	1863	1478		1806			1748	1133
Flt Permitted				0.95	1.00	1.00		0.70			1.00	1.00
Satd. Flow (perm)				1704	1863	1478		1293			1748	1133
Peak-hour factor, PHF	0.92	0.92	0.92	0.71	0.96	0.87	0.84	0.87	0.96	0.95	0.81	0.95
Adj. Flow (vph)	0	0	0	28	314	52	242	285	0	0	175	1602
RTOR Reduction (vph)	0	0	0	0	0	39	0	0	0	0	70	70
Lane Group Flow (vph)	0	0	0	28	314	13	0	527	0	0	826	811
Confl. Peds. (#/hr)				18		17			16	16		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								5				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	34.5
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.58
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				412	450	357		743			1005	651
v/s Ratio Prot					c0.17						0.47	
v/s Ratio Perm				0.02		0.01		0.41				c0.72
v/c Ratio				0.07	0.70	0.04		0.71			0.82	1.25
Uniform Delay, d1				17.5	20.8	17.4		9.2			10.3	12.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.3	8.7	0.2		5.7			7.5	123.1
Delay (s)				17.9	29.4	17.6		14.8			17.8	135.9
Level of Service				B	C	B		B			B	F
Approach Delay (s)		0.0			27.0			14.8			76.3	
Approach LOS		A			C			B			E	

Intersection Summary				
HCM Average Control Delay	57.1	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.08			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	121.2%	ICU Level of Service	H	
Analysis Period (min)	15			

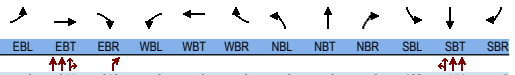
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	98	331	0	0	0	0	0	1110	1895	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	9.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.96			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4969						3765	2677			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4969						5085	1750			
Peak-hour factor, PHF	0.72	0.72	1.00	0.92	0.92	0.92	0.95	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	136	460	0	0	0	0	0	1156	1974	0	0	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	588	0	0	0	0	0	1156	1974	0	0	0
Confl. Peds. (#/hr)	25		11				27		13			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		27.0						23.0	60.0			
Effective Green, g (s)		27.0						23.0	60.0			
Actuated g/C Ratio		0.45						0.38	1.00			
Clearance Time (s)		5.0						5.0	25.0			
Lane Grp Cap (vph)		2236						1443	1750			
v/s Ratio Prot								0.31				
v/s Ratio Perm		0.12							c1.13			
v/c Ratio		0.26						0.80	1.13			
Uniform Delay, d1		10.3						16.5	30.0			
Progression Factor		1.31						1.00	1.00			
Incremental Delay, d2		0.3						4.8	65.6			
Delay (s)		13.7						21.2	95.6			
Level of Service		B						C	F			
Approach Delay (s)		13.7			0.0			68.1			0.0	
Approach LOS		B			A			E			A	

Intersection Summary				
HCM Average Control Delay	59.4	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.13			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	101.8%	ICU Level of Service	G	
Analysis Period (min)	15			

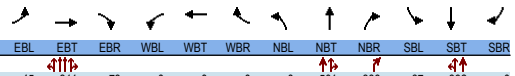
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	371	358	0	0	0	0	0	0	162	571	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.99	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		0.95	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4330	1150								4080	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4330	1150								4080	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	382	369	0	0	0	0	0	0	172	607	0
RTOR Reduction (vph)	0	72	72	0	0	0	0	0	0	0	85	0
Lane Group Flow (vph)	0	495	112	0	0	0	0	0	0	0	694	0
Confl. Peds. (#/hr)	42		31							26		13
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		28.0	28.0								24.0	
Effective Green, g (s)		28.0	28.0								24.0	
Actuated g/C Ratio		0.47	0.47								0.40	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		2021	537								1632	
v/s Ratio Prot		c0.11										
v/s Ratio Perm			0.10								0.17	
v/c Ratio		0.24	0.21								0.43	
Uniform Delay, d1		9.6	9.5								13.0	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.3	0.9								0.8	
Delay (s)		9.9	10.3								13.8	
Level of Service		A	B								B	
Approach Delay (s)		10.0			0.0				0.0		13.8	
Approach LOS		B			A				A		B	

Intersection Summary				
HCM Average Control Delay	12.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.33			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	311	78	0	0	0	0	501	366	67	392	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.99	0.91		1.00	
Flpb, ped/bikes		0.99						1.00	1.00		1.00	
Frt		0.97						0.97	0.85		1.00	
Flt Protected		0.99						1.00	1.00		0.99	
Satd. Flow (prot)		5497						2871	1184		3089	
Flt Permitted		0.99						1.00	1.00		0.78	
Satd. Flow (perm)		5497						2871	1184		2429	
Peak-hour factor, PHF	0.79	0.79	0.79	1.00	1.00	1.00	1.00	0.92	0.92	0.96	0.96	1.00
Adj. Flow (vph)	57	394	99	0	0	0	0	545	398	70	408	0
RTOR Reduction (vph)	0	48	0	0	0	0	0	20	112	0	0	0
Lane Group Flow (vph)	0	502	0	0	0	0	0	636	175	0	478	0
Confl. Peds. (#/hr)	28		34				43		26	26		43
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	5		5									5
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2112						1453	599		1229	
v/s Ratio Prot								c0.22				
v/s Ratio Perm		0.09							0.15		0.20	
v/c Ratio		0.24						0.44	0.29		0.39	
Uniform Delay, d1		17.1						12.8	11.7		12.5	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		0.3						1.0	1.2		0.9	
Delay (s)		17.4						13.8	13.0		13.4	
Level of Service		B						B	B		B	
Approach Delay (s)		17.4			0.0			13.6			13.4	
Approach LOS		B			A			B			B	

Intersection Summary				
HCM Average Control Delay	14.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	63.6%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	516	119	395	803	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	1.00				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5267		1329	4107				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5267		1329	4107				
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	573	132	416	845	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	70	0	31	26	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	635	0	273	931	0	0	0	0
Confl. Peds. (#/hr)				42		52	53		38			
Confl. Bikes (#/hr)						8						
Bus Blockages (#/hr)	0	0	0	0	18	0	0	0	0	0	0	0
Parking (#/hr)					5			5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					19.0		32.5	32.5				
Effective Green, g (s)					19.0		32.5	32.5				
Actuated g/C Ratio					0.32		0.54	0.54				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					1668		720	2225				
v/s Ratio Prot					c0.12							
v/s Ratio Perm							0.21	0.23				
v/c Ratio					0.38		0.38	0.42				
Uniform Delay, d1					15.9		7.9	8.1				
Progression Factor					1.00		2.77	2.47				
Incremental Delay, d2					0.7		1.0	0.4				
Delay (s)					16.6		23.0	20.5				
Level of Service					B		C	C				
Approach Delay (s)		0.0			16.6			21.1			0.0	
Approach LOS		A			B			C			A	

Intersection Summary				
HCM Average Control Delay	19.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	261	637	0	0	0	0	0	466	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4132						2351	1054
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4132						2351	1054
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	287	700	0	0	0	0	0	512	168
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	238	749	0	0	0	0	0	529	151
Confl. Bikes (#/hr)												8
Parking (#/hr)				5	5							5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1240						758	340
v/s Ratio Prot											c0.23	
v/s Ratio Perm				c0.20	0.18							0.14
v/c Ratio				0.66	0.60						0.70	0.44
Uniform Delay, d1				27.5	26.9						26.7	24.1
Progression Factor				1.00	1.00						0.28	0.20
Incremental Delay, d2				9.3	2.2						4.5	3.5
Delay (s)				36.8	29.1						12.0	8.5
Level of Service				D	C						B	A
Approach Delay (s)		0.0			31.0			0.0			11.2	
Approach LOS		A			C			A			B	

Intersection Summary					
HCM Average Control Delay	22.9	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.68				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	101	42	0	0	0	0	0	0	124	570	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1425	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frpb, ped/bikes		1.00	0.91								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1136								4101	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1136								4101	
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	122	51	0	0	0	0	0	0	141	648	0
RTOR Reduction (vph)	0	0	36	0	0	0	0	0	0	0	44	0
Lane Group Flow (vph)	0	122	15	0	0	0	0	0	0	0	745	0
Confl. Peds. (#/hr)	67		73							76		52
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	341								1321	
v/s Ratio Prot		c0.04										
v/s Ratio Perm			0.01								0.18	
v/c Ratio		0.14	0.04								0.56	
Uniform Delay, d1		23.0	22.4								25.3	
Progression Factor		1.00	1.00								1.04	
Incremental Delay, d2		0.3	0.2								1.7	
Delay (s)		23.3	22.6								28.1	
Level of Service		C	C								C	
Approach Delay (s)		23.1			0.0			0.0			28.1	
Approach LOS		C			A			A			C	

Intersection Summary					
HCM Average Control Delay	27.2	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.36				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	35.0%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	265	0	0	0	0	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2897					5587
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2897					5587
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.83	0.83
Adj. Flow (vph)	294	0	0	0	0	440
RTOR Reduction (vph)	189	0	0	0	0	0
Lane Group Flow (vph)	105	0	0	0	0	440
Confl. Peds. (#/hr)	57				63	
Parking (#/hr)	5					5
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1030					2856
v/s Ratio Prot	c0.04					c0.08
v/s Ratio Perm						
v/c Ratio	0.10					0.15
Uniform Delay, d1	9.7					5.8
Progression Factor	1.00					1.00
Incremental Delay, d2	0.2					0.1
Delay (s)	9.9					6.0
Level of Service	A					A
Approach Delay (s)	9.9		0.0			6.0
Approach LOS	A		A			A

Intersection Summary					
HCM Average Control Delay	7.5	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.13				
Actuated Cycle Length (s)	45.0	Sum of lost time (s)		6.0	
Intersection Capacity Utilization	20.9%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	316	26	0	0	0	0	766	152	12	55	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.98			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.99						1.00			0.99	
Satd. Flow (prot)		6094						3394			3280	
Flt Permitted		0.99						1.00			0.83	
Satd. Flow (perm)		6094						3394			2762	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	53	336	28	0	0	0	0	833	165	15	69	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	28	0	0	0	0
Lane Group Flow (vph)	0	403	0	0	0	0	0	970	0	0	84	0
Confl. Peds. (#/hr)	63		91				56		87	87		56
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5		5						5		5	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3149						1216			990	
v/s Ratio Prot								c0.29				
v/s Ratio Perm		0.07									0.03	
v/c Ratio		0.13						0.80			0.08	
Uniform Delay, d1		7.5						17.3			12.7	
Progression Factor		1.00						1.00			1.32	
Incremental Delay, d2		0.1						5.5			0.2	
Delay (s)		7.6						22.8			17.0	
Level of Service		A						C			B	
Approach Delay (s)		7.6			0.0			22.8			17.0	
Approach LOS		A			A			C			B	

Intersection Summary					
HCM Average Control Delay	18.3	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.40				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		7.5	
Intersection Capacity Utilization	46.9%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	51	695	53	178	606	0	0	35	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.98	
Flpb, ped/bikes					0.99			0.99			1.00	
Frt					0.99			1.00			0.93	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					6119			3253			3216	
Flt Permitted					1.00			0.85			1.00	
Satd. Flow (perm)					6119			2793			3216	
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.86	0.86	0.86	0.62	0.62	0.62
Adj. Flow (vph)	0	0	0	53	724	55	207	705	0	0	56	47
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	0	0	30	0
Lane Group Flow (vph)	0	0	0	0	814	0	0	912	0	0	73	0
Confl. Peds. (#/hr)				86		73	43		51	51		43
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				5		5		5				5
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3212			1001			1152	
v/s Ratio Prot											0.02	
v/s Ratio Perm					0.13			c0.33				
v/c Ratio					0.25			0.91			0.06	
Uniform Delay, d1					7.8			18.3			12.6	
Progression Factor					1.00			1.30			1.00	
Incremental Delay, d2					0.2			9.7			0.1	
Delay (s)					8.0			33.6			12.7	
Level of Service					A			C			B	
Approach Delay (s)		0.0			8.0			33.6			12.7	
Approach LOS		A			A			C			B	

Intersection Summary				
HCM Average Control Delay	20.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	46.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	244	508	69	0	0	0	0	449	62	1	58	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.98						0.98			1.00	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		4875						2066			1579	
Flt Permitted		0.98						1.00			0.70	
Satd. Flow (perm)		1100						2066			1102	
Peak-hour factor, PHF	0.86	0.93	0.72	1.00	1.00	1.00	0.84	0.75	0.70	0.25	0.76	0.70
Adj. Flow (vph)	284	546	96	0	0	0	0	599	89	4	76	0
RTOR Reduction (vph)	0	32	0	0	0	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	895	0	0	0	0	0	676	0	0	80	0
Confl. Peds. (#/hr)	22		23				16		14	14		16
Confl. Bikes (#/hr)									8			
Parking (#/hr)									10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		550						712			380	
v/s Ratio Prot								c0.33				
v/s Ratio Perm		c0.81									0.07	
v/c Ratio		1.63						0.95			0.21	
Uniform Delay, d1		11.2						14.4			10.4	
Progression Factor		1.00						1.00			0.50	
Incremental Delay, d2		290.1						23.4			1.2	
Delay (s)		301.4						37.8			6.4	
Level of Service		F						D			A	
Approach Delay (s)		301.4			0.0			37.8			6.4	
Approach LOS		F			A			D			A	

Intersection Summary				
HCM Average Control Delay	180.4	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.35			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	50.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	326	314	261	0	0	0	0	351	34	166	68	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.98						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.96						0.99			1.00	
Flt Protected		0.98						1.00			0.97	
Satd. Flow (prot)		4667						1835			1523	
Flt Permitted		0.98						1.00			0.52	
Satd. Flow (perm)		4667						1835			815	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.84	0.84	0.84	0.90	0.90	0.90
Adj. Flow (vph)	340	327	272	0	0	0	0	418	40	184	76	0
RTOR Reduction (vph)	0	164	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	775	0	0	0	0	0	450	0	0	260	0
Confl. Peds. (#/hr)	12		13	13		12	11		12	12		11
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			10						10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1296						958			426	
v/s Ratio Prot								0.25				
v/s Ratio Perm		0.17									c0.32	
v/c Ratio		0.60						0.47			0.61	
Uniform Delay, d1		14.1						6.8			7.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.0						1.7			6.4	
Delay (s)		16.1						8.5			13.9	
Level of Service		B						A			B	
Approach Delay (s)		16.1			0.0			8.5			13.9	
Approach LOS		B			A			A			B	

Intersection Summary				
HCM Average Control Delay	13.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	76.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	38	154	527	55	47	622
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.93		1.00		0.98	0.97
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.90	0.85
Flt Protected	1.00		0.99		0.98	1.00
Satd. Flow (prot)	1493		3490		3115	1404
Flt Permitted	1.00		0.99		0.98	1.00
Satd. Flow (perm)	1493		3490		3115	1404
Peak-hour factor, PHF	0.73	0.90	0.86	0.60	0.84	0.94
Adj. Flow (vph)	52	171	613	92	56	662
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	52	0	784	0	479	331
Confl. Peds. (#/hr)	13	15		15		13
Confl. Bikes (#/hr)	8					8
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	133		1264		1537	693
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.22		0.15	c0.24
v/c Ratio	0.39		0.62		0.31	0.48
Uniform Delay, d1	19.4		11.8		6.8	7.6
Progression Factor	1.00		0.69		1.00	1.00
Incremental Delay, d2	8.4		0.2		0.5	2.4
Delay (s)	27.8		8.4		7.4	9.9
Level of Service	C		A		A	A
Approach Delay (s)			8.4		8.4	
Approach LOS			A		A	

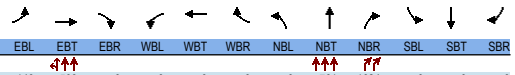
Intersection Summary				
HCM Average Control Delay	9.0	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	59.7%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	6	315	47	307	315	0	0	180	1374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.98
Flpb, ped/bikes				0.97	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.60
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1711	1863	1469		1750			1749	1046
Flt Permitted				0.95	1.00	1.00		0.70			1.00	1.00
Satd. Flow (perm)				1711	1863	1469		1256			1749	1046
Peak-hour factor, PHF	0.92	0.92	0.92	0.50	0.78	0.84	0.84	0.90	0.96	0.95	0.92	0.98
Adj. Flow (vph)	0	0	0	12	404	56	365	350	0	0	196	1402
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	40	40
Lane Group Flow (vph)	0	0	0	12	404	14	0	715	0	0	773	745
Confl. Peds. (#/hr)				16		20			14	14		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								10				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	34.5
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.58
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				413	450	355		722			1006	601
v/s Ratio Prot					c0.22						0.44	
v/s Ratio Perm				0.01		0.01		0.57				c0.71
v/c Ratio				0.03	0.90	0.04		0.99			0.77	1.24
Uniform Delay, d1				17.4	22.0	17.4		12.6			9.7	12.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.1	23.3	0.2		31.2			5.6	121.3
Delay (s)				17.5	45.3	17.6		43.8			15.3	134.1
Level of Service				B	D	B		D			B	F
Approach Delay (s)		0.0			41.3			43.8			73.6	
Approach LOS		A			D			D			E	

Intersection Summary				
HCM Average Control Delay	60.5	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.14			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	120.6%	ICU Level of Service	H	
Analysis Period (min)	15			

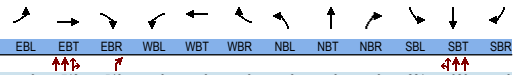
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	143	598	0	0	0	0	0	761	1624	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	16.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.94			
Flpb, ped/bikes		0.99						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4968						3685	2607			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4968						5085	1600			
Peak-hour factor, PHF	0.91	0.91	1.00	0.92	0.92	0.92	0.93	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	157	657	0	0	0	0	0	810	1728	0	0	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	809	0	0	0	0	0	810	1728	0	0	0
Confl. Peds. (#/hr)	56		32				41		26			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		34.0						16.0	60.0			
Effective Green, g (s)		34.0						16.0	60.0			
Actuated g/C Ratio		0.57						0.27	1.00			
Clearance Time (s)		5.0						5.0	26.0			
Lane Grp Cap (vph)		2815						983	1600			
v/s Ratio Prot								0.22				
v/s Ratio Perm		0.16							c1.08			
v/c Ratio		0.29						0.82	1.08			
Uniform Delay, d1		6.7						20.7	30.0			
Progression Factor		0.99						1.00	1.00			
Incremental Delay, d2		0.2						7.8	47.5			
Delay (s)		6.9						28.5	77.5			
Level of Service		A						C	E			
Approach Delay (s)		6.9			0.0			61.9			0.0	
Approach LOS		A			A			E			A	

Intersection Summary				
HCM Average Control Delay	48.5	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.08			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	105.1%	ICU Level of Service	G	
Analysis Period (min)	15			

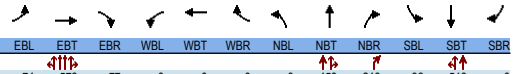
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	712	546	0	0	0	0	0	0	221	926	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.99	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		0.96	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4333	1107								4037	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4333	1107								4037	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	0	734	563	0	0	0	0	0	0	230	965	0
RTOR Reduction (vph)	0	7	7	0	0	0	0	0	0	0	67	0
Lane Group Flow (vph)	0	992	291	0	0	0	0	0	0	0	1128	0
Confl. Peds. (#/hr)	86		52							43		41
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		32.0	32.0								20.0	
Effective Green, g (s)		32.0	32.0								20.0	
Actuated g/C Ratio		0.53	0.53								0.33	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		2311	590								1346	
v/s Ratio Prot		0.23										
v/s Ratio Perm			c0.26								0.28	
v/c Ratio		0.43	0.49								0.84	
Uniform Delay, d1		8.5	8.9								18.5	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.6	2.9								6.4	
Delay (s)		9.1	11.8								24.9	
Level of Service		A	B								C	
Approach Delay (s)		9.7			0.0				0.0		24.9	
Approach LOS		A			A				A		C	

Intersection Summary				
HCM Average Control Delay	17.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	59.7%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	576	77	0	0	0	0	450	246	96	513	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.99	0.87		1.00	
Flpb, ped/bikes		0.99						1.00	1.00		0.99	
Frt		0.98						0.99	0.85		1.00	
Flt Protected		0.99						1.00	1.00		0.99	
Satd. Flow (prot)		5572						2927	1126		3074	
Flt Permitted		0.99						1.00	1.00		0.77	
Satd. Flow (perm)		5572						2927	1126		2390	
Peak-hour factor, PHF	0.94	0.94	0.94	1.00	1.00	1.00	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	79	613	82	0	0	0	0	489	267	107	570	0
RTOR Reduction (vph)	0	25	0	0	0	0	0	7	51	0	0	0
Lane Group Flow (vph)	0	749	0	0	0	0	0	522	176	0	677	0
Confl. Peds. (#/hr)	37		36				52		45	45		52
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	10		10									10
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2140						1481	570		1210	
v/s Ratio Prot								0.18				
v/s Ratio Perm		0.13							0.16		c0.28	
v/c Ratio		0.35						0.35	0.31		0.56	
Uniform Delay, d1		18.0						12.2	11.9		14.0	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		0.5						0.7	1.4		1.9	
Delay (s)		18.4						12.8	13.3		15.8	
Level of Service		B						B	B		B	
Approach Delay (s)		18.4			0.0			13.0			15.8	
Approach LOS		B			A			B			B	

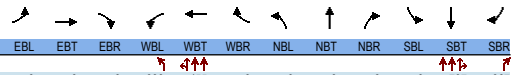
Intersection Summary				
HCM Average Control Delay	15.8	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	65.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	485	99	350	679	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	1.00				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5261		1324	4065				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5261		1324	4065				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	527	108	365	707	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	62	0	65	30	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	573	0	194	783	0	0	0	0
Confl. Peds. (#/hr)				52		67	53		46			
Confl. Bikes (#/hr)						8						
Bus Blockages (#/hr)	0	0	0	0	16	0	0	0	0	0	0	0
Parking (#/hr)					10			10				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					23.0		28.5	28.5				
Effective Green, g (s)					23.0		28.5	28.5				
Actuated g/C Ratio					0.38		0.48	0.48				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					2017		629	1931				
v/s Ratio Prot					c0.11							
v/s Ratio Perm							0.15	0.19				
v/c Ratio					0.28		0.31	0.41				
Uniform Delay, d1					12.8		9.7	10.2				
Progression Factor					1.00		3.31	2.35				
Incremental Delay, d2					0.4		0.9	0.5				
Delay (s)					13.2		33.0	24.5				
Level of Service					B		C	C				
Approach Delay (s)		0.0			13.2			26.5			0.0	
Approach LOS		A			B			C			A	

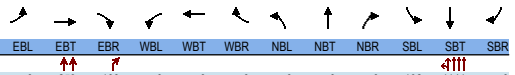
Intersection Summary				
HCM Average Control Delay	21.6	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



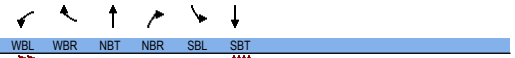
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	380	455	0	0	0	0	0	787	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						0.98	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1164	4053						2199	1084
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1164	4053						2199	1084
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	422	506	0	0	0	0	0	846	395
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	228	700	0	0	0	0	0	965	276
Confl. Bikes (#/hr)												8
Parking (#/hr)				10	10						10	0
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				349	1216						709	349
v/s Ratio Prot											c0.44	
v/s Ratio Perm				c0.20	0.17							0.25
v/c Ratio				0.65	0.58						1.36	0.79
Uniform Delay, d1				27.4	26.7						30.5	27.7
Progression Factor				1.00	1.00						0.21	0.16
Incremental Delay, d2				9.2	2.0						166.2	7.3
Delay (s)				36.6	28.6						172.8	11.7
Level of Service				D	C						F	B
Approach Delay (s)		0.0			30.6			0.0			136.9	
Approach LOS		A			C			A			F	

Intersection Summary					
HCM Average Control Delay	91.4	HCM Level of Service		F	
HCM Volume to Capacity ratio	1.02				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					



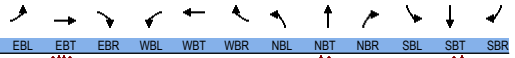
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	259	106	0	0	0	0	0	0	192	1141	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								*0.75	
Frpb, ped/bikes		1.00	0.88								1.00	
Flpb, ped/bikes		1.00	1.00								0.98	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2946	1071								4716	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2946	1071								4716	
Peak-hour factor, PHF	1.00	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.94
Adj. Flow (vph)	0	308	126	0	0	0	0	0	0	216	1282	0
RTOR Reduction (vph)	0	0	88	0	0	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	308	38	0	0	0	0	0	0	0	1468	0
Confl. Peds. (#/hr)	110		101							139		91
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		884	321								1520	
v/s Ratio Prot		c0.10										
v/s Ratio Perm			0.04								0.31	
v/c Ratio		0.35	0.12								0.97	
Uniform Delay, d1		24.6	22.9								30.0	
Progression Factor		1.00	1.00								0.98	
Incremental Delay, d2		1.1	0.7								15.9	
Delay (s)		25.7	23.6								45.4	
Level of Service		C	C								D	
Approach Delay (s)		25.1			0.0			0.0			45.4	
Approach LOS		C			A			A			D	

Intersection Summary					
HCM Average Control Delay	40.9	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.67				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	41.6%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	360	0	0	0	0	865
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2858					5551
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2858					5551
Peak-hour factor, PHF	0.89	0.89	0.92	0.92	0.94	0.94
Adj. Flow (vph)	404	0	0	0	0	920
RTOR Reduction (vph)	64	0	0	0	0	0
Lane Group Flow (vph)	340	0	0	0	0	920
Confl. Peds. (#/hr)	113				121	
Parking (#/hr)	10					10
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1016					2837
v/s Ratio Prot	c0.12					c0.17
v/s Ratio Perm						
v/c Ratio	0.33					0.32
Uniform Delay, d1	10.6					6.4
Progression Factor	1.00					1.00
Incremental Delay, d2	0.9					0.3
Delay (s)	11.5					6.8
Level of Service	B					A
Approach Delay (s)	11.5		0.0			6.8
Approach LOS	B		A			A

Intersection Summary					
HCM Average Control Delay	8.2	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.33				
Actuated Cycle Length (s)	45.0	Sum of lost time (s)		6.0	
Intersection Capacity Utilization	32.0%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	666	24	0	0	0	0	514	231	39	80	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.96			1.00	
Flpb, ped/bikes		0.99						1.00			0.99	
Frt		1.00						0.95			1.00	
Flt Protected		0.99						1.00			0.98	
Satd. Flow (prot)		6160						3242			3187	
Flt Permitted		0.99						1.00			0.73	
Satd. Flow (perm)		6160						3242			2373	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	1.00	0.99	0.99	0.80	0.80	0.84
Adj. Flow (vph)	99	793	29	0	0	0	0	519	233	49	100	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	46	0	0	0	0
Lane Group Flow (vph)	0	914	0	0	0	0	0	706	0	0	149	0
Confl. Peds. (#/hr)	73		131				76		113	113		76
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10		10						10		10	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3183						1162			850	
v/s Ratio Prot								c0.22				
v/s Ratio Perm		0.15									0.06	
v/c Ratio		0.29						0.61			0.18	
Uniform Delay, d1		8.2						15.8			13.2	
Progression Factor		1.00						1.00			0.75	
Incremental Delay, d2		0.2						2.4			0.4	
Delay (s)		8.5						18.2			10.4	
Level of Service		A						B			B	
Approach Delay (s)		8.5			0.0			18.2			10.4	
Approach LOS		A			A			B			B	

Intersection Summary					
HCM Average Control Delay	12.6	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.42				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		7.5	
Intersection Capacity Utilization	52.9%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	37	647	108	144	433	0	0	75	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.98	
Flpb, ped/bikes					1.00			0.99			1.00	
Frt					0.98			1.00			0.95	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					6022			3198			3284	
Flt Permitted					1.00			0.82			1.00	
Satd. Flow (perm)					6022			2650			3284	
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.91	0.91	0.91	0.86	0.63	0.63
Adj. Flow (vph)	0	0	0	43	752	126	158	476	0	0	119	59
RTOR Reduction (vph)	0	0	0	0	48	0	0	0	0	0	38	0
Lane Group Flow (vph)	0	0	0	0	874	0	0	634	0	0	140	0
Confl. Peds. (#/hr)				93		78	56		79	79		56
Confl. Bikes (#/hr)						8						8
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				10		10		10				10
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3162			950			1177	
v/s Ratio Prot											0.04	
v/s Ratio Perm					0.15			c0.24				
v/c Ratio					0.28			0.67			0.12	
Uniform Delay, d1					7.9			16.2			12.9	
Progression Factor					1.00			1.90			1.00	
Incremental Delay, d2					0.2			3.1			0.2	
Delay (s)					8.1			33.9			13.1	
Level of Service					A			C			B	
Approach Delay (s)		0.0			8.1			33.9			13.1	
Approach LOS		A			A			C			B	

Intersection Summary				
HCM Average Control Delay	18.1	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	40.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Mitigation - Existing plus Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	244	508	69	0	0	0	0	449	62	1	58	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.98						0.98			1.00	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		4860						2065			1579	
Flt Permitted		0.98						1.00			0.67	
Satd. Flow (perm)		1100						2065			1054	
Peak-hour factor, PHF	0.86	0.93	0.72	1.00	1.00	1.00	0.84	0.75	0.70	0.25	0.76	0.70
Adj. Flow (vph)	284	546	96	0	0	0	0	599	89	4	76	0
RTOR Reduction (vph)	0	24	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	902	0	0	0	0	0	679	0	0	80	0
Confl. Peds. (#/hr)	22		23				16		14	14		16
Confl. Bikes (#/hr)									8			
Parking (#/hr)									10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		34.5						18.5			18.5	
Effective Green, g (s)		34.5						18.5			18.5	
Actuated g/C Ratio		0.57						0.31			0.31	
Clearance Time (s)		3.5						3.5			3.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		633						637			325	
v/s Ratio Prot								c0.33				
v/s Ratio Perm		c0.82									0.08	
v/c Ratio		1.43						1.07			0.25	
Uniform Delay, d1		12.8						20.8			15.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		200.5						54.5			1.8	
Delay (s)		213.2						75.3			17.3	
Level of Service		F						E			B	
Approach Delay (s)		213.2			0.0			75.3			17.3	
Approach LOS		F			A			E			B	

Intersection Summary				
HCM Average Control Delay	147.9	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.30			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	50.7%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	6	315	47	307	315	0	0	180	1374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.92		1.00			0.99	0.99
Flpb, ped/bikes				0.96	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.60
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1696	1863	1450		1750			1750	1046
Flt Permitted				0.95	1.00	1.00		0.70			1.00	1.00
Satd. Flow (perm)				1696	1863	1450		1256			1750	1046
Peak-hour factor, PHF	0.92	0.92	0.92	0.50	0.78	0.84	0.84	0.90	0.96	0.95	0.92	0.98
Adj. Flow (vph)	0	0	0	12	404	56	365	350	0	0	196	1402
RTOR Reduction (vph)	0	0	0	0	0	44	0	0	0	0	22	22
Lane Group Flow (vph)	0	0	0	12	404	12	0	715	0	0	791	763
Confl. Peds. (#/hr)				16		20			14	14		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)									10			
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				15.5	15.5	15.5		48.5			48.5	48.5
Effective Green, g (s)				15.5	15.5	15.5		48.5			48.5	48.5
Actuated g/C Ratio				0.21	0.21	0.21		0.65			0.65	0.65
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Vehicle Extension (s)				2.0	2.0	2.0		2.0			2.0	2.0
Lane Grp Cap (vph)				351	385	300		812			1132	676
v/s Ratio Prot					c0.22						0.45	
v/s Ratio Perm				0.01		0.01		0.57				c0.73
v/c Ratio				0.03	1.05	0.04		0.88			0.70	1.13
Uniform Delay, d1				23.8	29.8	23.8		10.9			8.5	13.3
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.2	59.4	0.2		10.7			1.5	75.8
Delay (s)				24.0	89.1	24.0		21.6			10.1	89.1
Level of Service				C	F	C		C			B	F
Approach Delay (s)		0.0			79.8			21.6			48.9	
Approach LOS		A			E			C			D	

Intersection Summary				
HCM Average Control Delay	47.1	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.11			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	120.6%	ICU Level of Service	H	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	380	455	0	0	0	0	0	787	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						0.98	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1164	4053						2200	1085
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1164	4053						2200	1085
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	422	506	0	0	0	0	0	846	395
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	228	700	0	0	0	0	0	965	276
Confl. Bikes (#/hr)												8
Parking (#/hr)				10	10						10	0
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				17.0	17.0						39.0	39.0
Effective Green, g (s)				17.0	17.0						39.0	39.0
Actuated g/C Ratio				0.19	0.19						0.43	0.43
Clearance Time (s)				4.0	4.0						4.0	4.0
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Lane Grp Cap (vph)				220	766						953	470
v/s Ratio Prot											c0.44	
v/s Ratio Perm				c0.20	0.17							0.25
v/c Ratio				1.04	0.91						1.01	0.59
Uniform Delay, d1				36.5	35.8						25.5	19.4
Progression Factor				1.00	1.00						0.34	0.17
Incremental Delay, d2				70.5	15.3						21.6	2.2
Delay (s)				107.0	51.1						30.3	5.4
Level of Service				F	D						C	A
Approach Delay (s)		0.0			64.8			0.0			24.8	
Approach LOS		A			E			A			C	

Intersection Summary				
HCM Average Control Delay	41.9	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.02			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	34.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Future (Year 2015) Base Conditions

HCM Signalized Intersection Capacity Analysis
1: 5th St & Oak St

2015 No Project AM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	346	629	173	0	0	0	0	282	83	3	133	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.97			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4848						2033			1628	
Flt Permitted		0.99						1.00			0.99	
Satd. Flow (perm)		2000						2033			1618	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.81	0.95	0.95	0.95	0.95	0.92
Adj. Flow (vph)	364	662	182	0	0	0	0	297	87	3	140	0
RTOR Reduction (vph)	0	56	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1152	0	0	0	0	0	360	0	0	143	0
Confl. Peds. (#/hr)	9		17				7		15	15		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)									5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1								2			
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		1000						700			557	
v/s Ratio Prot								c0.18				
v/s Ratio Perm		c0.58									0.09	
v/c Ratio		1.15						0.51			0.26	
Uniform Delay, d1		11.2						11.8			10.6	
Progression Factor		1.00						1.00			1.46	
Incremental Delay, d2		80.1						2.7			1.0	
Delay (s)		91.3						14.4			16.5	
Level of Service		F						B			B	
Approach Delay (s)		91.3			0.0			14.4			16.5	
Approach LOS		F			A			B			B	

Intersection Summary				
HCM Average Control Delay	68.1	HCM Level of Service	E	
HCM Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	50.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: 5th St & Jackson St

2015 No Project AM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	326	454	310	0	0	0	0	213	21	46	107	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.96						0.99			1.00	
Flt Protected		0.99						1.00			0.99	
Satd. Flow (prot)		4708						1834			1603	
Flt Permitted		0.99						1.00			0.86	
Satd. Flow (perm)		4708						1834			1400	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.82	0.82	0.82	0.83	0.83	0.83
Adj. Flow (vph)	340	473	323	0	0	0	0	260	26	55	129	0
RTOR Reduction (vph)	0	160	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	976	0	0	0	0	0	278	0	0	184	0
Confl. Peds. (#/hr)	8		11	11		8	7		9	9		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			5						5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1308						958			731	
v/s Ratio Prot								c0.15				
v/s Ratio Perm		0.21									0.13	
v/c Ratio		0.75						0.29			0.25	
Uniform Delay, d1		14.8						6.1			5.9	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		3.9						0.8			0.8	
Delay (s)		18.7						6.8			6.7	
Level of Service		B						A			A	
Approach Delay (s)		18.7			0.0			6.8			6.7	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM Average Control Delay	15.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	75.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: 6th St & Oak St

2015 No Project AM
325 7th St Project

Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	31	164	450	122	51	833
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.82		1.00		0.98	0.98
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.90	0.85
Flt Protected	1.00		0.98		0.98	1.00
Satd. Flow (prot)	1314		3230		3118	1406
Flt Permitted	1.00		0.98		0.98	1.00
Satd. Flow (perm)	1314		3230		3118	1406
Peak-hour factor, PHF	0.92	0.75	0.96	0.77	0.86	0.89
Adj. Flow (vph)	34	219	469	158	59	936
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	34	0	688	0	685	468
Confl. Peds. (#/hr)	51	10		17		11
Confl. Bikes (#/hr)	2					8
Parking (#/hr)			8			
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	117		1170		1538	694
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.21		0.22	c0.33
v/c Ratio	0.29		0.59		0.45	0.67
Uniform Delay, d1	19.2		11.6		7.4	8.7
Progression Factor	1.00		0.77		1.00	1.00
Incremental Delay, d2	6.2		1.1		0.9	5.2
Delay (s)	25.4		10.0		8.3	13.8
Level of Service	C		B		A	B
Approach Delay (s)			10.0		10.6	
Approach LOS			B		B	

Intersection Summary				
HCM Average Control Delay	10.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	68.7%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: I-880 NB Onramp & Jackson St

2015 No Project AM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	386	50	194	259	0	0	142	1740
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.98
Flpb, ped/bikes				0.96	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.65
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1704	1863	1478		1809			1747	1133
Flt Permitted				0.95	1.00	1.00		0.85			1.00	1.00
Satd. Flow (perm)				1704	1863	1478		1570			1747	1150
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.96	0.95	0.95	0.95	0.96	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	21	402	53	204	273	0	0	149	1832
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	0	0	43	43
Lane Group Flow (vph)	0	0	0	21	402	13	0	477	0	0	968	929
Confl. Peds. (#/hr)				18		17			16	16		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								5				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	34.5
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.58
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				412	450	357		903			1005	661
v/s Ratio Prot					c0.22						0.55	
v/s Ratio Perm				0.01		0.01		0.30				c0.81
v/c Ratio				0.05	0.89	0.04		0.53			0.96	1.40
Uniform Delay, d1				17.5	22.0	17.4		7.8			12.1	12.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.2	22.7	0.2		2.2			20.7	191.1
Delay (s)				17.7	44.7	17.6		10.0			32.8	203.9
Level of Service				B	D	B		A			C	F
Approach Delay (s)		0.0			40.5			10.0			116.7	
Approach LOS		A			D			A			F	

Intersection Summary				
HCM Average Control Delay	87.0	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.25			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	134.6%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	305	0	0	0	0	0	1101	2004	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	9.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.96			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4975						5085	2677			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4975						5085	1750			
Peak-hour factor, PHF	0.72	0.72	1.00	0.92	0.92	0.92	0.95	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	112	424	0	0	0	0	0	1147	2088	0	0	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	528	0	0	0	0	0	1147	2088	0	0	0
Confl. Peds. (#/hr)	25		11				27		13			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		27.0						23.0	60.0			
Effective Green, g (s)		27.0						23.0	60.0			
Actuated g/C Ratio		0.45						0.38	1.00			
Clearance Time (s)		5.0						5.0	25.0			
Lane Grp Cap (vph)		2239						1949	1750			
v/s Ratio Prot								0.23				
v/s Ratio Perm		0.11							c1.19			
v/c Ratio		0.24						0.59	1.19			
Uniform Delay, d1		10.2						14.7	30.0			
Progression Factor		1.63						1.00	1.00			
Incremental Delay, d2		0.2						1.3	92.9			
Delay (s)		16.8						16.0	122.9			
Level of Service		B						B	F			
Approach Delay (s)		16.8			0.0			85.0			0.0	
Approach LOS		B			A			F			A	

Intersection Summary				
HCM Average Control Delay	75.3	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.19			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	105.6%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	372	561	0	0	0	0	0	0	143	1047	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.98	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		0.94	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4244	1150								4108	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4244	1150								4108	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	384	578	0	0	0	0	0	0	152	1114	0
RTOR Reduction (vph)	0	12	12	0	0	0	0	0	0	0	29	0
Lane Group Flow (vph)	0	661	277	0	0	0	0	0	0	0	1237	0
Confl. Peds. (#/hr)	42		31							26		13
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		28.0	28.0								24.0	
Effective Green, g (s)		28.0	28.0								24.0	
Actuated g/C Ratio		0.47	0.47								0.40	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		1981	537								1643	
v/s Ratio Prot		0.16										
v/s Ratio Perm			c0.24								0.30	
v/c Ratio		0.33	0.52								0.75	
Uniform Delay, d1		10.1	11.2								15.5	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.5	3.5								3.2	
Delay (s)		10.6	14.7								18.7	
Level of Service		B	B								B	
Approach Delay (s)		11.8			0.0				0.0		18.7	
Approach LOS		B			A				A		B	

Intersection Summary				
HCM Average Control Delay	15.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	59.8%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	506	78	0	0	0	0	501	361	90	411	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.99	0.91		1.00	
Flpb, ped/bikes		1.00						1.00	1.00		1.00	
Frt		0.98						0.98	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.99	
Satd. Flow (prot)		5580						2876	1184		3082	
Flt Permitted		1.00						1.00	1.00		0.73	
Satd. Flow (perm)		5580						2876	1184		2269	
Peak-hour factor, PHF	0.79	0.79	0.79	1.00	1.00	1.00	1.00	0.92	0.92	0.96	0.96	1.00
Adj. Flow (vph)	57	641	99	0	0	0	0	545	392	94	428	0
RTOR Reduction (vph)	0	31	0	0	0	0	0	18	46	0	0	0
Lane Group Flow (vph)	0	766	0	0	0	0	0	633	240	0	522	0
Confl. Peds. (#/hr)	28		34				43		26	26		43
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	5		5									5
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2144						1456	599		1148	
v/s Ratio Prot								0.22				
v/s Ratio Perm		0.14							0.20		c0.23	
v/c Ratio		0.36						0.43	0.40		0.45	
Uniform Delay, d1		18.0						12.8	12.5		13.0	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		0.5						0.9	2.0		1.3	
Delay (s)		18.5						13.8	14.5		14.3	
Level of Service		B						B	B		B	
Approach Delay (s)		18.5			0.0			14.0			14.3	
Approach LOS		B			A			B			B	

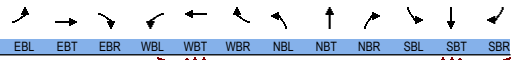
Intersection Summary				
HCM Average Control Delay	15.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	64.8%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	634	138	400	807	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	1.00				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5277		1329	4106				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5277		1329	4106				
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	704	153	421	849	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	66	0	17	17	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	791	0	290	946	0	0	0	0
Confl. Peds. (#/hr)				42		52	53		38			
Confl. Bikes (#/hr)						8						
Bus Blockages (#/hr)	0	0	0	0	18	0	0	0	0	0	0	0
Parking (#/hr)					5			5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					19.0		32.5	32.5				
Effective Green, g (s)					19.0		32.5	32.5				
Actuated g/C Ratio					0.32		0.54	0.54				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					1671		720	2224				
v/s Ratio Prot					c0.15							
v/s Ratio Perm							0.22	0.23				
v/c Ratio					0.47		0.40	0.43				
Uniform Delay, d1					16.5		8.1	8.2				
Progression Factor					1.00		2.82	2.68				
Incremental Delay, d2					1.0		1.4	0.5				
Delay (s)					17.4		24.1	22.4				
Level of Service					B		C	C				
Approach Delay (s)		0.0			17.4			22.8			0.0	
Approach LOS		A			B			C			A	

Intersection Summary				
HCM Average Control Delay	20.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

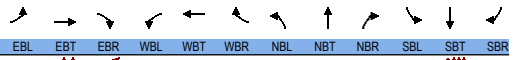
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	288	818	0	0	0	0	0	775	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4138						2355	1054
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4138						2355	1054
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	316	899	0	0	0	0	0	852	185
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	284	931	0	0	0	0	0	871	166
Confl. Bikes (#/hr)												8
Parking (#/hr)				5	5							5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1241						759	340
v/s Ratio Prot											c0.37	
v/s Ratio Perm				c0.24	0.22							0.16
v/c Ratio				0.79	0.75						1.15	0.49
Uniform Delay, d1				28.9	28.5						30.5	24.5
Progression Factor				1.00	1.00						0.22	0.12
Incremental Delay, d2				16.2	4.2						75.1	2.7
Delay (s)				45.1	32.7						81.9	5.7
Level of Service				D	C						F	A
Approach Delay (s)		0.0			35.6			0.0			69.7	
Approach LOS		A			D			A			E	

Intersection Summary				
HCM Average Control Delay	51.3	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	34.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

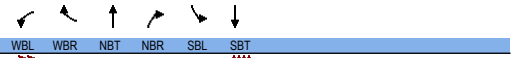
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	113	46	0	0	0	0	0	0	188	858	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1425	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frpb, ped/bikes		1.00	0.91								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1136								4100	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1136								4100	
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	136	55	0	0	0	0	0	0	214	975	0
RTOR Reduction (vph)	0	0	39	0	0	0	0	0	0	0	44	0
Lane Group Flow (vph)	0	136	17	0	0	0	0	0	0	0	1145	0
Confl. Peds. (#/hr)	67		73							76		52
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	341								1321	
v/s Ratio Prot		c0.05										
v/s Ratio Perm			0.01								0.28	
v/c Ratio		0.15	0.05								0.87	
Uniform Delay, d1		23.1	22.4								28.7	
Progression Factor		1.00	1.00								1.01	
Incremental Delay, d2		0.4	0.3								7.7	
Delay (s)		23.5	22.6								36.7	
Level of Service		C	C								D	
Approach Delay (s)		23.2			0.0			0.0			36.7	
Approach LOS		C			A			A			D	

Intersection Summary				
HCM Average Control Delay	34.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	34.0	
Intersection Capacity Utilization	42.7%	ICU Level of Service	A	
Analysis Period (min)	15			

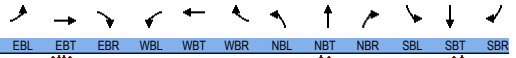
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	290	0	0	0	0	693
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2897					5587
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2897					5587
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.83	0.83
Adj. Flow (vph)	322	0	0	0	0	835
RTOR Reduction (vph)	112	0	0	0	0	0
Lane Group Flow (vph)	210	0	0	0	0	835
Confl. Peds. (#/hr)	57				63	
Parking (#/hr)	5					5
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1030					2856
v/s Ratio Prot	c0.07					c0.15
v/s Ratio Perm						
v/c Ratio	0.20					0.29
Uniform Delay, d1	10.1					6.3
Progression Factor	1.00					1.00
Incremental Delay, d2	0.4					0.3
Delay (s)	10.5					6.6
Level of Service	B					A
Approach Delay (s)	10.5		0.0			6.6
Approach LOS	B		A			A

Intersection Summary				
HCM Average Control Delay	7.7	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.26			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.0	
Intersection Capacity Utilization	27.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	382	26	0	0	0	0	777	164	21	55	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.98			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.97			1.00	
Flt Protected		0.99						1.00			0.99	
Satd. Flow (prot)		6129						3386			3261	
Flt Permitted		0.99						1.00			0.75	
Satd. Flow (perm)		6129						3386			2479	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	52	406	28	0	0	0	0	845	178	26	69	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	30	0	0	0	0
Lane Group Flow (vph)	0	472	0	0	0	0	0	993	0	0	95	0
Confl. Peds. (#/hr)	63		91				56		87	87		56
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5		5						5		5	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3167						1213			888	
v/s Ratio Prot								c0.29				
v/s Ratio Perm		0.08									0.04	
v/c Ratio		0.15						0.82			0.11	
Uniform Delay, d1		7.6						17.5			12.8	
Progression Factor		1.00						1.00			1.19	
Incremental Delay, d2		0.1						6.2			0.2	
Delay (s)		7.7						23.7			15.6	
Level of Service		A						C			B	
Approach Delay (s)		7.7			0.0			23.7			15.6	
Approach LOS		A			A			C			B	

Intersection Summary				
HCM Average Control Delay	18.4	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.5	
Intersection Capacity Utilization	47.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	51	910	94	169	626	0	0	44	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.97	
Flpb, ped/bikes					1.00			0.99			1.00	
Frt					0.99			1.00			0.92	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					6098			3259			3146	
Flt Permitted					1.00			0.84			1.00	
Satd. Flow (perm)					6098			2758			3146	
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.86	0.86	0.86	0.62	0.62	0.62
Adj. Flow (vph)	0	0	0	53	948	98	197	728	0	0	71	89
RTOR Reduction (vph)	0	0	0	0	23	0	0	0	0	0	44	0
Lane Group Flow (vph)	0	0	0	0	1076	0	0	925	0	0	116	0
Confl. Peds. (#/hr)				86		73	43		51	51		43
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				5		5		5				5
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3201			988			1127	
v/s Ratio Prot											0.04	
v/s Ratio Perm					0.18			c0.34				
v/c Ratio					0.34			0.94			0.10	
Uniform Delay, d1					8.2			18.6			12.8	
Progression Factor					1.00			1.31			1.00	
Incremental Delay, d2					0.3			11.9			0.2	
Delay (s)					8.5			36.2			13.0	
Level of Service					A			D			B	
Approach Delay (s)		0.0			8.5			36.2			13.0	
Approach LOS		A			A			D			B	

Intersection Summary				
HCM Average Control Delay	20.6	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	48.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	588	85	0	0	0	0	526	73	1	103	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		4891						2069			1583	
Flt Permitted		0.98						1.00			0.92	
Satd. Flow (perm)		1100						2069			1451	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.84	0.95	0.95	0.95	0.95	0.70
Adj. Flow (vph)	316	619	89	0	0	0	0	554	77	1	108	0
RTOR Reduction (vph)	0	25	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	999	0	0	0	0	0	620	0	0	109	0
Confl. Peds. (#/hr)	22		23				16		14	14		16
Confl. Bikes (#/hr)									8			
Parking (#/hr)									10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		550						713			500	
v/s Ratio Prot								c0.30				
v/s Ratio Perm		c0.91									0.08	
v/c Ratio		1.82						0.87			0.22	
Uniform Delay, d1		11.2						13.8			10.5	
Progression Factor		1.00						1.00			0.45	
Incremental Delay, d2		374.5						13.6			0.9	
Delay (s)		385.8						27.4			5.7	
Level of Service		F						C			A	
Approach Delay (s)		385.8			0.0			27.4			5.7	
Approach LOS		F			A			C			A	

Intersection Summary				
HCM Average Control Delay	234.1	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.43			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	58.5%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	349	658	260	0	0	0	0	382	34	166	68	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.97						0.99			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4780						1837			1523	
Flt Permitted		0.99						1.00			0.48	
Satd. Flow (perm)		4780						1837			764	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.84	0.84	0.84	0.90	0.90	0.90
Adj. Flow (vph)	364	685	271	0	0	0	0	455	40	184	76	0
RTOR Reduction (vph)	0	102	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	1218	0	0	0	0	0	488	0	0	260	0
Confl. Peds. (#/hr)	12		13	13		12	11		12	12		11
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			10						10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1328						959			399	
v/s Ratio Prot								0.27				
v/s Ratio Perm		0.25									c0.34	
v/c Ratio		0.92						0.51			0.65	
Uniform Delay, d1		15.7						7.0			7.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		11.5						1.9			8.0	
Delay (s)		27.2						8.9			15.8	
Level of Service		C						A			B	
Approach Delay (s)		27.2			0.0			8.9			15.8	
Approach LOS		C			A			A			B	

Intersection Summary				
HCM Average Control Delay	21.4	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	81.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	38	388	718	147	47	621
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.93		1.00		0.99	0.97
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.92	0.85
Flt Protected	1.00		0.98		0.98	1.00
Satd. Flow (prot)	1493		3463		3179	1404
Flt Permitted	1.00		0.98		0.98	1.00
Satd. Flow (perm)	1493		3463		3179	1404
Peak-hour factor, PHF	0.73	0.90	0.86	0.60	0.84	0.94
Adj. Flow (vph)	52	431	835	245	56	661
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	52	0	1266	0	632	330
Confl. Peds. (#/hr)	13	15		15		13
Confl. Bikes (#/hr)	8					8
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	133		1254		1568	693
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.37		0.20	c0.24
v/c Ratio	0.39		1.01		0.40	0.48
Uniform Delay, d1	19.4		14.3		7.2	7.5
Progression Factor	1.00		0.89		1.00	1.00
Incremental Delay, d2	8.4		21.0		0.8	2.3
Delay (s)	27.8		33.7		8.0	9.9
Level of Service	C		C		A	A
Approach Delay (s)			33.7		8.6	
Approach LOS			C		A	

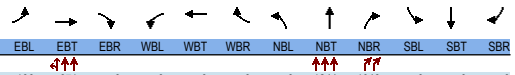
Intersection Summary				
HCM Average Control Delay	23.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	71.7%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	6	358	47	293	399	0	0	180	1469
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.98
Flpb, ped/bikes				0.97	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.60
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1711	1863	1469		1757			1749	1046
Flt Permitted				0.95	1.00	1.00		0.70			1.00	1.00
Satd. Flow (perm)				1711	1863	1469		1256			1749	1046
Peak-hour factor, PHF	0.92	0.92	0.92	0.50	0.95	0.95	0.95	0.95	0.96	0.95	0.95	0.98
Adj. Flow (vph)	0	0	0	12	377	49	308	420	0	0	189	1499
RTOR Reduction (vph)	0	0	0	0	0	37	0	0	0	0	47	47
Lane Group Flow (vph)	0	0	0	12	377	12	0	728	0	0	817	777
Confl. Peds. (#/hr)				16		20			14	14		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								10				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	34.5
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.58
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				413	450	355		722			1006	601
v/s Ratio Prot					c0.20						0.47	
v/s Ratio Perm				0.01		0.01		0.58				c0.74
v/c Ratio				0.03	0.84	0.03		1.01			0.81	1.29
Uniform Delay, d1				17.4	21.6	17.4		12.8			10.2	12.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.1	16.8	0.2		35.6			7.1	143.8
Delay (s)				17.5	38.4	17.6		48.3			17.3	156.5
Level of Service				B	D	B		D			B	F
Approach Delay (s)		0.0			35.5			48.3			85.3	
Approach LOS		A			D			D			F	

Intersection Summary				
HCM Average Control Delay	68.2	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.16			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	130.4%	ICU Level of Service	H	
Analysis Period (min)	15			

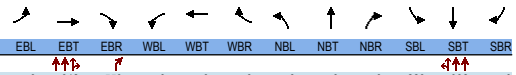
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	671	0	0	0	0	0	1244	1940	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	16.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.94			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4990						5085	2607			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4990						5085	1600			
Peak-hour factor, PHF	0.91	0.91	1.00	0.92	0.92	0.92	0.93	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	116	737	0	0	0	0	0	1323	2064	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	853	0	0	0	0	0	1323	2064	0	0	0
Confl. Peds. (#/hr)	56		32				41		26			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		34.0						16.0	60.0			
Effective Green, g (s)		34.0						16.0	60.0			
Actuated g/C Ratio		0.57						0.27	1.00			
Clearance Time (s)		5.0						5.0	26.0			
Lane Grp Cap (vph)		2828						1356	1600			
v/s Ratio Prot								0.26				
v/s Ratio Perm		0.17							c1.29			
v/c Ratio		0.30						0.98	1.29			
Uniform Delay, d1		6.8						21.8	30.0			
Progression Factor		1.10						1.00	1.00			
Incremental Delay, d2		0.2						19.3	135.3			
Delay (s)		7.7						41.1	165.3			
Level of Service		A						D	F			
Approach Delay (s)		7.7			0.0			116.8			0.0	
Approach LOS		A			A			F			A	

Intersection Summary				
HCM Average Control Delay	94.8	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.29			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	116.1%	ICU Level of Service	H	
Analysis Period (min)	15			

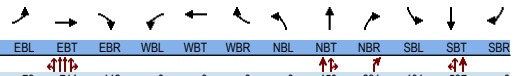
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	812	559	0	0	0	0	0	0	223	932	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.99	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		0.97	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4362	1107								4037	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4362	1107								4037	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	0	837	576	0	0	0	0	0	0	232	971	0
RTOR Reduction (vph)	0	7	7	0	0	0	0	0	0	0	59	0
Lane Group Flow (vph)	0	1083	316	0	0	0	0	0	0	0	1144	0
Confl. Peds. (#/hr)	86		52							43		41
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		32.0	32.0								20.0	
Effective Green, g (s)		32.0	32.0								20.0	
Actuated g/C Ratio		0.53	0.53								0.33	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		2326	590								1346	
v/s Ratio Prot		0.25										
v/s Ratio Perm			c0.29								0.28	
v/c Ratio		0.47	0.54								0.85	
Uniform Delay, d1		8.7	9.1								18.6	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.7	3.5								6.9	
Delay (s)		9.4	12.6								25.5	
Level of Service		A	B								C	
Approach Delay (s)		10.1			0.0				0.0		25.5	
Approach LOS		B			A				A		C	

Intersection Summary				
HCM Average Control Delay	17.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	60.3%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	714	112	0	0	0	0	450	281	101	537	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.98	0.87		1.00	
Flpb, ped/bikes		0.99						1.00	1.00		0.99	
Frt		0.98						0.98	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.99	
Satd. Flow (prot)		5562						2894	1126		3075	
Flt Permitted		1.00						1.00	1.00		0.76	
Satd. Flow (perm)		5562						2894	1126		2342	
Peak-hour factor, PHF	0.94	0.94	0.94	1.00	1.00	1.00	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	84	760	119	0	0	0	0	489	305	112	597	0
RTOR Reduction (vph)	0	31	0	0	0	0	0	12	30	0	0	0
Lane Group Flow (vph)	0	932	0	0	0	0	0	541	211	0	709	0
Confl. Peds. (#/hr)	37		36				52		45	45		52
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	10		10									10
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2137						1465	570		1185	
v/s Ratio Prot								0.19				
v/s Ratio Perm		0.17							0.19		c0.30	
v/c Ratio		0.44						0.37	0.37		0.60	
Uniform Delay, d1		18.7						12.3	12.3		14.3	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		0.7						0.7	1.8		2.2	
Delay (s)		19.3						13.0	14.2		16.6	
Level of Service		B						B	B		B	
Approach Delay (s)		19.3			0.0			13.4			16.6	
Approach LOS		B			A			B			B	

Intersection Summary				
HCM Average Control Delay	16.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	66.7%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	469	99	625	786	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	0.99				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5256		1324	4020				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5256		1324	4020				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	510	108	651	819	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	52	0	69	69	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	566	0	289	1043	0	0	0	0
Confl. Peds. (#/hr)				52		67	53		46			
Confl. Bikes (#/hr)						8						
Bus Blockages (#/hr)	0	0	0	0	16	0	0	0	0	0	0	0
Parking (#/hr)					10			10				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					23.0		28.5	28.5				
Effective Green, g (s)					23.0		28.5	28.5				
Actuated g/C Ratio					0.38		0.48	0.48				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					2015		629	1910				
v/s Ratio Prot					c0.11							
v/s Ratio Perm							0.22	0.26				
v/c Ratio					0.28		0.46	0.55				
Uniform Delay, d1					12.8		10.6	11.2				
Progression Factor					1.00		3.32	2.66				
Incremental Delay, d2					0.3		1.0	0.5				
Delay (s)					13.1		36.1	30.2				
Level of Service					B		D	C				
Approach Delay (s)		0.0			13.1			31.6			0.0	
Approach LOS		A			B			C			A	

Intersection Summary				
HCM Average Control Delay	26.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	320	850	0	0	0	0	0	768	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						0.98	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1164	4100						2168	1084
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1134	3984						2193	1084
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	356	944	0	0	0	0	0	826	412
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	313	987	0	0	0	0	0	962	276
Confl. Bikes (#/hr)												8
Parking (#/hr)				10	10						10	0
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				340	1195						699	349
v/s Ratio Prot											c0.44	
v/s Ratio Perm				c0.28	0.25							0.25
v/c Ratio				0.92	0.83						1.38	0.79
Uniform Delay, d1				30.5	29.3						30.5	27.7
Progression Factor				1.00	1.00						0.26	0.21
Incremental Delay, d2				32.3	6.6						173.3	7.8
Delay (s)				62.7	35.9						181.3	13.6
Level of Service				E	D						F	B
Approach Delay (s)		0.0			42.4			0.0			143.9	
Approach LOS		A			D			A			F	

Intersection Summary					
HCM Average Control Delay	91.9	HCM Level of Service		F	
HCM Volume to Capacity ratio	1.16				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	424	173	0	0	0	0	0	0	194	1135	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								*0.75	
Frpb, ped/bikes		1.00	0.88								1.00	
Flpb, ped/bikes		1.00	1.00								0.98	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2946	1071								4715	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2946	1071								4715	
Peak-hour factor, PHF	1.00	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.94
Adj. Flow (vph)	0	505	206	0	0	0	0	0	0	218	1275	0
RTOR Reduction (vph)	0	0	144	0	0	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	505	62	0	0	0	0	0	0	0	1462	0
Confl. Peds. (#/hr)	110		101							139		91
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		884	321								1519	
v/s Ratio Prot		c0.17										
v/s Ratio Perm			0.06								0.31	
v/c Ratio		0.57	0.19								0.96	
Uniform Delay, d1		26.6	23.4								30.0	
Progression Factor		1.00	1.00								0.98	
Incremental Delay, d2		2.7	1.3								15.4	
Delay (s)		29.3	24.7								44.9	
Level of Service		C	C								D	
Approach Delay (s)		28.0			0.0			0.0			44.9	
Approach LOS		C			A			A			D	

Intersection Summary					
HCM Average Control Delay	39.4	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.77				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	46.1%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	358	0	0	0	0	863
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2858					5551
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2858					5551
Peak-hour factor, PHF	0.89	0.89	0.92	0.92	0.94	0.94
Adj. Flow (vph)	402	0	0	0	0	918
RTOR Reduction (vph)	65	0	0	0	0	0
Lane Group Flow (vph)	337	0	0	0	0	918
Confl. Peds. (#/hr)	113				121	
Parking (#/hr)	10					10
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1016					2837
v/s Ratio Prot	c0.12					c0.17
v/s Ratio Perm						
v/c Ratio	0.33					0.32
Uniform Delay, d1	10.6					6.4
Progression Factor	1.00					1.00
Incremental Delay, d2	0.9					0.3
Delay (s)	11.5					6.7
Level of Service	B					A
Approach Delay (s)	11.5		0.0			6.7
Approach LOS	B		A			A

Intersection Summary					
HCM Average Control Delay	8.2	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.33				
Actuated Cycle Length (s)	45.0	Sum of lost time (s)		6.0	
Intersection Capacity Utilization	31.9%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	1002	24	0	0	0	0	651	243	57	79	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.97			1.00	
Flpb, ped/bikes		0.99						1.00			0.99	
Frt		1.00						0.96			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		6200						3278			3176	
Flt Permitted		1.00						1.00			0.62	
Satd. Flow (perm)		6200						3278			2021	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	1.00	0.99	0.99	0.80	0.80	0.84
Adj. Flow (vph)	121	1193	29	0	0	0	0	658	245	71	99	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	1338	0	0	0	0	0	888	0	0	170	0
Confl. Peds. (#/hr)	73		131				76		113	113		76
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10		10						10		10	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3203						1175			724	
v/s Ratio Prot								c0.27				
v/s Ratio Perm		0.22									0.08	
v/c Ratio		0.42						0.76			0.23	
Uniform Delay, d1		8.9						16.9			13.5	
Progression Factor		1.00						1.00			0.79	
Incremental Delay, d2		0.4						4.5			0.8	
Delay (s)		9.3						21.5			11.5	
Level of Service		A						C			B	
Approach Delay (s)		9.3			0.0			21.5			11.5	
Approach LOS		A			A			C			B	

Intersection Summary					
HCM Average Control Delay	14.0	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.56				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		7.5	
Intersection Capacity Utilization	69.1%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	37	837	127	237	497	0	0	92	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.98	
Flpb, ped/bikes					1.00			0.99			1.00	
Frt					0.98			1.00			0.96	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					6045			3178			3309	
Flt Permitted					1.00			0.78			1.00	
Satd. Flow (perm)					6045			2517			3309	
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.91	0.91	0.91	0.86	0.63	0.63
Adj. Flow (vph)	0	0	0	43	973	148	260	546	0	0	146	62
RTOR Reduction (vph)	0	0	0	0	38	0	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	0	1126	0	0	806	0	0	168	0
Confl. Peds. (#/hr)				93		78	56		79	79		56
Confl. Bikes (#/hr)						8						8
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				10		10		10				10
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3174			902			1186	
v/s Ratio Prot											0.05	
v/s Ratio Perm					0.19			c0.32				
v/c Ratio					0.35			0.89			0.14	
Uniform Delay, d1					8.3			18.2			13.0	
Progression Factor					1.00			1.86			1.00	
Incremental Delay, d2					0.3			10.0			0.3	
Delay (s)					8.6			43.8			13.3	
Level of Service					A			D			B	
Approach Delay (s)		0.0			8.6			43.8			13.3	
Approach LOS		A			A			D			B	

Intersection Summary				
HCM Average Control Delay	22.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	61.1%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Future (Year 2015) With Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	347	655	173	0	0	0	0	283	83	3	133	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.97			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4853						2033			1628	
Flt Permitted		0.99						1.00			0.99	
Satd. Flow (perm)		2000						2033			1618	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.81	0.95	0.95	0.95	0.95	0.92
Adj. Flow (vph)	365	689	182	0	0	0	0	298	87	3	140	0
RTOR Reduction (vph)	0	54	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1183	0	0	0	0	0	361	0	0	143	0
Confl. Peds. (#/hr)	9		17				7		15	15		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)									5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1								2			
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		1000						700			557	
v/s Ratio Prot								c0.18				
v/s Ratio Perm		c0.59									0.09	
v/c Ratio		1.18						0.52			0.26	
Uniform Delay, d1		11.2						11.8			10.6	
Progression Factor		1.00						1.00			1.46	
Incremental Delay, d2		92.5						2.7			1.0	
Delay (s)		103.7						14.5			16.5	
Level of Service		F						B			B	
Approach Delay (s)		103.7			0.0			14.5			16.5	
Approach LOS		F			A			B			B	

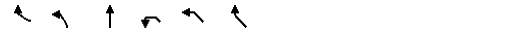
Intersection Summary				
HCM Average Control Delay	77.2	HCM Level of Service	E	
HCM Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	50.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	346	466	310	0	0	0	0	213	21	46	107	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.96						0.99			1.00	
Flt Protected		0.98						1.00			0.99	
Satd. Flow (prot)		4713						1834			1603	
Flt Permitted		0.98						1.00			0.86	
Satd. Flow (perm)		4713						1834			1400	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.82	0.82	0.82	0.83	0.83	0.83
Adj. Flow (vph)	360	485	323	0	0	0	0	260	26	55	129	0
RTOR Reduction (vph)	0	153	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	1015	0	0	0	0	0	278	0	0	184	0
Confl. Peds. (#/hr)	8		11	11		8	7		9	9		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			5						5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1309						958			731	
v/s Ratio Prot								c0.15				
v/s Ratio Perm		0.22									0.13	
v/c Ratio		0.78						0.29			0.25	
Uniform Delay, d1		15.0						6.1			5.9	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		4.5						0.8			0.8	
Delay (s)		19.5						6.8			6.7	
Level of Service		B						A			A	
Approach Delay (s)		19.5			0.0			6.8			6.7	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM Average Control Delay	15.9	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	76.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group



Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	31	164	452	122	51	839
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.82		1.00		0.98	0.98
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.90	0.85
Flt Protected	1.00		0.98		0.98	1.00
Satd. Flow (prot)	1314		3230		3118	1406
Flt Permitted	1.00		0.98		0.98	1.00
Satd. Flow (perm)	1314		3230		3118	1406
Peak-hour factor, PHF	0.92	0.75	0.96	0.77	0.86	0.89
Adj. Flow (vph)	34	219	471	158	59	943
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	34	0	690	0	689	471
Confl. Peds. (#/hr)	51	10		17		11
Confl. Bikes (#/hr)	2					8
Parking (#/hr)			8			
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	117		1170		1538	694
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.21		0.22	c0.33
v/c Ratio	0.29		0.59		0.45	0.68
Uniform Delay, d1	19.2		11.6		7.4	8.7
Progression Factor	1.00		0.76		1.00	1.00
Incremental Delay, d2	6.2		1.1		0.9	5.3
Delay (s)	25.4		10.0		8.4	14.0
Level of Service	C		A		A	B
Approach Delay (s)			10.0		10.6	
Approach LOS			A		B	

Intersection Summary				
HCM Average Control Delay	10.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	69.0%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	391	50	205	267	0	0	142	1752
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.98
Flpb, ped/bikes				0.96	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.65
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1704	1863	1478		1808			1747	1133
Flt Permitted				0.95	1.00	1.00		0.85			1.00	1.00
Satd. Flow (perm)				1704	1863	1478		1570			1747	1150
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.96	0.95	0.95	0.95	0.96	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	21	407	53	216	281	0	0	149	1844
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	0	0	41	41
Lane Group Flow (vph)	0	0	0	21	407	13	0	497	0	0	975	936
Confl. Peds. (#/hr)				18		17			16	16		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								5				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	34.5
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.58
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				412	450	357		903			1005	661
v/s Ratio Prot					c0.22						0.56	
v/s Ratio Perm				0.01		0.01		0.32				c0.81
v/c Ratio				0.05	0.90	0.04		0.55			0.97	1.42
Uniform Delay, d1				17.5	22.1	17.4		7.9			12.3	12.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.2	24.2	0.2		2.4			22.0	195.9
Delay (s)				17.7	46.3	17.6		10.3			34.3	208.7
Level of Service				B	D	B		B			C	F
Approach Delay (s)		0.0			41.9			10.3			119.8	
Approach LOS		A			D			B			F	

Intersection Summary				
HCM Average Control Delay	88.8	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.26			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	135.4%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	116	341	0	0	0	0	0	1128	2004	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	9.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.96			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4960						3575	2677			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4960						5085	1750			
Peak-hour factor, PHF	0.72	0.72	1.00	0.92	0.92	0.92	0.95	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	161	474	0	0	0	0	0	1175	2088	0	0	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	627	0	0	0	0	0	1175	2088	0	0	0
Confl. Peds. (#/hr)	25		11				27		13			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		27.0						23.0	60.0			
Effective Green, g (s)		27.0						23.0	60.0			
Actuated g/C Ratio		0.45						0.38	1.00			
Clearance Time (s)		5.0						5.0	25.0			
Lane Grp Cap (vph)		2232						1370	1750			
v/s Ratio Prot								0.33				
v/s Ratio Perm		0.13							c1.19			
v/c Ratio		0.28						0.86	1.19			
Uniform Delay, d1		10.4						17.0	30.0			
Progression Factor		1.50						1.00	1.00			
Incremental Delay, d2		0.3						7.1	92.9			
Delay (s)		15.9						24.1	122.9			
Level of Service		B						C	F			
Approach Delay (s)		15.9			0.0			87.3			0.0	
Approach LOS		B			A			F			A	

Intersection Summary				
HCM Average Control Delay	75.7	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.19			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	105.6%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	378	565	0	0	0	0	0	0	165	1076	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.98	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		0.94	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4246	1150								4104	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4246	1150								4104	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	390	582	0	0	0	0	0	0	176	1145	0
RTOR Reduction (vph)	0	11	11	0	0	0	0	0	0	0	34	0
Lane Group Flow (vph)	0	670	280	0	0	0	0	0	0	0	1287	0
Confl. Peds. (#/hr)	42		31							26		13
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		28.0	28.0								24.0	
Effective Green, g (s)		28.0	28.0								24.0	
Actuated g/C Ratio		0.47	0.47								0.40	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		1981	537								1642	
v/s Ratio Prot		0.16										
v/s Ratio Perm			c0.24								0.31	
v/c Ratio		0.34	0.52								0.78	
Uniform Delay, d1		10.1	11.3								15.7	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.5	3.6								3.8	
Delay (s)		10.6	14.9								19.6	
Level of Service		B	B								B	
Approach Delay (s)		11.9			0.0			0.0			19.6	
Approach LOS		B			A			A			B	

Intersection Summary				
HCM Average Control Delay	16.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	61.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	510	78	0	0	0	0	501	368	90	413	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.99	0.91		1.00	
Flpb, ped/bikes		1.00						1.00	1.00		1.00	
Frt		0.98						0.97	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.99	
Satd. Flow (prot)		5581						2871	1184		3082	
Flt Permitted		1.00						1.00	1.00		0.73	
Satd. Flow (perm)		5581						2871	1184		2263	
Peak-hour factor, PHF	0.79	0.79	0.79	1.00	1.00	1.00	1.00	0.92	0.92	0.96	0.96	1.00
Adj. Flow (vph)	57	646	99	0	0	0	0	545	400	94	430	0
RTOR Reduction (vph)	0	31	0	0	0	0	0	20	45	0	0	0
Lane Group Flow (vph)	0	771	0	0	0	0	0	637	243	0	524	0
Confl. Peds. (#/hr)	28		34				43		26	26		43
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	5		5									5
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2144						1453	599		1145	
v/s Ratio Prot								0.22				
v/s Ratio Perm		0.14							0.20		c0.23	
v/c Ratio		0.36						0.44	0.40		0.46	
Uniform Delay, d1		18.0						12.9	12.6		13.0	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		0.5						1.0	2.0		1.3	
Delay (s)		18.5						13.8	14.6		14.3	
Level of Service		B						B	B		B	
Approach Delay (s)		18.5			0.0			14.1			14.3	
Approach LOS		B			A			B			B	

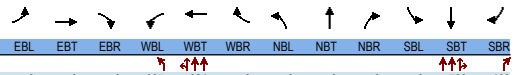
Intersection Summary				
HCM Average Control Delay	15.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	65.0%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	659	138	426	843	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	1.00				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5284		1329	4105				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5284		1329	4105				
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	732	153	448	887	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	63	0	16	16	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	822	0	307	996	0	0	0	0
Confl. Peds. (#/hr)				42		52	53		38			
Confl. Bikes (#/hr)						8						
Bus Blockages (#/hr)	0	0	0	0	18	0	0	0	0	0	0	0
Parking (#/hr)					5			5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					19.0		32.5	32.5				
Effective Green, g (s)					19.0		32.5	32.5				
Actuated g/C Ratio					0.32		0.54	0.54				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					1673		720	2224				
v/s Ratio Prot					c0.16							
v/s Ratio Perm							0.23	0.24				
v/c Ratio					0.49		0.43	0.45				
Uniform Delay, d1					16.6		8.2	8.3				
Progression Factor					1.00		2.42	2.34				
Incremental Delay, d2					1.0		1.1	0.4				
Delay (s)					17.6		21.0	19.9				
Level of Service					B		C	B				
Approach Delay (s)		0.0			17.6			20.2			0.0	
Approach LOS		A			B			C			A	

Intersection Summary				
HCM Average Control Delay	19.1	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

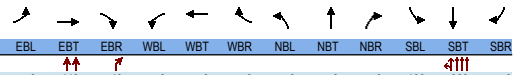
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	335	824	0	0	0	0	0	780	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4132						2355	1054
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4132						2355	1054
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	368	905	0	0	0	0	0	857	185
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	309	964	0	0	0	0	0	876	166
Confl. Bikes (#/hr)												8
Parking (#/hr)				5	5							5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1240						759	340
v/s Ratio Prot											c0.37	
v/s Ratio Perm				c0.26	0.23							0.16
v/c Ratio				0.86	0.78						1.15	0.49
Uniform Delay, d1				29.7	28.8						30.5	24.5
Progression Factor				1.00	1.00						0.22	0.12
Incremental Delay, d2				22.7	4.8						77.7	2.6
Delay (s)				52.5	33.6						84.4	5.6
Level of Service				D	C						F	A
Approach Delay (s)		0.0			38.2			0.0			71.8	
Approach LOS		A			D			A			E	

Intersection Summary				
HCM Average Control Delay	53.3	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.01			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	34.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

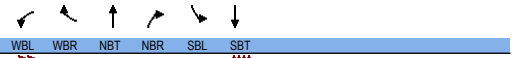
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	113	46	0	0	0	0	0	0	188	863	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1425	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frpb, ped/bikes		1.00	0.91								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1136								4100	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1136								4100	
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	136	55	0	0	0	0	0	0	214	981	0
RTOR Reduction (vph)	0	0	39	0	0	0	0	0	0	0	43	0
Lane Group Flow (vph)	0	136	17	0	0	0	0	0	0	0	1152	0
Confl. Peds. (#/hr)	67		73							76		52
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	341								1321	
v/s Ratio Prot		c0.05										
v/s Ratio Perm			0.01								0.28	
v/c Ratio		0.15	0.05								0.87	
Uniform Delay, d1		23.1	22.4								28.7	
Progression Factor		1.00	1.00								1.01	
Incremental Delay, d2		0.4	0.3								7.9	
Delay (s)		23.5	22.6								37.0	
Level of Service		C	C								D	
Approach Delay (s)		23.2			0.0			0.0			37.0	
Approach LOS		C			A			A			D	

Intersection Summary				
HCM Average Control Delay	35.1	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	34.0	
Intersection Capacity Utilization	42.8%	ICU Level of Service	A	
Analysis Period (min)	15			

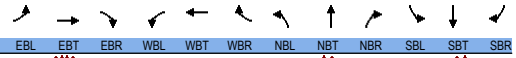
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	290	0	0	0	0	697
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2897					5587
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2897					5587
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.83	0.83
Adj. Flow (vph)	322	0	0	0	0	840
RTOR Reduction (vph)	111	0	0	0	0	0
Lane Group Flow (vph)	211	0	0	0	0	840
Confl. Peds. (#/hr)	57				63	
Parking (#/hr)	5					5
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1030					2856
v/s Ratio Prot	c0.07					c0.15
v/s Ratio Perm						
v/c Ratio	0.21					0.29
Uniform Delay, d1	10.1					6.3
Progression Factor	1.00					1.00
Incremental Delay, d2	0.5					0.3
Delay (s)	10.5					6.6
Level of Service	B					A
Approach Delay (s)	10.5		0.0			6.6
Approach LOS	B		A			A

Intersection Summary				
HCM Average Control Delay	7.7	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.26			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.0	
Intersection Capacity Utilization	27.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	382	26	0	0	0	0	798	177	21	55	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.98			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.97			1.00	
Flt Protected		0.99						1.00			0.99	
Satd. Flow (prot)		6129						3380			3262	
Flt Permitted		0.99						1.00			0.74	
Satd. Flow (perm)		6129						3380			2450	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	52	406	28	0	0	0	0	867	192	26	69	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	31	0	0	0	0
Lane Group Flow (vph)	0	472	0	0	0	0	0	1028	0	0	95	0
Confl. Peds. (#/hr)	63		91				56		87	87		56
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5		5						5		5	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3167						1211			878	
v/s Ratio Prot								c0.30				
v/s Ratio Perm		0.08									0.04	
v/c Ratio		0.15						0.85			0.11	
Uniform Delay, d1		7.6						17.7			12.9	
Progression Factor		1.00						1.00			1.19	
Incremental Delay, d2		0.1						7.5			0.2	
Delay (s)		7.7						25.2			15.6	
Level of Service		A						C			B	
Approach Delay (s)		7.7			0.0			25.2			15.6	
Approach LOS		A			A			C			B	

Intersection Summary				
HCM Average Control Delay	19.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.5	
Intersection Capacity Utilization	48.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	51	910	94	178	637	0	0	44	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.97	
Flpb, ped/bikes					1.00			0.99			1.00	
Frt					0.99			1.00			0.92	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					6098			3258			3146	
Flt Permitted					1.00			0.84			1.00	
Satd. Flow (perm)					6098			2751			3146	
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.86	0.86	0.86	0.62	0.62	0.62
Adj. Flow (vph)	0	0	0	53	948	98	207	741	0	0	71	89
RTOR Reduction (vph)	0	0	0	0	22	0	0	0	0	0	44	0
Lane Group Flow (vph)	0	0	0	0	1077	0	0	948	0	0	116	0
Confl. Peds. (#/hr)				86		73	43		51	51		43
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				5		5		5				5
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3201			986			1127	
v/s Ratio Prot											0.04	
v/s Ratio Perm					0.18			c0.34				
v/c Ratio					0.34			0.96			0.10	
Uniform Delay, d1					8.2			18.8			12.8	
Progression Factor					1.00			1.32			1.00	
Incremental Delay, d2					0.3			14.6			0.2	
Delay (s)					8.5			39.5			13.0	
Level of Service					A			D			B	
Approach Delay (s)		0.0			8.5			39.5			13.0	
Approach LOS		A			A			D			B	

Intersection Summary				
HCM Average Control Delay	22.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	48.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	301	620	85	0	0	0	0	529	73	1	103	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4897						2069			1583	
Flt Permitted		0.99						1.00			0.91	
Satd. Flow (perm)		1100						2069			1439	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.84	0.95	0.95	0.95	0.95	0.70
Adj. Flow (vph)	317	653	89	0	0	0	0	557	77	1	108	0
RTOR Reduction (vph)	0	24	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1035	0	0	0	0	0	623	0	0	109	0
Confl. Peds. (#/hr)	22		23				16		14	14		16
Confl. Bikes (#/hr)									8			
Parking (#/hr)									10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		550						713			496	
v/s Ratio Prot								c0.30				
v/s Ratio Perm		c0.94									0.08	
v/c Ratio		1.88						0.87			0.22	
Uniform Delay, d1		11.2						13.8			10.5	
Progression Factor		1.00						1.00			0.45	
Incremental Delay, d2		403.7						14.0			0.9	
Delay (s)		414.9						27.8			5.7	
Level of Service		F						C			A	
Approach Delay (s)		414.9			0.0			27.8			5.7	
Approach LOS		F			A			C			A	

Intersection Summary				
HCM Average Control Delay	254.0	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.47			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	59.3%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	383	672	260	0	0	0	0	382	34	166	68	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.97						0.99			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4782						1837			1523	
Flt Permitted		0.99						1.00			0.48	
Satd. Flow (perm)		4782						1837			764	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.84	0.84	0.84	0.90	0.90	0.90
Adj. Flow (vph)	399	700	271	0	0	0	0	455	40	184	76	0
RTOR Reduction (vph)	0	94	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	1276	0	0	0	0	0	488	0	0	260	0
Confl. Peds. (#/hr)	12		13	13		12	11		12	12		11
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			10						10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1328						959			399	
v/s Ratio Prot								0.27				
v/s Ratio Perm		0.27									c0.34	
v/c Ratio		0.96						0.51			0.65	
Uniform Delay, d1		16.0						7.0			7.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		17.0						1.9			8.0	
Delay (s)		33.0						8.9			15.8	
Level of Service		C						A			B	
Approach Delay (s)		33.0			0.0			8.9			15.8	
Approach LOS		C			A			A			B	

Intersection Summary				
HCM Average Control Delay	25.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	82.1%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	38	388	721	147	47	635
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.93		1.00		0.99	0.97
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.92	0.85
Flt Protected	1.00		0.98		0.98	1.00
Satd. Flow (prot)	1493		3463		3177	1404
Flt Permitted	1.00		0.98		0.98	1.00
Satd. Flow (perm)	1493		3463		3177	1404
Peak-hour factor, PHF	0.73	0.90	0.86	0.60	0.84	0.94
Adj. Flow (vph)	52	431	838	245	56	676
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	52	0	1269	0	639	338
Confl. Peds. (#/hr)	13	15		15		13
Confl. Bikes (#/hr)	8					8
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	133		1254		1567	693
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.37		0.20	c0.24
v/c Ratio	0.39		1.01		0.41	0.49
Uniform Delay, d1	19.4		14.3		7.2	7.6
Progression Factor	1.00		0.89		1.00	1.00
Incremental Delay, d2	8.4		21.1		0.8	2.4
Delay (s)	27.8		33.8		8.0	10.1
Level of Service	C		C		A	B
Approach Delay (s)			33.8		8.7	
Approach LOS			C		A	

Intersection Summary				
HCM Average Control Delay	23.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	72.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	6	365	47	307	420	0	0	180	1483
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.98
Flpb, ped/bikes				0.97	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.60
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1711	1863	1469		1757			1749	1046
Flt Permitted				0.95	1.00	1.00		0.70			1.00	1.00
Satd. Flow (perm)				1711	1863	1469		1256			1749	1046
Peak-hour factor, PHF	0.92	0.92	0.92	0.50	0.95	0.95	0.95	0.95	0.96	0.95	0.95	0.98
Adj. Flow (vph)	0	0	0	12	384	49	323	442	0	0	189	1513
RTOR Reduction (vph)	0	0	0	0	0	37	0	0	0	0	45	45
Lane Group Flow (vph)	0	0	0	12	384	12	0	765	0	0	825	787
Confl. Peds. (#/hr)				16		20			14	14		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								10				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	34.5
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.58
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				413	450	355		722			1006	601
v/s Ratio Prot					c0.21						0.47	
v/s Ratio Perm				0.01		0.01		0.61				c0.75
v/c Ratio				0.03	0.85	0.03		1.06			0.82	1.31
Uniform Delay, d1				17.4	21.7	17.4		12.8			10.2	12.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.1	18.2	0.2		50.4			7.4	150.6
Delay (s)				17.5	40.0	17.6		63.1			17.7	163.4
Level of Service				B	D	B		E			B	F
Approach Delay (s)		0.0			36.9			63.1			88.9	
Approach LOS		A			D			E			F	

Intersection Summary				
HCM Average Control Delay	74.2	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.17			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	133.3%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	143	714	0	0	0	0	0	1284	1940	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	16.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.94			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4978						5085	2607			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4978						5085	1600			
Peak-hour factor, PHF	0.91	0.91	1.00	0.92	0.92	0.92	0.93	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	157	785	0	0	0	0	0	1366	2064	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	942	0	0	0	0	0	1366	2064	0	0	0
Confl. Peds. (#/hr)	56		32				41		26			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		34.0						16.0	60.0			
Effective Green, g (s)		34.0						16.0	60.0			
Actuated g/C Ratio		0.57						0.27	1.00			
Clearance Time (s)		5.0						5.0	26.0			
Lane Grp Cap (vph)		2821						1356	1600			
v/s Ratio Prot								0.27				
v/s Ratio Perm		0.19							c1.29			
v/c Ratio		0.33						1.01	1.29			
Uniform Delay, d1		6.9						22.0	30.0			
Progression Factor		1.05						1.00	1.00			
Incremental Delay, d2		0.3						26.2	135.3			
Delay (s)		7.6						48.2	165.3			
Level of Service		A						D	F			
Approach Delay (s)		7.6			0.0			118.7			0.0	
Approach LOS		A			A			F			A	

Intersection Summary				
HCM Average Control Delay	94.8	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.29			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	116.1%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	829	571	0	0	0	0	0	0	287	987	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.99	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		0.97	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4361	1107								4025	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4361	1107								4025	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	0	855	589	0	0	0	0	0	0	299	1028	0
RTOR Reduction (vph)	0	5	5	0	0	0	0	0	0	0	56	0
Lane Group Flow (vph)	0	1109	325	0	0	0	0	0	0	0	1271	0
Confl. Peds. (#/hr)	86		52							43		41
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		32.0	32.0								20.0	
Effective Green, g (s)		32.0	32.0								20.0	
Actuated g/C Ratio		0.53	0.53								0.33	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		2326	590								1342	
v/s Ratio Prot		0.25										
v/s Ratio Perm			c0.29								0.32	
v/c Ratio		0.48	0.55								0.95	
Uniform Delay, d1		8.8	9.2								19.5	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.7	3.7								14.8	
Delay (s)		9.5	12.9								34.3	
Level of Service		A	B								C	
Approach Delay (s)		10.3			0.0				0.0		34.3	
Approach LOS		B			A				A		C	

Intersection Summary				
HCM Average Control Delay	21.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	63.6%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	725	112	0	0	0	0	450	299	101	539	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.98	0.87		1.00	
Flpb, ped/bikes		0.99						1.00	1.00		0.99	
Frt		0.98						0.98	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.99	
Satd. Flow (prot)		5564						2875	1126		3076	
Flt Permitted		1.00						1.00	1.00		0.75	
Satd. Flow (perm)		5564						2875	1126		2326	
Peak-hour factor, PHF	0.94	0.94	0.94	1.00	1.00	1.00	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	84	771	119	0	0	0	0	489	325	112	599	0
RTOR Reduction (vph)	0	31	0	0	0	0	0	15	29	0	0	0
Lane Group Flow (vph)	0	943	0	0	0	0	0	552	218	0	711	0
Confl. Peds. (#/hr)	37		36				52		45	45		52
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	10		10									10
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2137						1455	570		1177	
v/s Ratio Prot								0.19				
v/s Ratio Perm		0.17							0.19		c0.31	
v/c Ratio		0.44						0.38	0.38		0.60	
Uniform Delay, d1		18.7						12.4	12.4		14.4	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		0.7						0.8	1.9		2.3	
Delay (s)		19.4						13.1	14.4		16.7	
Level of Service		B						B	B		B	
Approach Delay (s)		19.4			0.0			13.5			16.7	
Approach LOS		B			A			B			B	

Intersection Summary				
HCM Average Control Delay	16.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	67.0%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	536	99	665	823	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	0.99				
Frt					0.98		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5278		1324	4017				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5278		1324	4017				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	583	108	693	857	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	47	0	53	53	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	644	0	321	1123	0	0	0	0
Confl. Peds. (#/hr)				52		67	53		46			
Confl. Bikes (#/hr)							8					
Bus Blockages (#/hr)	0	0	0	0	16	0	0	0	0	0	0	0
Parking (#/hr)					10			10				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					23.0		28.5	28.5				
Effective Green, g (s)					23.0		28.5	28.5				
Actuated g/C Ratio					0.38		0.48	0.48				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					2023		629	1908				
v/s Ratio Prot					c0.12							
v/s Ratio Perm							0.24	0.28				
v/c Ratio					0.32		0.51	0.59				
Uniform Delay, d1					13.0		10.9	11.5				
Progression Factor					1.00		2.90	2.52				
Incremental Delay, d2					0.4		1.1	0.5				
Delay (s)					13.4		32.7	29.4				
Level of Service					B		C	C				
Approach Delay (s)		0.0			13.4			30.2			0.0	
Approach LOS		A			B			C			A	

Intersection Summary				
HCM Average Control Delay	25.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	50.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	420	855	0	0	0	0	0	786	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						0.98	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1164	4085						2195	1084
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1164	4085						2195	1084
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	467	950	0	0	0	0	0	845	412
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	341	1076	0	0	0	0	0	977	280
Confl. Bikes (#/hr)												8
Parking (#/hr)				10	10						10	0
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				349	1226						707	349
v/s Ratio Prot											c0.45	
v/s Ratio Perm				c0.29	0.26							0.26
v/c Ratio				0.98	0.88						1.38	0.80
Uniform Delay, d1				31.2	29.9						30.5	27.9
Progression Factor				1.00	1.00						0.26	0.21
Incremental Delay, d2				42.7	9.0						175.5	7.9
Delay (s)				73.9	39.0						183.4	13.6
Level of Service				E	D						F	B
Approach Delay (s)		0.0			47.4			0.0			145.6	
Approach LOS		A			D			A			F	

Intersection Summary					
HCM Average Control Delay	93.5	HCM Level of Service		F	
HCM Volume to Capacity ratio	1.19				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	50.8%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	424	173	0	0	0	0	0	0	194	1153	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								*0.75	
Frpb, ped/bikes		1.00	0.88								1.00	
Flpb, ped/bikes		1.00	1.00								0.98	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2946	1071								4717	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2946	1071								4717	
Peak-hour factor, PHF	1.00	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.94
Adj. Flow (vph)	0	505	206	0	0	0	0	0	0	218	1296	0
RTOR Reduction (vph)	0	0	144	0	0	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	505	62	0	0	0	0	0	0	0	1484	0
Confl. Peds. (#/hr)	110		101							139		91
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		884	321								1520	
v/s Ratio Prot		c0.17										
v/s Ratio Perm			0.06								0.31	
v/c Ratio		0.57	0.19								0.98	
Uniform Delay, d1		26.6	23.4								30.2	
Progression Factor		1.00	1.00								0.98	
Incremental Delay, d2		2.7	1.3								17.7	
Delay (s)		29.3	24.7								47.3	
Level of Service		C	C								D	
Approach Delay (s)		28.0			0.0			0.0			47.3	
Approach LOS		C			A			A			D	

Intersection Summary					
HCM Average Control Delay	41.1	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.78				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0	
Intersection Capacity Utilization	46.4%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	359	0	0	0	0	880
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2858					5551
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2858					5551
Peak-hour factor, PHF	0.89	0.89	0.92	0.92	0.94	0.94
Adj. Flow (vph)	403	0	0	0	0	936
RTOR Reduction (vph)	62	0	0	0	0	0
Lane Group Flow (vph)	341	0	0	0	0	936
Confl. Peds. (#/hr)	113				121	
Parking (#/hr)	10					10
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1016					2837
v/s Ratio Prot	c0.12					c0.17
v/s Ratio Perm						
v/c Ratio	0.34					0.33
Uniform Delay, d1	10.6					6.5
Progression Factor	1.00					1.00
Incremental Delay, d2	0.9					0.3
Delay (s)	11.5					6.8
Level of Service	B					A
Approach Delay (s)	11.5		0.0			6.8
Approach LOS	B		A			A

Intersection Summary					
HCM Average Control Delay	8.2	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.33				
Actuated Cycle Length (s)	45.0	Sum of lost time (s)		6.0	
Intersection Capacity Utilization	32.2%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	1002	24	0	0	0	0	670	259	57	80	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.96			1.00	
Flpb, ped/bikes		0.99						1.00			0.99	
Frt		1.00						0.96			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		6200						3271			3179	
Flt Permitted		1.00						1.00			0.62	
Satd. Flow (perm)		6200						3271			1999	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	1.00	0.99	0.99	0.80	0.80	0.84
Adj. Flow (vph)	121	1193	29	0	0	0	0	677	262	71	100	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	1338	0	0	0	0	0	924	0	0	171	0
Confl. Peds. (#/hr)	73		131				76		113	113		76
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10		10						10		10	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3203						1172			716	
v/s Ratio Prot								c0.28				
v/s Ratio Perm		0.22									0.09	
v/c Ratio		0.42						0.79			0.24	
Uniform Delay, d1		8.9						17.2			13.5	
Progression Factor		1.00						1.00			0.79	
Incremental Delay, d2		0.4						5.4			0.8	
Delay (s)		9.3						22.6			11.5	
Level of Service		A						C			B	
Approach Delay (s)		9.3			0.0			22.6			11.5	
Approach LOS		A			A			C			B	

Intersection Summary					
HCM Average Control Delay	14.6	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.57				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		7.5	
Intersection Capacity Utilization	70.2%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	37	837	127	244	509	0	0	93	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.98	
Flpb, ped/bikes					1.00			0.99			1.00	
Frt					0.98			1.00			0.96	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					6045			3178			3311	
Flt Permitted					1.00			0.78			1.00	
Satd. Flow (perm)					6045			2513			3311	
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.91	0.91	0.91	0.86	0.63	0.63
Adj. Flow (vph)	0	0	0	43	973	148	268	559	0	0	148	62
RTOR Reduction (vph)	0	0	0	0	36	0	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	0	1128	0	0	827	0	0	170	0
Confl. Peds. (#/hr)				93		78	56		79	79		56
Confl. Bikes (#/hr)						8						8
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				10		10		10				10
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3174			900			1186	
v/s Ratio Prot											0.05	
v/s Ratio Perm					0.19			c0.33				
v/c Ratio					0.36			0.92			0.14	
Uniform Delay, d1					8.3			18.4			13.0	
Progression Factor					1.00			1.86			1.00	
Incremental Delay, d2					0.3			11.8			0.3	
Delay (s)					8.6			46.0			13.3	
Level of Service					A			D			B	
Approach Delay (s)		0.0			8.6			46.0			13.3	
Approach LOS		A			A			D			B	

Intersection Summary				
HCM Average Control Delay	23.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	61.6%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Mitigation - Future (Year 2015) With Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	347	655	173	0	0	0	0	283	83	3	133	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.97			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4845						2030			1628	
Flt Permitted		0.99						1.00			0.99	
Satd. Flow (perm)		2000						2030			1618	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.81	0.95	0.95	0.95	0.95	0.92
Adj. Flow (vph)	365	689	182	0	0	0	0	298	87	3	140	0
RTOR Reduction (vph)	0	40	0	0	0	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	1196	0	0	0	0	0	367	0	0	143	0
Confl. Peds. (#/hr)	9		17				7		15	15		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)									5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		37.3						15.7			15.7	
Effective Green, g (s)		37.3						15.7			15.7	
Actuated g/C Ratio		0.62						0.26			0.26	
Clearance Time (s)		3.5						3.5			3.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		1243						531			423	
v/s Ratio Prot								c0.18				
v/s Ratio Perm		c0.60									0.09	
v/c Ratio		0.96						0.69			0.34	
Uniform Delay, d1		10.7						20.0			17.9	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		17.1						7.2			2.2	
Delay (s)		27.8						27.2			20.1	
Level of Service		C						C			C	
Approach Delay (s)		27.8			0.0			27.2			20.1	
Approach LOS		C			A			C			C	

Intersection Summary				
HCM Average Control Delay	27.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	50.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	391	50	205	267	0	0	142	1752
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.92		1.00			0.99	0.99
Flpb, ped/bikes				0.95	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.65
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1687	1863	1462		1808			1747	1133
Flt Permitted				0.95	1.00	1.00		0.85			1.00	1.00
Satd. Flow (perm)				1687	1863	1462		1570			1747	1150
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.96	0.95	0.95	0.95	0.96	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	21	407	53	216	281	0	0	149	1844
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	22	22
Lane Group Flow (vph)	0	0	0	21	407	11	0	497	0	0	994	955
Confl. Peds. (#/hr)				18		17			16	16		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								5				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				15.5	15.5	15.5		48.5			48.5	48.5
Effective Green, g (s)				15.5	15.5	15.5		48.5			48.5	48.5
Actuated g/C Ratio				0.21	0.21	0.21		0.65			0.65	0.65
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Vehicle Extension (s)				2.0	2.0	2.0		2.0			2.0	2.0
Lane Grp Cap (vph)				349	385	302		1015			1130	744
v/s Ratio Prot					c0.22						0.57	
v/s Ratio Perm				0.01		0.01		0.32				c0.83
v/c Ratio				0.06	1.06	0.04		0.49			0.88	1.28
Uniform Delay, d1				23.9	29.8	23.8		6.9			10.9	13.3
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.3	61.7	0.2		0.1			7.8	137.6
Delay (s)				24.2	91.5	24.0		7.0			18.6	150.9
Level of Service				C	F	C		A			B	F
Approach Delay (s)		0.0			81.1			7.0			83.5	
Approach LOS		A			F			A			F	

Intersection Summary				
HCM Average Control Delay	70.3	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.23			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	133.4%	ICU Level of Service	H	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	301	620	85	0	0	0	0	529	73	1	103	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4883						2068			1583	
Flt Permitted		0.99						1.00			0.71	
Satd. Flow (perm)		1100						2068			1125	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.84	0.95	0.95	0.95	0.95	0.70
Adj. Flow (vph)	317	653	89	0	0	0	0	557	77	1	108	0
RTOR Reduction (vph)	0	18	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	1041	0	0	0	0	0	626	0	0	109	0
Confl. Peds. (#/hr)	22		23				16		14	14		16
Confl. Bikes (#/hr)									8			
Parking (#/hr)									10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		37.5						15.5			15.5	
Effective Green, g (s)		37.5						15.5			15.5	
Actuated g/C Ratio		0.62						0.26			0.26	
Clearance Time (s)		3.5						3.5			3.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		688						534			291	
v/s Ratio Prot								c0.30				
v/s Ratio Perm		c0.95									0.10	
v/c Ratio		1.51						1.17			0.37	
Uniform Delay, d1		11.2						22.2			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		238.4						95.9			3.7	
Delay (s)		249.6						118.2			21.9	
Level of Service		F						F			C	
Approach Delay (s)		249.6			0.0			118.2			21.9	
Approach LOS		F			A			F			C	

Intersection Summary				
HCM Average Control Delay	189.6	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.41			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	59.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	6	365	47	307	420	0	0	180	1483
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.91		1.00			0.99	0.99
Flpb, ped/bikes				0.96	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.60
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1696	1863	1448		1757			1749	1046
Flt Permitted				0.95	1.00	1.00		0.70			1.00	1.00
Satd. Flow (perm)				1696	1863	1448		1256			1749	1046
Peak-hour factor, PHF	0.92	0.92	0.92	0.50	0.95	0.95	0.95	0.95	0.96	0.95	0.95	0.98
Adj. Flow (vph)	0	0	0	12	384	49	323	442	0	0	189	1513
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	0	0	20	20
Lane Group Flow (vph)	0	0	0	12	384	9	0	765	0	0	850	812
Confl. Peds. (#/hr)				16		20			14	14		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								10				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		49.5			49.5	49.5
Effective Green, g (s)				14.5	14.5	14.5		49.5			49.5	49.5
Actuated g/C Ratio				0.19	0.19	0.19		0.66			0.66	0.66
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Vehicle Extension (s)				2.0	2.0	2.0		2.0			2.0	2.0
Lane Grp Cap (vph)				328	360	280		829			1154	690
v/s Ratio Prot					c0.21						0.49	
v/s Ratio Perm				0.01		0.01		0.61				c0.78
v/c Ratio				0.04	1.07	0.03		0.92			0.74	1.18
Uniform Delay, d1				24.6	30.2	24.6		11.1			8.4	12.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.2	66.2	0.2		15.4			2.1	94.4
Delay (s)				24.8	96.5	24.8		26.5			10.6	107.1
Level of Service				C	F	C		C			B	F
Approach Delay (s)		0.0			86.7			26.5			57.8	
Approach LOS		A			F			C			E	

Intersection Summary				
HCM Average Control Delay	54.0	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.15			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	133.3%	ICU Level of Service	H	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	420	855	0	0	0	0	0	786	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						0.98	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1164	4085						2195	1085
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1164	4085						2195	1085
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	467	950	0	0	0	0	0	845	412
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	341	1076	0	0	0	0	0	977	280
Confl. Bikes (#/hr)												8
Parking (#/hr)				10	10						10	0
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				22.0	22.0						34.0	34.0
Effective Green, g (s)				22.0	22.0						34.0	34.0
Actuated g/C Ratio				0.24	0.24						0.38	0.38
Clearance Time (s)				4.0	4.0						4.0	4.0
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Lane Grp Cap (vph)				285	999						829	410
v/s Ratio Prot											c0.45	
v/s Ratio Perm				c0.29	0.26							0.26
v/c Ratio				1.20	1.08						1.18	0.68
Uniform Delay, d1				34.0	34.0						28.0	23.5
Progression Factor				1.00	1.00						0.32	0.22
Incremental Delay, d2				117.4	51.6						85.8	3.8
Delay (s)				151.4	85.6						94.7	9.0
Level of Service				F	F						F	A
Approach Delay (s)		0.0			101.4			0.0			75.6	
Approach LOS		A			F			A			E	

Intersection Summary				
HCM Average Control Delay	89.3	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.19			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	34.0	
Intersection Capacity Utilization	50.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Future (Year 2030) Base Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	401	706	202	0	0	0	0	349	103	4	167	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.97			1.00	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		4843						2032			1628	
Flt Permitted		0.98						1.00			0.99	
Satd. Flow (perm)		2000						2032			1614	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.81	0.95	0.95	0.95	0.95	0.92
Adj. Flow (vph)	422	743	213	0	0	0	0	367	108	4	176	0
RTOR Reduction (vph)	0	59	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1320	0	0	0	0	0	451	0	0	180	0
Confl. Peds. (#/hr)	9		17				7		15	15		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)									5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		1000						700			556	
v/s Ratio Prot								c0.22				
v/s Ratio Perm		c0.66									0.11	
v/c Ratio		1.32						0.64			0.32	
Uniform Delay, d1		11.2						12.4			10.9	
Progression Factor		1.00						1.00			1.44	
Incremental Delay, d2		150.9						4.5			1.4	
Delay (s)		162.1						17.0			17.0	
Level of Service		F						B			B	
Approach Delay (s)		162.1			0.0			17.0			17.0	
Approach LOS		F			A			B			B	

Intersection Summary				
HCM Average Control Delay	115.3	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.04			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	58.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	363	781	314	0	0	0	0	214	21	48	112	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.97						0.99			1.00	
Flt Protected		0.99						1.00			0.99	
Satd. Flow (prot)		4791						1834			1603	
Flt Permitted		0.99						1.00			0.86	
Satd. Flow (perm)		4791						1834			1395	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.82	0.82	0.82	0.83	0.83	0.83
Adj. Flow (vph)	378	814	327	0	0	0	0	261	26	58	135	0
RTOR Reduction (vph)	0	110	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	1409	0	0	0	0	0	279	0	0	193	0
Confl. Peds. (#/hr)	8		11	11		8	7		9	9		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			5						5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1331						958			729	
v/s Ratio Prot								c0.15				
v/s Ratio Perm		0.29									0.14	
v/c Ratio		1.06						0.29			0.26	
Uniform Delay, d1		16.2						6.1			6.0	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		41.8						0.8			0.9	
Delay (s)		58.1						6.8			6.8	
Level of Service		E						A			A	
Approach Delay (s)		58.1			0.0			6.8			6.8	
Approach LOS		E			A			A			A	

Intersection Summary				
HCM Average Control Delay	45.8	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	82.4%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	31	309	811	137	76	889
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.82		1.00		0.98	0.98
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.90	0.85
Flt Protected	1.00		0.98		0.98	1.00
Satd. Flow (prot)	1314		3228		3130	1406
Flt Permitted	1.00		0.98		0.98	1.00
Satd. Flow (perm)	1314		3228		3130	1406
Peak-hour factor, PHF	0.92	0.75	0.96	0.77	0.86	0.89
Adj. Flow (vph)	34	412	845	178	88	999
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	34	0	1257	0	766	499
Confl. Peds. (#/hr)	51	10		17		11
Confl. Bikes (#/hr)	2					8
Parking (#/hr)			8			
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	117		1169		1544	694
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.39		0.24	c0.35
v/c Ratio	0.29		1.08		0.50	0.72
Uniform Delay, d1	19.2		14.3		7.6	9.0
Progression Factor	1.00		0.86		1.00	1.00
Incremental Delay, d2	6.2		46.3		1.1	6.3
Delay (s)	25.4		58.8		8.8	15.3
Level of Service	C		E		A	B
Approach Delay (s)			58.8		11.3	
Approach LOS			E		B	

Intersection Summary				
HCM Average Control Delay	34.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	85.2%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	444	148	205	362	0	0	150	1953
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.98
Flpb, ped/bikes				0.96	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.65
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1704	1863	1478		1814			1747	1133
Flt Permitted				0.95	1.00	1.00		0.85			1.00	1.00
Satd. Flow (perm)				1704	1863	1478		1570			1747	1150
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.96	0.95	0.95	0.95	0.96	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	21	462	156	216	381	0	0	158	2056
RTOR Reduction (vph)	0	0	0	0	0	118	0	0	0	0	30	30
Lane Group Flow (vph)	0	0	0	21	462	38	0	597	0	0	1094	1060
Confl. Peds. (#/hr)				18		17			16	16		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								5				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	34.5
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.58
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				412	450	357		903			1005	661
v/s Ratio Prot					c0.25						0.63	
v/s Ratio Perm				0.01		0.03		0.38				c0.92
v/c Ratio				0.05	1.03	0.11		0.66			1.09	1.60
Uniform Delay, d1				17.5	22.8	17.7		8.7			12.8	12.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.2	49.4	0.6		3.8			55.6	278.6
Delay (s)				17.7	72.2	18.3		12.5			68.3	291.3
Level of Service				B	E	B		B			E	F
Approach Delay (s)		0.0			57.2			12.5			178.1	
Approach LOS		A			E			B			F	

Intersection Summary				
HCM Average Control Delay	127.1	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.43			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	148.1%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: 7th St & Harrison St

2030 No Project AM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	363	0	0	0	0	0	1189	2312	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	9.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.96			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		5000						5085	2677			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		5000						5085	1750			
Peak-hour factor, PHF	0.72	0.72	1.00	0.92	0.92	0.92	0.95	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	78	504	0	0	0	0	0	1239	2408	0	0	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	576	0	0	0	0	0	1239	2408	0	0	0
Confl. Peds. (#/hr)	25		11				27		13			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		27.0						23.0	60.0			
Effective Green, g (s)		27.0						23.0	60.0			
Actuated g/C Ratio		0.45						0.38	1.00			
Clearance Time (s)		5.0						5.0	25.0			
Lane Grp Cap (vph)		2250						1949	1750			
v/s Ratio Prot								0.24				
v/s Ratio Perm		0.12							c1.38			
v/c Ratio		0.26						0.64	1.38			
Uniform Delay, d1		10.3						15.1	30.0			
Progression Factor		1.80						1.00	1.00			
Incremental Delay, d2		0.2						1.6	172.9			
Delay (s)		18.7						16.7	202.9			
Level of Service		B						B	F			
Approach Delay (s)		18.7			0.0			139.6			0.0	
Approach LOS		B			A			F			A	

Intersection Summary				
HCM Average Control Delay	123.0	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.38			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	116.4%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: 7th St & Webster St

2030 No Project AM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	449	672	0	0	0	0	0	0	131	1243	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.98	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		0.94	0.85								1.00	
Flt Protected		1.00	1.00								1.00	
Satd. Flow (prot)		4245	1150								4115	
Flt Permitted		1.00	1.00								1.00	
Satd. Flow (perm)		4245	1150								4115	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	463	693	0	0	0	0	0	0	139	1322	0
RTOR Reduction (vph)	0	6	6	0	0	0	0	0	0	0	21	0
Lane Group Flow (vph)	0	804	340	0	0	0	0	0	0	0	1440	0
Confl. Peds. (#/hr)	42		31							26		13
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		28.0	28.0								24.0	
Effective Green, g (s)		28.0	28.0								24.0	
Actuated g/C Ratio		0.47	0.47								0.40	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		1981	537								1646	
v/s Ratio Prot		0.19										
v/s Ratio Perm			c0.30								0.35	
v/c Ratio		0.41	0.63								0.87	
Uniform Delay, d1		10.5	12.1								16.6	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.6	5.6								6.8	
Delay (s)		11.1	17.7								23.4	
Level of Service		B	B								C	
Approach Delay (s)		13.1			0.0				0.0		23.4	
Approach LOS		B			A				A		C	

Intersection Summary				
HCM Average Control Delay	18.9	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	68.6%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: 7th St & Broadway

2030 No Project AM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	715	220	0	0	0	0	514	379	140	446	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.99	0.91		1.00	
Flpb, ped/bikes		1.00						1.00	1.00		1.00	
Frt		0.97						0.97	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.99	
Satd. Flow (prot)		5477						2870	1184		3070	
Flt Permitted		1.00						1.00	1.00		0.63	
Satd. Flow (perm)		5477						2870	1184		1956	
Peak-hour factor, PHF	0.79	0.79	0.79	1.00	1.00	1.00	1.00	0.92	0.92	0.96	0.96	1.00
Adj. Flow (vph)	67	905	278	0	0	0	0	559	412	146	465	0
RTOR Reduction (vph)	0	63	0	0	0	0	0	18	18	0	0	0
Lane Group Flow (vph)	0	1187	0	0	0	0	0	656	279	0	611	0
Confl. Peds. (#/hr)	28		34				43		26	26		43
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	5		5									5
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2104						1453	599		990	
v/s Ratio Prot								0.23				
v/s Ratio Perm		0.22							0.24		c0.31	
v/c Ratio		0.56						0.45	0.47		0.62	
Uniform Delay, d1		19.9						13.0	13.1		14.5	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		1.1						1.0	2.6		2.9	
Delay (s)		21.0						14.0	15.7		17.4	
Level of Service		C						B	B		B	
Approach Delay (s)		21.0			0.0			14.5			17.4	
Approach LOS		C			A			B			B	

Intersection Summary				
HCM Average Control Delay	18.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	68.1%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

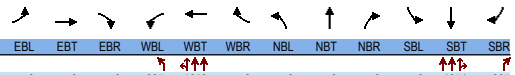
HCM Signalized Intersection Capacity Analysis
8: 8th St & Harrison St

2030 No Project AM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	856	197	439	854	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	1.00				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5267		1329	4103				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5267		1329	4103				
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	951	219	462	899	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	69	0	6	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1101	0	323	1028	0	0	0	0
Confl. Peds. (#/hr)				42		52	53		38			
Confl. Bikes (#/hr)						8						
Bus Blockages (#/hr)	0	0	0	0	18	0	0	0	0	0	0	0
Parking (#/hr)					5			5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					19.0		32.5	32.5				
Effective Green, g (s)					19.0		32.5	32.5				
Actuated g/C Ratio					0.32		0.54	0.54				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					1668		720	2222				
v/s Ratio Prot					c0.21							
v/s Ratio Perm							0.24	0.25				
v/c Ratio					0.66		0.45	0.46				
Uniform Delay, d1					17.7		8.3	8.4				
Progression Factor					1.00		2.62	2.62				
Incremental Delay, d2					2.1		1.6	0.6				
Delay (s)					19.8		23.4	22.6				
Level of Service					B		C	C				
Approach Delay (s)		0.0			19.8			22.8			0.0	
Approach LOS		A			B			C			A	

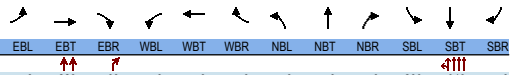
Intersection Summary				
HCM Average Control Delay	21.4	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	54.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



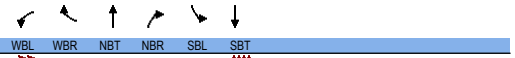
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	387	1013	0	0	0	0	0	1051	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4135						2353	1054
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4135						2353	1054
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.91	0.92	0.92	0.92	0.91	0.95	0.95
Adj. Flow (vph)	0	0	0	407	1066	0	0	0	0	0	1106	321
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	354	1119	0	0	0	0	0	1138	289
Confl. Bikes (#/hr)												8
Parking (#/hr)				5	5							5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1241						758	340
v/s Ratio Prot											c0.48	
v/s Ratio Perm				c0.30	0.27							0.27
v/c Ratio				0.99	0.90						1.50	0.85
Uniform Delay, d1				31.3	30.2						30.5	28.5
Progression Factor				1.00	1.00						0.36	0.32
Incremental Delay, d2				44.1	10.7						230.1	15.7
Delay (s)				75.5	40.9						241.2	24.9
Level of Service				E	D						F	C
Approach Delay (s)		0.0			49.2			0.0			197.4	
Approach LOS		A			D			A			F	

Intersection Summary				
HCM Average Control Delay	122.1	HCM Level of Service		F
HCM Volume to Capacity ratio	1.25			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0
Intersection Capacity Utilization	54.6%	ICU Level of Service		A
Analysis Period (min)	15			
c Critical Lane Group				



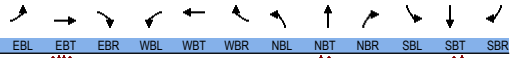
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	226	93	0	0	0	0	0	0	209	948	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1425	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frpb, ped/bikes		1.00	0.91								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1136								4099	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1136								4099	
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	272	112	0	0	0	0	0	0	238	1077	0
RTOR Reduction (vph)	0	0	78	0	0	0	0	0	0	0	44	0
Lane Group Flow (vph)	0	272	34	0	0	0	0	0	0	0	1271	0
Confl. Peds. (#/hr)	67		73							76		52
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	341								1321	
v/s Ratio Prot		c0.09										
v/s Ratio Perm			0.03								0.31	
v/c Ratio		0.30	0.10								0.96	
Uniform Delay, d1		24.3	22.7								30.0	
Progression Factor		1.00	1.00								0.98	
Incremental Delay, d2		0.9	0.6								16.3	
Delay (s)		25.1	23.3								45.7	
Level of Service		C	C								D	
Approach Delay (s)		24.6			0.0			0.0			45.7	
Approach LOS		C			A			A			D	

Intersection Summary				
HCM Average Control Delay	40.9	HCM Level of Service		D
HCM Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0
Intersection Capacity Utilization	45.1%	ICU Level of Service		A
Analysis Period (min)	15			
c Critical Lane Group				



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	506	0	0	0	0	886
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2897					5587
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2897					5587
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.83	0.83
Adj. Flow (vph)	562	0	0	0	0	1067
RTOR Reduction (vph)	59	0	0	0	0	0
Lane Group Flow (vph)	503	0	0	0	0	1067
Confl. Peds. (#/hr)	57				63	
Parking (#/hr)	5					5
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1030					2856
v/s Ratio Prot	c0.17					c0.19
v/s Ratio Perm						
v/c Ratio	0.49					0.37
Uniform Delay, d1	11.3					6.6
Progression Factor	1.00					1.00
Incremental Delay, d2	1.7					0.4
Delay (s)	13.0					7.0
Level of Service	B					A
Approach Delay (s)	13.0		0.0			7.0
Approach LOS	B		A			A

Intersection Summary				
HCM Average Control Delay	9.1	HCM Level of Service		A
HCM Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)		6.0
Intersection Capacity Utilization	37.0%	ICU Level of Service		A
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	586	26	0	0	0	0	935	244	58	55	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.98			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.97			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		6180						3357			3235	
Flt Permitted		1.00						1.00			0.58	
Satd. Flow (perm)		6180						3357			1931	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	64	623	28	0	0	0	0	1016	265	72	69	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	39	0	0	0	0
Lane Group Flow (vph)	0	706	0	0	0	0	0	1242	0	0	141	0
Confl. Peds. (#/hr)	63		91				56		87	87		56
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5		5						5		5	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3193						1203			692	
v/s Ratio Prot								c0.37				
v/s Ratio Perm		0.11									0.07	
v/c Ratio		0.22						1.03			0.20	
Uniform Delay, d1		7.9						19.2			13.3	
Progression Factor		1.00						1.00			0.93	
Incremental Delay, d2		0.2						34.6			0.7	
Delay (s)		8.1						53.9			13.0	
Level of Service		A						D			B	
Approach Delay (s)		8.1			0.0			53.9			13.0	
Approach LOS		A			A			D			B	

Intersection Summary				
HCM Average Control Delay	35.8	HCM Level of Service		D
HCM Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		7.5
Intersection Capacity Utilization	69.4%	ICU Level of Service		C
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	51	913	99	202	751	0	0	81	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.98	
Flpb, ped/bikes					1.00			0.99			1.00	
Frt					0.99			1.00			0.94	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					6093			3261			3252	
Flt Permitted					1.00			0.82			1.00	
Satd. Flow (perm)					6093			2704			3252	
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.86	0.86	0.86	0.62	0.62	0.62
Adj. Flow (vph)	0	0	0	53	951	103	235	873	0	0	131	89
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	0	0	43	0
Lane Group Flow (vph)	0	0	0	0	1094	0	0	1108	0	0	177	0
Confl. Peds. (#/hr)				86		73	43		51	51		43
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				5		5		5				5
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3199			969			1165	
v/s Ratio Prot											0.05	
v/s Ratio Perm					0.18			c0.41				
v/c Ratio					0.34			1.14			0.15	
Uniform Delay, d1					8.3			19.2			13.1	
Progression Factor					1.00			1.36			1.00	
Incremental Delay, d2					0.3			68.8			0.3	
Delay (s)					8.5			94.9			13.3	
Level of Service					A			F			B	
Approach Delay (s)		0.0			8.5			94.9			13.3	
Approach LOS		A			A			F			B	

Intersection Summary				
HCM Average Control Delay	48.3	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	67.8%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	336	630	95	0	0	0	0	701	97	3	211	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		4886						2056			1582	
Flt Permitted		0.98						1.00			0.67	
Satd. Flow (perm)		1100						2056			1062	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.84	0.95	0.70	0.95	0.95	0.70
Adj. Flow (vph)	354	663	100	0	0	0	0	738	139	3	222	0
RTOR Reduction (vph)	0	26	0	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	1091	0	0	0	0	0	862	0	0	225	0
Confl. Peds. (#/hr)	22		23				16		14	14		16
Confl. Bikes (#/hr)									8			
Parking (#/hr)									10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		550						708			366	
v/s Ratio Prot								c0.42				
v/s Ratio Perm		c0.99									0.21	
v/c Ratio		1.98						1.22			0.61	
Uniform Delay, d1		11.2						14.8			12.3	
Progression Factor		1.00						1.00			0.57	
Incremental Delay, d2		449.1						110.4			6.9	
Delay (s)		460.4						125.2			13.9	
Level of Service		F						F			B	
Approach Delay (s)		460.4			0.0			125.2			13.9	
Approach LOS		F			A			F			B	

Intersection Summary				
HCM Average Control Delay	282.6	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.67			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	70.9%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	361	702	262	0	0	0	0	389	34	173	71	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.97						0.99			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4788						1837			1523	
Flt Permitted		0.99						1.00			0.47	
Satd. Flow (perm)		4788						1837			738	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.84	0.84	0.84	0.90	0.90	0.90
Adj. Flow (vph)	376	731	273	0	0	0	0	463	40	192	79	0
RTOR Reduction (vph)	0	94	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	1286	0	0	0	0	0	496	0	0	271	0
Confl. Peds. (#/hr)	12		13	13		12	11		12	12		11
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			10						10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1330						959			385	
v/s Ratio Prot								0.27				
v/s Ratio Perm		0.27									c0.37	
v/c Ratio		0.97						0.52			0.70	
Uniform Delay, d1		16.0						7.0			8.1	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		18.0						2.0			10.3	
Delay (s)		34.0						9.0			18.4	
Level of Service		C						A			B	
Approach Delay (s)		34.0			0.0			9.0			18.4	
Approach LOS		C			A			A			B	

Intersection Summary				
HCM Average Control Delay	26.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	82.7%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	38	394	803	172	57	607
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.93		1.00		0.99	0.97
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.93	0.85
Flt Protected	1.00		0.98		0.97	1.00
Satd. Flow (prot)	1493		3468		3197	1404
Flt Permitted	1.00		0.98		0.97	1.00
Satd. Flow (perm)	1493		3468		3197	1404
Peak-hour factor, PHF	0.73	0.90	0.86	0.60	0.84	0.94
Adj. Flow (vph)	52	438	934	287	68	646
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	52	0	1372	0	678	323
Confl. Peds. (#/hr)	13	15		15		13
Confl. Bikes (#/hr)	8					8
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	133		1256		1577	693
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.40		0.21	c0.23
v/c Ratio	0.39		1.09		0.43	0.47
Uniform Delay, d1	19.4		14.3		7.3	7.5
Progression Factor	1.00		0.80		1.00	1.00
Incremental Delay, d2	8.4		43.0		0.9	2.2
Delay (s)	27.8		54.5		8.2	9.7
Level of Service	C		D		A	A
Approach Delay (s)			54.5		8.7	
Approach LOS			D		A	

Intersection Summary				
HCM Average Control Delay	35.0	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	73.7%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	17	462	47	285	451	0	0	180	1592
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	4.0
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.99
Flpb, ped/bikes				0.97	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.60
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1711	1863	1469		1760			1748	1046
Flt Permitted				0.95	1.00	1.00		0.70			1.00	1.00
Satd. Flow (perm)				1711	1863	1469		1436			1748	1046
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.96	0.95	0.95	0.98
Adj. Flow (vph)	0	0	0	18	486	49	300	475	0	0	189	1624
RTOR Reduction (vph)	0	0	0	0	0	37	0	0	0	0	25	24
Lane Group Flow (vph)	0	0	0	18	486	12	0	775	0	0	895	869
Confl. Peds. (#/hr)				16		20			14	14		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								10				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	36.0
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.60
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				413	450	355		826			1005	628
v/s Ratio Prot					c0.26						0.51	
v/s Ratio Perm				0.01		0.01		0.54				c0.83
v/c Ratio				0.04	1.08	0.03		0.94			0.89	1.38
Uniform Delay, d1				17.4	22.8	17.4		11.8			11.1	12.0
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.2	65.6	0.2		19.5			11.8	182.7
Delay (s)				17.6	88.4	17.6		31.2			22.9	194.7
Level of Service				B	F	B		C			C	F
Approach Delay (s)		0.0			79.8			31.2			107.5	
Approach LOS		A			E			C			F	

Intersection Summary				
HCM Average Control Delay	83.8	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.30			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.5	
Intersection Capacity Utilization	142.0%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: 7th St & Harrison St

2030 No Project PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1378	0	0	0	0	0	1217	2137	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	16.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.94			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		1.00						1.00	1.00			
Satd. Flow (prot)		5025						5085	2607			
Flt Permitted		1.00						1.00	1.00			
Satd. Flow (perm)		5025						5085	1600			
Peak-hour factor, PHF	0.91	0.91	1.00	0.92	0.92	0.92	0.93	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	77	1514	0	0	0	0	0	1295	2273	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1591	0	0	0	0	0	1295	2273	0	0	0
Confl. Peds. (#/hr)	56		32				41		26			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		34.0						16.0	60.0			
Effective Green, g (s)		34.0						16.0	60.0			
Actuated g/C Ratio		0.57						0.27	1.00			
Clearance Time (s)		5.0						5.0	26.0			
Lane Grp Cap (vph)		2848						1356	1600			
v/s Ratio Prot								0.25				
v/s Ratio Perm		0.32							c1.42			
v/c Ratio		0.56						0.96	1.42			
Uniform Delay, d1		8.2						21.6	30.0			
Progression Factor		1.61						1.00	1.00			
Incremental Delay, d2		0.4						15.8	193.0			
Delay (s)		13.7						37.5	223.0			
Level of Service		B						D	F			
Approach Delay (s)		13.7			0.0			155.7			0.0	
Approach LOS		B			A			F			A	

Intersection Summary				
HCM Average Control Delay	111.9	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.42			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	123.0%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: 7th St & Webster St

2030 No Project PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1662	823	0	0	0	0	0	0	291	993	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.99	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		0.98	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4445	1107								4025	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4445	1107								4025	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	0	1713	848	0	0	0	0	0	0	303	1034	0
RTOR Reduction (vph)	0	5	5	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1979	572	0	0	0	0	0	0	0	1332	0
Confl. Peds. (#/hr)	86		52							43		41
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		32.0	32.0								20.0	
Effective Green, g (s)		32.0	32.0								20.0	
Actuated g/C Ratio		0.53	0.53								0.33	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		2371	590								1342	
v/s Ratio Prot		0.45										
v/s Ratio Perm			c0.52								0.33	
v/c Ratio		0.83	0.97								0.99	
Uniform Delay, d1		11.8	13.5								19.9	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		3.7	30.2								22.8	
Delay (s)		15.4	43.7								42.7	
Level of Service		B	D								D	
Approach Delay (s)		21.8			0.0			0.0			42.7	
Approach LOS		C			A			A			D	

Intersection Summary				
HCM Average Control Delay	29.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	75.0%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: 7th St & Broadway

2030 No Project PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	1764	203	0	0	0	0	457	527	241	632	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.96	0.87		1.00	
Flpb, ped/bikes		1.00						1.00	1.00		0.99	
Frt		0.99						0.95	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.99	
Satd. Flow (prot)		5615						2721	1126		3053	
Flt Permitted		1.00						1.00	1.00		0.58	
Satd. Flow (perm)		5615						2721	1126		1810	
Peak-hour factor, PHF	0.94	0.94	0.94	1.00	1.00	1.00	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	117	1877	216	0	0	0	0	497	573	268	702	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2188	0	0	0	0	0	738	332	0	970	0
Confl. Peds. (#/hr)	37		36				52		45	45		52
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	10		10									10
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2157						1377	570		916	
v/s Ratio Prot								0.27				
v/s Ratio Perm		0.39							0.29		c0.54	
v/c Ratio		1.01						0.54	0.58		1.12dl	
Uniform Delay, d1		25.2						13.7	14.2		20.2	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		23.0						1.5	4.3		46.6	
Delay (s)		48.2						15.2	18.5		66.9	
Level of Service		D						B	B		E	
Approach Delay (s)		48.2			0.0			16.2			66.9	
Approach LOS		D			A			B			E	

Intersection Summary				
HCM Average Control Delay	44.4	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.04			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	100.6%	ICU Level of Service	G	
Analysis Period (min)	15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

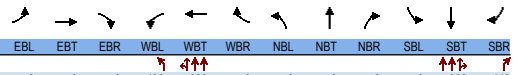
HCM Signalized Intersection Capacity Analysis
8: 8th St & Harrison St

2030 No Project PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	652	195	676	830	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.98		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	0.99				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5191		1324	4017				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5191		1324	4017				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	709	212	704	865	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	46	0	34	34	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	875	0	346	1155	0	0	0	0
Confl. Peds. (#/hr)				52		67	53		46			
Confl. Bikes (#/hr)							8					
Bus Blockages (#/hr)	0	0	0	0	16	0	0	0	0	0	0	0
Parking (#/hr)					10			10				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					23.0		28.5	28.5				
Effective Green, g (s)					23.0		28.5	28.5				
Actuated g/C Ratio					0.38		0.48	0.48				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					1990		629	1908				
v/s Ratio Prot					c0.17							
v/s Ratio Perm							0.26	0.29				
v/c Ratio					0.44		0.55	0.61				
Uniform Delay, d1					13.7		11.2	11.6				
Progression Factor					1.00		2.56	2.40				
Incremental Delay, d2					0.7		1.9	0.8				
Delay (s)					14.4		30.6	28.6				
Level of Service					B		C	C				
Approach Delay (s)		0.0			14.4			29.1			0.0	
Approach LOS		A			B			C			A	

Intersection Summary				
HCM Average Control Delay	23.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	51.1%	ICU Level of Service	A	
Analysis Period (min)	15			

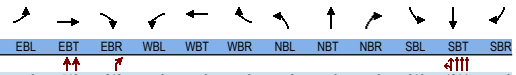
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	436	926	0	0	0	0	0	806	449
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						0.97	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1164	4088						2181	1084
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1164	4088						2181	1084
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.90	0.92	0.92	0.92	0.93	0.95	0.95
Adj. Flow (vph)	0	0	0	459	975	0	0	0	0	0	848	473
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	349	1085	0	0	0	0	0	1023	298
Confl. Bikes (#/hr)												8
Parking (#/hr)				10	10						10	0
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				349	1226						703	349
v/s Ratio Prot											c0.47	
v/s Ratio Perm				c0.30	0.27							0.28
v/c Ratio				1.00	0.88						1.46	0.85
Uniform Delay, d1				31.5	30.0						30.5	28.5
Progression Factor				1.00	1.00						0.27	0.23
Incremental Delay, d2				48.2	9.5						207.5	8.6
Delay (s)				79.7	39.6						215.6	15.2
Level of Service				E	D						F	B
Approach Delay (s)		0.0			49.3			0.0			170.4	
Approach LOS		A			D			A			F	

Intersection Summary				
HCM Average Control Delay	107.4	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.24			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	34.0	
Intersection Capacity Utilization	51.1%	ICU Level of Service	A	
Analysis Period (min)	15			

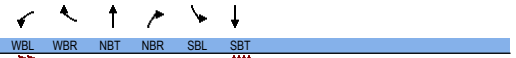
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	518	212	0	0	0	0	0	0	210	1214	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								*0.75	
Frpb, ped/bikes		1.00	0.88								1.00	
Flpb, ped/bikes		1.00	1.00								0.98	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2946	1071								4714	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2946	1071								4714	
Peak-hour factor, PHF	1.00	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.94
Adj. Flow (vph)	0	617	252	0	0	0	0	0	0	236	1364	0
RTOR Reduction (vph)	0	0	176	0	0	0	0	0	0	0	32	0
Lane Group Flow (vph)	0	617	76	0	0	0	0	0	0	0	1568	0
Confl. Peds. (#/hr)	110		101							139		91
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		884	321								1519	
v/s Ratio Prot		c0.21										
v/s Ratio Perm			0.07								0.33	
v/c Ratio		0.70	0.24								1.03	
Uniform Delay, d1		27.9	23.7								30.5	
Progression Factor		1.00	1.00								0.98	
Incremental Delay, d2		4.6	1.7								31.3	
Delay (s)		32.4	25.4								61.1	
Level of Service		C	C								E	
Approach Delay (s)		30.4			0.0			0.0			61.1	
Approach LOS		C			A			A			E	

Intersection Summary				
HCM Average Control Delay	50.3	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	34.0	
Intersection Capacity Utilization	50.4%	ICU Level of Service	A	
Analysis Period (min)	15			

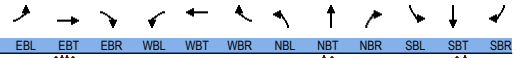
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	376	0	0	0	0	1010
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2858					5551
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2858					5551
Peak-hour factor, PHF	0.89	0.89	0.92	0.92	0.94	0.94
Adj. Flow (vph)	422	0	0	0	0	1074
RTOR Reduction (vph)	42	0	0	0	0	0
Lane Group Flow (vph)	380	0	0	0	0	1074
Confl. Peds. (#/hr)	113				121	
Parking (#/hr)	10					10
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1016					2837
v/s Ratio Prot	c0.13					c0.19
v/s Ratio Perm						
v/c Ratio	0.37					0.38
Uniform Delay, d1	10.8					6.7
Progression Factor	1.00					1.00
Incremental Delay, d2	1.1					0.4
Delay (s)	11.8					7.1
Level of Service	B					A
Approach Delay (s)	11.8		0.0			7.1
Approach LOS	B		A			A

Intersection Summary				
HCM Average Control Delay	8.4	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.0	
Intersection Capacity Utilization	34.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	1069	48	0	0	0	0	695	292	57	78	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.96			1.00	
Flpb, ped/bikes		0.99						1.00			0.99	
Frt		0.99						0.96			1.00	
Flt Protected		0.99						1.00			0.98	
Satd. Flow (prot)		6123						3255			3181	
Flt Permitted		0.99						1.00			0.60	
Satd. Flow (perm)		6123						3255			1964	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	1.00	0.99	0.99	0.80	0.80	0.84
Adj. Flow (vph)	208	1273	57	0	0	0	0	702	295	71	98	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	1529	0	0	0	0	0	985	0	0	169	0
Confl. Peds. (#/hr)	73		131				76		113	113		76
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10		10						10		10	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3164						1166			704	
v/s Ratio Prot								c0.30				
v/s Ratio Perm		0.25									0.09	
v/c Ratio		0.48						0.84			0.24	
Uniform Delay, d1		9.3						17.7			13.5	
Progression Factor		1.00						1.00			1.06	
Incremental Delay, d2		0.5						7.6			0.8	
Delay (s)		9.9						25.3			15.1	
Level of Service		A						C			B	
Approach Delay (s)		9.9			0.0			25.3			15.1	
Approach LOS		A			A			C			B	

Intersection Summary				
HCM Average Control Delay	15.9	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.5	
Intersection Capacity Utilization	74.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	102	1400	236	277	723	0	0	91	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.97	
Flpb, ped/bikes					0.99			0.99			1.00	
Frt					0.98			1.00			0.94	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					6013			3193			3252	
Flt Permitted					1.00			0.79			1.00	
Satd. Flow (perm)					6013			2555			3252	
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.91	0.91	0.91	0.86	0.63	0.63
Adj. Flow (vph)	0	0	0	119	1628	274	304	795	0	0	144	86
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	0	2007	0	0	1099	0	0	224	0
Confl. Peds. (#/hr)				93		78	56		79	79		56
Confl. Bikes (#/hr)						8						8
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				10		10		10				10
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3157			916			1165	
v/s Ratio Prot											0.07	
v/s Ratio Perm					0.33			c0.43				
v/c Ratio					0.64			1.20			0.19	
Uniform Delay, d1					10.2			19.2			13.3	
Progression Factor					1.00			1.62			1.00	
Incremental Delay, d2					1.0			98.2			0.4	
Delay (s)					11.1			129.5			13.6	
Level of Service					B			F			B	
Approach Delay (s)		0.0			11.1			129.5			13.6	
Approach LOS		A			B			F			B	

Intersection Summary				
HCM Average Control Delay	50.1	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	79.5%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Future (Year 2030) With Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	402	732	202	0	0	0	0	350	103	4	167	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.97			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4848						2033			1628	
Flt Permitted		0.99						1.00			0.99	
Satd. Flow (perm)		2000						2033			1614	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.81	0.95	0.95	0.95	0.95	0.92
Adj. Flow (vph)	423	771	213	0	0	0	0	368	108	4	176	0
RTOR Reduction (vph)	0	57	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1351	0	0	0	0	0	452	0	0	180	0
Confl. Peds. (#/hr)	9		17				7		15	15		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)									5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1								2			
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		1000						700			556	
v/s Ratio Prot								c0.22				
v/s Ratio Perm		c0.68									0.11	
v/c Ratio		1.35						0.65			0.32	
Uniform Delay, d1		11.2						12.4			10.9	
Progression Factor		1.00						1.00			1.43	
Incremental Delay, d2		164.4						4.6			1.4	
Delay (s)		175.6						17.0			17.0	
Level of Service		F						B			B	
Approach Delay (s)		175.6			0.0			17.0			17.0	
Approach LOS		F			A			B			B	

Intersection Summary				
HCM Average Control Delay	125.2	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.06			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	58.8%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	383	793	314	0	0	0	0	214	21	48	112	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.97						0.99			1.00	
Flt Protected		0.99						1.00			0.99	
Satd. Flow (prot)		4793						1834			1603	
Flt Permitted		0.99						1.00			0.86	
Satd. Flow (perm)		4793						1834			1395	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.82	0.82	0.82	0.83	0.83	0.83
Adj. Flow (vph)	399	826	327	0	0	0	0	261	26	58	135	0
RTOR Reduction (vph)	0	107	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	1445	0	0	0	0	0	279	0	0	193	0
Confl. Peds. (#/hr)	8		11	11		8	7		9	9		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			5						5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1331						958			729	
v/s Ratio Prot								c0.15				
v/s Ratio Perm		0.30									0.14	
v/c Ratio		1.09						0.29			0.26	
Uniform Delay, d1		16.2						6.1			6.0	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		51.4						0.8			0.9	
Delay (s)		67.7						6.8			6.8	
Level of Service		E						A			A	
Approach Delay (s)		67.7			0.0			6.8			6.8	
Approach LOS		E			A			A			A	

Intersection Summary				
HCM Average Control Delay	53.3	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	83.0%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	31	309	813	137	76	895
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.82		1.00		0.98	0.98
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.90	0.85
Flt Protected	1.00		0.98		0.98	1.00
Satd. Flow (prot)	1314		3228		3129	1406
Flt Permitted	1.00		0.98		0.98	1.00
Satd. Flow (perm)	1314		3228		3129	1406
Peak-hour factor, PHF	0.92	0.75	0.96	0.77	0.86	0.89
Adj. Flow (vph)	34	412	847	178	88	1006
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	34	0	1259	0	769	503
Confl. Peds. (#/hr)	51	10		17		11
Confl. Bikes (#/hr)	2					8
Parking (#/hr)			8			
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	117		1169		1544	694
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.39		0.25	c0.36
v/c Ratio	0.29		1.08		0.50	0.72
Uniform Delay, d1	19.2		14.3		7.7	9.0
Progression Factor	1.00		0.86		1.00	1.00
Incremental Delay, d2	6.2		46.8		1.2	6.5
Delay (s)	25.4		59.2		8.8	15.5
Level of Service	C		E		A	B
Approach Delay (s)			59.2		11.4	
Approach LOS			E		B	

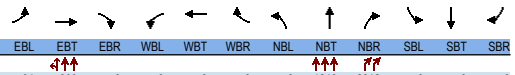
Intersection Summary				
HCM Average Control Delay	35.1	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	85.5%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	449	148	216	370	0	0	150	1965
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.98
Flpb, ped/bikes				0.96	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.65
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1704	1863	1478		1814			1747	1133
Flt Permitted				0.95	1.00	1.00		0.85			1.00	1.00
Satd. Flow (perm)				1704	1863	1478		1570			1747	1150
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.96	0.95	0.95	0.95	0.96	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	21	468	156	227	389	0	0	158	2068
RTOR Reduction (vph)	0	0	0	0	0	118	0	0	0	0	29	29
Lane Group Flow (vph)	0	0	0	21	468	38	0	616	0	0	1101	1067
Confl. Peds. (#/hr)				18		17			16	16		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								5				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	34.5
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.58
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				412	450	357		903			1005	661
v/s Ratio Prot					c0.25						0.63	
v/s Ratio Perm				0.01		0.03		0.39				c0.93
v/c Ratio				0.05	1.04	0.11		0.68			1.10	1.61
Uniform Delay, d1				17.5	22.8	17.7		8.9			12.8	12.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.2	53.2	0.6		4.2			58.2	283.4
Delay (s)				17.7	75.9	18.3		13.1			71.0	296.2
Level of Service				B	E	B		B			E	F
Approach Delay (s)		0.0			60.1			13.1			181.9	
Approach LOS		A			E			B			F	

Intersection Summary				
HCM Average Control Delay	129.5	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.44			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	149.9%	ICU Level of Service	H	
Analysis Period (min)	15			

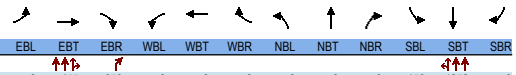
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	399	0	0	0	0	0	1216	2312	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	9.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.96			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4983						3585	2677			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4983						5085	1750			
Peak-hour factor, PHF	0.72	0.72	1.00	0.92	0.92	0.92	0.95	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	126	554	0	0	0	0	0	1267	2408	0	0	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	675	0	0	0	0	0	1267	2408	0	0	0
Confl. Peds. (#/hr)	25		11				27		13			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		27.0						23.0	60.0			
Effective Green, g (s)		27.0						23.0	60.0			
Actuated g/C Ratio		0.45						0.38	1.00			
Clearance Time (s)		5.0						5.0	25.0			
Lane Grp Cap (vph)		2242						1374	1750			
v/s Ratio Prot								0.35				
v/s Ratio Perm		0.14							c1.38			
v/c Ratio		0.30						0.92	1.38			
Uniform Delay, d1		10.5						17.6	30.0			
Progression Factor		1.68						1.00	1.00			
Incremental Delay, d2		0.3						11.6	172.9			
Delay (s)		17.9						29.3	202.9			
Level of Service		B						C	F			
Approach Delay (s)		17.9			0.0			143.0			0.0	
Approach LOS		B			A			F			A	

Intersection Summary				
HCM Average Control Delay	123.5	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.38			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	116.4%	ICU Level of Service	H	
Analysis Period (min)	15			

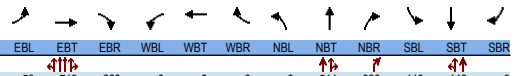
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	455	676	0	0	0	0	0	0	153	1272	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.98	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		0.94	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4246	1150								4112	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4246	1150								4112	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	469	697	0	0	0	0	0	0	163	1353	0
RTOR Reduction (vph)	0	5	5	0	0	0	0	0	0	0	25	0
Lane Group Flow (vph)	0	813	343	0	0	0	0	0	0	0	1491	0
Confl. Peds. (#/hr)	42		31							26		13
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		28.0	28.0								24.0	
Effective Green, g (s)		28.0	28.0								24.0	
Actuated g/C Ratio		0.47	0.47								0.40	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		1981	537								1645	
v/s Ratio Prot		0.19										
v/s Ratio Perm			c0.30								0.36	
v/c Ratio		0.41	0.64								0.91	
Uniform Delay, d1		10.6	12.2								16.9	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.6	5.7								8.8	
Delay (s)		11.2	17.9								25.7	
Level of Service		B	B								C	
Approach Delay (s)		13.2			0.0				0.0		25.7	
Approach LOS		B			A				A		C	

Intersection Summary				
HCM Average Control Delay	20.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	69.9%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	719	220	0	0	0	0	514	386	140	448	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.98	0.91		1.00	
Flpb, ped/bikes		1.00						1.00	1.00		1.00	
Frt		0.97						0.97	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.99	
Satd. Flow (prot)		5478						2864	1184		3070	
Flt Permitted		1.00						1.00	1.00		0.63	
Satd. Flow (perm)		5478						2864	1184		1950	
Peak-hour factor, PHF	0.79	0.79	0.79	1.00	1.00	1.00	1.00	0.92	0.92	0.96	0.96	1.00
Adj. Flow (vph)	67	910	278	0	0	0	0	559	420	146	467	0
RTOR Reduction (vph)	0	63	0	0	0	0	0	17	17	0	0	0
Lane Group Flow (vph)	0	1192	0	0	0	0	0	664	281	0	613	0
Confl. Peds. (#/hr)	28		34				43		26	26		43
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	5		5									5
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2104						1449	599		987	
v/s Ratio Prot								0.23				
v/s Ratio Perm		0.22							0.24		c0.31	
v/c Ratio		0.57						0.46	0.47		0.62	
Uniform Delay, d1		19.9						13.0	13.1		14.6	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		1.1						1.0	2.6		2.9	
Delay (s)		21.0						14.1	15.7		17.5	
Level of Service		C						B	B		B	
Approach Delay (s)		21.0			0.0			14.6			17.5	
Approach LOS		C			A			B			B	

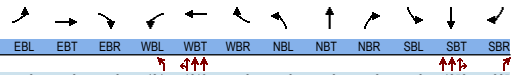
Intersection Summary				
HCM Average Control Delay	18.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	68.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	881	197	465	890	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	1.00				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5272		1329	4102				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5272		1329	4102				
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	979	219	489	937	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	62	0	5	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1136	0	342	1074	0	0	0	0
Confl. Peds. (#/hr)				42		52	53		38			
Confl. Bikes (#/hr)						8						
Bus Blockages (#/hr)	0	0	0	0	18	0	0	0	0	0	0	0
Parking (#/hr)					5			5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					19.0		32.5	32.5				
Effective Green, g (s)					19.0		32.5	32.5				
Actuated g/C Ratio					0.32		0.54	0.54				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					1669		720	2222				
v/s Ratio Prot					c0.22							
v/s Ratio Perm							0.26	0.26				
v/c Ratio					0.68		0.47	0.48				
Uniform Delay, d1					17.9		8.5	8.5				
Progression Factor					1.00		2.30	2.31				
Incremental Delay, d2					2.3		1.1	0.4				
Delay (s)					20.1		20.7	20.1				
Level of Service					C		C	C				
Approach Delay (s)		0.0			20.1			20.3			0.0	
Approach LOS		A			C			C			A	

Intersection Summary				
HCM Average Control Delay	20.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	55.6%	ICU Level of Service	B	
Analysis Period (min)	15			

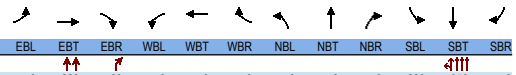
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	434	1019	0	0	0	0	0	1056	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4130						2353	1054
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4130						2353	1054
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.91	0.92	0.92	0.92	0.91	0.95	0.95
Adj. Flow (vph)	0	0	0	457	1073	0	0	0	0	0	1112	321
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	370	1160	0	0	0	0	0	1144	289
Confl. Bikes (#/hr)												8
Parking (#/hr)				5	5							5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1239						758	340
v/s Ratio Prot											c0.49	
v/s Ratio Perm				c0.31	0.28							0.27
v/c Ratio				1.03	0.94						1.51	0.85
Uniform Delay, d1				31.5	30.7						30.5	28.5
Progression Factor				1.00	1.00						0.36	0.32
Incremental Delay, d2				55.6	14.3						233.6	15.6
Delay (s)				87.1	44.9						244.6	24.7
Level of Service				F	D						F	C
Approach Delay (s)		0.0			55.1			0.0			200.3	
Approach LOS		A			E			A			F	

Intersection Summary				
HCM Average Control Delay	125.3	HCM Level of Service		F
HCM Volume to Capacity ratio	1.28			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0
Intersection Capacity Utilization	55.6%	ICU Level of Service		B
Analysis Period (min)	15			

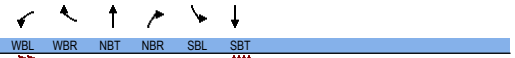
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	226	93	0	0	0	0	0	0	209	953	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1425	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frpb, ped/bikes		1.00	0.91								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1136								4100	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1136								4100	
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	272	112	0	0	0	0	0	0	238	1083	0
RTOR Reduction (vph)	0	0	78	0	0	0	0	0	0	0	44	0
Lane Group Flow (vph)	0	272	34	0	0	0	0	0	0	0	1277	0
Confl. Peds. (#/hr)	67		73							76		52
Confl. Bikes (#/hr)			8									
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	341								1321	
v/s Ratio Prot		c0.09										
v/s Ratio Perm			0.03								0.31	
v/c Ratio		0.30	0.10								0.97	
Uniform Delay, d1		24.3	22.7								30.0	
Progression Factor		1.00	1.00								0.98	
Incremental Delay, d2		0.9	0.6								17.1	
Delay (s)		25.1	23.3								46.5	
Level of Service		C	C								D	
Approach Delay (s)		24.6			0.0			0.0			46.5	
Approach LOS		C			A			A			D	

Intersection Summary				
HCM Average Control Delay	41.6	HCM Level of Service		D
HCM Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0
Intersection Capacity Utilization	45.2%	ICU Level of Service		A
Analysis Period (min)	15			

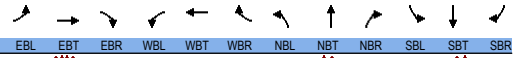
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	506	0	0	0	0	890
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2897					5587
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2897					5587
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.83	0.83
Adj. Flow (vph)	562	0	0	0	0	1072
RTOR Reduction (vph)	59	0	0	0	0	0
Lane Group Flow (vph)	503	0	0	0	0	1072
Confl. Peds. (#/hr)	57				63	
Parking (#/hr)	5					5
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1030					2856
v/s Ratio Prot	c0.17					c0.19
v/s Ratio Perm						
v/c Ratio	0.49					0.38
Uniform Delay, d1	11.3					6.7
Progression Factor	1.00					1.00
Incremental Delay, d2	1.7					0.4
Delay (s)	13.0					7.0
Level of Service	B					A
Approach Delay (s)	13.0		0.0			7.0
Approach LOS	B		A			A

Intersection Summary				
HCM Average Control Delay	9.1	HCM Level of Service		A
HCM Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)		6.0
Intersection Capacity Utilization	37.0%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	586	26	0	0	0	0	956	257	58	55	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.98			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.97			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		6180						3353			3235	
Flt Permitted		1.00						1.00			0.58	
Satd. Flow (perm)		6180						3353			1936	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	64	623	28	0	0	0	0	1039	279	72	69	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	40	0	0	0	0
Lane Group Flow (vph)	0	706	0	0	0	0	0	1278	0	0	141	0
Confl. Peds. (#/hr)	63		91				56		87	87		56
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5		5						5		5	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3193						1201			694	
v/s Ratio Prot								c0.38				
v/s Ratio Perm		0.11									0.07	
v/c Ratio		0.22						1.06			0.20	
Uniform Delay, d1		7.9						19.2			13.3	
Progression Factor		1.00						1.00			0.93	
Incremental Delay, d2		0.2						44.7			0.7	
Delay (s)		8.1						64.0			13.0	
Level of Service		A						E			B	
Approach Delay (s)		8.1			0.0			64.0			13.0	
Approach LOS		A			A			E			B	

Intersection Summary				
HCM Average Control Delay	42.3	HCM Level of Service		D
HCM Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		7.5
Intersection Capacity Utilization	69.4%	ICU Level of Service		C
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	51	913	99	211	762	0	0	81	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.98	
Flpb, ped/bikes					1.00			0.99			1.00	
Frt					0.99			1.00			0.94	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					6093			3260			3252	
Flt Permitted					1.00			0.82			1.00	
Satd. Flow (perm)					6093			2696			3252	
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.86	0.86	0.86	0.62	0.62	0.62
Adj. Flow (vph)	0	0	0	53	951	103	245	886	0	0	131	89
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	0	0	43	0
Lane Group Flow (vph)	0	0	0	0	1095	0	0	1131	0	0	177	0
Confl. Peds. (#/hr)				86		73	43		51	51		43
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				5		5		5				5
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3199			966			1165	
v/s Ratio Prot											0.05	
v/s Ratio Perm					0.18			c0.42				
v/c Ratio					0.34			1.17			0.15	
Uniform Delay, d1					8.3			19.2			13.1	
Progression Factor					1.00			1.36			1.00	
Incremental Delay, d2					0.3			79.9			0.3	
Delay (s)					8.5			106.1			13.3	
Level of Service					A			F			B	
Approach Delay (s)		0.0			8.5			106.1			13.3	
Approach LOS		A			A			F			B	

Intersection Summary				
HCM Average Control Delay	53.9	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	68.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	662	95	0	0	0	0	704	97	3	211	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		4891						2069			1582	
Flt Permitted		0.98						1.00			0.67	
Satd. Flow (perm)		1100						2069			1062	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.84	0.95	0.95	0.95	0.95	0.70
Adj. Flow (vph)	355	697	100	0	0	0	0	741	102	3	222	0
RTOR Reduction (vph)	0	25	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1127	0	0	0	0	0	832	0	0	225	0
Confl. Peds. (#/hr)	22		23				16		14	14		16
Confl. Bikes (#/hr)									8			
Parking (#/hr)									10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.5						15.5			15.5	
Actuated g/C Ratio		0.50						0.34			0.34	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		550						713			366	
v/s Ratio Prot								c0.40				
v/s Ratio Perm		c1.02									0.21	
v/c Ratio		2.05						1.17			0.61	
Uniform Delay, d1		11.2						14.8			12.3	
Progression Factor		1.00						1.00			0.57	
Incremental Delay, d2		478.4						89.8			6.9	
Delay (s)		489.6						104.5			13.9	
Level of Service		F						F			B	
Approach Delay (s)		489.6			0.0			104.5			13.9	
Approach LOS		F			A			F			B	

Intersection Summary				
HCM Average Control Delay	295.2	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.69			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	71.7%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	395	716	262	0	0	0	0	389	34	173	71	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5			4.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.97						0.99			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4790						1837			1523	
Flt Permitted		0.99						1.00			0.47	
Satd. Flow (perm)		4790						1837			738	
Peak-hour factor, PHF	0.96	0.96	0.96	1.00	1.00	1.00	0.84	0.84	0.84	0.90	0.90	0.90
Adj. Flow (vph)	411	746	273	0	0	0	0	463	40	192	79	0
RTOR Reduction (vph)	0	87	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	1343	0	0	0	0	0	496	0	0	271	0
Confl. Peds. (#/hr)	12		13	13		12	11		12	12		11
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)			10						10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		12.5						23.5			23.5	
Actuated g/C Ratio		0.28						0.52			0.52	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1331						959			385	
v/s Ratio Prot								0.27				
v/s Ratio Perm		0.28									c0.37	
v/c Ratio		1.01						0.52			0.70	
Uniform Delay, d1		16.2						7.0			8.1	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		27.0						2.0			10.3	
Delay (s)		43.2						9.0			18.4	
Level of Service		D						A			B	
Approach Delay (s)		43.2			0.0			9.0			18.4	
Approach LOS		D			A			A			B	

Intersection Summary				
HCM Average Control Delay	32.4	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	83.6%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBR	NBL	NBT	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	38	394	806	172	57	621
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5		3.0	3.0
Lane Util. Factor	1.00		0.95		0.97	0.91
Frpb, ped/bikes	0.93		1.00		0.99	0.97
Flpb, ped/bikes	1.00		1.00		0.99	1.00
Frt	0.86		1.00		0.93	0.85
Flt Protected	1.00		0.98		0.97	1.00
Satd. Flow (prot)	1493		3468		3195	1404
Flt Permitted	1.00		0.98		0.97	1.00
Satd. Flow (perm)	1493		3468		3195	1404
Peak-hour factor, PHF	0.73	0.90	0.86	0.60	0.84	0.94
Adj. Flow (vph)	52	438	937	287	68	661
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	52	0	1375	0	686	330
Confl. Peds. (#/hr)	13	15		15		13
Confl. Bikes (#/hr)	8					8
Turn Type	custom	Perm		Perm		Perm
Protected Phases			3		1	
Permitted Phases	2	3		1		1
Actuated Green, G (s)	4.0		16.3		22.2	22.2
Effective Green, g (s)	4.0		16.3		22.2	22.2
Actuated g/C Ratio	0.09		0.36		0.49	0.49
Clearance Time (s)	3.0		3.5		3.0	3.0
Lane Grp Cap (vph)	133		1256		1576	693
v/s Ratio Prot						
v/s Ratio Perm	0.03		0.40		0.21	c0.24
v/c Ratio	0.39		1.09		0.44	0.48
Uniform Delay, d1	19.4		14.3		7.4	7.5
Progression Factor	1.00		0.80		1.00	1.00
Incremental Delay, d2	8.4		44.1		0.9	2.3
Delay (s)	27.8		55.6		8.2	9.9
Level of Service	C		E		A	A
Approach Delay (s)			55.6		8.8	
Approach LOS			E		A	

Intersection Summary				
HCM Average Control Delay	35.5	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.5	
Intersection Capacity Utilization	74.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	17	469	47	299	472	0	0	180	1607
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	4.0
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.93		1.00			0.99	0.99
Flpb, ped/bikes				0.97	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.60
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1711	1863	1469		1760			1748	1046
Flt Permitted				0.95	1.00	1.00		0.80			1.00	1.00
Satd. Flow (perm)				1711	1863	1469		1436			1748	1046
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.84	0.95	0.95	0.96	0.95	0.95	0.98
Adj. Flow (vph)	0	0	0	18	494	56	315	497	0	0	189	1640
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	24	23
Lane Group Flow (vph)	0	0	0	18	494	14	0	812	0	0	903	879
Confl. Peds. (#/hr)				16		20			14	14		
Confl. Bikes (#/hr)						8						8
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	100	0	0	0
Parking (#/hr)								10				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				14.5	14.5	14.5		34.5			34.5	34.5
Effective Green, g (s)				14.5	14.5	14.5		34.5			34.5	36.0
Actuated g/C Ratio				0.24	0.24	0.24		0.58			0.58	0.60
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Grp Cap (vph)				413	450	355		826			1005	628
v/s Ratio Prot					c0.27						0.52	
v/s Ratio Perm				0.01		0.01		0.57				c0.84
v/c Ratio				0.04	1.10	0.04		0.98			0.90	1.40
Uniform Delay, d1				17.4	22.8	17.4		12.5			11.2	12.0
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.2	71.6	0.2		27.5			12.4	189.5
Delay (s)				17.6	94.3	17.6		39.9			23.6	201.5
Level of Service				B	F	B		D			C	F
Approach Delay (s)		0.0			84.4			39.9			111.4	
Approach LOS		A			F			D			F	

Intersection Summary				
HCM Average Control Delay	88.5	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.31			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.5	
Intersection Capacity Utilization	144.9%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: 7th St & Harrison St

2030 with Project PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	1421	0	0	0	0	0	1257	2137	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	16.0			
Lane Util. Factor		0.91						0.91	0.88			
Frpb, ped/bikes		1.00						1.00	0.94			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		1.00						1.00	1.00			
Satd. Flow (prot)		5016						4995	2607			
Flt Permitted		1.00						1.00	1.00			
Satd. Flow (perm)		5016						5085	1600			
Peak-hour factor, PHF	0.91	0.91	1.00	0.92	0.92	0.92	0.93	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	118	1562	0	0	0	0	0	1337	2273	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1680	0	0	0	0	0	1337	2273	0	0	0
Confl. Peds. (#/hr)	56		32				41		26			
Confl. Bikes (#/hr)									8			
Bus Blockages (#/hr)	0	6	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10											
Turn Type	Perm								custom			
Protected Phases		2						1				
Permitted Phases	2								3			
Actuated Green, G (s)		34.0						16.0	60.0			
Effective Green, g (s)		34.0						16.0	60.0			
Actuated g/C Ratio		0.57						0.27	1.00			
Clearance Time (s)		5.0						5.0	26.0			
Lane Grp Cap (vph)		2842						1332	1600			
v/s Ratio Prot								0.27				
v/s Ratio Perm		0.33							c1.42			
v/c Ratio		0.59						1.00	1.42			
Uniform Delay, d1		8.5						22.0	30.0			
Progression Factor		1.55						1.00	1.00			
Incremental Delay, d2		0.4						25.6	193.0			
Delay (s)		13.5						47.6	223.0			
Level of Service		B						D	F			
Approach Delay (s)		13.5			0.0			158.0			0.0	
Approach LOS		B			A			F			A	

Intersection Summary				
HCM Average Control Delay	112.1	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.42			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	124.3%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: 7th St & Webster St

2030 with Project PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1679	835	0	0	0	0	0	0	355	1048	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1615	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		0.99	0.96								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		0.98	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		4444	1107								4015	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		4444	1107								4015	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	0	1731	861	0	0	0	0	0	0	370	1092	0
RTOR Reduction (vph)	0	4	4	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	2003	581	0	0	0	0	0	0	0	1457	0
Confl. Peds. (#/hr)	86		52							43		41
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		4									6	
Permitted Phases			4							6		
Actuated Green, G (s)		32.0	32.0								20.0	
Effective Green, g (s)		32.0	32.0								20.0	
Actuated g/C Ratio		0.53	0.53								0.33	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		2370	590								1338	
v/s Ratio Prot		0.45										
v/s Ratio Perm			c0.52								0.36	
v/c Ratio		0.85	0.98								1.09	
Uniform Delay, d1		11.9	13.8								20.0	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		3.9	33.4								52.5	
Delay (s)		15.8	47.2								72.5	
Level of Service		B	D								E	
Approach Delay (s)		22.9			0.0			0.0			72.5	
Approach LOS		C			A			A			E	

Intersection Summary				
HCM Average Control Delay	40.8	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.02			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	78.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: 7th St & Broadway

2030 with Project PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	1775	203	0	0	0	0	457	545	241	634	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5	4.5		4.5	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		0.99						0.96	0.87		1.00	
Flpb, ped/bikes		1.00						1.00	1.00		0.99	
Frt		0.99						0.95	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.99	
Satd. Flow (prot)		5616						2711	1126		3054	
Flt Permitted		1.00						1.00	1.00		0.58	
Satd. Flow (perm)		5616						2711	1126		1799	
Peak-hour factor, PHF	0.94	0.94	0.94	1.00	1.00	1.00	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	117	1888	216	0	0	0	0	497	592	268	704	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2199	0	0	0	0	0	752	337	0	972	0
Confl. Peds. (#/hr)	37		36				52		45	45		52
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	10	0
Parking (#/hr)	10		10									10
Turn Type	Perm								custom	Perm		
Protected Phases		4						2			6	
Permitted Phases	4								6	6		
Actuated Green, G (s)		31.5						41.5	41.5		41.5	
Effective Green, g (s)		31.5						41.5	41.5		41.5	
Actuated g/C Ratio		0.38						0.51	0.51		0.51	
Clearance Time (s)		4.5						4.5	4.5		4.5	
Lane Grp Cap (vph)		2157						1372	570		910	
v/s Ratio Prot								0.28				
v/s Ratio Perm		0.39							0.30		c0.54	
v/c Ratio		1.02						0.55	0.59		1.15dl	
Uniform Delay, d1		25.2						13.8	14.3		20.2	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		24.4						1.6	4.4		49.8	
Delay (s)		49.7						15.4	18.7		70.0	
Level of Service		D						B	B		E	
Approach Delay (s)		49.7			0.0			16.4			70.0	
Approach LOS		D			A			B			E	

Intersection Summary				
HCM Average Control Delay	45.8	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.05			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	101.7%	ICU Level of Service	G	
Analysis Period (min)	15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: 8th St & Harrison St

2030 with Project PM
325 7th St Project

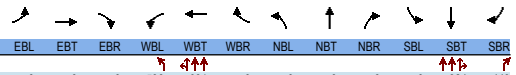
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	719	195	716	867	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.5	4.5				
Lane Util. Factor					0.86		0.86	0.86				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.97	0.99				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5211		1324	4016				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5211		1324	4016				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	782	212	746	903	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	41	0	26	26	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	953	0	377	1220	0	0	0	0
Confl. Peds. (#/hr)				52		67	53		46			
Confl. Bikes (#/hr)							8					
Bus Blockages (#/hr)	0	0	0	0	16	0	0	0	0	0	0	0
Parking (#/hr)					10			10				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					23.0		28.5	28.5				
Effective Green, g (s)					23.0		28.5	28.5				
Actuated g/C Ratio					0.38		0.48	0.48				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					1998		629	1908				
v/s Ratio Prot					c0.18							
v/s Ratio Perm							0.28	0.30				
v/c Ratio					0.48		0.60	0.64				
Uniform Delay, d1					14.0		11.6	11.9				
Progression Factor					1.00		2.39	2.31				
Incremental Delay, d2					0.8		2.1	0.8				
Delay (s)					14.8		29.7	28.3				
Level of Service					B		C	C				
Approach Delay (s)		0.0			14.8			28.6			0.0	
Approach LOS		A			B			C			A	

Intersection Summary				
HCM Average Control Delay	23.4	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	52.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
9: 8th St & Webster St

2030 with Project PM
325 7th St Project

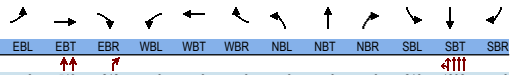


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	536	931	0	0	0	0	0	824	449
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						0.98	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1164	4076						2197	1084
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1221	4253						2184	1084
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.90	0.92	0.92	0.92	0.93	0.95	0.95
Adj. Flow (vph)	0	0	0	564	980	0	0	0	0	0	867	473
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	372	1172	0	0	0	0	0	1037	303
Confl. Bikes (#/hr)												8
Parking (#/hr)				10	10						10	0
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				366	1276						708	349
v/s Ratio Prot											c0.47	
v/s Ratio Perm				c0.30	0.28							0.28
v/c Ratio				1.02	0.92						1.46	0.87
Uniform Delay, d1				31.5	30.4						30.5	28.7
Progression Factor				1.00	1.00						0.26	0.23
Incremental Delay, d2				51.3	12.0						211.5	8.9
Delay (s)				82.8	42.4						219.4	15.4
Level of Service				F	D						F	B
Approach Delay (s)		0.0			52.1			0.0			173.3	
Approach LOS		A			D			A			F	

Intersection Summary				
HCM Average Control Delay	108.4	HCM Level of Service		F
HCM Volume to Capacity ratio	1.25			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0
Intersection Capacity Utilization	52.3%	ICU Level of Service		A
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
10: 9th St & Webster St

2030 with Project PM
325 7th St Project

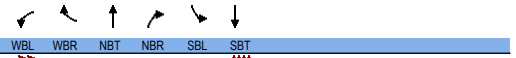


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	518	212	0	0	0	0	0	0	210	1232	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								*0.75	
Frpb, ped/bikes		1.00	0.88								1.00	
Flpb, ped/bikes		1.00	1.00								0.98	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2946	1071								4715	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2946	1071								4715	
Peak-hour factor, PHF	1.00	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.94
Adj. Flow (vph)	0	617	252	0	0	0	0	0	0	236	1384	0
RTOR Reduction (vph)	0	0	176	0	0	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	617	76	0	0	0	0	0	0	0	1589	0
Confl. Peds. (#/hr)	110		101							139		91
Confl. Bikes (#/hr)			8									
Parking (#/hr)		10	10							10	10	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		884	321								1519	
v/s Ratio Prot		c0.21										
v/s Ratio Perm			0.07								0.34	
v/c Ratio		0.70	0.24								1.05	
Uniform Delay, d1		27.9	23.7								30.5	
Progression Factor		1.00	1.00								0.98	
Incremental Delay, d2		4.6	1.7								35.6	
Delay (s)		32.4	25.4								65.4	
Level of Service		C	C								E	
Approach Delay (s)		30.4			0.0			0.0			65.4	
Approach LOS		C			A			A			E	

Intersection Summary				
HCM Average Control Delay	53.2	HCM Level of Service		D
HCM Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		34.0
Intersection Capacity Utilization	50.6%	ICU Level of Service		A
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
11: 10th St & Webster St

2030 with Project PM
325 7th St Project

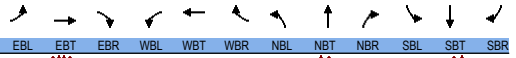


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	377	0	0	0	0	1027
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0					3.0
Lane Util. Factor	0.97					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	2858					5551
Flt Permitted	0.95					1.00
Satd. Flow (perm)	2858					5551
Peak-hour factor, PHF	0.89	0.89	0.92	0.92	0.94	0.94
Adj. Flow (vph)	424	0	0	0	0	1093
RTOR Reduction (vph)	40	0	0	0	0	0
Lane Group Flow (vph)	384	0	0	0	0	1093
Confl. Peds. (#/hr)	113				121	
Parking (#/hr)	10					10
Turn Type						
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)	16.0					23.0
Effective Green, g (s)	16.0					23.0
Actuated g/C Ratio	0.36					0.51
Clearance Time (s)	3.0					3.0
Lane Grp Cap (vph)	1016					2837
v/s Ratio Prot	c0.13					c0.20
v/s Ratio Perm						
v/c Ratio	0.38					0.39
Uniform Delay, d1	10.8					6.7
Progression Factor	1.00					1.00
Incremental Delay, d2	1.1					0.4
Delay (s)	11.9					7.1
Level of Service	B					A
Approach Delay (s)	11.9		0.0			7.1
Approach LOS	B		A			A

Intersection Summary				
HCM Average Control Delay	8.4	HCM Level of Service		A
HCM Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	45.0	Sum of lost time (s)		6.0
Intersection Capacity Utilization	35.2%	ICU Level of Service		A
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
12: 11th St & Harrison St

2030 with Project PM
325 7th St Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	1069	48	0	0	0	0	714	308	57	79	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.5			3.5	
Lane Util. Factor		0.86						0.95			0.95	
Frpb, ped/bikes		0.99						0.96			1.00	
Flpb, ped/bikes		0.99						1.00			0.99	
Frt		0.99						0.95			1.00	
Flt Protected		0.99						1.00			0.98	
Satd. Flow (prot)		6123						3250			3184	
Flt Permitted		0.99						1.00			0.60	
Satd. Flow (perm)		6123						3250			1946	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	1.00	0.99	0.99	0.80	0.80	0.84
Adj. Flow (vph)	208	1273	57	0	0	0	0	721	311	71	99	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	1529	0	0	0	0	0	1020	0	0	170	0
Confl. Peds. (#/hr)	73		131				76		113	113		76
Confl. Bikes (#/hr)			8						8			
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	10		10						10		10	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.0						21.5			21.5	
Effective Green, g (s)		31.0						21.5			21.5	
Actuated g/C Ratio		0.52						0.36			0.36	
Clearance Time (s)		4.0						3.5			3.5	
Lane Grp Cap (vph)		3164						1165			697	
v/s Ratio Prot								c0.31				
v/s Ratio Perm		0.25									0.09	
v/c Ratio		0.48						0.88			0.24	
Uniform Delay, d1		9.3						18.0			13.5	
Progression Factor		1.00						1.00			1.05	
Incremental Delay, d2		0.5						9.3			0.8	
Delay (s)		9.9						27.3			15.1	
Level of Service		A						C			B	
Approach Delay (s)		9.9			0.0			27.3			15.1	
Approach LOS		A			A			C			B	

Intersection Summary				
HCM Average Control Delay	16.8	HCM Level of Service		B
HCM Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		7.5
Intersection Capacity Utilization	74.2%	ICU Level of Service		D
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	102	1400	236	284	735	0	0	92	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5			3.5			3.5	
Lane Util. Factor					0.86			0.95			0.95	
Frpb, ped/bikes					0.99			1.00			0.97	
Flpb, ped/bikes					0.99			0.99			1.00	
Frt					0.98			1.00			0.94	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					6013			3192			3254	
Flt Permitted					1.00			0.79			1.00	
Satd. Flow (perm)					6013			2551			3254	
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.91	0.91	0.91	0.86	0.63	0.63
Adj. Flow (vph)	0	0	0	119	1628	274	312	808	0	0	146	86
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	0	2008	0	0	1120	0	0	226	0
Confl. Peds. (#/hr)				93		78	56		79	79		56
Confl. Bikes (#/hr)						8						8
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)				10		10		10				10
Turn Type				Perm			Perm					
Protected Phases					6			4			4	
Permitted Phases				6			4					
Actuated Green, G (s)					31.5			21.5			21.5	
Effective Green, g (s)					31.5			21.5			21.5	
Actuated g/C Ratio					0.52			0.36			0.36	
Clearance Time (s)					3.5			3.5			3.5	
Lane Grp Cap (vph)					3157			914			1166	
v/s Ratio Prot											0.07	
v/s Ratio Perm					0.33			c0.44				
v/c Ratio					0.64			1.23			0.19	
Uniform Delay, d1					10.2			19.2			13.3	
Progression Factor					1.00			1.62			1.00	
Incremental Delay, d2					1.0			108.9			0.4	
Delay (s)					11.2			140.1			13.6	
Level of Service					B			F			B	
Approach Delay (s)		0.0			11.2			140.1			13.6	
Approach LOS		A			B			F			B	

Intersection Summary				
HCM Average Control Delay	54.1	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	80.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Mitigation - Future (Year 2030) With Project Conditions

HCM Signalized Intersection Capacity Analysis
1: 5th St & Oak St

Mitigation-2030 with Project AM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	402	732	202	0	0	0	0	350	103	4	167	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.97			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4839						2030			1628	
Flt Permitted		0.99						1.00			0.82	
Satd. Flow (perm)		2000						2030			1333	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.81	0.95	0.95	0.95	0.95	0.92
Adj. Flow (vph)	423	771	213	0	0	0	0	368	108	4	176	0
RTOR Reduction (vph)	0	42	0	0	0	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	1365	0	0	0	0	0	458	0	0	180	0
Confl. Peds. (#/hr)	9		17				7		15	15		7
Confl. Bikes (#/hr)			8						8			
Parking (#/hr)									5		5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		37.5						15.5			15.5	
Effective Green, g (s)		37.5						15.5			15.5	
Actuated g/C Ratio		0.62						0.26			0.26	
Clearance Time (s)		3.5						3.5			3.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		1250						524			344	
v/s Ratio Prot								c0.23				
v/s Ratio Perm		c0.68									0.14	
v/c Ratio		1.09						0.87			0.52	
Uniform Delay, d1		11.2						21.3			19.1	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		54.3						18.1			5.6	
Delay (s)		65.5						39.4			24.7	
Level of Service		E						D			C	
Approach Delay (s)		65.5			0.0			39.4			24.7	
Approach LOS		E			A			D			C	

Intersection Summary				
HCM Average Control Delay	56.0	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.03			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	58.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
4: I-880 NB Onramp & Jackson St

Mitigation-2030 with Project AM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	449	148	216	370	0	0	150	1965
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.92		1.00			0.99	0.99
Flpb, ped/bikes				0.95	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.65
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1687	1863	1463		1814			1747	1133
Flt Permitted				0.95	1.00	1.00		0.85			1.00	1.00
Satd. Flow (perm)				1687	1863	1463		1570			1747	1150
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.96	0.95	0.95	0.95	0.96	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	21	468	156	227	389	0	0	158	2068
RTOR Reduction (vph)	0	0	0	0	0	122	0	0	0	0	19	19
Lane Group Flow (vph)	0	0	0	21	468	34	0	616	0	0	1111	1077
Confl. Peds. (#/hr)				18		17			16	16		
Confl. Bikes (#/hr)						8						8
Parking (#/hr)								5				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				16.5	16.5	16.5		47.5			47.5	47.5
Effective Green, g (s)				16.5	16.5	16.5		47.5			47.5	47.5
Actuated g/C Ratio				0.22	0.22	0.22		0.63			0.63	0.63
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Vehicle Extension (s)				2.0	2.0	2.0		2.0			2.0	2.0
Lane Grp Cap (vph)				371	410	322		994			1106	728
v/s Ratio Prot					c0.25						0.64	
v/s Ratio Perm				0.01		0.02		0.39				c0.94
v/c Ratio				0.06	1.14	0.11		0.62			1.00	1.48
Uniform Delay, d1				23.1	29.2	23.4		8.3			13.8	13.8
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.3	89.0	0.7		0.8			28.2	223.3
Delay (s)				23.4	118.2	24.0		9.1			42.0	237.0
Level of Service				C	F	C		A			D	F
Approach Delay (s)		0.0			92.4			9.1			138.0	
Approach LOS		A			F			A			F	

Intersection Summary				
HCM Average Control Delay	106.8	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.39			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	149.9%	ICU Level of Service	H	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
9: 8th St & Webster St

Mitigation-2030 with Project AM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	434	1019	0	0	0	0	0	1056	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4130						2353	1054
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4130						2353	1054
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.91	0.92	0.92	0.92	0.91	0.95	0.95
Adj. Flow (vph)	0	0	0	457	1073	0	0	0	0	0	1112	321
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	370	1160	0	0	0	0	0	1144	289
Confl. Bikes (#/hr)												8
Parking (#/hr)				5	5							5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				25.0	25.0						31.0	31.0
Effective Green, g (s)				25.0	25.0						31.0	31.0
Actuated g/C Ratio				0.28	0.28						0.34	0.34
Clearance Time (s)				4.0	4.0						4.0	4.0
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Lane Grp Cap (vph)				333	1147						810	363
v/s Ratio Prot											c0.49	
v/s Ratio Perm				c0.31	0.28							0.27
v/c Ratio				1.11	1.01						1.41	0.80
Uniform Delay, d1				32.5	32.5						29.5	26.6
Progression Factor				1.00	1.00						0.34	0.29
Incremental Delay, d2				82.7	29.4						190.3	11.0
Delay (s)				115.2	61.9						200.3	18.8
Level of Service				F	E						F	B
Approach Delay (s)		0.0			74.8			0.0			163.7	
Approach LOS		A			E			A			F	

Intersection Summary				
HCM Average Control Delay	117.8	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.28			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	34.0	
Intersection Capacity Utilization	55.6%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
1: 5th St & Oak St

Mitigation-2030 with Project PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	662	95	0	0	0	0	704	97	3	211	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		3.5						3.5			3.5	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		4877						2068			1582	
Flt Permitted		0.98						1.00			0.70	
Satd. Flow (perm)		1100						2068			1105	
Peak-hour factor, PHF	0.95	0.95	0.95	1.00	1.00	1.00	0.84	0.95	0.95	0.95	0.95	0.70
Adj. Flow (vph)	355	697	100	0	0	0	0	741	102	3	222	0
RTOR Reduction (vph)	0	19	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	1133	0	0	0	0	0	835	0	0	225	0
Confl. Peds. (#/hr)	22		23				16		14	14		16
Confl. Bikes (#/hr)									8			
Parking (#/hr)									10		10	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		33.5						19.5			19.5	
Effective Green, g (s)		33.5						19.5			19.5	
Actuated g/C Ratio		0.56						0.32			0.32	
Clearance Time (s)		3.5						3.5			3.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		614						672			359	
v/s Ratio Prot								c0.40				
v/s Ratio Perm		c1.03									0.20	
v/c Ratio		1.85						1.24			0.63	
Uniform Delay, d1		13.2						20.2			17.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		387.0						121.4			8.0	
Delay (s)		400.2						141.7			25.2	
Level of Service		F						F			C	
Approach Delay (s)		400.2			0.0			141.7			25.2	
Approach LOS		F			A			F			C	

Intersection Summary				
HCM Average Control Delay	264.0	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.62			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.0	
Intersection Capacity Utilization	71.7%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
4: I-880 NB Onramp & Jackson St

Mitigation-2030 with Project PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	17	469	47	299	472	0	0	180	1607
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)				5.5	5.5	5.5		5.5			5.5	4.0
Lane Util. Factor				1.00	1.00	1.00		1.00			0.95	0.95
Frpb, ped/bikes				1.00	1.00	0.92		1.00			0.99	0.99
Flpb, ped/bikes				0.96	1.00	1.00		1.00			1.00	1.00
Frt				1.00	1.00	0.85		1.00			1.00	0.60
Flt Protected				0.95	1.00	1.00		0.98			1.00	1.00
Satd. Flow (prot)				1696	1863	1452		1760			1749	1046
Flt Permitted				0.95	1.00	1.00		0.80			1.00	1.00
Satd. Flow (perm)				1696	1863	1452		1436			1749	1046
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.84	0.95	0.95	0.96	0.95	0.95	0.98
Adj. Flow (vph)	0	0	0	18	494	56	315	497	0	0	189	1640
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	19	18
Lane Group Flow (vph)	0	0	0	18	494	13	0	812	0	0	908	884
Confl. Peds. (#/hr)				16		20			14	14		
Confl. Bikes (#/hr)						8						8
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	100	0	0	0
Parking (#/hr)								10				
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					6			8			4	
Permitted Phases				6		6	8					4
Actuated Green, G (s)				17.5	17.5	17.5		46.5			46.5	46.5
Effective Green, g (s)				17.5	17.5	17.5		46.5			46.5	48.0
Actuated g/C Ratio				0.23	0.23	0.23		0.62			0.62	0.64
Clearance Time (s)				5.5	5.5	5.5		5.5			5.5	5.5
Vehicle Extension (s)				2.0	2.0	2.0		2.0			2.0	2.0
Lane Grp Cap (vph)				396	435	339		890			1084	669
v/s Ratio Prot					c0.27						0.52	
v/s Ratio Perm				0.01		0.01		0.57				c0.84
v/c Ratio				0.05	1.14	0.04		0.91			0.84	1.32
Uniform Delay, d1				22.3	28.8	22.2		12.5			11.3	13.5
Progression Factor				1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2				0.2	85.7	0.2		13.2			5.5	154.7
Delay (s)				22.5	114.5	22.5		25.7			16.8	168.2
Level of Service				C	F	C		C			B	F
Approach Delay (s)		0.0			102.5			25.7			91.5	
Approach LOS		A			F			C			F	

Intersection Summary				
HCM Average Control Delay	76.8	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.27			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	9.5	
Intersection Capacity Utilization	144.9%	ICU Level of Service	H	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
9: 8th St & Webster St

Mitigation-2030 with Project PM
325 7th St Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	536	931	0	0	0	0	0	824	449
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						*0.47	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						0.98	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1164	4076						2197	1084
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1221	4253						2184	1084
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.90	0.92	0.92	0.92	0.93	0.95	0.95
Adj. Flow (vph)	0	0	0	564	980	0	0	0	0	0	867	473
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	372	1172	0	0	0	0	0	1037	303
Confl. Bikes (#/hr)												8
Parking (#/hr)				10	10						10	0
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				25.0	25.0						31.0	31.0
Effective Green, g (s)				25.0	25.0						31.0	31.0
Actuated g/C Ratio				0.28	0.28						0.34	0.34
Clearance Time (s)				4.0	4.0						4.0	4.0
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Lane Grp Cap (vph)				339	1181						757	373
v/s Ratio Prot											c0.47	
v/s Ratio Perm				c0.30	0.28							0.28
v/c Ratio				1.10	0.99						1.37	0.81
Uniform Delay, d1				32.5	32.4						29.5	26.9
Progression Factor				1.00	1.00						0.19	0.18
Incremental Delay, d2				77.6	24.2						169.1	5.9
Delay (s)				110.1	56.6						174.8	10.8
Level of Service				F	E						F	B
Approach Delay (s)		0.0			69.5			0.0			137.7	
Approach LOS		A			E			A			F	

Intersection Summary				
HCM Average Control Delay	101.2	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.25			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	34.0	
Intersection Capacity Utilization	52.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

APPENDIX F

HEALTH RISK ASSESSMENT

HEALTH RISK ASSESSMENT
325 SEVENTH STREET RESIDENTIAL PROJECT, OAKLAND, CA

LSA Associates, Inc. has completed a health risk assessment (HRA) for the proposed 382-unit residential development located east of Interstate 880 (I-880) in the City of Oakland. The analysis considered specific meteorological conditions on the project site and the proximity of the project site to the adjacent freeway to determine the potential risk to future residents at the project site from emissions generated from the freeway. Land uses in the vicinity of the project were also evaluated as potential sources of toxic emissions, however, no additional sources were found.

Results of the analysis concluded that the cancer risk associated with exposure of future residents on the project site to freeway emissions would not exceed the significance criterion for toxic air contaminants assuming outdoor exposure as established by the Bay Area Air Quality Management District (BAAQMD).

The following discussion provides the technical background information used to determine the health risk to future residents of the project site.

General Health Risks of Toxics. Determining how hazardous a substance is depends on many factors, including the amount of the substance in the air, how it enters the body, how long the exposure lasts, and what organs in the body are affected. One major way these substances enter the body is through inhalation of either gases or particulates. While many gases are harmful, very small particles penetrate deep into the lungs, contributing to a range of health problems. Exhaust from diesel engines is a major source of these airborne particles. California's Office of Environmental Health Hazard Assessment (OEHHA) has determined that long-term exposure to diesel exhaust particulates poses the highest cancer risk of any toxic air contaminant (TAC) it has evaluated. Fortunately, improvements to diesel fuel and diesel engines have already reduced emissions of some of the contaminants, which, when fully implemented, will result in a 75 percent reduction in particle emissions from diesel-powered trucks and other equipment by 2010 (compared to 2000 levels) and an 85 percent reduction by 2020. Similarly, improvements have been made to significantly reduce TAC emissions from gasoline-powered vehicles. These improvements are anticipated to continue into the foreseeable future.

According to the OEHHA recommendations, while 9-and 30-year exposure durations can be used to represent potential impacts to adults over a range of residency periods, all HRAs must present the results based on 70-year exposure. The 9-and 30-year durations correspond to the central tendency and high-end estimates for residency time. The parameters used for the 9-year exposure scenario are for the first 9-years of life and are thus protective of children. Children, for physiological as well as behavioral reasons, have higher intake rates on a per kilogram body weight basis and thus receive a higher dose from contaminated air than adults. Therefore, the daily point estimate (e.g. inhalation rate) for the 9-year exposure duration is higher than for the 30-year and 70-year (adult) exposure durations.

There are currently no federal project-level requirements for air toxics analysis, and CEQA only requires a consideration of the risks from toxics, with the BAAQMD providing the *Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants* (July 2005) for guidance. The BAAQMD has also established a maximum individual cancer risk significance threshold of 10 in 1 million (1.0×10^{-5}) and a noncarcinogenic hazard index of 1.0.

Analysis of Site Specific Toxics. According to California Air Resources Board (ARB),[1] when conducting an HRA, the surrogate for whole diesel exhaust is diesel particulate matter, and is used as the basis for the potential risk calculations. When conducting an HRA, the potential cancer risk from inhalation exposure to diesel particulate matter PM will outweigh the potential noncancer health impacts. Therefore, inhalation cancer risk is required for every HRA. When comparing whole diesel exhaust to speciated diesel exhaust (e.g., polynuclear aromatic hydrocarbons, metals), potential cancer risk from inhalation exposure to whole diesel exhaust will outweigh the multipathway cancer risk from the speciated components. For this reason, there will be few situations where an analysis of multipathway risk is necessary.[2]

To estimate the potential cancer risk associated with project-related diesel engine exhaust, a dispersion model is used to translate an emission rate from a source location to a concentration at a receptor location of interest. Dispersion modeling varies from the simpler, more conservative screening-level analysis to the more complex and refined detailed analysis. This assessment was conducted using the ARB health risk model, HARP, which includes the EPA dispersion model ISCST3. In addition to examining the risks from diesel exhaust particulate, this assessment includes the exhaust from gasoline-fueled vehicles. This model provides a detailed estimate of concentrations considering site and source geometry, source strength, distance to receptor, building wake effects on plume distribution, and site specific meteorological data.

Additional sources of toxic emissions located within ½ mile of the project site were surveyed using the ARB's CHAPIS (Community Health Air Pollution Information System) database and no additional significant sources of emissions were found to be located near the project site.

Emission Estimates. This HRA was conducted as recommended in the OEHHA Guidelines and by the ARB.[3] It consists of several steps including: determine the PM_{10} emission factor, emission rate, and concentration at locations of interest; translate the PM_{10} concentrations into health risk values and compare the health risk values to thresholds and determine significance.

Emission factors for vehicle emissions were estimated using the ARB's EMFAC2007. EMFAC2007 includes assumptions of technological and regulatory changes that will reduce emission rates over time. The HARP model only allows for a single emission rate for the entire 70-year health risk evaluation period. Therefore, a median set of emission factors from the year 2025 was used to represent the long-term 70-year evaluation period.

[1] Air Resources Board, 2005. http://www.arb.ca.gov/toxics/harp/docs/userguide/appendixK.pdf

[2] OEHHA. 2003. *Air Toxics Hot Spots Program Risk Assessment Guidelines, Appendix D, Risk Assessment Procedures to Evaluate Particulate Emissions from Diesel-Fueled Vehicles, Section B.* August.

[3] Air Resources Board, 2005. *HARP Model Documentation, Appendix K, Risk Assessment Procedures to Evaluate Particulate Emissions from Diesel-Fueled Engines*. February

Caltrans annual traffic data was used as an input to the model. The total annual average daily traffic (AADT) along I-880 is 217,000 (northbound and southbound combined) of which 7,384 are light-duty trucks (LDT), 3,854 are medium-duty trucks (MDT) and 11,981 are heavy-duty trucks (HDT). For purposes of this analysis, all vehicle exhaust was modeled as volume sources located along the I-880 freeway. These extend approximately ¾ mile from the edge of the proposed project site in both directions. The PM_{10} and ROG emission rates used in the analysis were determined based on the vehicle distribution by type identified in Caltrans traffic data for I-880.[4]

Table 1 indicates the derivation of the emission rates by the total average daily traffic (AADT) and the average speed. The classification of the total AADT into four vehicle type categories and the corresponding total emissions for that volume of vehicles at the average speed are also shown in Table 1. For the purpose of this assessment, it is assumed that the traffic volumes are constant throughout the year. Gasoline vehicle exhaust speciation data from the ARB was used to determine the emission rates of the TACs within the ROG emissions. Emission factors are shown in Table 2.

Table 1: Emission Rates

Hwy I-880	AADT by Vehicle Category				Number	Emission Rates per Source		
	LDA	LDT	MDT	HDT	of	g/s	lb/hr	lb/yr
Total	193,781	7,384	3,854	11,981	Sources			
AADT	% of Vehicles That Are Diesel-Powered							
217,000	0%	20.0%	70.0%	87.5%				
	Diesel Exhaust PM_{10} Emissions at 60 mph (g/s)							
	0	7.27E-06	1.56E-05	3.37E-04	14	2.6E-05	2.0E-04	1.8
Average	% of Vehicles That Are Gasoline-Powered							
Speed	100%	80.0%	30.0%	12.5%				
60 mph	**Gasoline Exhaust ROG Emissions at 60 mph (g/s)**							
	8.42E-04	4.79E-05	1.21E-05	6.16E-05	14	6.9E-05	5.5E-04	4.8

Notes : AADT = Annual Average Daily Traffic g/s = grams/second
Source: LSA Associates, Inc., June 2008.

Table 2: Gasoline Exhaust Speciation

CAS Number	Chemical Name	Weight Fraction	lb/hr	lb/yr
106990	1,3-butadiene	0.00775	4.2E-06	0.037
71432	benzene	0.04136	2.3E-05	0.20
100414	ethylbenzene	0.01422	7.8E-06	0.068
91203	naphthalene	0.00308	1.7E-06	0.015
115071	propylene	0.04254998	2.3E-05	0.20
100425	styrene	0.00308	1.7E-06	0.015
108883	toluene	0.07247	4.0E-05	0.35
95476	m & p-xylene	0.05467999	3.0E-05	0.26

Source: ARB, June 2008.

Modeled receptors were placed in a general grid extending in all directions to characterize the risk level isopleths and at locations of future residences. Meteorological data obtained from the BAAQMD for the Oakland STP were used to represent the conditions at the project site. Attachment

[4] Caltrans web site: http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/, on 6/3/2008

A includes the model input and output sheets including the model grid and isopleths results as well as portions of the ISCST3 output file showing all model inputs and important outputs. The HARP model output listing the modeled health risks for all receptors can also be found in Attachment A.

Acute Emission Impacts. Exposure to diesel exhaust can have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks. However, according to rulemaking on *Identifying Particulate Emissions from Diesel-Fueled Engines as a Toxic Air Contaminant* (ARB 1998), the available data from studies of humans exposed to diesel exhaust are not sufficient for deriving an acute noncancer health risk guidance value. While the lung is a major target organ for diesel exhaust, studies of the gross respiratory effects of diesel exhaust in exposed workers have not provided sufficient exposure information to establish a short-term noncancer health risk guidance value for respiratory effects.

As shown in Table 3, for future residents of the project site, the maximum acute hazard index would be 0.00004, which is below the threshold of 1.0. Therefore, the potential for short-term acute exposure will be less than significant.

Table 3: Inhalation Health Risks from Road Sources

	Carcinogenic Inhalation Health Risk	Chronic Inhalation Health Index	Acute Inhalation Health Index
30-Year Risks	3.0 in 1 million	0.0049	0.00004
70-Year Risks	7.9 in 1 million	0.0049	0.00004
Child Risk Levels	1.5 in 1 million	0.0049	0.00004
Threshold	**10 in a million**	**1.0**	**1.0**

LSA Associates, Inc. June 2008

Carcinogenic and Chronic Impacts. The results for carcinogenic and chronic impacts are also shown in Table 3. Results of the analysis indicate that the maximum exposed individual (MEI) inhalation cancer risk associated with living at the proposed development for 70 years would be an inhalation cancer risk of 7.9 in 1 million which is less than the threshold of 10 in 1 million. The maximum chronic hazard index would be 0.0049, which is below the threshold of 1.0. The 70-year risk contour line is graphically displayed in Figure 1. Health risks for 30 year exposure would be 3.0 in 1 million with a chronic inhalation risk of 0.0049. Child risk levels would be 1.5 in 1 million also with a chronic inhalation health index of 0.0049.

CONCLUSIONS

As shown in Table 3, a 70-year outdoor exposure of freeway emissions at the proposed residential units on the project site would result in a maximum exposure to future residents to a risk level that is below the BAAQMD's criteria of significance (10 in 1 million). The BAAQMD analysis methodology requires that the modeling assumptions include individual inhalation of 100 percent outdoor air at that location for 70 years while residing outside the residence 350 days of every year for 24-hours each day.

LSA

LEGEND

- 1 – Carcinogenic Risk Level - 1 in 1 Million
- 2 – Carcinogenic Risk Level - 2 in 1 Million
- 5 – Carcinogenic Risk Level - 5 in 1 Million
- 10 – Carcinogenic Risk Level - 10 in 1 Million
- 20 – Carcinogenic Risk Level - 20 in 1 Million
- – Modeling Receptors
- – Emission Locations
- – Project Site

N

0 105 210

FEET

MAP SOURCE: Windows Local.Live

FIGURE 1

325 Seventh Street

Residential Health Risk Analysis Results

I:\LRY0801\G\Health Risk.cdr (6/13/08)

Historically, the BAAQMD has used the criteria of 10 in 1 million to determine the risk for point sources such as emissions from industrial facilities. The BAAQMD has the authority to regulate point source emissions, not mobile source emissions such as vehicles on roadways. The exposure risk indicated in Table 3 only includes exposure to emissions from freeway traffic near the project site. The HRA results indicate an exposure to risk that would not exceed the BAAQMD criterion for cancer or acute health risks and therefore, it is unlikely that future residents of the project site would be exposed to a health risk which would be substantially greater than the average Californian. (The average ambient air in the Bay Area has a 602 in 1 million health risk.[5])

A report to the Air Resources Board in 1998 acknowledges that people spend a majority of time indoors (for example, the report to the ARB estimates the average individual spends 22.5 hours per day indoors.[6]), and that to accurately estimate the population's exposure to toxic air pollutants, risk assessors must consider the amount of time people spend in different environments. The report found that toxic air concentrations were more than one third less in residences and schools, and almost one half less in offices as compared to outdoor areas.[7] Because individuals spend most of their time indoors, the addition of an upgraded HVAC system could significantly improve indoor air quality in the dwelling units on the project site and further reduce the potential for any increased health risk.

The project proponent plans to incorporate a centralized ventilation (filtration) system with a minimum efficiency reporting value (MERV) 13 and efficiency consistent with American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 52.2 standards. Studies have indicated that a MERV 13 filtration system consistent with ASHRAE 52.2 standards has the potential to remove between 75 percent and 90 percent of particulate emissions[8][1]. A MERV 13 filtration system is consistent with filtration systems used in hospitals and elementary schools to protect the most vulnerable populations from adverse air quality impacts. Intakes for the filtration system will be located in areas which are physically separated, and as far away as possible, from the freeway, in order to further reduce potential adverse air quality effects to project residents.

Based on information provided by the project applicant, each residential unit proposed will be supplied with outside air for ventilation, between 200-400 cubic feet per minute (CFM) of outside air per unit for ventilation (the volume would depend on the size of the unit and whether there is a re-circulating kitchen hood or a vented kitchen hood). Each residential unit will also have a way to relieve the outside air being introduced into it. This can be achieved through sound attenuated Z-ducts or continuously running scavenger fans. The proposed building will have two air handling units (AHU) rated at approximately 45,000 CFM each, with pre-filters, final filters and carbon panels for the removal of the diesel contaminants and PM_{10}. The filters will need to be changed two or three times each year.

Installation, operation, and on-going maintenance of a MERV 13 filtration system at the project site consistent with that proposed by the project would be expected to reduce the potential for exposure of those living in residential units at the project site to substantial pollutant concentrations even further.

[5] Bay Area Air Quality Management District (BAAQMD), 2004. *Toxic Air Contaminant Control Program, Annual Report 2002*. June.

[6] Ibid.

[7] Krieger, Robert K., D. Ames, J. Brooks, G. Shiroma, and P. Venturini, 1998. Report to the Air Resources Board on the Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, Part A, Exposure Assessment. April 22.

Additional details on the methodology and specific model input data used to analyze the health risk associated with future residential use of the project site are provided in Attachment A.

ATTACHMENT A

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
1	GRID	0.4	2.47E-04	3.19E-06	563,801	4,183,998	10
2	GRID	0.42	2.58E-04	3.35E-06	563,826	4,183,998	10
3	GRID	0.44	2.70E-04	3.42E-06	563,851	4,183,998	10
4	GRID	0.45	2.81E-04	3.45E-06	563,876	4,183,998	10
5	GRID	0.47	2.91E-04	3.60E-06	563,901	4,183,998	10
6	GRID	0.48	2.98E-04	3.71E-06	563,926	4,183,998	10
7	GRID	0.49	3.02E-04	3.76E-06	563,951	4,183,998	10
8	GRID	0.49	3.04E-04	3.78E-06	563,976	4,183,998	10
9	GRID	0.49	3.03E-04	3.86E-06	564,001	4,183,998	10
10	GRID	0.49	3.02E-04	3.80E-06	564,026	4,183,998	10
11	GRID	0.48	2.98E-04	3.88E-06	564,051	4,183,998	10
12	GRID	0.47	2.94E-04	3.82E-06	564,076	4,183,998	10
13	GRID	0.46	2.87E-04	3.80E-06	564,101	4,183,998	10
14	GRID	0.45	2.80E-04	3.64E-06	564,126	4,183,998	10
15	GRID	0.44	2.72E-04	3.57E-06	564,151	4,183,998	10
16	GRID	0.43	2.63E-04	3.42E-06	564,176	4,183,998	10
17	GRID	0.41	2.55E-04	3.27E-06	564,201	4,183,998	10
18	GRID	0.40	2.46E-04	3.18E-06	564,226	4,183,998	10
19	GRID	0.38	2.37E-04	3.04E-06	564,251	4,183,998	10
20	GRID	0.37	2.28E-04	2.94E-06	564,276	4,183,998	10
21	GRID	0.35	2.19E-04	2.81E-06	564,301	4,183,998	10
22	GRID	0.34	2.10E-04	2.71E-06	564,326	4,183,998	10
23	GRID	0.32	2.00E-04	2.62E-06	564,351	4,183,998	10
24	GRID	0.31	1.91E-04	2.52E-06	564,376	4,183,998	10
25	GRID	0.29	1.82E-04	2.45E-06	564,401	4,183,998	10
26	GRID	0.45	2.79E-04	3.58E-06	563,801	4,183,973	10
27	GRID	0.47	2.94E-04	3.76E-06	563,826	4,183,973	10
28	GRID	0.50	3.09E-04	3.80E-06	563,851	4,183,973	10
29	GRID	0.52	3.22E-04	3.90E-06	563,876	4,183,973	10
30	GRID	0.54	3.34E-04	4.08E-06	563,901	4,183,973	10
31	GRID	0.55	3.41E-04	4.19E-06	563,926	4,183,973	10
32	GRID	0.56	3.45E-04	4.24E-06	563,951	4,183,973	10
33	GRID	0.56	3.46E-04	4.26E-06	563,976	4,183,973	10
34	GRID	0.56	3.45E-04	4.34E-06	564,001	4,183,973	10
35	GRID	0.55	3.42E-04	4.36E-06	564,026	4,183,973	10
36	GRID	0.54	3.37E-04	4.32E-06	564,051	4,183,973	10
37	GRID	0.53	3.30E-04	4.30E-06	564,076	4,183,973	10
38	GRID	0.52	3.22E-04	4.15E-06	564,101	4,183,973	10
39	GRID	0.50	3.12E-04	4.06E-06	564,126	4,183,973	10
40	GRID	0.49	3.02E-04	3.88E-06	564,151	4,183,973	10
41	GRID	0.47	2.92E-04	3.74E-06	564,176	4,183,973	10
42	GRID	0.45	2.81E-04	3.56E-06	564,201	4,183,973	10
43	GRID	0.44	2.70E-04	3.48E-06	564,226	4,183,973	10
44	GRID	0.42	2.60E-04	3.33E-06	564,251	4,183,973	10
45	GRID	0.40	2.49E-04	3.20E-06	564,276	4,183,973	10
46	GRID	0.39	2.39E-04	3.06E-06	564,301	4,183,973	10
47	GRID	0.37	2.28E-04	2.93E-06	564,326	4,183,973	10
48	GRID	0.35	2.17E-04	2.82E-06	564,351	4,183,973	10
49	GRID	0.33	2.06E-04	2.70E-06	564,376	4,183,973	10
50	GRID	0.32	1.95E-04	2.59E-06	564,401	4,183,973	10
51	GRID	0.52	3.20E-04	4.03E-06	563,801	4,183,948	10
52	GRID	0.55	3.39E-04	4.24E-06	563,826	4,183,948	10
53	GRID	0.58	3.58E-04	4.31E-06	563,851	4,183,948	10
54	GRID	0.61	3.75E-04	4.49E-06	563,876	4,183,948	10
55	GRID	0.63	3.89E-04	4.64E-06	563,901	4,183,948	10
56	GRID	0.64	3.96E-04	4.77E-06	563,926	4,183,948	10
57	GRID	0.65	3.99E-04	4.77E-06	563,951	4,183,948	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
58	GRID	0.65	4.00E-04	4.93E-06	563,976	4,183,948	10
59	GRID	0.64	3.97E-04	4.90E-06	564,001	4,183,948	10
60	GRID	0.63	3.92E-04	4.97E-06	564,026	4,183,948	10
61	GRID	0.62	3.84E-04	4.82E-06	564,051	4,183,948	10
62	GRID	0.60	3.74E-04	4.77E-06	564,076	4,183,948	10
63	GRID	0.59	3.63E-04	4.62E-06	564,101	4,183,948	10
64	GRID	0.57	3.51E-04	4.47E-06	564,126	4,183,948	10
65	GRID	0.55	3.38E-04	4.29E-06	564,151	4,183,948	10
66	GRID	0.52	3.25E-04	4.13E-06	564,176	4,183,948	10
67	GRID	0.50	3.12E-04	3.94E-06	564,201	4,183,948	10
68	GRID	0.48	2.99E-04	3.78E-06	564,226	4,183,948	10
69	GRID	0.46	2.86E-04	3.67E-06	564,251	4,183,948	10
70	GRID	0.44	2.73E-04	3.45E-06	564,276	4,183,948	10
71	GRID	0.42	2.61E-04	3.34E-06	564,301	4,183,948	10
72	GRID	0.40	2.48E-04	3.14E-06	564,326	4,183,948	10
73	GRID	0.38	2.35E-04	3.02E-06	564,351	4,183,948	10
74	GRID	0.36	2.23E-04	2.88E-06	564,376	4,183,948	10
75	GRID	0.34	2.10E-04	2.75E-06	564,401	4,183,948	10
76	GRID	0.60	3.71E-04	4.60E-06	563,801	4,183,923	10
77	GRID	0.64	3.97E-04	4.86E-06	563,826	4,183,923	10
78	GRID	0.68	4.22E-04	5.02E-06	563,851	4,183,923	10
79	GRID	0.72	4.44E-04	5.26E-06	563,876	4,183,923	10
80	GRID	0.74	4.60E-04	5.36E-06	563,901	4,183,923	10
81	GRID	0.75	4.67E-04	5.52E-06	563,926	4,183,923	10
82	GRID	0.76	4.69E-04	5.58E-06	563,951	4,183,923	10
83	GRID	0.75	4.67E-04	5.65E-06	563,976	4,183,923	10
84	GRID	0.75	4.61E-04	5.74E-06	564,001	4,183,923	10
85	GRID	0.73	4.52E-04	5.55E-06	564,026	4,183,923	10
86	GRID	0.71	4.41E-04	5.48E-06	564,051	4,183,923	10
87	GRID	0.69	4.27E-04	5.26E-06	564,076	4,183,923	10
88	GRID	0.67	4.12E-04	5.18E-06	564,101	4,183,923	10
89	GRID	0.64	3.97E-04	4.90E-06	564,126	4,183,923	10
90	GRID	0.61	3.81E-04	4.83E-06	564,151	4,183,923	10
91	GRID	0.59	3.64E-04	4.56E-06	564,176	4,183,923	10
92	GRID	0.56	3.48E-04	4.41E-06	564,201	4,183,923	10
93	GRID	0.54	3.32E-04	4.17E-06	564,226	4,183,923	10
94	GRID	0.51	3.16E-04	4.01E-06	564,251	4,183,923	10
95	GRID	0.49	3.01E-04	3.79E-06	564,276	4,183,923	10
96	GRID	0.46	2.86E-04	3.57E-06	564,301	4,183,923	10
97	GRID	0.44	2.71E-04	3.40E-06	564,326	4,183,923	10
98	GRID	0.41	2.56E-04	3.18E-06	564,351	4,183,923	10
99	GRID	0.39	2.41E-04	3.08E-06	564,376	4,183,923	10
100	GRID	0.37	2.27E-04	2.89E-06	564,401	4,183,923	10
101	GRID	0.71	4.38E-04	5.26E-06	563,801	4,183,898	10
102	GRID	0.76	4.74E-04	5.76E-06	563,826	4,183,898	10
103	GRID	0.82	5.09E-04	5.93E-06	563,851	4,183,898	10
104	GRID	0.87	5.38E-04	6.27E-06	563,876	4,183,898	10
105	GRID	0.90	5.55E-04	6.30E-06	563,901	4,183,898	10
106	GRID	0.91	5.61E-04	6.41E-06	563,926	4,183,898	10
107	GRID	0.91	5.61E-04	6.61E-06	563,951	4,183,898	10
108	GRID	0.89	5.54E-04	6.62E-06	563,976	4,183,898	10
109	GRID	0.88	5.42E-04	6.60E-06	564,001	4,183,898	10
110	GRID	0.85	5.28E-04	6.35E-06	564,026	4,183,898	10
111	GRID	0.82	5.11E-04	6.18E-06	564,051	4,183,898	10
112	GRID	0.79	4.92E-04	5.99E-06	564,076	4,183,898	10
113	GRID	0.76	4.72E-04	5.80E-06	564,101	4,183,898	10
114	GRID	0.73	4.52E-04	5.61E-06	564,126	4,183,898	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
115	GRID	0.70	4.32E-04	5.34E-06	564,151	4,183,898	10
116	GRID	0.66	4.11E-04	5.20E-06	564,176	4,183,898	10
117	GRID	0.63	3.91E-04	4.77E-06	564,201	4,183,898	10
118	GRID	0.60	3.71E-04	4.64E-06	564,226	4,183,898	10
119	GRID	0.57	3.52E-04	4.31E-06	564,251	4,183,898	10
120	GRID	0.54	3.34E-04	4.13E-06	564,276	4,183,898	10
121	GRID	0.51	3.15E-04	3.84E-06	564,301	4,183,898	10
122	GRID	0.48	2.97E-04	3.64E-06	564,326	4,183,898	10
123	GRID	0.45	2.80E-04	3.42E-06	564,351	4,183,898	10
124	GRID	0.42	2.62E-04	3.25E-06	564,376	4,183,898	10
125	GRID	0.40	2.46E-04	3.10E-06	564,401	4,183,898	10
126	GRID	0.85	5.28E-04	6.40E-06	563,801	4,183,873	10
127	GRID	0.94	5.81E-04	7.03E-06	563,826	4,183,873	10
128	GRID	1.0	6.32E-04	7.16E-06	563,851	4,183,873	10
129	GRID	1.1	6.71E-04	7.61E-06	563,876	4,183,873	10
130	GRID	1.1	6.88E-04	7.69E-06	563,901	4,183,873	10
131	GRID	1.1	6.91E-04	7.85E-06	563,926	4,183,873	10
132	GRID	1.1	6.84E-04	8.06E-06	563,951	4,183,873	10
133	GRID	1.1	6.68E-04	7.82E-06	563,976	4,183,873	10
134	GRID	1.0	6.47E-04	7.52E-06	564,001	4,183,873	10
135	GRID	1.0	6.24E-04	7.35E-06	564,026	4,183,873	10
136	GRID	0.97	5.99E-04	7.05E-06	564,051	4,183,873	10
137	GRID	0.92	5.73E-04	6.94E-06	564,076	4,183,873	10
138	GRID	0.88	5.46E-04	6.54E-06	564,101	4,183,873	10
139	GRID	0.84	5.20E-04	6.33E-06	564,126	4,183,873	10
140	GRID	0.80	4.94E-04	6.05E-06	564,151	4,183,873	10
141	GRID	0.75	4.67E-04	5.73E-06	564,176	4,183,873	10
142	GRID	0.71	4.42E-04	5.40E-06	564,201	4,183,873	10
143	GRID	0.67	4.17E-04	5.01E-06	564,226	4,183,873	10
144	GRID	0.64	3.94E-04	4.81E-06	564,251	4,183,873	10
145	GRID	0.60	3.71E-04	4.41E-06	564,276	4,183,873	10
146	GRID	0.56	3.49E-04	4.20E-06	564,301	4,183,873	10
147	GRID	0.53	3.28E-04	3.88E-06	564,326	4,183,873	10
148	GRID	0.50	3.07E-04	3.69E-06	564,351	4,183,873	10
149	GRID	0.46	2.86E-04	3.48E-06	564,376	4,183,873	10
150	GRID	0.43	2.67E-04	3.30E-06	564,401	4,183,873	10
151	GRID	1.1	6.55E-04	7.84E-06	563,801	4,183,848	10
152	GRID	1.2	7.39E-04	8.75E-06	563,826	4,183,848	10
153	GRID	1.3	8.21E-04	8.84E-06	563,851	4,183,848	10
154	GRID	1.4	8.70E-04	9.50E-06	563,876	4,183,848	10
155	GRID	1.4	8.84E-04	9.64E-06	563,901	4,183,848	10
156	GRID	1.4	8.78E-04	9.79E-06	563,926	4,183,848	10
157	GRID	1.4	8.54E-04	9.77E-06	563,951	4,183,848	10
158	GRID	1.3	8.22E-04	9.20E-06	563,976	4,183,848	10
159	GRID	1.3	7.86E-04	8.89E-06	564,001	4,183,848	10
160	GRID	1.2	7.49E-04	8.74E-06	564,026	4,183,848	10
161	GRID	1.2	7.12E-04	8.36E-06	564,051	4,183,848	10
162	GRID	1.1	6.75E-04	7.92E-06	564,076	4,183,848	10
163	GRID	1.0	6.39E-04	7.57E-06	564,101	4,183,848	10
164	GRID	0.98	6.04E-04	7.08E-06	564,126	4,183,848	10
165	GRID	0.92	5.70E-04	6.83E-06	564,151	4,183,848	10
166	GRID	0.87	5.36E-04	6.35E-06	564,176	4,183,848	10
167	GRID	0.81	5.04E-04	5.96E-06	564,201	4,183,848	10
168	GRID	0.76	4.73E-04	5.56E-06	564,226	4,183,848	10
169	GRID	0.72	4.43E-04	5.24E-06	564,251	4,183,848	10
170	GRID	0.67	4.16E-04	4.87E-06	564,276	4,183,848	10
171	GRID	0.63	3.89E-04	4.55E-06	564,301	4,183,848	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
172	GRID	0.59	3.63E-04	4.27E-06	564,326	4,183,848	10
173	GRID	0.55	3.38E-04	3.97E-06	564,351	4,183,848	10
174	GRID	0.51	3.14E-04	3.75E-06	564,376	4,183,848	10
175	GRID	0.47	2.91E-04	3.50E-06	564,401	4,183,848	10
176	GRID	1.4	8.43E-04	9.89E-06	563,801	4,183,823	10
177	GRID	1.6	9.99E-04	1.13E-05	563,826	4,183,823	10
178	GRID	1.8	1.14E-03	1.13E-05	563,851	4,183,823	10
179	GRID	1.9	1.20E-03	1.26E-05	563,876	4,183,823	10
180	GRID	1.9	1.20E-03	1.29E-05	563,901	4,183,823	10
181	GRID	1.9	1.15E-03	1.24E-05	563,926	4,183,823	10
182	GRID	1.8	1.10E-03	1.17E-05	563,951	4,183,823	10
183	GRID	1.7	1.04E-03	1.14E-05	563,976	4,183,823	10
184	GRID	1.6	9.76E-04	1.07E-05	564,001	4,183,823	10
185	GRID	1.5	9.17E-04	1.03E-05	564,026	4,183,823	10
186	GRID	1.4	8.61E-04	9.69E-06	564,051	4,183,823	10
187	GRID	1.3	8.08E-04	9.08E-06	564,076	4,183,823	10
188	GRID	1.2	7.57E-04	8.64E-06	564,101	4,183,823	10
189	GRID	1.2	7.10E-04	8.18E-06	564,126	4,183,823	10
190	GRID	1.1	6.64E-04	7.63E-06	564,151	4,183,823	10
191	GRID	1.0	6.21E-04	7.19E-06	564,176	4,183,823	10
192	GRID	0.94	5.79E-04	6.64E-06	564,201	4,183,823	10
193	GRID	0.87	5.40E-04	6.26E-06	564,226	4,183,823	10
194	GRID	0.81	5.03E-04	5.77E-06	564,251	4,183,823	10
195	GRID	0.76	4.68E-04	5.39E-06	564,276	4,183,823	10
196	GRID	0.70	4.36E-04	4.95E-06	564,301	4,183,823	10
197	GRID	0.65	4.04E-04	4.66E-06	564,326	4,183,823	10
198	GRID	0.60	3.74E-04	4.28E-06	564,351	4,183,823	10
199	GRID	0.56	3.45E-04	4.08E-06	564,376	4,183,823	10
200	GRID	0.51	3.17E-04	3.75E-06	564,401	4,183,823	10
201	GRID	1.8	1.14E-03	1.27E-05	563,801	4,183,798	10
202	GRID	2.4	1.50E-03	1.54E-05	563,826	4,183,798	10
203	GRID	2.9	1.79E-03	1.71E-05	563,851	4,183,798	10
204	GRID	2.9	1.81E-03	1.81E-05	563,876	4,183,798	10
205	GRID	2.8	1.72E-03	1.81E-05	563,901	4,183,798	10
206	GRID	2.6	1.60E-03	1.56E-05	563,926	4,183,798	10
207	GRID	2.4	1.47E-03	1.57E-05	563,951	4,183,798	10
208	GRID	2.2	1.35E-03	1.42E-05	563,976	4,183,798	10
209	GRID	2.0	1.25E-03	1.33E-05	564,001	4,183,798	10
210	GRID	1.9	1.15E-03	1.22E-05	564,026	4,183,798	10
211	GRID	1.7	1.06E-03	1.15E-05	564,051	4,183,798	10
212	GRID	1.6	9.84E-04	1.06E-05	564,076	4,183,798	10
213	GRID	1.5	9.11E-04	1.00E-05	564,101	4,183,798	10
214	GRID	1.4	8.45E-04	9.34E-06	564,126	4,183,798	10
215	GRID	1.3	7.84E-04	8.70E-06	564,151	4,183,798	10
216	GRID	1.2	7.27E-04	8.12E-06	564,176	4,183,798	10
217	GRID	1.1	6.73E-04	7.60E-06	564,201	4,183,798	10
218	GRID	1.0	6.22E-04	7.04E-06	564,226	4,183,798	10
219	GRID	0.93	5.75E-04	6.50E-06	564,251	4,183,798	10
220	GRID	0.86	5.32E-04	5.97E-06	564,276	4,183,798	10
221	GRID	0.79	4.91E-04	5.54E-06	564,301	4,183,798	10
222	GRID	0.73	4.53E-04	5.05E-06	564,326	4,183,798	10
223	GRID	0.67	4.16E-04	4.76E-06	564,351	4,183,798	10
224	GRID	0.61	3.81E-04	4.33E-06	564,376	4,183,798	10
225	GRID	0.56	3.48E-04	4.10E-06	564,401	4,183,798	10
226	GRID	2.5	1.57E-03	1.80E-05	563,801	4,183,773	10
227	GRID	4.6	2.87E-03	2.77E-05	563,826	4,183,773	10
228	GRID	6.0	3.72E-03	3.14E-05	563,851	4,183,773	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
229	GRID	5.2	3.20E-03	2.99E-05	563,876	4,183,773	10
230	GRID	4.4	2.75E-03	2.54E-05	563,901	4,183,773	10
231	GRID	3.9	2.39E-03	2.31E-05	563,926	4,183,773	10
232	GRID	3.4	2.08E-03	1.91E-05	563,951	4,183,773	10
233	GRID	3.0	1.85E-03	1.91E-05	563,976	4,183,773	10
234	GRID	2.7	1.65E-03	1.60E-05	564,001	4,183,773	10
235	GRID	2.4	1.49E-03	1.52E-05	564,026	4,183,773	10
236	GRID	2.2	1.35E-03	1.39E-05	564,051	4,183,773	10
237	GRID	2.0	1.22E-03	1.27E-05	564,076	4,183,773	10
238	GRID	1.8	1.12E-03	1.20E-05	564,101	4,183,773	10
239	GRID	1.7	1.02E-03	1.10E-05	564,126	4,183,773	10
240	GRID	1.5	9.39E-04	1.01E-05	564,151	4,183,773	10
241	GRID	1.4	8.62E-04	9.45E-06	564,176	4,183,773	10
242	GRID	1.3	7.91E-04	8.70E-06	564,201	4,183,773	10
243	GRID	1.2	7.26E-04	7.94E-06	564,226	4,183,773	10
244	GRID	1.1	6.65E-04	7.36E-06	564,251	4,183,773	10
245	GRID	0.98	6.10E-04	6.70E-06	564,276	4,183,773	10
246	GRID	0.90	5.59E-04	6.18E-06	564,301	4,183,773	10
247	GRID	0.82	5.10E-04	5.61E-06	564,326	4,183,773	10
248	GRID	0.75	4.65E-04	5.17E-06	564,351	4,183,773	10
249	GRID	0.68	4.22E-04	4.82E-06	564,376	4,183,773	10
250	GRID	0.62	3.83E-04	4.34E-06	564,401	4,183,773	10
251	GRID	2.4	1.50E-03	2.48E-05	563,801	4,183,748	10
252	GRID	11	6.95E-03	5.66E-05	563,826	4,183,748	10
253	GRID	17	1.03E-02	7.77E-05	563,851	4,183,748	10
254	GRID	12	7.48E-03	5.10E-05	563,876	4,183,748	10
255	GRID	8.5	5.28E-03	4.21E-05	563,901	4,183,748	10
256	GRID	6.5	4.03E-03	3.40E-05	563,926	4,183,748	10
257	GRID	5.2	3.22E-03	2.95E-05	563,951	4,183,748	10
258	GRID	4.3	2.69E-03	2.36E-05	563,976	4,183,748	10
259	GRID	3.7	2.30E-03	2.22E-05	564,001	4,183,748	10
260	GRID	3.2	2.00E-03	1.86E-05	564,026	4,183,748	10
261	GRID	2.9	1.77E-03	1.76E-05	564,051	4,183,748	10
262	GRID	2.5	1.57E-03	1.56E-05	564,076	4,183,748	10
263	GRID	2.3	1.41E-03	1.42E-05	564,101	4,183,748	10
264	GRID	2.0	1.27E-03	1.31E-05	564,126	4,183,748	10
265	GRID	1.9	1.15E-03	1.18E-05	564,151	4,183,748	10
266	GRID	1.7	1.04E-03	1.11E-05	564,176	4,183,748	10
267	GRID	1.5	9.45E-04	1.02E-05	564,201	4,183,748	10
268	GRID	1.4	8.57E-04	9.15E-06	564,226	4,183,748	10
269	GRID	1.3	7.78E-04	8.35E-06	564,251	4,183,748	10
270	GRID	1.1	7.06E-04	7.62E-06	564,276	4,183,748	10
271	GRID	1.0	6.41E-04	6.81E-06	564,301	4,183,748	10
272	GRID	0.94	5.80E-04	6.29E-06	564,326	4,183,748	10
273	GRID	0.85	5.24E-04	5.63E-06	564,351	4,183,748	10
274	GRID	0.76	4.71E-04	5.26E-06	564,376	4,183,748	10
275	GRID	0.68	4.22E-04	4.70E-06	564,401	4,183,748	10
276	GRID	1.7	1.07E-03	2.68E-05	563,801	4,183,723	10
277	GRID	5.1	3.13E-03	5.15E-05	563,826	4,183,723	10
278	GRID	17	1.06E-02	8.92E-05	563,851	4,183,723	10
279	GRID	6.9	4.26E-03	3.39E-05	563,876	4,183,723	10
280	GRID	20	1.26E-02	7.46E-05	563,901	4,183,723	10
281	GRID	15	9.36E-03	6.05E-05	563,926	4,183,723	10
282	GRID	9.4	5.81E-03	4.45E-05	563,951	4,183,723	10
283	GRID	7.1	4.38E-03	3.57E-05	563,976	4,183,723	10
284	GRID	5.6	3.48E-03	2.87E-05	564,001	4,183,723	10
285	GRID	4.6	2.87E-03	2.62E-05	564,026	4,183,723	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
286	GRID	3.9	2.43E-03	2.24E-05	564,051	4,183,723	10
287	GRID	3.4	2.09E-03	1.99E-05	564,076	4,183,723	10
288	GRID	3.0	1.83E-03	1.76E-05	564,101	4,183,723	10
289	GRID	2.6	1.61E-03	1.59E-05	564,126	4,183,723	10
290	GRID	2.3	1.43E-03	1.44E-05	564,151	4,183,723	10
291	GRID	2.1	1.28E-03	1.29E-05	564,176	4,183,723	10
292	GRID	1.9	1.15E-03	1.20E-05	564,201	4,183,723	10
293	GRID	1.7	1.03E-03	1.06E-05	564,226	4,183,723	10
294	GRID	1.5	9.24E-04	9.61E-06	564,251	4,183,723	10
295	GRID	1.3	8.29E-04	8.76E-06	564,276	4,183,723	10
296	GRID	1.2	7.44E-04	7.80E-06	564,301	4,183,723	10
297	GRID	1.1	6.66E-04	6.98E-06	564,326	4,183,723	10
298	GRID	0.96	5.94E-04	6.34E-06	564,351	4,183,723	10
299	GRID	0.85	5.28E-04	5.66E-06	564,376	4,183,723	10
300	GRID	0.76	4.69E-04	5.14E-06	564,401	4,183,723	10
301	GRID	1.2	7.70E-04	2.02E-05	563,801	4,183,698	10
302	GRID	2.3	1.45E-03	3.19E-05	563,826	4,183,698	10
303	GRID	4.6	2.85E-03	4.72E-05	563,851	4,183,698	10
304	GRID	9.6	5.92E-03	7.33E-05	563,876	4,183,698	10
305	GRID	12	7.50E-03	1.03E-04	563,901	4,183,698	10
306	GRID	26	1.63E-02	9.81E-05	563,926	4,183,698	10
307	GRID	8.4	5.19E-03	3.76E-05	563,951	4,183,698	10
308	GRID	14	8.87E-03	6.08E-05	563,976	4,183,698	10
309	GRID	10	6.29E-03	4.67E-05	564,001	4,183,698	10
310	GRID	7.4	4.60E-03	3.63E-05	564,026	4,183,698	10
311	GRID	5.8	3.62E-03	3.14E-05	564,051	4,183,698	10
312	GRID	4.8	2.97E-03	2.62E-05	564,076	4,183,698	10
313	GRID	4.0	2.50E-03	2.23E-05	564,101	4,183,698	10
314	GRID	3.5	2.14E-03	2.07E-05	564,126	4,183,698	10
315	GRID	3.0	1.86E-03	1.74E-05	564,151	4,183,698	10
316	GRID	2.6	1.62E-03	1.59E-05	564,176	4,183,698	10
317	GRID	2.3	1.43E-03	1.39E-05	564,201	4,183,698	10
318	GRID	2.0	1.27E-03	1.29E-05	564,226	4,183,698	10
319	GRID	1.8	1.12E-03	1.12E-05	564,251	4,183,698	10
320	GRID	1.6	9.89E-04	1.00E-05	564,276	4,183,698	10
321	GRID	1.4	8.76E-04	8.85E-06	564,301	4,183,698	10
322	GRID	1.3	7.74E-04	7.85E-06	564,326	4,183,698	10
323	GRID	1.1	6.81E-04	7.02E-06	564,351	4,183,698	10
324	GRID	0.96	5.97E-04	6.33E-06	564,376	4,183,698	10
325	GRID	0.84	5.22E-04	5.52E-06	564,401	4,183,698	10
326	GRID	0.96	5.92E-04	1.55E-05	563,801	4,183,673	10
327	GRID	1.5	9.18E-04	2.32E-05	563,826	4,183,673	10
328	GRID	2.3	1.44E-03	3.04E-05	563,851	4,183,673	10
329	GRID	3.7	2.27E-03	3.94E-05	563,876	4,183,673	10
330	GRID	5.6	3.49E-03	5.07E-05	563,901	4,183,673	10
331	GRID	8.9	5.51E-03	7.00E-05	563,926	4,183,673	10
332	GRID	6.2	3.85E-03	4.57E-05	563,951	4,183,673	10
333	GRID	11	6.72E-03	4.30E-05	563,976	4,183,673	10
334	GRID	26	1.58E-02	8.98E-05	564,001	4,183,673	10
335	GRID	16	1.02E-02	6.23E-05	564,026	4,183,673	10
336	GRID	10	6.35E-03	4.72E-05	564,051	4,183,673	10
337	GRID	7.7	4.75E-03	3.87E-05	564,076	4,183,673	10
338	GRID	6.0	3.72E-03	3.13E-05	564,101	4,183,673	10
339	GRID	4.9	3.03E-03	2.66E-05	564,126	4,183,673	10
340	GRID	4.1	2.54E-03	2.40E-05	564,151	4,183,673	10
341	GRID	3.5	2.15E-03	1.88E-05	564,176	4,183,673	10
342	GRID	3.0	1.85E-03	1.82E-05	564,201	4,183,673	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
343	GRID	2.6	1.60E-03	1.55E-05	564,226	4,183,673	10
344	GRID	2.2	1.39E-03	1.38E-05	564,251	4,183,673	10
345	GRID	2.0	1.21E-03	1.19E-05	564,276	4,183,673	10
346	GRID	1.7	1.05E-03	1.04E-05	564,301	4,183,673	10
347	GRID	1.5	9.14E-04	8.99E-06	564,326	4,183,673	10
348	GRID	1.3	7.90E-04	7.97E-06	564,351	4,183,673	10
349	GRID	1.1	6.80E-04	6.93E-06	564,376	4,183,673	10
350	GRID	0.95	5.86E-04	6.02E-06	564,401	4,183,673	10
351	GRID	0.77	4.77E-04	1.40E-05	563,801	4,183,648	10
352	GRID	1.1	6.61E-04	1.69E-05	563,826	4,183,648	10
353	GRID	1.5	9.39E-04	2.26E-05	563,851	4,183,648	10
354	GRID	2.1	1.32E-03	2.67E-05	563,876	4,183,648	10
355	GRID	3.0	1.85E-03	3.27E-05	563,901	4,183,648	10
356	GRID	4.1	2.53E-03	4.02E-05	563,926	4,183,648	10
357	GRID	6.0	3.69E-03	5.63E-05	563,951	4,183,648	10
358	GRID	9.5	5.85E-03	7.18E-05	563,976	4,183,648	10
359	GRID	16	9.73E-03	9.59E-05	564,001	4,183,648	10
360	GRID	8.1	5.00E-03	4.27E-05	564,026	4,183,648	10
361	GRID	24	1.48E-02	8.88E-05	564,051	4,183,648	10
362	GRID	16	1.01E-02	6.61E-05	564,076	4,183,648	10
363	GRID	11	6.69E-03	4.80E-05	564,101	4,183,648	10
364	GRID	7.8	4.84E-03	4.03E-05	564,126	4,183,648	10
365	GRID	6.1	3.77E-03	3.16E-05	564,151	4,183,648	10
366	GRID	4.9	3.05E-03	2.70E-05	564,176	4,183,648	10
367	GRID	4.1	2.51E-03	2.18E-05	564,201	4,183,648	10
368	GRID	3.4	2.12E-03	2.07E-05	564,226	4,183,648	10
369	GRID	2.9	1.79E-03	1.64E-05	564,251	4,183,648	10
370	GRID	2.5	1.52E-03	1.47E-05	564,276	4,183,648	10
371	GRID	2.1	1.29E-03	1.25E-05	564,301	4,183,648	10
372	GRID	1.8	1.10E-03	1.04E-05	564,326	4,183,648	10
373	GRID	1.5	9.29E-04	9.24E-06	564,351	4,183,648	10
374	GRID	1.3	7.82E-04	7.79E-06	564,376	4,183,648	10
375	GRID	1.1	6.61E-04	6.69E-06	564,401	4,183,648	10
376	GRID	0.64	3.95E-04	1.15E-05	563,801	4,183,623	10
377	GRID	0.83	5.14E-04	1.41E-05	563,826	4,183,623	10
378	GRID	1.1	6.81E-04	1.72E-05	563,851	4,183,623	10
379	GRID	1.5	9.03E-04	2.05E-05	563,876	4,183,623	10
380	GRID	1.9	1.19E-03	2.48E-05	563,901	4,183,623	10
381	GRID	2.5	1.55E-03	2.83E-05	563,926	4,183,623	10
382	GRID	3.2	1.99E-03	3.52E-05	563,951	4,183,623	10
383	GRID	4.4	2.70E-03	4.38E-05	563,976	4,183,623	10
384	GRID	6.0	3.70E-03	5.24E-05	564,001	4,183,623	10
385	GRID	9.5	5.87E-03	7.33E-05	564,026	4,183,623	10
386	GRID	7.1	4.39E-03	4.46E-05	564,051	4,183,623	10
387	GRID	24	1.47E-02	9.48E-05	564,076	4,183,623	10
388	GRID	8.5	5.26E-03	3.96E-05	564,101	4,183,623	10
389	GRID	16	9.96E-03	6.32E-05	564,126	4,183,623	10
390	GRID	11	6.84E-03	5.09E-05	564,151	4,183,623	10
391	GRID	7.9	4.89E-03	3.82E-05	564,176	4,183,623	10
392	GRID	6.1	3.75E-03	3.25E-05	564,201	4,183,623	10
393	GRID	4.8	3.00E-03	2.51E-05	564,226	4,183,623	10
394	GRID	3.9	2.44E-03	2.22E-05	564,251	4,183,623	10
395	GRID	3.2	2.00E-03	1.82E-05	564,276	4,183,623	10
396	GRID	2.7	1.65E-03	1.56E-05	564,301	4,183,623	10
397	GRID	2.2	1.36E-03	1.24E-05	564,326	4,183,623	10
398	GRID	1.8	1.12E-03	1.06E-05	564,351	4,183,623	10
399	GRID	1.5	9.09E-04	8.87E-06	564,376	4,183,623	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
400	GRID	1.2	7.49E-04	7.28E-06	564,401	4,183,623	10
401	GRID	0.54	3.34E-04	1.04E-05	563,801	4,183,598	10
402	GRID	0.68	4.18E-04	1.14E-05	563,826	4,183,598	10
403	GRID	0.85	5.29E-04	1.43E-05	563,851	4,183,598	10
404	GRID	1.1	6.73E-04	1.64E-05	563,876	4,183,598	10
405	GRID	1.4	8.49E-04	1.91E-05	563,901	4,183,598	10
406	GRID	1.7	1.06E-03	2.26E-05	563,926	4,183,598	10
407	GRID	2.1	1.32E-03	2.45E-05	563,951	4,183,598	10
408	GRID	2.7	1.65E-03	3.04E-05	563,976	4,183,598	10
409	GRID	3.4	2.10E-03	3.61E-05	564,001	4,183,598	10
410	GRID	4.4	2.70E-03	4.28E-05	564,026	4,183,598	10
411	GRID	6.1	3.76E-03	5.37E-05	564,051	4,183,598	10
412	GRID	8.7	5.36E-03	6.68E-05	564,076	4,183,598	10
413	GRID	17	1.07E-02	9.90E-05	564,101	4,183,598	10
414	GRID	8.9	5.52E-03	4.22E-05	564,126	4,183,598	10
415	GRID	25	1.52E-02	8.01E-05	564,151	4,183,598	10
416	GRID	19	1.15E-02	6.86E-05	564,176	4,183,598	10
417	GRID	11	6.72E-03	4.89E-05	564,201	4,183,598	10
418	GRID	7.9	4.88E-03	3.66E-05	564,226	4,183,598	10
419	GRID	5.9	3.67E-03	2.88E-05	564,251	4,183,598	10
420	GRID	4.6	2.84E-03	2.51E-05	564,276	4,183,598	10
421	GRID	3.6	2.24E-03	1.96E-05	564,301	4,183,598	10
422	GRID	2.9	1.76E-03	1.52E-05	564,326	4,183,598	10
423	GRID	2.2	1.38E-03	1.29E-05	564,351	4,183,598	10
424	GRID	1.7	1.07E-03	9.72E-06	564,376	4,183,598	10
425	GRID	1.4	8.53E-04	8.20E-06	564,401	4,183,598	10
426	GRID	0.47	2.89E-04	9.12E-06	563,801	4,183,573	10
427	GRID	0.57	3.51E-04	1.01E-05	563,826	4,183,573	10
428	GRID	0.69	4.29E-04	1.17E-05	563,851	4,183,573	10
429	GRID	0.85	5.28E-04	1.39E-05	563,876	4,183,573	10
430	GRID	1.1	6.48E-04	1.53E-05	563,901	4,183,573	10
431	GRID	1.3	7.91E-04	1.78E-05	563,926	4,183,573	10
432	GRID	1.5	9.56E-04	1.99E-05	563,951	4,183,573	10
433	GRID	1.9	1.15E-03	2.18E-05	563,976	4,183,573	10
434	GRID	2.3	1.40E-03	2.73E-05	564,001	4,183,573	10
435	GRID	2.7	1.70E-03	2.95E-05	564,026	4,183,573	10
436	GRID	3.4	2.11E-03	3.45E-05	564,051	4,183,573	10
437	GRID	4.4	2.70E-03	4.23E-05	564,076	4,183,573	10
438	GRID	5.9	3.62E-03	5.26E-05	564,101	4,183,573	10
439	GRID	9.0	5.59E-03	6.88E-05	564,126	4,183,573	10
440	GRID	14	8.42E-03	9.11E-05	564,151	4,183,573	10
441	GRID	8.2	5.11E-03	4.72E-05	564,176	4,183,573	10
442	GRID	9.5	5.91E-03	3.87E-05	564,201	4,183,573	10
443	GRID	17	1.03E-02	6.53E-05	564,226	4,183,573	10
444	GRID	11	6.88E-03	4.69E-05	564,251	4,183,573	10
445	GRID	7.4	4.61E-03	3.46E-05	564,276	4,183,573	10
446	GRID	5.4	3.36E-03	2.65E-05	564,301	4,183,573	10
447	GRID	4.0	2.46E-03	2.01E-05	564,326	4,183,573	10
448	GRID	2.8	1.76E-03	1.48E-05	564,351	4,183,573	10
449	GRID	2.1	1.28E-03	1.19E-05	564,376	4,183,573	10
450	GRID	1.6	9.70E-04	8.10E-06	564,401	4,183,573	10
451	GRID	0.41	2.54E-04	8.09E-06	563,801	4,183,548	10
452	GRID	0.49	3.01E-04	8.88E-06	563,826	4,183,548	10
453	GRID	0.58	3.59E-04	1.01E-05	563,851	4,183,548	10
454	GRID	0.7	4.31E-04	1.16E-05	563,876	4,183,548	10
455	GRID	0.84	5.17E-04	1.29E-05	563,901	4,183,548	10
456	GRID	1.0	6.18E-04	1.47E-05	563,926	4,183,548	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
457	GRID	1.2	7.33E-04	1.63E-05	563,951	4,183,548	10
458	GRID	1.4	8.65E-04	1.82E-05	563,976	4,183,548	10
459	GRID	1.7	1.02E-03	2.04E-05	564,001	4,183,548	10
460	GRID	1.9	1.20E-03	2.33E-05	564,026	4,183,548	10
461	GRID	2.3	1.43E-03	2.49E-05	564,051	4,183,548	10
462	GRID	2.8	1.72E-03	3.12E-05	564,076	4,183,548	10
463	GRID	3.4	2.09E-03	3.50E-05	564,101	4,183,548	10
464	GRID	4.3	2.68E-03	4.01E-05	564,126	4,183,548	10
465	GRID	5.8	3.59E-03	4.83E-05	564,151	4,183,548	10
466	GRID	8.6	5.34E-03	6.73E-05	564,176	4,183,548	10
467	GRID	15	9.43E-03	1.02E-04	564,201	4,183,548	10
468	GRID	18	1.09E-02	1.06E-04	564,226	4,183,548	10
469	GRID	8.3	5.17E-03	3.73E-05	564,251	4,183,548	10
470	GRID	17	1.07E-02	6.17E-05	564,276	4,183,548	10
471	GRID	10	6.28E-03	4.32E-05	564,301	4,183,548	10
472	GRID	6.4	3.99E-03	2.89E-05	564,326	4,183,548	10
473	GRID	3.9	2.40E-03	1.89E-05	564,351	4,183,548	10
474	GRID	2.5	1.54E-03	1.24E-05	564,376	4,183,548	10
475	GRID	1.8	1.10E-03	9.24E-06	564,401	4,183,548	10
476	GRID	0.36	2.25E-04	7.11E-06	563,801	4,183,523	10
477	GRID	0.42	2.62E-04	7.90E-06	563,826	4,183,523	10
478	GRID	0.50	3.07E-04	8.70E-06	563,851	4,183,523	10
479	GRID	0.58	3.61E-04	1.00E-05	563,876	4,183,523	10
480	GRID	0.69	4.26E-04	1.09E-05	563,901	4,183,523	10
481	GRID	0.81	5.00E-04	1.23E-05	563,926	4,183,523	10
482	GRID	0.94	5.84E-04	1.38E-05	563,951	4,183,523	10
483	GRID	1.1	6.78E-04	1.47E-05	563,976	4,183,523	10
484	GRID	1.3	7.86E-04	1.67E-05	564,001	4,183,523	10
485	GRID	1.5	9.09E-04	1.80E-05	564,026	4,183,523	10
486	GRID	1.7	1.05E-03	2.04E-05	564,051	4,183,523	10
487	GRID	2.0	1.22E-03	2.31E-05	564,076	4,183,523	10
488	GRID	2.3	1.43E-03	2.62E-05	564,101	4,183,523	10
489	GRID	2.8	1.70E-03	2.88E-05	564,126	4,183,523	10
490	GRID	3.4	2.10E-03	3.39E-05	564,151	4,183,523	10
491	GRID	4.2	2.61E-03	3.99E-05	564,176	4,183,523	10
492	GRID	5.7	3.52E-03	5.04E-05	564,201	4,183,523	10
493	GRID	8.2	5.05E-03	6.12E-05	564,226	4,183,523	10
494	GRID	14	8.41E-03	8.19E-05	564,251	4,183,523	10
495	GRID	7.0	4.35E-03	3.42E-05	564,276	4,183,523	10
496	GRID	23	1.43E-02	7.61E-05	564,301	4,183,523	10
497	GRID	17	1.03E-02	5.23E-05	564,326	4,183,523	10
498	GRID	5.5	3.38E-03	2.17E-05	564,351	4,183,523	10
499	GRID	2.9	1.82E-03	1.27E-05	564,376	4,183,523	10
500	GRID	2.0	1.21E-03	9.20E-06	564,401	4,183,523	10
501	GRID	0.33	2.02E-04	6.33E-06	563,801	4,183,498	10
502	GRID	0.37	2.32E-04	6.98E-06	563,826	4,183,498	10
503	GRID	0.43	2.67E-04	7.67E-06	563,851	4,183,498	10
504	GRID	0.5	3.09E-04	8.47E-06	563,876	4,183,498	10
505	GRID	0.58	3.59E-04	9.51E-06	563,901	4,183,498	10
506	GRID	0.67	4.16E-04	1.02E-05	563,926	4,183,498	10
507	GRID	0.77	4.79E-04	1.16E-05	563,951	4,183,498	10
508	GRID	0.89	5.50E-04	1.24E-05	563,976	4,183,498	10
509	GRID	1.0	6.28E-04	1.36E-05	564,001	4,183,498	10
510	GRID	1.2	7.16E-04	1.52E-05	564,026	4,183,498	10
511	GRID	1.3	8.15E-04	1.58E-05	564,051	4,183,498	10
512	GRID	1.5	9.29E-04	1.81E-05	564,076	4,183,498	10
513	GRID	1.7	1.06E-03	1.97E-05	564,101	4,183,498	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
514	GRID	2.0	1.22E-03	2.20E-05	564,126	4,183,498	10
515	GRID	2.3	1.42E-03	2.53E-05	564,151	4,183,498	10
516	GRID	2.7	1.68E-03	2.70E-05	564,176	4,183,498	10
517	GRID	3.3	2.01E-03	3.17E-05	564,201	4,183,498	10
518	GRID	4.1	2.54E-03	3.76E-05	564,226	4,183,498	10
519	GRID	5.3	3.27E-03	4.42E-05	564,251	4,183,498	10
520	GRID	7.9	4.88E-03	5.72E-05	564,276	4,183,498	10
521	GRID	11	7.06E-03	6.91E-05	564,301	4,183,498	10
522	GRID	18	1.13E-02	5.84E-05	564,326	4,183,498	10
523	GRID	5.8	3.58E-03	1.91E-05	564,351	4,183,498	10
524	GRID	3.0	1.87E-03	1.27E-05	564,376	4,183,498	10
525	GRID	2.0	1.23E-03	9.22E-06	564,401	4,183,498	10
526	GRID	0.29	1.82E-04	5.70E-06	563,801	4,183,473	10
527	GRID	0.33	2.06E-04	6.22E-06	563,826	4,183,473	10
528	GRID	0.38	2.35E-04	6.76E-06	563,851	4,183,473	10
529	GRID	0.43	2.69E-04	7.47E-06	563,876	4,183,473	10
530	GRID	0.50	3.08E-04	8.21E-06	563,901	4,183,473	10
531	GRID	0.57	3.52E-04	9.00E-06	563,926	4,183,473	10
532	GRID	0.65	4.02E-04	9.78E-06	563,951	4,183,473	10
533	GRID	0.74	4.57E-04	1.07E-05	563,976	4,183,473	10
534	GRID	0.83	5.16E-04	1.13E-05	564,001	4,183,473	10
535	GRID	0.94	5.81E-04	1.25E-05	564,026	4,183,473	10
536	GRID	1.1	6.54E-04	1.33E-05	564,051	4,183,473	10
537	GRID	1.2	7.35E-04	1.41E-05	564,076	4,183,473	10
538	GRID	1.3	8.26E-04	1.59E-05	564,101	4,183,473	10
539	GRID	1.5	9.31E-04	1.69E-05	564,126	4,183,473	10
540	GRID	1.7	1.05E-03	1.89E-05	564,151	4,183,473	10
541	GRID	1.9	1.20E-03	2.06E-05	564,176	4,183,473	10
542	GRID	2.2	1.38E-03	2.11E-05	564,201	4,183,473	10
543	GRID	2.6	1.61E-03	2.56E-05	564,226	4,183,473	10
544	GRID	3.1	1.90E-03	2.72E-05	564,251	4,183,473	10
545	GRID	3.7	2.28E-03	3.00E-05	564,276	4,183,473	10
546	GRID	4.6	2.82E-03	3.18E-05	564,301	4,183,473	10
547	GRID	5.1	3.17E-03	2.78E-05	564,326	4,183,473	10
548	GRID	3.7	2.29E-03	1.81E-05	564,351	4,183,473	10
549	GRID	2.5	1.54E-03	1.07E-05	564,376	4,183,473	10
550	GRID	1.8	1.11E-03	7.21E-06	564,401	4,183,473	10
551	GRID	0.27	1.65E-04	5.14E-06	563,801	4,183,448	10
552	GRID	0.30	1.86E-04	5.60E-06	563,826	4,183,448	10
553	GRID	0.34	2.09E-04	6.00E-06	563,851	4,183,448	10
554	GRID	0.38	2.36E-04	6.57E-06	563,876	4,183,448	10
555	GRID	0.43	2.68E-04	7.19E-06	563,901	4,183,448	10
556	GRID	0.49	3.03E-04	7.75E-06	563,926	4,183,448	10
557	GRID	0.55	3.43E-04	8.50E-06	563,951	4,183,448	10
558	GRID	0.62	3.86E-04	9.04E-06	563,976	4,183,448	10
559	GRID	0.70	4.33E-04	9.60E-06	564,001	4,183,448	10
560	GRID	0.78	4.83E-04	1.05E-05	564,026	4,183,448	10
561	GRID	0.87	5.38E-04	1.12E-05	564,051	4,183,448	10
562	GRID	0.97	5.98E-04	1.17E-05	564,076	4,183,448	10
563	GRID	1.1	6.64E-04	1.26E-05	564,101	4,183,448	10
564	GRID	1.2	7.37E-04	1.37E-05	564,126	4,183,448	10
565	GRID	1.3	8.20E-04	1.45E-05	564,151	4,183,448	10
566	GRID	1.5	9.12E-04	1.58E-05	564,176	4,183,448	10
567	GRID	1.6	1.02E-03	1.68E-05	564,201	4,183,448	10
568	GRID	1.8	1.14E-03	1.71E-05	564,226	4,183,448	10
569	GRID	2.1	1.27E-03	1.94E-05	564,251	4,183,448	10
570	GRID	2.3	1.42E-03	1.85E-05	564,276	4,183,448	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
571	GRID	2.6	1.59E-03	1.96E-05	564,301	4,183,448	10
572	GRID	2.7	1.65E-03	1.82E-05	564,326	4,183,448	10
573	GRID	2.4	1.47E-03	1.36E-05	564,351	4,183,448	10
574	GRID	1.9	1.16E-03	1.08E-05	564,376	4,183,448	10
575	GRID	1.5	9.21E-04	7.71E-06	564,401	4,183,448	10
576	GRID	0.24	1.51E-04	4.66E-06	563,801	4,183,423	10
577	GRID	0.27	1.68E-04	4.97E-06	563,826	4,183,423	10
578	GRID	0.30	1.87E-04	5.38E-06	563,851	4,183,423	10
579	GRID	0.34	2.10E-04	5.75E-06	563,876	4,183,423	10
580	GRID	0.38	2.36E-04	6.30E-06	563,901	4,183,423	10
581	GRID	0.43	2.65E-04	6.78E-06	563,926	4,183,423	10
582	GRID	0.48	2.97E-04	7.31E-06	563,951	4,183,423	10
583	GRID	0.54	3.31E-04	7.80E-06	563,976	4,183,423	10
584	GRID	0.60	3.69E-04	8.22E-06	564,001	4,183,423	10
585	GRID	0.66	4.09E-04	8.91E-06	564,026	4,183,423	10
586	GRID	0.73	4.51E-04	9.56E-06	564,051	4,183,423	10
587	GRID	0.8	4.97E-04	9.81E-06	564,076	4,183,423	10
588	GRID	0.88	5.47E-04	1.07E-05	564,101	4,183,423	10
589	GRID	0.97	6.00E-04	1.11E-05	564,126	4,183,423	10
590	GRID	1.1	6.58E-04	1.16E-05	564,151	4,183,423	10
591	GRID	1.2	7.20E-04	1.26E-05	564,176	4,183,423	10
592	GRID	1.3	7.86E-04	1.30E-05	564,201	4,183,423	10
593	GRID	1.4	8.56E-04	1.37E-05	564,226	4,183,423	10
594	GRID	1.5	9.33E-04	1.41E-05	564,251	4,183,423	10
595	GRID	1.6	1.01E-03	1.38E-05	564,276	4,183,423	10
596	GRID	1.7	1.08E-03	1.41E-05	564,301	4,183,423	10
597	GRID	1.8	1.09E-03	1.32E-05	564,326	4,183,423	10
598	GRID	1.7	1.03E-03	1.09E-05	564,351	4,183,423	10
599	GRID	1.5	8.96E-04	8.86E-06	564,376	4,183,423	10
600	GRID	1.2	7.55E-04	7.63E-06	564,401	4,183,423	10
601	GRID	0.22	1.38E-04	4.17E-06	563,801	4,183,398	10
602	GRID	0.25	1.53E-04	4.53E-06	563,826	4,183,398	10
603	GRID	0.27	1.69E-04	4.76E-06	563,851	4,183,398	10
604	GRID	0.3	1.88E-04	5.19E-06	563,876	4,183,398	10
605	GRID	0.34	2.10E-04	5.53E-06	563,901	4,183,398	10
606	GRID	0.38	2.34E-04	6.02E-06	563,926	4,183,398	10
607	GRID	0.42	2.60E-04	6.40E-06	563,951	4,183,398	10
608	GRID	0.47	2.88E-04	6.88E-06	563,976	4,183,398	10
609	GRID	0.51	3.18E-04	7.29E-06	564,001	4,183,398	10
610	GRID	0.57	3.50E-04	7.73E-06	564,026	4,183,398	10
611	GRID	0.62	3.84E-04	8.16E-06	564,051	4,183,398	10
612	GRID	0.68	4.20E-04	8.45E-06	564,076	4,183,398	10
613	GRID	0.74	4.58E-04	8.84E-06	564,101	4,183,398	10
614	GRID	0.80	4.98E-04	9.43E-06	564,126	4,183,398	10
615	GRID	0.87	5.39E-04	9.45E-06	564,151	4,183,398	10
616	GRID	0.94	5.83E-04	1.02E-05	564,176	4,183,398	10
617	GRID	1.0	6.29E-04	1.07E-05	564,201	4,183,398	10
618	GRID	1.1	6.76E-04	1.04E-05	564,226	4,183,398	10
619	GRID	1.2	7.25E-04	1.11E-05	564,251	4,183,398	10
620	GRID	1.2	7.70E-04	1.12E-05	564,276	4,183,398	10
621	GRID	1.3	8.00E-04	1.08E-05	564,301	4,183,398	10
622	GRID	1.3	8.05E-04	1.02E-05	564,326	4,183,398	10
623	GRID	1.3	7.79E-04	8.87E-06	564,351	4,183,398	10
624	GRID	1.2	7.11E-04	7.71E-06	564,376	4,183,398	10
625	GRID	1.0	6.28E-04	6.69E-06	564,401	4,183,398	10
626	BOUNDARY	2.5	1.54E-03	1.54E-05	564,100	4,183,739	10
627	BOUNDARY	2.5	1.54E-03	1.53E-05	564,109	4,183,735	10

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
628	BOUNDARY	2.5	1.54E-03	1.54E-05	564,118	4,183,731	10
629	BOUNDARY	2.5	1.54E-03	1.52E-05	564,127	4,183,727	10
630	BOUNDARY	2.5	1.54E-03	1.53E-05	564,137	4,183,723	10
631	BOUNDARY	2.5	1.53E-03	1.52E-05	564,146	4,183,719	10
632	BOUNDARY	2.5	1.53E-03	1.52E-05	564,155	4,183,715	10
633	BOUNDARY	2.5	1.52E-03	1.49E-05	564,163	4,183,711	10
634	BOUNDARY	2.8	1.70E-03	1.66E-05	564,159	4,183,702	10
635	BOUNDARY	3.1	1.93E-03	1.87E-05	564,156	4,183,692	10
636	BOUNDARY	3.6	2.20E-03	2.15E-05	564,152	4,183,683	10
637	BOUNDARY	4.1	2.56E-03	2.42E-05	564,149	4,183,674	10
638	BOUNDARY	4.9	3.01E-03	2.66E-05	564,145	4,183,664	10
639	BOUNDARY	5.8	3.62E-03	3.00E-05	564,142	4,183,655	10
640	BOUNDARY	7.3	4.50E-03	3.46E-05	564,138	4,183,646	10
641	BOUNDARY	7.4	4.56E-03	3.50E-05	564,138	4,183,645	10
642	BOUNDARY	7.5	4.62E-03	3.88E-05	564,129	4,183,649	10
643	BOUNDARY	7.6	4.72E-03	3.74E-05	564,119	4,183,653	10
644	BOUNDARY	7.8	4.82E-03	3.94E-05	564,110	4,183,656	10
645	BOUNDARY	7.8	4.86E-03	3.71E-05	564,101	4,183,660	10
646	BOUNDARY	7.9	4.90E-03	4.05E-05	564,092	4,183,664	10
647	BOUNDARY	8.1	5.00E-03	3.93E-05	564,082	4,183,668	10
648	BOUNDARY	8.3	5.11E-03	4.14E-05	564,073	4,183,671	10
649	BOUNDARY	8.3	5.13E-03	4.14E-05	564,069	4,183,673	10
650	BOUNDARY	6.5	4.03E-03	3.38E-05	564,073	4,183,682	10
651	BOUNDARY	5.3	3.29E-03	2.74E-05	564,078	4,183,691	10
652	BOUNDARY	4.4	2.75E-03	2.46E-05	564,082	4,183,700	10
653	BOUNDARY	3.8	2.36E-03	2.23E-05	564,086	4,183,709	10
654	BOUNDARY	3.3	2.05E-03	2.01E-05	564,090	4,183,718	10
655	BOUNDARY	2.9	1.80E-03	1.79E-05	564,095	4,183,727	10
656	BOUNDARY	2.6	1.60E-03	1.59E-05	564,099	4,183,736	10
657	CENSUS	0.045	2.78E-05	8.56E-07	563,628	4,182,826	10
658	CENSUS	0.050	3.07E-05	9.06E-07	563,700	4,182,809	10
659	CENSUS	0.061	3.80E-05	1.13E-06	563,730	4,182,921	10
660	CENSUS	0.092	5.71E-05	1.21E-06	563,325	4,183,960	10
661	CENSUS	0.072	4.47E-05	9.39E-07	563,224	4,184,010	10
662	CENSUS	0.064	3.96E-05	1.05E-06	563,191	4,183,934	10
663	CENSUS	0.088	5.43E-05	1.37E-06	563,318	4,183,916	10
664	CENSUS	0.075	4.65E-05	1.23E-06	563,273	4,183,888	10
665	CENSUS	0.066	4.12E-05	1.10E-06	563,259	4,183,835	10
666	CENSUS	0.055	3.44E-05	9.37E-07	563,157	4,183,884	10
667	CENSUS	0.045	2.81E-05	8.77E-07	563,122	4,183,809	10
668	CENSUS	0.052	3.21E-05	1.20E-06	563,216	4,183,749	10
669	CENSUS	0.045	2.80E-05	1.22E-06	563,180	4,183,688	10
670	CENSUS	0.086	5.34E-05	7.65E-07	563,547	4,184,450	10
671	CENSUS	0.080	4.97E-05	7.53E-07	563,580	4,184,517	10
672	CENSUS	0.094	5.81E-05	7.89E-07	563,511	4,184,372	10
673	CENSUS	0.097	6.00E-05	7.98E-07	563,401	4,184,294	10
674	CENSUS	0.084	5.22E-05	6.97E-07	563,380	4,184,362	10
675	CENSUS	0.094	5.81E-05	9.58E-07	563,289	4,184,216	10
676	CENSUS	0.086	5.35E-05	1.05E-06	563,263	4,184,099	10
677	CENSUS	0.11	6.81E-05	1.17E-06	563,346	4,184,133	10
678	CENSUS	0.13	7.98E-05	1.24E-06	563,416	4,184,135	10
679	CENSUS	0.13	7.77E-05	1.14E-06	563,426	4,184,166	10
680	CENSUS	0.12	7.29E-05	9.65E-07	563,457	4,184,222	10
681	CENSUS	0.10	6.41E-05	8.54E-07	563,483	4,184,300	10
682	CENSUS	0.13	8.05E-05	1.40E-06	563,405	4,184,072	10
683	CENSUS	0.12	7.20E-05	1.35E-06	563,374	4,184,044	10
684	CENSUS	0.096	5.93E-05	1.08E-06	563,324	4,184,009	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
685	CENSUS	0.081	5.00E-05	6.90E-07	564,206	4,184,659	10
686	CENSUS	0.078	4.83E-05	6.83E-07	564,114	4,184,671	10
687	CENSUS	0.076	4.70E-05	6.79E-07	564,011	4,184,665	10
688	CENSUS	0.085	5.26E-05	7.60E-07	564,001	4,184,598	10
689	CENSUS	0.075	4.63E-05	7.24E-07	563,910	4,184,653	10
690	CENSUS	0.074	4.55E-05	7.44E-07	563,761	4,184,630	10
691	CENSUS	0.084	5.19E-05	8.27E-07	563,873	4,184,580	10
692	CENSUS	0.097	5.99E-05	8.69E-07	563,981	4,184,526	10
693	CENSUS	0.11	6.87E-05	9.58E-07	564,055	4,184,471	10
694	CENSUS	0.098	6.09E-05	8.55E-07	564,063	4,184,532	10
695	CENSUS	0.093	5.74E-05	8.04E-07	564,117	4,184,571	10
696	CENSUS	0.11	6.53E-05	9.07E-07	564,118	4,184,503	10
697	CENSUS	0.11	6.83E-05	1.05E-06	564,545	4,184,364	10
698	CENSUS	0.099	6.11E-05	9.30E-07	564,470	4,184,474	10
699	CENSUS	0.096	5.96E-05	8.48E-07	564,366	4,184,523	10
700	CENSUS	0.091	5.66E-05	7.82E-07	564,259	4,184,578	10
701	CENSUS	0.12	7.50E-05	1.04E-06	564,188	4,184,433	10
702	CENSUS	0.13	7.90E-05	1.10E-06	564,299	4,184,390	10
703	CENSUS	0.13	8.17E-05	1.20E-06	564,403	4,184,340	10
704	CENSUS	0.16	9.97E-05	1.38E-06	564,254	4,184,295	10
705	CENSUS	0.15	9.16E-05	1.26E-06	564,149	4,184,344	10
706	CENSUS	0.18	1.12E-04	1.52E-06	564,113	4,184,266	10
707	CENSUS	0.2	1.24E-04	1.71E-06	564,217	4,184,217	10
708	CENSUS	0.26	1.62E-04	2.21E-06	564,180	4,184,133	10
709	CENSUS	0.23	1.39E-04	1.89E-06	564,079	4,184,194	10
710	CENSUS	0.30	1.87E-04	2.45E-06	564,041	4,184,110	10
711	CENSUS	0.35	2.18E-04	2.91E-06	564,144	4,184,056	10
712	CENSUS	0.42	2.58E-04	3.26E-06	564,000	4,184,032	10
713	CENSUS	0.58	3.61E-04	4.43E-06	563,972	4,183,965	10
714	CENSUS	0.8	4.92E-04	5.95E-06	564,069	4,183,900	10
715	CENSUS	1.1	6.72E-04	7.63E-06	563,928	4,183,876	10
716	CENSUS	2.6	1.58E-03	1.70E-05	563,897	4,183,804	10
717	CENSUS	0.17	1.04E-04	1.50E-06	564,459	4,184,191	10
718	CENSUS	0.17	1.06E-04	1.49E-06	564,351	4,184,240	10
719	CENSUS	0.21	1.30E-04	1.78E-06	564,319	4,184,168	10
720	CENSUS	0.21	1.30E-04	1.80E-06	564,424	4,184,113	10
721	CENSUS	0.27	1.67E-04	2.26E-06	564,390	4,184,035	10
722	CENSUS	0.27	1.68E-04	2.24E-06	564,286	4,184,090	10
723	CENSUS	0.37	2.31E-04	2.97E-06	564,249	4,184,006	10
724	CENSUS	0.37	2.26E-04	2.92E-06	564,355	4,183,957	10
725	CENSUS	0.53	3.27E-04	3.95E-06	564,317	4,183,879	10
726	CENSUS	0.54	3.33E-04	4.20E-06	564,212	4,183,928	10
727	CENSUS	0.83	5.14E-04	6.17E-06	564,175	4,183,856	10
728	CENSUS	0.83	5.14E-04	5.79E-06	564,281	4,183,801	10
729	CENSUS	1.6	9.76E-04	1.03E-05	564,238	4,183,723	10
730	CENSUS	1.6	9.94E-04	1.07E-05	564,136	4,183,772	10
731	CENSUS	1.4	8.63E-04	9.73E-06	564,037	4,183,827	10
732	CENSUS	3.7	2.26E-03	2.18E-05	564,001	4,183,749	10
733	CENSUS	12	7.49E-03	5.21E-05	563,938	4,183,721	10
734	CENSUS	15	8.96E-03	6.02E-05	564,053	4,183,661	10
735	CENSUS	4.0	2.46E-03	2.19E-05	564,099	4,183,700	10
736	CENSUS	3.8	2.36E-03	2.04E-05	564,204	4,183,651	10
737	CENSUS	14	8.86E-03	5.87E-05	564,181	4,183,601	10
738	CENSUS	17	1.05E-02	6.50E-05	564,101	4,183,637	10
739	CENSUS	0.12	7.41E-05	1.06E-06	563,983	4,184,426	10
740	CENSUS	0.097	5.99E-05	9.46E-07	563,840	4,184,497	10
741	CENSUS	0.083	5.16E-05	8.17E-07	563,724	4,184,546	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
742	CENSUS	0.093	5.78E-05	8.88E-07	563,694	4,184,474	10
743	CENSUS	0.11	6.94E-05	1.08E-06	563,803	4,184,414	10
744	CENSUS	0.14	8.79E-05	1.26E-06	563,946	4,184,348	10
745	CENSUS	0.18	1.09E-04	1.52E-06	563,928	4,184,265	10
746	CENSUS	0.13	7.90E-05	1.19E-06	563,762	4,184,341	10
747	CENSUS	0.11	6.52E-05	9.76E-07	563,656	4,184,396	10
748	CENSUS	0.12	7.30E-05	1.02E-06	563,618	4,184,318	10
749	CENSUS	0.15	9.09E-05	1.32E-06	563,726	4,184,269	10
750	CENSUS	0.19	1.15E-04	1.67E-06	563,825	4,184,214	10
751	CENSUS	0.24	1.51E-04	2.02E-06	563,929	4,184,159	10
752	CENSUS	0.31	1.89E-04	2.47E-06	563,899	4,184,092	10
753	CENSUS	0.22	1.39E-04	1.94E-06	563,791	4,184,141	10
754	CENSUS	0.17	1.07E-04	1.45E-06	563,689	4,184,190	10
755	CENSUS	0.13	8.15E-05	1.06E-06	563,581	4,184,240	10
756	CENSUS	0.15	9.08E-05	1.18E-06	563,551	4,184,173	10
757	CENSUS	0.20	1.24E-04	1.55E-06	563,652	4,184,113	10
758	CENSUS	0.28	1.74E-04	2.26E-06	563,755	4,184,064	10
759	CENSUS	0.42	2.58E-04	3.29E-06	563,856	4,184,009	10
760	CENSUS	0.60	3.73E-04	4.61E-06	563,822	4,183,931	10
761	CENSUS	0.35	2.18E-04	2.69E-06	563,719	4,183,985	10
762	CENSUS	0.23	1.45E-04	1.89E-06	563,616	4,184,035	10
763	CENSUS	0.17	1.02E-04	1.47E-06	563,506	4,184,089	10
764	CENSUS	0.16	1.00E-04	1.77E-06	563,474	4,183,995	10
765	CENSUS	0.12	7.52E-05	1.30E-06	563,410	4,183,957	10
766	CENSUS	0.25	1.55E-04	2.45E-06	563,583	4,183,957	10
767	CENSUS	0.42	2.61E-04	3.65E-06	563,680	4,183,902	10
768	CENSUS	0.92	5.69E-04	6.82E-06	563,784	4,183,853	10
769	CENSUS	1.0	6.33E-04	9.15E-06	563,758	4,183,797	10
770	CENSUS	0.28	1.74E-04	3.00E-06	563,610	4,183,874	10
771	CENSUS	4.1	2.53E-03	3.98E-05	564,143	4,183,537	10
772	CENSUS	13	7.94E-03	9.83E-05	564,084	4,183,607	10
773	CENSUS	9.8	6.08E-03	7.36E-05	564,032	4,183,622	10
774	CENSUS	8.5	5.27E-03	6.63E-05	563,946	4,183,660	10
775	CENSUS	0.76	4.73E-04	1.06E-05	563,751	4,183,753	10
776	CENSUS	0.25	1.53E-04	3.47E-06	563,602	4,183,824	10
777	CENSUS	0.12	7.60E-05	1.64E-06	563,425	4,183,911	10
778	CENSUS	0.11	6.85E-05	1.76E-06	563,412	4,183,856	10
779	CENSUS	0.15	9.14E-05	2.30E-06	563,505	4,183,812	10
780	CENSUS	0.2	1.21E-04	3.76E-06	563,601	4,183,737	10
781	CENSUS	0.39	2.40E-04	8.00E-06	563,714	4,183,697	10
782	CENSUS	0.98	6.08E-04	1.64E-05	563,820	4,183,648	10
783	CENSUS	1.6	9.94E-04	2.12E-05	563,925	4,183,593	10
784	CENSUS	1.9	1.19E-03	2.31E-05	564,022	4,183,550	10
785	CENSUS	0.81	4.99E-04	1.13E-05	563,994	4,183,473	10
786	CENSUS	0.66	4.10E-04	1.06E-05	563,891	4,183,527	10
787	CENSUS	0.41	2.54E-04	8.12E-06	563,783	4,183,575	10
788	CENSUS	0.25	1.53E-04	5.66E-06	563,679	4,183,628	10
789	CENSUS	0.15	9.06E-05	3.55E-06	563,570	4,183,674	10
790	CENSUS	0.11	6.55E-05	2.27E-06	563,468	4,183,729	10
791	CENSUS	0.081	5.01E-05	1.52E-06	563,362	4,183,779	10
792	CENSUS	0.077	4.75E-05	1.73E-06	563,372	4,183,730	10
793	CENSUS	0.065	4.02E-05	1.61E-06	563,326	4,183,700	10
794	CENSUS	0.082	5.10E-05	2.28E-06	563,429	4,183,645	10
795	CENSUS	0.093	5.73E-05	2.28E-06	563,448	4,183,690	10
796	CENSUS	0.13	8.08E-05	3.36E-06	563,556	4,183,640	10
797	CENSUS	0.11	7.08E-05	3.09E-06	563,534	4,183,596	10
798	CENSUS	0.16	1.01E-04	4.02E-06	563,638	4,183,541	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
799	CENSUS	0.21	1.27E-04	5.03E-06	563,665	4,183,587	10
800	CENSUS	0.27	1.65E-04	5.89E-06	563,735	4,183,550	10
801	CENSUS	0.23	1.44E-04	4.85E-06	563,743	4,183,492	10
802	CENSUS	0.33	2.05E-04	5.89E-06	563,852	4,183,443	10
803	CENSUS	0.45	2.80E-04	7.82E-06	563,870	4,183,487	10
804	CENSUS	0.57	3.52E-04	8.27E-06	563,976	4,183,433	10
805	CENSUS	0.41	2.56E-04	6.31E-06	563,953	4,183,394	10
806	CENSUS	0.43	2.66E-04	5.68E-06	564,051	4,183,334	10
807	CENSUS	0.84	5.19E-04	1.02E-05	564,098	4,183,417	10
808	CENSUS	1.8	1.09E-03	1.94E-05	564,145	4,183,479	10
809	CENSUS	0.30	1.85E-04	4.25E-06	564,019	4,183,278	10
810	CENSUS	0.26	1.62E-04	4.20E-06	563,919	4,183,322	10
811	CENSUS	0.22	1.38E-04	4.05E-06	563,818	4,183,376	10
812	CENSUS	0.17	1.07E-04	3.60E-06	563,721	4,183,425	10
813	CENSUS	0.13	7.75E-05	3.07E-06	563,603	4,183,480	10
814	CENSUS	0.096	5.95E-05	2.52E-06	563,503	4,183,529	10
815	CENSUS	0.069	4.30E-05	2.00E-06	563,392	4,183,573	10
816	CENSUS	0.056	3.45E-05	1.66E-06	563,292	4,183,627	10
817	CENSUS	0.046	2.82E-05	1.34E-06	563,235	4,183,516	10
818	CENSUS	0.066	4.09E-05	1.68E-06	563,422	4,183,393	10
819	CENSUS	0.099	6.14E-05	2.41E-06	563,571	4,183,408	10
820	CENSUS	0.12	7.69E-05	2.58E-06	563,679	4,183,353	10
821	CENSUS	0.16	9.92E-05	3.00E-06	563,787	4,183,304	10
822	CENSUS	0.15	9.22E-05	2.50E-06	563,865	4,183,205	10
823	CENSUS	0.10	6.46E-05	2.05E-06	563,692	4,183,247	10
824	CENSUS	0.15	9.45E-05	2.34E-06	563,959	4,183,133	10
825	CENSUS	0.048	2.94E-05	1.14E-06	563,380	4,183,178	10
826	CENSUS	0.091	5.64E-05	1.64E-06	563,800	4,183,065	10
827	CENSUS	0.10	6.20E-05	1.60E-06	563,898	4,183,022	10
828	CENSUS	0.099	6.13E-05	6.61E-07	565,092	4,183,756	10
829	CENSUS	0.15	9.22E-05	1.07E-06	564,845	4,183,817	10
830	CENSUS	0.15	9.29E-05	9.70E-07	564,881	4,183,739	10
831	CENSUS	0.23	1.45E-04	1.45E-06	564,730	4,183,683	10
832	CENSUS	0.29	1.79E-04	1.74E-06	564,692	4,183,599	10
833	CENSUS	0.17	1.03E-04	1.22E-06	564,897	4,183,457	10
834	CENSUS	0.11	6.99E-05	7.45E-07	565,070	4,183,589	10
835	CENSUS	0.17	1.04E-04	9.37E-07	564,844	4,183,269	10
836	CENSUS	0.39	2.41E-04	2.19E-06	564,617	4,183,432	10
837	CENSUS	0.35	2.14E-04	2.21E-06	564,658	4,183,516	10
838	CENSUS	0.41	2.53E-04	2.03E-06	564,587	4,183,382	10
839	CENSUS	0.72	4.43E-04	3.34E-06	564,496	4,183,437	10
840	CENSUS	1.9	1.18E-03	8.40E-06	564,401	4,183,486	10
841	CENSUS	13	8.08E-03	5.19E-05	564,268	4,183,557	10
842	CENSUS	11	6.69E-03	6.51E-05	564,285	4,183,502	10
843	CENSUS	2.1	1.28E-03	1.18E-05	564,370	4,183,451	10
844	CENSUS	0.76	4.70E-04	4.40E-06	564,460	4,183,403	10
845	CENSUS	0.62	3.82E-04	4.44E-06	564,440	4,183,342	10
846	CENSUS	1.1	7.05E-04	8.92E-06	564,338	4,183,386	10
847	CENSUS	1.6	1.02E-03	1.56E-05	564,237	4,183,435	10
848	CENSUS	0.78	4.81E-04	8.13E-06	564,201	4,183,363	10
849	CENSUS	0.65	4.02E-04	5.92E-06	564,303	4,183,314	10
850	CENSUS	0.46	2.83E-04	3.73E-06	564,400	4,183,259	10
851	CENSUS	0.32	2.01E-04	2.61E-06	564,517	4,183,232	10
852	CENSUS	0.36	2.22E-04	2.41E-06	564,562	4,183,310	10
853	CENSUS	0.23	1.42E-04	1.48E-06	564,692	4,183,261	10
854	CENSUS	0.18	1.12E-04	1.56E-06	564,692	4,183,150	10
855	CENSUS	0.14	8.91E-05	1.34E-06	564,710	4,183,023	10

HARP Risk Modeling Results - Adult 70-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	Northing	ZONE
856	CENSUS	0.25	1.54E-04	2.09E-06	564,459	4,183,115	10
857	CENSUS	0.35	2.15E-04	3.11E-06	564,375	4,183,192	10
858	CENSUS	0.41	2.54E-04	4.15E-06	564,267	4,183,235	10
859	CENSUS	0.46	2.86E-04	5.16E-06	564,166	4,183,290	10
860	CENSUS	0.31	1.93E-04	3.79E-06	564,137	4,183,218	10
861	CENSUS	0.24	1.47E-04	2.42E-06	564,324	4,183,095	10
862	CENSUS	0.30	1.84E-04	3.26E-06	564,238	4,183,169	10
863	CENSUS	0.26	1.60E-04	2.55E-06	564,334	4,183,117	10
864	CENSUS	0.21	1.27E-04	1.84E-06	564,438	4,183,048	10
865	CENSUS	0.16	1.01E-04	1.86E-06	564,273	4,182,986	10
866	CENSUS	0.14	8.63E-05	1.21E-06	564,670	4,182,972	10
867	CENSUS	0.19	1.19E-04	1.42E-06	564,694	4,183,877	10
868	CENSUS	0.23	1.41E-04	1.83E-06	564,591	4,183,926	10
869	CENSUS	0.25	1.52E-04	2.09E-06	564,498	4,183,986	10
870	CENSUS	0.34	2.09E-04	2.68E-06	564,455	4,183,903	10
871	CENSUS	0.29	1.77E-04	2.16E-06	564,561	4,183,854	10
872	CENSUS	0.24	1.46E-04	1.65E-06	564,663	4,183,804	10
873	CENSUS	0.30	1.88E-04	1.98E-06	564,624	4,183,726	10
874	CENSUS	0.39	2.40E-04	2.76E-06	564,524	4,183,775	10
875	CENSUS	0.46	2.86E-04	3.46E-06	564,425	4,183,830	10
876	CENSUS	0.74	4.61E-04	5.12E-06	564,382	4,183,747	10
877	CENSUS	0.53	3.31E-04	3.53E-06	564,491	4,183,703	10
878	CENSUS	0.40	2.46E-04	2.43E-06	564,589	4,183,649	10
879	CENSUS	0.53	3.30E-04	3.10E-06	564,553	4,183,570	10
880	CENSUS	0.86	5.35E-04	5.04E-06	564,450	4,183,620	10
881	CENSUS	1.4	8.44E-04	8.42E-06	564,345	4,183,669	10
882	CENSUS	3.6	2.20E-03	1.84E-05	564,312	4,183,591	10
883	CENSUS	1.5	9.45E-04	7.44E-06	564,416	4,183,542	10
884	CENSUS	0.67	4.12E-04	3.84E-06	564,521	4,183,493	10
885	CENSUS	0.093	5.75E-05	7.78E-07	564,930	4,184,100	10
886	CENSUS	0.11	6.84E-05	9.05E-07	564,856	4,184,050	10
887	CENSUS	0.12	7.43E-05	9.21E-07	564,867	4,183,961	10
888	CENSUS	0.14	8.44E-05	1.01E-06	564,832	4,183,911	10
889	CENSUS	0.13	7.78E-05	9.23E-07	564,907	4,183,858	10
890	CENSUS	0.11	7.09E-05	8.28E-07	564,963	4,183,851	10
891	CENSUS	0.10	6.34E-05	9.79E-07	564,657	4,184,326	10
892	CENSUS	0.15	9.57E-05	1.40E-06	564,572	4,184,142	10
893	CENSUS	0.14	8.86E-05	1.30E-06	564,676	4,184,087	10
894	CENSUS	0.13	8.08E-05	1.09E-06	564,773	4,184,033	10
895	CENSUS	0.15	9.45E-05	1.21E-06	564,739	4,183,966	10
896	CENSUS	0.18	1.09E-04	1.51E-06	564,637	4,184,010	10
897	CENSUS	0.20	1.21E-04	1.73E-06	564,532	4,184,059	10
898	CENSUS	0.091	5.62E-05	8.43E-07	564,864	4,184,217	10
899	CENSUS	0.089	5.49E-05	8.44E-07	564,786	4,184,321	10
900	CENSUS	0.12	7.30E-05	1.10E-06	564,718	4,184,171	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
1	GRID	0.15	2.47E-04	3.19E-06	563,801	4,183,998	10
2	GRID	0.16	2.58E-04	3.35E-06	563,826	4,183,998	10
3	GRID	0.17	2.70E-04	3.42E-06	563,851	4,183,998	10
4	GRID	0.18	2.81E-04	3.45E-06	563,876	4,183,998	10
5	GRID	0.18	2.91E-04	3.60E-06	563,901	4,183,998	10
6	GRID	0.19	2.98E-04	3.71E-06	563,926	4,183,998	10
7	GRID	0.19	3.02E-04	3.76E-06	563,951	4,183,998	10
8	GRID	0.19	3.04E-04	3.78E-06	563,976	4,183,998	10
9	GRID	0.19	3.03E-04	3.86E-06	564,001	4,183,998	10
10	GRID	0.19	3.02E-04	3.80E-06	564,026	4,183,998	10
11	GRID	0.19	2.98E-04	3.88E-06	564,051	4,183,998	10
12	GRID	0.18	2.94E-04	3.82E-06	564,076	4,183,998	10
13	GRID	0.18	2.87E-04	3.80E-06	564,101	4,183,998	10
14	GRID	0.17	2.80E-04	3.64E-06	564,126	4,183,998	10
15	GRID	0.17	2.72E-04	3.57E-06	564,151	4,183,998	10
16	GRID	0.16	2.63E-04	3.42E-06	564,176	4,183,998	10
17	GRID	0.16	2.55E-04	3.27E-06	564,201	4,183,998	10
18	GRID	0.15	2.46E-04	3.18E-06	564,226	4,183,998	10
19	GRID	0.15	2.37E-04	3.04E-06	564,251	4,183,998	10
20	GRID	0.14	2.28E-04	2.94E-06	564,276	4,183,998	10
21	GRID	0.14	2.19E-04	2.81E-06	564,301	4,183,998	10
22	GRID	0.13	2.10E-04	2.71E-06	564,326	4,183,998	10
23	GRID	0.12	2.00E-04	2.62E-06	564,351	4,183,998	10
24	GRID	0.12	1.91E-04	2.52E-06	564,376	4,183,998	10
25	GRID	0.11	1.82E-04	2.45E-06	564,401	4,183,998	10
26	GRID	0.17	2.79E-04	3.58E-06	563,801	4,183,973	10
27	GRID	0.18	2.94E-04	3.76E-06	563,826	4,183,973	10
28	GRID	0.19	3.09E-04	3.80E-06	563,851	4,183,973	10
29	GRID	0.20	3.22E-04	3.90E-06	563,876	4,183,973	10
30	GRID	0.21	3.34E-04	4.08E-06	563,901	4,183,973	10
31	GRID	0.21	3.41E-04	4.19E-06	563,926	4,183,973	10
32	GRID	0.21	3.45E-04	4.24E-06	563,951	4,183,973	10
33	GRID	0.22	3.46E-04	4.26E-06	563,976	4,183,973	10
34	GRID	0.21	3.45E-04	4.34E-06	564,001	4,183,973	10
35	GRID	0.21	3.42E-04	4.36E-06	564,026	4,183,973	10
36	GRID	0.21	3.37E-04	4.32E-06	564,051	4,183,973	10
37	GRID	0.21	3.30E-04	4.30E-06	564,076	4,183,973	10
38	GRID	0.20	3.22E-04	4.15E-06	564,101	4,183,973	10
39	GRID	0.19	3.12E-04	4.06E-06	564,126	4,183,973	10
40	GRID	0.19	3.02E-04	3.88E-06	564,151	4,183,973	10
41	GRID	0.18	2.92E-04	3.74E-06	564,176	4,183,973	10
42	GRID	0.17	2.81E-04	3.56E-06	564,201	4,183,973	10
43	GRID	0.17	2.70E-04	3.48E-06	564,226	4,183,973	10
44	GRID	0.16	2.60E-04	3.33E-06	564,251	4,183,973	10
45	GRID	0.16	2.49E-04	3.20E-06	564,276	4,183,973	10
46	GRID	0.15	2.39E-04	3.06E-06	564,301	4,183,973	10
47	GRID	0.14	2.28E-04	2.93E-06	564,326	4,183,973	10
48	GRID	0.13	2.17E-04	2.82E-06	564,351	4,183,973	10
49	GRID	0.13	2.06E-04	2.70E-06	564,376	4,183,973	10
50	GRID	0.12	1.95E-04	2.59E-06	564,401	4,183,973	10
51	GRID	0.20	3.20E-04	4.03E-06	563,801	4,183,948	10
52	GRID	0.21	3.39E-04	4.24E-06	563,826	4,183,948	10
53	GRID	0.22	3.58E-04	4.31E-06	563,851	4,183,948	10
54	GRID	0.23	3.75E-04	4.49E-06	563,876	4,183,948	10
55	GRID	0.24	3.89E-04	4.64E-06	563,901	4,183,948	10
56	GRID	0.25	3.96E-04	4.77E-06	563,926	4,183,948	10
57	GRID	0.25	3.99E-04	4.77E-06	563,951	4,183,948	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
58	GRID	0.25	4.00E-04	4.93E-06	563,976	4,183,948	10
59	GRID	0.25	3.97E-04	4.90E-06	564,001	4,183,948	10
60	GRID	0.24	3.92E-04	4.97E-06	564,026	4,183,948	10
61	GRID	0.24	3.84E-04	4.82E-06	564,051	4,183,948	10
62	GRID	0.23	3.74E-04	4.77E-06	564,076	4,183,948	10
63	GRID	0.23	3.63E-04	4.62E-06	564,101	4,183,948	10
64	GRID	0.22	3.51E-04	4.47E-06	564,126	4,183,948	10
65	GRID	0.21	3.38E-04	4.29E-06	564,151	4,183,948	10
66	GRID	0.20	3.25E-04	4.13E-06	564,176	4,183,948	10
67	GRID	0.19	3.12E-04	3.94E-06	564,201	4,183,948	10
68	GRID	0.19	2.99E-04	3.78E-06	564,226	4,183,948	10
69	GRID	0.18	2.86E-04	3.67E-06	564,251	4,183,948	10
70	GRID	0.17	2.73E-04	3.45E-06	564,276	4,183,948	10
71	GRID	0.16	2.61E-04	3.34E-06	564,301	4,183,948	10
72	GRID	0.15	2.48E-04	3.14E-06	564,326	4,183,948	10
73	GRID	0.15	2.35E-04	3.02E-06	564,351	4,183,948	10
74	GRID	0.14	2.23E-04	2.88E-06	564,376	4,183,948	10
75	GRID	0.13	2.10E-04	2.75E-06	564,401	4,183,948	10
76	GRID	0.23	3.71E-04	4.60E-06	563,801	4,183,923	10
77	GRID	0.25	3.97E-04	4.86E-06	563,826	4,183,923	10
78	GRID	0.26	4.22E-04	5.02E-06	563,851	4,183,923	10
79	GRID	0.28	4.44E-04	5.26E-06	563,876	4,183,923	10
80	GRID	0.29	4.60E-04	5.36E-06	563,901	4,183,923	10
81	GRID	0.29	4.67E-04	5.52E-06	563,926	4,183,923	10
82	GRID	0.29	4.69E-04	5.58E-06	563,951	4,183,923	10
83	GRID	0.29	4.67E-04	5.65E-06	563,976	4,183,923	10
84	GRID	0.29	4.61E-04	5.74E-06	564,001	4,183,923	10
85	GRID	0.28	4.52E-04	5.55E-06	564,026	4,183,923	10
86	GRID	0.27	4.41E-04	5.48E-06	564,051	4,183,923	10
87	GRID	0.27	4.27E-04	5.26E-06	564,076	4,183,923	10
88	GRID	0.26	4.12E-04	5.18E-06	564,101	4,183,923	10
89	GRID	0.25	3.97E-04	4.90E-06	564,126	4,183,923	10
90	GRID	0.24	3.81E-04	4.83E-06	564,151	4,183,923	10
91	GRID	0.23	3.64E-04	4.56E-06	564,176	4,183,923	10
92	GRID	0.22	3.48E-04	4.41E-06	564,201	4,183,923	10
93	GRID	0.21	3.32E-04	4.17E-06	564,226	4,183,923	10
94	GRID	0.20	3.16E-04	4.01E-06	564,251	4,183,923	10
95	GRID	0.19	3.01E-04	3.79E-06	564,276	4,183,923	10
96	GRID	0.18	2.86E-04	3.57E-06	564,301	4,183,923	10
97	GRID	0.17	2.71E-04	3.40E-06	564,326	4,183,923	10
98	GRID	0.16	2.56E-04	3.18E-06	564,351	4,183,923	10
99	GRID	0.15	2.41E-04	3.08E-06	564,376	4,183,923	10
100	GRID	0.14	2.27E-04	2.89E-06	564,401	4,183,923	10
101	GRID	0.27	4.38E-04	5.26E-06	563,801	4,183,898	10
102	GRID	0.29	4.74E-04	5.76E-06	563,826	4,183,898	10
103	GRID	0.32	5.09E-04	5.93E-06	563,851	4,183,898	10
104	GRID	0.33	5.38E-04	6.27E-06	563,876	4,183,898	10
105	GRID	0.34	5.55E-04	6.30E-06	563,901	4,183,898	10
106	GRID	0.35	5.61E-04	6.41E-06	563,926	4,183,898	10
107	GRID	0.35	5.61E-04	6.61E-06	563,951	4,183,898	10
108	GRID	0.34	5.54E-04	6.62E-06	563,976	4,183,898	10
109	GRID	0.34	5.42E-04	6.60E-06	564,001	4,183,898	10
110	GRID	0.33	5.28E-04	6.35E-06	564,026	4,183,898	10
111	GRID	0.32	5.11E-04	6.18E-06	564,051	4,183,898	10
112	GRID	0.31	4.92E-04	5.99E-06	564,076	4,183,898	10
113	GRID	0.29	4.72E-04	5.80E-06	564,101	4,183,898	10
114	GRID	0.28	4.52E-04	5.61E-06	564,126	4,183,898	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
115	GRID	0.27	4.32E-04	5.34E-06	564,151	4,183,898	10
116	GRID	0.26	4.11E-04	5.20E-06	564,176	4,183,898	10
117	GRID	0.24	3.91E-04	4.77E-06	564,201	4,183,898	10
118	GRID	0.23	3.71E-04	4.64E-06	564,226	4,183,898	10
119	GRID	0.22	3.52E-04	4.31E-06	564,251	4,183,898	10
120	GRID	0.21	3.34E-04	4.13E-06	564,276	4,183,898	10
121	GRID	0.20	3.15E-04	3.84E-06	564,301	4,183,898	10
122	GRID	0.19	2.97E-04	3.64E-06	564,326	4,183,898	10
123	GRID	0.17	2.80E-04	3.42E-06	564,351	4,183,898	10
124	GRID	0.16	2.62E-04	3.25E-06	564,376	4,183,898	10
125	GRID	0.15	2.46E-04	3.10E-06	564,401	4,183,898	10
126	GRID	0.33	5.28E-04	6.40E-06	563,801	4,183,873	10
127	GRID	0.36	5.81E-04	7.03E-06	563,826	4,183,873	10
128	GRID	0.39	6.32E-04	7.16E-06	563,851	4,183,873	10
129	GRID	0.42	6.71E-04	7.61E-06	563,876	4,183,873	10
130	GRID	0.43	6.88E-04	7.69E-06	563,901	4,183,873	10
131	GRID	0.43	6.91E-04	7.85E-06	563,926	4,183,873	10
132	GRID	0.42	6.84E-04	8.06E-06	563,951	4,183,873	10
133	GRID	0.42	6.68E-04	7.82E-06	563,976	4,183,873	10
134	GRID	0.40	6.47E-04	7.52E-06	564,001	4,183,873	10
135	GRID	0.39	6.24E-04	7.35E-06	564,026	4,183,873	10
136	GRID	0.37	5.99E-04	7.05E-06	564,051	4,183,873	10
137	GRID	0.36	5.73E-04	6.94E-06	564,076	4,183,873	10
138	GRID	0.34	5.46E-04	6.54E-06	564,101	4,183,873	10
139	GRID	0.32	5.20E-04	6.33E-06	564,126	4,183,873	10
140	GRID	0.31	4.94E-04	6.05E-06	564,151	4,183,873	10
141	GRID	0.29	4.67E-04	5.73E-06	564,176	4,183,873	10
142	GRID	0.27	4.42E-04	5.40E-06	564,201	4,183,873	10
143	GRID	0.26	4.17E-04	5.01E-06	564,226	4,183,873	10
144	GRID	0.24	3.94E-04	4.81E-06	564,251	4,183,873	10
145	GRID	0.23	3.71E-04	4.41E-06	564,276	4,183,873	10
146	GRID	0.22	3.49E-04	4.20E-06	564,301	4,183,873	10
147	GRID	0.20	3.28E-04	3.88E-06	564,326	4,183,873	10
148	GRID	0.19	3.07E-04	3.69E-06	564,351	4,183,873	10
149	GRID	0.18	2.86E-04	3.48E-06	564,376	4,183,873	10
150	GRID	0.17	2.67E-04	3.30E-06	564,401	4,183,873	10
151	GRID	0.41	6.55E-04	7.84E-06	563,801	4,183,848	10
152	GRID	0.46	7.39E-04	8.75E-06	563,826	4,183,848	10
153	GRID	0.51	8.21E-04	8.84E-06	563,851	4,183,848	10
154	GRID	0.54	8.70E-04	9.50E-06	563,876	4,183,848	10
155	GRID	0.55	8.84E-04	9.64E-06	563,901	4,183,848	10
156	GRID	0.55	8.78E-04	9.79E-06	563,926	4,183,848	10
157	GRID	0.53	8.54E-04	9.77E-06	563,951	4,183,848	10
158	GRID	0.51	8.22E-04	9.20E-06	563,976	4,183,848	10
159	GRID	0.49	7.86E-04	8.89E-06	564,001	4,183,848	10
160	GRID	0.47	7.49E-04	8.74E-06	564,026	4,183,848	10
161	GRID	0.44	7.12E-04	8.36E-06	564,051	4,183,848	10
162	GRID	0.42	6.75E-04	7.92E-06	564,076	4,183,848	10
163	GRID	0.40	6.39E-04	7.57E-06	564,101	4,183,848	10
164	GRID	0.38	6.04E-04	7.08E-06	564,126	4,183,848	10
165	GRID	0.35	5.70E-04	6.83E-06	564,151	4,183,848	10
166	GRID	0.33	5.36E-04	6.35E-06	564,176	4,183,848	10
167	GRID	0.31	5.04E-04	5.96E-06	564,201	4,183,848	10
168	GRID	0.29	4.73E-04	5.56E-06	564,226	4,183,848	10
169	GRID	0.28	4.43E-04	5.24E-06	564,251	4,183,848	10
170	GRID	0.26	4.16E-04	4.87E-06	564,276	4,183,848	10
171	GRID	0.24	3.89E-04	4.55E-06	564,301	4,183,848	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
172	GRID	0.23	3.63E-04	4.27E-06	564,326	4,183,848	10
173	GRID	0.21	3.38E-04	3.97E-06	564,351	4,183,848	10
174	GRID	0.20	3.14E-04	3.75E-06	564,376	4,183,848	10
175	GRID	0.18	2.91E-04	3.50E-06	564,401	4,183,848	10
176	GRID	0.52	8.43E-04	9.89E-06	563,801	4,183,823	10
177	GRID	0.62	9.99E-04	1.13E-05	563,826	4,183,823	10
178	GRID	0.71	1.14E-03	1.13E-05	563,851	4,183,823	10
179	GRID	0.74	1.20E-03	1.26E-05	563,876	4,183,823	10
180	GRID	0.74	1.20E-03	1.29E-05	563,901	4,183,823	10
181	GRID	0.72	1.15E-03	1.24E-05	563,926	4,183,823	10
182	GRID	0.68	1.10E-03	1.17E-05	563,951	4,183,823	10
183	GRID	0.64	1.04E-03	1.14E-05	563,976	4,183,823	10
184	GRID	0.61	9.76E-04	1.07E-05	564,001	4,183,823	10
185	GRID	0.57	9.17E-04	1.03E-05	564,026	4,183,823	10
186	GRID	0.53	8.61E-04	9.69E-06	564,051	4,183,823	10
187	GRID	0.50	8.08E-04	9.08E-06	564,076	4,183,823	10
188	GRID	0.47	7.57E-04	8.64E-06	564,101	4,183,823	10
189	GRID	0.44	7.10E-04	8.18E-06	564,126	4,183,823	10
190	GRID	0.41	6.64E-04	7.63E-06	564,151	4,183,823	10
191	GRID	0.39	6.21E-04	7.19E-06	564,176	4,183,823	10
192	GRID	0.36	5.79E-04	6.64E-06	564,201	4,183,823	10
193	GRID	0.34	5.40E-04	6.26E-06	564,226	4,183,823	10
194	GRID	0.31	5.03E-04	5.77E-06	564,251	4,183,823	10
195	GRID	0.29	4.68E-04	5.39E-06	564,276	4,183,823	10
196	GRID	0.27	4.36E-04	4.95E-06	564,301	4,183,823	10
197	GRID	0.25	4.04E-04	4.66E-06	564,326	4,183,823	10
198	GRID	0.23	3.74E-04	4.28E-06	564,351	4,183,823	10
199	GRID	0.21	3.45E-04	4.08E-06	564,376	4,183,823	10
200	GRID	0.20	3.17E-04	3.75E-06	564,401	4,183,823	10
201	GRID	0.71	1.14E-03	1.27E-05	563,801	4,183,798	10
202	GRID	0.93	1.50E-03	1.54E-05	563,826	4,183,798	10
203	GRID	1.1	1.79E-03	1.71E-05	563,851	4,183,798	10
204	GRID	1.1	1.81E-03	1.81E-05	563,876	4,183,798	10
205	GRID	1.1	1.72E-03	1.81E-05	563,901	4,183,798	10
206	GRID	0.99	1.60E-03	1.56E-05	563,926	4,183,798	10
207	GRID	0.91	1.47E-03	1.57E-05	563,951	4,183,798	10
208	GRID	0.84	1.35E-03	1.42E-05	563,976	4,183,798	10
209	GRID	0.77	1.25E-03	1.33E-05	564,001	4,183,798	10
210	GRID	0.71	1.15E-03	1.22E-05	564,026	4,183,798	10
211	GRID	0.66	1.06E-03	1.15E-05	564,051	4,183,798	10
212	GRID	0.61	9.84E-04	1.06E-05	564,076	4,183,798	10
213	GRID	0.57	9.11E-04	1.00E-05	564,101	4,183,798	10
214	GRID	0.53	8.45E-04	9.34E-06	564,126	4,183,798	10
215	GRID	0.49	7.84E-04	8.70E-06	564,151	4,183,798	10
216	GRID	0.45	7.27E-04	8.12E-06	564,176	4,183,798	10
217	GRID	0.42	6.73E-04	7.60E-06	564,201	4,183,798	10
218	GRID	0.39	6.22E-04	7.04E-06	564,226	4,183,798	10
219	GRID	0.36	5.75E-04	6.50E-06	564,251	4,183,798	10
220	GRID	0.33	5.32E-04	5.97E-06	564,276	4,183,798	10
221	GRID	0.31	4.91E-04	5.54E-06	564,301	4,183,798	10
222	GRID	0.28	4.53E-04	5.05E-06	564,326	4,183,798	10
223	GRID	0.26	4.16E-04	4.76E-06	564,351	4,183,798	10
224	GRID	0.24	3.81E-04	4.33E-06	564,376	4,183,798	10
225	GRID	0.22	3.48E-04	4.10E-06	564,401	4,183,798	10
226	GRID	0.97	1.57E-03	1.80E-05	563,801	4,183,773	10
227	GRID	1.8	2.87E-03	2.77E-05	563,826	4,183,773	10
228	GRID	2.3	3.72E-03	3.14E-05	563,851	4,183,773	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
229	GRID	2.0	3.20E-03	2.99E-05	563,876	4,183,773	10
230	GRID	1.7	2.75E-03	2.54E-05	563,901	4,183,773	10
231	GRID	1.5	2.39E-03	2.31E-05	563,926	4,183,773	10
232	GRID	1.3	2.08E-03	1.91E-05	563,951	4,183,773	10
233	GRID	1.2	1.85E-03	1.91E-05	563,976	4,183,773	10
234	GRID	1.0	1.65E-03	1.60E-05	564,001	4,183,773	10
235	GRID	0.92	1.49E-03	1.52E-05	564,026	4,183,773	10
236	GRID	0.84	1.35E-03	1.39E-05	564,051	4,183,773	10
237	GRID	0.76	1.22E-03	1.27E-05	564,076	4,183,773	10
238	GRID	0.69	1.12E-03	1.20E-05	564,101	4,183,773	10
239	GRID	0.64	1.02E-03	1.10E-05	564,126	4,183,773	10
240	GRID	0.58	9.39E-04	1.01E-05	564,151	4,183,773	10
241	GRID	0.54	8.62E-04	9.45E-06	564,176	4,183,773	10
242	GRID	0.49	7.91E-04	8.70E-06	564,201	4,183,773	10
243	GRID	0.45	7.26E-04	7.94E-06	564,226	4,183,773	10
244	GRID	0.41	6.65E-04	7.36E-06	564,251	4,183,773	10
245	GRID	0.38	6.10E-04	6.70E-06	564,276	4,183,773	10
246	GRID	0.35	5.59E-04	6.18E-06	564,301	4,183,773	10
247	GRID	0.32	5.10E-04	5.61E-06	564,326	4,183,773	10
248	GRID	0.29	4.65E-04	5.17E-06	564,351	4,183,773	10
249	GRID	0.26	4.22E-04	4.82E-06	564,376	4,183,773	10
250	GRID	0.24	3.83E-04	4.34E-06	564,401	4,183,773	10
251	GRID	0.93	1.50E-03	2.48E-05	563,801	4,183,748	10
252	GRID	4.3	6.95E-03	5.66E-05	563,826	4,183,748	10
253	GRID	6.4	1.03E-02	7.77E-05	563,851	4,183,748	10
254	GRID	4.7	7.48E-03	5.10E-05	563,876	4,183,748	10
255	GRID	3.3	5.28E-03	4.21E-05	563,901	4,183,748	10
256	GRID	2.5	4.03E-03	3.40E-05	563,926	4,183,748	10
257	GRID	2.0	3.22E-03	2.95E-05	563,951	4,183,748	10
258	GRID	1.7	2.69E-03	2.36E-05	563,976	4,183,748	10
259	GRID	1.4	2.30E-03	2.22E-05	564,001	4,183,748	10
260	GRID	1.2	2.00E-03	1.86E-05	564,026	4,183,748	10
261	GRID	1.1	1.77E-03	1.76E-05	564,051	4,183,748	10
262	GRID	0.97	1.57E-03	1.56E-05	564,076	4,183,748	10
263	GRID	0.87	1.41E-03	1.42E-05	564,101	4,183,748	10
264	GRID	0.79	1.27E-03	1.31E-05	564,126	4,183,748	10
265	GRID	0.71	1.15E-03	1.18E-05	564,151	4,183,748	10
266	GRID	0.65	1.04E-03	1.11E-05	564,176	4,183,748	10
267	GRID	0.59	9.45E-04	1.02E-05	564,201	4,183,748	10
268	GRID	0.53	8.57E-04	9.15E-06	564,226	4,183,748	10
269	GRID	0.48	7.78E-04	8.35E-06	564,251	4,183,748	10
270	GRID	0.44	7.06E-04	7.62E-06	564,276	4,183,748	10
271	GRID	0.4	6.41E-04	6.81E-06	564,301	4,183,748	10
272	GRID	0.36	5.80E-04	6.29E-06	564,326	4,183,748	10
273	GRID	0.33	5.24E-04	5.63E-06	564,351	4,183,748	10
274	GRID	0.29	4.71E-04	5.26E-06	564,376	4,183,748	10
275	GRID	0.26	4.22E-04	4.70E-06	564,401	4,183,748	10
276	GRID	0.67	1.07E-03	2.68E-05	563,801	4,183,723	10
277	GRID	1.9	3.13E-03	5.15E-05	563,826	4,183,723	10
278	GRID	6.6	1.06E-02	8.92E-05	563,851	4,183,723	10
279	GRID	2.6	4.26E-03	3.39E-05	563,876	4,183,723	10
280	GRID	7.8	1.26E-02	7.46E-05	563,901	4,183,723	10
281	GRID	5.8	9.36E-03	6.05E-05	563,926	4,183,723	10
282	GRID	3.6	5.81E-03	4.45E-05	563,951	4,183,723	10
283	GRID	2.7	4.38E-03	3.57E-05	563,976	4,183,723	10
284	GRID	2.2	3.48E-03	2.87E-05	564,001	4,183,723	10
285	GRID	1.8	2.87E-03	2.62E-05	564,026	4,183,723	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
286	GRID	1.5	2.43E-03	2.24E-05	564,051	4,183,723	10
287	GRID	1.3	2.09E-03	1.99E-05	564,076	4,183,723	10
288	GRID	1.1	1.83E-03	1.76E-05	564,101	4,183,723	10
289	GRID	1.0	1.61E-03	1.59E-05	564,126	4,183,723	10
290	GRID	0.89	1.43E-03	1.44E-05	564,151	4,183,723	10
291	GRID	0.80	1.28E-03	1.29E-05	564,176	4,183,723	10
292	GRID	0.71	1.15E-03	1.20E-05	564,201	4,183,723	10
293	GRID	0.64	1.03E-03	1.06E-05	564,226	4,183,723	10
294	GRID	0.57	9.24E-04	9.61E-06	564,251	4,183,723	10
295	GRID	0.51	8.29E-04	8.76E-06	564,276	4,183,723	10
296	GRID	0.46	7.44E-04	7.80E-06	564,301	4,183,723	10
297	GRID	0.41	6.66E-04	6.98E-06	564,326	4,183,723	10
298	GRID	0.37	5.94E-04	6.34E-06	564,351	4,183,723	10
299	GRID	0.33	5.28E-04	5.66E-06	564,376	4,183,723	10
300	GRID	0.29	4.69E-04	5.14E-06	564,401	4,183,723	10
301	GRID	0.48	7.70E-04	2.02E-05	563,801	4,183,698	10
302	GRID	0.90	1.45E-03	3.19E-05	563,826	4,183,698	10
303	GRID	1.8	2.85E-03	4.72E-05	563,851	4,183,698	10
304	GRID	3.7	5.92E-03	7.33E-05	563,876	4,183,698	10
305	GRID	4.7	7.50E-03	1.03E-04	563,901	4,183,698	10
306	GRID	10	1.63E-02	9.81E-05	563,926	4,183,698	10
307	GRID	3.2	5.19E-03	3.76E-05	563,951	4,183,698	10
308	GRID	5.5	8.87E-03	6.08E-05	563,976	4,183,698	10
309	GRID	3.9	6.29E-03	4.67E-05	564,001	4,183,698	10
310	GRID	2.9	4.60E-03	3.63E-05	564,026	4,183,698	10
311	GRID	2.3	3.62E-03	3.14E-05	564,051	4,183,698	10
312	GRID	1.9	2.97E-03	2.62E-05	564,076	4,183,698	10
313	GRID	1.6	2.50E-03	2.23E-05	564,101	4,183,698	10
314	GRID	1.3	2.14E-03	2.07E-05	564,126	4,183,698	10
315	GRID	1.2	1.86E-03	1.74E-05	564,151	4,183,698	10
316	GRID	1.0	1.62E-03	1.59E-05	564,176	4,183,698	10
317	GRID	0.89	1.43E-03	1.39E-05	564,201	4,183,698	10
318	GRID	0.79	1.27E-03	1.29E-05	564,226	4,183,698	10
319	GRID	0.69	1.12E-03	1.12E-05	564,251	4,183,698	10
320	GRID	0.61	9.89E-04	1.00E-05	564,276	4,183,698	10
321	GRID	0.54	8.76E-04	8.85E-06	564,301	4,183,698	10
322	GRID	0.48	7.74E-04	7.85E-06	564,326	4,183,698	10
323	GRID	0.42	6.81E-04	7.02E-06	564,351	4,183,698	10
324	GRID	0.37	5.97E-04	6.33E-06	564,376	4,183,698	10
325	GRID	0.32	5.22E-04	5.52E-06	564,401	4,183,698	10
326	GRID	0.37	5.92E-04	1.55E-05	563,801	4,183,673	10
327	GRID	0.57	9.18E-04	2.32E-05	563,826	4,183,673	10
328	GRID	0.90	1.44E-03	3.04E-05	563,851	4,183,673	10
329	GRID	1.4	2.27E-03	3.94E-05	563,876	4,183,673	10
330	GRID	2.2	3.49E-03	5.07E-05	563,901	4,183,673	10
331	GRID	3.4	5.51E-03	7.00E-05	563,926	4,183,673	10
332	GRID	2.4	3.85E-03	4.57E-05	563,951	4,183,673	10
333	GRID	4.2	6.72E-03	4.30E-05	563,976	4,183,673	10
334	GRID	9.8	1.58E-02	8.98E-05	564,001	4,183,673	10
335	GRID	6.3	1.02E-02	6.23E-05	564,026	4,183,673	10
336	GRID	3.9	6.35E-03	4.72E-05	564,051	4,183,673	10
337	GRID	3.0	4.75E-03	3.87E-05	564,076	4,183,673	10
338	GRID	2.3	3.72E-03	3.13E-05	564,101	4,183,673	10
339	GRID	1.9	3.03E-03	2.66E-05	564,126	4,183,673	10
340	GRID	1.6	2.54E-03	2.40E-05	564,151	4,183,673	10
341	GRID	1.3	2.15E-03	1.88E-05	564,176	4,183,673	10
342	GRID	1.2	1.85E-03	1.82E-05	564,201	4,183,673	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
343	GRID	0.99	1.60E-03	1.55E-05	564,226	4,183,673	10
344	GRID	0.86	1.39E-03	1.38E-05	564,251	4,183,673	10
345	GRID	0.75	1.21E-03	1.19E-05	564,276	4,183,673	10
346	GRID	0.65	1.05E-03	1.04E-05	564,301	4,183,673	10
347	GRID	0.57	9.14E-04	8.99E-06	564,326	4,183,673	10
348	GRID	0.49	7.90E-04	7.97E-06	564,351	4,183,673	10
349	GRID	0.42	6.80E-04	6.93E-06	564,376	4,183,673	10
350	GRID	0.36	5.86E-04	6.02E-06	564,401	4,183,673	10
351	GRID	0.30	4.77E-04	1.40E-05	563,801	4,183,648	10
352	GRID	0.41	6.61E-04	1.69E-05	563,826	4,183,648	10
353	GRID	0.58	9.39E-04	2.26E-05	563,851	4,183,648	10
354	GRID	0.82	1.32E-03	2.67E-05	563,876	4,183,648	10
355	GRID	1.2	1.85E-03	3.27E-05	563,901	4,183,648	10
356	GRID	1.6	2.53E-03	4.02E-05	563,926	4,183,648	10
357	GRID	2.3	3.69E-03	5.63E-05	563,951	4,183,648	10
358	GRID	3.6	5.85E-03	7.18E-05	563,976	4,183,648	10
359	GRID	6.0	9.73E-03	9.59E-05	564,001	4,183,648	10
360	GRID	3.1	5.00E-03	4.27E-05	564,026	4,183,648	10
361	GRID	9.2	1.48E-02	8.88E-05	564,051	4,183,648	10
362	GRID	6.3	1.01E-02	6.61E-05	564,076	4,183,648	10
363	GRID	4.2	6.69E-03	4.80E-05	564,101	4,183,648	10
364	GRID	3.0	4.84E-03	4.03E-05	564,126	4,183,648	10
365	GRID	2.3	3.77E-03	3.16E-05	564,151	4,183,648	10
366	GRID	1.9	3.05E-03	2.70E-05	564,176	4,183,648	10
367	GRID	1.6	2.51E-03	2.18E-05	564,201	4,183,648	10
368	GRID	1.3	2.12E-03	2.07E-05	564,226	4,183,648	10
369	GRID	1.1	1.79E-03	1.64E-05	564,251	4,183,648	10
370	GRID	0.94	1.52E-03	1.47E-05	564,276	4,183,648	10
371	GRID	0.80	1.29E-03	1.25E-05	564,301	4,183,648	10
372	GRID	0.68	1.10E-03	1.04E-05	564,326	4,183,648	10
373	GRID	0.58	9.29E-04	9.24E-06	564,351	4,183,648	10
374	GRID	0.49	7.82E-04	7.79E-06	564,376	4,183,648	10
375	GRID	0.41	6.61E-04	6.69E-06	564,401	4,183,648	10
376	GRID	0.25	3.95E-04	1.15E-05	563,801	4,183,623	10
377	GRID	0.32	5.14E-04	1.41E-05	563,826	4,183,623	10
378	GRID	0.42	6.81E-04	1.72E-05	563,851	4,183,623	10
379	GRID	0.56	9.03E-04	2.05E-05	563,876	4,183,623	10
380	GRID	0.74	1.19E-03	2.48E-05	563,901	4,183,623	10
381	GRID	0.96	1.55E-03	2.83E-05	563,926	4,183,623	10
382	GRID	1.2	1.99E-03	3.52E-05	563,951	4,183,623	10
383	GRID	1.7	2.70E-03	4.38E-05	563,976	4,183,623	10
384	GRID	2.3	3.70E-03	5.24E-05	564,001	4,183,623	10
385	GRID	3.6	5.87E-03	7.33E-05	564,026	4,183,623	10
386	GRID	2.7	4.39E-03	4.46E-05	564,051	4,183,623	10
387	GRID	9.2	1.47E-02	9.48E-05	564,076	4,183,623	10
388	GRID	3.3	5.26E-03	3.96E-05	564,101	4,183,623	10
389	GRID	6.2	9.96E-03	6.32E-05	564,126	4,183,623	10
390	GRID	4.2	6.84E-03	5.09E-05	564,151	4,183,623	10
391	GRID	3.0	4.89E-03	3.82E-05	564,176	4,183,623	10
392	GRID	2.3	3.75E-03	3.25E-05	564,201	4,183,623	10
393	GRID	1.9	3.00E-03	2.51E-05	564,226	4,183,623	10
394	GRID	1.5	2.44E-03	2.22E-05	564,251	4,183,623	10
395	GRID	1.2	2.00E-03	1.82E-05	564,276	4,183,623	10
396	GRID	1.0	1.65E-03	1.56E-05	564,301	4,183,623	10
397	GRID	0.85	1.36E-03	1.24E-05	564,326	4,183,623	10
398	GRID	0.69	1.12E-03	1.06E-05	564,351	4,183,623	10
399	GRID	0.56	9.09E-04	8.87E-06	564,376	4,183,623	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
400	GRID	0.47	7.49E-04	7.28E-06	564,401	4,183,623	10
401	GRID	0.21	3.34E-04	1.04E-05	563,801	4,183,598	10
402	GRID	0.26	4.18E-04	1.14E-05	563,826	4,183,598	10
403	GRID	0.33	5.29E-04	1.43E-05	563,851	4,183,598	10
404	GRID	0.42	6.73E-04	1.64E-05	563,876	4,183,598	10
405	GRID	0.53	8.49E-04	1.91E-05	563,901	4,183,598	10
406	GRID	0.66	1.06E-03	2.26E-05	563,926	4,183,598	10
407	GRID	0.82	1.32E-03	2.45E-05	563,951	4,183,598	10
408	GRID	1.0	1.65E-03	3.04E-05	563,976	4,183,598	10
409	GRID	1.3	2.10E-03	3.61E-05	564,001	4,183,598	10
410	GRID	1.7	2.70E-03	4.28E-05	564,026	4,183,598	10
411	GRID	2.3	3.76E-03	5.37E-05	564,051	4,183,598	10
412	GRID	3.3	5.36E-03	6.68E-05	564,076	4,183,598	10
413	GRID	6.7	1.07E-02	9.90E-05	564,101	4,183,598	10
414	GRID	3.4	5.52E-03	4.22E-05	564,126	4,183,598	10
415	GRID	9.4	1.52E-02	8.01E-05	564,151	4,183,598	10
416	GRID	7.2	1.15E-02	6.86E-05	564,176	4,183,598	10
417	GRID	4.2	6.72E-03	4.89E-05	564,201	4,183,598	10
418	GRID	3.0	4.88E-03	3.66E-05	564,226	4,183,598	10
419	GRID	2.3	3.67E-03	2.88E-05	564,251	4,183,598	10
420	GRID	1.8	2.84E-03	2.51E-05	564,276	4,183,598	10
421	GRID	1.4	2.24E-03	1.96E-05	564,301	4,183,598	10
422	GRID	1.1	1.76E-03	1.52E-05	564,326	4,183,598	10
423	GRID	0.85	1.38E-03	1.29E-05	564,351	4,183,598	10
424	GRID	0.67	1.07E-03	9.72E-06	564,376	4,183,598	10
425	GRID	0.53	8.53E-04	8.20E-06	564,401	4,183,598	10
426	GRID	0.18	2.89E-04	9.12E-06	563,801	4,183,573	10
427	GRID	0.22	3.51E-04	1.01E-05	563,826	4,183,573	10
428	GRID	0.27	4.29E-04	1.17E-05	563,851	4,183,573	10
429	GRID	0.33	5.28E-04	1.39E-05	563,876	4,183,573	10
430	GRID	0.40	6.48E-04	1.53E-05	563,901	4,183,573	10
431	GRID	0.49	7.91E-04	1.78E-05	563,926	4,183,573	10
432	GRID	0.59	9.56E-04	1.99E-05	563,951	4,183,573	10
433	GRID	0.72	1.15E-03	2.18E-05	563,976	4,183,573	10
434	GRID	0.87	1.40E-03	2.73E-05	564,001	4,183,573	10
435	GRID	1.1	1.70E-03	2.95E-05	564,026	4,183,573	10
436	GRID	1.3	2.11E-03	3.45E-05	564,051	4,183,573	10
437	GRID	1.7	2.70E-03	4.23E-05	564,076	4,183,573	10
438	GRID	2.3	3.62E-03	5.26E-05	564,101	4,183,573	10
439	GRID	3.5	5.59E-03	6.88E-05	564,126	4,183,573	10
440	GRID	5.2	8.42E-03	9.11E-05	564,151	4,183,573	10
441	GRID	3.2	5.11E-03	4.72E-05	564,176	4,183,573	10
442	GRID	3.7	5.91E-03	3.87E-05	564,201	4,183,573	10
443	GRID	6.4	1.03E-02	6.53E-05	564,226	4,183,573	10
444	GRID	4.3	6.88E-03	4.69E-05	564,251	4,183,573	10
445	GRID	2.9	4.61E-03	3.46E-05	564,276	4,183,573	10
446	GRID	2.1	3.36E-03	2.65E-05	564,301	4,183,573	10
447	GRID	1.5	2.46E-03	2.01E-05	564,326	4,183,573	10
448	GRID	1.1	1.76E-03	1.48E-05	564,351	4,183,573	10
449	GRID	0.80	1.28E-03	1.19E-05	564,376	4,183,573	10
450	GRID	0.60	9.70E-04	8.10E-06	564,401	4,183,573	10
451	GRID	0.16	2.54E-04	8.09E-06	563,801	4,183,548	10
452	GRID	0.19	3.01E-04	8.88E-06	563,826	4,183,548	10
453	GRID	0.22	3.59E-04	1.01E-05	563,851	4,183,548	10
454	GRID	0.27	4.31E-04	1.16E-05	563,876	4,183,548	10
455	GRID	0.32	5.17E-04	1.29E-05	563,901	4,183,548	10
456	GRID	0.38	6.18E-04	1.47E-05	563,926	4,183,548	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
457	GRID	0.46	7.33E-04	1.63E-05	563,951	4,183,548	10
458	GRID	0.54	8.65E-04	1.82E-05	563,976	4,183,548	10
459	GRID	0.63	1.02E-03	2.04E-05	564,001	4,183,548	10
460	GRID	0.75	1.20E-03	2.33E-05	564,026	4,183,548	10
461	GRID	0.89	1.43E-03	2.49E-05	564,051	4,183,548	10
462	GRID	1.1	1.72E-03	3.12E-05	564,076	4,183,548	10
463	GRID	1.3	2.09E-03	3.50E-05	564,101	4,183,548	10
464	GRID	1.7	2.68E-03	4.01E-05	564,126	4,183,548	10
465	GRID	2.2	3.59E-03	4.83E-05	564,151	4,183,548	10
466	GRID	3.3	5.34E-03	6.73E-05	564,176	4,183,548	10
467	GRID	5.9	9.43E-03	1.02E-04	564,201	4,183,548	10
468	GRID	6.8	1.09E-02	1.06E-04	564,226	4,183,548	10
469	GRID	3.2	5.17E-03	3.73E-05	564,251	4,183,548	10
470	GRID	6.7	1.07E-02	6.17E-05	564,276	4,183,548	10
471	GRID	3.9	6.28E-03	4.32E-05	564,301	4,183,548	10
472	GRID	2.5	3.99E-03	2.89E-05	564,326	4,183,548	10
473	GRID	1.5	2.40E-03	1.89E-05	564,351	4,183,548	10
474	GRID	0.96	1.54E-03	1.24E-05	564,376	4,183,548	10
475	GRID	0.68	1.10E-03	9.24E-06	564,401	4,183,548	10
476	GRID	0.14	2.25E-04	7.11E-06	563,801	4,183,523	10
477	GRID	0.16	2.62E-04	7.90E-06	563,826	4,183,523	10
478	GRID	0.19	3.07E-04	8.70E-06	563,851	4,183,523	10
479	GRID	0.22	3.61E-04	1.00E-05	563,876	4,183,523	10
480	GRID	0.26	4.26E-04	1.09E-05	563,901	4,183,523	10
481	GRID	0.31	5.00E-04	1.23E-05	563,926	4,183,523	10
482	GRID	0.36	5.84E-04	1.38E-05	563,951	4,183,523	10
483	GRID	0.42	6.78E-04	1.47E-05	563,976	4,183,523	10
484	GRID	0.49	7.86E-04	1.67E-05	564,001	4,183,523	10
485	GRID	0.56	9.09E-04	1.80E-05	564,026	4,183,523	10
486	GRID	0.65	1.05E-03	2.04E-05	564,051	4,183,523	10
487	GRID	0.76	1.22E-03	2.31E-05	564,076	4,183,523	10
488	GRID	0.89	1.43E-03	2.62E-05	564,101	4,183,523	10
489	GRID	1.1	1.70E-03	2.88E-05	564,126	4,183,523	10
490	GRID	1.3	2.10E-03	3.39E-05	564,151	4,183,523	10
491	GRID	1.6	2.61E-03	3.99E-05	564,176	4,183,523	10
492	GRID	2.2	3.52E-03	5.04E-05	564,201	4,183,523	10
493	GRID	3.1	5.05E-03	6.12E-05	564,226	4,183,523	10
494	GRID	5.2	8.41E-03	8.19E-05	564,251	4,183,523	10
495	GRID	2.7	4.35E-03	3.42E-05	564,276	4,183,523	10
496	GRID	8.9	1.43E-02	7.61E-05	564,301	4,183,523	10
497	GRID	6.4	1.03E-02	5.23E-05	564,326	4,183,523	10
498	GRID	2.1	3.38E-03	2.17E-05	564,351	4,183,523	10
499	GRID	1.1	1.82E-03	1.27E-05	564,376	4,183,523	10
500	GRID	0.75	1.21E-03	9.20E-06	564,401	4,183,523	10
501	GRID	0.13	2.02E-04	6.33E-06	563,801	4,183,498	10
502	GRID	0.14	2.32E-04	6.98E-06	563,826	4,183,498	10
503	GRID	0.17	2.67E-04	7.67E-06	563,851	4,183,498	10
504	GRID	0.19	3.09E-04	8.47E-06	563,876	4,183,498	10
505	GRID	0.22	3.59E-04	9.51E-06	563,901	4,183,498	10
506	GRID	0.26	4.16E-04	1.02E-05	563,926	4,183,498	10
507	GRID	0.30	4.79E-04	1.16E-05	563,951	4,183,498	10
508	GRID	0.34	5.50E-04	1.24E-05	563,976	4,183,498	10
509	GRID	0.39	6.28E-04	1.36E-05	564,001	4,183,498	10
510	GRID	0.44	7.16E-04	1.52E-05	564,026	4,183,498	10
511	GRID	0.51	8.15E-04	1.58E-05	564,051	4,183,498	10
512	GRID	0.58	9.29E-04	1.81E-05	564,076	4,183,498	10
513	GRID	0.66	1.06E-03	1.97E-05	564,101	4,183,498	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
514	GRID	0.76	1.22E-03	2.20E-05	564,126	4,183,498	10
515	GRID	0.88	1.42E-03	2.53E-05	564,151	4,183,498	10
516	GRID	1.0	1.68E-03	2.70E-05	564,176	4,183,498	10
517	GRID	1.3	2.01E-03	3.17E-05	564,201	4,183,498	10
518	GRID	1.6	2.54E-03	3.76E-05	564,226	4,183,498	10
519	GRID	2.0	3.27E-03	4.42E-05	564,251	4,183,498	10
520	GRID	3.0	4.88E-03	5.72E-05	564,276	4,183,498	10
521	GRID	4.4	7.06E-03	6.91E-05	564,301	4,183,498	10
522	GRID	7.0	1.13E-02	5.84E-05	564,326	4,183,498	10
523	GRID	2.2	3.58E-03	1.91E-05	564,351	4,183,498	10
524	GRID	1.2	1.87E-03	1.27E-05	564,376	4,183,498	10
525	GRID	0.76	1.23E-03	9.22E-06	564,401	4,183,498	10
526	GRID	0.11	1.82E-04	5.70E-06	563,801	4,183,473	10
527	GRID	0.13	2.06E-04	6.22E-06	563,826	4,183,473	10
528	GRID	0.15	2.35E-04	6.76E-06	563,851	4,183,473	10
529	GRID	0.17	2.69E-04	7.47E-06	563,876	4,183,473	10
530	GRID	0.19	3.08E-04	8.21E-06	563,901	4,183,473	10
531	GRID	0.22	3.52E-04	9.00E-06	563,926	4,183,473	10
532	GRID	0.25	4.02E-04	9.78E-06	563,951	4,183,473	10
533	GRID	0.28	4.57E-04	1.07E-05	563,976	4,183,473	10
534	GRID	0.32	5.16E-04	1.13E-05	564,001	4,183,473	10
535	GRID	0.36	5.81E-04	1.25E-05	564,026	4,183,473	10
536	GRID	0.41	6.54E-04	1.33E-05	564,051	4,183,473	10
537	GRID	0.46	7.35E-04	1.41E-05	564,076	4,183,473	10
538	GRID	0.51	8.26E-04	1.59E-05	564,101	4,183,473	10
539	GRID	0.58	9.31E-04	1.69E-05	564,126	4,183,473	10
540	GRID	0.65	1.05E-03	1.89E-05	564,151	4,183,473	10
541	GRID	0.75	1.20E-03	2.06E-05	564,176	4,183,473	10
542	GRID	0.85	1.38E-03	2.11E-05	564,201	4,183,473	10
543	GRID	1.0	1.61E-03	2.56E-05	564,226	4,183,473	10
544	GRID	1.2	1.90E-03	2.72E-05	564,251	4,183,473	10
545	GRID	1.4	2.28E-03	3.00E-05	564,276	4,183,473	10
546	GRID	1.8	2.82E-03	3.18E-05	564,301	4,183,473	10
547	GRID	2.0	3.17E-03	2.78E-05	564,326	4,183,473	10
548	GRID	1.4	2.29E-03	1.81E-05	564,351	4,183,473	10
549	GRID	0.96	1.54E-03	1.07E-05	564,376	4,183,473	10
550	GRID	0.69	1.11E-03	7.21E-06	564,401	4,183,473	10
551	GRID	0.10	1.65E-04	5.14E-06	563,801	4,183,448	10
552	GRID	0.12	1.86E-04	5.60E-06	563,826	4,183,448	10
553	GRID	0.13	2.09E-04	6.00E-06	563,851	4,183,448	10
554	GRID	0.15	2.36E-04	6.57E-06	563,876	4,183,448	10
555	GRID	0.17	2.68E-04	7.19E-06	563,901	4,183,448	10
556	GRID	0.19	3.03E-04	7.75E-06	563,926	4,183,448	10
557	GRID	0.21	3.43E-04	8.50E-06	563,951	4,183,448	10
558	GRID	0.24	3.86E-04	9.04E-06	563,976	4,183,448	10
559	GRID	0.27	4.33E-04	9.60E-06	564,001	4,183,448	10
560	GRID	0.30	4.83E-04	1.05E-05	564,026	4,183,448	10
561	GRID	0.33	5.38E-04	1.12E-05	564,051	4,183,448	10
562	GRID	0.37	5.98E-04	1.17E-05	564,076	4,183,448	10
563	GRID	0.41	6.64E-04	1.26E-05	564,101	4,183,448	10
564	GRID	0.46	7.37E-04	1.37E-05	564,126	4,183,448	10
565	GRID	0.51	8.20E-04	1.45E-05	564,151	4,183,448	10
566	GRID	0.57	9.12E-04	1.58E-05	564,176	4,183,448	10
567	GRID	0.63	1.02E-03	1.68E-05	564,201	4,183,448	10
568	GRID	0.71	1.14E-03	1.71E-05	564,226	4,183,448	10
569	GRID	0.79	1.27E-03	1.94E-05	564,251	4,183,448	10
570	GRID	0.88	1.42E-03	1.85E-05	564,276	4,183,448	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
571	GRID	0.99	1.59E-03	1.96E-05	564,301	4,183,448	10
572	GRID	1.0	1.65E-03	1.82E-05	564,326	4,183,448	10
573	GRID	0.91	1.47E-03	1.36E-05	564,351	4,183,448	10
574	GRID	0.72	1.16E-03	1.08E-05	564,376	4,183,448	10
575	GRID	0.57	9.21E-04	7.71E-06	564,401	4,183,448	10
576	GRID	0.094	1.51E-04	4.66E-06	563,801	4,183,423	10
577	GRID	0.10	1.68E-04	4.97E-06	563,826	4,183,423	10
578	GRID	0.12	1.87E-04	5.38E-06	563,851	4,183,423	10
579	GRID	0.13	2.10E-04	5.75E-06	563,876	4,183,423	10
580	GRID	0.15	2.36E-04	6.30E-06	563,901	4,183,423	10
581	GRID	0.16	2.65E-04	6.78E-06	563,926	4,183,423	10
582	GRID	0.18	2.97E-04	7.31E-06	563,951	4,183,423	10
583	GRID	0.21	3.31E-04	7.80E-06	563,976	4,183,423	10
584	GRID	0.23	3.69E-04	8.22E-06	564,001	4,183,423	10
585	GRID	0.25	4.09E-04	8.91E-06	564,026	4,183,423	10
586	GRID	0.28	4.51E-04	9.56E-06	564,051	4,183,423	10
587	GRID	0.31	4.97E-04	9.81E-06	564,076	4,183,423	10
588	GRID	0.34	5.47E-04	1.07E-05	564,101	4,183,423	10
589	GRID	0.37	6.00E-04	1.11E-05	564,126	4,183,423	10
590	GRID	0.41	6.58E-04	1.16E-05	564,151	4,183,423	10
591	GRID	0.45	7.20E-04	1.26E-05	564,176	4,183,423	10
592	GRID	0.49	7.86E-04	1.30E-05	564,201	4,183,423	10
593	GRID	0.53	8.56E-04	1.37E-05	564,226	4,183,423	10
594	GRID	0.58	9.33E-04	1.41E-05	564,251	4,183,423	10
595	GRID	0.63	1.01E-03	1.38E-05	564,276	4,183,423	10
596	GRID	0.67	1.08E-03	1.41E-05	564,301	4,183,423	10
597	GRID	0.68	1.09E-03	1.32E-05	564,326	4,183,423	10
598	GRID	0.64	1.03E-03	1.09E-05	564,351	4,183,423	10
599	GRID	0.56	8.96E-04	8.86E-06	564,376	4,183,423	10
600	GRID	0.47	7.55E-04	7.63E-06	564,401	4,183,423	10
601	GRID	0.086	1.38E-04	4.17E-06	563,801	4,183,398	10
602	GRID	0.095	1.53E-04	4.53E-06	563,826	4,183,398	10
603	GRID	0.11	1.69E-04	4.76E-06	563,851	4,183,398	10
604	GRID	0.12	1.88E-04	5.19E-06	563,876	4,183,398	10
605	GRID	0.13	2.10E-04	5.53E-06	563,901	4,183,398	10
606	GRID	0.15	2.34E-04	6.02E-06	563,926	4,183,398	10
607	GRID	0.16	2.60E-04	6.40E-06	563,951	4,183,398	10
608	GRID	0.18	2.88E-04	6.88E-06	563,976	4,183,398	10
609	GRID	0.20	3.18E-04	7.29E-06	564,001	4,183,398	10
610	GRID	0.22	3.50E-04	7.73E-06	564,026	4,183,398	10
611	GRID	0.24	3.84E-04	8.16E-06	564,051	4,183,398	10
612	GRID	0.26	4.20E-04	8.45E-06	564,076	4,183,398	10
613	GRID	0.28	4.58E-04	8.84E-06	564,101	4,183,398	10
614	GRID	0.31	4.98E-04	9.43E-06	564,126	4,183,398	10
615	GRID	0.34	5.39E-04	9.45E-06	564,151	4,183,398	10
616	GRID	0.36	5.83E-04	1.02E-05	564,176	4,183,398	10
617	GRID	0.39	6.29E-04	1.07E-05	564,201	4,183,398	10
618	GRID	0.42	6.76E-04	1.04E-05	564,226	4,183,398	10
619	GRID	0.45	7.25E-04	1.11E-05	564,251	4,183,398	10
620	GRID	0.48	7.70E-04	1.12E-05	564,276	4,183,398	10
621	GRID	0.50	8.00E-04	1.08E-05	564,301	4,183,398	10
622	GRID	0.50	8.05E-04	1.02E-05	564,326	4,183,398	10
623	GRID	0.48	7.79E-04	8.87E-06	564,351	4,183,398	10
624	GRID	0.44	7.11E-04	7.71E-06	564,376	4,183,398	10
625	GRID	0.39	6.28E-04	6.69E-06	564,401	4,183,398	10
626	BOUNDARY	0.96	1.54E-03	1.54E-05	564,100	4,183,739	10
627	BOUNDARY	0.96	1.54E-03	1.53E-05	564,109	4,183,735	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
628	BOUNDARY	0.96	1.54E-03	1.54E-05	564,118	4,183,731	10
629	BOUNDARY	0.96	1.54E-03	1.52E-05	564,127	4,183,727	10
630	BOUNDARY	0.96	1.54E-03	1.53E-05	564,137	4,183,723	10
631	BOUNDARY	0.95	1.53E-03	1.52E-05	564,146	4,183,719	10
632	BOUNDARY	0.95	1.53E-03	1.52E-05	564,155	4,183,715	10
633	BOUNDARY	0.95	1.52E-03	1.49E-05	564,163	4,183,711	10
634	BOUNDARY	1.1	1.70E-03	1.66E-05	564,159	4,183,702	10
635	BOUNDARY	1.2	1.93E-03	1.87E-05	564,156	4,183,692	10
636	BOUNDARY	1.4	2.20E-03	2.15E-05	564,152	4,183,683	10
637	BOUNDARY	1.6	2.56E-03	2.42E-05	564,149	4,183,674	10
638	BOUNDARY	1.9	3.01E-03	2.66E-05	564,145	4,183,664	10
639	BOUNDARY	2.2	3.62E-03	3.00E-05	564,142	4,183,655	10
640	BOUNDARY	2.8	4.50E-03	3.46E-05	564,138	4,183,646	10
641	BOUNDARY	2.8	4.56E-03	3.50E-05	564,138	4,183,645	10
642	BOUNDARY	2.9	4.62E-03	3.88E-05	564,129	4,183,649	10
643	BOUNDARY	2.9	4.72E-03	3.74E-05	564,119	4,183,653	10
644	BOUNDARY	3.0	4.82E-03	3.94E-05	564,110	4,183,656	10
645	BOUNDARY	3.0	4.86E-03	3.71E-05	564,101	4,183,660	10
646	BOUNDARY	3.0	4.90E-03	4.05E-05	564,092	4,183,664	10
647	BOUNDARY	3.1	5.00E-03	3.93E-05	564,082	4,183,668	10
648	BOUNDARY	3.2	5.11E-03	4.14E-05	564,073	4,183,671	10
649	BOUNDARY	3.2	5.13E-03	4.14E-05	564,069	4,183,673	10
650	BOUNDARY	2.5	4.03E-03	3.38E-05	564,073	4,183,682	10
651	BOUNDARY	2.0	3.29E-03	2.74E-05	564,078	4,183,691	10
652	BOUNDARY	1.7	2.75E-03	2.46E-05	564,082	4,183,700	10
653	BOUNDARY	1.5	2.36E-03	2.23E-05	564,086	4,183,709	10
654	BOUNDARY	1.3	2.05E-03	2.01E-05	564,090	4,183,718	10
655	BOUNDARY	1.1	1.80E-03	1.79E-05	564,095	4,183,727	10
656	BOUNDARY	0.99	1.60E-03	1.59E-05	564,099	4,183,736	10
657	CENSUS	0.017	2.78E-05	8.56E-07	563,628	4,182,826	10
658	CENSUS	0.019	3.07E-05	9.06E-07	563,700	4,182,809	10
659	CENSUS	0.024	3.80E-05	1.13E-06	563,730	4,182,921	10
660	CENSUS	0.036	5.71E-05	1.21E-06	563,325	4,183,960	10
661	CENSUS	0.028	4.47E-05	9.39E-07	563,224	4,184,010	10
662	CENSUS	0.025	3.96E-05	1.05E-06	563,191	4,183,934	10
663	CENSUS	0.034	5.43E-05	1.37E-06	563,318	4,183,916	10
664	CENSUS	0.029	4.65E-05	1.23E-06	563,273	4,183,888	10
665	CENSUS	0.026	4.12E-05	1.10E-06	563,259	4,183,835	10
666	CENSUS	0.021	3.44E-05	9.37E-07	563,157	4,183,884	10
667	CENSUS	0.017	2.81E-05	8.77E-07	563,122	4,183,809	10
668	CENSUS	0.020	3.21E-05	1.20E-06	563,216	4,183,749	10
669	CENSUS	0.017	2.80E-05	1.22E-06	563,180	4,183,688	10
670	CENSUS	0.033	5.34E-05	7.65E-07	563,547	4,184,450	10
671	CENSUS	0.031	4.97E-05	7.53E-07	563,580	4,184,517	10
672	CENSUS	0.036	5.81E-05	7.89E-07	563,511	4,184,372	10
673	CENSUS	0.037	6.00E-05	7.98E-07	563,401	4,184,294	10
674	CENSUS	0.032	5.22E-05	6.97E-07	563,380	4,184,362	10
675	CENSUS	0.036	5.81E-05	9.58E-07	563,289	4,184,216	10
676	CENSUS	0.033	5.35E-05	1.05E-06	563,263	4,184,099	10
677	CENSUS	0.042	6.81E-05	1.17E-06	563,346	4,184,133	10
678	CENSUS	0.050	7.98E-05	1.24E-06	563,416	4,184,135	10
679	CENSUS	0.048	7.77E-05	1.14E-06	563,426	4,184,166	10
680	CENSUS	0.045	7.29E-05	9.65E-07	563,457	4,184,222	10
681	CENSUS	0.040	6.41E-05	8.54E-07	563,483	4,184,300	10
682	CENSUS	0.050	8.05E-05	1.40E-06	563,405	4,184,072	10
683	CENSUS	0.045	7.20E-05	1.35E-06	563,374	4,184,044	10
684	CENSUS	0.037	5.93E-05	1.08E-06	563,324	4,184,009	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
685	CENSUS	0.031	5.00E-05	6.90E-07	564,206	4,184,659	10
686	CENSUS	0.030	4.83E-05	6.83E-07	564,114	4,184,671	10
687	CENSUS	0.029	4.70E-05	6.79E-07	564,011	4,184,665	10
688	CENSUS	0.033	5.26E-05	7.60E-07	564,001	4,184,598	10
689	CENSUS	0.029	4.63E-05	7.24E-07	563,910	4,184,653	10
690	CENSUS	0.028	4.55E-05	7.44E-07	563,761	4,184,630	10
691	CENSUS	0.032	5.19E-05	8.27E-07	563,873	4,184,580	10
692	CENSUS	0.037	5.99E-05	8.69E-07	563,981	4,184,526	10
693	CENSUS	0.043	6.87E-05	9.58E-07	564,055	4,184,471	10
694	CENSUS	0.038	6.09E-05	8.55E-07	564,063	4,184,532	10
695	CENSUS	0.036	5.74E-05	8.04E-07	564,117	4,184,571	10
696	CENSUS	0.041	6.53E-05	9.07E-07	564,118	4,184,503	10
697	CENSUS	0.042	6.83E-05	1.05E-06	564,545	4,184,364	10
698	CENSUS	0.038	6.11E-05	9.30E-07	564,470	4,184,474	10
699	CENSUS	0.037	5.96E-05	8.48E-07	564,366	4,184,523	10
700	CENSUS	0.035	5.66E-05	7.82E-07	564,259	4,184,578	10
701	CENSUS	0.047	7.50E-05	1.04E-06	564,188	4,184,433	10
702	CENSUS	0.049	7.90E-05	1.10E-06	564,299	4,184,390	10
703	CENSUS	0.051	8.17E-05	1.20E-06	564,403	4,184,340	10
704	CENSUS	0.062	9.97E-05	1.38E-06	564,254	4,184,295	10
705	CENSUS	0.057	9.16E-05	1.26E-06	564,149	4,184,344	10
706	CENSUS	0.070	1.12E-04	1.52E-06	564,113	4,184,266	10
707	CENSUS	0.077	1.24E-04	1.71E-06	564,217	4,184,217	10
708	CENSUS	0.10	1.62E-04	2.21E-06	564,180	4,184,133	10
709	CENSUS	0.087	1.39E-04	1.89E-06	564,079	4,184,194	10
710	CENSUS	0.12	1.87E-04	2.45E-06	564,041	4,184,110	10
711	CENSUS	0.14	2.18E-04	2.91E-06	564,144	4,184,056	10
712	CENSUS	0.16	2.58E-04	3.26E-06	564,000	4,184,032	10
713	CENSUS	0.22	3.61E-04	4.43E-06	563,972	4,183,965	10
714	CENSUS	0.31	4.92E-04	5.95E-06	564,069	4,183,900	10
715	CENSUS	0.42	6.72E-04	7.63E-06	563,928	4,183,876	10
716	CENSUS	0.98	1.58E-03	1.70E-05	563,897	4,183,804	10
717	CENSUS	0.064	1.04E-04	1.50E-06	564,459	4,184,191	10
718	CENSUS	0.066	1.06E-04	1.49E-06	564,351	4,184,240	10
719	CENSUS	0.081	1.30E-04	1.78E-06	564,319	4,184,168	10
720	CENSUS	0.080	1.30E-04	1.80E-06	564,424	4,184,113	10
721	CENSUS	0.10	1.67E-04	2.26E-06	564,390	4,184,035	10
722	CENSUS	0.10	1.68E-04	2.24E-06	564,286	4,184,090	10
723	CENSUS	0.14	2.31E-04	2.97E-06	564,249	4,184,006	10
724	CENSUS	0.14	2.26E-04	2.92E-06	564,355	4,183,957	10
725	CENSUS	0.20	3.27E-04	3.95E-06	564,317	4,183,879	10
726	CENSUS	0.21	3.33E-04	4.20E-06	564,212	4,183,928	10
727	CENSUS	0.32	5.14E-04	6.17E-06	564,175	4,183,856	10
728	CENSUS	0.32	5.14E-04	5.79E-06	564,281	4,183,801	10
729	CENSUS	0.61	9.76E-04	1.03E-05	564,238	4,183,723	10
730	CENSUS	0.62	9.94E-04	1.07E-05	564,136	4,183,772	10
731	CENSUS	0.54	8.63E-04	9.73E-06	564,037	4,183,827	10
732	CENSUS	1.4	2.26E-03	2.18E-05	564,001	4,183,749	10
733	CENSUS	4.7	7.49E-03	5.21E-05	563,938	4,183,721	10
734	CENSUS	5.6	8.96E-03	6.02E-05	564,053	4,183,661	10
735	CENSUS	1.5	2.46E-03	2.19E-05	564,099	4,183,700	10
736	CENSUS	1.5	2.36E-03	2.04E-05	564,204	4,183,651	10
737	CENSUS	5.5	8.86E-03	5.87E-05	564,181	4,183,601	10
738	CENSUS	6.5	1.05E-02	6.50E-05	564,101	4,183,637	10
739	CENSUS	0.046	7.41E-05	1.06E-06	563,983	4,184,426	10
740	CENSUS	0.037	5.99E-05	9.46E-07	563,840	4,184,497	10
741	CENSUS	0.032	5.16E-05	8.17E-07	563,724	4,184,546	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
742	CENSUS	0.036	5.78E-05	8.88E-07	563,694	4,184,474	10
743	CENSUS	0.043	6.94E-05	1.08E-06	563,803	4,184,414	10
744	CENSUS	0.055	8.79E-05	1.26E-06	563,946	4,184,348	10
745	CENSUS	0.068	1.09E-04	1.52E-06	563,928	4,184,265	10
746	CENSUS	0.049	7.90E-05	1.19E-06	563,762	4,184,341	10
747	CENSUS	0.041	6.52E-05	9.76E-07	563,656	4,184,396	10
748	CENSUS	0.045	7.30E-05	1.02E-06	563,618	4,184,318	10
749	CENSUS	0.056	9.09E-05	1.32E-06	563,726	4,184,269	10
750	CENSUS	0.072	1.15E-04	1.67E-06	563,825	4,184,214	10
751	CENSUS	0.094	1.51E-04	2.02E-06	563,929	4,184,159	10
752	CENSUS	0.12	1.89E-04	2.47E-06	563,899	4,184,092	10
753	CENSUS	0.086	1.39E-04	1.94E-06	563,791	4,184,141	10
754	CENSUS	0.066	1.07E-04	1.45E-06	563,689	4,184,190	10
755	CENSUS	0.051	8.15E-05	1.06E-06	563,581	4,184,240	10
756	CENSUS	0.056	9.08E-05	1.18E-06	563,551	4,184,173	10
757	CENSUS	0.077	1.24E-04	1.55E-06	563,652	4,184,113	10
758	CENSUS	0.11	1.74E-04	2.26E-06	563,755	4,184,064	10
759	CENSUS	0.16	2.58E-04	3.29E-06	563,856	4,184,009	10
760	CENSUS	0.23	3.73E-04	4.61E-06	563,822	4,183,931	10
761	CENSUS	0.14	2.18E-04	2.69E-06	563,719	4,183,985	10
762	CENSUS	0.09	1.45E-04	1.89E-06	563,616	4,184,035	10
763	CENSUS	0.064	1.02E-04	1.47E-06	563,506	4,184,089	10
764	CENSUS	0.062	1.00E-04	1.77E-06	563,474	4,183,995	10
765	CENSUS	0.047	7.52E-05	1.30E-06	563,410	4,183,957	10
766	CENSUS	0.096	1.55E-04	2.45E-06	563,583	4,183,957	10
767	CENSUS	0.16	2.61E-04	3.65E-06	563,680	4,183,902	10
768	CENSUS	0.35	5.69E-04	6.82E-06	563,784	4,183,853	10
769	CENSUS	0.39	6.33E-04	9.15E-06	563,758	4,183,797	10
770	CENSUS	0.11	1.74E-04	3.00E-06	563,610	4,183,874	10
771	CENSUS	1.6	2.53E-03	3.98E-05	564,143	4,183,537	10
772	CENSUS	4.9	7.94E-03	9.83E-05	564,084	4,183,607	10
773	CENSUS	3.8	6.08E-03	7.36E-05	564,032	4,183,622	10
774	CENSUS	3.3	5.27E-03	6.63E-05	563,946	4,183,660	10
775	CENSUS	0.29	4.73E-04	1.06E-05	563,751	4,183,753	10
776	CENSUS	0.095	1.53E-04	3.47E-06	563,602	4,183,824	10
777	CENSUS	0.047	7.60E-05	1.64E-06	563,425	4,183,911	10
778	CENSUS	0.043	6.85E-05	1.76E-06	563,412	4,183,856	10
779	CENSUS	0.057	9.14E-05	2.30E-06	563,505	4,183,812	10
780	CENSUS	0.075	1.21E-04	3.76E-06	563,601	4,183,737	10
781	CENSUS	0.15	2.40E-04	8.00E-06	563,714	4,183,697	10
782	CENSUS	0.38	6.08E-04	1.64E-05	563,820	4,183,648	10
783	CENSUS	0.62	9.94E-04	2.12E-05	563,925	4,183,593	10
784	CENSUS	0.74	1.19E-03	2.31E-05	564,022	4,183,550	10
785	CENSUS	0.31	4.99E-04	1.13E-05	563,994	4,183,473	10
786	CENSUS	0.25	4.10E-04	1.06E-05	563,891	4,183,527	10
787	CENSUS	0.16	2.54E-04	8.12E-06	563,783	4,183,575	10
788	CENSUS	0.095	1.53E-04	5.66E-06	563,679	4,183,628	10
789	CENSUS	0.056	9.06E-05	3.55E-06	563,570	4,183,674	10
790	CENSUS	0.041	6.55E-05	2.27E-06	563,468	4,183,729	10
791	CENSUS	0.031	5.01E-05	1.52E-06	563,362	4,183,779	10
792	CENSUS	0.030	4.75E-05	1.73E-06	563,372	4,183,730	10
793	CENSUS	0.025	4.02E-05	1.61E-06	563,326	4,183,700	10
794	CENSUS	0.032	5.10E-05	2.28E-06	563,429	4,183,645	10
795	CENSUS	0.036	5.73E-05	2.28E-06	563,448	4,183,690	10
796	CENSUS	0.050	8.08E-05	3.36E-06	563,556	4,183,640	10
797	CENSUS	0.044	7.08E-05	3.09E-06	563,534	4,183,596	10
798	CENSUS	0.062	1.01E-04	4.02E-06	563,638	4,183,541	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
799	CENSUS	0.079	1.27E-04	5.03E-06	563,665	4,183,587	10
800	CENSUS	0.10	1.65E-04	5.89E-06	563,735	4,183,550	10
801	CENSUS	0.089	1.44E-04	4.85E-06	563,743	4,183,492	10
802	CENSUS	0.13	2.05E-04	5.89E-06	563,852	4,183,443	10
803	CENSUS	0.17	2.80E-04	7.82E-06	563,870	4,183,487	10
804	CENSUS	0.22	3.52E-04	8.27E-06	563,976	4,183,433	10
805	CENSUS	0.16	2.56E-04	6.31E-06	563,953	4,183,394	10
806	CENSUS	0.17	2.66E-04	5.68E-06	564,051	4,183,334	10
807	CENSUS	0.32	5.19E-04	1.02E-05	564,098	4,183,417	10
808	CENSUS	0.67	1.09E-03	1.94E-05	564,145	4,183,479	10
809	CENSUS	0.12	1.85E-04	4.25E-06	564,019	4,183,278	10
810	CENSUS	0.10	1.62E-04	4.20E-06	563,919	4,183,322	10
811	CENSUS	0.085	1.38E-04	4.05E-06	563,818	4,183,376	10
812	CENSUS	0.066	1.07E-04	3.60E-06	563,721	4,183,425	10
813	CENSUS	0.048	7.75E-05	3.07E-06	563,603	4,183,480	10
814	CENSUS	0.037	5.95E-05	2.52E-06	563,503	4,183,529	10
815	CENSUS	0.027	4.30E-05	2.00E-06	563,392	4,183,573	10
816	CENSUS	0.021	3.45E-05	1.66E-06	563,292	4,183,627	10
817	CENSUS	0.018	2.82E-05	1.34E-06	563,235	4,183,516	10
818	CENSUS	0.025	4.09E-05	1.68E-06	563,422	4,183,393	10
819	CENSUS	0.038	6.14E-05	2.41E-06	563,571	4,183,408	10
820	CENSUS	0.048	7.69E-05	2.58E-06	563,679	4,183,353	10
821	CENSUS	0.062	9.92E-05	3.00E-06	563,787	4,183,304	10
822	CENSUS	0.057	9.22E-05	2.50E-06	563,865	4,183,205	10
823	CENSUS	0.040	6.46E-05	2.05E-06	563,692	4,183,247	10
824	CENSUS	0.059	9.45E-05	2.34E-06	563,959	4,183,133	10
825	CENSUS	0.018	2.94E-05	1.14E-06	563,380	4,183,178	10
826	CENSUS	0.035	5.64E-05	1.64E-06	563,800	4,183,065	10
827	CENSUS	0.039	6.20E-05	1.60E-06	563,898	4,183,022	10
828	CENSUS	0.038	6.13E-05	6.61E-07	565,092	4,183,756	10
829	CENSUS	0.057	9.22E-05	1.07E-06	564,845	4,183,817	10
830	CENSUS	0.058	9.29E-05	9.70E-07	564,881	4,183,739	10
831	CENSUS	0.090	1.45E-04	1.45E-06	564,730	4,183,683	10
832	CENSUS	0.11	1.79E-04	1.74E-06	564,692	4,183,599	10
833	CENSUS	0.064	1.03E-04	1.22E-06	564,897	4,183,457	10
834	CENSUS	0.043	6.99E-05	7.45E-07	565,070	4,183,589	10
835	CENSUS	0.065	1.04E-04	9.37E-07	564,844	4,183,269	10
836	CENSUS	0.15	2.41E-04	2.19E-06	564,617	4,183,432	10
837	CENSUS	0.13	2.14E-04	2.21E-06	564,658	4,183,516	10
838	CENSUS	0.16	2.53E-04	2.03E-06	564,587	4,183,382	10
839	CENSUS	0.28	4.43E-04	3.34E-06	564,496	4,183,437	10
840	CENSUS	0.73	1.18E-03	8.40E-06	564,401	4,183,486	10
841	CENSUS	5.0	8.08E-03	5.19E-05	564,268	4,183,557	10
842	CENSUS	4.2	6.69E-03	6.51E-05	564,285	4,183,502	10
843	CENSUS	0.80	1.28E-03	1.18E-05	564,370	4,183,451	10
844	CENSUS	0.29	4.70E-04	4.40E-06	564,460	4,183,403	10
845	CENSUS	0.24	3.82E-04	4.44E-06	564,440	4,183,342	10
846	CENSUS	0.44	7.05E-04	8.92E-06	564,338	4,183,386	10
847	CENSUS	0.63	1.02E-03	1.56E-05	564,237	4,183,435	10
848	CENSUS	0.30	4.81E-04	8.13E-06	564,201	4,183,363	10
849	CENSUS	0.25	4.02E-04	5.92E-06	564,303	4,183,314	10
850	CENSUS	0.18	2.83E-04	3.73E-06	564,400	4,183,259	10
851	CENSUS	0.13	2.01E-04	2.61E-06	564,517	4,183,232	10
852	CENSUS	0.14	2.22E-04	2.41E-06	564,562	4,183,310	10
853	CENSUS	0.088	1.42E-04	1.48E-06	564,692	4,183,261	10
854	CENSUS	0.070	1.12E-04	1.56E-06	564,692	4,183,150	10
855	CENSUS	0.055	8.91E-05	1.34E-06	564,710	4,183,023	10

HARP Modeling Results - Child 9-Year Exposure

Receptor Number	Receptor Type	Cancer Risk # in a million	Chronic Hazard Index	Acute Hazard Index	UTM Easting	UTM Northing	UTM ZONE
856	CENSUS	0.096	1.54E-04	2.09E-06	564,459	4,183,115	10
857	CENSUS	0.13	2.15E-04	3.11E-06	564,375	4,183,192	10
858	CENSUS	0.16	2.54E-04	4.15E-06	564,267	4,183,235	10
859	CENSUS	0.18	2.86E-04	5.16E-06	564,166	4,183,290	10
860	CENSUS	0.12	1.93E-04	3.79E-06	564,137	4,183,218	10
861	CENSUS	0.091	1.47E-04	2.42E-06	564,324	4,183,095	10
862	CENSUS	0.11	1.84E-04	3.26E-06	564,238	4,183,169	10
863	CENSUS	0.10	1.60E-04	2.55E-06	564,334	4,183,117	10
864	CENSUS	0.079	1.27E-04	1.84E-06	564,438	4,183,048	10
865	CENSUS	0.063	1.01E-04	1.86E-06	564,273	4,182,986	10
866	CENSUS	0.054	8.63E-05	1.21E-06	564,670	4,182,972	10
867	CENSUS	0.074	1.19E-04	1.42E-06	564,694	4,183,877	10
868	CENSUS	0.087	1.41E-04	1.83E-06	564,591	4,183,926	10
869	CENSUS	0.094	1.52E-04	2.09E-06	564,498	4,183,986	10
870	CENSUS	0.13	2.09E-04	2.68E-06	564,455	4,183,903	10
871	CENSUS	0.11	1.77E-04	2.16E-06	564,561	4,183,854	10
872	CENSUS	0.09	1.46E-04	1.65E-06	564,663	4,183,804	10
873	CENSUS	0.12	1.88E-04	1.98E-06	564,624	4,183,726	10
874	CENSUS	0.15	2.40E-04	2.76E-06	564,524	4,183,775	10
875	CENSUS	0.18	2.86E-04	3.46E-06	564,425	4,183,830	10
876	CENSUS	0.29	4.61E-04	5.12E-06	564,382	4,183,747	10
877	CENSUS	0.21	3.31E-04	3.53E-06	564,491	4,183,703	10
878	CENSUS	0.15	2.46E-04	2.43E-06	564,589	4,183,649	10
879	CENSUS	0.21	3.30E-04	3.10E-06	564,553	4,183,570	10
880	CENSUS	0.33	5.35E-04	5.04E-06	564,450	4,183,620	10
881	CENSUS	0.52	8.44E-04	8.42E-06	564,345	4,183,669	10
882	CENSUS	1.4	2.20E-03	1.84E-05	564,312	4,183,591	10
883	CENSUS	0.59	9.45E-04	7.44E-06	564,416	4,183,542	10
884	CENSUS	0.26	4.12E-04	3.84E-06	564,521	4,183,493	10
885	CENSUS	0.036	5.75E-05	7.78E-07	564,930	4,184,100	10
886	CENSUS	0.043	6.84E-05	9.05E-07	564,856	4,184,050	10
887	CENSUS	0.046	7.43E-05	9.21E-07	564,867	4,183,961	10
888	CENSUS	0.052	8.44E-05	1.01E-06	564,832	4,183,911	10
889	CENSUS	0.048	7.78E-05	9.23E-07	564,907	4,183,858	10
890	CENSUS	0.044	7.09E-05	8.28E-07	564,963	4,183,851	10
891	CENSUS	0.039	6.34E-05	9.79E-07	564,657	4,184,326	10
892	CENSUS	0.059	9.57E-05	1.40E-06	564,572	4,184,142	10
893	CENSUS	0.055	8.86E-05	1.30E-06	564,676	4,184,087	10
894	CENSUS	0.050	8.08E-05	1.09E-06	564,773	4,184,033	10
895	CENSUS	0.059	9.45E-05	1.21E-06	564,739	4,183,966	10
896	CENSUS	0.067	1.09E-04	1.51E-06	564,637	4,184,010	10
897	CENSUS	0.075	1.21E-04	1.73E-06	564,532	4,184,059	10
898	CENSUS	0.035	5.62E-05	8.43E-07	564,864	4,184,217	10
899	CENSUS	0.034	5.49E-05	8.44E-07	564,786	4,184,321	10
900	CENSUS	0.045	7.30E-05	1.10E-06	564,718	4,184,171	10

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APPENDIX G

URBEMIS AIR QUALITY ASSESSMENT OUTPUT SHEETS

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\scott\Application Data\Urbemis\Version9a\Projects\325 7th wConstScheduleNOFilters.urb924

Project Name: 325 7th Street

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2011 TOTALS (lbs/day unmitigated)	3.39	31.81	37.46	0.04	4.25	1.48	5.73	0.89	1.36	2.25	4,837.65
2011 TOTALS (lbs/day mitigated)	3.39	27.12	37.46	0.04	2.35	0.95	2.59	0.49	0.87	1.09	4,837.65
2012 TOTALS (lbs/day unmitigated)	16.95	12.15	34.88	0.04	0.19	0.50	0.70	0.07	0.45	0.52	4,857.32
2012 TOTALS (lbs/day mitigated)	5.64	11.20	34.88	0.04	0.19	0.41	0.60	0.07	0.37	0.43	4,857.32
2013 TOTALS (lbs/day unmitigated)	16.80	11.00	32.31	0.04	0.19	0.45	0.65	0.07	0.41	0.48	4,859.00
2013 TOTALS (lbs/day mitigated)	7.32	10.12	32.31	0.04	0.19	0.37	0.56	0.07	0.33	0.40	4,859.00
2014 TOTALS (lbs/day unmitigated)	18.24	19.55	38.14	0.04	0.20	1.18	1.38	0.07	1.08	1.15	6,029.91
2014 TOTALS (lbs/day mitigated)	7.40	16.84	38.14	0.04	0.20	0.76	0.97	0.07	0.69	0.76	6,029.91

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AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	15.64	2.95	1.29	0.00	0.01	0.01	3,755.93
TOTALS (lbs/day, mitigated)	15.64	2.95	1.29	0.00	0.01	0.01	3,755.93
Percent Reduction	0.00	0.00	0.00	NaN	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	9.95	14.28	110.43	0.11	22.65	4.31	11,156.28
TOTALS (lbs/day, mitigated)	7.60	10.81	83.75	0.09	17.13	3.26	8,434.54
Percent Reduction	23.62	24.30	24.16	18.18	24.37	24.36	24.40

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	25.59	17.23	111.72	0.11	22.66	4.32	14,912.21
TOTALS (lbs/day, mitigated)	23.24	13.76	85.04	0.09	17.14	3.27	12,190.47
Percent Reduction	9.18	20.14	23.88	18.18	24.36	24.31	18.25

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

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For Residential Architectural Coating Measures, the Residential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.23	2.95	1.29	0.00	0.01	0.01	3,755.93
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping - No Winter Emissions							
Consumer Products	12.80						
Architectural Coatings	2.61						
TOTALS (lbs/day, unmitigated)	15.64	2.95	1.29	0.00	0.01	0.01	3,755.93

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with wood fireplaces changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 55% to 0%

The number of persons per household for consumer product use changed from 2.861 persons to 1.97 persons

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Condo/townhouse high rise	8.79	13.11	100.53	0.10	21.05	4.01	10,352.78
Regnl shop. center	1.04	0.99	8.53	0.01	1.32	0.25	663.96
General office building	0.12	0.18	1.37	0.00	0.28	0.05	139.54
TOTALS (lbs/day, unmitigated)	9.95	14.28	110.43	0.11	22.65	4.31	11,156.28

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Condo/townhouse high rise	6.56	9.78	74.99	0.08	15.71	2.99	7,722.96
Regnl shop. center	0.93	0.87	7.55	0.01	1.17	0.22	588.00
General office building	0.11	0.16	1.21	0.00	0.25	0.05	123.58
TOTALS (lbs/day, mitigated)	7.60	10.81	83.75	0.09	17.13	3.26	8,434.54

Operational Mitigation Options Selected

Residential Mitigation Measures

Residential Mix of Uses Mitigation

Percent Reduction in Trips is 3.85% (calculated as a % of 9.57 trips/day))

Note that the above percent is applied to a baseline of 9.57 and that product is

subtracted from the Unmitigated Trips

Inputs Selected:

The number of housing units within a 1/2 mile radius of the project, plus the

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Does not include double counting adjustment for internal trips

Analysis Year: 2015 Temperature (F): 40 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Condo/townhouse high rise	0.41	4.31	dwelling units	380.00	1,637.80	12,259.36
Regnl shop. center		42.94	1000 sq ft	6.80	291.99	769.58
General office building		11.01	1000 sq ft	2.32	25.54	165.67
					1,955.33	13,194.61

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.8	0.2	99.6	0.2
Light Truck < 3750 lbs	12.7	0.8	96.8	2.4
Light Truck 3751-5750 lbs	19.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	50.0	50.0	0.0
School Bus	0.1	0.0	0.0	100.0

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Regnl shop. center				2.0	1.0	97.0
General office building				35.0	17.5	47.5

Operational Changes to Defaults

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\scott\Application Data\Urbemis\Version9a\Projects\325 7th wConstScheduleNOFilters.urb924

Project Name: 325 7th Street

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2011 TOTALS (tons/year unmitigated)	0.23	2.02	1.69	0.00	0.26	0.09	0.36	0.06	0.09	0.14	300.28
2011 TOTALS (tons/year mitigated)	0.23	1.73	1.69	0.00	0.08	0.06	0.14	0.02	0.06	0.07	300.28
Percent Reduction	0.00	14.38	0.00	0.00	68.16	34.98	59.41	67.07	35.06	47.62	0.00
2012 TOTALS (tons/year unmitigated)	1.56	1.59	4.55	0.01	0.03	0.07	0.09	0.01	0.06	0.07	633.11
2012 TOTALS (tons/year mitigated)	0.57	1.46	4.55	0.01	0.03	0.05	0.08	0.01	0.05	0.06	633.11
Percent Reduction	63.30	7.85	0.00	0.00	0.00	19.02	13.76	0.00	19.39	16.86	0.00
2013 TOTALS (tons/year unmitigated)	2.19	1.43	4.22	0.01	0.03	0.06	0.08	0.01	0.05	0.06	634.10
2013 TOTALS (tons/year mitigated)	0.96	1.32	4.22	0.01	0.03	0.05	0.07	0.01	0.04	0.05	634.10
Percent Reduction	56.41	8.00	0.00	0.00	0.00	18.48	12.97	0.00	18.89	16.18	0.00
2014 TOTALS (tons/year unmitigated)	1.66	1.08	3.04	0.00	0.02	0.05	0.07	0.01	0.04	0.05	491.63

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2014 TOTALS (tons/year mitigated)	0.59	0.98	3.04	0.00	0.02	0.04	0.06	0.01	0.03	0.04	491.63
Percent Reduction	64.42	9.25	0.00	0.00	0.00	22.39	16.08	0.00	22.87	19.80	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	2.89	0.55	0.66	0.00	0.00	0.00	686.22
TOTALS (tons/year, mitigated)	2.89	0.55	0.66	0.00	0.00	0.00	686.22
Percent Reduction	0.00	0.00	0.00	NaN	NaN	NaN	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.98	2.04	19.35	0.02	4.13	0.79	2,249.95
TOTALS (tons/year, mitigated)	1.60	1.55	14.66	0.02	3.13	0.60	1,701.00
Percent Reduction	19.19	24.02	24.24	0.00	24.21	24.05	24.40

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	4.87	2.59	20.01	0.02	4.13	0.79	2,936.17
TOTALS (tons/year, mitigated)	4.49	2.10	15.32	0.02	3.13	0.60	2,387.22
Percent Reduction	7.80	18.92	23.44	0.00	24.21	24.05	18.70

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\bruce\Application Data\Urbemis\Version9a\Projects\325 7th wConstScheduleNOFilters.urb924

Project Name: 325 7th Street

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2011 TOTALS (tons/year unmitigated)	0.26	0.10	0.36	0.06	0.09	0.15
2011 TOTALS (tons/year mitigated)	0.08	0.06	0.15	0.02	0.06	0.08
Percent Reduction	68.16	35.35	59.26	67.07	35.43	47.56
2012 TOTALS (tons/year unmitigated)	0.03	0.07	0.10	0.01	0.07	0.07
2012 TOTALS (tons/year mitigated)	0.03	0.06	0.08	0.01	0.05	0.06
Percent Reduction	0.00	21.38	15.87	0.00	21.76	19.15
2013 TOTALS (tons/year unmitigated)	0.03	0.06	0.08	0.01	0.05	0.06
2013 TOTALS (tons/year mitigated)	0.03	0.05	0.07	0.01	0.04	0.05
Percent Reduction	0.00	18.48	12.97	0.00	18.89	16.18
2014 TOTALS (tons/year unmitigated)	0.02	0.05	0.07	0.01	0.04	0.05

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2014 TOTALS (tons/year mitigated)	0.02	0.04	0.06	0.01	0.03	0.04
Percent Reduction	0.00	22.39	16.08	0.00	22.87	19.80

AREA SOURCE EMISSION ESTIMATES

	PM10	PM2.5
TOTALS (tons/year, unmitigated)	0.00	0.00
TOTALS (tons/year, mitigated)	0.00	0.00
Percent Reduction	NaN	NaN

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	PM10	PM2.5
TOTALS (tons/year, unmitigated)	4.13	0.79
TOTALS (tons/year, mitigated)	3.13	0.60
Percent Reduction	24.21	24.05

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	PM10	PM2.5
TOTALS (tons/year, unmitigated)	4.13	0.79
TOTALS (tons/year, mitigated)	3.13	0.60
Percent Reduction	24.21	24.05

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5

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2011	0.26	0.10	0.36	0.06	0.09	0.15
Demolition 05/01/2011-05/30/2011	0.02	0.00	0.03	0.01	0.00	0.01
Fugitive Dust	0.02	0.00	0.02	0.00	0.00	0.00
Demo Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Demo Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 06/01/2011-10/01/2011	0.19	0.06	0.25	0.04	0.06	0.10
Mass Grading Dust	0.18	0.00	0.18	0.04	0.00	0.04
Mass Grading Off Road Diesel	0.00	0.05	0.05	0.00	0.05	0.05
Mass Grading On Road Diesel	0.00	0.01	0.02	0.00	0.01	0.01
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading 10/02/2011-11/01/2011	0.05	0.01	0.06	0.01	0.01	0.02
Fine Grading Dust	0.05	0.00	0.05	0.01	0.00	0.01
Fine Grading Off Road Diesel	0.00	0.01	0.01	0.00	0.01	0.01
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Building 11/02/2011-05/01/2012	0.00	0.02	0.02	0.00	0.01	0.02
Building Off Road Diesel	0.00	0.01	0.01	0.00	0.01	0.01
Building Vendor Trips	0.00	0.01	0.01	0.00	0.00	0.01
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

2012	0.03	0.07	0.10	0.01	0.07	0.07
Building 11/02/2011-05/01/2012	0.01	0.03	0.04	0.00	0.03	0.03
Building Off Road Diesel	0.00	0.02	0.02	0.00	0.01	0.01
Building Vendor Trips	0.00	0.01	0.01	0.00	0.01	0.01
Building Worker Trips	0.01	0.00	0.01	0.00	0.00	0.00
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Building 05/02/2012-10/02/2014	0.02	0.04	0.06	0.01	0.04	0.05
Building Off Road Diesel	0.00	0.02	0.02	0.00	0.02	0.02
Building Vendor Trips	0.00	0.02	0.02	0.00	0.02	0.02
Building Worker Trips	0.01	0.01	0.02	0.00	0.01	0.01
2013	0.03	0.06	0.08	0.01	0.05	0.06
Building 05/02/2012-10/02/2014	0.03	0.06	0.08	0.01	0.05	0.06
Building Off Road Diesel	0.00	0.02	0.02	0.00	0.02	0.02
Building Vendor Trips	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.02	0.01	0.03	0.01	0.01	0.01
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

2014	0.02	0.05	0.07	0.01	0.04	0.05
Building 05/02/2012-10/02/2014	0.02	0.04	0.06	0.01	0.04	0.04
Building Off Road Diesel	0.00	0.02	0.02	0.00	0.01	0.01
Building Vendor Trips	0.01	0.02	0.02	0.00	0.02	0.02
Building Worker Trips	0.01	0.01	0.02	0.00	0.01	0.01
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt 10/02/2014-11/02/2014	0.00	0.01	0.01	0.00	0.01	0.01
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.00	0.01	0.01	0.00	0.01	0.01
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Paving Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Demolition 5/1/2011 - 5/30/2011 - Type Your Description Here

Building Volume Total (cubic feet): 110660

Building Volume Daily (cubic feet): 5550

On Road Truck Travel (VMT): 77.08

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 1 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Fine Grading 10/2/2011 - 11/1/2011 - Default Fine Site Grading Description

Total Acres Disturbed: 0.83

10/5/2010 3:50:30 PM

Maximum Daily Acreage Disturbed: 0.21

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2011 - 10/1/2011 - Excavation

Total Acres Disturbed: 0.83

Maximum Daily Acreage Disturbed: 0.21

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 328.7

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 10/2/2014 - 11/2/2014 - Default Paving Description

Acres to be Paved: 0.21

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

10/5/2010 3:50:30 PM

Phase: Building Construction 5/2/2012 - 10/2/2014 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

Phase: Building Construction 11/2/2011 - 5/1/2012 - Type Your Description Here

Off-Road Equipment:

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 5/1/2012 - 10/2/2014 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5

2011	0.08	0.06	0.15	0.02	0.06	0.08
Demolition 05/01/2011-05/30/2011	0.02	0.00	0.03	0.01	0.00	0.01
Fugitive Dust	0.02	0.00	0.02	0.00	0.00	0.00
Demo Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Demo Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 06/01/2011-10/01/2011	0.04	0.04	0.09	0.01	0.04	0.05
Mass Grading Dust	0.04	0.00	0.04	0.01	0.00	0.01
Mass Grading Off Road Diesel	0.00	0.03	0.03	0.00	0.03	0.03
Mass Grading On Road Diesel	0.00	0.01	0.02	0.00	0.01	0.01
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading 10/02/2011-11/01/2011	0.01	0.01	0.02	0.00	0.01	0.01
Fine Grading Dust	0.01	0.00	0.01	0.00	0.00	0.00
Fine Grading Off Road Diesel	0.00	0.01	0.01	0.00	0.01	0.01
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Building 11/02/2011-05/01/2012	0.00	0.01	0.02	0.00	0.01	0.01
Building Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Building Vendor Trips	0.00	0.01	0.01	0.00	0.00	0.01
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

2012	0.03	0.06	0.08	0.01	0.05	0.06
Building 11/02/2011-05/01/2012	0.01	0.02	0.03	0.00	0.02	0.02
Building Off Road Diesel	0.00	0.01	0.01	0.00	0.01	0.01
Building Vendor Trips	0.00	0.01	0.01	0.00	0.01	0.01
Building Worker Trips	0.01	0.00	0.01	0.00	0.00	0.00
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Building 05/02/2012-10/02/2014	0.02	0.04	0.05	0.01	0.03	0.04
Building Off Road Diesel	0.00	0.01	0.01	0.00	0.01	0.01
Building Vendor Trips	0.00	0.02	0.02	0.00	0.02	0.02
Building Worker Trips	0.01	0.01	0.02	0.00	0.01	0.01
2013	0.03	0.05	0.07	0.01	0.04	0.05
Building 05/02/2012-10/02/2014	0.03	0.05	0.07	0.01	0.04	0.05
Building Off Road Diesel	0.00	0.01	0.01	0.00	0.01	0.01
Building Vendor Trips	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.02	0.01	0.03	0.01	0.01	0.01
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

2014	0.02	0.04	0.06	0.01	0.03	0.04
Building 05/02/2012-10/02/2014	0.02	0.03	0.05	0.01	0.03	0.04
Building Off Road Diesel	0.00	0.01	0.01	0.00	0.01	0.01
Building Vendor Trips	0.01	0.02	0.02	0.00	0.02	0.02
Building Worker Trips	0.01	0.01	0.02	0.00	0.01	0.01
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt 10/02/2014-11/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Paving Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Demolition 5/1/2011 - 5/30/2011 - Type Your Description Here

For Concrete/Industrial Saws, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Rubber Tired Dozers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Tractors/Loaders/Backhoes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

The following mitigation measures apply to Phase: Fine Grading 10/2/2011 - 11/1/2011 - Default Fine Site Grading Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Graders, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Rubber Tired Dozers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Tractors/Loaders/Backhoes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Water Trucks, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

The following mitigation measures apply to Phase: Mass Grading 6/1/2011 - 10/1/2011 - Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Graders, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Rubber Tired Dozers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Tractors/Loaders/Backhoes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Water Trucks, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

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The following mitigation measures apply to Phase: Paving 10/2/2014 - 11/2/2014 - Default Paving Description

For Cement and Mortar Mixers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Pavers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Rollers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Tractors/Loaders/Backhoes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

The following mitigation measures apply to Phase: Building Construction 5/2/2012 - 10/2/2014 - Default Building Construction Description

For Cranes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Forklifts, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

The following mitigation measures apply to Phase: Building Construction 11/2/2011 - 5/1/2012 - Type Your Description Here

For Forklifts, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Tractors/Loaders/Backhoes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

The following mitigation measures apply to Phase: Architectural Coating 5/1/2012 - 10/2/2014 - Default Architectural Coating Description

For Residential Architectural Coating Measures, the Residential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Residential Architectural Coating Measures, the Residential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\bruce\Application Data\Urbemis\Version9a\Projects\325 7th wCostSchedule.urb924

Project Name: 325 7th Street

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2011 TOTALS (tons/year unmitigated)	0.26	0.10	0.36	0.06	0.09	0.15
2011 TOTALS (tons/year mitigated)	0.08	0.03	0.11	0.02	0.02	0.04
Percent Reduction	68.16	72.07	69.22	67.07	72.23	70.25
2012 TOTALS (tons/year unmitigated)	0.03	0.07	0.10	0.01	0.07	0.07
2012 TOTALS (tons/year mitigated)	0.03	0.04	0.07	0.01	0.04	0.05
Percent Reduction	0.00	43.59	32.35	0.00	44.37	39.04
2013 TOTALS (tons/year unmitigated)	0.03	0.06	0.08	0.01	0.05	0.06
2013 TOTALS (tons/year mitigated)	0.03	0.04	0.06	0.01	0.03	0.04
Percent Reduction	0.00	37.68	26.45	0.00	38.51	32.99
2014 TOTALS (tons/year unmitigated)	0.02	0.05	0.07	0.01	0.04	0.05

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2014 TOTALS (tons/year mitigated)	0.02	0.03	0.05	0.01	0.02	0.03
Percent Reduction	0.00	45.66	32.78	0.00	46.62	40.38

AREA SOURCE EMISSION ESTIMATES

	PM10	PM2.5
TOTALS (tons/year, unmitigated)	0.00	0.00
TOTALS (tons/year, mitigated)	0.00	0.00
Percent Reduction	NaN	NaN

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	PM10	PM2.5
TOTALS (tons/year, unmitigated)	4.13	0.79
TOTALS (tons/year, mitigated)	3.13	0.60
Percent Reduction	24.21	24.05

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	PM10	PM2.5
TOTALS (tons/year, unmitigated)	4.13	0.79
TOTALS (tons/year, mitigated)	3.13	0.60
Percent Reduction	24.21	24.05

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5

2011	0.26	0.10	0.36	0.06	0.09	0.15
Demolition 05/01/2011-05/30/2011	0.02	0.00	0.03	0.01	0.00	0.01
Fugitive Dust	0.02	0.00	0.02	0.00	0.00	0.00
Demo Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Demo Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 06/01/2011-10/01/2011	0.19	0.06	0.25	0.04	0.06	0.10
Mass Grading Dust	0.18	0.00	0.18	0.04	0.00	0.04
Mass Grading Off Road Diesel	0.00	0.05	0.05	0.00	0.05	0.05
Mass Grading On Road Diesel	0.00	0.01	0.02	0.00	0.01	0.01
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading 10/02/2011-11/01/2011	0.05	0.01	0.06	0.01	0.01	0.02
Fine Grading Dust	0.05	0.00	0.05	0.01	0.00	0.01
Fine Grading Off Road Diesel	0.00	0.01	0.01	0.00	0.01	0.01
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Building 11/02/2011-05/01/2012	0.00	0.02	0.02	0.00	0.01	0.02
Building Off Road Diesel	0.00	0.01	0.01	0.00	0.01	0.01
Building Vendor Trips	0.00	0.01	0.01	0.00	0.00	0.01
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

2012	0.03	0.07	0.10	0.01	0.07	0.07
Building 11/02/2011-05/01/2012	0.01	0.03	0.04	0.00	0.03	0.03
Building Off Road Diesel	0.00	0.02	0.02	0.00	0.01	0.01
Building Vendor Trips	0.00	0.01	0.01	0.00	0.01	0.01
Building Worker Trips	0.01	0.00	0.01	0.00	0.00	0.00
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Building 05/02/2012-10/02/2014	0.02	0.04	0.06	0.01	0.04	0.05
Building Off Road Diesel	0.00	0.02	0.02	0.00	0.02	0.02
Building Vendor Trips	0.00	0.02	0.02	0.00	0.02	0.02
Building Worker Trips	0.01	0.01	0.02	0.00	0.01	0.01
2013	0.03	0.06	0.08	0.01	0.05	0.06
Building 05/02/2012-10/02/2014	0.03	0.06	0.08	0.01	0.05	0.06
Building Off Road Diesel	0.00	0.02	0.02	0.00	0.02	0.02
Building Vendor Trips	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.02	0.01	0.03	0.01	0.01	0.01
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

2014	0.02	0.05	0.07	0.01	0.04	0.05
Building 05/02/2012-10/02/2014	0.02	0.04	0.06	0.01	0.04	0.04
Building Off Road Diesel	0.00	0.02	0.02	0.00	0.01	0.01
Building Vendor Trips	0.01	0.02	0.02	0.00	0.02	0.02
Building Worker Trips	0.01	0.01	0.02	0.00	0.01	0.01
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt 10/02/2014-11/02/2014	0.00	0.01	0.01	0.00	0.01	0.01
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.00	0.01	0.01	0.00	0.01	0.01
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Paving Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Demolition 5/1/2011 - 5/30/2011 - Type Your Description Here

Building Volume Total (cubic feet): 110660

Building Volume Daily (cubic feet): 5550

On Road Truck Travel (VMT): 77.08

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 1 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Fine Grading 10/2/2011 - 11/1/2011 - Default Fine Site Grading Description

Total Acres Disturbed: 0.83

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Maximum Daily Acreage Disturbed: 0.21

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2011 - 10/1/2011 - Excavation

Total Acres Disturbed: 0.83

Maximum Daily Acreage Disturbed: 0.21

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 328.7

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 10/2/2014 - 11/2/2014 - Default Paving Description

Acres to be Paved: 0.21

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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Phase: Building Construction 5/2/2012 - 10/2/2014 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

Phase: Building Construction 11/2/2011 - 5/1/2012 - Type Your Description Here

Off-Road Equipment:

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 5/1/2012 - 10/2/2014 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5

2011	0.08	0.03	0.11	0.02	0.02	0.04
Demolition 05/01/2011-05/30/2011	0.02	0.00	0.03	0.01	0.00	0.01
Fugitive Dust	0.02	0.00	0.02	0.00	0.00	0.00
Demo Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Demo Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 06/01/2011-10/01/2011	0.04	0.02	0.06	0.01	0.02	0.03
Mass Grading Dust	0.04	0.00	0.04	0.01	0.00	0.01
Mass Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading On Road Diesel	0.00	0.01	0.02	0.00	0.01	0.01
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading 10/02/2011-11/01/2011	0.01	0.00	0.01	0.00	0.00	0.00
Fine Grading Dust	0.01	0.00	0.01	0.00	0.00	0.00
Fine Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Building 11/02/2011-05/01/2012	0.00	0.01	0.01	0.00	0.01	0.01
Building Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Building Vendor Trips	0.00	0.01	0.01	0.00	0.00	0.01
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

2012	0.03	0.04	0.07	0.01	0.04	0.05
Building 11/02/2011-05/01/2012	0.01	0.01	0.02	0.00	0.01	0.02
Building Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Building Vendor Trips	0.00	0.01	0.01	0.00	0.01	0.01
Building Worker Trips	0.01	0.00	0.01	0.00	0.00	0.00
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Building 05/02/2012-10/02/2014	0.02	0.03	0.04	0.01	0.02	0.03
Building Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Building Vendor Trips	0.00	0.02	0.02	0.00	0.02	0.02
Building Worker Trips	0.01	0.01	0.02	0.00	0.01	0.01
2013	0.03	0.04	0.06	0.01	0.03	0.04
Building 05/02/2012-10/02/2014	0.03	0.04	0.06	0.01	0.03	0.04
Building Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Building Vendor Trips	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.02	0.01	0.03	0.01	0.01	0.01
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

2014	0.02	0.03	0.05	0.01	0.02	0.03
Building 05/02/2012-10/02/2014	0.02	0.03	0.04	0.01	0.02	0.03
Building Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Building Vendor Trips	0.01	0.02	0.02	0.00	0.02	0.02
Building Worker Trips	0.01	0.01	0.02	0.00	0.01	0.01
Coating 05/01/2012-10/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt 10/02/2014-11/02/2014	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Paving Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Demolition 5/1/2011 - 5/30/2011 - Type Your Description Here

For Concrete/Industrial Saws, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Concrete/Industrial Saws, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Rubber Tired Dozers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

10/5/2010 3:45:50 PM

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Fine Grading 10/2/2011 - 11/1/2011 - Default Fine Site Grading Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Graders, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Graders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Rubber Tired Dozers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Water Trucks, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 6/1/2011 - 10/1/2011 - Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

10/5/2010 3:45:50 PM

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Graders, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Graders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Rubber Tired Dozers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Water Trucks, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Paving 10/2/2014 - 11/2/2014 - Default Paving Description

For Cement and Mortar Mixers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Cement and Mortar Mixers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Pavers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Pavers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Rollers, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Rollers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 5/2/2012 - 10/2/2014 - Default Building Construction Description

For Cranes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Cranes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Forklifts, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Forklifts, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 11/2/2011 - 5/1/2012 - Type Your Description Here

For Forklifts, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Forklifts, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Use Aqueous Diesel Fuel mitigation reduces emissions by:

NOX: 20% PM10: 45% PM25: 45%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Architectural Coating 5/1/2012 - 10/2/2014 - Default Architectural Coating Description

For Residential Architectural Coating Measures, the Residential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

10/5/2010 3:45:50 PM

For Residential Architectural Coating Measures, the Residential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

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APPENDIX H

CONSTRUCTION PERIOD HEALTH RISK ASSESSMENT

Construction-Period Health Risk Assessment
Calculations for Diesel Particulate Matter (DPM) Cancer Risk,
Chronic Hazard and PM 2.5 Exposure

CANCER RISK:

1. URBEMIS Output

Specifics of construction phases were entered into URBEMIS for a 380–unit residential building in Oakland with a construction period running from 5/1/2011 to 11/02/2014. Default assumptions regarding construction equipment were used, with the following exceptions:

- During grading operations, only one dozer was assumed due to the relatively small site (less than 1 acre)
- During construction phase no backhoe was assumed, as all foundation work will have been completed.
- Mitigation consistent with City of Oakland Standard Conditions of Approval (i.e., 45% reduction in diesel exhaust [PM10 and PM2.5])

Total emissions (all years) was added together and divided by the total construction period in years (0.06+ 0.06+ 0.05+ 0.04 = 0.21 / 3.5 years = 0.06 average yearly short tons as the average yearly emissions rate.

2. Screen3

The average yearly emissions rate was converted to micro-grams/second/square meter (using a conversion factor of 1 short ton per year = 0.0287475637 g/s) then dividing by the project area (35,500 sq feet = 3,298 m^2). This emission rate, calculated at 5.22991E-07 g/s/m^2 was entered into Screen3 with these other parameters:

- Source type: area
- Urban dispersion coefficient
- Source release height: 3 meters
- Search through range of wind conditions: yes
- Simple terrain – flat
- Automated distances
- Full meteorology

This resulted in a 1-hour concentration of 3.771 ug/m^3

3. Scaling to Annual

GLC = (X1-hour) (Scalar)

Where GLC is the annual average ground level concentration.

The maximum 1-hour concentration from the Screen3 output was then multiplied by the BAAQMD recommended Scalar of 0.1 for the following:

GLC = (3.771 ug/m3) (0.1)

Ground Level Concentration = 0.3771 ug/m3

4. Calculate Risk

This GLC was used as the concentration in air ("C air") for calculation of inhalation dose as follows:

Inhalation Dose = (C air*DBR*A*EF*ED*1x10^{-6})/AT

DBR = daily breathing rate = 581 (for a child)

A = inhalation absorption rate = 1

EF = Exposure frequency = 250 days/yr (assuming 5 days a week for 50 weeks for the entire year)

ED = Exposure duration = 3.5 years (full construction period)

AT = Averaging time = 25,550 (for a 70 year cancer risk)

Inhalation Dose = (0.3771) (581) (1) (250) (3.5) (10^-6) / 25550

Inhalation Dose = 7.50326 E-06

And from there calculated the Inhalation Cancer Risk:

Inhalation Cancer Potency factor (for DPM) = 1.1

Inhalation Cancer Risk per million = (Inhalation Dose)*Inhalation Cancer Potency factor*10^6

Inhalation Cancer Risk per million = (7.50326 E-06)*1.1*10^6

Inhalation Cancer Risk per million (adult) = 8.25 - compared to Threshold of 10.0

5. Applying the Age Sensitivity Factor

Inhalation Cancer Risk * ASF = risk adjusted for age sensitivity

Approach 1:

8.25 * 10 (ASF for infant) = 82.5

Inhalation Cancer Risk per million (infant) = 82.5 compared to Threshold of 10

Approach 2:

8.25 x (2.25 yrs as infant/70 year exposure x 10 [ASF]) + (14 yrs as child/70 year exposure x 3 [ASF]) + 54 years adult/70 year exposure x 1 [ASF] = 8.2535 x 1.6928 = 13.97

Inhalation Cancer Risk per million (infant) = 13.97 compared to Threshold of 10

FOR CHRONIC NON-HAZARD:

Hazard Quotient = C air/REL

Hazard Quotient = 0.3771/ 5.0

Hazard Quotient = 0.075 compared to Threshold of 1

FOR PM2.5

The total PM2.5 emissions from URBEMIS (all years added together) were summed then divided by the total construction period in years. In this case, it was 0.0514 short tons per year.

2. Screen3

This was converted to grams/second/square meter (using a conversion factor of 1 short ton per year = 0.0287475637 g/s) then dividing by the project area (35,500 sq feet = 3298 m2), resulting in an emission rate of 4.4828 E-07 g/s/m^2

This emission rate was entered into Screen3 with the same parameters as above, resulting in a maximum 1-hour output of 3.233 ug/s/m^2, at a distance of 64 meters.

The maximum 1-hour concentration from the Screen3 output was converted to annual average as follows:

GLC = (3.233 ug/m3) (0.1)

GLC = 0.3233 ug/m^3, compared to the threshold of 0.3 ug/m^3

CANCER RISK, MITIGATED:

1. URBEMIS Output

The same specifics of construction phases as the Project were entered into URBEMIS, with the following exception:

- The highest tier of diesel particulate matter filters were added to all construction equipment, (i.e., achieving an 85% reduction in diesel exhaust [PM10 and PM2.5])

Total emissions (all years) was added together and divided by the total construction period in years (0.03+ 0.04+ 0.04+ 0.03 = 0.14 / 3.5 years = 0.04 average yearly short tons as the average yearly emissions rate.

2. Screen3

The average yearly emissions rate was converted to micro-grams/second/square meter (using a conversion factor of 1 short ton per year = 0.0287475637 g/s) then dividing by the project area (35,500 sq feet = 3,298 m^2). This emission rate, calculated at 3.4866E-07 g/s/m^2 was entered into Screen3 with the same parameters as the project.

This resulted in a 1-hour concentration of 2.514 ug/m^3

3. Scaling to Annual

GLC = (X1-hour) (Scalar)

Where GLC is the annual average ground level concentration.

The maximum 1-hour concentration from the Screen3 output was then multiplied by the BAAQMD recommended Scalar of 0.1 for the following:

GLC = (2.514 ug/m3) (0.1)

Ground Level Concentration = 0.2514 ug/m3

4. Calculate Risk

This GLC was used as the concentration in air ("C air") for calculation of inhalation dose as follows:

Inhalation Dose = (C air*DBR*A*EF*ED*1x10^{-6})/AT

DBR = daily breathing rate = 581 (for a child)

A = inhalation absorption rate = 1

EF = Exposure frequency = 250 days/yr (assuming 5 days a week for 50 weeks for the entire year)

ED = Exposure duration = 3.5 years (full construction period)

AT = Averaging time = 25,550 (for a 70 year cancer risk)

Inhalation Dose = (0.2514) (581) (1) (250) (3.5) (10^-6) / 25550

Inhalation Dose = 5.00217E-06

And from there calculated the Inhalation Cancer Risk:

Inhalation Cancer Potency factor (for DPM) = 1.1

Inhalation Cancer Risk per million = (Inhalation Dose)*Inhalation Cancer Potency factor*10^6

Inhalation Cancer Risk per million = (5.00217E-06)*1.1*10^6

Inhalation Cancer Risk per million (adult) = 5.502 compared to Threshold of 10.0

5. Applying the Age Sensitivity Factor

Inhalation Cancer Risk * ASF = risk adjusted for age sensitivity

Approach 1:

5.502 * 10 (ASF for infant) = 55.02

Inhalation Cancer Risk per million (infant) = 55.02 compared to Threshold of 10

Approach 2:

5.502 * (2.25 yrs as infant/70 year exposure x 10 [ASF]) + (14 yrs child/70 year exposure x 3 [ASF]) + 54 years adult/70 year exposure x 1 [ASF] = 5.502 x 1.6928 = 9.314

Inhalation Cancer Risk per million (infant) = 9.314 compared to Threshold of 10

PM2.5 EXPOSURE, MITIGATED

The total PM2.5 emissions from URBEMIS as mitigated with tier 1 diesel filters (85% reduction) were summed then divided by the total construction period in years. In this case, it was 0.0314 short tons per year.

2. Screen3

This was converted to grams/second/square meter (using a conversion factor of 1 short ton per year = 0.0287475637 g/s) then dividing by the project area (35,500 sq feet = 3298 m2), resulting in an emission rate of 2.739E-07 g/s/m^2

This emission rate was entered into Screen3 with the same parameters as above, resulting in a maximum 1-hour output of 1.976 ug/s/m^2, at a distance of 64 meters.

The maximum 1-hour concentration from the Screen3 output was converted to annual average as follows:

GLC = (1.976 ug/m3) (0.1)

GLC = 0.197 ug/m^3, compared to the threshold of 0.3 ug/m^3

APPENDIX I

BAAQMD GREENHOUSE GAS MODEL (BGM) OUTPUT

Summary Results

Project Name: 325 7th Street
Project and Baseline Years: 2015 N/A

Results	Unmitigated Project-Baseline CO2e (metric tons/year)	Mitigated Project-Baseline CO2e (metric tons/year)
Transportation:	1,951.27	1,475.20
Area Source:	0.69	0.69
Electricity:	556.36	556.36
Natural Gas:	458.86	458.86
Water & Wastewater:	45.60	45.60
Solid Waste:	322.78	322.78
Agriculture:	0.00	0.00
Off-Road Equipment:	0.00	0.00
Refrigerants:	0.00	0.00
Sequestration:	N/A	0.00
Purchase of Offsets:	N/A	0.00
Total:	3,335.56	2,859.49

Baseline is currently: **OFF**
Baseline Project Name:
Go to Settings Tab to Turn On Baseline

Detailed Results

Unmitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				1,951.27	58.50%
Area Source:	0.69	0.00	0.00	0.69	0.02%
Electricity:	555.47	0.00	0.00	556.36	16.68%
Natural Gas:	457.69	0.04	0.00	458.86	13.76%
Water & Wastewater:	45.53	0.00	0.00	45.60	1.37%
Solid Waste:	2.34	15.26	N/A	322.78	9.68%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				3,335.56	100.00%

* Several adjustments were made to transportation emissions after they have been imported from URBEMIS.
After importing from URBEMIS, CO2 emissions are converted to metric tons and then adjusted to account for the "Pavley"
regulation. Then, CO2 is converted to CO2e by multiplying by 100/95 to account for the contribution of other GHGs (CH4, N2O, and HFCs [from leaking a
Finally, CO2e is adjusted to account for th low carbon fuels rule.

Mitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				1,475.20	51.59%
Area Source:	0.69	0.00	0.00	0.69	0.02%
Electricity:	555.47	0.00	0.00	556.36	19.46%
Natural Gas:	457.69	0.04	0.00	458.86	16.05%
Water & Wastewater:	45.53	0.00	0.00	45.60	1.59%
Solid Waste:	2.34	15.26	N/A	322.78	11.29%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	0.00	0.00%
Purchase of Offsets:	N/A	N/A	N/A	0.00	0.00%
Total:				2,859.49	100.00%

Baseline	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				0.00	N/A
Area Source:	0.00	0.00	0.00	0.00	N/A
Electricity:	0.00	0.00	0.00	0.00	N/A
Natural Gas:	0.00	0.00	0.00	0.00	N/A
Water & Wastewater:	0.00	0.00	0.00	0.00	N/A
Solid Waste:	0.00	0.00	N/A	0.00	N/A
Agriculture:	0.00	0.00	0.00	0.00	N/A
Off-Road Equipment:	0.00	0.00	0.00	0.00	N/A
Refrigerants:	N/A	N/A	N/A	0.00	N/A
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				0.00	0.00%

ıir conditioners]).

Mitigation Measures Selected:

Transportation: Go to the following tab: Transp. Detail Mit for a list of the transportation mitigation measures selected (in UR

Electricity: The following mitigation measure(s) have been selected to reduce electricity emissions.

Natural Gas: The following mitigation measure(s) have been selected to reduce natural gas emissions.

Water and Wastewater: The following mitigation measure(s) have been selected to reduce water and wastewater emissions.

Solid Waste: The following mitigation measure has been selected to reduce solid waste related GHG emissions.

Ag: No existing mitigation measures available.

Off-Road Equipment: No existing mitigation measures available.

Refrigerants: The following mitigation measure has ben selected to reduce refrigerant emissions:

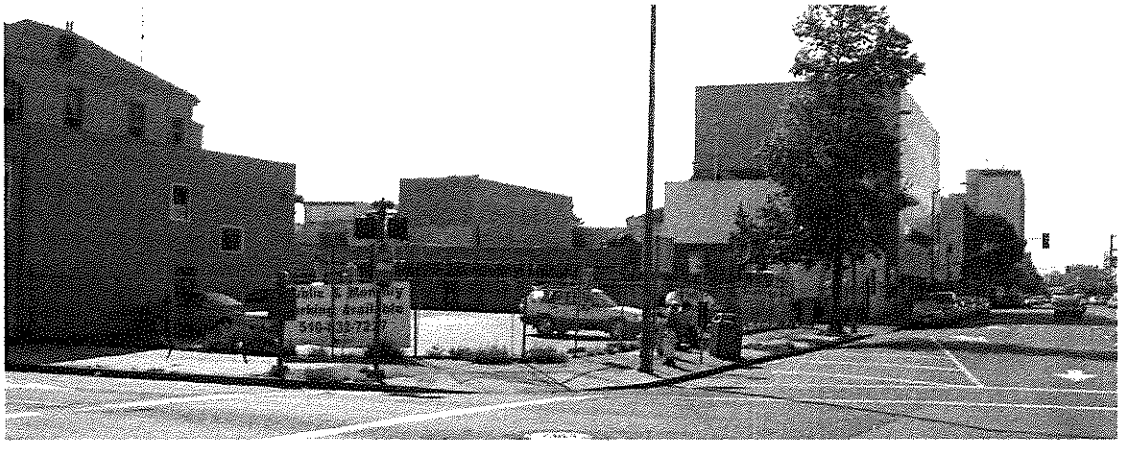
Carbon Sequestration: Project does not include carbon sequestration through tree planting.

Emission Offsets/Credits: Project does not include purchase of emission offsets/credits.

APPENDIX J

PHASE I ENVIRONMENTAL SITE ASSESSMENT AND PHASE II SUBSURFACE INVESTIGATION, SCHUTZE & ASSOCIATES, INC., MAY 23, 2006

PHASE I ENVIRONMENTAL SITE ASSESSMENT
and
PHASE II SUBSURFACE INVESTIGATION
325 Seventh Street, Oakland, California



Prepared for:

325 – 7th Street, LLC.
325 Seventh Street
Oakland, California 94607

Prepared by:

SCHUTZE & Associates, Inc.
436-14th Street, Suite 1216
Oakland, CA 94612

Project No. SCS180
May 23, 2006

SCHUTZE
& ASSOCIATES

436 14th Street, Suite 1216 • Oakland, CA 94612 • Tel (510) 625-8175 • Fax (510) 625-8176 • js@schutze-inc.com

May 23, 2006
Project No. SCS180

Mr. Reed Westphal
325 7th Street, LLC.
505 Sansome, Suite 1010
San Francisco, CA 94111
(415) 398-4322, Ext. 23

Reference: **Executive Summary**
Phase I Environmental Site Assessment (ESA), and
Phase II Subsurface Investigation

Subject: **Commercial Building Complex**
325 Seventh Street and 316 to 332 Sixth Street
Oakland, California

Dear Mr. Westphal,

SCHUTZE & Associates, Inc. has completed a Phase I ESA, in conformance with the scope and limitations of ASTM Practice E 1527-05 and the AAI Final Rule, of the following Oakland, California property:

Address			APN	Approx. Parcel Sizes
325 Seventh St.	Formerly: 301 Seventh St. and 625 Harrison St.	Oakland, Alameda County, CA	189-63-6	1,875 sq ft
325 Seventh St.	Formerly: 303 Seventh St. and 631 Harrison St.		189-63-7	1,875 sq ft
325 Seventh St.	Formerly: 305-7 Seventh St. and 635 Harrison St.		189-63-8	3,375 sq ft
325 Seventh St.			189-63-5	5,625 sq ft
316, 320 and 324 Sixth St.			189-63-13	7,500 sq ft
330 and 332 Sixth St.			189-63-14	7,500 sq ft

Simultaneously with the Phase I ESA, Schutze & Associates, Inc. completed a Phase II Subsurface Investigation consisting of four Geoprobe borings.

The site consisted of six adjoining, rectangular parcels with a combined area of approximately 0.55 acres. The northern three parcels were at the corner of Seventh and Harrison Streets and were occupied by a parking area, Building I (approx. 2,750 square feet (sq ft)), and Building II (approx. 3,280 sq ft). The southern three parcels were located along Sixth Street, between Harrison and Webster Streets. These parceled were occupied by a common parking area, Building III (approx. 11,950 sq ft), and Building IV (unknown sq ft). The on-site buildings were one- and two-story structures.

The property is located on the southern edge of Oakland's Chinatown, in an area with commercial office and retail buildings, interspersed with occasional residences. To the south

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Appendix A: Environmental Data Resources (EDR), Regulatory Database Search Report No. 1635227.10s, March 16, 2006.

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PHASE I ENVIRONMENTAL SITE ASSESSMENT, and PHASE II SUBSURFACE INVESTIGATION
Commercial Building Complex
325 Seventh Street and 316 to 332 Sixth Street
Oakland, California

A. INTRODUCTION

This report presents the results of a Phase I Environmental Site Assessment (Phase I ESA) and Phase II Subsurface Investigation of a developed parcel located in Oakland, Alameda County, California. The site consisted of six adjoining, rectangular parcels with a combined area of approximately 0.55 acres. The northern three parcels were at the corner of Seventh and Harrison Streets and were occupied by a parking area, Building I (approx. 2,750 square feet (sq ft)), and Building II (approx. 3,280 sq ft). The southern three parcels were located along Sixth Street, between Harrison and Webster Streets. These parceled were occupied by a common parking area, Building III (approx. 11,950 sq ft), and Building IV (unknown sq ft). The on-site buildings were one- and two-story structures. Adjacent to the property were residential and commercial developments.

The property is shown on the Location Map and Site Plan (Figures 1 and 2) attached to this report. Work was conducted in conformance with the American Society for Testing Materials (ASTM) Standard Practice for Phase I ESAs (E1527-05) and the All Appropriate Inquiry (AAI) Final Rule (2005). The subject site is:

Table 1
Property Information

Address			APN	Approx. Parcel Sizes
325 Seventh St.	Formerly: 301 Seventh St. and 625 Harrison St.	Oakland, Alameda County, California	189-63-6	1,875 sq ft
325 Seventh St.	Formerly: 303 Seventh St. and 631 Harrison St.		189-63-7	1,875 sq ft
325 Seventh St.	Formerly: 305 Seventh St. and 635 Harrison St.		189-63-8	3,375 sq ft
325 Seventh St.			189-63-5	5,625 sq ft
316, 320 and 324 Sixth St.			189-63-13	7,500 sq ft
330 and 332 Sixth St.			189-63-14	7,500 sq ft

A.1. Purpose

The purpose of this Phase I ESA was to review past and present land use practices and site operations to evaluate the potential presence of "recognized environmental conditions" at the subject properties. The purpose of the Phase II Subsurface Investigation was to investigate if former on-site and offsite activities have environmentally impacted the soil or groundwater beneath the subject site.

A.2. Phase I: Scope of Services

The Phase I scope of services included the following:

- A site reconnaissance;
- A drive-by survey of the subject property vicinity;
- Review of records available at local and regional public agencies through agency visits, telephone contact, and agency environmental database search;
- Historical research including aerial photo, city directory and map review; and
- A review of a nation-wide radon survey.

These tasks were performed to evaluate past and current land use for indications of the manufacture, generation, use, storage, and/or disposal of hazardous materials at the subject properties. This Phase I ESA includes a preliminary evaluation of the potential for soil and/or groundwater impacts resulting from past and present subject property land use activities and nearby offsite operations, based upon the scope of services described. The ESA was conducted in general conformance with ASTM Designation E1527-05 and the AAI Final Rule. The collection radon samples or performance of analytical laboratory testing of suspect asbestos-containing building materials (ACMs) was not included.

A.3. Phase II: Scope of Services

The Phase II Subsurface Investigation included the following:

- Selection of four boring locations;
- A utility survey;
- Drilling to groundwater and collection of soil and water samples; and
- Laboratory analyses for hydrocarbons and solvents.

These tasks were performed to evaluate if past and current land use on and adjacent to the subject site have impacted the subsurface conditions beneath the site.

A.4. Credentials

This report has been prepared by Mr. Jan Schutze, Registered Geologist (R.G.). The information contained in this report has received appropriate technical review and approval. The conclusions represent professional judgments and are founded upon the findings of the investigations identified in the report and the interpretation of such data based on our experience and expertise, according to the existing standard of care for work of this kind.

A Phase I ESA and Phase II Subsurface Investigation are limited in their scopes and adverse conditions may exist that could not be discovered by such investigations. SCHUTZE & Associates, Inc. has made every reasonable effort to discover and interpret the information and current conditions regarding the site.

This ESA includes the review of agency lists and reports prepared by others. SCHUTZE & Associates, Inc. believes that the information contained herein is reliable, but cannot guarantee the accuracy of information provided by others.

B. SITE LOCATION

The northern portion of the site was at the corner of Seventh and Harrison Streets, and the southern portion along Sixth Street between Harrison and Webster Streets. The subject site can be reached by taking the Oakland/Broadway exit off Interstate 880 (I-880) which is also referred to as the Nimitz or East Shore Freeway. At the base of the off ramp, turn north onto Broadway for one block and east on Seventh Street for two blocks. A Location Map and Site Plan are included as Figures 1 and 2; selected photographs of the site and vicinity are also attached.

The property is located on the southern edge of Oakland's Chinatown, in an area with commercial office and retail buildings, interspersed with occasional residences. To the south was the elevated I-880 structure, to the west and north were commercial and residential buildings along Webster and Seventh Streets. To the east was Harrison Park with a community building constructed in traditional Chinese architectural style.

B.1. Topographic Map Review

The property is depicted on the Oakland West 7.5 minute, topographic quadrangle sheet produced by the U.S. Geologic Survey (USGS).[1] The site is shown as urban, developed land adjacent to the north of I-880. The site is shown within the city limits of Oakland.

The Oakland Inner Harbor Channel and facilities of the Port of Oakland were approximately 2,000 ft south of the subject site. Lake Merritt was approximately 2,200 ft northeast of the site. The water level of the lake is controlled by floodgates beneath the 14th Street bridge. A creek connects the lake with the Oakland Inner Harbor Channel.

The subject site has an elevation of approximately 10 ft above msl. The gradient at the subject site is gently downward to the south-southwest, towards the Oakland Inner Harbor Channel. The surface gradient is approximately 10 vertical feet per 1,000 horizontal ft.

A review of the topographic maps and a reconnaissance of the surrounding area indicate that no oil wells are located within a 1/2-mile radius of the site.

C. GEOLOGY, HYDROLOGY, SOILS AND CLIMATE

C.1. Geology

The subject site is located within the Coast Ranges geomorphic province, which is characterized by a series of parallel, northwesterly trending, folded and faulted mountain chains and valleys. The Peninsular and East Bay Ranges are separated by a depression containing the San Francisco Bay. The Peninsular Range on the southwest

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[1] USGS 1959 photorevised 1980, Oakland West, 7.5 Minute Quad Sheet, Scale 1:24,000

side of the Bay is formed mainly by Franciscan Formation rock series, consisting of Jurassic Franciscan mélanges and serpentinites. The East Bay Ranges (or Oakland Hills) form the northeastern boundary of the Bay and consist of Late Mesozoic shelf and slope sedimentary rocks.

The subject site is located in the East Bay Plain, a relatively flat area which, prior to urban development consisted of tidal flats, estuaries and alluvial plains. The area of the subject site if underlain by Quaternary-age beach and dune sands (Map Unit Qs) with an estimated thickness of at least 40 ft. Below these sands is Bay Mud, consisting of silty sands and clays.[2]

C.2. Soils

Soils beneath the subject site are mapped as loamy sands of the Baywood Group. These types of soils generally have high water infiltration rates, which means that storm water in the area will readily infiltrate into areas with exposed soil.

C.3. Surface Waters

The Oakland Inner Harbor Channel and facilities of the Port of Oakland are approximately 2,000 ft south of the subject site. Lake Merritt is approximately 2,200 ft northeast of the site. The water level of the lake is controlled by floodgates beneath the 14th Street bridge. A creek connects the lake with the Oakland Inner Harbor Channel.

C.4. Groundwater

Based on observations during the Phase II Subsurface Investigation, the groundwater level beneath the subject site appeared to be between 15 and 22 feet below ground surface (ft bgs). It is likely that the groundwater gradient follows the surface gradient to the south-southwest.

C.5. Seismicity

Based on a review of a USGS database[3], the subject site is located approximately three miles southwest of the Hayward Fault, and 15 miles northeast of the San Andreas Fault. The faults have been active in recent times. Accordingly, the subject site is located in an area with a high potential for strong ground shaking, with possible structural damage to buildings.

SCHUTZE & Associates, Inc. has reviewed a Susceptibility Map of the San Francisco Bay Area.[4] The subject site is located in an area with a high potential for liquefaction during earthquakes. The subject site is not mapped as being in an Alquist-Priolo Earthquake Fault Zone.[5]

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2 Geology of California, 1990, R. M. Norris and R. W. Webb.
3 USGS Fault and Fold Database for the United States, Oakland Sheets, 2006.
4 USGS, Witter et al. 2005, Susceptibility Map of the San Francisco Bay Area
5 California Department of Conservation, 2000, Digital Images of Alquist-Priolo Earthquake Fault Zones of Alameda, California.

D. HISTORICAL REVIEW

As part of the historical review, SCHUTZE & Associates, Inc. reviewed available historical aerial photographs, topographic maps, a Title Report, Sanborn fire insurance maps and City Directories.

D.1. Review of Historical Aerial Photographs

Historical aerial photographs were provided by Environmental Data Resources, Inc. (EDR) for the years 1939, 1946, 1958, 1965, 1982 and 1993.[6] Observations noted during the historical aerial photograph review are discussed below:

1939 Aerial Photograph: – The subject site and surrounding blocks were part of the urban developments of Oakland, with residential and commercial buildings. Many of the wharfs along the Oakland Inner Harbor Channel, approximately 2,000 ft to the south of the subject site, were still undeveloped. Only one of the tunnels to the island of Alameda existed as an extension of Harrison Street. I-880 did not exist. Harrison Park existed on the block adjacent to the east of the subject site. On the subject site were residences along Harrison Street and commercial shops at the corner of Harrison and Seventh Streets. The area of today's Erik's Auto Tech shop (332 and 330 Sixth Street) appeared to be a vacant lot. Residential structures appeared to be located along Sixths Street on the eastern portion of the subject site (316 and 324 Sixth Street).

1949 Aerial Photograph: – The port operations south of the subject site, on the Oakland and Alameda sides had been greatly expanded. Developments on and around the subject site appeared similar to those in 1939.

1958 Aerial Photograph: – I-880 directly adjacent to the south of the subject site, was under construction. The second tunnel to Alameda still had not been built. Developments on the subject site appeared similar to those observed in previous years. There appeared to be gasoline service stations adjacent to the north (up-gradient) at both, the northwest and northeast corners of the intersection of Harrison and Seventh Streets.

1965 Aerial Photograph: – Construction of I-880 had been completed, and the second tunnel to Alameda had been built as an extension of Webster Street. Harrison Park, adjacent to the east of the subject site still existed with one gazebo-type structure in the center. Operations at the subject site appeared as before. Retail shops were on the subject site directly at the corner of Seventh and Harrison Streets (301 to 307 Seventh Street). A shop building at 325 Seventh Street was larger than in previous years. A commercial building had been constructed at the previously vacant lot at 330/332 Sixth Street.

1982 and 1993 Aerial Photographs: – The retail shops at 301, 303 and 305 Seventh Street, and the residences at 625 and 631 Harrison Street had been demolished and

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[6] The EDR Aerial Photo Decade Package, Inquiry No.: 1656740.5, April 18, 2006

were replaced by a parking lot. Otherwise the facilities on the subject site and adjacent properties remained as before.

D.2. Historical Topographic Maps

Historical topographic maps were provided by EDR. Maps dated 1915, 1948, 1949, 1959, 1973 and 1980 were reviewed.[7]

1915 Topographic Map:[8] – The subject site and vicinity were shown as part of the downtown, urban developments of Oakland. Approximately 2,000 ft to the south was the San Antonio Creek, which had been widened and deepened to accommodate the Oakland Harbor. Railroad tracks of the Western Pacific and Southern Pacific Railroad Companies ran approximately 500 feet south of the subject site. The railroad lines continued to the west to the San Francisco ferry terminals and to the south to the Port of Oakland and, across a bridge, to the island of Alameda. A tunnel to Alameda did not yet exist.

1948 Topographic Map:[9] – Urban development of Oakland had expanded, and large areas of the Port of Oakland had been filled with dredged materials. The Oakland Bay Bridge and the tunnel to Alameda had been built (Posey Tube). The main street from the southeast into Oakland was Highway 17, which corresponded with today's Seventh Street, adjacent to the north of the subject site.

1949 and 1959 Topographic Maps:[10] – The six-lane I-880 was constructed adjacent to the south of the subject site, between Fifth and Sixth Steen. Seventh Street was no longer referred to as Highway 17. Approximately 2,000 ft west of the subject site, the former Central Trade School was converted to Oakland Laney College.

1973 and 1980 Topographic Maps:[11] – The second tunnel to Alameda was constructed as an extension of Webster Street which reduced traffic on Harrison Street, adjacent to the east of the subject site. The area of the subject site appeared as it does today.

D.3. Title Report

SCHUTZE & Associates, Inc. reviewed the following title documents provided by the client:

Western Title Insurance Company, 1964, Copy of Title Insurance: The property consisted of Parcels 12, 13 and 14 which approximately corresponds with today's 325 Seventh Street property without the parking lot. The site was owned by Mr. E. A. Westphal and leased by Bay Alarm Co.

Grant Deeds from Balco Properties LTD. to 325 – 7th Street, LLC: The deeds were for lots 12, 13, 14, 15, 16, 17, 18, 23, 24, 25, 26, 27 and 28. Lots 12 to 14 combined to

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7 EDR Historical Topographic Map Report, Inquiry No.: 1656740.4, April 18, 2006
8 USGS, 15' Quadrangle Maps, San Francisco, 1:62,500, 1915
9 USGS, 15' Quadrangle Map, San Francisco, 1:24,000, 1948.
10 USGS, 7.5' Quad Maps, Oakland West, 1949 and 1959.
11 USGS, 7.5' Quad Maps, Oakland West, 1973 and 1980.

APN 189-63-5. Lots 15 to 18 combined to APN 189-63-6, -7 and –8. Lots 23 to 25 combined to APN 189-63-13. Lots 26 to 28 combined to APN 189-63-14. Based on the title documents, the current owner of the property is 325-7th Street, LLC.

D.4. Sanborn Fire Insurance Maps

Fire insurance maps were primarily used by insurance underwriters to determine the risk involved in insuring individual buildings in urban areas against loss due to fire. Historical fire insurance maps were for the years 1889, 1903, 1911, 1950, 1952, 1953, 1957, 1959, 1960, 1964, 1965, 1967 and 1969 were reviewed.[12]

Sanborn Maps of 1889, 1903 and 1911: The subject site was depicted in a residential area in the southern part of the downtown Oakland area. A total of ten, single-family residential homes were on the area of today's subject site. In 1911, the building in the back portion of 325 Seventh Street was the "Stage and Scenery" portion of the Germania Hall and Gymnasium on Webster Street. This structure later became the first office of the Bay Alarm Co. Adjacent to the north of the subject site, in the center of Seventh Street, ran the tracks of the Southern Railroad Company. Harrison Square existed as a park on the block adjacent to the east of the site. Gasoline service stations were not observed on or in the vicinity of the subject site.

Sanborn Map of 1950 to 1960: The number of commercial facilities in the area was increasing. The railroad tracks on Seventh Street no longer existed. The residence at 625 Harrison Street no longer existed and the lot was vacant. The residence at the corner, at 635 Harrison Street, had been replaced by four retail stores with the addresses 301 to 307 Seventh Street. At 325 Seventh Street was a used auto storage yard with two structures belonging to W. G. Schultz. At 314, 316, 320 and 324 Sixth Street were single-family residences. 330 Sixth Street was a vacant lot and was described as a junkyard.

Sanborn Maps of 1964 to 1969: In the 1960s, an office building was constructed at 625 Harrison Street. A furniture store operated at 301 to 307 Seventh Street. The alarm service at 325 Seventh Street expanded their operations on the parcel. W. Ho developed the lots from 316 to 332 with a coin-machine repair shop, and warehouses for paper and plastic specialties. Gasoline service stations were observed across the streets to the north and northeast of the subject site.

D.5. Historical City Directories

SCHUTZE & Associates, Inc. reviewed business directories including city, cross-reference and telephone directories for the addresses of the subject site and nearby properties. The time span for which records were reviewed spanned approximately from 1920 through 2002. The main sources were the directories of the R. L. Polk & Company, and the California Pacific Bell Directories.[13] The following companies were listed at the subject site:

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[12] Sanborn Map Report by EDR, Report No.: 1656740.3s, April 18, 2006.
[13] City Directories Research by EDR, Report No.: 1656740, April 18, 2006.

Table 2
City Director Listings

Address	Year	Listed Company
325 Seventh Street	1943	Roger Frank Auto Repair
	1945	Wilson Auto Repair
	1950	Wilson Welding
	1955	Wilson's Garage
	1967	Alarm Equipment Co., Bay Alarm Co. Bay Burglar Alarm Co.
	1995	Bay Business Computers

D.6. Oil and Gas Fields, Mining Operations

A review of the current topographic map indicates that the subject site is not located within a known oil or gas field and that mining operations did not exist on the subject site. No indications of oil wells or former mining operations were observed during the reconnaissance of adjacent properties.

D.7. Interviews

SCHUTZE & Associates, Inc. interviewed Mr. R. Westphal, a representative of 325-7th Street, LLC, the current owner. The Westphal family has owned the property since the early 1960s. Mr. Westphal stated that two underground storage tanks (USTs) were removed in 1998 and that case closure had been granted by the responsible agencies. Apparently, no asbestos survey for the subject site had been performed or was available. No leaks or spills of hazardous substances had been reported to the current owner.

Mr. Westphal was not aware of environmental liens against the property. Also, the sales price of the property had not been reduced as an adjustment for an environmental problem at the site.

D.8. Previous Environmental Investigations

SCHUTZE & Associates, Inc. reviewed the following previously prepared environmental report:

- Report of UST Removal Activities, February 8, 1999, Foss Environmental & Infrastructure.
- Fire Department Certificate for UST removal in 2004.

The report summarizes the environmental investigations associated with the UST removal. Foss Environmental removed a 3,000- and a 10,000-gallon UST in October 1998. Soil contamination was discovered at both tanks. The affected soil was excavated and disposed of in accordance with applicable regulations. Groundwater was not tested. According to the report, a new 10,000-gallon UST was installed after the UST removal and environmental cleanup. This new UST was removed in 2004. No environmental reports were available regarding the 2004 UST removal.

E. SITE RECONNAISSANCE

SCHUTZE & Associates, Inc. conducted a site reconnaissance on April 13, 2006. Mr. Jan Schutze walked over the entire property, and through all tenant spaces.

The purpose of the site reconnaissance was to observe existing subject property conditions and to evaluate evidence for recognized environmental conditions, including hazardous materials and/or wastes. Observations noted during the site reconnaissance are summarized below.

E.1. General Site Condition

As of this site-visit date the property was developed with four structures which were referred to as 325 Seventh Street, Buildings I, II, III and IV. Buildings I and II are located on the corner of Seventh and Harrison Streets. The entrances of these two buildings face towards a fenced, asphalt-paved parking lot. Buildings III and IV are warehouse structures with pull-up doors and parking areas along Sixth Street.

Building I: This building represented the property which was actually located at the 325 Seventh Street address. The building had an approximate floor space of 2,700 sq ft. The structure was built on a concrete slab, with exterior concrete block walls. The only interior portions were for restrooms and consisted of wood framing. The single story structure had a flat, composite roof over wood trusses. At the time of the site visit the building was occupied by T & K Importers and U & P Wholesale, distributors of clothing items. Roofing and piping insulation consisted of fiberglass materials. There is a potential that portions of the roof cover and minor interior drywall materials could consist of asbestos-containing materials (ACMs). These materials should be tested prior to potential demolition or renovation activities. No other issues of environmental concern were observed.

Building II: This building represented the property which historically had the address of 625 Harrison Street. This two-story structure had an approximate floor space of 3,280 sq ft. The building formerly contained office spaces for Bay Alarm Co. and is currently vacant. Suspect ACMs were interior wall and floor coverings and exterior roofing materials. A pre-demolition ACM survey is recommended.

Asphalt-Paved Parking Lot: This area represented the property which historically had the address of 335 Harrison Street. The asphalt-paved parking lot was accessed from Seventh Street. The site was fenced and approximately 25 parking spaces were available. Parking was open to the public; parking tickets were available from an on-site, automatic dispenser. No evidence of leaks or spills was observed. An asphalt patch marked the area were a 10,000 gal UST was removed in 2004.

Building III: The address for this building was historically 316 to 324 Sixth Street. At the time of the site visit, this building served as an additional warehouse space for the tenants of Building I. Clothing items were loaded and unloaded from trucks parked adjacent to the pull-up doors of the building along Sixth Street. Issues of environmental concern were not observed.

Building IV: The address for this building was historically 330 and 332 Sixth Street. The structure was built on a concrete slab, with exterior concrete block walls. The only interior partitions were for restrooms and offices and consisted of wood framing. A loft area served as a parts storage area. The single story structure had a flat, composite roof over wood trusses. The building had an approximate floor space of 11,900 sq ft. At the time of the site visit the western half of the building was occupied by Erik Auto Tech, an automotive repair shop. The eastern half of the structure was vacant. In the back of the auto repair shop was an above ground hoist. A concrete patch indicated the location of a former in-ground hoist. There is a potential that the former in-ground equipment has leaked and potentially caused soil and/or groundwater contamination. Based on the low mobility and toxicity of hydraulic oil, it is the opinion of SCHUTZE & Associates, Inc. that the potential of a significant environmental impact at this location is low. At the front of the auto repair shop were 55-gallon drums for the storage of used and new oil and lubricants. It appeared that occasional parts washing was performed in this area. No significant oil staining was observed in this storage area, however, there is a potential that parts washing solvent has been spilled at this location.

E.2. Insecticides and Pesticides

Based on the historical review for this site, it is unlikely that significant amounts of herbicides and pesticides were applied to the plants and soil on the subject site.

E.3. Pits, Ponds and Lagoons

Pits, ponds and lagoons are often associated with the disposal of solid and liquid wastes, which may include hazardous materials. Pits, ponds or lagoons were not observed on the subject property.

E.4. Septic Tanks and Cesspools

Septic tanks and cesspools are often associated with the disposal of wastewater from structures that are not served by public sewer systems. Septic tanks and cesspools may be associated with hazardous materials, if such materials have been inappropriately disposed of in the past via sinks.

No visual evidence was found during the site reconnaissance for potential, former leach fields or septic tanks.

E.5. Wells, Cisterns and Sumps

Based on observations made by SCHUTZE & Associates, Inc. during the site reconnaissance, there was no drinking water well on the subject site. It is unknown if wells formerly existed on the site associated with the former on-site residences.

E.6. Polychlorinated Biphenyls (PCBs)

Transformers were not observed on the subject site. There is a potential that old fluorescent lamp fixtures have PCB-containing ballasts.

E.7. On-Site Fuel Storage Tanks

No evidence of the presence of on-site fuel storage tanks, such as above-ground vents or piping, was observed during the site reconnaissance. A patched area in the parking lot at the corner of Seventh and Harrison Streets indicates the presence of former, on-site USTs. Based on a previous report by Foss Environmental, Inc., a 3,000- and a 10,000-gallon UST were removed in October 1998. Soil contamination was discovered at both tanks. The affected soil was excavated and disposed of in accordance with applicable regulations. Groundwater was not tested. According to the report, a new 10,000-gallon UST was installed after the UST removal and environmental cleanup. Based on a Permit issued by the Oakland Fire Department, this new UST was removed in 2004. No environmental reports were available regarding the 2004 UST removal.

E.8. Utilities

Natural gas and electricity are provided to the site by Pacific Gas & Electric (PG&E). Water and sewer services are provided to the site by the City of Oakland.

Sanitary sewer discharge from the subject site is to sewer main lines located beneath Sixth, Seventh and Harrison Streets.

E.9. Radon Gas Survey

Radon is a radioactive gas that occurs naturally in the environment and cannot be seen, smelled or tasted. The human health effect associated with exposure to elevated levels of radon is an increased risk of developing lung cancer. The EPA and US Center for Disease Control are concerned about the increased risk of lung cancer developing in individuals exposed to above average levels of radon in their homes or offices. In order to address these concerns, the EPA conducted a radon survey and presented the results for various counties in 1993.[14]

EPA's map of Radon Zones assigns each of the 3,141 counties in the United States to one of three zones. The zone designations were determined by assessing five factors that are known to be important indicators of radon potential: indoor radon measurements, geology, aerial radioactivity surveys, soil parameters and foundation types. Based on the results of the surveys of the EPA, the subject property falls within the designation of Zone 2. Zone 2 counties have a predicted average indoor radon screening level between two and four picocuries per liter (pCi/l) of air. Based on the results of the survey, the subject site appears to fall within a radon screening level below the recommended EPA Action Level of four pCi/l. It is the opinion of SCHUTZE & Associates, Inc., that it is unlikely that radon is a concern for the subject property.

E.10. Limited, Visual Asbestos Survey

SCHUTZE & Associates, Inc. observed that the exterior walls of the buildings consisted of concrete blocks and that the roofing and plumbing insulation was made from fiberglass materials. It is unlikely that these materials contain asbestos.

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[14] EPA Map of Radon Zones, 1993.

Suspect ACMs observed were drywall/mud, furnace insulation, vinyl flooring and flue materials. SCHUTZE & Associates, Inc. recommends asbestos surveys of the buildings prior to potential future renovations and demolition.

E.11. Adjacent and Nearby Land Use

The property is located in an area with residential, retail and commercial developments.

Adjacent to the north of the subject site, across Seventh Street, are Café de Bordeaux and New Tin's Market. No issues of environmental concern were observed. Adjacent to the northeast, across the intersection of Harrison and Seventh Streets, is a vacant lot currently used as a parking lot. These were formerly the locations of gasoline service stations. Because these facilities were adjacent to and up-gradient of the subject site, there is a moderate potential that leaks or spills, which might have occurred at these former operations, could have environmentally impacted the subject site.

Adjacent to the east, across Harrison Street, is Harrison Park with a community building constructed in traditional Chinese architectural style.

Adjacent to the south is the raised I-880 structure which occupies the entire area of the block between Fifth and Sixth Streets. The area beneath the roadway structure is utilized for automobile parking.

Adjacent to the west are residential and commercial retail structures.

Based on observations during a visual survey of the site's vicinity, there is a low to moderate potential that adjacent/nearby properties have environmentally impacted the subject site.

E.12. Wetlands and Flood Plains

During the site reconnaissance and drive-by survey of adjacent areas, SCHUTZE & Associates, Inc. did not observe wetlands on or adjacent to the subject site.

The Oakland Inner Harbor Channel and facilities of the Port of Oakland are approximately 2,000 ft south of the subject site. The Oakland Inner Harbor Channel was historically called San Antonio Creek. Lake Merritt is approximately 2,200 ft northeast of the site. The water level of the lake is controlled by floodgates beneath the 14th Street bridge. A creek connects the lake with the Oakland Inner Harbor Channel.

SCHUTZE & Associates, Inc. reviewed FEMA Flood Insurance Maps for the subject site and vicinity.[15] The subject site occurs in an area marked as Zone X. According to the legend on the map, this is an "Area Outside the 500 Year Floodplain".

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[15] January 7, 1998, FEMA Flood Insurance Map, Community Panel Map No. 0650480015B.

F. AGENCY CONTACTS AND FILE REVIEWS

F.1. GOVERNMENTAL RECORDS REVIEW (EDR Report)

Regulatory compliance is a primary element of a Phase I ESA. The presence of hazardous wastes or hazardous materials, on-site or at nearby sites, may present certain liabilities. Environmental Data Resources, Inc. (EDR) provided a map-based report identifying sites with real or potential environmental issues.[16] At SCHUTZE & Associates, Inc.' request, the regulatory agency environmental databases, maintained by EDR, were searched within a one-mile radius from the subject site or as defined by ASTM E 1527-2005 and by the AAI Final Rule (November 1, 2005). The environmental databases list sites that have registered with the appropriate regulatory agencies. The databases typically include sites that have recorded environmental violations and have handled or disposed of hazardous materials, chemicals and wastes. A detailed list of the individual databases search is provided with the EDR report in Appendix A. Table 3 is a summary of listed nearby sites of specific concern.

F.2. Subject Property

The subject site was listed in the agency files as the following facility:

- Bay Alarm Co., 325 7th Street, listed on the HAZNET list for the generation of oil containing waste (no violation on record), and on the HistUST list for the removal of one 3,000 and one 10,000 gallon UST. No leaks or spills have been recorded.

Based on the review of agency lists, the subject site is not on record as having caused soil or groundwater contamination.

F.3. Offsite Properties

Twelve leaking underground storage tank (LUST) sites were listed within a ¼ mile search radius of the subject site. One state landfill was listed within a ½ mile search radius of the site. The closest listed LUST site was Gin's Arco Service listed at 706 Harrison Street. The same facility is also listed as Oakland Auto Parts. This site is directly northeast of the subject site, on the northeast corner of the intersection of Harrison and Seventh Streets. Kin's Shell gasoline service station is listed at 726 Harrison Street, approximately 250 feet northeast of the subject site. These gasoline service stations are directly up-gradient from the subject site and there is a potential that contaminated groundwater has migrated beneath the subject site. The Phase II section of this report further addresses these issues.

The list search did not find records for the former gasoline service station adjacent to the north of the subject site (at today's Tin's Market).

The characteristics of the listed sites within the vicinity of the subject site were summarized in Table 3. Additional listing details are described in the EDR Report, which is attached to this report as Appendix A.

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[16] EDR Report Id: 1656740.2s, April 18, 2006.

F.4. EDR Database Summary

Table 3
EDR Database Summary

Sites	Federal Records						State and Local Records (incl. Tribal Records)										Threat to Site	Comments
	NPL	CORRACTS	CERCLIS	RCRA-TSD	RCRA-LQG	RCRA-SQG	Cortese	LUST	UST/Hist. UST/AST	State Landfills	Alameda Cont. Sites	CAL SITES	Drycleaners	HAZNET	Notify 65	FINDS / CA FID		
Subject Site									x					x			**Moderate**	Bay Alarm Co. is listed for two former USTs. No leaks or violations are on record.
Gin's Arco, Oakland Auto Parts, 706 Harrison St.							x	x	X			x				x	**Moderate**	Gasoline service station approx. 200 ft northeast of site. Six USTs were removed. Leak first reported 1991. Groundwater affected. Up-gradient from subject site. Case active.
Kin's Shell, 726 Harrison St.							x	x	x			x				x	**Moderate**	Gasoline service station approx. 250 ft north of site. Seven USTs were removed. Leak first reported 1988. Groundwater affected. Up-gradient from subject site. Remediation in progress.
Dicks and Vics Arco, 245 8th St.									x								**Moderate**	Gasoline service station approx. 250 ft northeast of site. Five USTs apparently active. No leak reported. Up-gradient from subject site.
Unocal, 800 Harrison St.							x	x	x			x		x			**Moderate**	Gasoline service station approx. 400 ft northeast of site. Three USTs are active. Leak first reported 1991. Soil and groundwater affected. Up-gradient from subject site. Env. assessment in progress.

F.5. Orphan Sites

SCHUTZE & Associates, Inc. reviewed a list of facilities with uncertain addresses (orphan sites). Twenty-eight orphan sites were found. Based on a review of the addresses of these orphan sites, they were apparently not in the direct vicinity of the subject site.

G. LIMITED PHASE II SUBSURFACE INVESTIGATION

G.1. Background and Purpose

The objective of this Phase II Subsurface Investigation was to address the following environmental concerns:

- Investigate if the up-gradient gasoline service stations have caused groundwater contamination beneath the subject site.
- Investigate if the former on-site auto repair shops and USTs have caused soil and/or groundwater contamination, and
- Investigate if the former scrap yard and/or current auto repair shop at 332 Sixth Street have caused groundwater contamination beneath the site.

G.2. Scope of Services

SCHUTZE & Associates, Inc. advanced four borings to depths of up to 27 ft bgs. Direct push (Geoprobe) drilling techniques were used. The detailed tasks of this project were as follows:

- Submitted a Workplan and obtained a drilling permit from the Alameda County Environmental Health Department.
- Marked the proposed probe boring locations. Subsequently, the regional utility locating center cleared the proposed boring locations for utilities.
- Prepared and implemented a site-specific Health and Safety Plan.
- On April 13, 2006, drilled four borings as follows (Figure 2):
    - Boring #1 was advanced to a depth of 24 ft bgs. The boring location was adjacent to the south of the auto repair shop at 332 Sixth Street.
    - Boring #2 was advanced to a depth of 24 ft bgs. The boring location was adjacent to the south of 316 Sixth Street.
    - Boring #3 was advanced to a depth of 27 ft bgs. The boring location was on the northeastern corner of the property, adjacent from the intersection of Harrison and Seventh Streets.
    - Boring #4 was advanced to a depth of 24 ft bgs. The boring location was on the 325 Seventh Street property, adjacent to the former on-site USTs.
- Collected one groundwater sample at the groundwater table between 15 and 27 ft bgs.
- Collected soil samples at five-foot intervals.
- Stored soil and groundwater samples in a cooled container and transported them following Chain-of-Custody procedures.
- Submitted five groundwater samples (plus one quality-control trip blank) to a California-certified laboratory to be analyzed for:
    - Total Petroleum Hydrocarbon, quantified against gasoline, diesel and motor oil (TPH-g, d, mo) using EPA Method 8015M.
    - Halogenated Volatile Organic Compounds (HVOCs) including solvents such as methyl tert-butyl ether (MTBE), benzene, toluene, ethylbenzene,

and xylenes (BTEX), tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride (VC) using EPA Method 8260.

- Submitted 16 soil samples to the laboratory. The samples were placed on hold subject to the laboratory results for the groundwater samples and field observations. No visual evidence of contamination was observed in the soil column. Therefore, soil analyses were not performed.
- Provided all of the necessary equipment and materials to perform the required services. These included Geoprobe drilling equipment, concrete coring equipment, and asphalt cold patch or concrete.
- Backfilled borings with concrete slurry and re-paved the drilled areas with a concrete finish.

G.3. Drilling and Sample Collection

Drilling was performed by ECA Environmental Drilling, Inc., using a Geoprobe drill rig with two-inch diameter probes. The groundwater samples were collected with a stainless steel bailer and placed in 40-milliliter (mL) volatile organics analysis (VOA) vials and one-liter amber bottles. The sample containers were placed in a cooler, kept on ice, and then transported and delivered to McCampbell Analytical, Inc. in Concord, California.

Soil samples were recovered from clear acetate, continuous coring sleeves. Samples were collected at depths of 5, 10, 15 and 20 ft bgs and placed into a cooler.

Soil samples were field-screened at the time of collection using a portable flame-ionizing detector (FID). Based on the FID results, hazardous vapors were not detected during the field-testing.

The borings were back-filled with concrete slurry.

G.4. Quality Control and Chain-of-Custody

Based on the observations of SCHUTZE & Associates, Inc., the drilling and sampling equipment was appropriately decontaminated between borings. The sample containers were provided in new, sterilized condition by the analytical laboratory. The field procedures were appropriate to minimize external sample contamination. The samples were delivered to McCampbell Analytical in accordance with Chain-of-Custody procedures. McCampbell Analytical provided "Level II" Quality Control Data Reporting, which consists of Laboratory Control Sample (LCS) and surrogate recoveries.

G.5. Groundwater Analytical Results

The groundwater samples were tested for TPH-g, d, mo using EPA Method 8015M, and VOCs including MTBE, BTEX, PCE, TCE and VC using EPA Method 8260.

Table 4
Laboratory Results for Groundwater Samples
VOCs and TPH-(g, d, mo), Concentrations in µg/L
325-Seventh Street, Oakland, CA

	Results				Action Levels		
	Boring B1	Boring B2	Boring B3	*Boring B4*	*Final Groundwater Screening Level*	*Groundwater Screening Level for Vapor Intrusion*	*Drinking Water MCL*
TPH-g	ND	ND	ND	ND	100	NA	NA
TPH-d	ND	ND	**220**	**1,600**	**100**	NA	NA
TPH-mo	ND	ND	**380**	**2,400**	**100**	NA	NA
MTBE	ND	ND	ND	ND	5.0	24,000	13.0
BTEX	ND	ND	ND	ND	1.0/40/30/20	540/380,000/170,000/160,000	1.0/150/700/1,800
PCE	ND	ND	ND	ND	5.0	120	5.0
TCE	ND	ND	ND	ND	5.0	530	5.0
1,1DCE	**91**	ND	ND	ND	**6.0**	6,300	**6.0**
1,1,1TCA	**100**	ND	ND	ND	**62.0**	130,000	200
VC	ND	ND	ND	ND	0.5	3.8	0.5
Depth to water/ depth of boring	16.5/24 ft bgs	21.5/24 ft bgs	15/27 ft bgs	16.7/24 ft bgs			

Final Groundwater Screening Level, RWQCB Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater (Interim Final - February 2005), Table F-1a
Groundwater Screening Level for Vapor Intrusion, RWQCB Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater (Interim Final - February 2005), Table E-1a
Drinking Water MCL, California Department of Health Services, Maximum Contamination Levels for Drinking Water
ND = Not detected by laboratory procedure. NA = Not available. µg/L = micrograms per liter
MTBE = Methyl tert butyl ether. BTEX = Benzene, toluene, ethylbenzene and xylenes. TPH = Total petroleum hydrocarbons
PCE = Tetrachloroethene. TCE = Trichloroethene. 1,1-DCE = 1,1-Dichloroethene. 1,1,1-TCA = Trichloroethane. VC = Vinyl Chloride

Gasoline and automotive-type VOCs such as BTEX, MTBE, PCE, TCE and VC were not detected in any of the borings. No contamination was detected in Boring B3.

Diesel and motor oil were detected directly adjacent to the intersection of Harrison and Seventh Streets (Boring B3), at concentrations of up to 220 and 380 µg/L, respectively. Diesel and motor oil were also detected adjacent to the former on-site USTs (Boring B4) at concentrations of up to 1,600 and 2,400 µg/L, respectively. The RWQCB uses action levels (Groundwater Screening Levels (GSLs)) of 100 µg/L for TPH-d and TPH-mo.

It appears that contaminated groundwater from the off-site LUSTs has migrated to the subject site. The elevated TPH-d and -mo concentrations near the former on-site UST location indicate that the historical USTs on the subject site have impacted the groundwater beneath the subject site and commingled with the contamination originating from off-site sources. Based on the laboratory results for Borings B1 and B2, the diesel and motor oil contamination does not extend down-gradient, beyond the property boundary of the subject site or onto Sixth Street (Boring B2).

1,1 – DCE and 1,1,1 – TCA were detected at low concentrations in the groundwater samples in Boring B1 at concentrations of up to 91 and 100 µg/L, respectively. The concentrations exceed the GSLs for these compounds which are 6.0 and 62.0 µg/L,

respectively. The likely sources of this contamination are the former junkyard and/or the current Erik Auto Tech shop at 332 Sixth Street.

H. CONCLUSIONS

SCHUTZE & Associates, Inc. has completed a Phase I ESA, in conformance with the scope and limitations of ASTM Practice E 1527-05 and the AAI Final Rule, of the following Oakland, California property:

Address			APN	Approx. Parcel Sizes
325 Seventh St.	Formerly: 301 Seventh St. and 625 Harrison St.	Oakland, Alameda County, CA	189-63-6	1,875 sq ft
325 Seventh St.	Formerly: 303 Seventh St. and 631 Harrison St.		189-63-7	1,875 sq ft
325 Seventh St.	Formerly: 305-7 Seventh St. and 635 Harrison St.		189-63-8	3,375 sq ft
325 Seventh St.			189-63-5	5,625 sq ft
316, 320 and 324 Sixth St.			189-63-13	7,500 sq ft
330 and 332 Sixth St.			189-63-14	7,500 sq ft

Simultaneously with the Phase I ESA, Schutze & Associates, Inc. completed a Phase II Subsurface Investigation consisting of four Geoprobe borings.

The site consisted of six adjoining, rectangular parcels with a combined area of approximately 0.55 acres. The northern three parcels were at the corner of Seventh and Harrison Streets and were occupied by a parking area, Building I (approx. 2,750 square feet (sq ft)), and Building II (approx. 3,280 sq ft). The southern three parcels were located along Sixth Street, between Harrison and Webster Streets. These parceled were occupied by a common parking area, Building III (approx. 11,950 sq ft), and Building IV (unknown sq ft). The on-site buildings were one- and two-story structures.

The property is located on the southern edge of Oakland's Chinatown, in an area with commercial office and retail buildings, interspersed with occasional residences. To the south was the elevated I-880 structure; to the west and north were commercial and residential buildings along Webster and Seventh Streets. To the east was Harrison Park with a community building constructed in traditional Chinese architectural style.

The subject site had an approximate elevation off 10 feet above mean sea level (msl). The surface gradient was gentle to the west, towards the Oakland Inner Harbor Channel.

As part of the assessment, SCHUTZE & Associates, Inc. reviewed historical records for the subject site. The earliest historical record was an 1889 Sanborn fire insurance map. Based on this map and other historical records, the southern portion of 325 Seventh Street property used to be part of the Germania Hall and Gymnasium. The northern portion of the 325 Seventh Street property used to be an auto repair shop and a

gasoline service station from approximately 1911 to 1967. In approximately 1967, Bay Alarm Co. became the owner and operator at 325 Seventh Street. Currently, the 325 Seventh Street property is occupied by the offices and warehouse of T & K Importers and U & P Wholesale which are clothing merchants.

The 330/332 Sixth Street properties were a junkyard from approximately 1950 to 1964. From approximately 1964 to 1967, W. Ho operated a paper and plastic specialties warehouse and coin-operated machine repair shop at 316 to 332 Sixth Street. Bay Alarm occupied the space from approximately 1967 to 2004. Currently, and 332 Sixth Street is occupied by a Eric's Auto Tech, and the 316 Sixth Street space is occupied by T & K Importers.

During the 1950s to 1980s, gasoline service stations operated on both, the northwest and northeast corners of the intersection of Seventh and Harrison Streets. The site on the northeast corner is a listed LUST site.

Based on a review of a previous environmental report, one 3,000-gallon and one 10,000-gallon USTs were removed from the subject site in October 1998. Soil contamination was discovered at both tanks. The affected soil was excavated and disposed of in accordance with applicable regulations. Groundwater was not tested. According to the report, a new 10,000-gallon UST was installed after the UST removal and environmental cleanup. Based on a Permit issued by the Oakland Fire Department, this new UST was removed in 2004. No environmental reports were available regarding the 2004 UST removal.

Based on the results of the Phase I ESA, SCHUTZE & Associates, Inc. recommended performing a Phase II Subsurface Investigation consisting of four Geoprobe borings and the collection and analyses of soil and/or groundwater samples. The following soil boring locations were selected:

- Boring B3 was drilled on the northeast corner of the 325 Seventh Street property to investigate if contaminated groundwater had migrated to the subject site from the adjacent historical gasoline service stations located on the northeast and northwest corners of the intersection of Seventh and Harrison Streets.
- Boring B4 was drilled on the 325 Seventh Street property adjacent and down-gradient from the former UST location. The purpose of this boring was to investigate if soil and/or groundwater contamination had been caused by the former on-site USTs.
- Borings B1 and B2 were drilled adjacent to the Sixth Street parcels to investigate if soil and/or groundwater contamination had been caused by the former junkyard and/or by the current tenant Eric's Auto Tech at 330 Sixth Street. In addition, the purpose of these two borings was to assess if groundwater contamination had migrated off the subject site onto Sixth Street.

Drilling permits were obtained from the County of Alameda, Department of Public Works. An underground services survey was performed to clear the boring locations for utilities. Drilling and sampling were performed on April 13, 2006.

Based on the laboratory report, gasoline and automotive-type VOCs such as BTEX,

MTBE, PCE, TCE and VC were not detected in any of the borings. No contamination was detected in Boring B2.

Diesel and motor oil were detected directly adjacent to the intersection of Harrison and Seventh Streets (Boring B3), at concentrations of up to 220 and 380 µg/L, respectively. Diesel and motor oil were also detected adjacent to the former on-site USTs (Boring B4) at concentrations of up to 1,600 and 2,400 µg/L, respectively. The RWQCB uses action levels (Target Groundwater Concentration – TGC) of 640 µg/L for TPH-d and TPH-mo. It appears that contaminated groundwater from the off-site LUSTs has migrated to the subject site. The elevated TPH-d and -mo concentrations near the former on-site UST location indicate that the historical USTs on the subject site had impacted the groundwater beneath the subject site and commingled with the contamination originating from off-site sources. Based on the laboratory results for Borings B1 and B2, the diesel and motor oil contamination does not extend down-gradient, beyond the property boundary onto Sixth Street (Boring B2).

1,1 – DCE and 1,1,1 – TCA were detected at low concentrations in the groundwater samples from Boring B1 at concentrations of up to 91 and 100 µg/L, respectively. The concentrations exceed the TGCs for these compounds of 25 and 62 µg/L, respectively. The likely sources of this contamination are the former junkyard at this location and/or the current Erik Auto Tech shop.

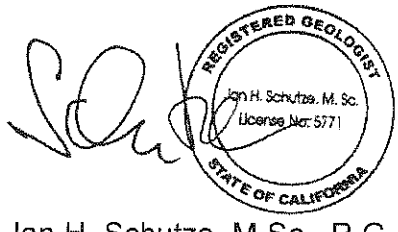
I. RECOMMENDATIONS

SCHUTZE & Associates, Inc. recommends reporting the results of the Phase II Subsurface Investigation as required by city, county and state regulations. A follow-up subsurface investigation is recommended to investigate the lateral and vertical extent of the two areas of groundwater contamination.

We have enjoyed working on this project and appreciate the opportunity to be of service. Please call SCHUTZE & Associates, Inc. at (510) 625-8175 with questions or comments about this report.

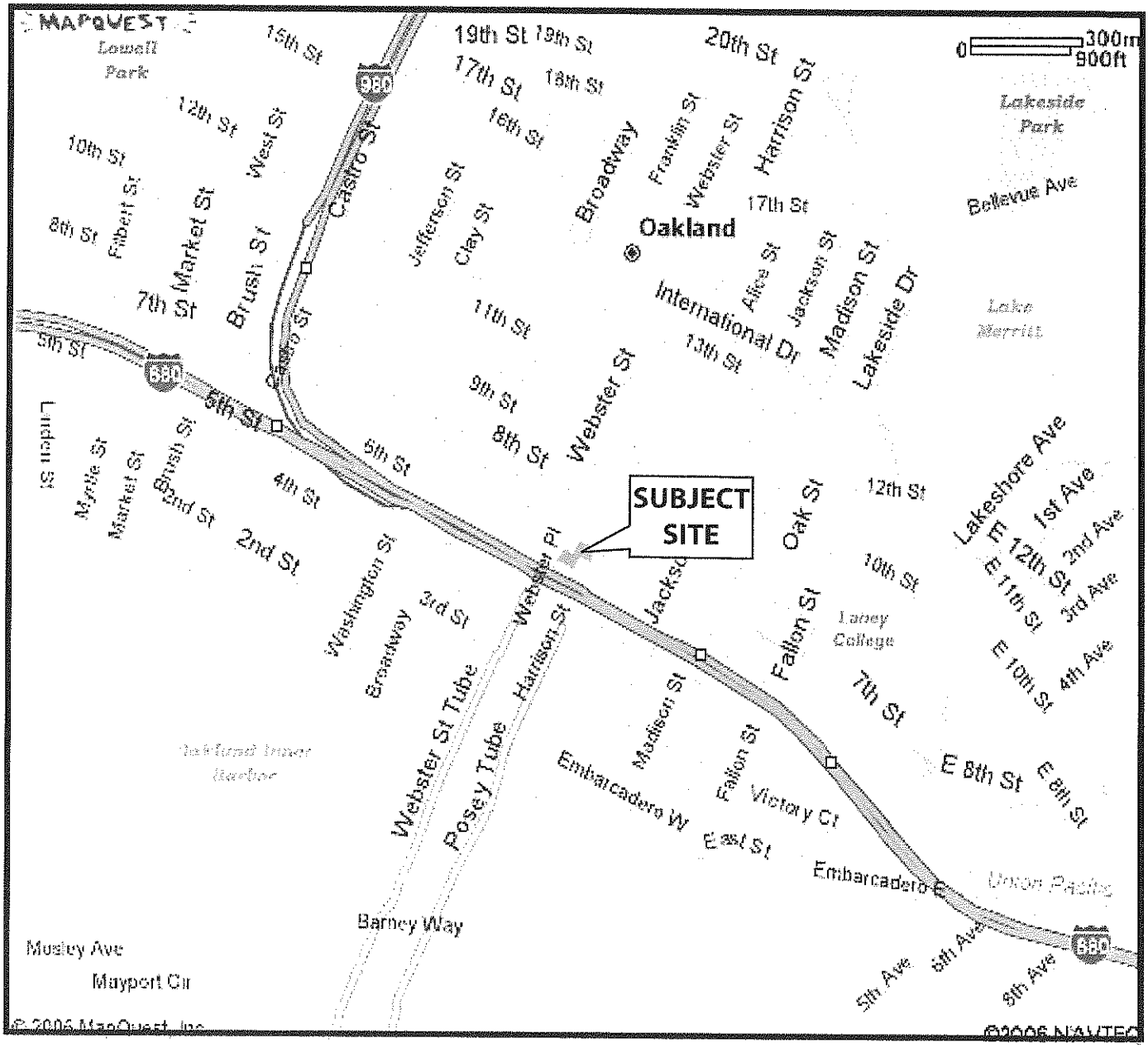
Respectfully submitted:

SCHUTZE & ASSOCIATES, INC.



Jan H. Schutze, M.Sc., R.G.
President

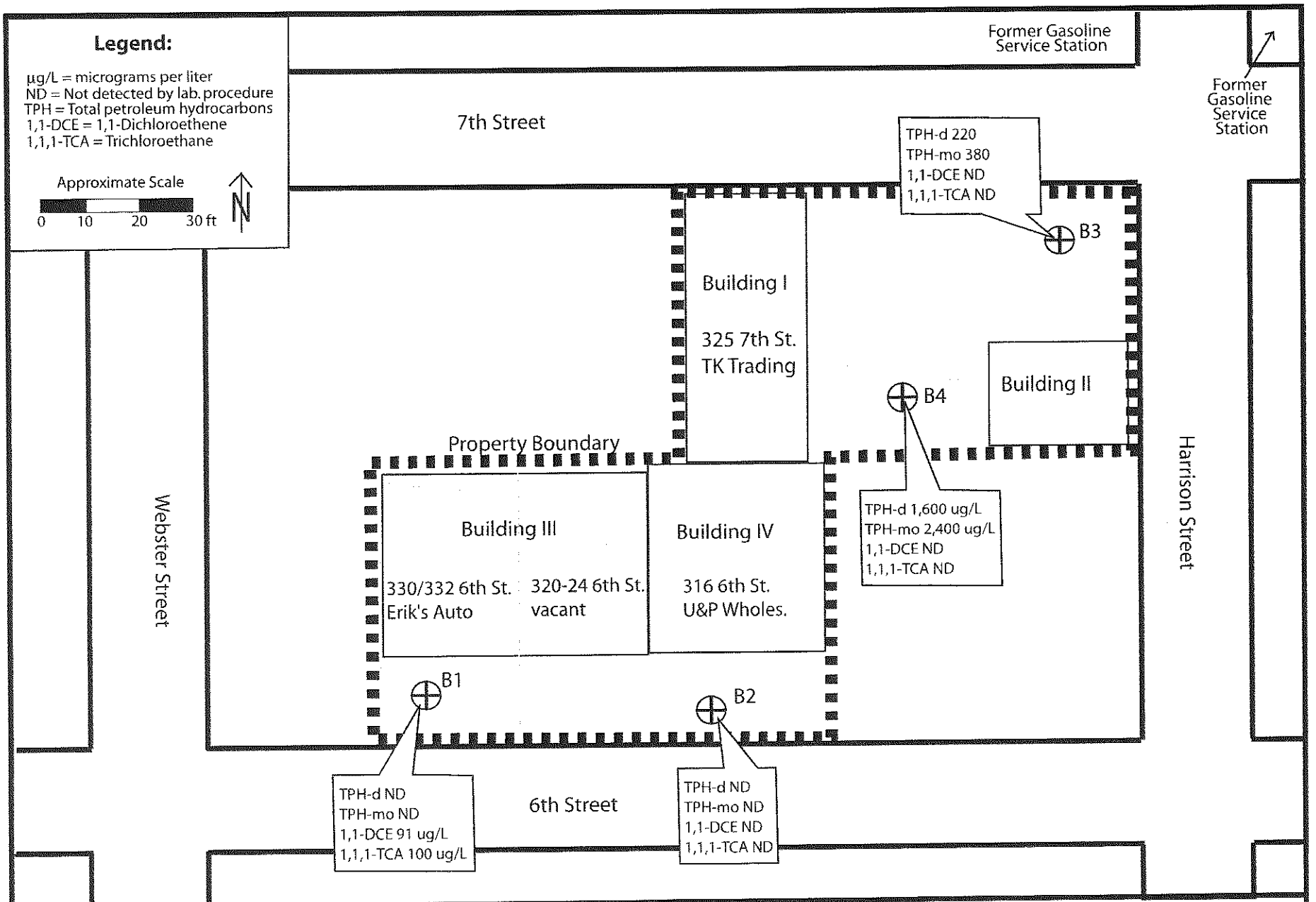
Figures 1, 2 and 3
Location Map, Site Plan and
1950 Sanborn Fire Insurance Map



Location Map
316-332 Sixth Street and 325 Seventh Street
Oakland, California

Schutze & Associates, Inc.

Figure 1



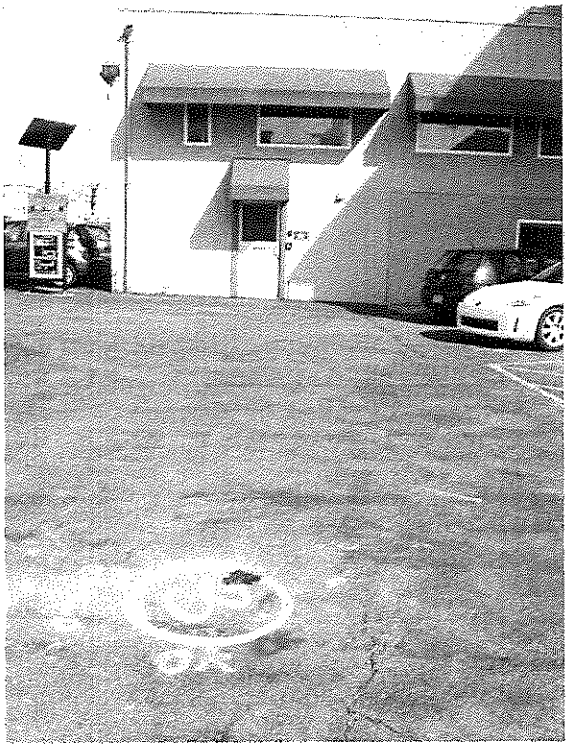
Site Map with Boring Locations and Laboratory Results
325 Seventh Street and 316-332 Sixth Street
Oakland, California

Figure 2
May 2006

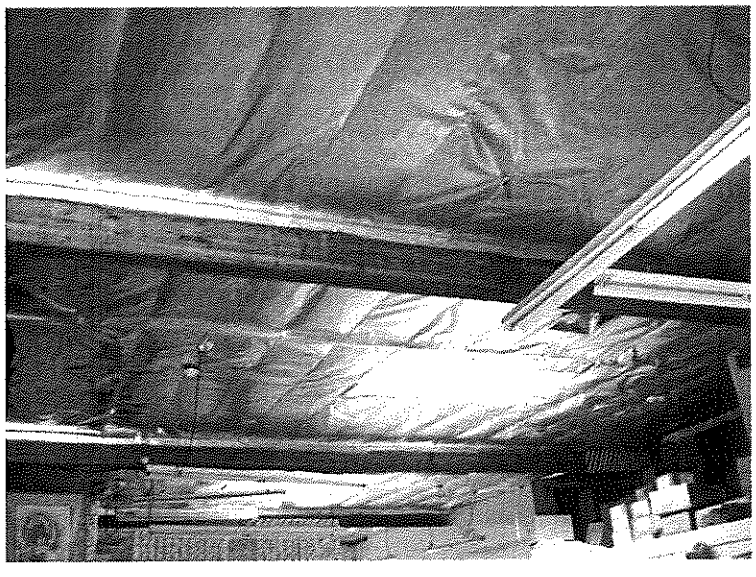
SCHUTZE & Associates, Inc.

Site Photographs

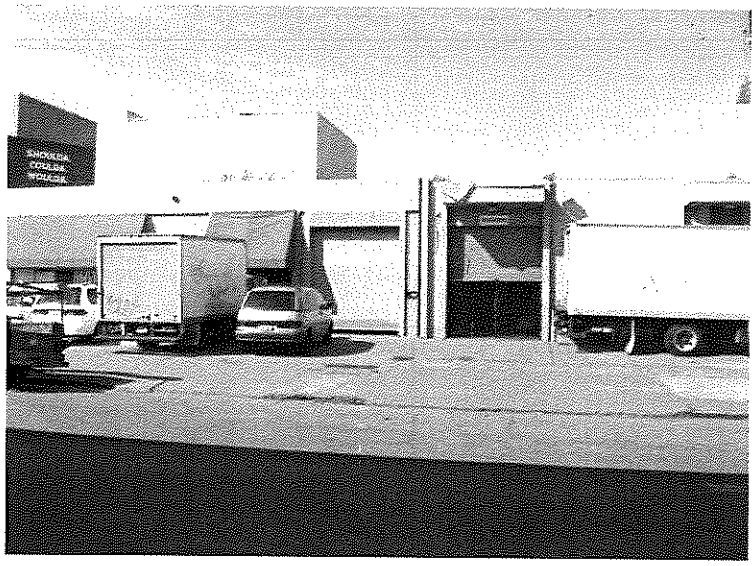
Photograph #1: Looking south east from Seventh Street at the subject site.



Photograph 2: The parking lot at 325 7th St.
The former are UST and soil boring location in the foreground.



Photograph 3: the ceiling in the warehouse was insulated with fiberglass insulation.
Asbestos-containing insulationwas not observed.



Photograph 4: Looking from the south at 316 to 3 Sixth Street. Erik's Auto Tech on the left, and the warehouse of T & K on the right.

Photograph 5: In the southwest corner of the tenant space occupied by Erik Auto Tech were 55 gallon drums containing various automotive fluids and lubricants.

Photograph 6: A concrete patch in the Eric Auto Tech space indicates the former location of an in-ground hydraulic hoist.

Appendix A

Government List Search
EDR Report

The EDR Radius Map
with GeoCheck®

Commercial Property
325 Seventh Street
Oakland, CA 94607

Inquiry Number: 1656740.2s

April 17, 2006

EDR® Environmental
Data Resources Inc

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

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Overview Map	2
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EPA Waste Codes	EPA-1
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GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
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Physical Setting SSURGO Soil Map	A-6
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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

325 SEVENTH STREET
OAKLAND, CA 94607

COORDINATES

Latitude (North):	37.798000 - 37° 47' 52.8"
Longitude (West):	122.271400 - 122° 16' 17.0"
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	564146.2
UTM Y (Meters):	4183447.8
Elevation:	31 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	37122-G3 OAKLAND WEST, CA
Most Recent Revision:	1980

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following government records. For more information on this property see page 6 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
BAY ALARM COMPANY 325 7TH ST OAKLAND, CA 94607	HAZNET HIST UST	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

FEDERAL RECORDS

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
Delisted NPL..... National Priority List Deletions

EXECUTIVE SUMMARY

NPL RECOVERY	Federal Superfund Liens
CERC-NFRAP	CERCLIS No Further Remedial Action Planned
ERNS	Emergency Response Notification System
HMIRS	Hazardous Materials Information Reporting System
US ENG CONTROLS	Engineering Controls Sites List
US INST CONTROL	Sites with Institutional Controls
US BROWNFIELDS	A Listing of Brownfields Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
ODI	Open Dump Inventory
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
SSTS	Section 7 Tracking Systems
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
MINES	Mines Master Index File
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System

STATE AND LOCAL RECORDS

AWP	Annual Workplan Sites
Cal-Sites	Calsites Database
CA BOND EXP. PLAN	Bond Expenditure Plan
NFA	No Further Action Determination
NFE	Properties Needing Further Evaluation
REF	Unconfirmed Properties Referred to Another Agency
SCH	School Property Evaluation Program
Toxic Pits	Toxic Pits Cleanup Act Sites
CA WDS	Waste Discharge System
WMUDS/SWAT	Waste Management Unit Database
AST	Aboveground Petroleum Storage Tank Facilities
CHMIRS	California Hazardous Material Incident Report System
CLEANERS	Cleaner Facilities
WIP	Well Investigation Program Case List
CDL	Clandestine Drug Labs
EMI	Emissions Inventory Data

TRIBAL RECORDS

INDIAN RESERV	Indian Reservations
INDIAN LUST	Leaking Underground Storage Tanks on Indian Land
INDIAN UST	Underground Storage Tanks on Indian Land

EDR PROPRIETARY RECORDS

EDR Historical Cleaners	EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

FEDERAL RECORDS

CERCLIS: The Comprehensive Environmental Response, Compensation and Liability Information System contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the CERCLIS list, as provided by EDR, and dated 02/01/2006 has revealed that there is 1 CERCLIS site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
FRANCIS PLATING OF OAKLAND INC	***785 7TH ST***	***1/4 - 1/2 WNW***	***Y114***	***165***

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 03/15/2006 has revealed that there are 2 CORRACTS sites within approximately 1 mile of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
FRANCIS PLATING OF OAKLAND INC	***785 7TH ST***	***1/4 - 1/2 WNW***	***Y114***	***165***
SAFETY KLEEN CORP 7 178 01	***404 MARKET ST***	***1/2 - 1 WNW***	***127***	***189***

RCRAInfo: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System(RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month Large quantity generators generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-TSDF list, as provided by EDR, and dated 02/21/2006 has revealed that there is 1

RCRA-TSDF site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
FRANCIS PLATING OF OAKLAND INC	*785 7TH ST*	*1/4 - 1/2 WNW*	*Y114*	*165*

RCRAInfo: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System(RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month Large quantity generators generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-LQG list, as provided by EDR, and dated 02/21/2006 has revealed that there is 1 RCRA-LQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
OAKLAND NATIONAL ENGRAVING CO	*307 10TH ST*	*1/8 - 1/4 ENE*	*41*	*62*

RCRAInfo: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System(RCRIS). The database includes selective information on sites which generate, transport, store , treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month Large quantity generators generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-SQG list, as provided by EDR, and dated 02/24/2006 has revealed that there are 3 RCRA-SQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
PORT OF OAKLAND	*251 5TH*	*1/8 - 1/4 SSE*	*29*	*52*

Lower Elevation	Address	Dist / Dir	Map ID	Page
CALTRANS DISTRICT 4	*415 HARRISON ST*	*1/8 - 1/4 SSW*	*E18*	*32*
REYNOLDS FAMILY TRUST 201 4TH	*201 4TH ST*	*1/8 - 1/4 SSE*	*42*	*62*

EXECUTIVE SUMMARY

Federal Lands: Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

A review of the DOD list, as provided by EDR, and dated 12/31/2004 has revealed that there is 1 DOD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
ALAMEDA NAVAL AIR STATION (CLO		1/2 - 1 SW	0	7

FUDS: The Listing includes locations of Formerly Used Defense Sites Properties where the US Army Corps Of Engineers is actively working or will take necessary cleanup actions.

A review of the FUDS list, as provided by EDR, and dated 12/05/2005 has revealed that there is 1 FUDS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
OAKLAND AREA HOSPITAL SITE		1/4 - 1/2 NE	R79	113

STATE AND LOCAL RECORDS

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the Integrated Waste Management Board's Solid Waste Information System (SWIS) database.

A review of the SWF/LF list, as provided by EDR, and dated 03/13/2006 has revealed that there is 1 SWF/LF site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
NORTH PORT OF OAKLAND REFUSE D	SE CORNER DOOLITTLE RD	1/4 - 1/2 ENE	63	87

CORTESE: This database identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with USTs having a reportable release and all solid waste disposal facilities from which there is known migration. The source is the California Environmental Protection Agency/Office of Emergency Information.

A review of the Cortese list, as provided by EDR, and dated 04/01/2001 has revealed that there are 59 Cortese sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
OAKLAND AUTO PARTS	*706 HARRISON ST*	*0 - 1/8 ENE*	*A3*	*9*
SHELL	*726 HARRISON ST*	*0 - 1/8 ENE*	*A4*	*12*
UNOCAL	*800 HARRISON ST*	*0 - 1/8 NE*	*D12*	*23*
BUILDING H 209	*271 8TH ST*	*0 - 1/8 ENE*	*15*	*30*
EXXON	*250 8TH ST*	*1/8 - 1/4 E*	*F20*	*36*
VIC'S AUTOMOTIVE SERVICE	*245 8TH AVE*	*1/8 - 1/4 E*	*F25*	*44*
BILL LOUIE'S AUTO SERVICE	*800 FRANKLIN ST*	*1/8 - 1/4 NNW*	*G27*	*46*
OAKLAND FIRE STATION #12	*822 ALICE ST*	*1/8 - 1/4 ENE*	*F28*	*50*
SHELL	*461 8TH ST*	*1/8 - 1/4 NW*	*43*	*63*
PACIFIC RENAISSANCE PLAZA	*1000 FRANKLIN ST*	*1/8 - 1/4 N*	*44*	*65*

EXECUTIVE SUMMARY

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
OFFICE OF THE PRESIDENT U	*1111 FRANKLIN*	*1/4 - 1/2 N*	*L55*	*77*
LEE FAMILY ASSOCIATES	*387 12TH ST E*	*1/4 - 1/2 N*	*O66*	*94*
BRAMALEA PACIFIC	*1111 BROADWAY*	*1/4 - 1/2 N*	*68*	*96*
ALLRIGHT PARKING LOT	*1225 WEBSTER ST*	*1/4 - 1/2 NNE*	*69*	*98*
BART CORPORATION YARD	*540 7TH ST E*	*1/4 - 1/2 WNW*	*71*	*100*
SALVATION ARMY	*810 CLAY ST*	*1/4 - 1/2 NW*	*78*	*112*
ZIMMERMAN INVESTMENTS	*420 13TH ST*	*1/4 - 1/2 N*	*S84*	*118*
CHEVRON	301 14TH ST E	1/4 - 1/2 NNE	V93	130
GERMAN AUTOCRAFT	301 14TH	1/4 - 1/2 NNE	V94	130
ZIMMERMAN INVESTMENTS	*1330 BROADWAY*	*1/4 - 1/2 N*	*96*	*132*
WESTERN UNION	*125 12TH ST*	*1/4 - 1/2 ENE*	*97*	*136*
TIME OIL COMPANY	255 14TH	1/4 - 1/2 NE	W98	140
QUALITY TUNE UP	*246 14TH ST*	*1/4 - 1/2 NE*	*W99*	*140*
FINANCIAL CENTER BUILDING	*405 14TH ST*	*1/4 - 1/2 N*	*100*	*141*
HOUSEWIVES MARKET	*818 JEFFERSON ST*	*1/4 - 1/2 NW*	*101*	*143*
A BACHARACH TR & B BORSUK	*1432 HARRISON ST*	*1/4 - 1/2 NNE*	*V103*	*147*
ALCOPARK GARAGE	*165 13TH ST*	*1/4 - 1/2 ENE*	*X104*	*150*
TUNE UP MASTERS #325	*450 14TH ST E*	*1/4 - 1/2 N*	*109*	*159*
ONE HOUR CLEANERS	*190 14TH ST*	*1/4 - 1/2 NE*	*110*	*161*
MOBIL	160 14TH ST	1/4 - 1/2 ENE	113	164
FIVE CITY CENTER	*1300 CLAY ST*	*1/4 - 1/2 NNW*	*Z116*	*173*
OAKLAND FEDERAL BUILDING	*1305 CLAY ST*	*1/4 - 1/2 NNW*	*Z117*	*174*
BRAMALEA PACIFIC	UNKNOWN 12TH / CLAY	1/4 - 1/2 NNW	119	179
YWCA OF OAKLAND	*1515 WEBSTER ST*	*1/4 - 1/2 NNE*	*122*	*181*
PACIFIC BELL	*1519 FRANKLIN STREET*	*1/4 - 1/2 NNE*	*123*	*182*

Lower Elevation	Address	Dist / Dir	Map ID	Page
PE OHARE COMPANY	*309 4TH ST*	*1/8 - 1/4 SSW*	*E22*	*42*
CITY AUTO REPAIR	*330 WEBSTER ST*	*1/8 - 1/4 SW*	*32*	*53*
PE O'HAIR & COMPANY	*339 3RD ST*	*1/8 - 1/4 SW*	*35*	*55*
OAKLAND PORT OF	*295 6TH ST*	*1/8 - 1/4 WNW*	*39*	*59*
MEYER PLUMBING SUPPLY	*311 2ND ST*	*1/8 - 1/4 SSW*	*50*	*68*
EXPRESS AUTO SERVICE	*333 BROADWAY*	*1/4 - 1/2 WSW*	*53*	*71*
FUTURE AMTRAK STATION	*245 2ND ST*	*1/4 - 1/2 S*	*54*	*74*
ALAMEDA CTY HEALTH HEADQU	499 5TH	1/4 - 1/2 WNW	M58	79
LAKESIDE NON FERROUS METALS	*412 MADISON ST*	*1/4 - 1/2 SE*	*60*	*81*
MILLER PACKING COMPANY II	*206 2ND ST*	*1/4 - 1/2 S*	*N62*	*85*
EAST BAY PACKING COMPANY	*208 JACKSON ST*	*1/4 - 1/2 S*	*N64*	*88*
MILLER PACKING	*201 2ND ST*	*1/4 - 1/2 S*	*N65*	*91*
SHELL	*105 5TH ST*	*1/4 - 1/2 SE*	*P75*	*107*
UNITED BEVERAGE	*105 JACKSON ST*	*1/4 - 1/2 S*	*76*	*109*
CARD LOCK FORMER BUILDING H 20	*79 8TH AVE*	*1/4 - 1/2 ESE*	*80*	*114*
ALLIED FOOD SALES	*333 CLAY ST*	*1/4 - 1/2 W*	*87*	*124*
UNION MACHINE WORKS OF OA	534 2ND	1/4 - 1/2 WSW	90	127
BALCO PROPERTIES	*55 4TH ST*	*1/4 - 1/2 SE*	*95*	*130*
LANEY JUNIOR COLLEGE	*900 FALLON ST*	*1/4 - 1/2 E*	*102*	*145*
KTVU-TV	*2 JACK LONDON SQUARE*	*1/4 - 1/2 WSW*	*106*	*155*
PEERLESS COFFEE	*225 FALLON ST*	*1/4 - 1/2 SE*	*112*	*163*
PORT OF OAKLAND/CINEMA PROJECT	*CLAY / EMBARCADERO*	*1/4 - 1/2 W*	*115*	*168*
MACY'S MOVERS	*200 VICTORY CT*	*1/4 - 1/2 SE*	*118*	*177*
FIRE ALARM STATION	*1310 OAK ST*	*1/4 - 1/2 ENE*	*120*	*179*

EXECUTIVE SUMMARY

SWRCY: A listing of recycling facilities in California.

A review of the SWRCY list, as provided by EDR, and dated 01/05/2006 has revealed that there is 1 SWRCY site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
LAKESIDE NON FERROUS METALS	*412 MADISON ST*	*1/4 - 1/2 SE*	*60*	*81*

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the State Water Resources Control Board Leaking Underground Storage Tank Information System.

A review of the LUST list, as provided by EDR, and dated 01/09/2006 has revealed that there are 57 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
OAKLAND AUTO PARTS Facility Status: Preliminary site assessment underway	*706 HARRISON ST*	*0 - 1/8 ENE*	*A3*	*9*
SHELL Facility Status: Pollution Characterization	*726 HARRISON ST*	*0 - 1/8 ENE*	*A4*	*12*
UNOCAL Facility Status: Pollution Characterization	*800 HARRISON ST*	*0 - 1/8 NE*	*D12*	*23*
BUILDING H 209 Facility Status: Preliminary site assessment workplan submitted	*271 8TH ST*	*0 - 1/8 ENE*	*15*	*30*
EXXON Facility Status: Remedial action (cleanup) Underway	*250 8TH ST*	*1/8 - 1/4 E*	*F20*	*36*
VIC'S AUTOMOTIVE SERVICE Facility Status: Preliminary site assessment underway	*245 8TH AVE*	*1/8 - 1/4 E*	*F25*	*44*
BILL LOUIE'S AUTO SERVICE Facility Status: Preliminary site assessment underway	*800 FRANKLIN ST*	*1/8 - 1/4 NNW*	*G27*	*46*
OAKLAND FIRE STATION #12 Facility Status: Case Closed	*822 ALICE ST*	*1/8 - 1/4 ENE*	*F28*	*50*
SHELL Facility Status: Pollution Characterization	*461 8TH ST*	*1/8 - 1/4 NW*	*43*	*63*
PACIFIC RENAISSANCE PLAZA Facility Status: Remedial action (cleanup) Underway	*1000 FRANKLIN ST*	*1/8 - 1/4 N*	*44*	*65*
OFFICE OF THE PRESIDENT UC Facility Status: Case Closed	*1111 FRANKLIN ST*	*1/4 - 1/2 N*	*L56*	*78*
LEE FAMILY ASSOCIATES Facility Status: Case Closed	*387 12TH ST E*	*1/4 - 1/2 N*	*O66*	*94*
BRAMALEA PACIFIC Facility Status: Case Closed	*1111 BROADWAY*	*1/4 - 1/2 N*	*68*	*96*
ALLRIGHT PARKING LOT Facility Status: Case Closed	*1225 WEBSTER ST*	*1/4 - 1/2 NNE*	*69*	*98*
BART CORPORATION YARD Facility Status: Case Closed	*540 7TH ST E*	*1/4 - 1/2 WNW*	*71*	*100*
SALVATION ARMY Facility Status: Post remedial action monitoring	*810 CLAY ST*	*1/4 - 1/2 NW*	*78*	*112*
ZIMMERMAN INVESTMENTS Facility Status: Case Closed	*420 13TH ST*	*1/4 - 1/2 N*	*S84*	*118*

EXECUTIVE SUMMARY

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
CHEVRON Facility Status: Pollution Characterization	301 14TH ST	1/4 - 1/2 NNE	V91	127
ZIMMERMAN INVESTMENTS Facility Status: Case Closed	*1330 BROADWAY*	*1/4 - 1/2 N*	*96*	*132*
WESTERN UNION Facility Status: Case Closed	*125 12TH ST*	*1/4 - 1/2 ENE*	*97*	*136*
QUALITY TUNE UP Facility Status: Case Closed	*246 14TH ST*	*1/4 - 1/2 NE*	*W99*	*140*
FINANCIAL CENTER BUILDING Facility Status: Case Closed	*405 14TH ST*	*1/4 - 1/2 N*	*100*	*141*
HOUSEWIVES MARKET Facility Status: Leak being confirmed	*818 JEFFERSON ST*	*1/4 - 1/2 NW*	*101*	*143*
A BACHARACH TR & B BORSUK Facility Status: Pollution Characterization	*1432 HARRISON ST*	*1/4 - 1/2 NNE*	*V103*	*147*
ALCOPARK GARAGE Facility Status: Preliminary site assessment underway	*165 13TH ST*	*1/4 - 1/2 ENE*	*X104*	*150*
TUNE UP MASTERS #325 Facility Status: Case Closed	*450 14TH ST E*	*1/4 - 1/2 N*	*109*	*159*
FIVE CITY CENTER Facility Status: Case Closed	*1300 CLAY ST*	*1/4 - 1/2 NNW*	*Z116*	*173*
OAKLAND FEDERAL BUILDING Facility Status: Case Closed	*1305 CLAY ST*	*1/4 - 1/2 NNW*	*Z117*	*174*
YWCA OF OAKLAND Facility Status: Preliminary site assessment underway	*1515 WEBSTER ST*	*1/4 - 1/2 NNE*	*122*	*181*
PACIFIC BELL Facility Status: Post remedial action monitoring	*1519 FRANKLIN STREET*	*1/4 - 1/2 NNE*	*123*	*182*

Lower Elevation	Address	Dist / Dir	Map ID	Page
OAKLAND FISC 331EAST 331E Facility Status: Case Closed	331 4TH STREET	1/8 - 1/4 SSW	21	41
PE OHARE COMPANY Facility Status: Case Closed	*309 4TH ST*	*1/8 - 1/4 SSW*	*E22*	*42*
PE O'HAIR & COMPANY Facility Status: Leak being confirmed	*339 3RD ST*	*1/8 - 1/4 SW*	*35*	*55*
EAST BAY TIRE COMPANY Facility Status: Case Closed	*225 3RD ST*	*1/8 - 1/4 S*	*J37*	*57*
OAKLAND PORT OF Facility Status: Case Closed	*295 6TH ST*	*1/8 - 1/4 WNW*	*39*	*59*
MEYER PLUMBING SUPPLY Facility Status: Case Closed	*311 2ND ST*	*1/8 - 1/4 SSW*	*50*	*68*
EXPRESS AUTO SERVICE Facility Status: Case Closed	*333 BROADWAY*	*1/4 - 1/2 WSW*	*53*	*71*
FUTURE AMTRAK STATION Facility Status: Case Closed	*245 2ND ST*	*1/4 - 1/2 S*	*54*	*74*
ALAMEDA CTY HEALTH HEADQUARTER Facility Status: Case Closed	499 5TH ST	1/4 - 1/2 WNW	M59	80

Lower Elevation	Address	Dist / Dir	Map ID	Page
LAKESIDE NON FERROUS METALS Facility Status: Preliminary site assessment underway	*412 MADISON ST*	*1/4 - 1/2 SE*	*60*	*81*
MILLER PACKING COMPANY II Facility Status: Preliminary site assessment underway	*206 2ND ST*	*1/4 - 1/2 S*	*N62*	*85*
EAST BAY PACKING COMPANY Facility Status: Preliminary site assessment underway	*208 JACKSON ST*	*1/4 - 1/2 S*	*N64*	*88*
MILLER PACKING Facility Status: Preliminary site assessment underway	*201 2ND ST*	*1/4 - 1/2 S*	*N65*	*91*
T & T AUTO Facility Status: Case Closed	*610 OAK ST*	*1/4 - 1/2 ESE*	*Q72*	*101*
CHEVRON Facility Status: Remedial action (cleanup) Underway	*609 OAK ST*	*1/4 - 1/2 ESE*	*Q73*	*103*
SHELL Facility Status: Preliminary site assessment workplan submitted	*105 5TH ST*	*1/4 - 1/2 SE*	*P75*	*107*
UNITED BEVERAGE Facility Status: Preliminary site assessment underway	*105 JACKSON ST*	*1/4 - 1/2 S*	*76*	*109*
CARD LOCK FORMER BUILDING H 20 Facility Status: Preliminary site assessment workplan submitted	*79 8TH AVE*	*1/4 - 1/2 ESE*	*80*	*114*
POST TOOL Facility Status: Case Closed	*400 OAK ST*	*1/4 - 1/2 SE*	*T85*	*121*
PENN PARTNERS Facility Status: Case Closed	333 OAK ST	1/4 - 1/2 SSE	T86	123
ALLIED FOOD SALES Facility Status: Case Closed	*333 CLAY ST*	*1/4 - 1/2 W*	*87*	*124*
UNION MACHINE WORKS OF OAKLAND Facility Status: Case Closed	534 2ND ST	1/4 - 1/2 WSW	U89	126
BALCO PROPERTIES Facility Status: Case Closed	*55 4TH ST*	*1/4 - 1/2 SE*	*95*	*130*
LANEY JUNIOR COLLEGE Facility Status: Case Closed	*900 FALLON ST*	*1/4 - 1/2 E*	*102*	*145*
PEERLESS COFFEE Facility Status: Case Closed	*225 FALLON ST*	*1/4 - 1/2 SE*	*112*	*163*
MACY'S MOVERS Facility Status: Case Closed	*200 VICTORY CT*	*1/4 - 1/2 SE*	*118*	*177*
FIRE ALARM STATION Facility Status: Case Closed	*1310 OAK ST*	*1/4 - 1/2 ENE*	*120*	*179*

CA FID: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there are 12 CA FID UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
OAKLAND AUTO PARTS	*706 HARRISON ST*	*0 - 1/8 ENE*	*A3*	*9*
SHELL	*726 HARRISON ST*	*0 - 1/8 ENE*	*A4*	*12*
VICS AUTOMOTIVE SERVICE	*245 008TH ST*	*0 - 1/8 NNE*	*C9*	*20*

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
BAY ALARM COMPANY	*325 007TH ST*	*0 - 1/8 WNW*	*17*	*31*
BILL LOUIE'S AUTO SERVICE	*800 FRANKLIN ST*	*1/8 - 1/4 NNW*	*G27*	*46*
METROCENTER	*101 008TH ST*	*1/8 - 1/4 ESE*	*36*	*56*

Lower Elevation	Address	Dist / Dir	Map ID	Page
REHABILITATION CENTER	601 WEBSTER	0 - 1/8 WSW	B6	17
P.E. O'HAIR & CO.	*309 004TH ST*	*1/8 - 1/4 SW*	*H31*	*52*
OAKLAND PORT OF	*295 6TH ST*	*1/8 - 1/4 WNW*	*39*	*59*
OAK STREET SHELL	*105 005TH ST*	*1/8 - 1/4 SE*	*40*	*61*
PROBATION CENTER	*400 BROADWAY*	*1/8 - 1/4 W*	*K46*	*67*
EAST BAY TIRE CO.	*225 003RD ST*	*1/8 - 1/4 S*	*49*	*68*

CA SLIC: SLIC Region comes from the California Regional Water Quality Control Board.

A review of the SLIC list, as provided by EDR, and dated 01/09/2006 has revealed that there are 6 SLIC sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
HOWARD JOHNSON EXPRESS INN Facility Status: Case Open	423 7TH STREET	1/8 - 1/4 NW	I33	54
FRANK MAR COMMUNITY HOUSING PR	383 13TH ST	1/4 - 1/2 NNE	82	115
TRIBUNE TOWER COMPLEX	*409 13TH ST*	*1/4 - 1/2 N*	*S83*	*116*
CITY CENTER GARAGE WEST SITE	UNKNOWN 12TH ST / JEF	1/4 - 1/2 NNW	125	187

Lower Elevation	Address	Dist / Dir	Map ID	Page
PORT OF OAKLAND LOT 12	*475 2ND ST*	*1/4 - 1/2 WSW*	*74*	*106*
PORT OF OAKLAND - SITE A Facility Status: Pollution Characterization	535 WATER ST	1/4 - 1/2 WSW	111	162

Alameda CS: A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

A review of the CS list, as provided by EDR, and dated 02/16/2006 has revealed that there are 57 CS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
OAKLAND AUTO PARTS	*706 HARRISON ST*	*0 - 1/8 ENE*	*A3*	*9*
SHELL	*726 HARRISON ST*	*0 - 1/8 ENE*	*A4*	*12*
BAYPORT VILLAGE (ACORN II APAR	310 8TH ST	0 - 1/8 NE	C10	23
UNOCAL	*800 HARRISON ST*	*0 - 1/8 NE*	*D12*	*23*
OAKLAND AUTOMATIC SALES	719 ALICE ST	0 - 1/8 E	16	31
EXXON	*250 8TH ST*	*1/8 - 1/4 E*	*F20*	*36*
VIC'S AUTOMOTIVE SERVICE	*245 8TH AVE*	*1/8 - 1/4 E*	*F25*	*44*
BILL LOUIE'S AUTO SERVICE	*800 FRANKLIN ST*	*1/8 - 1/4 NNW*	*G27*	*46*
OAKLAND FIRE STATION #12	*822 ALICE ST*	*1/8 - 1/4 ENE*	*F28*	*50*
HOWARD JOHNSON EXPRESS INN	423 7TH ST	1/8 - 1/4 NW	I34	54
SHELL	*461 8TH ST*	*1/8 - 1/4 NW*	*43*	*63*
PACIFIC RENAISSANCE PLAZA	*1000 FRANKLIN ST*	*1/8 - 1/4 N*	*44*	*65*
PARKING LOT	9TH ST / BROADWAY	1/8 - 1/4 NNW	45	66

EXECUTIVE SUMMARY

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
OFFICE OF THE PRESIDENT UC	*1111 FRANKLIN ST*	*1/4 - 1/2 N*	*L56*	*78*
EAST BAY ASIAN LOCAL DEVELOPME	*901 WASHINGTON ST*	*1/4 - 1/2 NW*	*61*	*85*
LEE ASSOC.	*387 12TH ST*	*1/4 - 1/2 N*	*O67*	*96*
BRAMALEA PACIFIC	*1111 BROADWAY*	*1/4 - 1/2 N*	*68*	*96*
ALLRIGHT PARKING LOT	*1225 WEBSTER ST*	*1/4 - 1/2 NNE*	*69*	*98*
SALVATION ARMY	*810 CLAY ST*	*1/4 - 1/2 NW*	*78*	*112*
FRANK G MAR COMMUNITY HOUSING	283 13TH ST	1/4 - 1/2 NE	R81	115
ZIMMERMAN INVESTMENTS	*420 13TH ST*	*1/4 - 1/2 N*	*S84*	*118*
HARRISON CAR WASH	*301 14TH ST*	*1/4 - 1/2 NNE*	*V92*	*129*
WESTERN UNION	*125 12TH ST*	*1/4 - 1/2 ENE*	*97*	*136*
QUALITY TUNE UP	*246 14TH ST*	*1/4 - 1/2 NE*	*W99*	*140*
FINANCIAL CENTER BUILDING	*405 14TH ST*	*1/4 - 1/2 N*	*100*	*141*
HOUSEWIVES MARKET	*818 JEFFERSON ST*	*1/4 - 1/2 NW*	*101*	*143*
A BACHARACH TR & B BORSUK	*1432 HARRISON ST*	*1/4 - 1/2 NNE*	*V103*	*147*
ALCO PARK GARAGE	165 13TH ST	1/4 - 1/2 ENE	X105	155
SALTER, DOUGLAS N	901-909 JEFFERSON ST	1/4 - 1/2 NW	107	159
CITY CENTER PROJECT PARCEL 9	1155 CLAY ST	1/4 - 1/2 NNW	108	159
OAKLAND FEDERAL BUILDING	*1305 CLAY ST*	*1/4 - 1/2 NNW*	*Z117*	*174*
YWCA OF OAKLAND	*1515 WEBSTER ST*	*1/4 - 1/2 NNE*	*122*	*181*
PACIFIC BELL	*1519 FRANKLIN STREET*	*1/4 - 1/2 NNE*	*123*	*182*

Lower Elevation	Address	Dist / Dir	Map ID	Page
PE OHARE COMPANY	*309 4TH ST*	*1/8 - 1/4 SSW*	*E22*	*42*
EAST BAY TIRE COMPANY	*225 3RD ST*	*1/8 - 1/4 S*	*J37*	*57*
MEYER PLUMBING SUPPLY	*311 2ND ST*	*1/8 - 1/4 SSW*	*50*	*68*
EXPRESS AUTO SERVICE	*333 BROADWAY*	*1/4 - 1/2 WSW*	*53*	*71*
FUTURE AMTRAK STATION	*245 2ND ST*	*1/4 - 1/2 S*	*54*	*74*
ALCO HEALTH HEADQUARTERS	499 5TH ST	1/4 - 1/2 WNW	M57	79
LAKESIDE NON FERROUS METALS	*412 MADISON ST*	*1/4 - 1/2 SE*	*60*	*81*
MILLER PACKING COMPANY II	*206 2ND ST*	*1/4 - 1/2 S*	*N62*	*85*
EAST BAY PACKING COMPANY	*208 JACKSON ST*	*1/4 - 1/2 S*	*N64*	*88*
MILLER PACKING	*201 2ND ST*	*1/4 - 1/2 S*	*N65*	*91*
T & T AUTO	*610 OAK ST*	*1/4 - 1/2 ESE*	*Q72*	*101*
CHEVRON	*609 OAK ST*	*1/4 - 1/2 ESE*	*Q73*	*103*
SHELL	*105 5TH ST*	*1/4 - 1/2 SE*	*P75*	*107*
UNITED BEVERAGE	*105 JACKSON ST*	*1/4 - 1/2 S*	*76*	*109*
CARD LOCK FORMER BUILDING H 20	*79 8TH AVE*	*1/4 - 1/2 ESE*	*80*	*114*
POST TOOL	*400 OAK ST*	*1/4 - 1/2 SE*	*T85*	*121*
ALLIED FOOD SALES	*333 CLAY ST*	*1/4 - 1/2 W*	*87*	*124*
BALCO PROPERTIES	*55 4TH ST*	*1/4 - 1/2 SE*	*95*	*130*
LANEY JUNIOR COLLEGE	*900 FALLON ST*	*1/4 - 1/2 E*	*102*	*145*
KTVU-TV	*2 JACK LONDON SQUARE*	*1/4 - 1/2 WSW*	*106*	*155*
PEERLESS COFFEE	*225 FALLON ST*	*1/4 - 1/2 SE*	*112*	*163*
MACY'S MOVERS	*200 VICTORY CT*	*1/4 - 1/2 SE*	*118*	*177*
FIRE ALARM STATION	*1310 OAK ST*	*1/4 - 1/2 ENE*	*120*	*179*
GROVE AUTO REPAIR	424 MARTIN LUTHER KING	1/4 - 1/2 WNW	Y121	181

EXECUTIVE SUMMARY

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, and dated 01/09/2006 has revealed that there are 4 UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
TOSCO CORPORATION #30343	800 HARRISON ST	0 - 1/8 NE	D11	23
VIC'S AUTOMOTIVE	245 8TH ST	1/8 - 1/4 E	F24	44
EBMUD ADMINISTRATION CENTER	375 11TH ST	1/8 - 1/4 N	52	71
Lower Elevation	**Address**	**Dist / Dir**	**Map ID**	**Page**
ALAMEDA COUNTY PROBATION CENTE	400 BROADWAY	1/8 - 1/4 W	K48	68

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 11 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
GIN'S ARCO SERVICE	706 HARRISON ST	0 - 1/8 ENE	A2	7
KIN'S SHELL SERVICE	726 HARRISON ST	0 - 1/8 ENE	A5	16
DICK & VICS ARCO	245-8TH ST.	0 - 1/8 NNE	C8	19
UNOCAL	***800 HARRISON ST***	***0 - 1/8 NE***	***D12***	***23***
UNION OIL SS#0752	800 HARRISON ST	0 - 1/8 NE	D13	28
MANDARIN AUTO SERVICE	250 8TH ST	1/8 - 1/4 E	F19	34
BILL LOUIE'S TEXACO	800 FRANKLIN ST	1/8 - 1/4 NNW	G26	46
Lower Elevation	**Address**	**Dist / Dir**	**Map ID**	**Page**
THE SALVATION ARMY	***601 WEBSTER ST***	***0 - 1/8 WSW***	***B7***	***17***
P.E. O'HAIR & CO.	309 4TH ST	1/8 - 1/4 SSW	E23	43
EAST BAY TIRE CO.	225 3RD ST	1/8 - 1/4 S	J38	58
PROBATION CENTER	400 BROADWAY	1/8 - 1/4 W	K47	67

SWEEPS: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1980's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are 14 SWEEPS UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
OAKLAND AUTO PARTS	***706 HARRISON ST***	***0 - 1/8 ENE***	***A3***	***9***
SHELL	***726 HARRISON ST***	***0 - 1/8 ENE***	***A4***	***12***
VICS AUTOMOTIVE SERVICE	***245 008TH ST***	***0 - 1/8 NNE***	***C9***	***20***
UNOCAL	***800 HARRISON ST***	***0 - 1/8 NE***	***D12***	***23***
BAY ALARM COMPANY	***325 007TH ST***	***0 - 1/8 WNW***	***17***	***31***
EXXON	***250 8TH ST***	***1/8 - 1/4 E***	***F20***	***36***
BILL LOUIE'S AUTO SERVICE	***800 FRANKLIN ST***	***1/8 - 1/4 NNW***	***G27***	***46***
METROCENTER	***101 008TH ST***	***1/8 - 1/4 ESE***	***36***	***56***

EXECUTIVE SUMMARY

Lower Elevation	Address	Dist / Dir	Map ID	Page
THE SALVATION ARMY	*601 WEBSTER ST*	*0 - 1/8 WSW*	*B7*	*17*
P.E. O'HAIR & CO.	*309 004TH ST*	*1/8 - 1/4 SW*	*H31*	*52*
OAKLAND PORT OF	*295 6TH ST*	*1/8 - 1/4 WNW*	*39*	*59*
OAK STREET SHELL	*105 005TH ST*	*1/8 - 1/4 SE*	*40*	*61*
PROBATION CENTER	*400 BROADWAY*	*1/8 - 1/4 W*	*K46*	*67*
EAST BAY TIRE CO.	*225 003RD ST*	*1/8 - 1/4 S*	*49*	*68*

NOTIFY 65: Notify 65 records contain facility notifications about any release that could impact drinking water and thereby expose the public to a potential health risk. The data come from the State Water Resources Control Board's Proposition 65 database.

A review of the Notify 65 list, as provided by EDR, and dated 10/21/1993 has revealed that there are 8 Notify 65 sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
F.G. MA COMMUNITY HOUSING P J	HARRISON / 13TH STREE	1/4 - 1/2 NNE	77	111
OAKLAND CITY HALL	*#1 CITY HALL PLAZA*	*1/2 - 1 N*	*126*	*187*

Lower Elevation	Address	Dist / Dir	Map ID	Page
P. E. O'HAIR & CO.	309 FOURTH STREET	1/8 - 1/4 SW	H30	52
LANEY COLLEGE	600 FALLON STREET	1/4 - 1/2 SE	P70	99
VUKASIN/SOUTHERN PACIFIC TRANS	54 EMBARCADERO AT FALLO	1/4 - 1/2 SSE	124	187
EAST BAY FORD TRUCK	*333 FIBERT ST*	*1/2 - 1 WNW*	*129*	*205*
AMERICAN INK PRODUCTS	630 EAST 10TH STREET	1/2 - 1 ESE	130	209
SERVICE STATION	2225 TELEGRAPH AVENUE	1/2 - 1 N	131	209

DEED: The use of recorded land use restrictions is one of the methods the DTSC uses to protect the public from unsafe exposures to hazardous substances and wastes .

A review of the DEED list, as provided by EDR, and dated 01/03/2006 has revealed that there is 1 DEED site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
PORT OF OAKLAND/CINEMA PROJECT	*CLAY / EMBARCADERO*	*1/4 - 1/2 W*	*115*	*168*

VCP: Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

A review of the VCP list, as provided by EDR, and dated 08/08/2005 has revealed that there are 2 VCP sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
ASIAN HEALTH SERVICES	*814 WEBSTER STREET*	*0 - 1/8 N*	*14*	*28*

Lower Elevation	Address	Dist / Dir	Map ID	Page
PORT OF OAKLAND/CINEMA PROJECT	*CLAY / EMBARCADERO*	*1/4 - 1/2 W*	*115*	*168*

EXECUTIVE SUMMARY

EDR PROPRIETARY RECORDS

EDR Manufactured Gas Plants: The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

A review of the Manufactured Gas Plants list, as provided by EDR, has revealed that there are 2 Manufactured Gas Plants sites within approximately 1 mile of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
PG AND E GAS PLANT OAKLAND	FIRST AND WASHINGTON	1/4 - 1/2 WSW	U88	126
PGANDE OAKLAND	50 MARKET ST BTWN 1ST A	1/2 - 1 W	128	204

EDR Historical Auto Stations: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

A review of the EDR Historical Auto Stations list, as provided by EDR, has revealed that there is 1 EDR Historical Auto Stations site within approximately 0.25 miles of the target property.

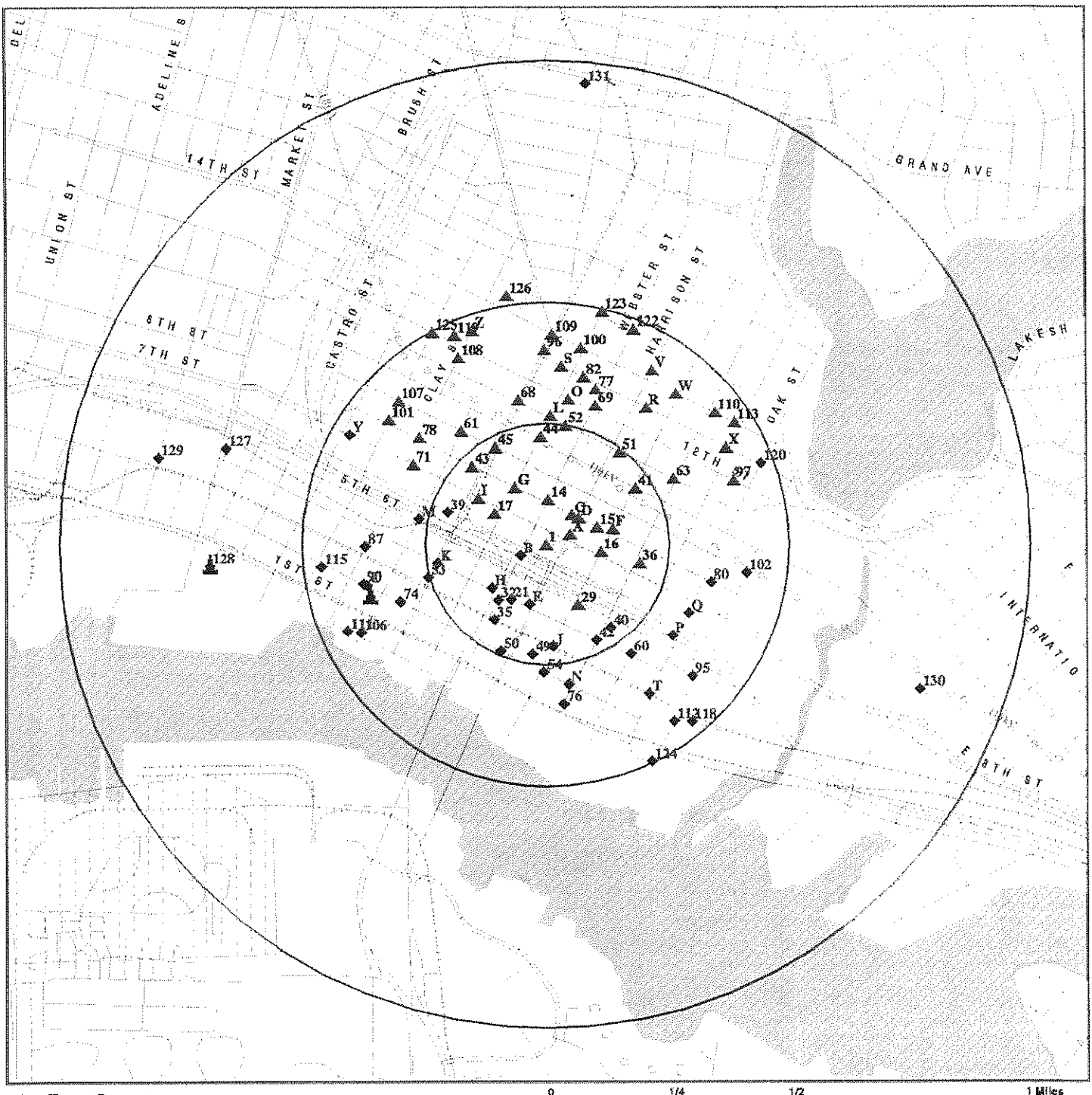
Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
CLOVER LEAF AUTO BODY & FENDER	288 11TH PHONE LAKESI	1/8 - 1/4 NE	51	70

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
CALTRANS CYPRESS PROJECT	CS
CALTRANS	CS
WAREHAM PROPERTY DEVELOPMENT	CS
FRANCIS PLATING	CS
ALL MERCEDES DISMANTLERS	HAZNET, CA FID UST, CS, SWEEPS UST
TRUCKER'S FRIEND	CS
SOUTHERN PACIFIC TRANSPORT COMPANY	LUST, CS
KELLY'S TRUCK REPAIR	LUST, Cortese, CS
1675 7TH ST.	CHMIRS, CS
OAKLAND POLICE STATION	SWEEPS UST
SOUTHERN PACIFIC -WEST OAKLAND RAI	Cal-Sites, AWP
COMMERCIAL BUILDINGS	Cal-Sites, AWP
BNSF WOOD STREET YARD	Cal-Sites, AWP
UNION PACIFIC	LUST, CHMIRS
OAKLAND ARMY BASE	HAZNET, LUST, CHMIRS, CA WDS
CHEVRON	LUST, Cortese
BATAVIA PROPERTY	CERC-NFRAP
OAKLAND ARMY BASE - TANK 672	LUST
OAKLAND ARMY BASE - TANK 742	LUST
OAKLAND ARMY BASE TANKS 4&5	LUST
COMMERCIAL BUILDING	LUST
GERMAN AUTOCRAFT	LUST
MANDELA PARKWAY CORRIDOR	VCP
MICRONESIAN CARGO INTERNATIONAL	VCP
OAKLAND MAIN POST OFFICE PARKING S	VCP
ALL MERCEDES DISMANTLERS	RCRA-SQG, FINDS, HAZNET
SANTA FE PACIFIC PIPELINE OAKLAND	RCRA-SQG, FINDS
UNION PACIFIC RAILROAD - 5TH AND U	SLIC
SITE B PROPERTIES	SLIC
CYPRESS FREEWAY RECONSTRUCTION	SLIC
FRANCIS PLATING	SLIC
COMMERCIAL TRUCK & AUTO SERVICE	EDR Historical Auto Stations
A A A COMMERCIAL LAUNDRY	EDR Historical Cleaners

OVERVIEW MAP - 1656740.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Commercial Property ADDRESS: 325 Seventh Street Oakland CA 94607 LAT/LONG: 37.7980 / 122.2714	CLIENT: Schutze and Associates Inc. CONTACT: Jan Schutze INQUIRY #: 1656740.2s DATE: April 17, 2006

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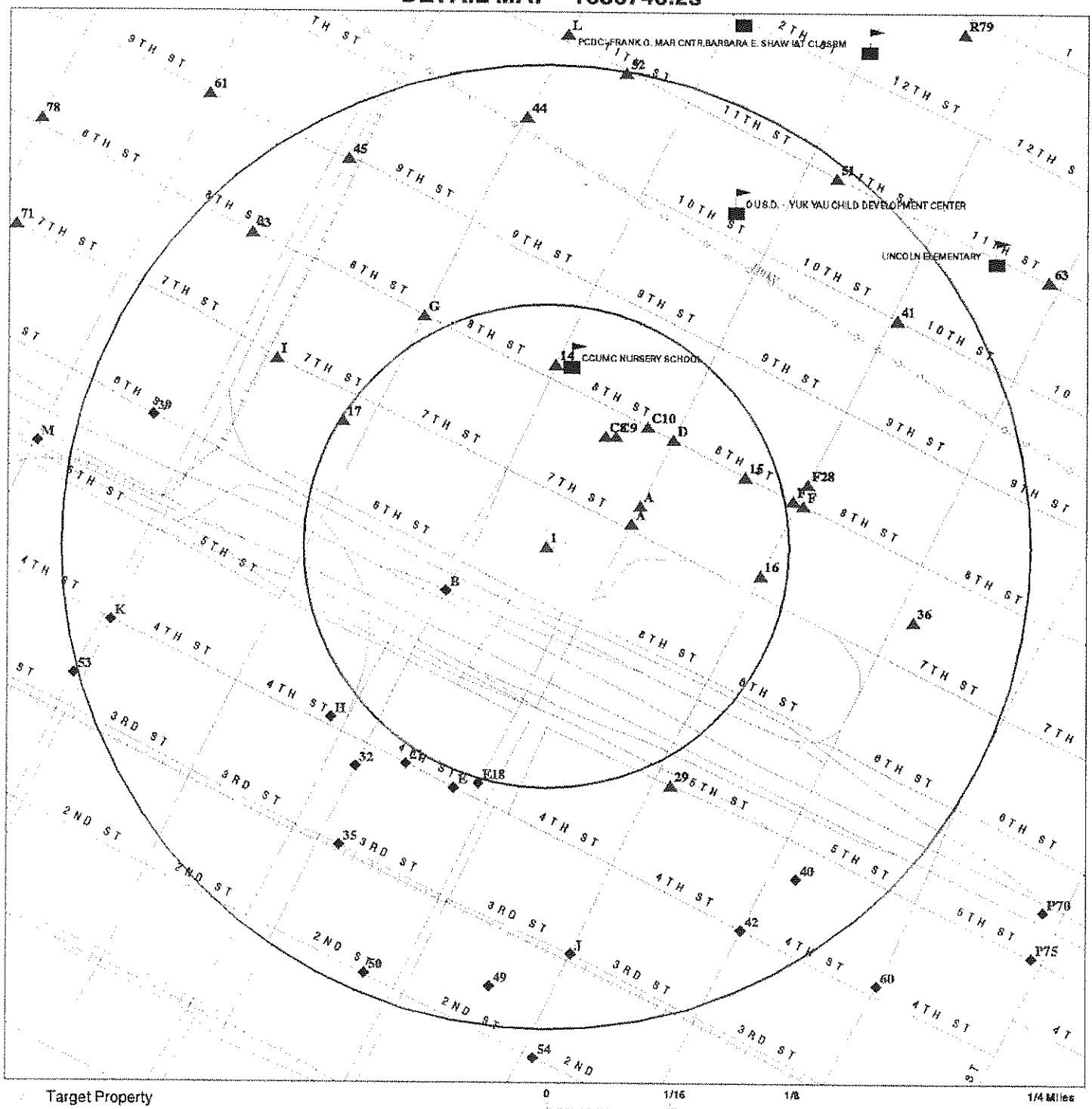
DETAIL MAP - 1656740.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

0 1/16 1/8 1/4 Miles

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Commercial Property ADDRESS: 325 Seventh Street Oakland CA 94607 LAT/LONG: 37.7980 / 122.2714	CLIENT: Schutze and Associates Inc. CONTACT: Jan Schutze INQUIRY #: 1656740.2s DATE: April 17, 2006

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL RECORDS								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
NPL RECOVERY		TP	NR	NR	NR	NR	NR	0
CERCLIS		0.500	0	0	1	NR	NR	1
CERC-NFRAP		0.500	0	0	0	NR	NR	0
CORRACTS		1.000	0	0	1	1	NR	2
RCRA TSD		0.500	0	0	1	NR	NR	1
RCRA Lg. Quan. Gen.		0.250	0	1	NR	NR	NR	1
RCRA Sm. Quan. Gen.		0.250	0	3	NR	NR	NR	3
ERNS		TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
DOD		1.000	0	0	0	1	NR	1
FUDS		1.000	0	0	1	0	NR	1
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
STATE AND LOCAL RECORDS								
AWP		1.000	0	0	0	0	NR	0
Cal-Sites		1.000	0	0	0	0	NR	0
CA Bond Exp. Plan		1.000	0	0	0	0	NR	0
NFA		0.250	0	0	NR	NR	NR	0
NFE		0.250	0	0	NR	NR	NR	0
REF		0.250	0	0	NR	NR	NR	0
SCH		0.250	0	0	NR	NR	NR	0
Toxic Pits		1.000	0	0	0	0	NR	0
State Landfill		0.500	0	0	1	NR	NR	1
CA WDS		TP	NR	NR	NR	NR	NR	0
WMUDS/SWAT		0.500	0	0	0	NR	NR	0
Cortese		0.500	4	11	44	NR	NR	59
SWRCY		0.500	0	0	1	NR	NR	1
LUST		0.500	4	12	41	NR	NR	57
CA FID UST		0.250	5	7	NR	NR	NR	12

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SLIC		0.500	0	1	5	NR	NR	6
CS		0.500	5	11	41	NR	NR	57
UST		0.250	1	3	NR	NR	NR	4
HIST UST	X	0.250	6	5	NR	NR	NR	11
AST		0.250	0	0	NR	NR	NR	0
SWEEPS UST		0.250	6	8	NR	NR	NR	14
CHMIRS		TP	NR	NR	NR	NR	NR	0
Notify 65		1.000	0	1	3	4	NR	8
DEED		0.500	0	0	1	NR	NR	1
VCP		0.500	1	0	1	NR	NR	2
DRYCLEANERS		0.250	0	0	NR	NR	NR	0
WIP		0.250	0	0	NR	NR	NR	0
CDL		TP	NR	NR	NR	NR	NR	0
HAZNET	X	TP	NR	NR	NR	NR	NR	0
EMI		TP	NR	NR	NR	NR	NR	0
TRIBAL RECORDS								
INDIAN RESERV		1.000	0	0	0	0	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
Manufactured Gas Plants		1.000	0	0	1	1	NR	2
EDR Historical Auto Stations		0.250	0	1	NR	NR	NR	1
EDR Historical Cleaners		0.250	0	0	NR	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 **BAY ALARM COMPANY** **HAZNET** **U001599151**
Target **325 7TH ST** **HIST UST** **N/A**
Property **OAKLAND, CA 94607**

Actual:
31 ft.

HAZNET:

Gepaid:	CAC002101216
TSD EPA ID:	CAD009466392
Gen County:	1
Tsd County:	7
Tons:	6.5000
Facility Address 2:	Not reported
Waste Category:	Other empty containers 30 gallons or more
Disposal Method:	Not reported
Contact:	BAY ALARM
Telephone:	(925) 443-7301
Mailing Name:	Not reported
Mailing Address:	325 7TH ST OAKLAND, CA 94607
County	1

Gepaid:	CAC002101216
TSD EPA ID:	CAD099452708
Gen County:	1
Tsd County:	Los Angeles
Tons:	2.0641
Facility Address 2:	Not reported
Waste Category:	Unspecified oil-containing waste
Disposal Method:	Recycler
Contact:	BAY ALARM
Telephone:	(925) 443-7301
Mailing Name:	Not reported
Mailing Address:	325 7TH ST OAKLAND, CA 94607
County	1

Gepaid:	CAC002101216
TSD EPA ID:	CAD009466392
Gen County:	1
Tsd County:	7
Tons:	6.5000
Facility Address 2:	Not reported
Waste Category:	Other empty containers 30 gallons or more
Disposal Method:	Recycler
Contact:	BAY ALARM
Telephone:	(925) 443-7301
Mailing Name:	Not reported
Mailing Address:	325 7TH ST OAKLAND, CA 94607
County	1

UST HIST:

Facility ID:	53680	Owner Name:	BAY ALARM CO.
Total Tanks:	2	Region:	STATE
Owner Address:	325 7TH ST. OAKLAND, CA 94607		
Tank Used for:	PRODUCT		
Tank Num:	1	Container Num:	1
Tank Capacity:	00010000	Year Installed:	Not reported
Type of Fuel:	UNLEADED	Tank Construction:	Not Reported
Leak Detection:	None		
Contact Name:	ROGER WESTPHAL	Telephone:	(415) 452-3211

BAY ALARM COMPANY (Continued) **U001599151**

Facility Type:	Other	Other Type:	ALARM SYSTEM
Facility ID:	53680	Owner Name:	BAY ALARM CO.
Total Tanks:	2	Region:	STATE
Owner Address:	325 7TH ST. OAKLAND, CA 94607		
Tank Used for:	PRODUCT		
Tank Num:	2	Container Num:	2
Tank Capacity:	00003000	Year Installed:	Not reported
Type of Fuel:	DIESEL	Tank Construction:	Not Reported
Leak Detection:	None		
Contact Name:	ROGER WESTPHAL	Telephone:	(415) 452-3211
Facility Type:	Other	Other Type:	ALARM SYSTEM

DOD
Region SW
1/2-1
4100 ft.

ALAMEDA NAVAL AIR STATION (CLOSED) **DOD** **CUSA036095**
N/A

ALAMEDA NAVAL AIR STATION (County), CA

FEDERAL LANDS:

Feature 1:	Navy DOD
Feature 2:	Not reported
Feature 3:	Not reported
Agency:	DOD
URL:	Not reported
Name 1:	Alameda Naval Air Station (Closed)
Name 2:	Not reported
Name 3:	Not reported
State:	CA

A2
ENE
< 1/8
234 ft.

Relative: Higher

Actual: 32 ft.

GIN'S ARCO SERVICE **HIST UST** **U001599177**
706 HARRISON ST **N/A**
OAKLAND, CA 94607

Site 1 of 4 in cluster A

UST HIST:

Facility ID:	61568	Owner Name:	BO K. GIN
Total Tanks:	6	Region:	STATE
Owner Address:	706 HARRISON ST. OAKLAND, CA 94607		
Tank Used for:	PRODUCT		
Tank Num:	1	Container Num:	1
Tank Capacity:	00002667	Year Installed:	Not reported
Type of Fuel:	UNLEADED	Tank Construction:	Not Reported
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(415) 444-2997
Facility Type:	Gas Station	Other Type:	Not reported
Facility ID:	61568	Owner Name:	BO K. GIN
Total Tanks:	6	Region:	STATE
Owner Address:	706 HARRISON ST. OAKLAND, CA 94607		
Tank Used for:	PRODUCT		
Tank Num:	2	Container Num:	2
Tank Capacity:	00002667	Year Installed:	Not reported
Type of Fuel:	UNLEADED	Tank Construction:	Not Reported

GIN'S ARCO SERVICE (Continued) **U001599177**

Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(415) 444-2997
Facility Type:	Gas Station	Other Type:	Not reported
Facility ID:	61568	Owner Name:	BO K. GIN
Total Tanks:	6	Region:	STATE
Owner Address:	706 HARRISON ST. OAKLAND, CA 94607		
Tank Used for:	PRODUCT		
Tank Num:	3	Container Num:	3
Tank Capacity:	00002667	Year Installed:	Not reported
Type of Fuel:	REGULAR	Tank Construction:	Not Reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(415) 444-2997
Facility Type:	Gas Station	Other Type:	Not reported
Facility ID:	61568	Owner Name:	BO K. GIN
Total Tanks:	6	Region:	STATE
Owner Address:	706 HARRISON ST. OAKLAND, CA 94607		
Tank Used for:	PRODUCT		
Tank Num:	4	Container Num:	4
Tank Capacity:	00002667	Year Installed:	Not reported
Type of Fuel:	REGULAR	Tank Construction:	Not Reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(415) 444-2997
Facility Type:	Gas Station	Other Type:	Not reported
Facility ID:	61568	Owner Name:	BO K. GIN
Total Tanks:	6	Region:	STATE
Owner Address:	706 HARRISON ST. OAKLAND, CA 94607		
Tank Used for:	PRODUCT		
Tank Num:	5	Container Num:	5
Tank Capacity:	00002667	Year Installed:	Not reported
Type of Fuel:	PREMIUM	Tank Construction:	Not Reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(415) 444-2997
Facility Type:	Gas Station	Other Type:	Not reported
Facility ID:	61568	Owner Name:	BO K. GIN
Total Tanks:	6	Region:	STATE
Owner Address:	706 HARRISON ST. OAKLAND, CA 94607		
Tank Used for:	PRODUCT		
Tank Num:	6	Container Num:	6
Tank Capacity:	00002667	Year Installed:	Not reported
Type of Fuel:	PREMIUM	Tank Construction:	Not Reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(415) 444-2997
Facility Type:	Gas Station	Other Type:	Not reported